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REPAIR MANUAL MAN 008102

CUSTOMER SERVICES
AFTER-SALES TECHNICAL DEPARTMENT

VOLUME 2

JULY 1977

Supplement N° 1 : July 1977 (included)
N° 2 : .....
N° 3 : .....

GS VEHICLES

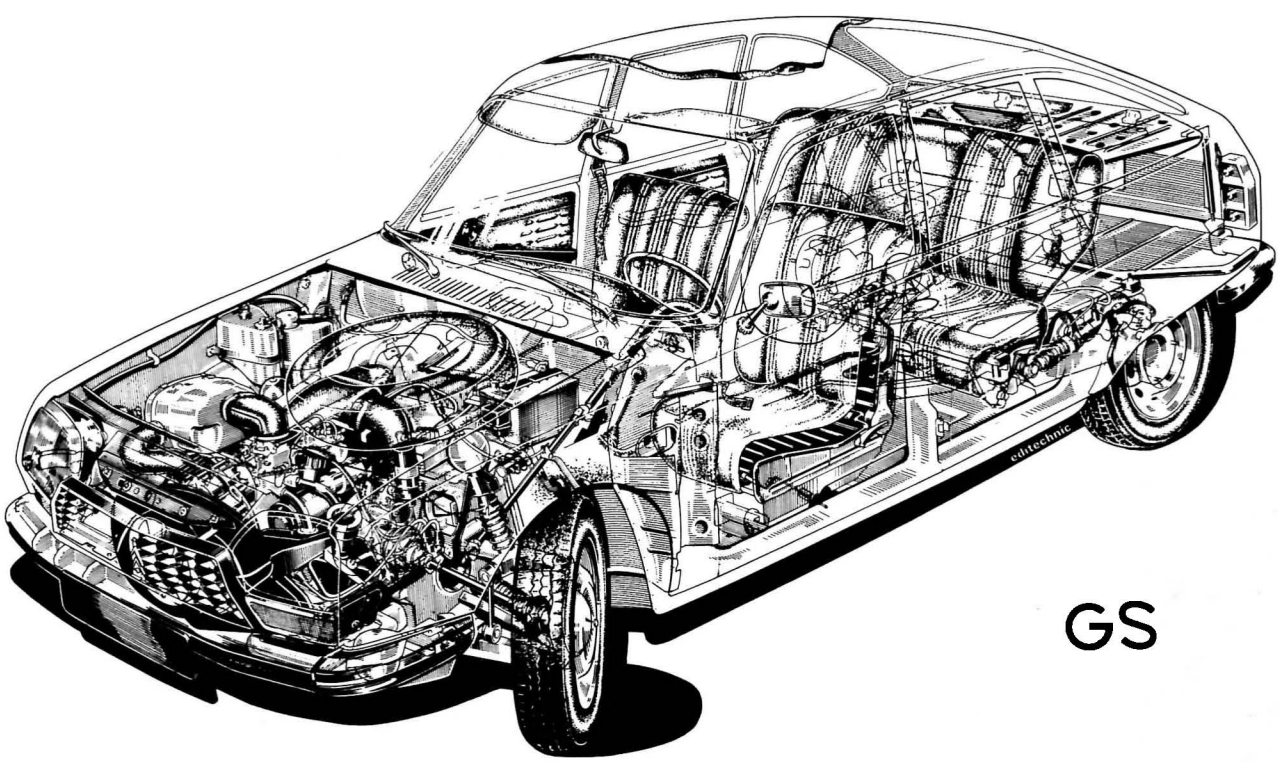
FIRST SECTION : **REMOVAL and FITTING**

SECOND SECTION : **RECONDITIONING**

THIRD SECTION : **ELECTRICAL SYSTEM**

FOURTH SECTION : **BODYWORK**

Manual 810-2



GS

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HOW TO USE THE MANUAL

PRESENTATION

To facilitate the use of the manual, operations have been grouped in two volumes ;

- Volume 1 contains :
  - CHARACTERISTICS - ADJUSTMENTS - CHECKS

  This volume is essential to all workshops for repairs or overhauls

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

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

COMPOSITION

Every volume comprises :

- the list of operations contained in the volume

- these operations filed in numerical sequence

- the list of all the tools mentioned in the operations and the manufacturing drawings for special tools which are not sold but are intended to be manufactured by the repair department itself.

Supplement N° 1 to Manual 810-2 (CORR)

OPERATIONS

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

The numbering of the operations is made up as follows :

a) The code letter for the car : « G »

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

c) A figure code designating the type of repair :
- the figures 0 0 0 indicate the characteristics of the car
- the figures 0 0 indicate the characteristics of the unit
- the figure 0 indicates checks and adjustments
- the figures 1, 4, 7 indicate removal or fitting
- the figures 2, 5, 8 indicate dismantling or reassembly and
- the figures 3, 6, 9 indicate reconditioning.

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

TOOLING

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

These tools are sold by :
- Etablissements FENWICK, Department AMA, 24 Bd Biron - 93404 St-Ouen - FRANCE.

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

TIGHTENING TORQUES

Torques are expressed in the following units :
- in metres Newton (mΛN) : the legal unit for measuring torque
- metre-kilogrammes (mkg), since torque wrenches at present in use are sometimes graduated in mkg :
  - 1 mkg = 9.81 mΛN (which may also be written mΛN or m.N.)
- in foot-pounds. (ft. lbs) converted at 7.22 ft. lbs = 1 m.kg.

The numbers corresponding to the torques are « rounded off »

Examples : 2 mΛN = 0.2 m.kg = 1.4 ft. lbs
60 mΛN = 6 m.kg = 43 ft. lbs.

IMPORTANT : When a tightening torque figure is followed by the words « torsion spanner », the operation must OF NECESSITY be carried out with a torsion spanner.

ADVISORY SERVICE

For all technical information concerning these vehicles, please contact :

The Service Department,
Citroen Cars Limited,
Slough, Bucks, GB.

or : DEPARTEMENT TECHNIQUE APRES-VENTE,
ASSISTANCE TECHNIQUE
163 Avenue G. Clémenceau,
92000 NANTERRE - FRANCE

MANUAL N° 810-2

FIRST SECTION

REMOVAL and FITTING

LIST OF OPERATIONS

IN THE FIRST SECTION OF MANUAL 810-2

- Operations where the number is preceded by the letter « G » are common to all the vehicles of the « GS » range
- Operations where the number is preceded by the letters « GE » or « GF » are specific to the five-door or three-door versions of the «GS» Estate respectively.
- Operations where the number is preceded by the letters « Gea » are specific to vehicles fitted with a torque converter.

Operation Number	DESCRIPTION
	ENGINE - CARBURETTOR - IGNITION
G. 100-1	Removing and fitting an engine-gearbox unit
G. 100-4	Removing and fitting an engine only
G. 111-1	Removing and fitting the cylinders and pistons (or the piston rings)
G. 112-4	Working on the cylinder-heads - Removing and fitting a rocker shaft or a rocker arm *(on the vehicle)*
G. 122-4	Working on the timing gear - Removing and fitting a camshaft belt, a tensioner or a timing gear
G. 123-1	Removing and fitting a camshaft
G. 222-1	Working on the oil pump - Removing and fitting a pump drive (or a seal) or an oil pump *(on the vehicle)*
	GEARBOX
G. 330-2	Dismantling and assembling a four-speed gearbox
G. 334-1	Working on the gear-change : - Removing and fitting the gear lever - Removing and fitting the gear linkage
G. 343-4	Working on the gearbox drive outlet : - Removing and fitting a gearbox drive outlet shaft, a bearing or a seal - Removing and fitting a rear cover (see Op. G.133-1)
	DRIVE SHAFTS
G. 372-1	Removing and fitting a complete drive shaft
G. 372-4	Replacing the protective rubber sleeves
	SOURCE AND RESERVE OF PRESSURE
G. 391-1	Removing and fitting a high pressure pump
	FRONT AXLE
G. 412-1	Working on the front wheelarms - Removing and fitting an upper wheelarm - Removing and fitting a lower wheelarm - Replacing the « Fluid-bloc » bushes on a lower wheelarm
G. 413-1	Working on the swivel joint - Removing and fitting a complete swivel assembly, or a ball-joint - Removing and fitting a bearing, a seal or a hub
G. 414-1	Removing and fitting the front axle unit (for exchange)

Operation Number	DESCRIPTION
	REAR AXLE
G. 422-1	Removing and fitting a rear wheelarm
G. 422-4	Working on a rear wheelarm - Removing and fitting a bearing, a seal or a friction washer
G. 423-1	Working on a rear wheel hub - Removing and fitting a brake disc, a hub or a bearing
G. 424-1	Replacing a rear axle unit
G. 424-4	Replacing a wheelarm support tube
	SUSPENSION SYSTEM
G. 434-1	Working on the mechanical components of the suspension system - Removing and fitting a front anti-roll bar or its bearings - Removing and fitting a rear anti-roll bar (see Op. G. 422-1)
G. 437-1	Working on the height control system : - Removing and fitting a front automatic height control unit - Removing and fitting a rear automatic height control unit - Removing and fitting a manual height control unit
	STEERING SYSTEM
G. 442-1	Removing and fitting a steering system - Working on the steering arms (see Op. G. 422-1 and G. 413-1)
	BRAKING SYSTEM
G. 451-1	Working on the front brakes : - Replacing the main brake pads - Removing and fitting a brake unit - Removing and fitting a brake disc - Replacing the hand-brake pads Working on the rear brakes - Removing and fitting a brake unit, or a brake disc (see Op. G. 423-1)
	ELECTRICAL SYSTEM
G. 560-1	Working on the windscreen wipers - Removing and fitting a windscreen wiper motor - Removing and fitting a windscreen wiper mechanism
	BODYWORK
G. 800-1	Removing and fitting a body shell
	TOOLS
	List of the tools mentioned in the section Manufacturing drawings for the tools not sold

REMOVING AND FITTING AN ENGINE-GEARBOX UNIT

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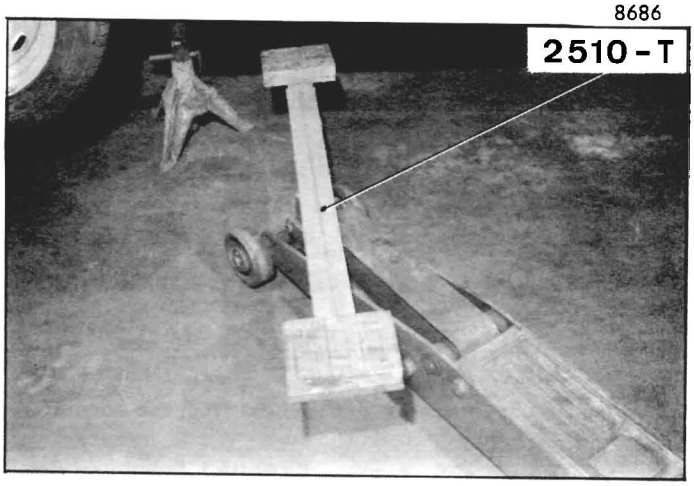

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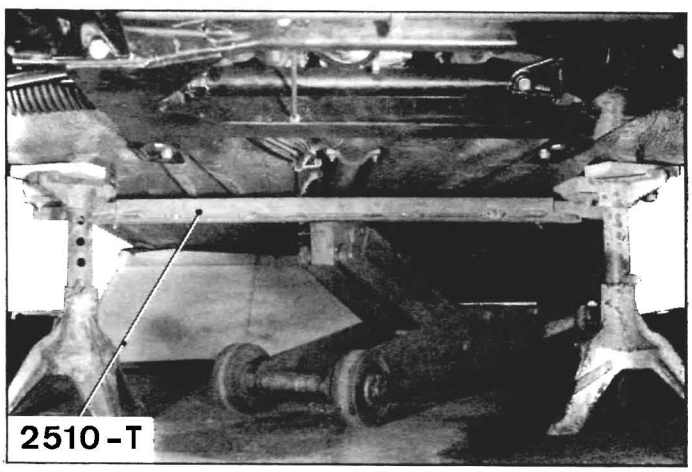

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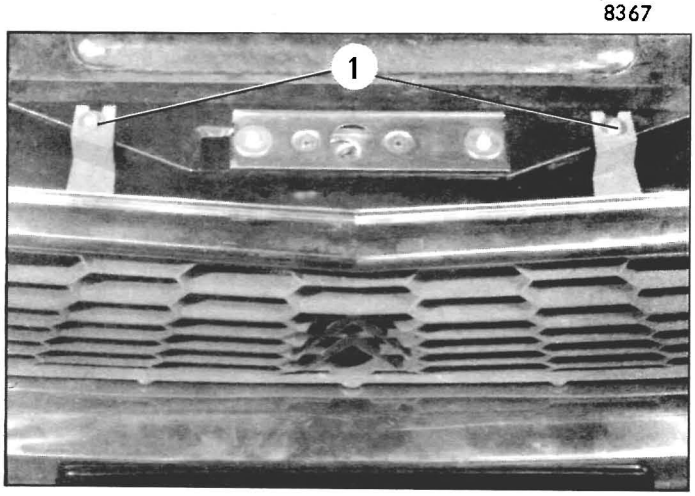

Supplement N° 1 to Manual 810-2 (CORR)

REMOVAL

1. Raise the vehicle :

Raise the vehicle to the *high position.* to allow a jack to be pushed underneath fitted with trestle support 2510-T.

Raise and prop the front of the vehicle *with the wheels off the ground* (see figure for arrangement of props).

Place the jack immediately below the rear seats.

2. Release the pressure in the suspension circuits :

With the engine stopped, place the vehicle height control lever *in the normal position.*

Slacken the pressure regulator bleed screw.

Place the lever *in the high position* and wait until the rear suspension has completely settled.

Check that there is no pressure in the front suspension system (cylinders free).
Otherwise operate the front height corrector.

Jack up the rear of the vehicle (underneath the rear seats).

3. Remove the front wheels and the spare wheel.

Disconnect the lead from the negative terminal of the battery.

Remove the nut holding the stay on the bonnet.

Raise the bonnet fully without touching the upper panel and secure it in position, using a cord.

4. Remove the grille :

Slacken the bolts (1), remove the grille by pulling it upwards.

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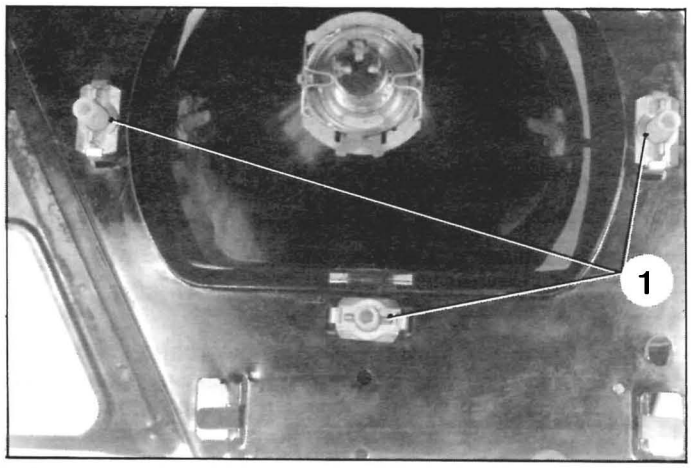

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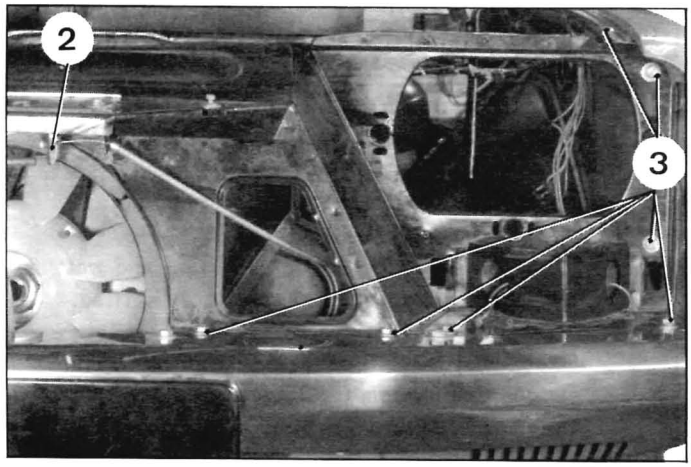

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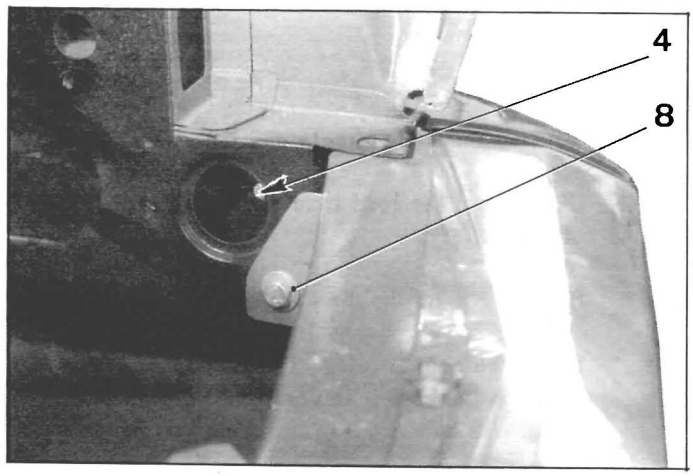

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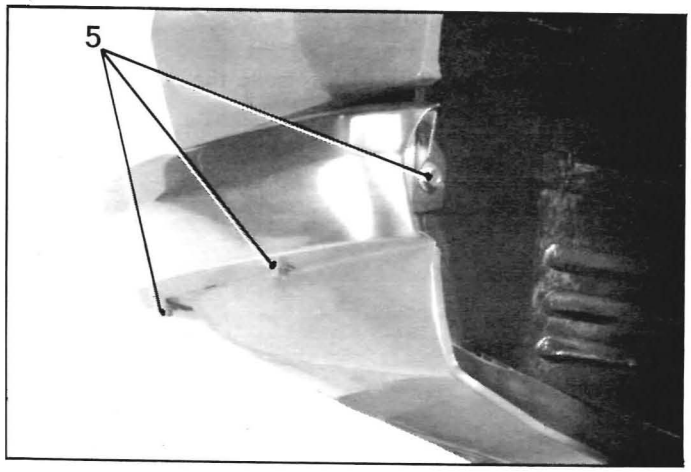

5. Disconnect the wiring harness :

Remove the indicator lamps.
Pull out the connectors from the headlamps.
Free the harness from its brackets on the fan panel.
Disconnect the leads from the alternator and the horn.
Remove the rubber collar from the inlet duct to the air filter.

6. Remove the headlamps :

Rotate the locks (1) holding the headlamps and remove them.

7. Remove the fan panel.

Disconnect the control cable from the bonnet lock (2).
On each side. remove the bolts (3) holding the fan panel.
Remove the horn with its bracket.
Remove the fan panel.

8. Remove the lower valance :

On each side, remove :

- the nut (4) and the bolts (5) holding the lateral part of the bumpers.
- the bolts (7) holding the front of the plate protecting the anti-roll bar bearing.
- the bolts (6) and the bolt (8) holding the valance.

Remove the valance.

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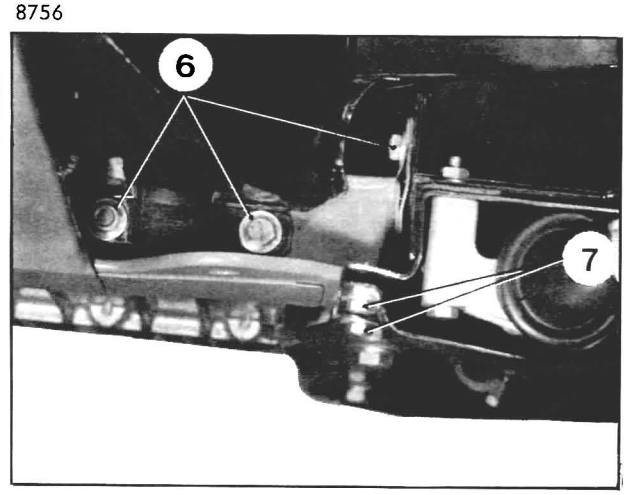

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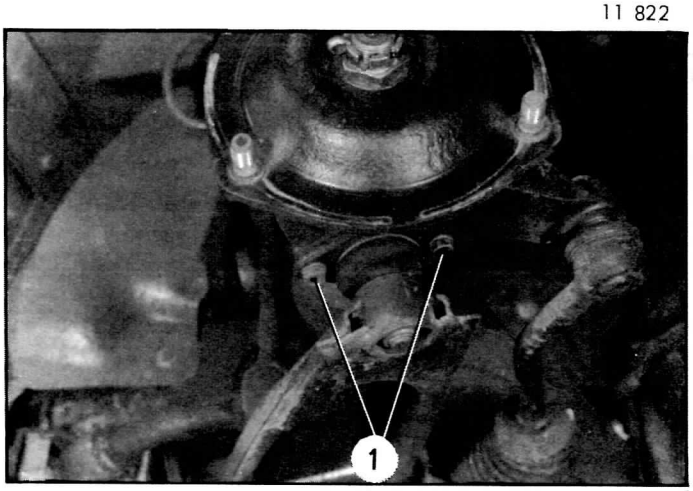

9. Uncouple the drive shafts :

Remove the nuts holding the drive shafts to the gearbox drive outlet shafts.
Remove the bolts (1) holding the ball joints of the lower wheelarms.
Release the drive shafts from the studs on the differential shafts.

10. Disconnect the wiring harness :

a) Disconnect the leads :
- from the distributor,
- from the engine oil pressure warning lamp,
- from coil to distributor (H.T. lead),
- from the starter motor,
- from the engine oil temperature switch,
- from the reversing lamp switch.

b) *For a vehicle fitted with a torque converter :* disconnect in addition :
- the leads from the electro-valve (on the clutch housing),
- the leads from the starter inhibitor switch (on the rear cover of the gearbox).

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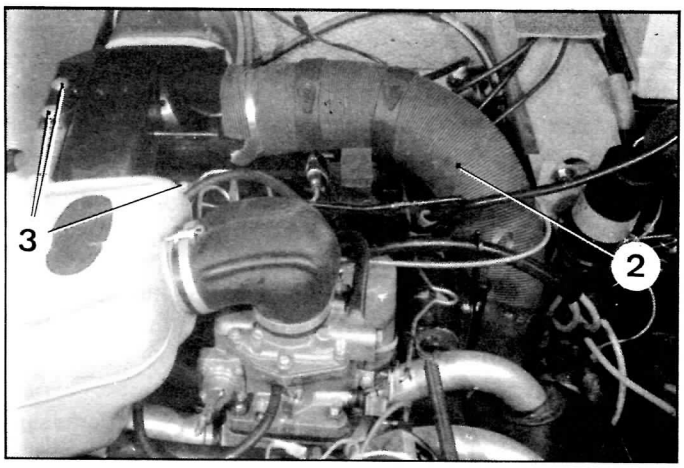

11. Remove the spare wheel support.

12. Remove the heater distribution unit :

Remove the fixing bolts (3) from the box.
Uncouple the control cable.
Remove the box with the hose (2).

13. Uncouple the flexible drive from the speedometer :

Remove the spring clip and withdraw the flexible drive.

14. Uncouple the handbrake cables :

Remove the locknuts, the adjusting nuts (6) and release the cable ends from the brake units.

15. Uncouple the clutch cable :

Slacken the cable adjusting nuts (4) .
Release the cable from the clutch fork (from underneath the vehicle).

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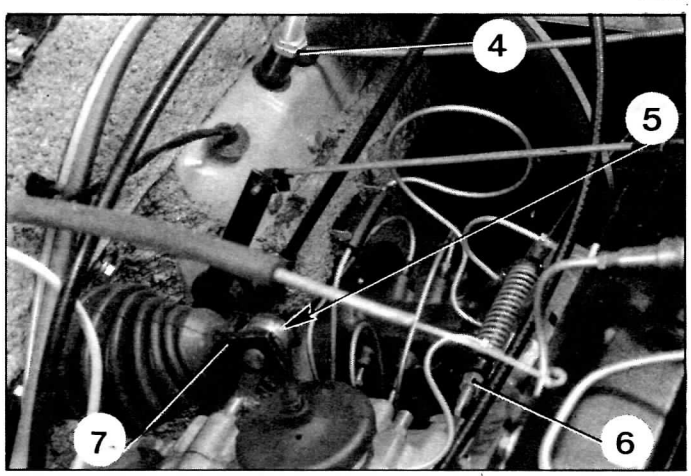

NOTE : If an assistant is available, have him depress the clutch pedal.
From underneath the vehicle, chock the clutch fork, have the assistant release the pedal and then release the cable end from the fork.

16. Uncouple the gear lever :

Remove the retainer (5) from the lever link pin.

Remove the pin and uncouple the gear lever (7).

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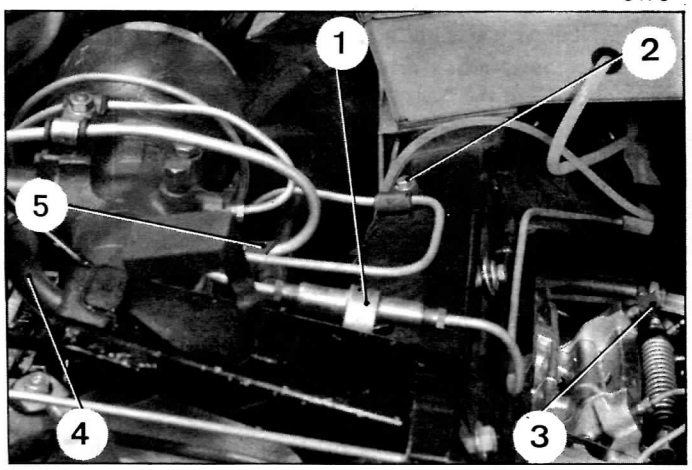

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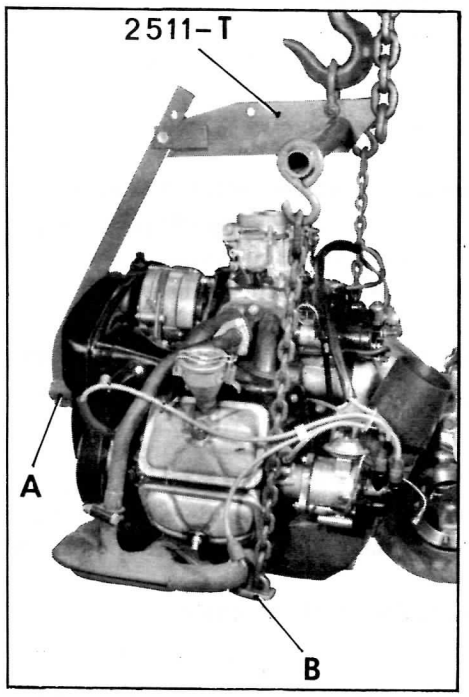

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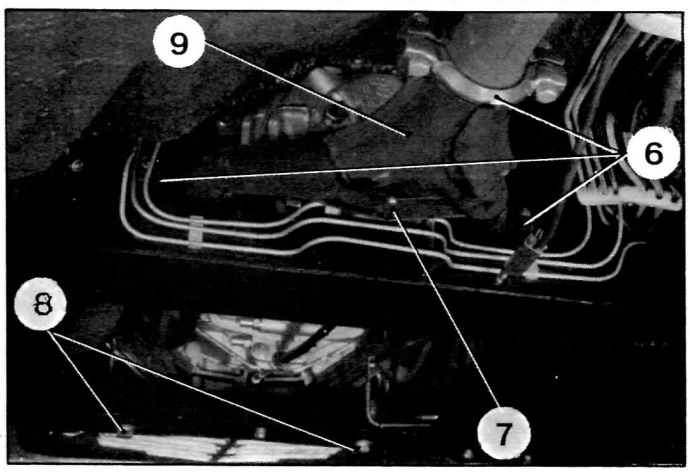

17. Uncouple the carburettor controls :

Uncouple the throttle control cable. .
Uncouple the choke control.
Remove the bolts holding the cable sleeve bracket on the clutch housing.

18. Disconnect the petrol feed :

Disconnect the flexible feed pipe from the pump. (Blank the orifice using a 7 mm diameter bolt).

19. *For a vehicle fitted with a torque converter :*

Disconnect the flexible pipes from the converter oil cooler.

20. Disconnect the hydraulic pipes :

Disconnect the main feed pipe from the two-way union (1).

Remove the bolt (2) holding the tube bracket.

Unscrew the feed pipe for the front brakes and release it from the lefthand brake unit.

Remove the bleed screw (3) (blank off the orifice). *(Vehicles fitted with early type brake units).*

NOTE : If the bleed screw is not removed, it might be damaged when the engine-gearbox assembly is being removed.

Disconnect the return pipe (4) from the pressure regulator and remove the rubber collar (5) which holds this tube.

Disconnect the intake pipe from the high pressure pump. Release the pipe from the bracket on the righthand wheel arch.

21. Disconnect the engine-gearbox unit :

a) Bring up the lifting apparatus, fitted with the sling bracket 2511-T (see photograph for engagement of hooks A and B)

Tighten the chains without raising the engine.

b) Remove :
- the clamps (6) from the exhaust pipe,
- the bolt (7) holding the central exhaust pipe support on the gearbox casing,
- the Y-shaped union (9),
- the bolt holding the rear flexible mounting for the gearbox,
- the bolts (8) holding the front flexible mountings for the engine.

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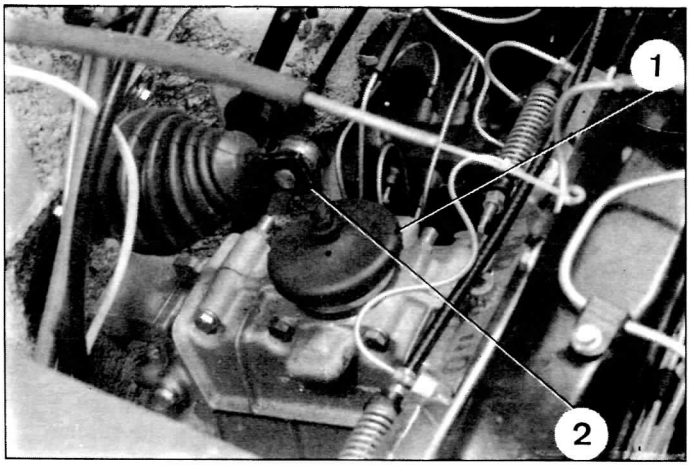

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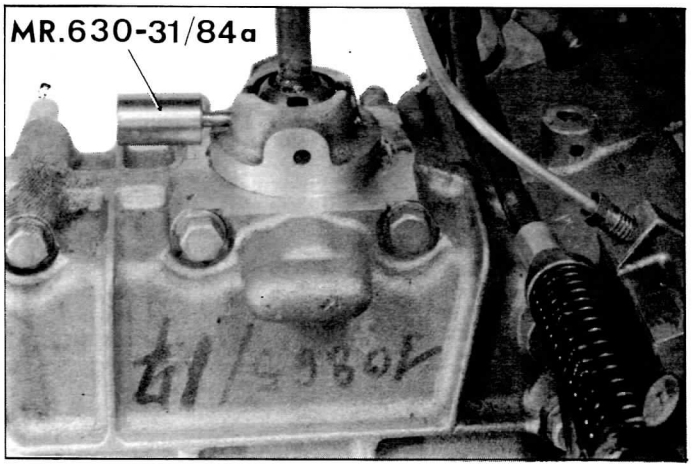

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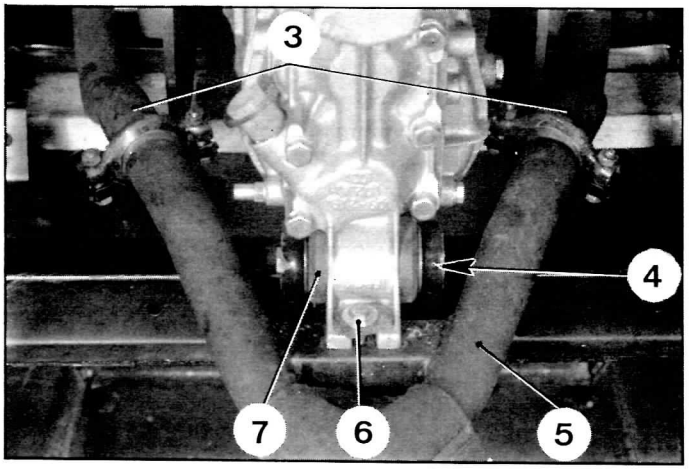

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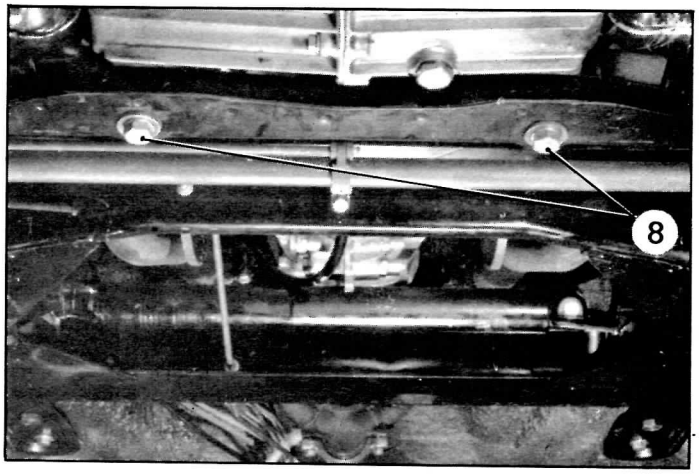

22. Remove the engine-gearbox unit :

a) Pull the engine-gearbox unit gently forward and remove :.
- the hose-clip holding the dust cover (1) and release this by pulling it up,
- the lever (2) operating the fork shafts (remove the roll pin holding the lever (2) to the ball joint, using mandrel MR.630-31/84a).

b) Release the engine-gearbox unit by pulling it forward.
CAUTION : Take care that :
- the distributor does not foul the left-hand wheel arch,
- the tube linking the brake units does not come in contact with the crossmember of the axle unit.

c) Remove the left and right exhaust connecting pipes.

FITTING

23. Fitting the engine-gearbox unit :

a) Position the sling bracket 2511-T and place the assembly on the vehicle by passing the gearbox underneath the upper crossmember of the axle unit.
CAUTION : Take care that :
- the distributor does not foul the left-hand wheel arch,
- the tube linking the brake units does not come in contact with the crossmember.

b) Fit :
- the lever (2) operating the fork shafts (insert the roll pin in the ball joint using mandrel MR. 630-31/84 b)
- the dust cover (1) (tighten the hose-clip) :

c) Insert the rear flexible mounting (7) in the support on the axle unit.
Insert the bolt (4). Tighten the nut from 23 to 40 m.N (17 to 29 ft.Ib) (serrated washer)

d) Fit the bolts (8) securing the front flexible mountings for the engine and tighten them from 40 to 45 m.N (29 to 32 1/2 ft.Ib).

e) Connect the tubes (3) to the left and righthand engine exhaust manifolds (do not tighten the clamps).

f) Remove sling bracket 2511-T. -

24. Fit the exhaust pipes :

Couple up the Y-shaped union (5) to the connecting pipes (3) and the central exhaust pipe.
Fit the clamps.
Fit the sealing rings to the heater pipes.
Tighten the bolt and nut (6) (plate, spring and flat washer) fixing the Y-shaped union (5) on the gearbox casing .

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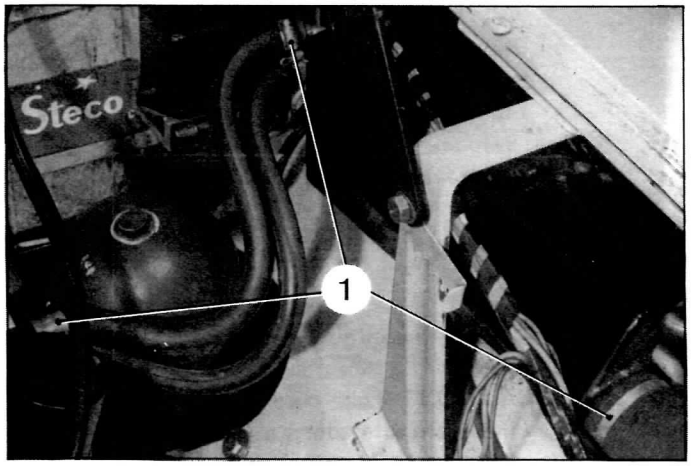

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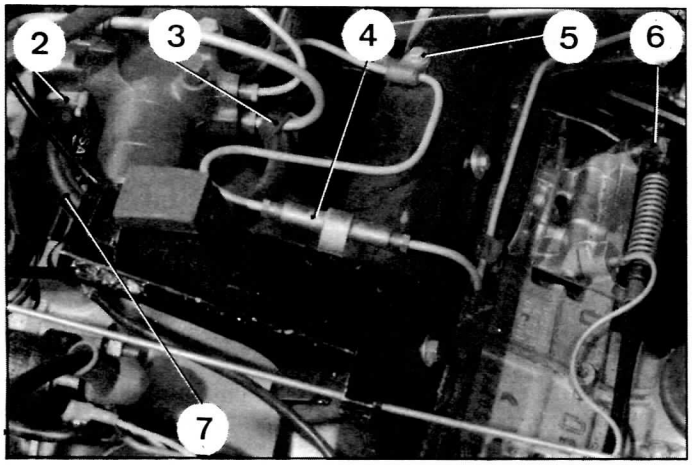

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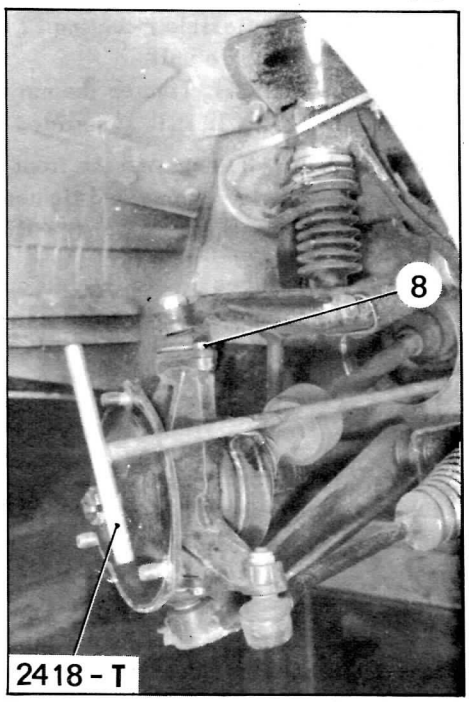


25. *For a vehicle fitted with a torque converter :*
Connect up the flexible tubes to the converter oil cooler. Tighten the hose-clips (1).

26. **Connect hydraulic circuit pipes :**
Connect the main feed pipe to the two-way union (4) (new seal).
Insert the bolt (5) holding the clip.
Connect the feed pipe to the lefthand brake unit and the brake unit connecting tube if necessary (new seals).
Fit the bleed screw (6).
Connect the flexible return pipe (7) to the pressure regulator and fix it using the rubber collar (3). Tighten the collar (2)

27. **Link up the gear-lever :**
a) *First fitting :*
Fit the shaft (10) and the link pin.
b) *Second fitting :*
Fit the shaft, the flexible washer and the NYLSTOP nut.
NOTE : The assembly must be free to move, but without clearance.

28. **Couple the drive shafts :**
Tighten the nuts coupling the drive-shafts to the gearbox drive outlet shafts to 50 m.N (5 m.kg) (36 ft.lb) (Tool 2418-T).
Use tool 6310-T or lever MR. 630-64/40 to hold the plate.
Link up the lower wheelarms to the swivels. Tighten the bolts (8) to 18.5 m.N (1.85 m.kg) (13 1/2 ft.lb.) (contact washer). Use a torque wrench.

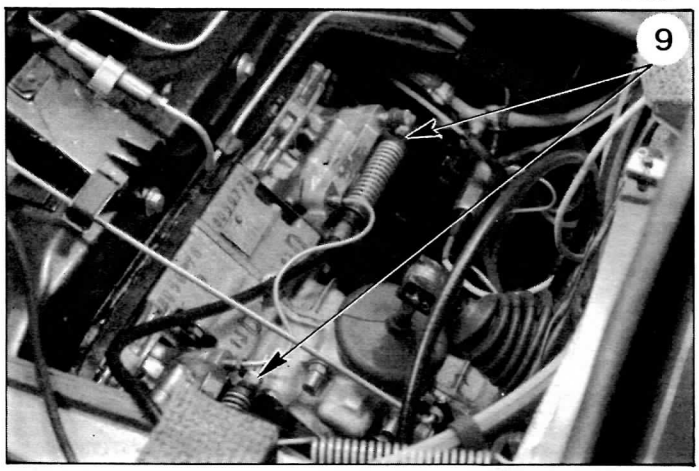
29. **Connect the handbrake cables :**
Fit the cables.
Tighten the nuts and locknuts (9).

30. **Adjust the handbrake.**

31. **Connect the clutch cable :**
Connect the cable to the clutch fork.

32. **Adjust the clutch free-play.**

3458



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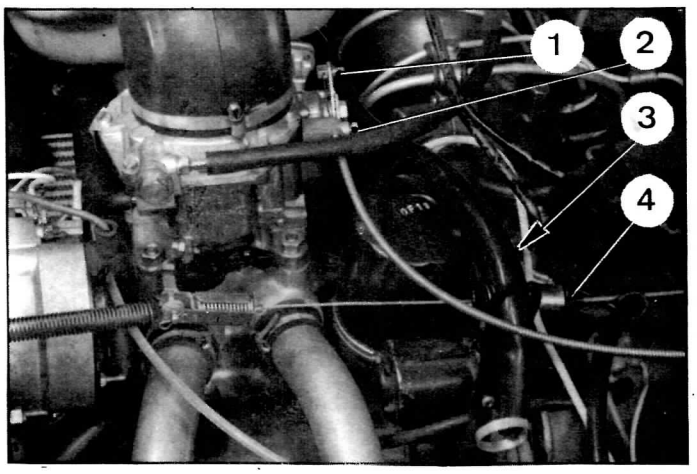

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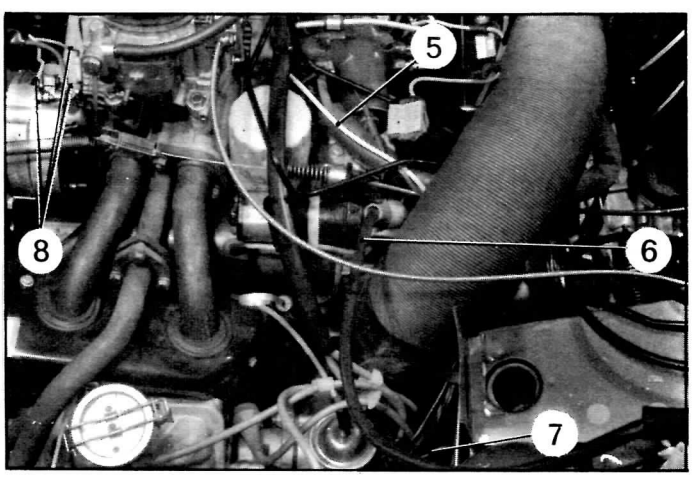

33. Connect up the speedometer drive cable :

Insert the end of the cable in the gearbox drive socket.
Insert the stop pin.

34. Connect up the carburettor controls :

Fit the cable sleeve bracket (3).
Connect up the throttle control cable.
Fit the choke control sleeve onto its support.

Slightly tighten the bolt (2).
Before tightening the cable stop screw (1), leave a clearance of 3 to 5 mm at the knob so that the choke is properly closed. If necessary, adjust the tension of the throttle control cable using the bolt (4).

35. Install the spare wheel support and fix the hydraulic pipe.

36. Connect up the petrol feed :

Remove the blanking bolt.

Connect up the flexible feed pipe to the petrol pump.

37. Connect up the wiring harness :

a) Connect :

- the lead (5) to the oil pressure warning lamp,
- the leads (6) to the starter motor (spring washer),
- the lead (7) to the distributor,
- the leads (8) to the alternator,
- the high tension lead to the distributor,
- the lead to the oil temperature switch,
- the lead to the reversing lamp switch.

b) *For a vehicle fitted with a torque converter.*
Also connect :

- the leads to the electro-valve,
- the lead to the starter inhibitor switch.

Supplement N° 1 to Manual 810-2 (CORR)

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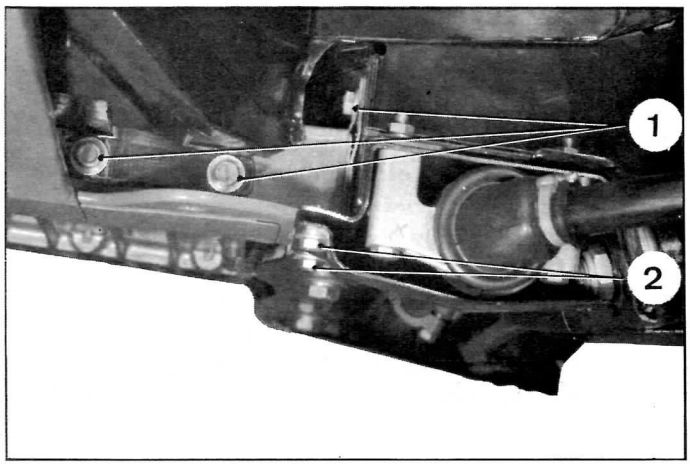

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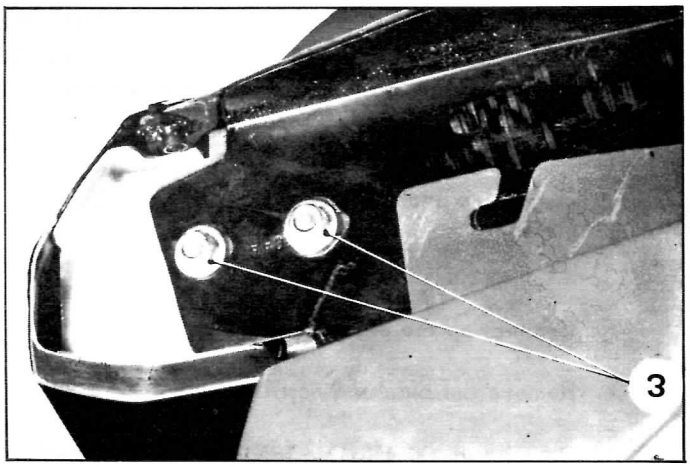

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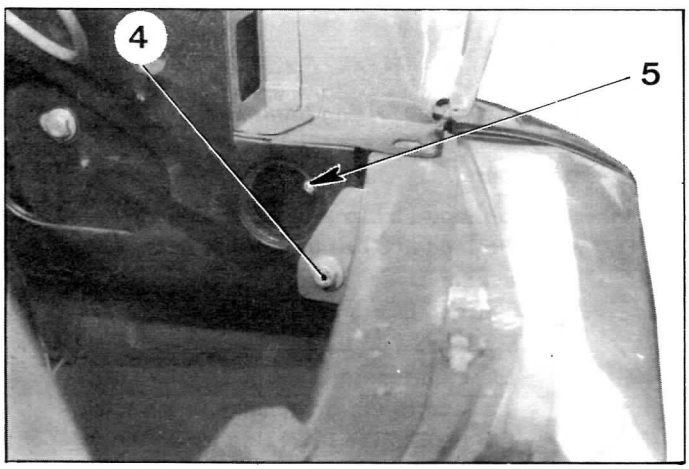

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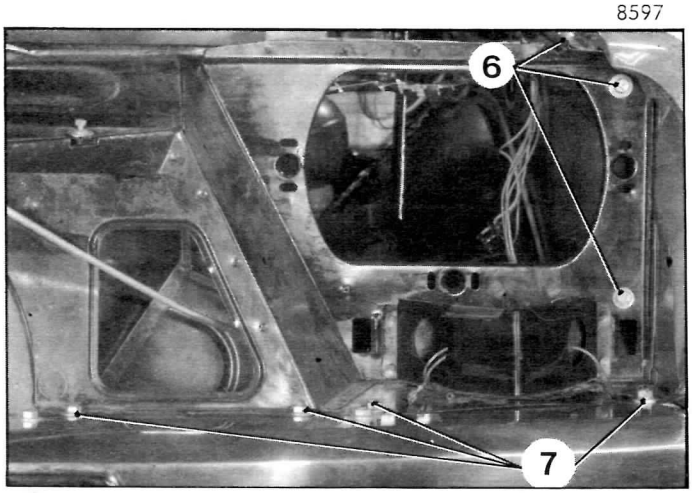

38. Fit the lower valance :

Position the panel and bumpers.

On each side :

- Fit (without tightening them) the bolts (1) and (2) (contact washer) on the axle unit.
- Fit the bolts (3) and (4) (contact washer).

Tighten all the bolts.

Fit the lateral parts of the bumpers :

On each side :

- Fit the nuts (5) and the bolts (8) (contact washer).
- Check the alignment of wing and bumper.

Finally tighten nuts and bolts.

39. Fit the fan panel :

Position the panel between the wings, with the top slightly inclined backwards.

On each side :

Fit (without tightening them) the bolts (6) and (7) (contact washer).

Finally tighten all the bolts.

Fit the accelerator return spring.

Fit the horn with its bracket.

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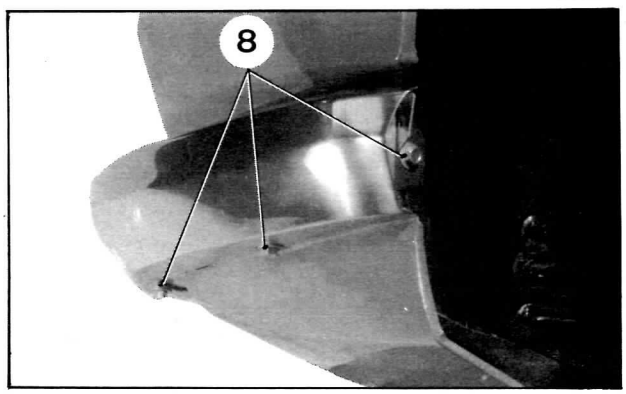

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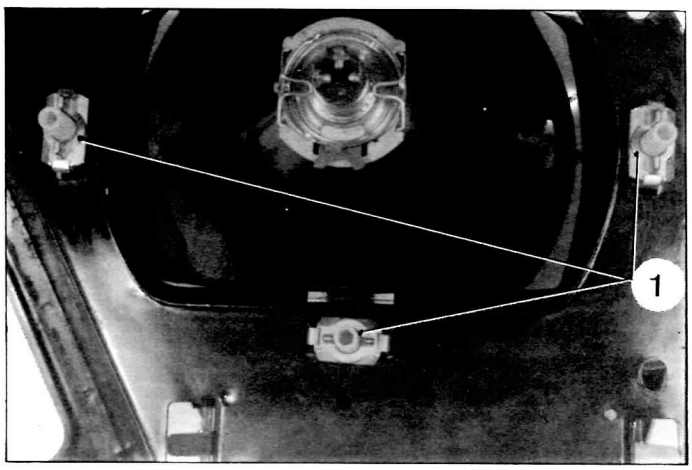


40. Fit the headlamps :

Position the headlamps.
Insert the locking tabs (1) (turn to lock).
Fit the connectors on the headlamp bulbs.
Connect the horn.
Fit the wiring harness in the securing clips.

41. Fit the direction indicator lamps :

Connect the leads before fitting.
Fit the lamps (push to lock).

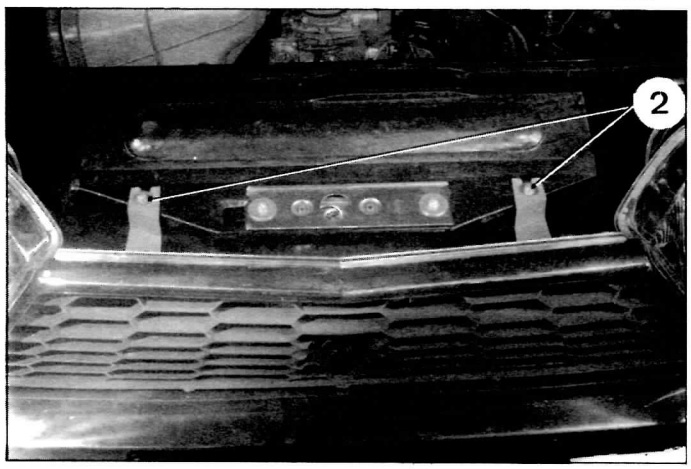
42. Fit the bonnet lock control cable :
Check its operation

43. Fit the grille :

Insert the lower lugs into the slots.
Fit the upper brackets under the flat washers (2)
Tighten the bolts (contact washer).

44. Connect the lead to the negative terminal of the battery.

8367



45. Check the oil levels.

46. Prime the high pressure pump :

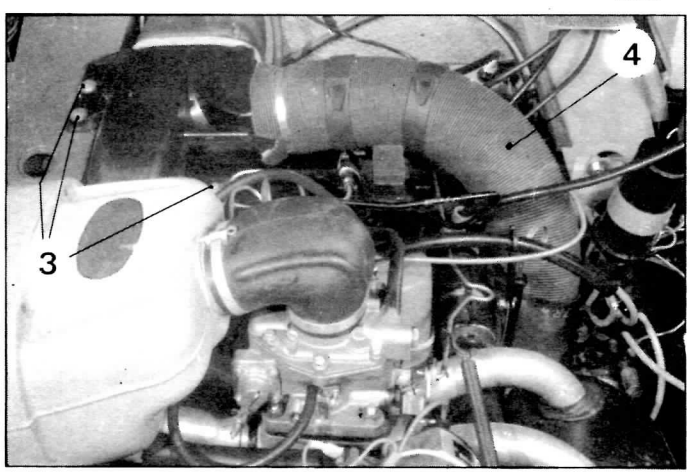
a) Link up the flexible intake pipe to the filter tube of the hydraulic fluid reservoir.

Fill the pump by pouring L.H.M. liquid into the tube.

b) Slacken the pressure regulator bleed screw
Start up the engine and rapidly push the tube into the reservoir.

47. Retighten the pressure regulator bleed screw .
With the engine running, check that the unions in the hydraulic circuit do not leak.

8366



48. Fit :

- the protective shield for the front height corrector,
- the front wheels.

Lower the vehicle to the ground.

49. Bleed the front brakes.

50. Fit the heater distribution unit :

Tighten the fixing bolts (3) (contact washer).
Link up the heater pipe (4) to the lefthand heater duct.
Connect up the cable to the flap control lever.
Check that it operates correctly.

51. Fit the stay to the bonnet.
52. Replace the spare wheel.
53. Check the headlamp adjustment.

Supplement N° 1 to Manual 810-2 (CORR)

REMOVING AND FITTING AN ENGINE ONLY

NOTE : To remove a torque converter, the removal of the engine-gearbox unit is MANDATORY

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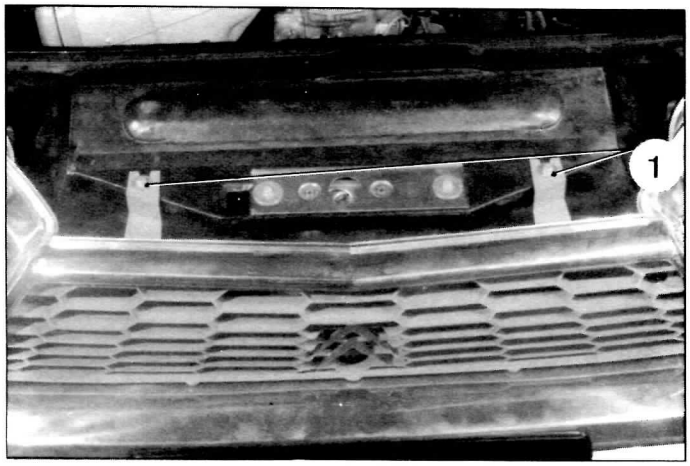

REMOVAL

1. **Raise the vehicle :**
   Place the height control lever to the « *height position* ».
   Raise the vehicle at the front (with the wheels off the ground) and at the rear (jack fitted with support 2510-T) *Release the pressure in the suspension system.*
2. Remove :
   - the spare wheel,
   - the nut holding the stay on the bonnet.

   Raise the bonnet fully without touching the scuttle panel and secure it in this position, using a cord.

3. **Disconnect the lead from the negative terminal of the battery.**

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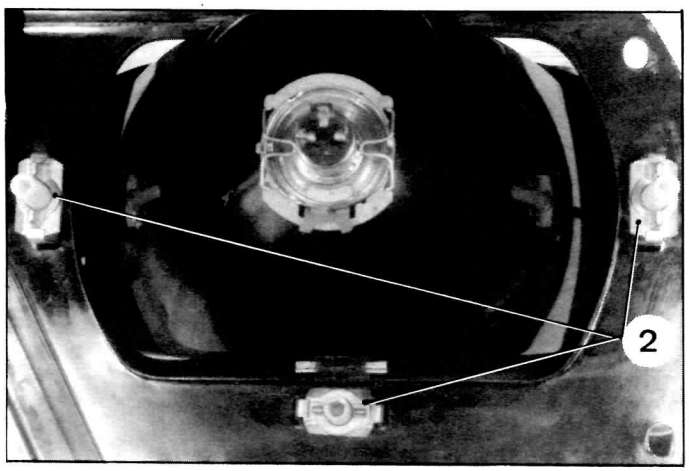

4. **Remove the grille :**
   Slacken the bolts (1) and remove the grille by pulling it upwards.

5. **Disconnect the wiring harnesses :**
   - Unfasten the connectors from the headlamp bulbs.
   - Disconnect the horn lead.
   - Remove the direction indicator lamps.
   - Release the harness from its clips on the fan panel.

6. **Remove the headlamps :**
   Turn the headlamp locks (2) to remove them.

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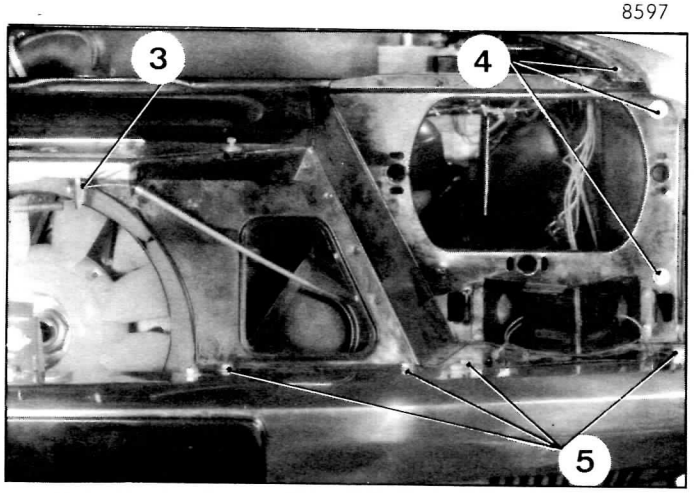

7. **Remove the fan panel :**

   Disconnect the bonnet control cable (3).

   On each side :

   Remove the bolts (4) and (5) from the fan panel.

   Remove the horn with its bracket.

   Remove the fan panel.

Supplement N° 1 to Manual 810-2 (CORR)

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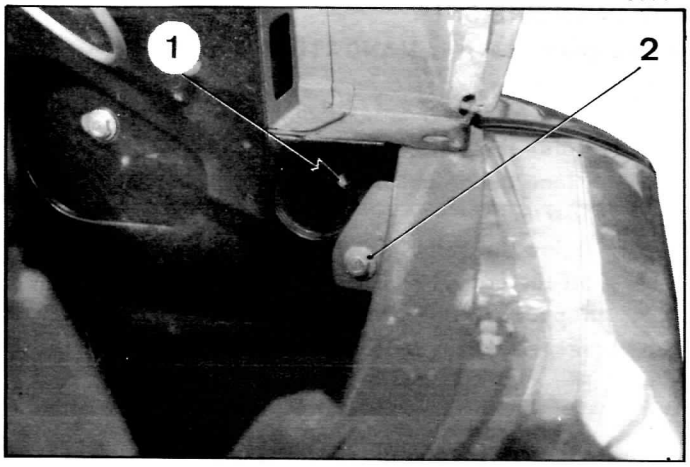

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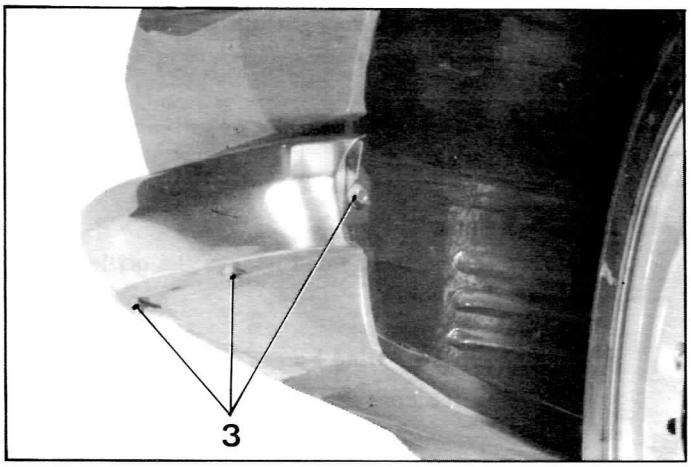

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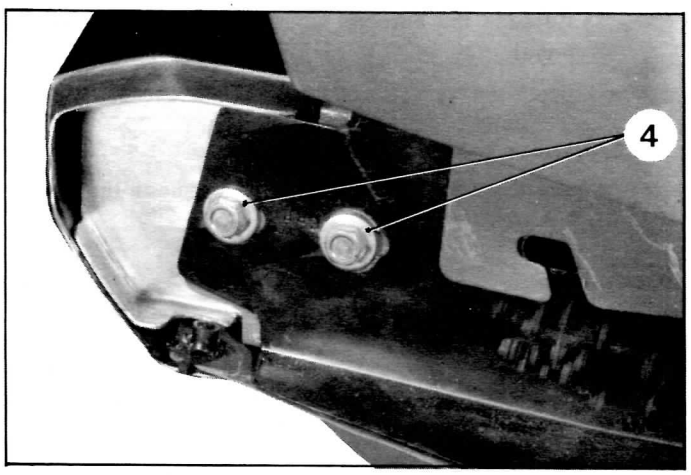

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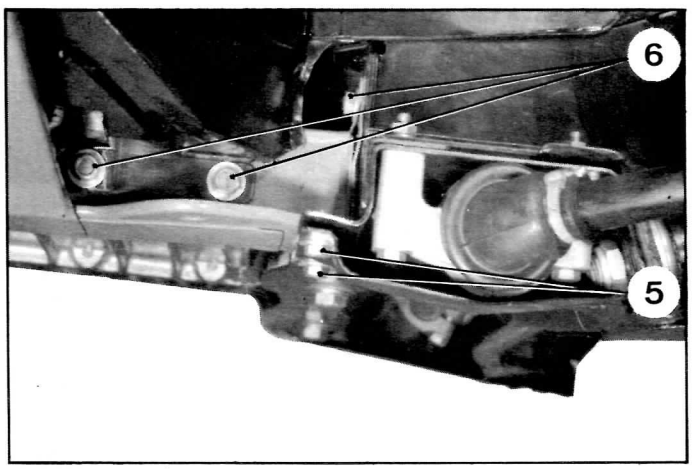

8. Remove the lower valance :

At each side :

- Remove the nut (1) and the bolts (2) and (3). Free the lateral part of the front bumpers.
- Remove the protective plate for the height corrector (righthand side only).
- Remove the bolts (4).
- Remove the bolts (5) securing the front of the anti-roll bar bearing protective plate.
- Remove the bolts (6) holding the valance unit.
- Remove the valance.

9. Disconnect the carburettor controls :

Disconnect the throttle control cable.
Remove the bolts holding the sleeve support on the pressure regulator.

10. Remove the heater distribution unit :

Disconnect the cable from the control lever.
Remove the bolts (7) holding the unit.
Remove the unit together with the left-hand hose.

11. Remove the spare wheel support.

12. Disconnect the wiring harness :

Disconnect the leads :
- from the distributor,
- from the oil pressure warning lamp,
- from the coil to the distributor (high tension lead),
- from the starter motor,
- from the alternator,
- from the oil temperature switch.

Release the harness and lay it on the left-hand extension arm.

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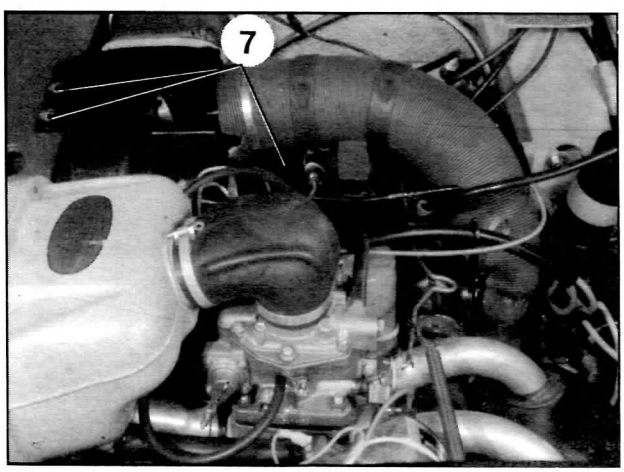

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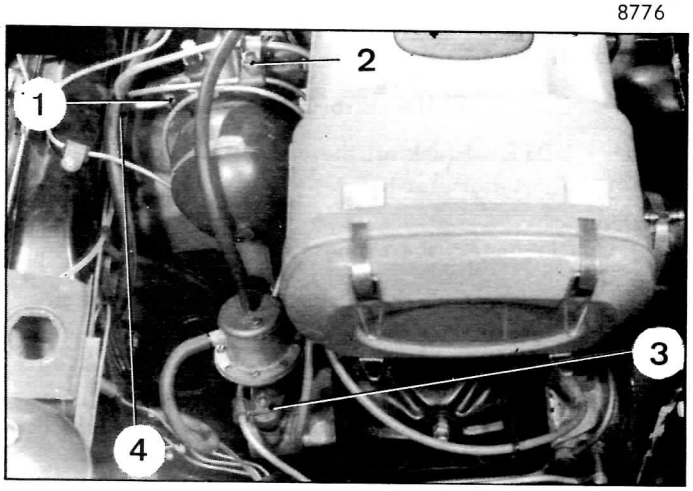

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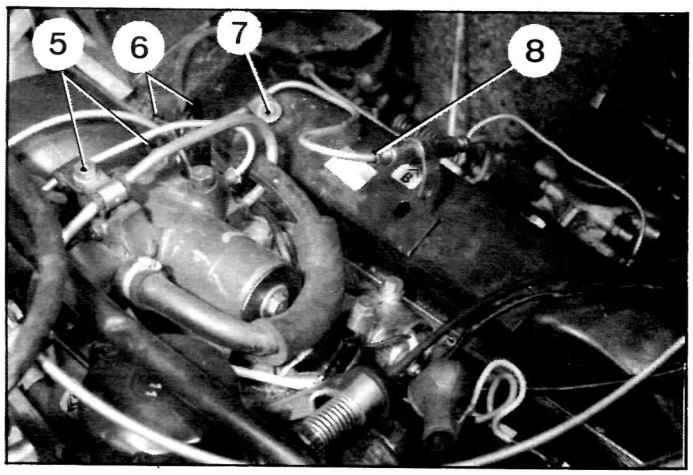

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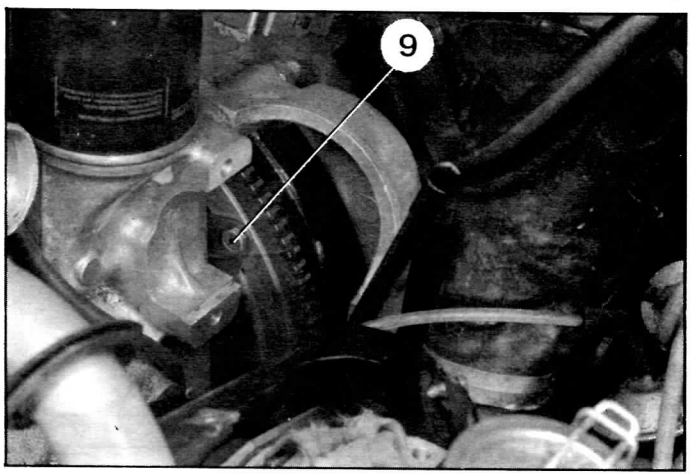

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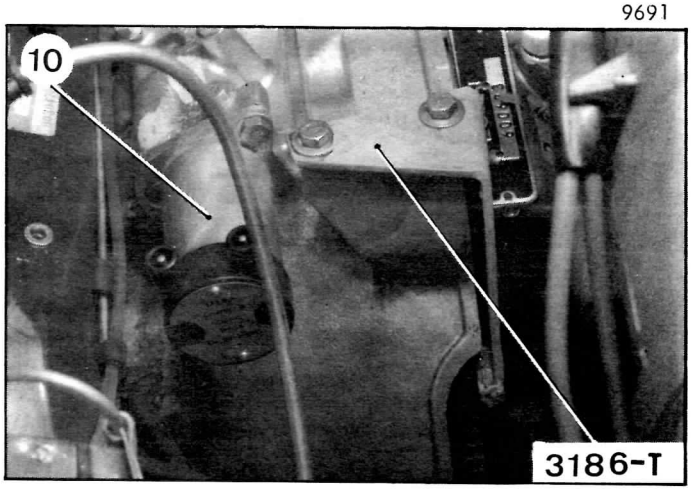


13. Disconnect the hydraulic circuits :

Disconnect the flexible pump inlet pipe from the hydraulic reservoir.
Release this pipe from the clip on the wheel arch and remove the rubber collar (4). Disconnect the pipe (1) from the pressure regulator.
Remove the nuts (2) and (3) and free the clips from the tube (1).
Remove the tube (1) from the pressure regulator.

NOTE : Blank off the ends of the tubes.

14. For vehicles fitted with a torque converter :

a) *Remove the pressure regulator :*

Disconnect the pipe (8) (blank off the opening).
Remove the bolt (7).
Disconnect the leads (6) from the electro-valve.
Remove the bolts (5) holding the pressure regulator, release the latter and lay it on the righthand extension.

b) *Remove the starter motor.*

c) Disconnect the flexible duct which supplies air to the converter oil cooler.

d) *Remove the three bolts (9) holding the converter drive plate.*

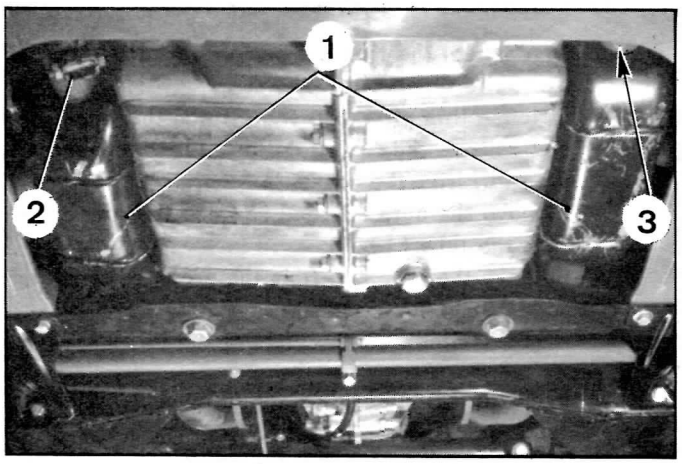
e) *Hold the converter using the bracket 3186-T fixed in the place of the pressure regulator.*

VERY IMPORTANT :

- It is essential to use the bracket 3186-T; otherwise the converter would not be held in position when the engine is removed.

- *The electro-valve (10) must never be disconnected from the control distributor of the converter.*

Supplement N° 1 to Manual 810-2 (CORR)



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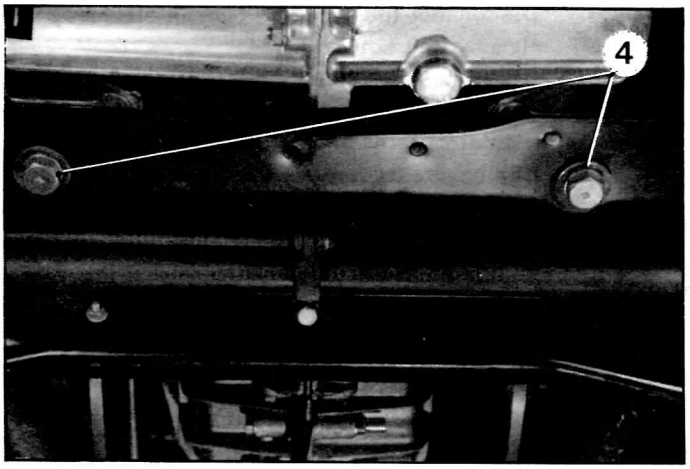

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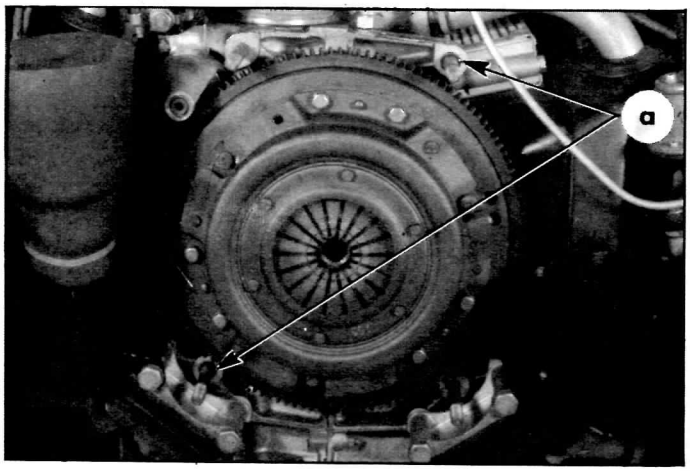

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c) Clear the engine by bringing it forward.

CAUTION : Support the engine in such a way as to avoid any strain on the gearbox control shaft.
Ensure that the distributor does not foul the wheel arch.

FITTING

18. Make sure that the two centering dowels are in position in their housings on the engine casing at « a ».

Also make sure that the corresponding housings in the clutch casing are not damaged.

15. Disconnect the petrol supply :

Disconnect the petrol inlet pipe from the pump.

NOTE : Blank off the end of the pipe using a 7 mm diameter bolt.

16. Disconnect the exhaust pipes :

Remove the plates (1) from the lower heater ducts.
Remove the front connection collars (2) and (3) from the exhaust pipes.
Slacken the bolt of the central exhaust pipe support on the gearbox.

17. Remove the engine :

a) Bring up the lifting apparatus fitted with the sling bracket 2511-T (see photograph below).
Remove the bolts holding the front flexible mountings (4).
Raise the engine-gearbox unit until the clutch housing comes into contact with the upper crossmember of the axle unit.
Raise the engine-gearbox unit underneath the gearbox housing, taking care not to damage the clutch cable.

b) Using a key 1690-T, remove the four nuts from the studs holding the engine to the gearbox.

CAUTION : *Never disconnect the electro-valve from the control distributor of the converter.*

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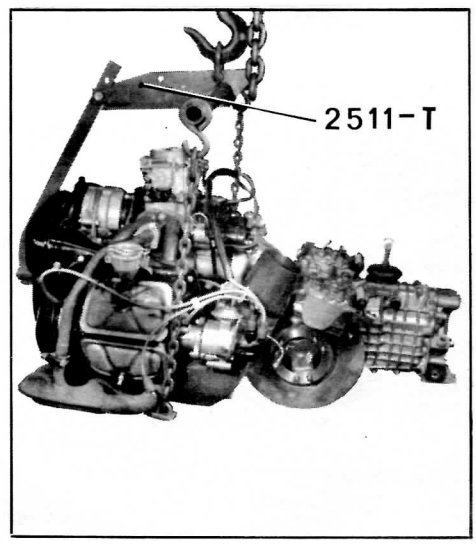

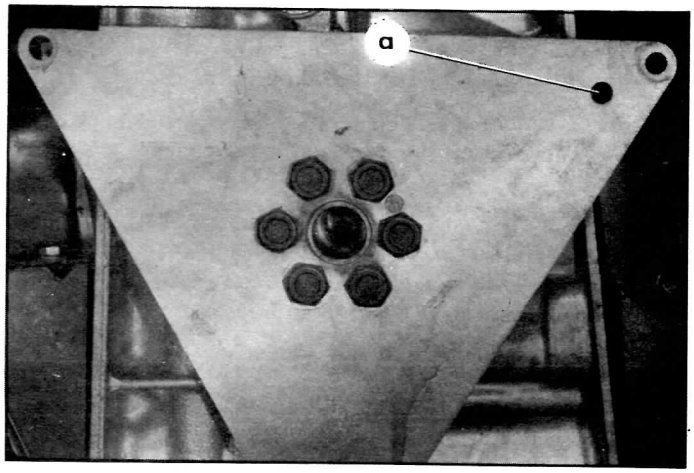

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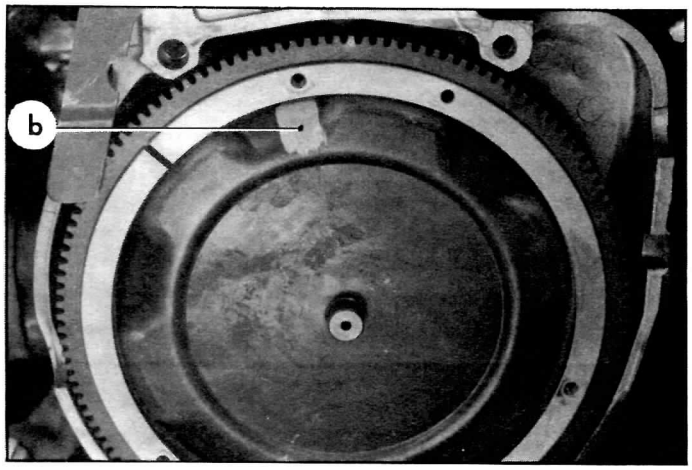

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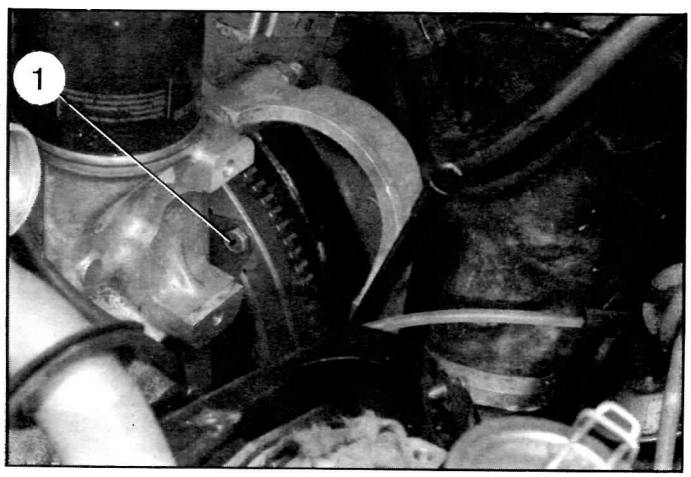

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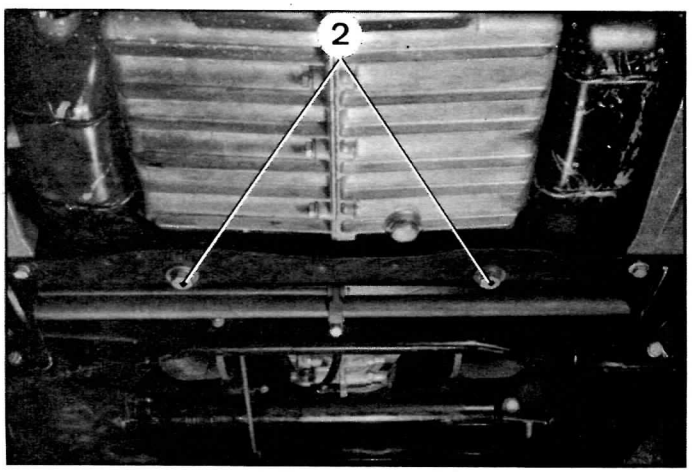

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Supplement N° 1 to Manual 810-2 (CORR)

19. Couple the engine to the gearbox :

a) *For vehicles fitted with a torque converter :*

- Before fitting, make sure that the hole « a » in the drive plate is opposite the painted mark « b » on the converter housing (ignition point mark).
- Smear the converter centering peg and its housing in the crankshaft with TOTAL MULTIS grease.
- Couple the engine to the gearbox : engage the studs to bring the converter centering peg into its housing in the crankshaft.
- Tighten the nuts joining the engine to the gearbox (spring washer) to 45 m.N (4.5m.kg) (32.5 ft.Ib) (key 1790-T).
- Tighten the three bolts (1) holding the drive plate to the converter from 27 to 29 m.N (2.7 to 2.9 m.kg) (19 1/2 to 21 ft.Ib). Use Loctite N° GX. 01 460 01 A.
- Remove the bracket 3186-T.

b) *Vehicles fitted with a pedal operated clutch :*

Engage a gear.

Couple the engine to the gearbox, engage the studs to bring the centre of the disc into contact with the drive shaft.

Turn the engine flywheel by hand to engage the splines.

Tighten the bolts holding the engine to the gearbox (spring washer) to 45 m.N (4.5m.kg) (32.5 ft.Ib).

20. Install the engine-gearbox unit :

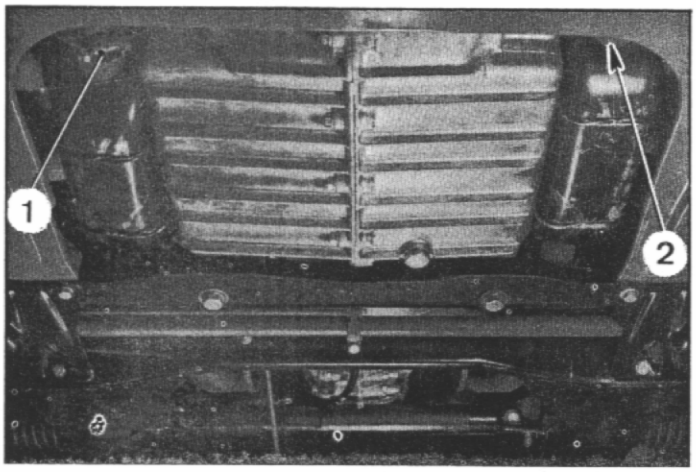
a) Slightly raise the engine-gearbox unit and remove the stand from under the gearbox housing.

b) Lower the engine-gearbox unit until the flexible mountings just touch the crossmember.

Fit the bolts (2) holding the flexible mountings and tighten to 40 to 45 m.N (4 to 4.5m.kg) (29 to 32.5 ft.Ib).

21. Fit the starter motor :

(For vehicles fitted with a torque converter).



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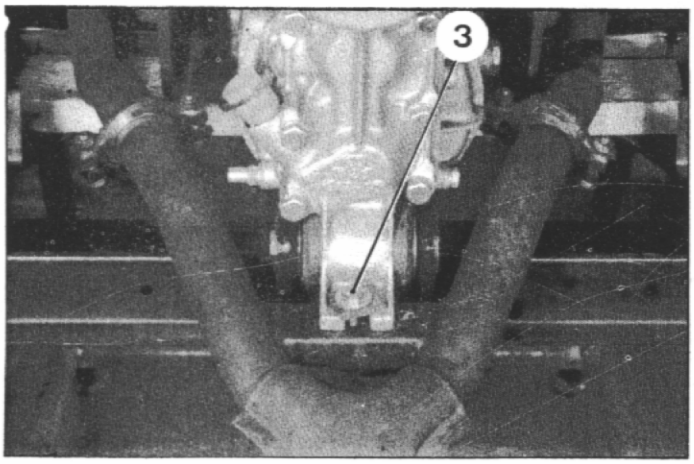

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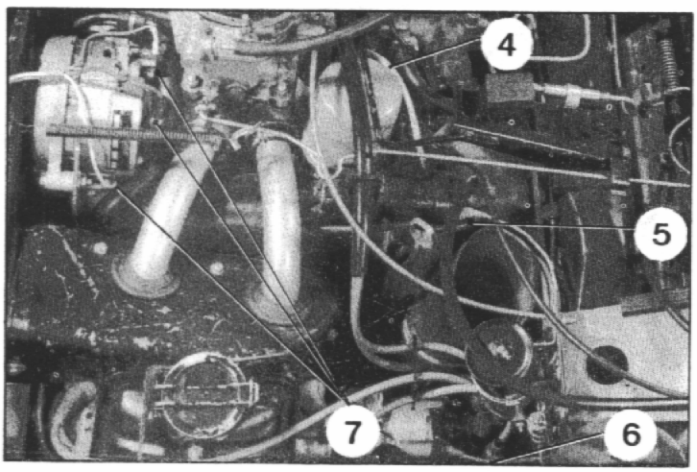

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22. Connect up the exhaust pipes :

Fit and tighten the clamps (1) and (2) from 10 to 12 mAN (1 to 1.2 m.kg).

Tighten the bolt (3) of the central exhaust pipe support on the gearbox.

Fit the closing plates to the lower heater ducts.

Fit the sealing rings to the heater ducts.

23. Connect up the petrol feed :

Remove the blanking bolt and connect the petrol inlet to the pump.

24. Connect up the electrical harnesses :

a) Connect up the leads :
- to the oil pressure warning lamp (4),
- to the starter motor (5) (shakeproof washer),
- to the distributor (6),
- to the coil and distributor (high tension),
- to the oil thermal switch,
- to the alternator (7).

b) *Vehicles fitted with a torque converter :*

Connect the leads to the electro-valve on the control distributor of the converter.

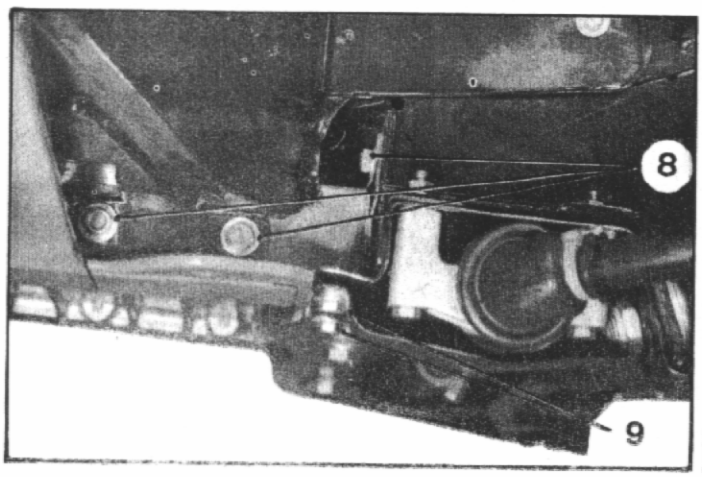
25. Fit the lower finishing panel :

Offer up the panel and bumpers..

At each side; fit without tightening :
- the fixing bolts (8) and (9) on the unit (contact washer),
- the lateral parts of the bumpers,
- the bolts (10) and nuts (11) (flat and shake-proof washers).

Check that the clearance between the lateral parts of the bumpers and the wings is evenly distributed at each side.

Finally tighten all bolts.



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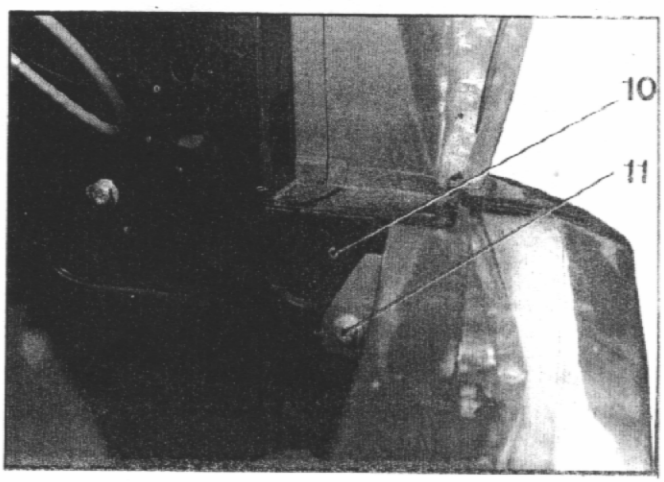

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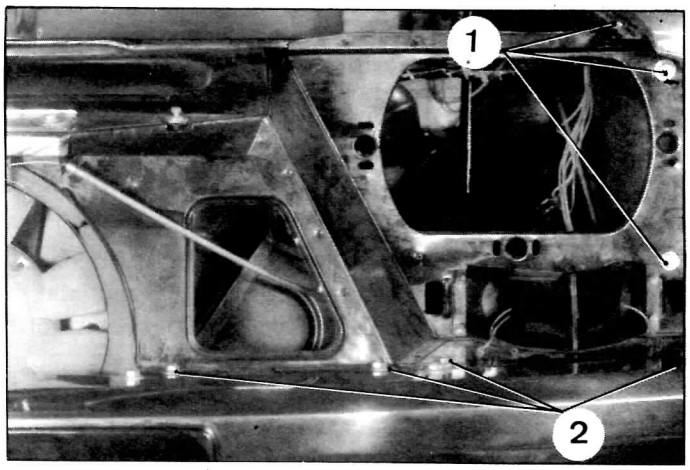

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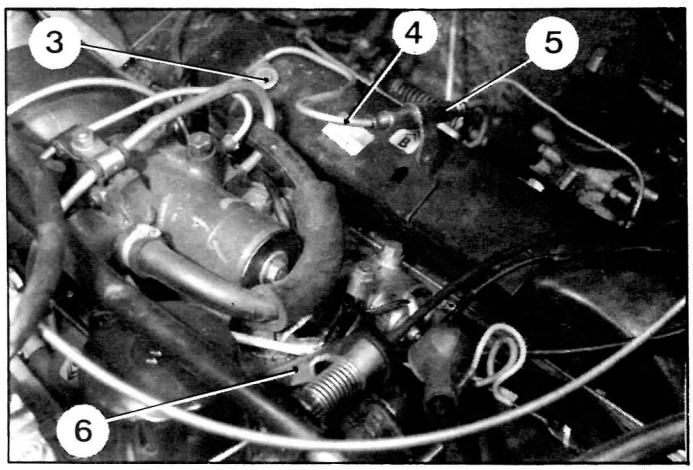

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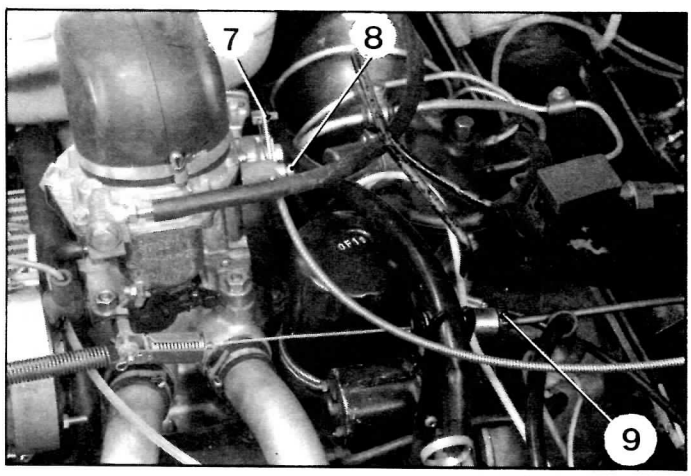

26. Fit the fan panel :

Position the panel, slightly inclined to the rear.

On each side, fit without tightening :
- the upper (1) and lower (2) fixing bolts (contact washer).

Finally tighten all bolts.

27. Fit the horn with its bracket.

28. Fit the direction indicator lamps and the headlamps :

Connect the leads to the indicator lamps and fit the latter.
Fit the bonnet locking cable.
Fit the headlamps. Fit the locks and turn these to lock them.
Fit the connectors to the headlamp bulbs.
Connect the horn.
Fit the front wiring harness in the clips.

29. Fit the grille :

Engage the lower lugs into the slots.
Insert the upper brackets under the washers.
Tighten the bolts (contact washer).

30. Fit the pressure regulator :

(For vehicles fitted with a torque converter) :

- Fit the pressure regulator.
- Fix the pipe (4) to the union (5) (new seal).
- Tighten the bolts to 18 mΛN (13 ft.lb).
- Fix the securing clip (3) of the main supply pipe.

31. Connect up the carburettor controls :

a) Fix the sleeve support bracket (6).

b) Connect up the throttle cable.

c) Insert the sleeve of the choke control cable into its support.
- Lightly tighten the bolt (8).
- Before tightening the cable stop screw (7), leave a clearance of 3 to 5 mm at the knob so that the choke is properly closed.

d) If necessary, adjust the throttle cable tension using the screw (8).

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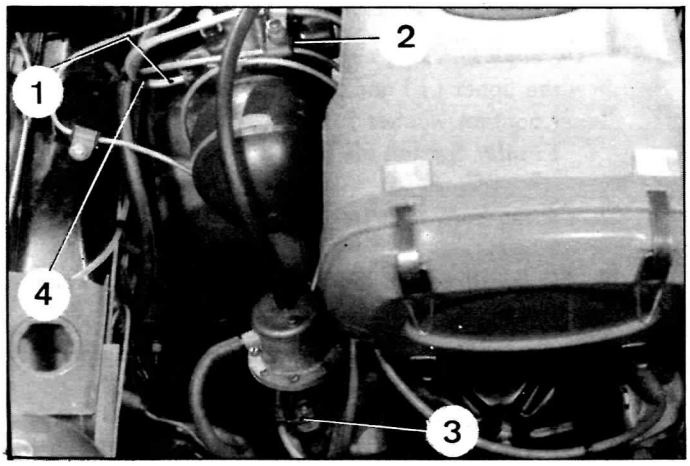

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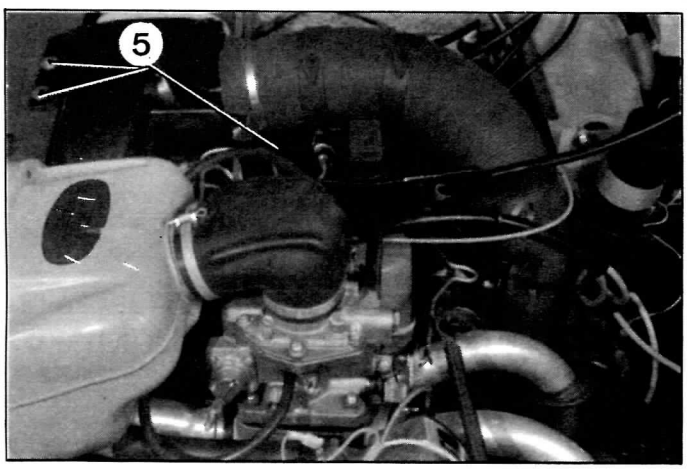


32. Fit the spare wheel support.
Fit the clip which holds the supply tube to the four-way union.

33. Check the engine oil level.

34. Connect up the hydraulic circuits :

Connect the feed pipe (1) to the pressure regulator (new seal). Fit the clips (2) and (3) and tighten the nuts (contact washer).
Connect the high pressure pump flexible inlet pipe to the tube of the hydraulic fluid reservoir.
Fit the rubber collar (4).

35. Prime the high pressure pump :

Connect the negative (earth) lead to the battery.
Check that the pressure regulator bleed screw is loosened.
Take out the tube and fill it with hydraulic fluid.
Start the engine and quickly replace the tube in the reservoir. Fix it to the righthand wheel arch securing clip.
Tighten the bleed screw and check all unions for leaks.

36. Fit the heater distribution unit.
Tighten the bolts (5).
Fit the lefthand heater hose.
Connect up the control cable to the lever.

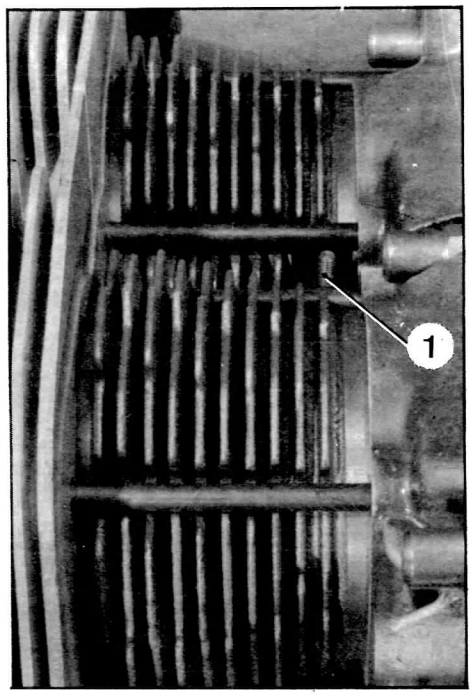
37. Position the flexible hose which supplies air to the converter oil cooler.

38. Fit and tighten the nut holding the stay to the bonnet. Fit the spare wheel.

39. Lower the vehicle to the ground.

40. Start the engine. Allow it to warm up.
Check (and adjust if necessary) :
- the ignition,
- the idling speed,
- the tightness of the exhaust pipe connections and hydraulic circuit,
- the headlamps.

REMOVING AND FITTING THE CYLINDERS AND PISTONS
(or the piston-rings)



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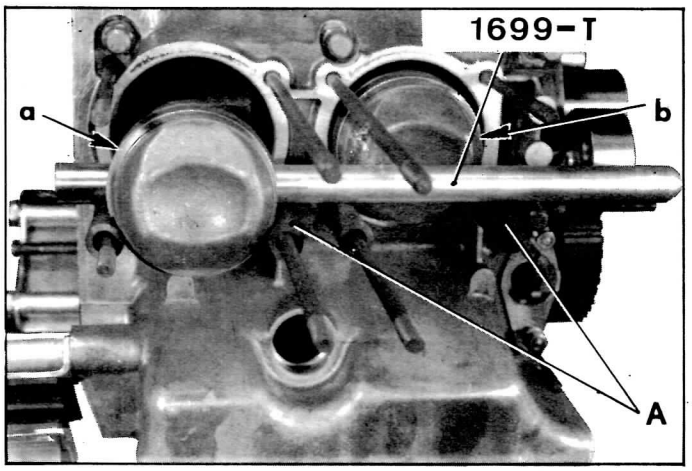
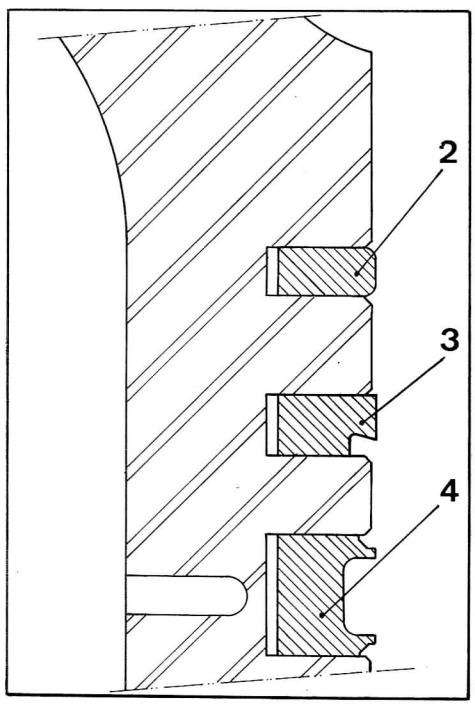


7996 Supplement N° 1 to Manual 810-2 (ADD)



A.12-50 a

REMOVAL

IMPORTANT : *One cannot replace separately one or two cylinder/piston assemblies.*
As the difference in weight of two pistons must not exceed a few grams., the Replacement Parts Department only sells barrel/piston assemblies in sets of four, which must not be used separately.

1. Remove the engine unit only.

2. Remove the cylinder-heads.

3. Remove the barrels :
- Remove bracket (1) on the right-hand side only.
- Remove the four cylinders.

NOTE : If the cylinders are to be refitted mark their respective position.

Place some protective rubber piping A on the cylinder-head studs so as not to scratch the pistons.

4. Remove the pistons :

Remove the gudgeon pin circlip situated at « a » and « b » towards the outside of the engine.

Tap out the gudgeon pins by hand, using tool 1699-T. Withdraw the pistons and remove the protective rubber piping A.

NOTE : In each set, the barrel, the piston and the gudgeon pin are matched. *Do not mix them with components of another set.* (mark them when dismantling).

5. Remove the pistons rings.

FITTING

6. Fit the piston-rings :

The compression ring (2), the scraper ring (3) and the scraper-collector ring (4) have an identification mark (Haut, H or Top) stamped on the upper face, near the gap.
When fitting, this mark must face towards the crown of the piston.
Incorrect fitting of the piston rings induces excessive oil consumption.

U-FLEX Piston-Ring : Before it is fitted, the U-flex piston-ring has a larger diameter than that of the piston.

NOTE : If used pistons are fitted with new rings, the grooves must be carefully cleaned with part of an old piston ring (ground gap).

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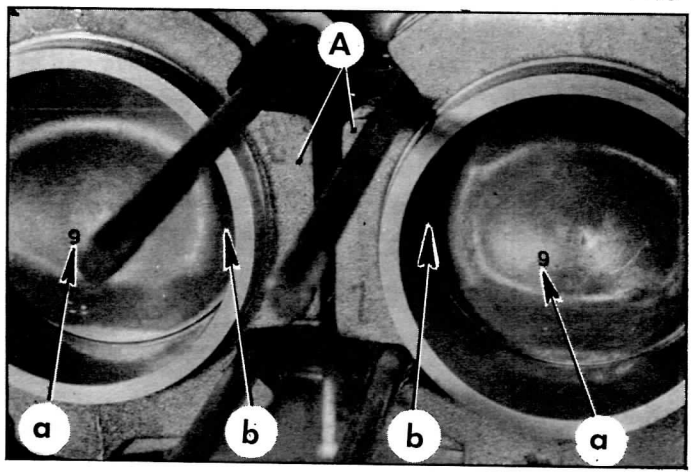

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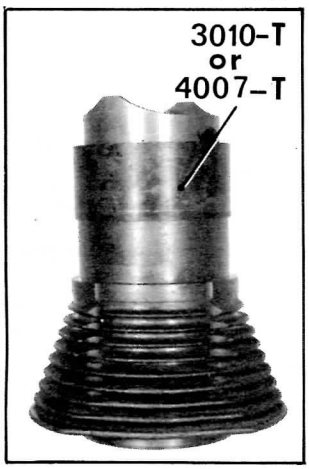

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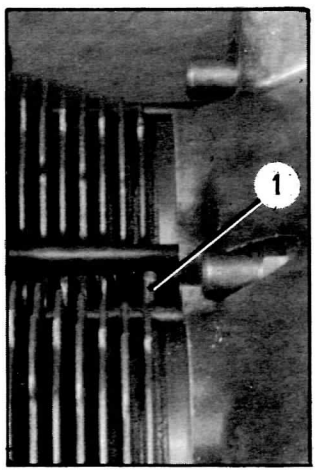

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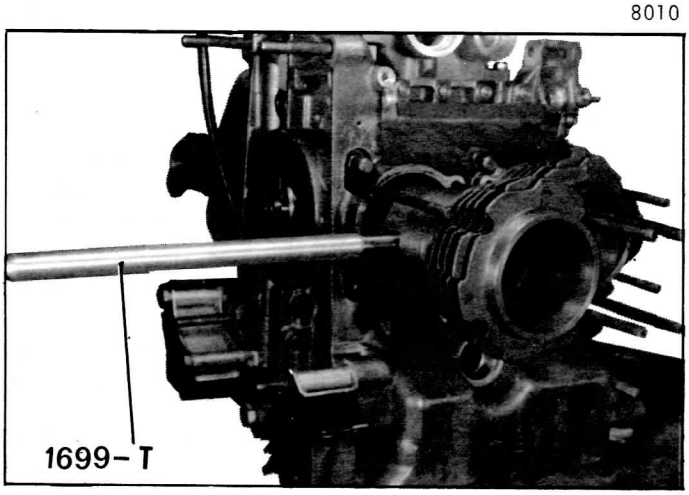


7. Fit the pistons in the barrels :

A) Preparation of the cylinders::
WARNING : There are two grades of cylinder (different height) identified by different coloured paint marks (red and green).
The two cylinders on the SAME SIDE of the engine MUST WITHOUT FAIL have the SAME COLOUR paint mark (same grade).
Fit the cylinders so that the fins A face each other.

B) Preparation of the barrels :

- **Correct fitting :**
  a) *Pistons without identification mark for fitting (arrow) :*
  Once the piston is fitted, the figure indicating the compression ratio must be the right way up.
  b) *Pistons with identification mark (arrow) :*
  (Pistons with offset gudgeon pins) :
  Once the piston is fitted, the arrow must point towards the timing gear (Front of the engine).
- **Before fitting the pistons :**
  Fit the gudgeon pin circlips at « b » on the side of the cooling fins A.
  The grooves of the three piston rings should be 120° apart.

C) Fit the pistons into the corresponding cylinders (marked on removal - see note in paragraph 4)
Use a ring 3010-T or 4007-T : insert each piston into the lower section of the cylinder. *Ring 3002-T is still useful for fitting rings other than « U-FLEX ».*
Insert the gudgeon pin (oiled) into the gudgeon pin boss without the securing circlips (allow for the small-end of the con-rod).

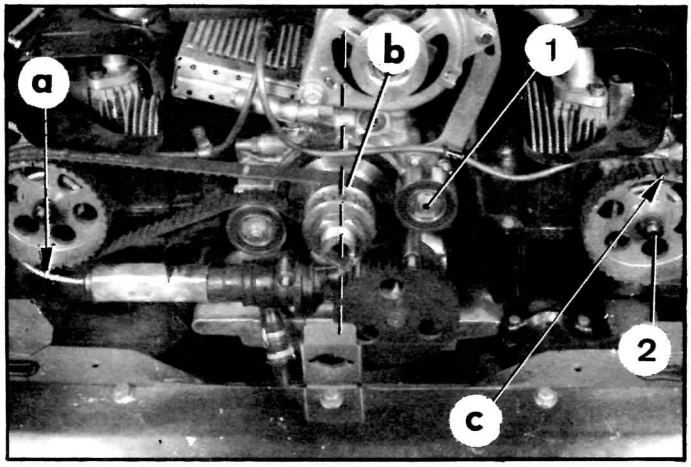
8. Position the barrel/piston units on the con-rods :
Observe the fitting instructions (see paragraph 7).

Position the gudgeon pins using tool 1699-T.
Fit the gudgeon pin circlips. Make sure they are properly located in their groove.
Oil the piston skirts and the bores.
Insert the barrel completely.

9. Fit the cylinder-heads :
Right-hand side :
Before tightening the right-hand cylinder-head, position the barrels to allow for the fitting of the bracket (1) (Depending on the case).

10. Fit the engine.

REMOVING AND FITTING A ROCKER SHAFT OR A ROCKER ON THE VEHICLE



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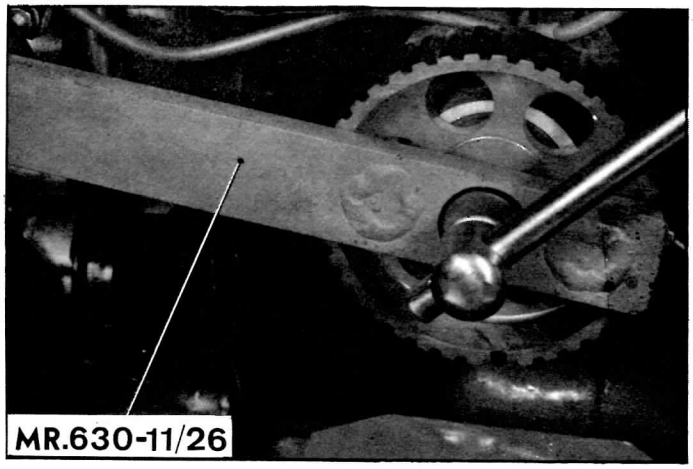

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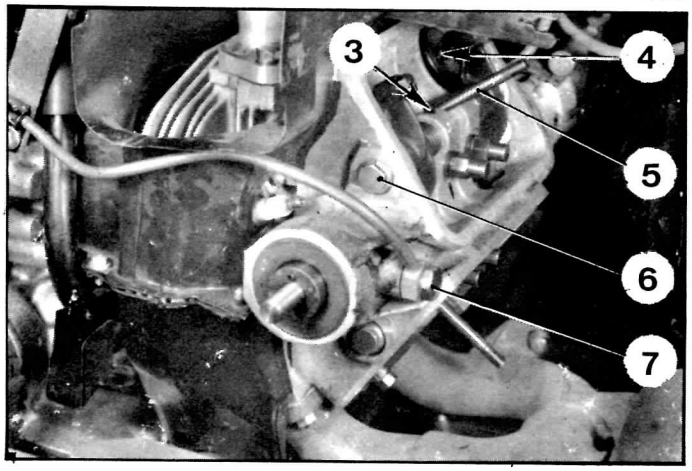

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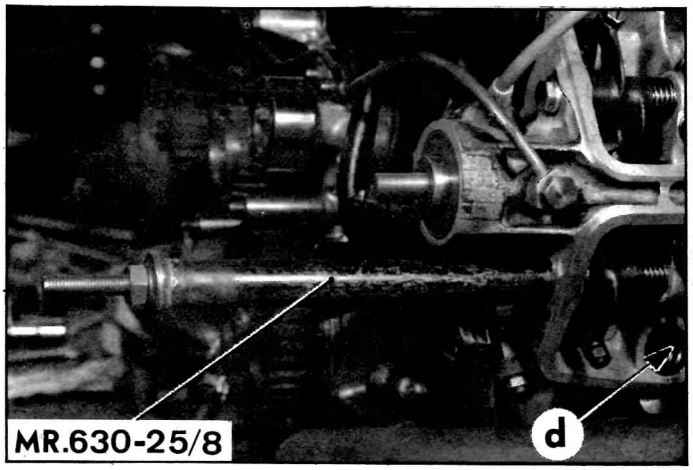

REMOVAL .

1. *Removing the intake valve rocker shaft :* remove the fan panel.
   Removing the exhaust valve rocker shaft : remove the bolt holding the front flexible mountings of the engine, and raise the engine-gearbox assembly.
2. **Remove the fan and the air intake.**
3. **Remove the camshaft wheel :**
   a) Rotate the crankshaft to bring the mark « b » (on the intermediate flange) and the marks « a » and « c » of the wheels into the position shown on the figure.
   NOTE : Take no account of the marks on the driving belts.
   b) Slacken the nut (1). Compress the tensioner to release the belt. Retighten the nut (1).
   c) Release the belt from the camshaft wheel.
   d) Remove the nut (2) (tool MR. 630-11/26) and remove the wheel.
   CAUTION : Do not rotate the crankshaft while the belts are not fitted.
4. **Remove the lower and upper cylinder head covers.**
   NOTE : For removing the exhaust valve rocker shaft, remove only the lower cylinder head cover. Blank off the hole « d » of the oil return to the cylinder head.
   Rotate the camshaft to release the intake or exhaust valve rockers and slacken them on the shaft (take care not to lose the valve caps (4) where these exist).
5. **Remove the rocker shaft :**
   Remove the plug (6) at each end.
   Remove the grub screw (3) holding the shaft (3 mm Allen key).
   Remove the stud (5) and the connector bolt (7).
   Extract the shaft using tool MR. 630-25/8.
   Remove the O-ring seals (10) the caps (9) and (11) and the copper seals (8).
6. **Remove the rocker arms and springs.**

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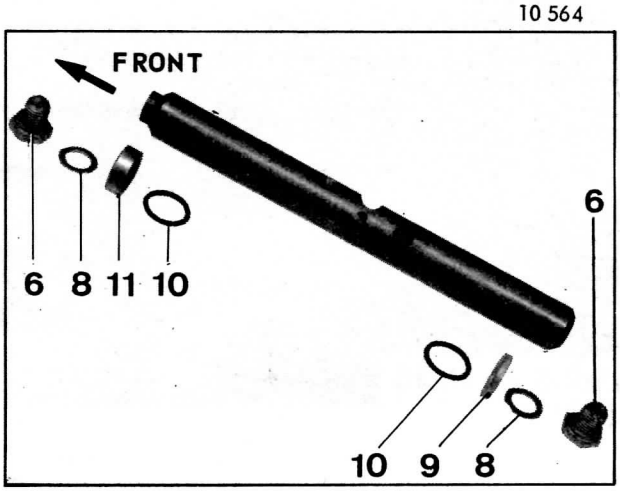

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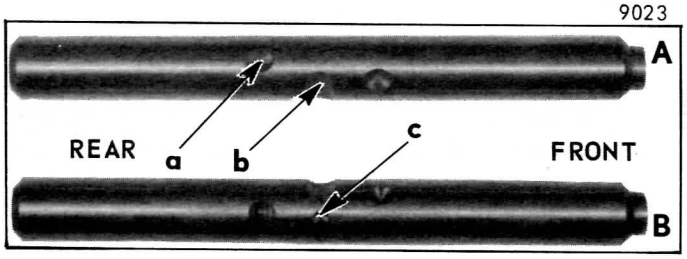

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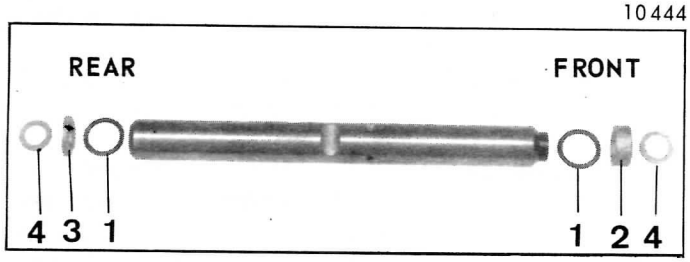

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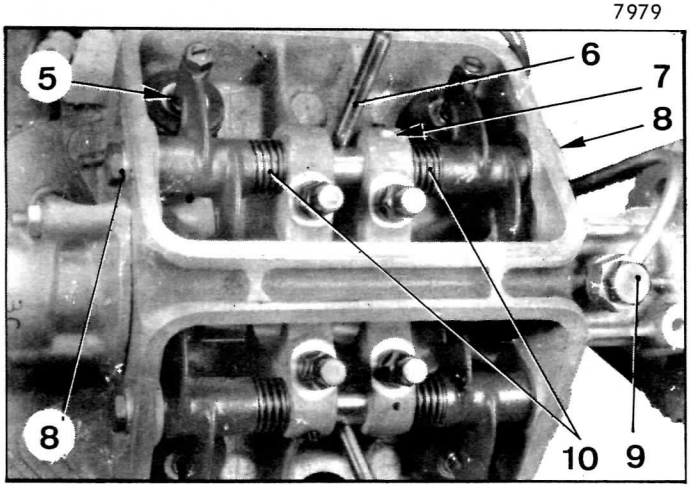

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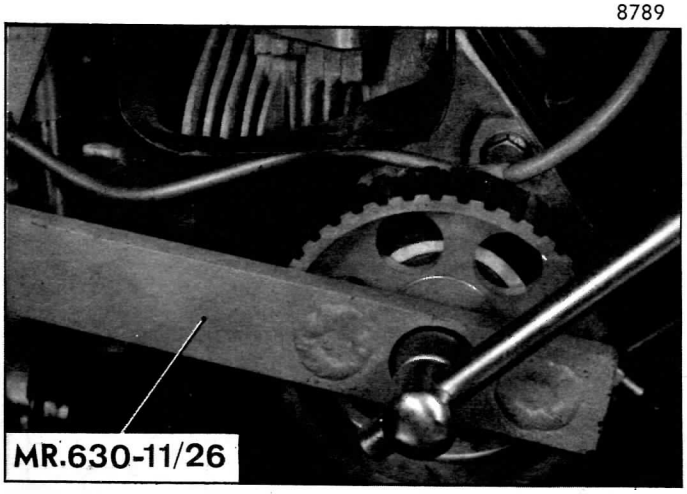


FITTING.

NOTE : For identifying the rocker shafts, see the figure.

- *Shaft A without mark* = left intake or right exhaust.
- *Shaft B marked « c » (blind hole)* = right intake or left exhaust.

7. Fit the rocker arms :

Using grease, stick the caps (5) to the round-headed screws of the rocker arms (where these caps are fitted).

Place the rocker arms and springs (10) in the cylinder head (the springs (10) should be against the central bearing).

8. Fit the rocker shaft :

a) Screw a plug (8) *on the front end* of the shaft.

b) Grease the shaft and insert it in the cylinder head by its rear end.

c) Turn the shaft so that once it is fitted, the groove « b » (for the pin (6) and the cone « a » (for grub screw (7)) are correctly placed.

d) Complete the fitting by lightly tapping the front end of the shaft using a bronze drift.

CAUTION : When fitting, guide the springs and rockers.

e) Fit the stud (6) :
The shortest threaded end must be screwed into the cylinder head.

f) Fit the grub screw (7) :
Smear the threads with LOCTITE N° GX. 01. 459 01 A.

9. Fit the plugs (8) :

(If necessary, replace the plug used during fitting).

Fit *new* O-ring seals (1).

Fit *new* caps : the flat cap (3) is fitted at the rear and the hollow cap (2) « caps » the front end of the shaft.

Place the copper seals (4) at each end of the shaft.

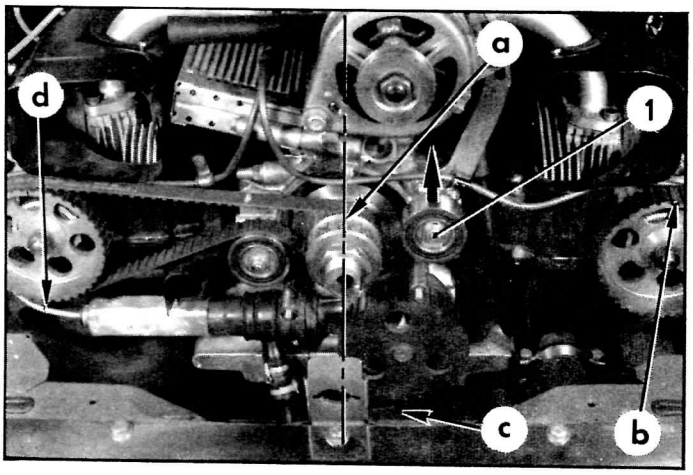
Tighten the plugs (8) from 17 to 18 m.N (1.7 to 1.8 m.kg) (12.5 to 13 ft.Ib)

10. Fit the union screw (9) :

Replace the seals. Tighten from 18 to 20 m.N (1.8 to 2 m.kg) (13 to 14.5 ft.Ib).

11. Fit the camshaft wheel :

Tighten the nut to 82 m.N (8.2 m.kg) (59 ft.Ib) (Hold the wheel using tool MR. 630-11/26).



12. Fit the toothed belt :

a) Check that the marks on the crankshaft, camshaft wheels and the oil pump gear are positionned as shown in the above figure.

b) Fit the belt :

For the left-hand belt :

Position the belt so that :
- the white paint marks on the belt coincide with the marks « a » and « b »,
- the yellow paint mark coincides with the mark « c » on the oil pump gear.

NOTE : Spacing of the marks on the belt :
ab = 32 teeth *(G 10 engine 1015 cc)*
ab = 33 teeth *(All engines 1220 cc)*
ac = 25 teeth *(G. 10 engine and all 1220 cc engines)*

For the right-hand belt :

Place the belt so that the paint marks on the belt coincide with the marks « a » and « b » such that :
ad = 42 teeth *on tensioner side (G 10 engine)*
ad = 43 teeth *on tensioner side (all 1220 cc engines)*

c) Slacken the nut (1) so that the tensioner returns to its original position. Retighten.

13. Set the valve clearances (engine cold) :

Separately adjust the clearances between the tappet of each rocker and *the back of the corresponding cam.*

Intake and exhaust = *0.20 mm*

14. Tighten the two belts :

The marks on the crankshaft and the camshaft wheels must be positionned as shown in the figure.

Rotate the crankshaft through 90° in the normal direction of rotation.

Slacken the nut (1) to release the left-hand tensioner and retighten it to 18.5 m.N (1.8 m.kg) (13 ft.lb).

Turn the crankshaft by one turn in the normal direction of rotation and carry out the same operation for the right-hand tensioner.

15. Fit the cylinder head covers :

IMPORTANT : Carefully oil the cams as well as the tappets and round-headed screws of the rockers.

16. If necessary, tighten the bolts holding the front flexible mountings of the engine to 40 to 45 m.N (4 to 4.5 m.kg) (29 to 32.5 ft.lb).

17. Fit the engine cooling air intake.

18. Fit the fan.

Fit the « starting dog » and its nut *(head face and threads greased).*

Tighten the nut to 170 to 200 m.N (17 to 20 m.kg) (123 to 145 ft.lb) (torque wrench and extension MR. 630-17/1).

19. Fit the fan panel.

20. Check the headlamp adjustment.

21. Check the engine oil level.

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REMOVING AND FITTING A TIMING BELT, TENSIONER OR WHEEL

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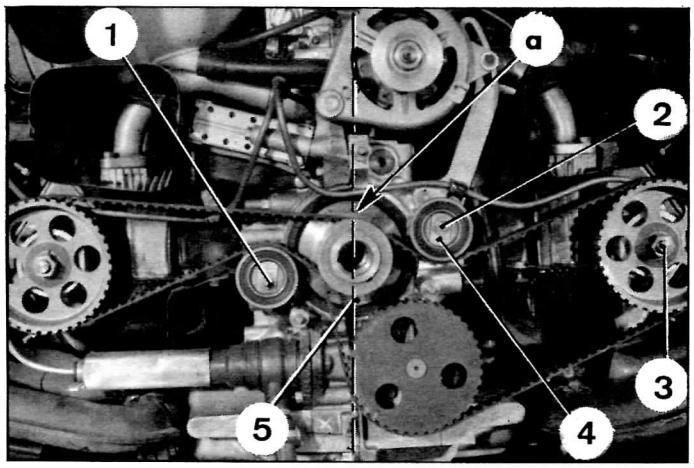

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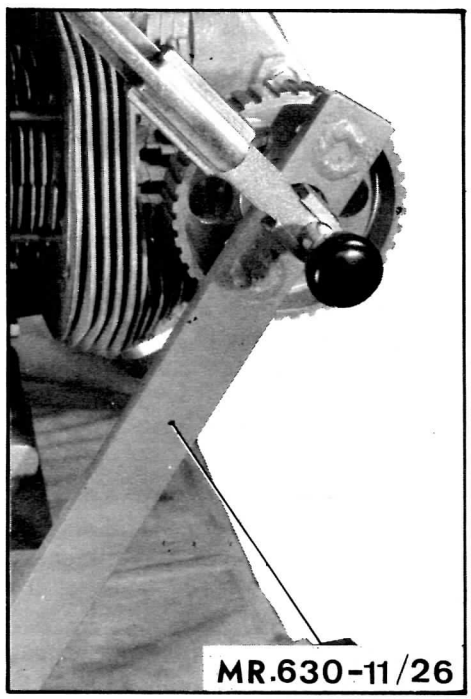

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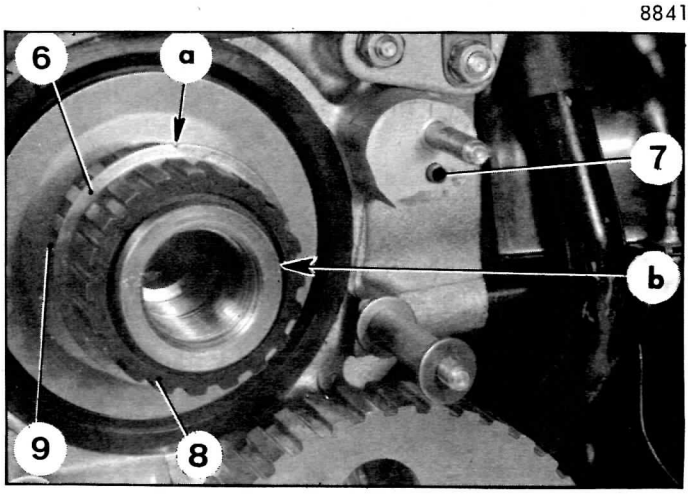

Insert the roll-pin (7) into its housing.

Fit the nuts (contact washer).

REMOVAL.

1. Remove :
   - the fan panel,
   - the air intake.
2. **Remove the belts :**
   a) *Set the timing :* Rotate the crankshaft to bring the mark « a » (on the intermediate flange (6)) on the engine centre line, upwards (see figure).
   IMPORTANT : *Leave the crankshaft in this position during the whole operation.*
   NOTE : To remove the right-hand belt, it is necessary to remove the left-hand belt.
   b) Slacken the nuts (1) and (2) on the tensioners.
   - Remove the outer flange (5).
   - Release the left-hand belt by sliding it over the timing gears.

   Remove the right-hand belt in the same way.
3. **Remove the tensioners :**
   NOTE : To remove the tensioners only, it is not necessary to remove the belts.
   - Remove the nuts (1) and (2).
   - Remove the tensioners (Do not lose the bearing plates (4)).
4. **Remove the timing gears and wheels :**
   Remove the gears (8) and (9) and the intermediate flange (6) from the crankshaft (Do not lose the key)).
   Remove the nuts (3). Prevent the wheel from rotating by means of tool MR. 630-11/26.
   Remove the camshaft wheels.

FITTING.

NOTE :
- the two camshaft wheels,
- the two crankshaft gears (8) and (9),
- the two flanges (5) and (6),
- the two tensioners,

are identical.
IMPORTANT : Before fitting, make sure that the bolts, wheels, gears and tensioners are completely free of grease.

5. **Fit the timing wheels and gears :**
   a) Fit the camshaft wheels :
   Fit the wheel on each camshaft (positioning pin).
   Tighten the nut (flat washer) to 82 m.N (8.2 m.kg) (59 ft.lb) (torque wrench) (use tool MR. 630-11/26).
   b) Fit the gears to the crankshaft :
   Fit the gears (9) and (8), interposing the flange (6) (key) on the crankshaft.
   CAUTION : Fit the gears so that :
   - *gear (8) has the groove « b » facing outwards.*
   - *gear (9) has the groove « b » facing the engine casing.*
6. **Fit the tensioners :**
   Fit the tensioners (bearing plate (4) to the outside).

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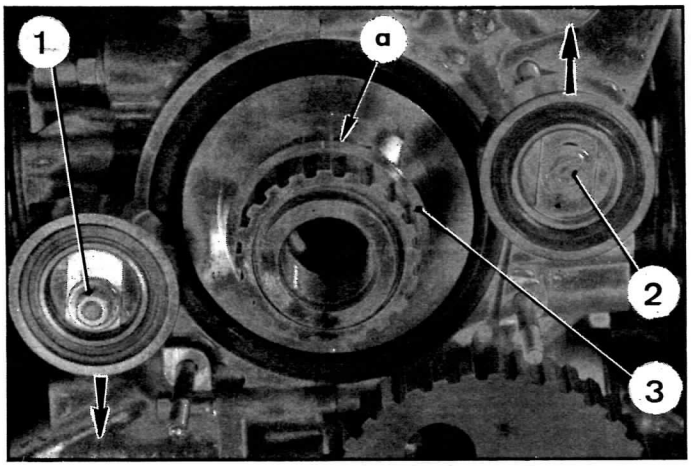

7. Fit the belts :

NOTE :

- the right-hand belt (the shorter) has two white paint marks at « a » and « d », so that :
  ad = 42 teeth tensioner side *(G.10 engine)*
  ad = 43 teeth tensioner side *(all G.12 engines)*
- the left-hand has two white paint marks at « a » and « b » and a yellow paint mark at « c » so that :
  ab = 32 teeth *(G.10 engine)*
  ab = 33 teeth *(all G.12 engines)*
  ac = 25 teeth *(G.10 and all G.12 engines)*

a) *Set the timing :*
The mark « a » (engraved on the intermediate flange (3)) being on the engine centre line, facing upwards, position the marks « b », « c » and « d » of the wheels as shown in the figure.

b) Compress the tensioner rollers (direction of the arrows).
Tighten the nuts (1) and (2).

c) Fit the right-hand belt so that its marks coincide with the marks « a » and « d » such that :
ad = 42 teeth tensioner end *(G.10 engine)*
ad = 43 teeth tensioner end *(all G.12 engines)*
(in this position, the mark « d » faces downwards).

d) Fit the left-hand belt so that :
- the white marks coincide with the mark « a » and « b »,
- the yellow mark coincides with the mark « c »

e) Fit the outer flange (4).

f) Release the tensioner rollers and tighten the nuts (1) and (2).

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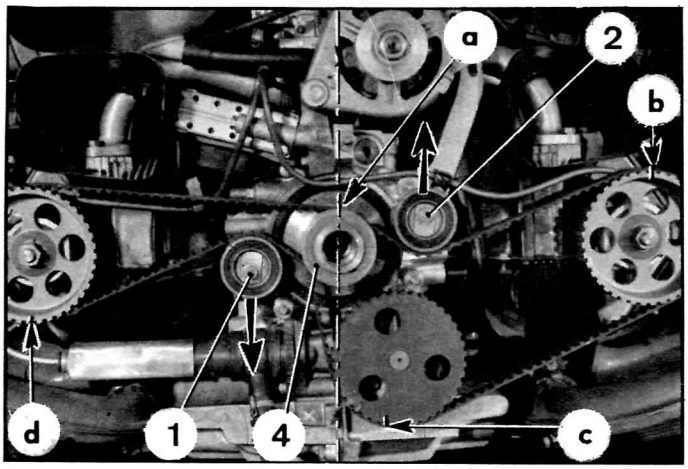


8. Tighten the belts :

With the marks on the crankshaft and camshaft wheels located as shown in the figure, turn the crankshaft through 90° in the normal direction of rotation.
Slacken the nut (2) of the left-hand tensioner roller to release it and retighten to 18.5 m.N (1.8 m.kg)(13 ft.Ib)
Rotate the crankshaft by one turn in the normal direction of rotation and carry out the same operation for the right-hand tensioner roller.

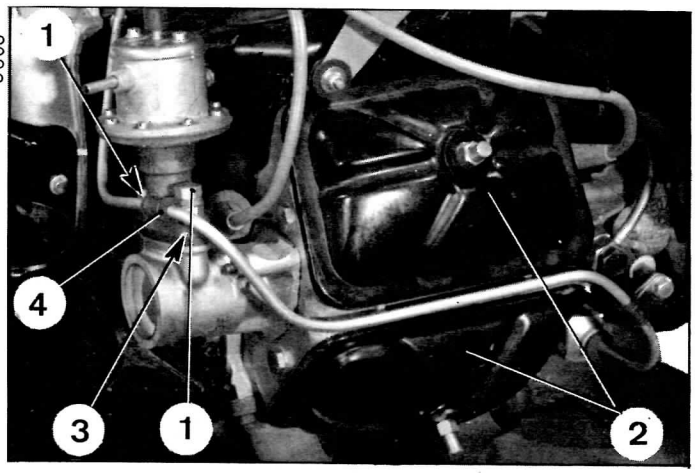
9. Fit the air intake and the fan.

10. Tighten the fan :

Grease the threads of the « starting dog » and the back of the nut.
Tighten the nut to 170 to 200 m.N (17 to 20 m.kg) (123 to 145 ft.Ib) (torque wrench and extension MR. 630-17/1).

11. Fit the fan panel and check the headlamp setting.

REMOVING AND FITTING A CAMSHAFT ON THE VEHICLE



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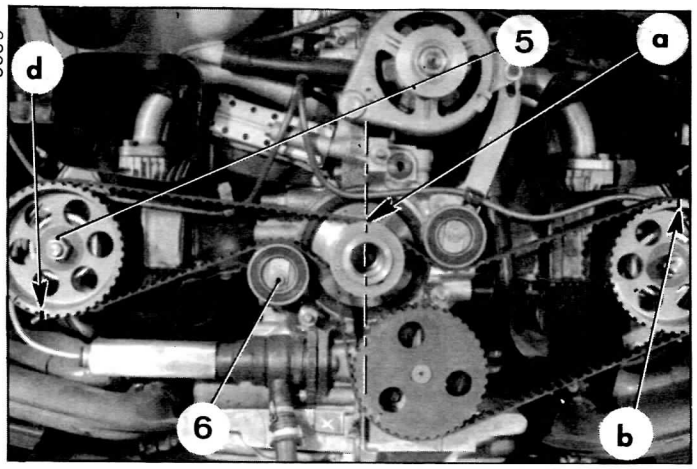

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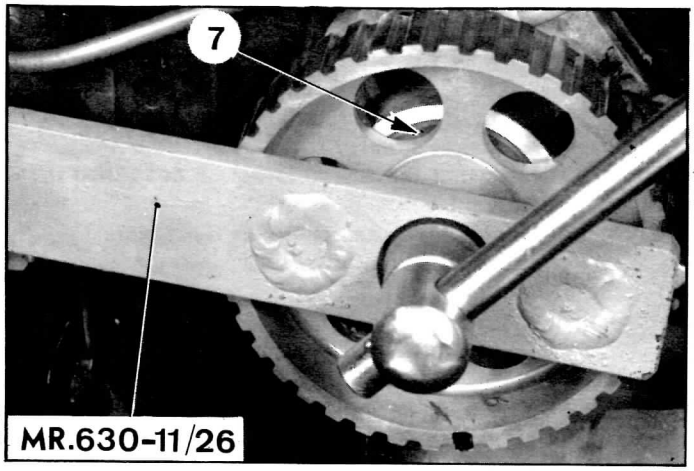

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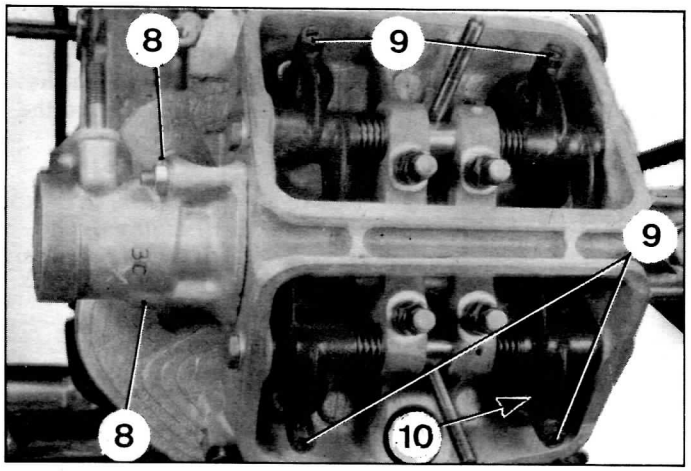

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Supplement N° 1 to Manual 810-2 (CORR)

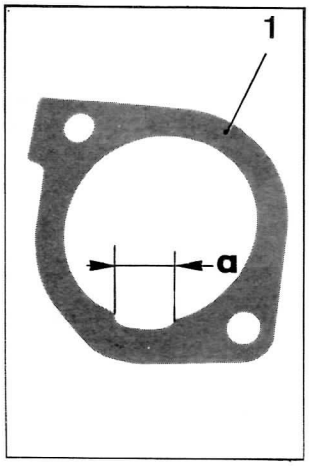
♦ NOTE : The camshafts on G 12/619 engines (GSX2) are different from those on other engines They are marked (mark stamped on centre bearing):
- 57 for the left-hand camshaft
- 58 for the right-hand camshaft

REMOVAL

1. Remove :
   - the fan panel,
   - the bolts holding the front flexible mountings of the engine.
2. **Remove the fan and the air intake :**
   Use tool MR. 630-17/1 for removing the fan.
3. **Remove the cylinder head covers :**
   Remove the H.T. leads.
4. **Remove the petrol pump (or the distributor) :**
   a) *For the right-hand camshaft :*
   Remove the clip (4).
   Remove the nuts (1).
   Free the pump and the spacer (3).
   Remove the studs on which the pump is mounted.
   Move the engine as far as possible to the left (so that the camshaft can be passed between the heater duct and the axle unit).
   NOTE : For removing the right-hand camshaft, it is necessary to remove the preheater tube from the intake box (when fitted).
   b) *For the left-hand camshaft :*
   Remove the distributor.
5. **Set the timing :**
   NOTE : Take no account of the paint marks on the timing belts.
   Turn the engine so that :
   - the mark « a » (on the flange between the two gears) faces upwards on the engine centre line
   - the marks « b » and « d » on the wheels are in the position shown in the figure.

   CAUTION : *Do not rotate the crankshaft during the whole operation.*
6. **Remove the wheel from the camshaft to be replaced :**
   Slacken the nut (6) of the tensioner at the correct side.
   Remove the belt from the camshaft wheel.
   Remove the nut (5) (hold the wheel using the tool MR. 630-11/26).
   Remove the wheel.
7. **Remove the camshaft :**
   Completely slacken the rocker ball-screws (9).
   CAUTION : *Do not lose the ball caps (10) where these are fitted.*
   Remove the nuts (8) holding the bearing.
   Use a mallet, lightly tap the end of the camshaft to free the bearing.
   Remove the camshaft, taking care not to foul the cams on the rocker heels.
8. **Remove the oil seal (7).**

9581



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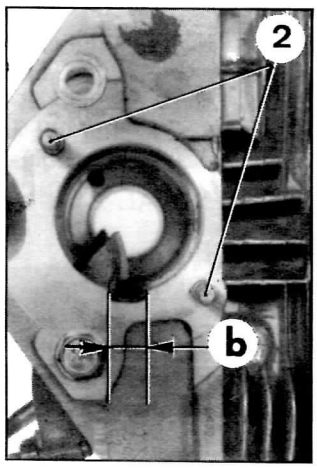

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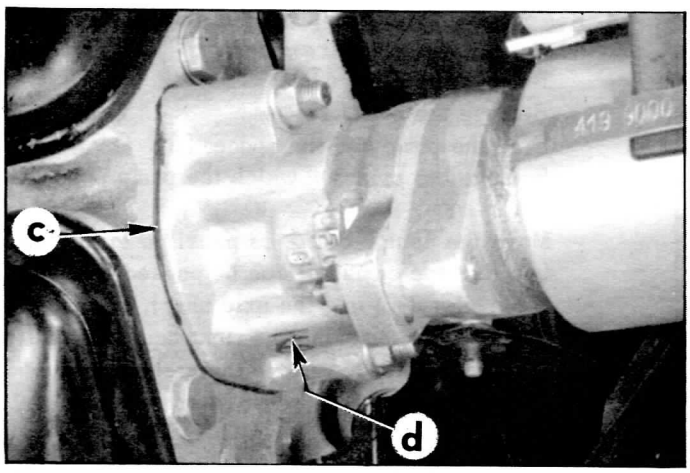

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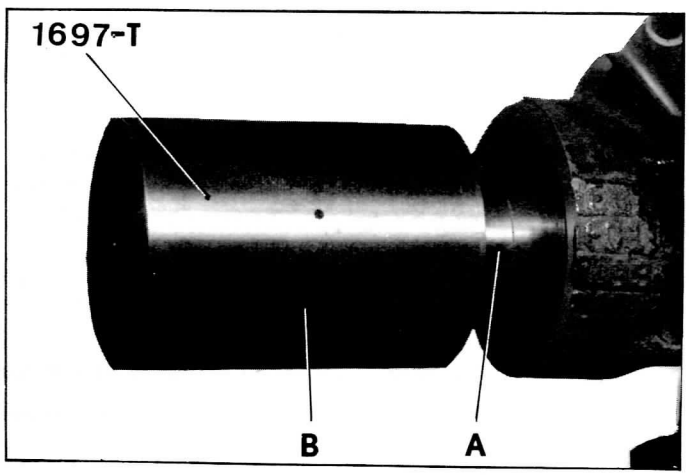

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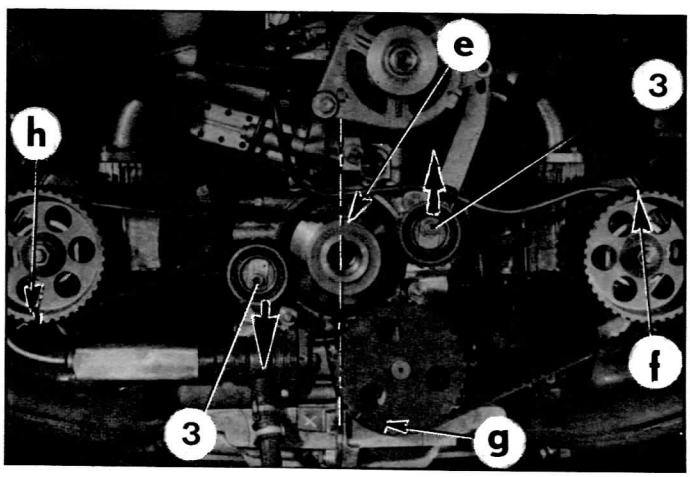

FITTING.

9. Clean the bearing faces of the camshaft bearing housing and the cylinder head at « c ».
Oil the rings and the bearing.

10. **Fit the camshaft :**
a) Fit the paper seal between the rear camshaft bearing and the cylinder head :
Fit the seal (1) on the studs (2) *so that the groove « a » of the seal coincides with the oil return groove « b » of the cylinder head.* Fit the seal dry.
b) Engage the camshaft in the cylinder head.
IMPORTANT : *Position the rear bearing : the boss « d » (oil return) of the bearing must correspond with the groove « b » of the cylinder head. In other words, it must be facing the exhaust openings.*
For the right-hand cylinder head, this means directing the petrol pump mounting studs towards the intake openings.
c) Tighten the nuts (contact washer) to 15 - 18 m.N (1.5 to 1.8 m.kg (11 to 13 ft.lb).

11. **Fit the front seal :**
Oil the front seal where it touches the camshaft.
Use the tool 1697-T : screw the inlet cone A on the stud at the end of the camshaft.
Oil the cone and position the seal (take care to fit it the right way round).
Complete the fitting of the seal by means of the cap B, tapping lightly until it comes up against the cone A.
Remove the tool.

12. **Fit the camshaft wheel :**
Place the wheel on the end of the camshaft (be careful of the positioning pin on the shaft).
Fit the nut (flat washer) : Hold the wheel with tool MR. 630-11/26. Tighten to 82 m.N (8.2 m.kg) (59 ft.lb) torque wrench.

13. **Fit the toothed belt :**
a) Check that the timing is set as described in paragraph 5.
b) Compress the tensioner (or tensioners) (direction of the arrows).
Tighten the nut (3) of the tensioner,
c) Fit the belt or belts :
Right-hand belt. Fit the belt so that :
- the two white paint marks coincide with the mark « e » on the crankshaft (on the intermediate flange),
- the mark « h » of the wheel so that :
eh = 42 teeth tensioner end (G.10 engine)
eh = 43 teeth tensioner end (all G.12 engines

Left-hand belt. Fit the belt so that :
- the two white paint marks coincide with the marks « e » on the crankshaft and « f » on the wheel,
- the yellow paint mark coincides with the mark « g » on the oil pump gear :
ef = 32 teeth tensioner end (G.10 engine)
ef = 33 teeth tensioner end (all G 12 engines)
eg = 25 teeth tensioner end (G.10 and all G.12 engines)

d) Slacken the nuts on the tensioners to release them and then retighten.

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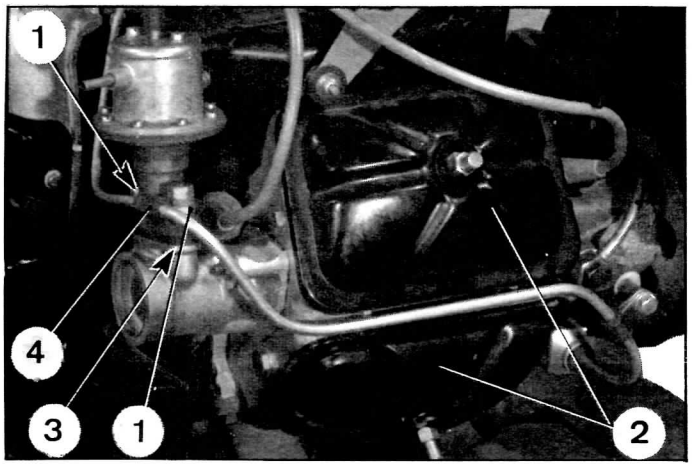

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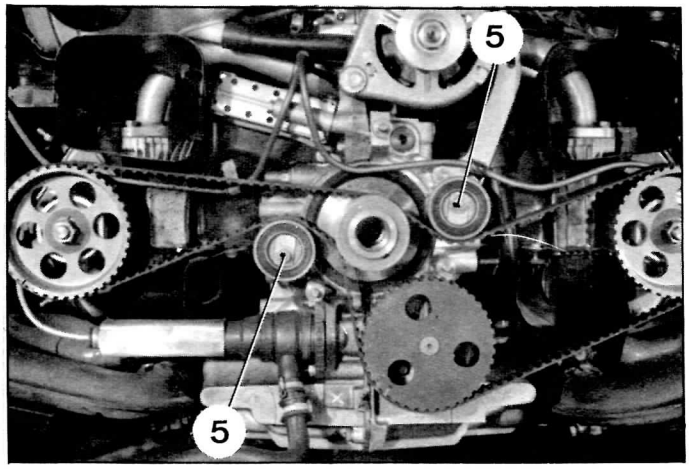

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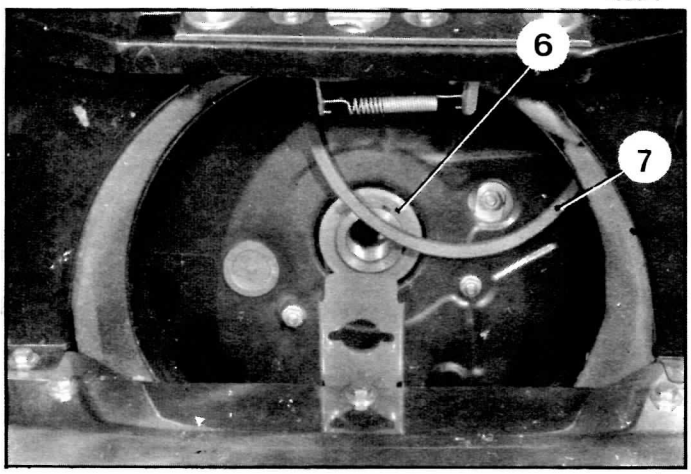

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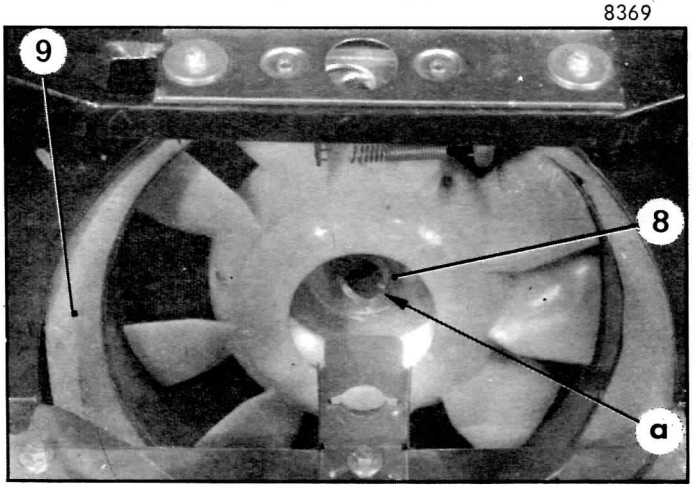

14. Set the valve clearances :

Check that the ball caps are in position (where these are fitted).

Separately set the clearance between the heel of each rocker and the back of the corresponding cam.

Intake and exhaust = 0.20 mm

15. Fit the cylinder head covers :

IMPORTANT : *Carefully oil the cams.*

Fit the lower and upper cylinder head covers (2) (they are different). Tighten the nuts from 8 to 10 m.N (0.8 to 1 m.kg) (6 to 7.2 ft.lb).

Fit the H.T. leads.

16. Tighten the belts :

Check that the timing is set as described in paragraph 5.

Rotate the crankshaft through 90° in the normal direction of rotation.

Slacken the nut (5) on the left-hand tensioner in order to release it and retighten to 18.5 m.N (1.8 m.kg) (13 ft.lb).

Rotate the crankshaft through one turn in the normal direction of rotation and repeat the same operation for the right-hand tensioner.

17. Fit the petrol pump (or the distributor) :

a) *For the right-hand camshaft :*

Fit the petrol pump studs.

Fit the pump.

Fit the spacer (3) (dry fitting).

Position the pump (take care with orientation : see figure). Fit the clip (4). Tighten the nuts (1) (contact washer) to 21 m.N (15 ft.lb).

b) *Left-hand camshaft :*

Fit the distributor (do not tighten the nuts ; setting will be carried out after replacing the accessory plate).

18. Fit the engine cooling air intake.

19. Fit the air intake cowl, *without tightening it.*

20. Fit the fan :

Check that the flange (6) is in position.

Position the fan and insert the alternator belt (7) in the pulley groove.

Fit the « starting dog » *(the « starting dog » and the nut must have the face and threads greased).*

With the engine at the point of ignition, the « starting dog » should be horizontal.

Check that about 5 mm of threads are visible at «a» after adjustment.

Tighten the lock nut (8) to 170 to 200 m.N (123 to 145 ft.lb) (torque wrench and extension MR.630-17/1).

Position the air intake cowl on the fan to give correct clearance at the blades. Tighten the bolts.

Glue the cowl seal (9) in position (COLFIX 180).

21. Fit the accessory support plate.

22. Tighten the bolts holding the front flexible mounting of the engine to 40 to 45 m.N (29 to 32.5 ft.lb).

23. Replace the filter cartridge.

Drain the oil from the engine and fill up with new oil.

24. Check the setting of the distributor if necessary.

25. Check the headlamp setting.

REMOVING AND FITTING A PUMP DRIVE (OR SEAL) OR AN OIL PUMP ON THE VEHICLE.

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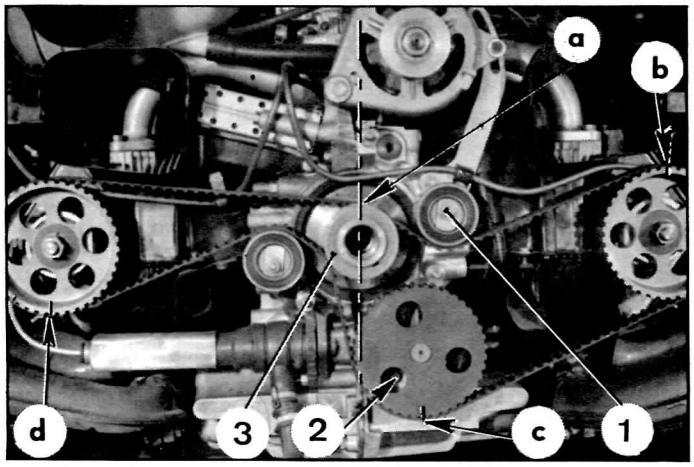

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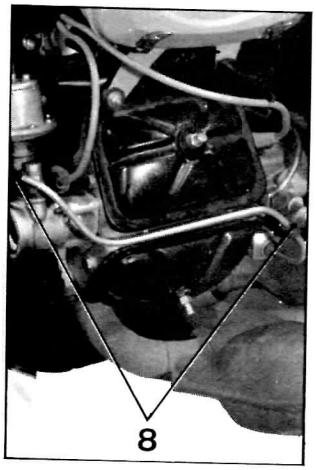

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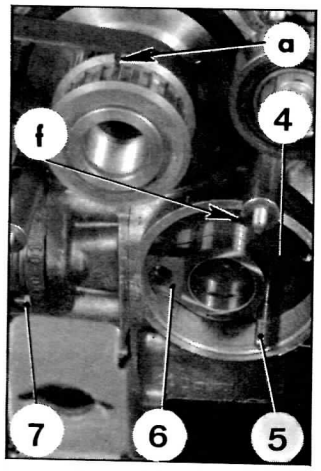

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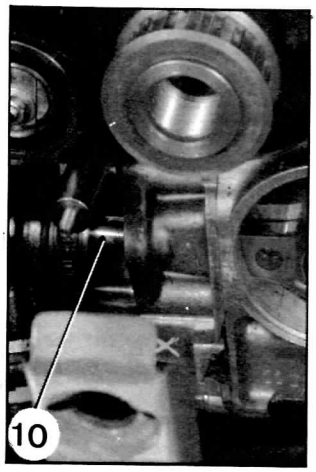

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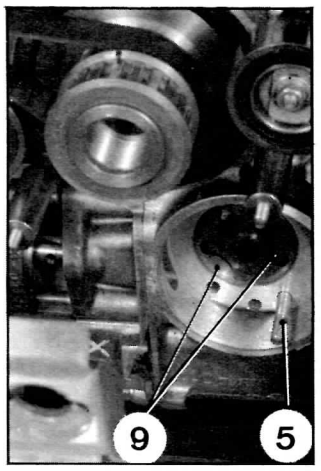

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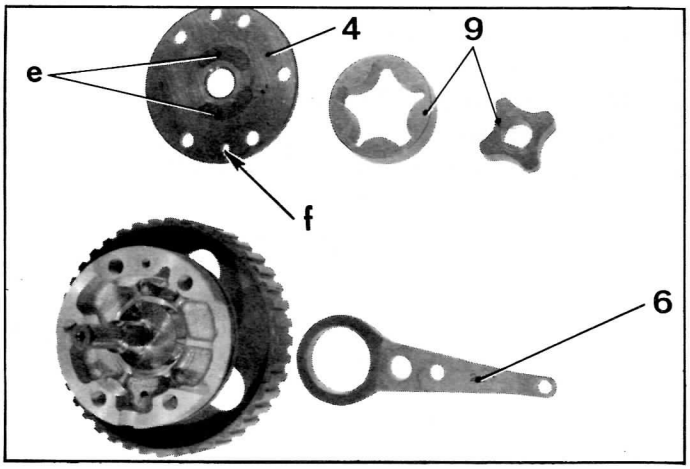


REMOVAL.

1. Remove :
   - the fan panel,
   - the fan (extension MR. 630-17/1),
   - the air intake.

2. Slacken the pressure regulator bleed screw.

3. **Remove the left-hand timing belt :**
   a) *Set the timing :*
   Turn the engine so that the mark « a » (engraved on the flange between the crankshaft gears) faces upwards on the engine centre line.
   The marks « b, c, d » are then placed as shown in the figure.
   IMPORTANT : *Take account only of the marks engraved on the gears and wheels (and not of the painted marks on the belts).*
   b) Slacken the nut (1) on the tensioner.
   Release the outer flange (3) and remove the belt.

4. **Remove the oil pump drive :**
   Remove the five bolts (2).
   CAUTION : Extract the drive, by levering on two diametrically opposed points of the pulley to avoid damaging the pump bearing.

5. **Remove the high pressure pump control rod :**
   Remove the bolt holding the clips (8).
   Remove the nuts (7) holding the pump.
   Move the pump sufficiently to obtain access to the spindle (10) : drive out the spindle by hand (Do not damage the pump piston).
   Release the rod (6).

6. **Remove the oil pump gears :**
   Remove :
   - the closing plate (4),
   - the gears (9).

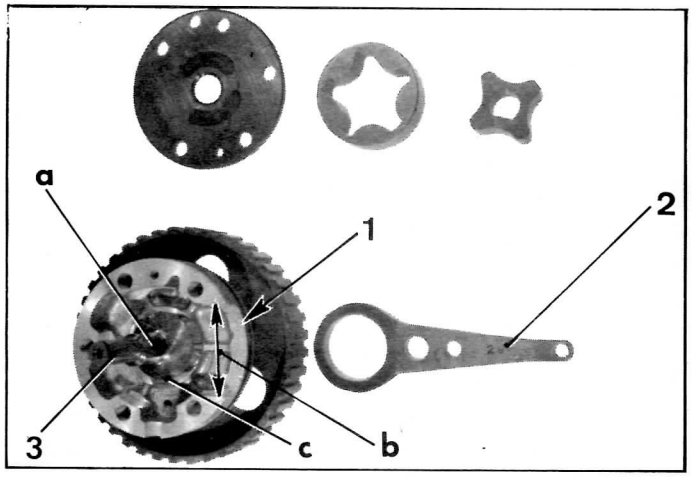
FITTING.

IMPORTANT : Make sure that the belts, tensioners or timing wheels are completely free of oil or grease.

7. **Oil and fit the oil pump gears :**
   NOTE : On casings not fitted with a guide stud (5), it is recommended to fit one temporarily to assist positioning the plate and the pump drive.

8. **Fit the closing plate (4) :**
   The recesses « e » should be inside and the small hole « f » to the top.

9. **Install the high pressure pump rod (6).**



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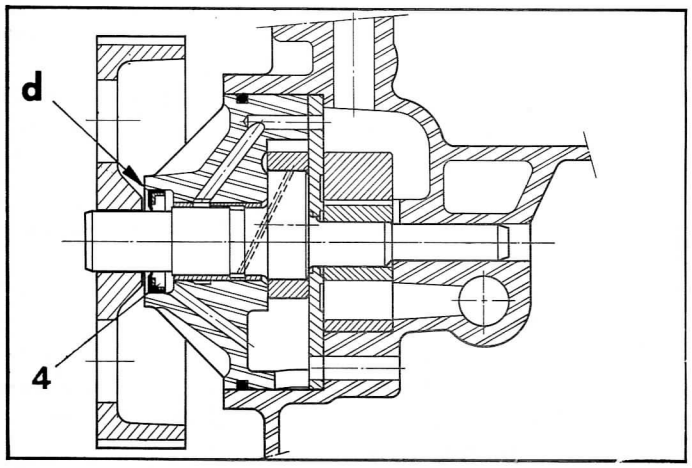
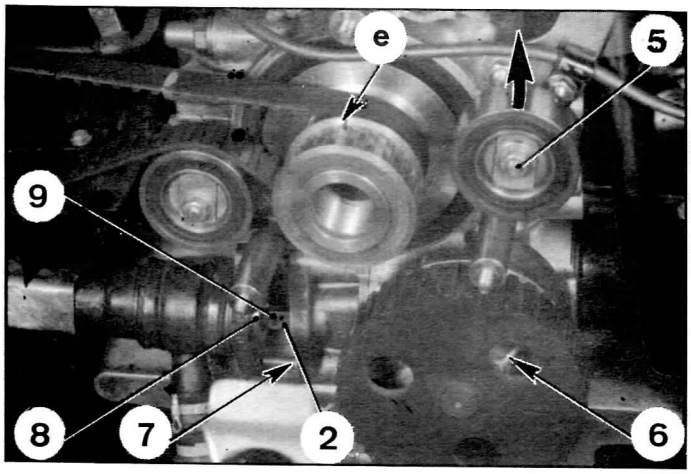


G. 22-2



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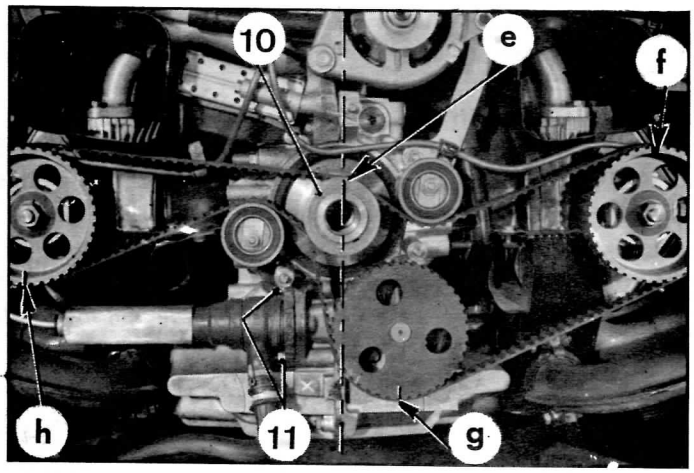

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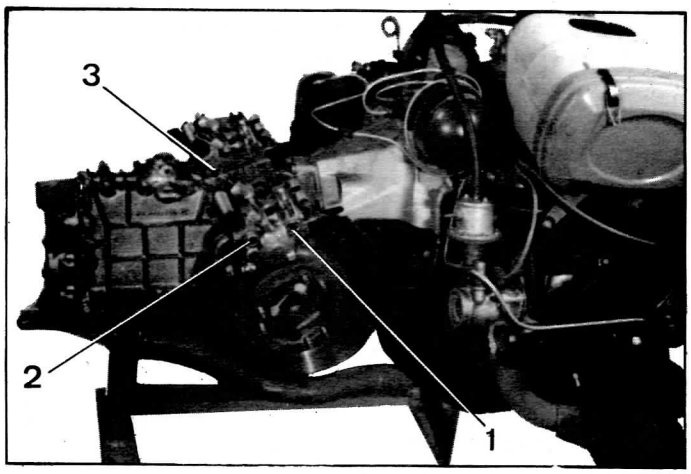
10. **Fit the pump drive :**
    a) Replace the O-ring seal (1).
    Oil the spindle (3) and the eccentric « c ».
    b) Place the shim 4001-T between the wheel and the bearing at « d » to avoid depressing the seal (4).
    c) Position the pump drive on the guide stud (the groove « b » for the rod should face the high pressure pump) and engage the spindle in the central gear.
    Turn the spindle so that the flat part « a » engages in the oil pump gear.
    d) Push the piston into the liner (8) of the high pressure pump and guide the rod (2) in order to engage it on the driving eccentric.
    Fit the bolts (6) (contact washer).
    CAUTION : Tighten the diametrically opposed bolts one after the other, a fraction of a turn at a time, until the pump drive is properly positioned.
    Tighten the bolts (6) to 15 - 18.5 m.N (11 to 13 ft.lb). Remove the shim 4001-T.
    Check that the pump drive rotates freely.
11. **Install the high pressure pump :**
    If necessary, replace the O-ring seal (7).
    Release the piston (brass hook) and fit the spindle (9).
    Fit the pump, and tighten the nuts (11) (contact washer) at 12.6 to 14 m.N (9 to 10 ft.lb).
    Fit the clips holding the high pressure pump tube.
12. **Fit the left-hand timing belt :**
    Raise the tensioner roller (direction of the arrow).
    Tighten the nut (5).
    a) *Set the timing :*
    Check that the mark « e » (engraved on the flange) is in the position described in paragraph 3 a).
    Position the marks « f » and « g » as shown in the figure.
    b) Fit the belt so that :
    - the two white paint marks on the belt coincide with the marks « e » and « f »,
    - the yellow paint mark on the belt coincides with the mark « g ».
    IMPORTANT : *Check the position of the marks by counting the number of teeth on the belt :*
    - ef = 32 teeth *G.10 Engine (1015 cc)*
    - ef = 33 teeth *G.12 Engine (1220 cc)*
    The marks in « e » and « g » must be separated by 25 teeth.
13. **Adjust the tension of the belts.**
    (See Op. G. 122-4).
14. Fit the flange (10) and the air intake.
15. **Fit the fan :**
    Fit the « starting dog » fitted with the nut *(face and threads greased)* so that the dog is horizontal when the engine is at the ignition point. Tighten the nut to 170 to 200 m.N (123 to 145 ft.lb) (torque wrench and extension MR. 630-17/1)
    NOTE : The « starting dog » should have 4 to 5 threads visible after the nut has been tightened.

STRIPPING AND ASSEMBLING A GEARBOX

(for exchange or repair)

Supplement N° 1 to Manual 810-2 (CORR)



STRIPPING

1. Remove the brake units and the brake discs :

a) Remove :
- the connection tube (3),
- the main brake pads.

b) Release the rear fixing bolts (2)
Loosen the front bolt (1).
Tip the unit upwards (be careful of the shim placed between the unit and the gearbox casing).
Fit and tighten a nut (10 × 1.50) on the bolt (2) (to prevent the half-units from separating from one another).
Remove the bolt (1).

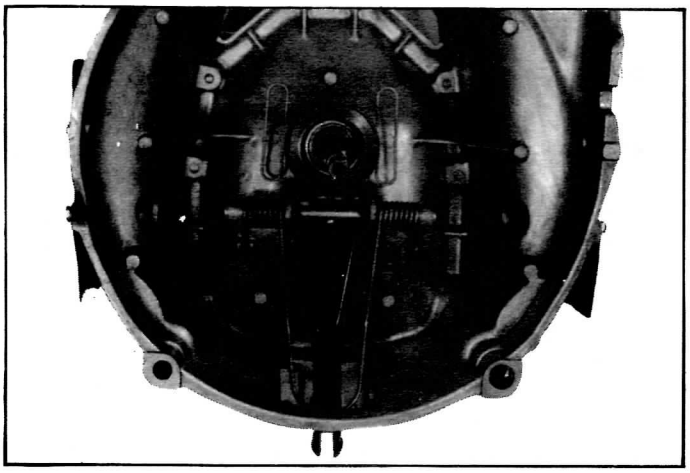
c) Remove the brake discs.

d) Remove the disc fixing studs.

2. Remove the clutch release and its control :

Remove :
- the thrust bearing,
- the clutch fork pin,
- the fork and its spring.

3. Clean the parts.



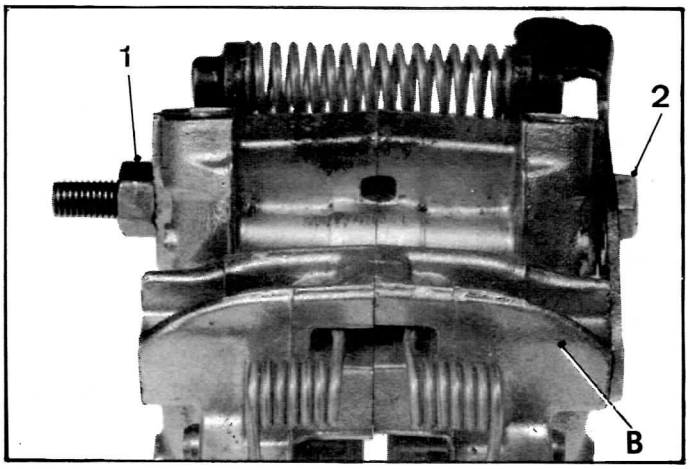
ASSEMBLING

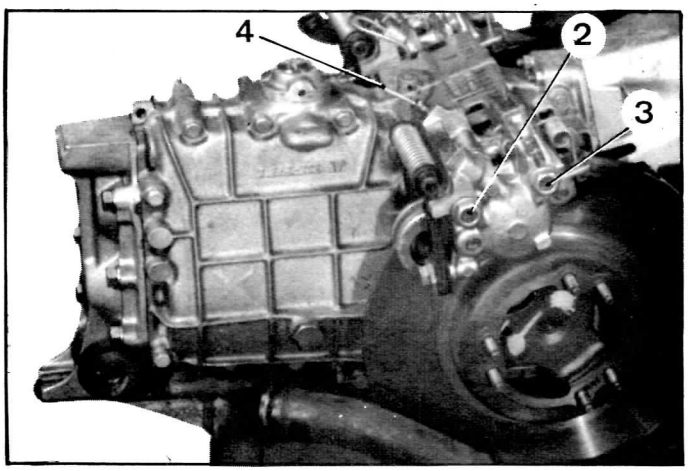
4. Fit the clutch release and its operating mechanism :

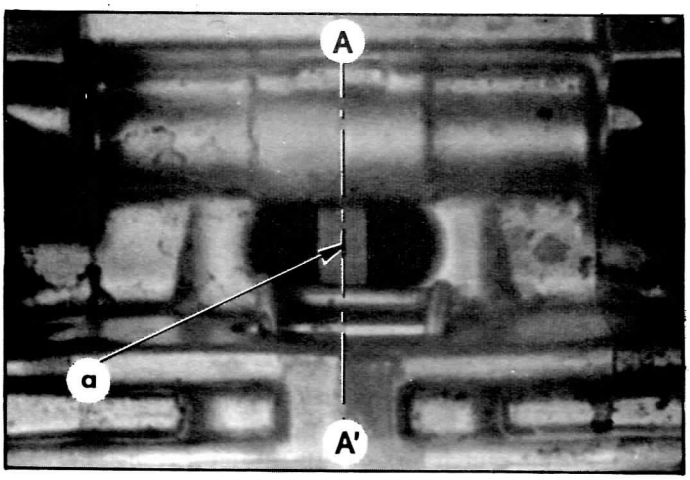
Fit the clutch fork and its spring. Fit the shaft and its stop screw.
Fit the thrust bearing and its fastener.

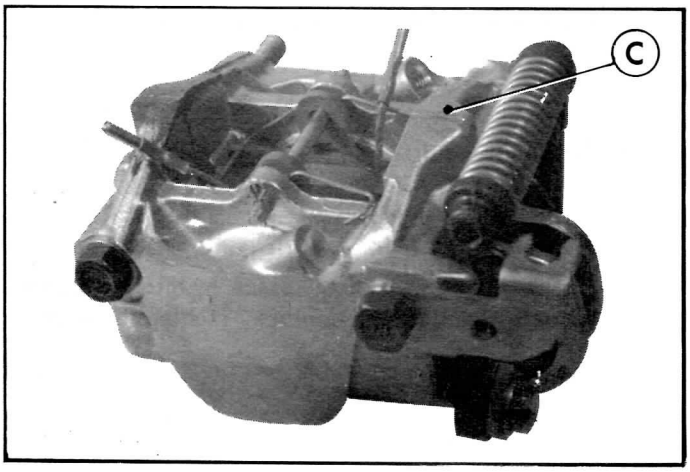
5. Fit the brake discs :

Fit the fixing studs, tighten them to 4 m.N (0.4 m.kg) (3 ft.lb) and fit the brake discs.
Fit two fixing nuts of the discs by interposing the spacers to hold them in place. Tighten the nuts.









6. Fit the brake unit *(Véhicles fitted with early Model B brake units).* :

IMPORTANT : The shim (or shims) placed between the unit and the gearbox position the unit in relation to the brake disc, it is necessary to check this position each time a disc or a unit is changed.

a) Check the condition of the bearing surface of the unit on the gearbox housing. Remove burrs with a scraper.

b) Position the unit completely assembled and fitted with an adjusting shim and emergency brake pads (the two half units have been assembled and tightened by the bolt (2) and nut (1) used in the dismantling).

c) Fit the front fixing bolt (3); screw it up without fully tightening (flat washer under the head).

d) Remove the nut (1). Pivot the unit and tighten the bolt (2) (flat washer under the head). Check that the shim is correctly positioned.
Early (Model B) Unit :
Tighten the bolts to 45 to 50 m.N (4.5 to 5 m.kg) (33 to 36 ft.Ib).
Later (Model C) Unit :
Tighten the bolts to 60 m.N (6 m.kg) (43.5 ft.Ib).

e) Make a marking « a » on the disc equidistant from the two faces.

Check that this marking is aligned with the joint faces A - A' of the two half-units.

The displacement between these two faces should not exceed 0.5 mm. Otherwise, change the thickness of the shims placed between the brake unit and gearbox.

7. Fit the main brake pads.

8. Connect up the connecting tube (4) of the brake units.

Tighten the connection to 8 to 9 m.N (0.8 to 0.9 m.kg)(6 to 6.5 ft.Ib).

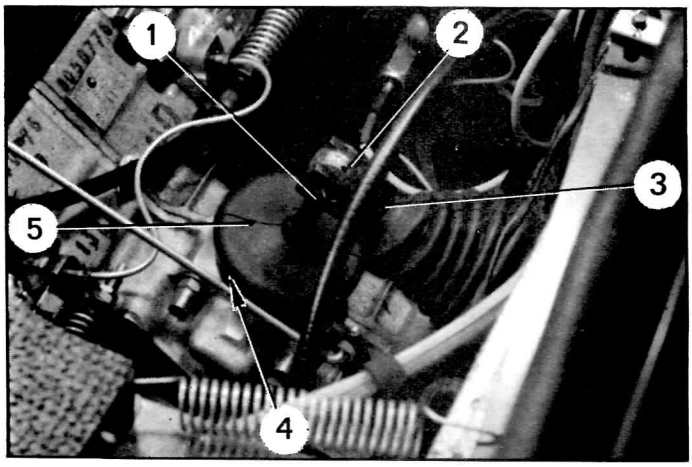
NOTE : Do not fit the fork operating lever which would interfere with the fitting of the engine-gearbox assembly on the vehicle.

9. Fit the brake units *(Vehicles fitted with later (Model C) brake units) :*

The fitting is identical to that for the old models, but there is no shim placed between the brake unit and the gearbox.

I. REMOVING AND FITTING A SELECTOR FORK SHAFT OPERATING LEVER

845



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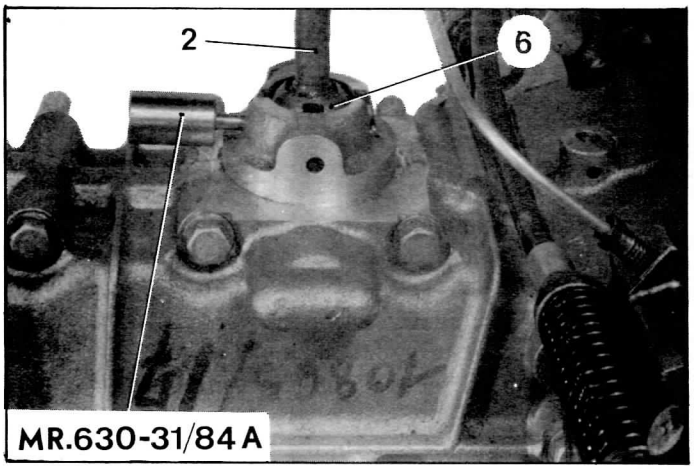

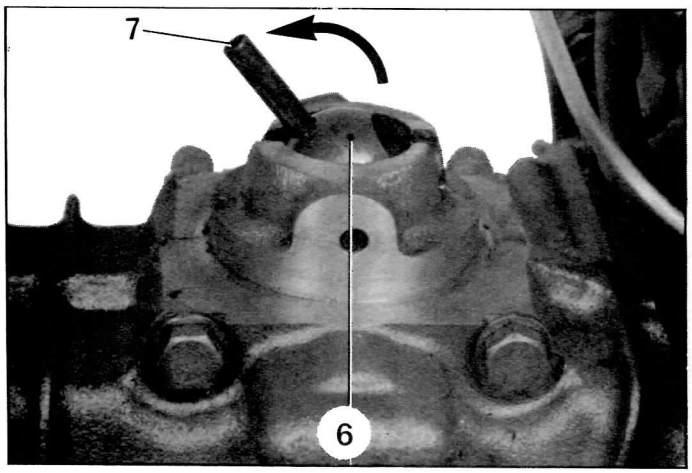

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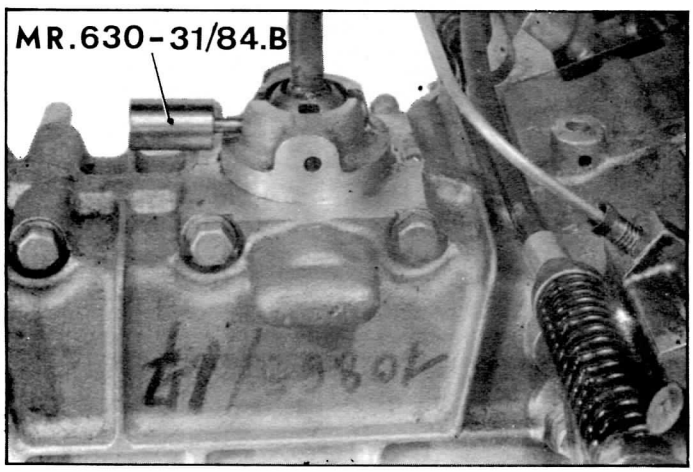


7025

Supplement N° 1 to Manual 810-2 (CORR)

REMOVAL.

1. Remove the spare wheel.

2. **Disconnect the gear change tie-rod :**
   Remove :
   - the pin (1),
   - the spindle (2),
   - the collar (5).

   Separate the tie-rod (4) from the ball joint (3).
   Pull the dust cover (6) upwards.

3. **Remove the selector fork shaft operating lever :**
   By means of tool MR. 630-31/ 84 a, remove the roll-pin (9) linking the lever (7) to the ball joint.

   Release the operating lever (7).
   NOTE : The use of the tool MR. 630-31/ 84 a allows the pin (9) to be left in position on the ball joint (8).

FITTING.

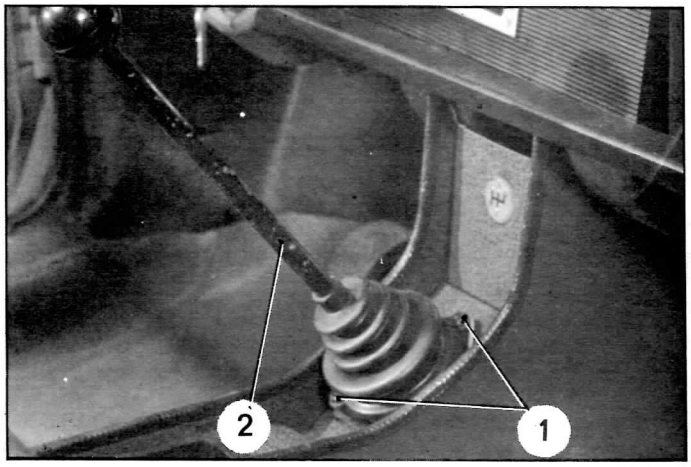
4. **Fit the selector fork shaft operating lever :**
   To facilitate the positioning of the roll-pin (9) turn the ball joint (8) through 180° so that the pin is towards the rear (direction of the arrow).
   Fit the lever to the ball joint (8).
   Push the roll-pin (9) once again to the front using the tool MR. 630-31/ 84 b until the body of the tool is bearing against the gearbox housing.

   IMPORTANT : With the tool MR. 630-31/ 84 b it is possible to adjust exactly the position of the pin (9) in the ball joint (8).
   If this position is incorrect, the pin might interfere with the movement of the ball joint and damage the gearbox housing.

5. **Connect up the selector fork shaft operating lever to the tie-rod :**
   Fit the tie-rod (4) into the ball joint (3).
   Fit the spindle (2) and the pin (1).

6. Replace the spare wheel.

II. REMOVING AND FITTING A GEAR LEVER



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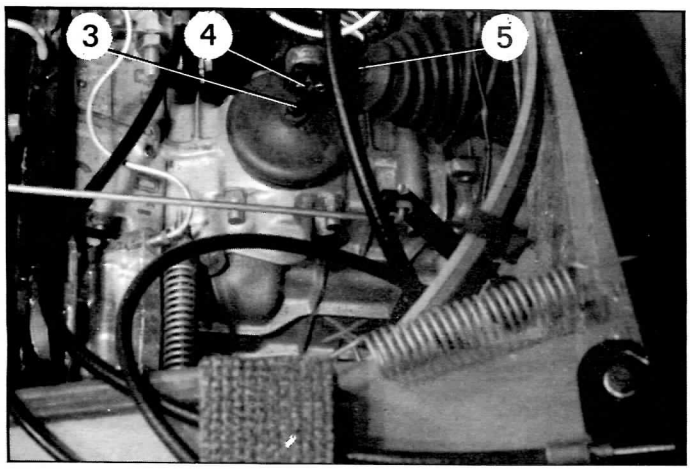

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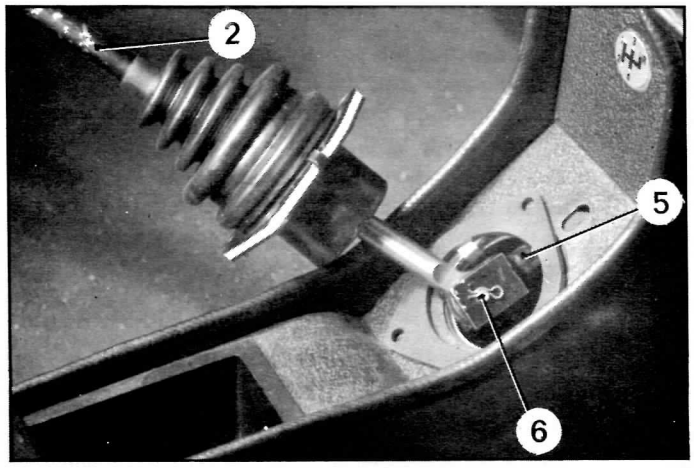


9181

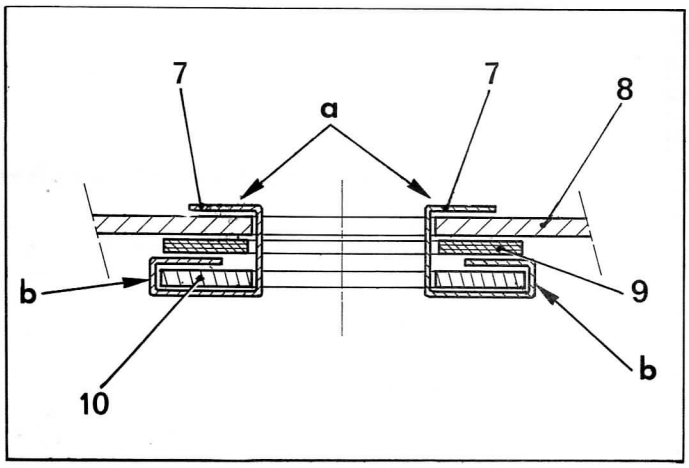
REMOVAL.

1. Remove the spare wheel.
2. On the gearbox :
   - Remove the pin (4).
   - Separate the tie-rod (5) from the lever ball joint (3).
3. On the central panel :
   - Remove the bolts (1) holding the casing to the panel.
   - Pull on the lever (2) in order to remove the pin (7) and the spindle (8).

   Disconnect the tie-rod (5) from the lever (2).
   NOTE : The plate holding the casing remains in the central panel.
   To remove it, it is necessary to remove the panel.
4. Release the tie-rod (5) from the front.

FITTING.

5. **Prepare the plate holding the casing on the panel :**
   To facilitate positioning the casing, proceed as follows :
   a) Cut two strips (9) 10 mm wide and 40 mm long from 0.5 mm steel sheet.
   b) Bend the end « b » of each strip back over a length of about 10 mm.
   c) Through the hole in the panel, fit the lower seal (9) and the plate (10) holding the casing under the panel plate (8).
   Fit the bent back end « b » of each strip under the plate (10) as shown on the drawing.
   Bend the other end « a » over the panel plate (8) so as to hold the plate (10) and the seal (9) against the panel.
6. **Fit the tie-rod :**
   Place the rubber dust cover over the tie-rod.
   Fit the tie-rod into the panel from the front.
   (engine compartment).



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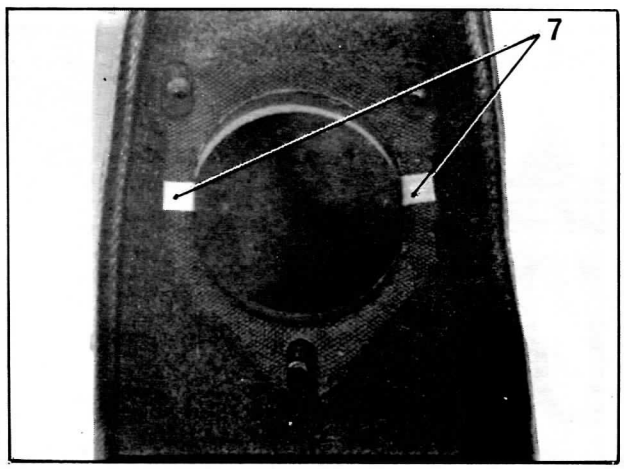

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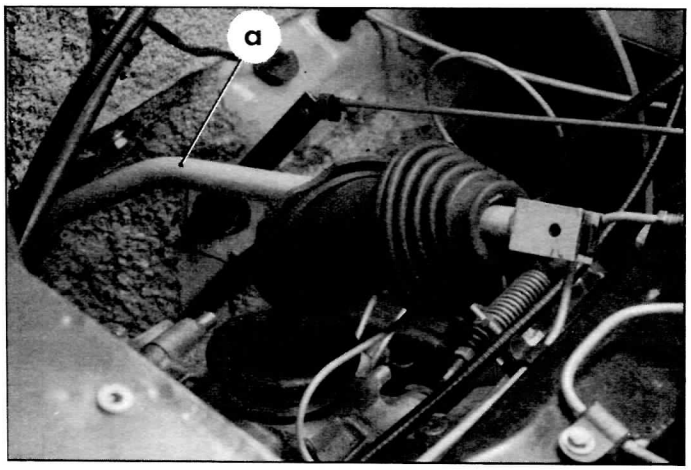

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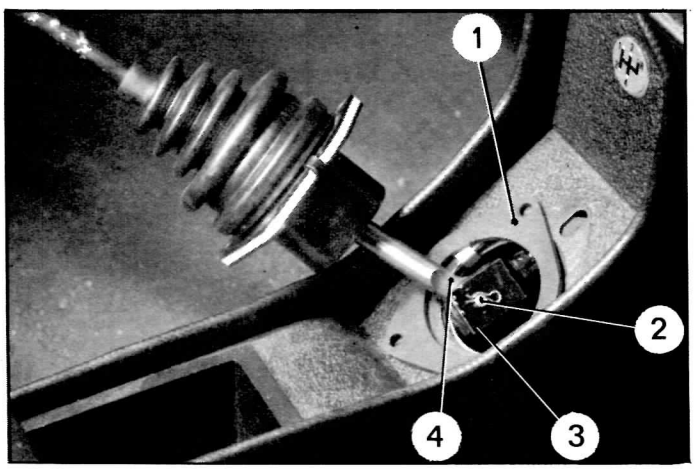

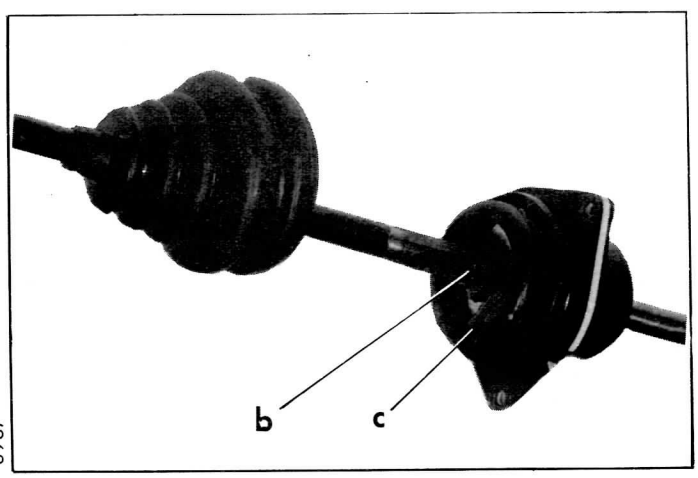

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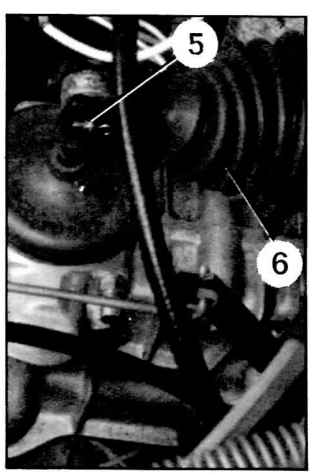

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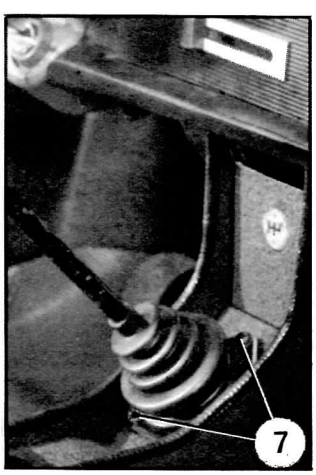


8872

7. Connect the tie-rod to the levers :

Check that the curved part « a » of the tie-rod faces upwards.

Console Side :

Fit the rubber seal (1) to the console.
Engage the ball joint of the lever (4) into the yoke of the tie-rod (3).

a) *First fitting :*
Fit the spindle (2) and the pin.

b) *Second fitting :*
Fit the spindle, the flexible washer and the NYLSTOP nut.

NOTE : The assembly must be free to move, but without clearance.

WARNING : *The reverse gear stop lug « b » must face to the right (on levers on which they are fitted).*

Gearbox Side :

Fit the yoke of the tie-rod (3) into the ball joint of the selector fork shaft operating lever.

a) *First fitting :*
Fit the spindle (5) and the pin.

b) *Second fitting :*
Fit the spindle, the flexible washer and the NYLSTOP nut.
NOTE : The assembly must be free to move but without clearance.

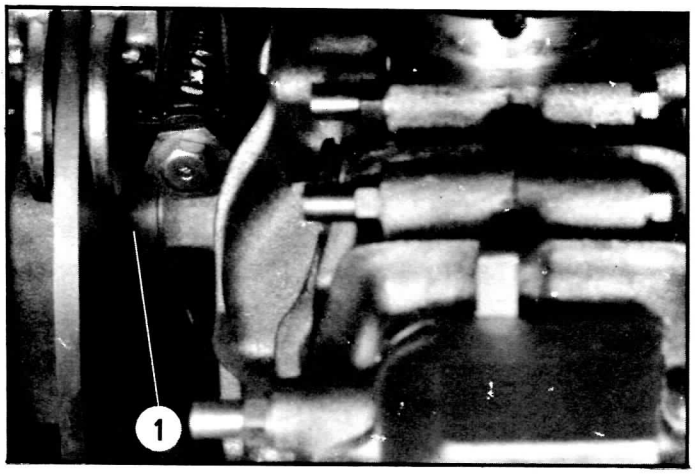
Insert the dust cover (6) into its housing behind the dashboard.

8. Fit the gear lever/casing assembly onto the console :

Turn the flat part « c » of the casing to the right-hand side (reverse gear stop side).
Insert the casing into its housing on the console.
Tighten the bolts (7).
Fit the dust cover onto the casing.
Check that when second gear is selected, the gear lever does not touch the casing or the driver's seat.

9. Fit the spare wheel.

REMOVING AND FITTING A GEARBOX DRIVE OUTLET SHAFT
(or a bearing or a seal)



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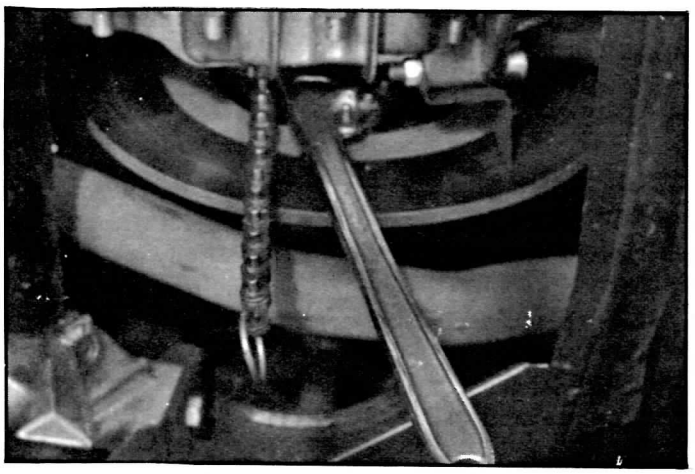
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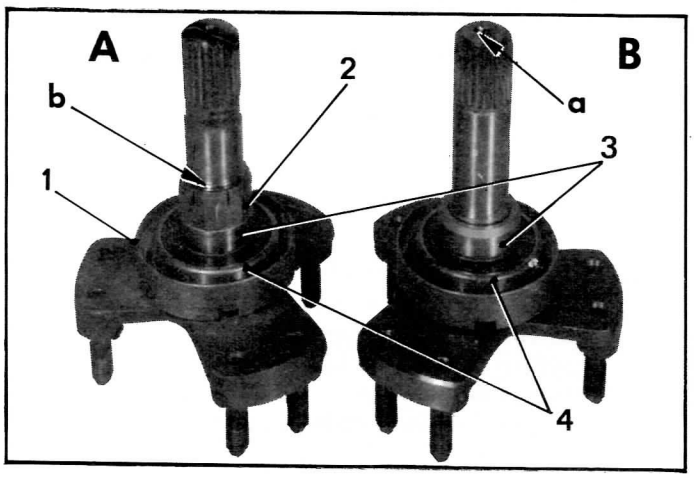

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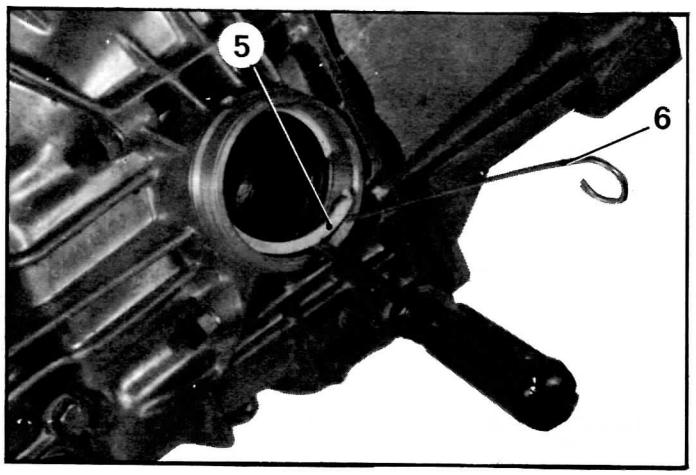


11266

Supplement N° 1 to Manual 810-2 (CORR)

REMOVAL.

1. Remove the spare wheel.

2. Raise the front of the vehicle with the wheels off the ground.

3. Disconnect the lead from the negative terminal of the battery.

4. Remove the brake disc.

5. From underneath the vehicle, slacken the ring nut (1) from the gearbox bearing (chain wrench).

6. Free the gearbox drive outlet shaft.

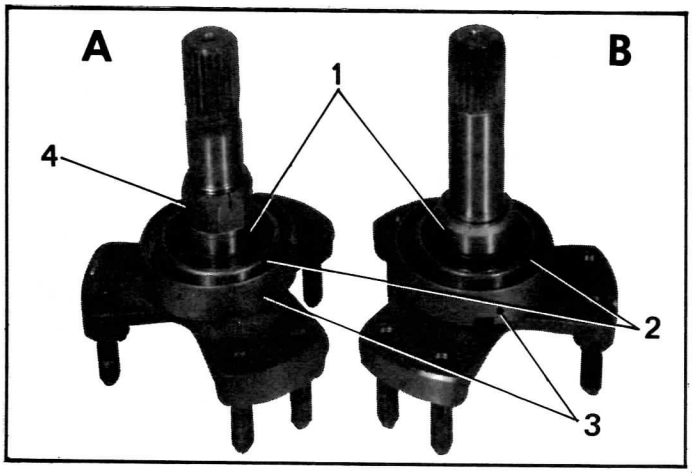
7. **Remove the sealing ring from the gearbox housing :**

   a) *Gearboxes fitted with drive outlet shafts with a nut (type A fitting).*
   Free the ring by means of a screwdriver bearing on the collar of the gearbox bearing.

   b) *Gearboxes fitted with drive outlet shafts without nut (type B fitting).*
   Remove the circlip (5).
   Free the circlip from its recess after lifting it, using the tip of a screwdriver. Hold it with a hook (6) to complete the removal.
   Press the sealing ring against the drive outlet casing and release it by hand.

8. Strip the gearbox drive outlet shaft :
   Grease the visible part « b » of the threads *(type A fitting)* and remove the nut (4) : for this purpose use a universal extractor, bearing underneath the ring nut (1), as close as possible to the shaft.

   NOTE : The extractor should have a central screw fitted with a ball to avoid damaging the end « a » of the shaft.



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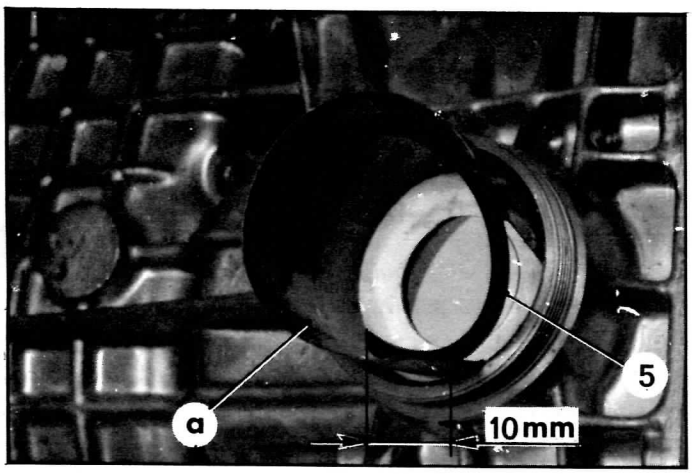

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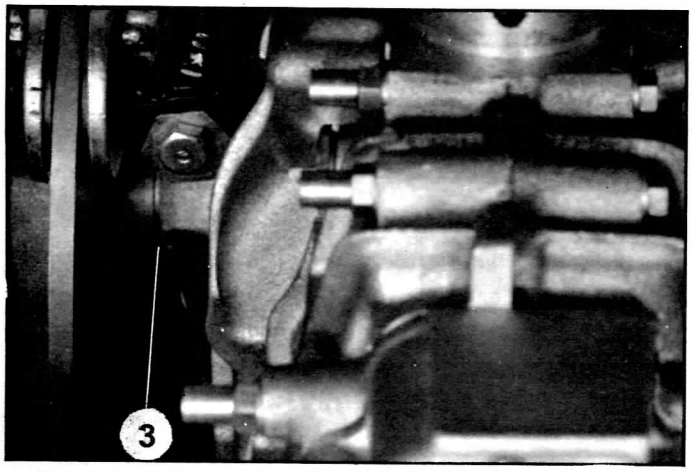


8611

FITTING.

9. Prepare the shaft :
Fit :
- the ring-nut (3),
- the seal bearing (2) (with a press, using a tube of 26 mm internal diameter, 34 mm outside diameter and 120 mm long.
- the ring (1).

IMPORTANT : The ring (1) (on which the seal bears) must show no trace of scratching or impact, otherwise it must be replaced.
Fit the nut (4) *(type A fitting)* and tighten it to 140 to 160 m.N (14 to 16 m.kg) (101 to 116 ft.Ib)

Fit the gearbox drive outlet shaft :
Grease the bore of the gearbox housing and the area around the seal.
a) *Gearboxes without bearing circlip :*
Fit the seal using the mandrel in the kit 3184-T.
b) *Gearboxes with bearing circlip :*
Position the seal using a tube of external diameter 51 mm or a 36 mm socket wrench.
Push the seal as far as the circlip recess.
Insert the circlip (5) into the bore using a piece of foil « a » with the following dimensions :
- length = 150 mm
- width = 50 mm
- thickness = 0.2 mm

Use the tube or the socket wrench for positioning it.
Remove the foil and finish inserting the circlip and the seal by means of the mandrel used for gearboxes without circlips.
NOTE : For facilitating removal, the nose of the circlip should be 10 mm from the drain hole.

10 . Fit the complete shaft :
Engage the splines of the shaft in those of the planet gear. Strike lightly with a mallet to help position the bearing (2).
Tighten the ring-nut (3) to 60 to 100 m.N (6 to 10 m.kg) (43 to 72 ft.Ib) (chain wrench).
IMPORTANT : *Outlet shaft with nut (type A fitting) : while tightening the ring, do not rotate the shaft (risk of damaging the lip of the seal).*
Lock the ring (3) by peening in the corresponding slot of the housing.

11 . Fit the brake disc.

12 . Check the oil level in the gearbox.

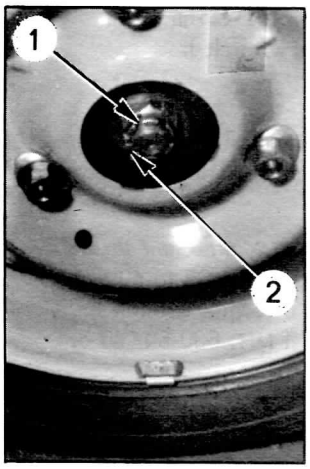
13 . Lower the vehicle to the ground.

14 . Connect the lead to the negative terminal of the battery.

15 . Fit the spare wheel.

REMOVING AND FITTING A COMPLETE DRIVE SHAFT UNIT

8591



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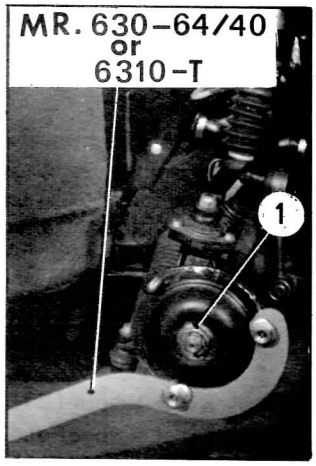

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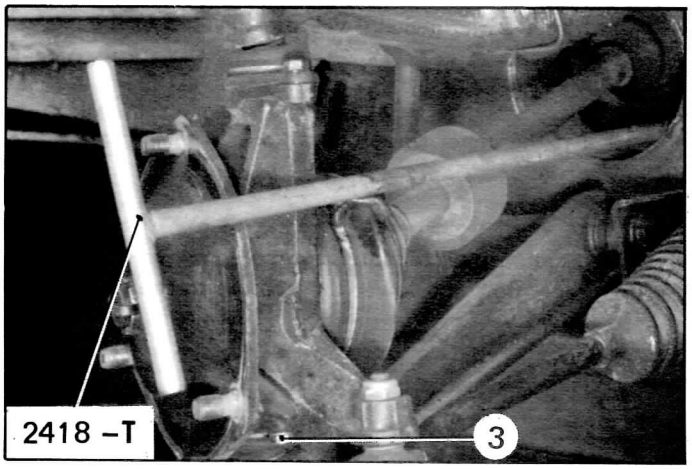

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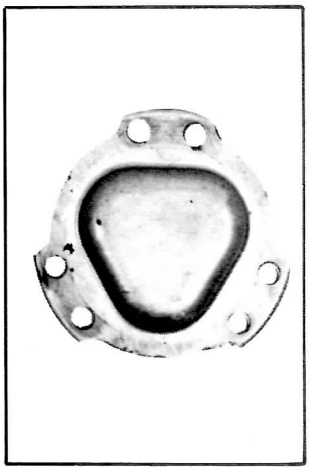

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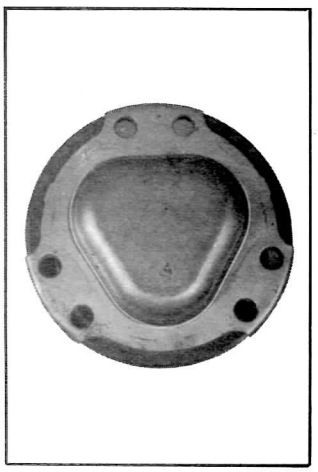

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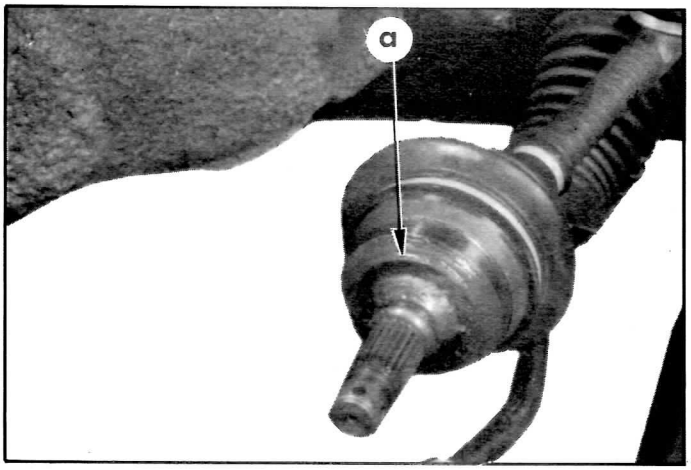


Supplement N° 1 to Manual 810-2 (ADD)

REMOVAL

1. Put the vehicle in the *high position*, to allow a trolley-jack to be positioned (equipped with a beam 2510-T).

2. Remove the following :
   - the hub-cap,
   - the split pin (2),
   - the nut (1).

   Raise the front of the vehicle, and put it on stands.

3. Slacken the pressure release screw on the pressure regulator and set the manual height control lever to the *normal driving position.*

4. Remove the wheel.
   NOTE : With the wheel removed, it is possible to remove nut (1) by holding the hub using tool 6310-T or lever MR. 630-64/ 40.

5. Remove the nuts securing the gearbox drive outlet shaft (Tool 2418-T).

6. Remove the nuts (3) securing the lower ball joint.

7. **Remove the drive-shaft :**

   a) *First type of drive-shaft :*
   Withdraw the extremity of the drive-shaft from the hub by pulling the hub out.
   Remove the drive-shaft.

   b) *Second type of drive-shaft :*
   Remove the upper wheelarm stop (corresponding to the « low » position).
   Withdraw the extremity of the drive-shaft from the hub by pulling the hub out.
   Raise the upper wheelarm as far as it will go, and withdraw the drive-shaft.

   WARNING : *Take care not the disengage the tri-axe balls when removing the drive-shaft.*

FITTING

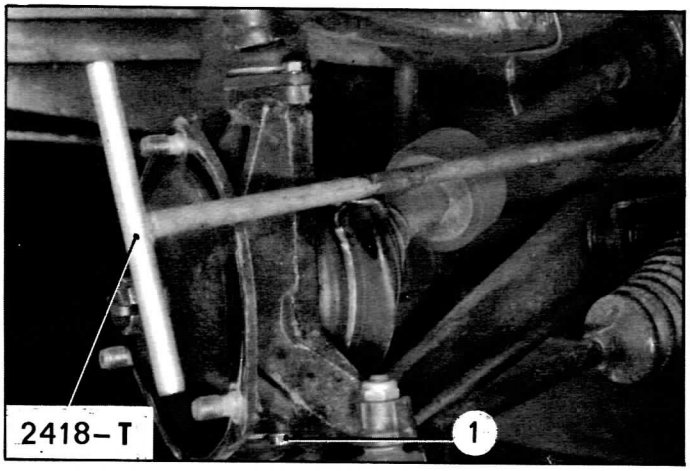
WARNING : Before fitting make sure the tri-axe balls *are not disengaged.*

8. **Fit the drive-shaft :**

   a) *Second type of drive-shaft only :*
   Raise the upper wheelarm as far as it will go.

   Position the drive-shaft at the gearbox outlet.
   Insert the extremity of the drive-shaft into the hub (grease the face of ring-seal « a »).

11 846



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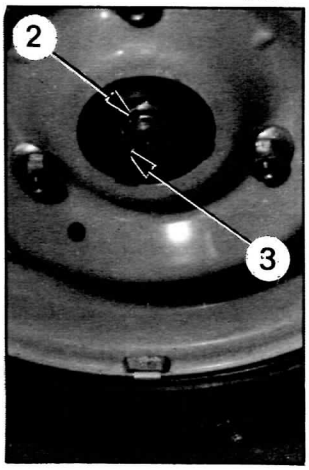

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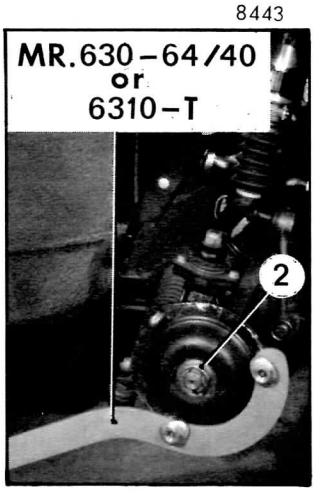


9. Couple the lower ball-joint. Tighten nuts (1) (contact washer) to 18 m.N (1.8 m.kg) (13 ft.Ib) (Use a torque wrench).

10. Fit and tighten the nuts and bolts at the gear-box outlet to 50 m.N (5 m.kg) (36 ft.Ib).

11. Fit and tighten nut (2) *(with face and threads greased)* from 350 to 400 m.N (35 to 40 m.kg) (253 to 290 ft.Ib) (Use a torque wrench).
Hold the hub by using tool MR. 630-64/ 40 or 6310-T.
Fit split pin (3).
Fit the wheel and the hub-cap.

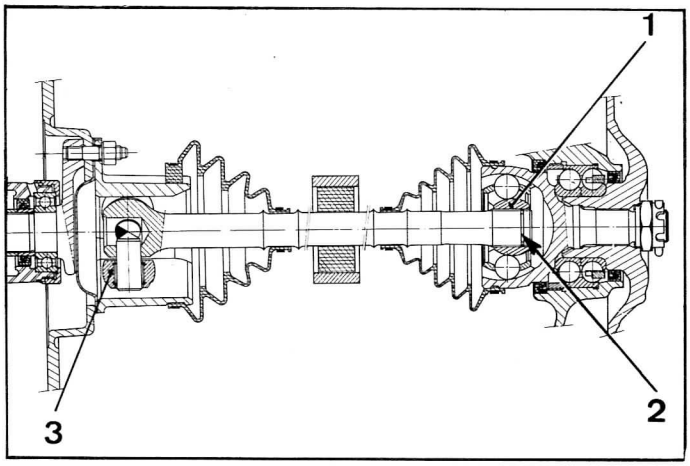
NOTE : The nut (2) may be tightened with the wheel fitted and the vehicle lowered to the ground.

12. Fit the upper wheelarm stop *(second type of drive-shaft)*.

13. Tighten the pressure release screw on the pressure regulator, and lower the vehicle to the ground.

REPLACING THE PROTECTIVE RUBBER SLEEVES

G.37-1a



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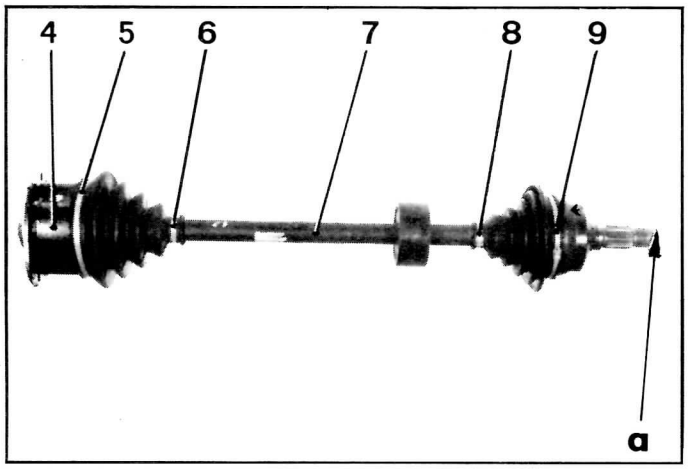
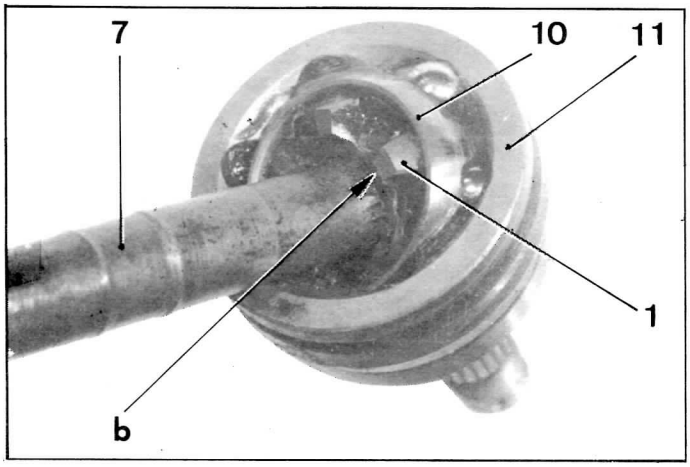


Supplement N° 1 to Manual 810-2 (ADD)



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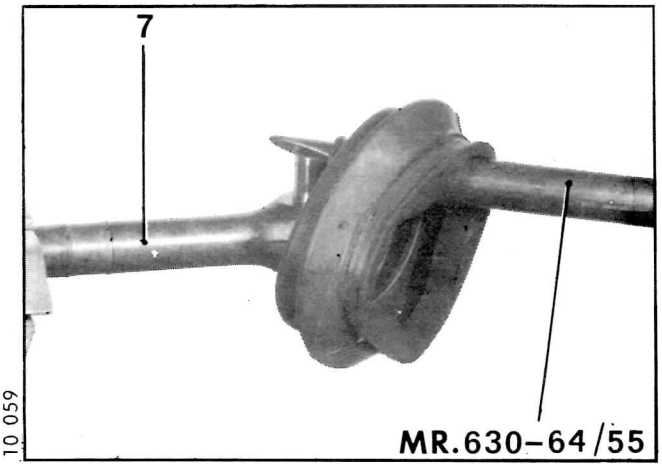

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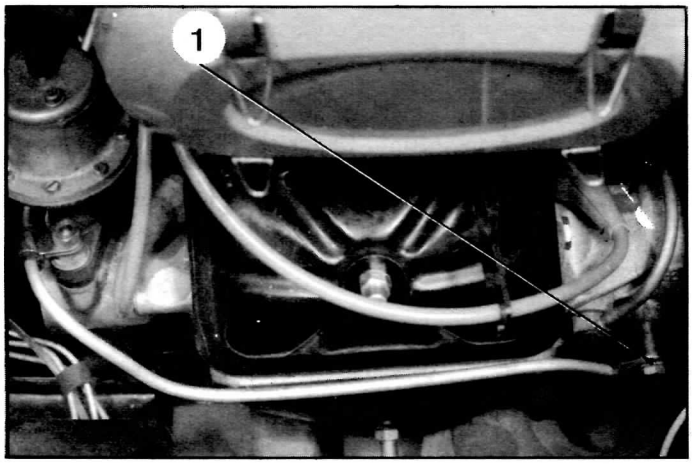
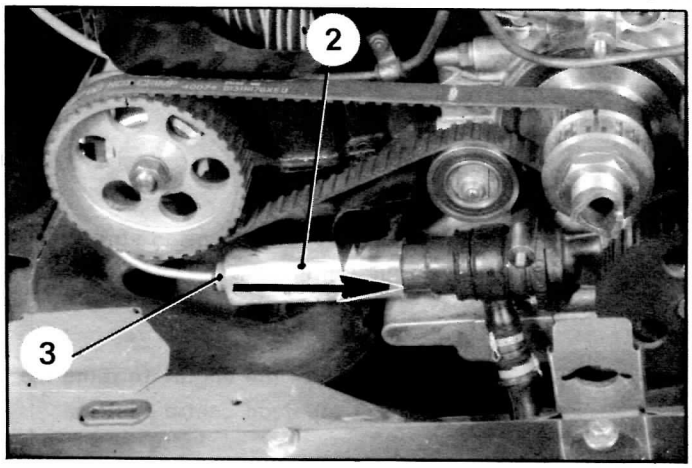
1. **Remove the drive-shaft.**
2. Hold the drive shaft in a vice using soft-jaws.
3. **Replace the ball-joint protective sleeve.**
   a) Remove hose clips (8) and (9) and withdraw the sleeve.
   b) Withdraw the ball-joint unit from the shaft. Use for this purpose a tool with a flat blunt extremity. Apply the tool to the extremity of the central claw (1) at « b », as close as possible to the shaft (7) : tap the tool until the unit is completely disengaged.
   WARNING : *Never apply any force to the ball-cage (10) or to the body of the joint (11).*
   c) Remove seal (2) from the extremity of the shaft (7). Remove the sleeve.
   d) Carefully clean the inside of the joint. Blow through with compressed air.
   WARNING : *Never try to dismantle the joint.*
   Fill the joint with grease (TOTAL MULTIS MS).
   e) Fit the new sleeve onto the shaft (7). Fit a *new seal (2).*
   f) Engage the central claw (1) onto the extremity of the shaft (7) using a screwdriver, compress the seal (2) to allow it to be fitted in the claw. Position the joint on the shaft by tapping at «a».
   g) Fill the sleeve with approx. 80 g (3 oz) of grease (TOTAL MULTIS MS). Fit the hose clips (8) and (9).
4. **Replace the tri-axe protective sleeve :**
   a) Remove the ligarex clips (5) and (6), and withdraw the drive housing (4), the ball joints (3) (taking care not to lose the needles). Remove the sleeve.
   b) Carefully clean all the components.
   c) Fit the new sleeve : first of all, engage it over one of the arms of the tri-axe. Then, pass the sleeve over the other two arms, by widening it using tool MR. 630-64/55 (see figure) (grease both the tool and the sleeve).
   d) Smear the needles and the ball-joints with grease (TOTAL MULTIS MS). Position them on the tri-axe.
   e) Position the drive housing and its sleeve. Fit the ligarex clips (5) and (6).
5. **Fit the drive-shaft.**

REMOVING AND FITTING A HIGH PRESSURE PUMP

8776



8791



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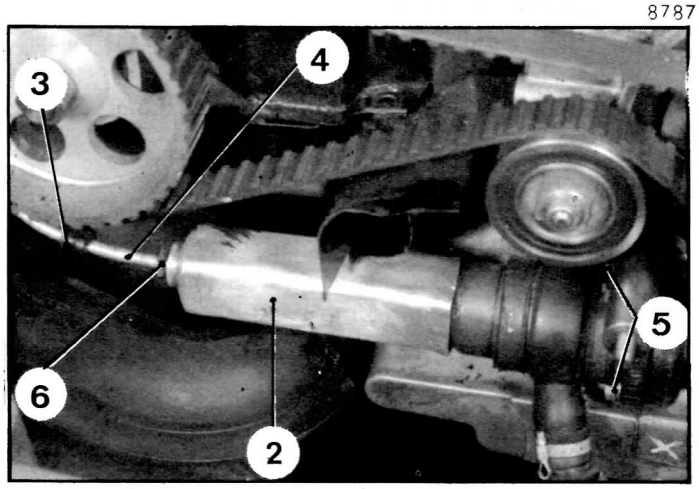

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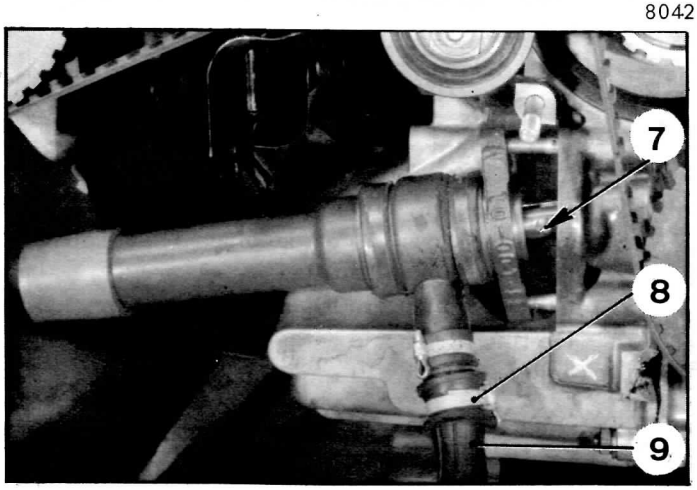


REMOVAL.

1. Remove the engine cooling air collector.

2. Slacken the pressure regulator bleed screw.

3. Remove the bracket (1) holding the pump delivery pipe.

4. Free the ring (3) and push the protective cover (2) towards the engine (direction of the arrow).

5. Slacken the union screw (6) and release the tube (4) without bending it.

6. Remove the pump :
Remove the nuts (5).
Gently pull the pump until the spindle (7) can be removed.

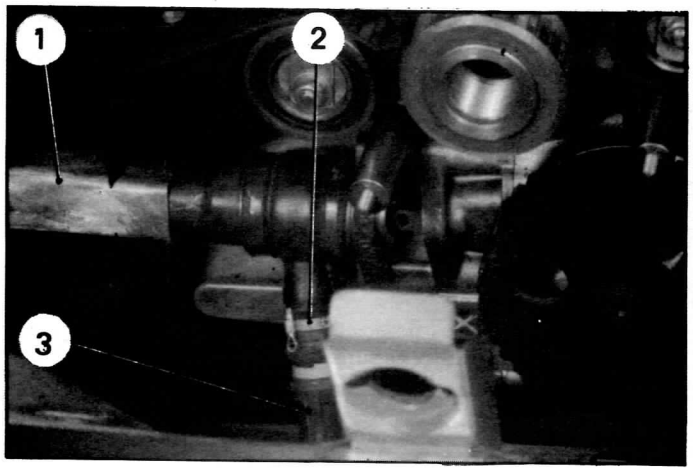
NOTE : If necessary, turn the engine to bring the driving rod to its top dead centre position.

7. Disconnect the flexible intake pipe :
- Slacken the hose clip (8),
- Free the flexible pipe (9) (tool 3903-T).

8. If necessary, remove the protective cover (2).

Supplement N° 1 to Manual 810-2 (CORR)

8796



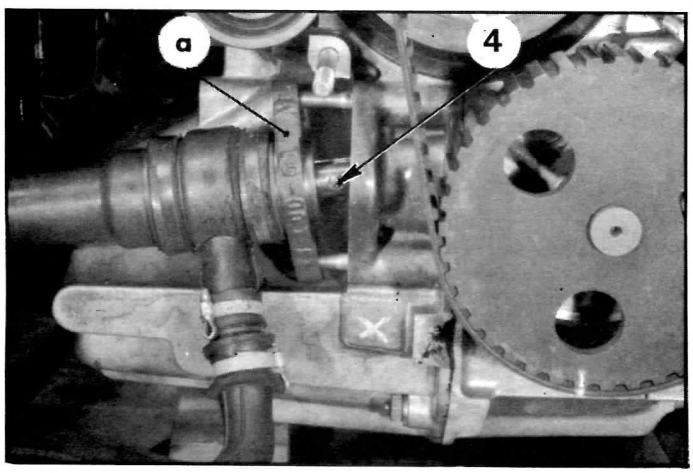
FITTING.

NOTE : During handling, hold the pump piston to prevent it from falling. Check that the bearing faces of pump and casing are clean. Change the O-ring seal between the pump and the engine casing.

9. Connect up the flexible intake pipe :
Fit the flexible pipe (3) to the connection.
Fit and tighten the hose clip (2).

10. If necessary, position the protective cover (1) on the pump body.

8042



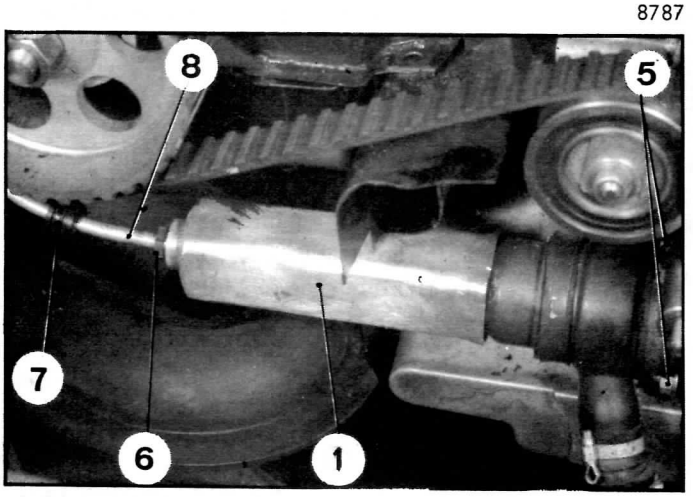
11. Place the pump on the lower mounting stud.
- Connect up the piston drive rod and fit the spindle (4).

NOTE : If necessary, turn the engine to bring the connecting rod to its top dead centre position.

CAUTION : Ensure :
- that the piston is correctly placed in the pump cylinder,
- that the O-ring seal is in place in the groove on the engine casing.

Fit the pump completely over the mounting studs (it should be possible to bring the base plate «a» up to the engine casing without forcing).
Tighten the nuts (5) to 13 to 14 m.N (1.3 to 1.4 m.kg) (9 1/2 to 10 ft.lb) (contact washer)

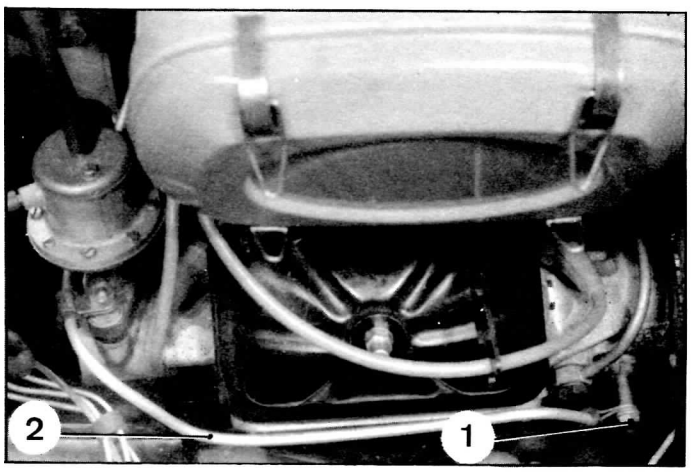
8787



12. Connect up the pump delivery pipe (8) (new seal).
Gently tighten the union screw (6).

13. Fit the ring (1) to the protective cover (2).
- Move the cover (1) on the pipe (8) so that the ring (7) can be fitted.
- Replace the cover (1) on the pump body ; the ring (7) should be in contact with the union screw (6).

8776



14. Fit the bracket (1) holding the pipe (2) on the cylinder head.

    Tighten the nut (contact washer).

15. Fit the air intake collector.

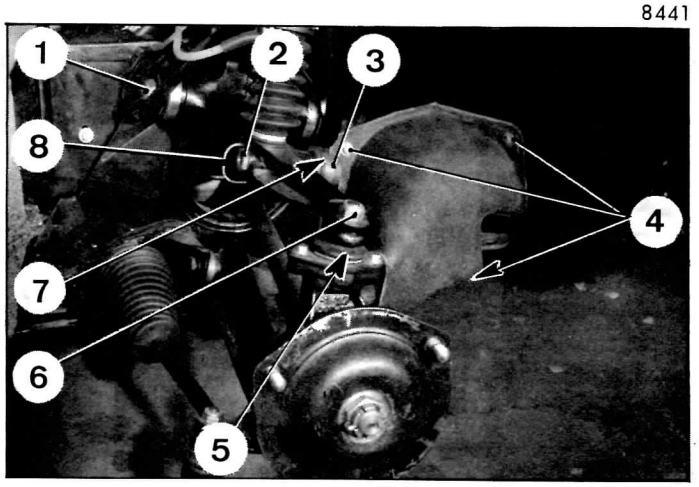
16. Prime the high pressure pump :

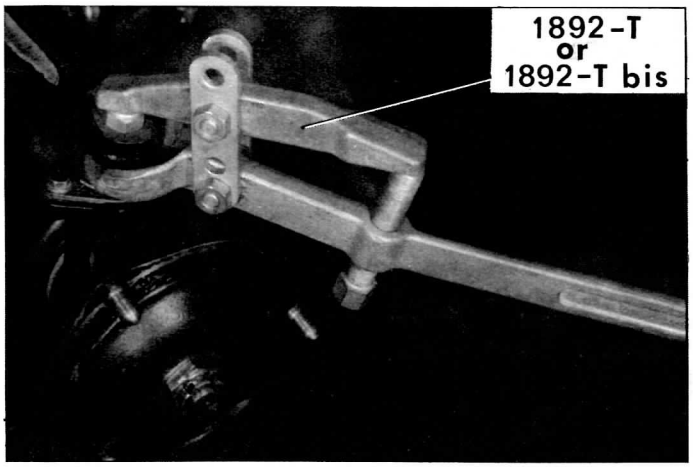
    - Free the pipe from the hydraulic tank,
    - Fill the high pressure pump with L.H.M liquid through the pipe,
    - *Start the engine with the pressure regulator bleed screw slackened.*
    - Rapidly replace the pipe in the tank.

17. Tighten the pressure regulator bleed-screw.

I. REMOVING AND FITTING AN UPPER WHEELARM

8441





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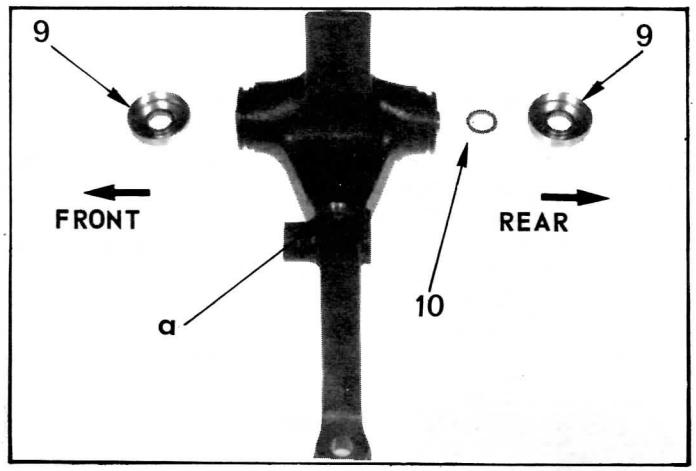


REMOVAL.

1. **Raise the vehicle :**
   Place the vehicle *in the high position* so that the jack can be pushed underneath.
   Support the front of the vehicle with *the wheels off the ground.*
2. **Release the pressure in the circuits :**
   Slacken the pressure regulator bleed screw.
   Place the height control *in the normal position.*
   Wait until the rear suspension has stabilized and then set the lever *to the high position.*
3. Remove the wheel.
   If the work is to be done on the right-hand side, remove the three bolts (4) and the height corrector protection plate.
4. **Disconnect the anti-roll bar :**
   Slacken the bush nut (2) by a few threads and tap its end *sharply* to free the ball joint (3).
5. Remove the pin (8).
6. **Disconnect the upper ball joint :**
   Slacken the nut (6) by a few threads.
   Release the ball joint using the extractor 1892-T.
   Remove the nut (6).
7. **Remove the arm :**
   - Remove the nut (1).
   - Drive out the swivel pin.
   - Free the arm.

FITTING.

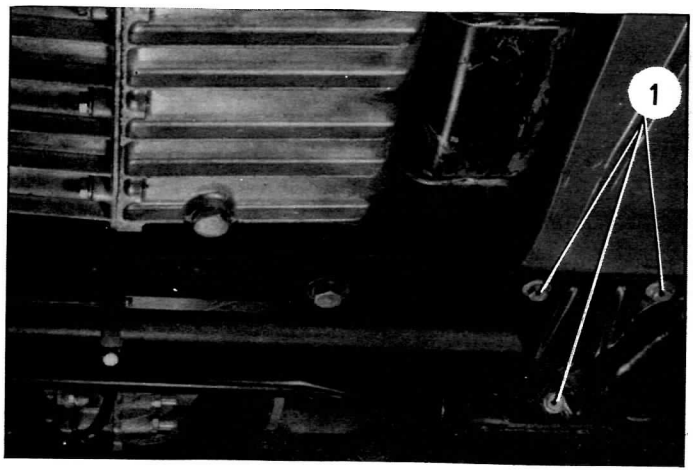
NOTE : The left-hand and right-hand arms are different. The boss « a » must face forward when the arm is fitted to the vehicle.

8. **Fit the arm :**
   Place the shim washer (10) at the opposite side to the boss « a » (stick it with grease).
   Fit the protective caps (9).
   Offer up the arm and engage the pin.
   Fit a new NYLSTOP nut.
   Tighten to 59 to 65 m.N (5.9 to 6.5 m.kg) (42 1/2 to 47 ft.lb) (torque wrench)
   Check the swivelling of the arm (no play).
9. **Connect the upper ball joint :**
   Check the rubber seal (5). If it is in poor condition, replace the ball joint assembly.
   Degrease the tail of the ball joint and its housing using a cloth soaked in solvent.
   Fit a new NYLSTOP nut and tighten it to 27 to 30 m.N (19 1/2 to 21 1/2 ft.lb) (torque wrench)
10. **Couple up the anti-roll bar :**
    Check the rubber seal (7). If it is not in good condition, replace the linkage rod.
    Tighten the bush nut (1) to 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb) (torque wrench)
11. Fit the pin (8).
12. *Right-hand side :* Fit the protective cover to the height corrector.
13. **Fit the wheel.**
    Lower the vehicle to the ground.

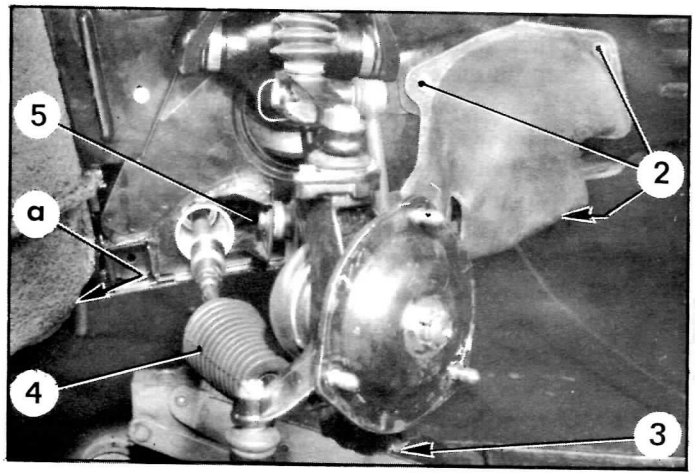
Supplement N° 1 to Manual 810-2 (CORR)

II. REMOVING AND FITTING A LOWER WHEELARM

8536



8455



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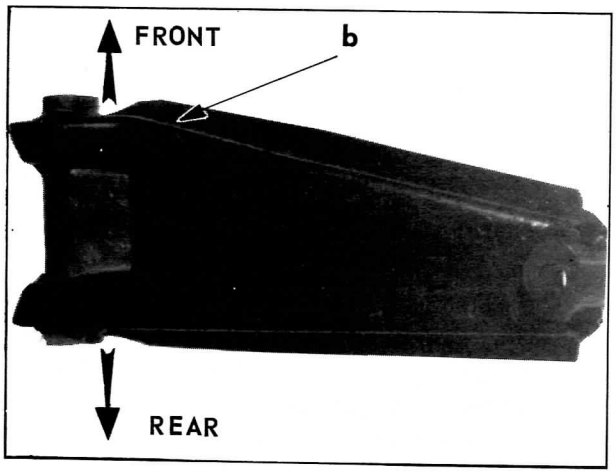


REMOVAL

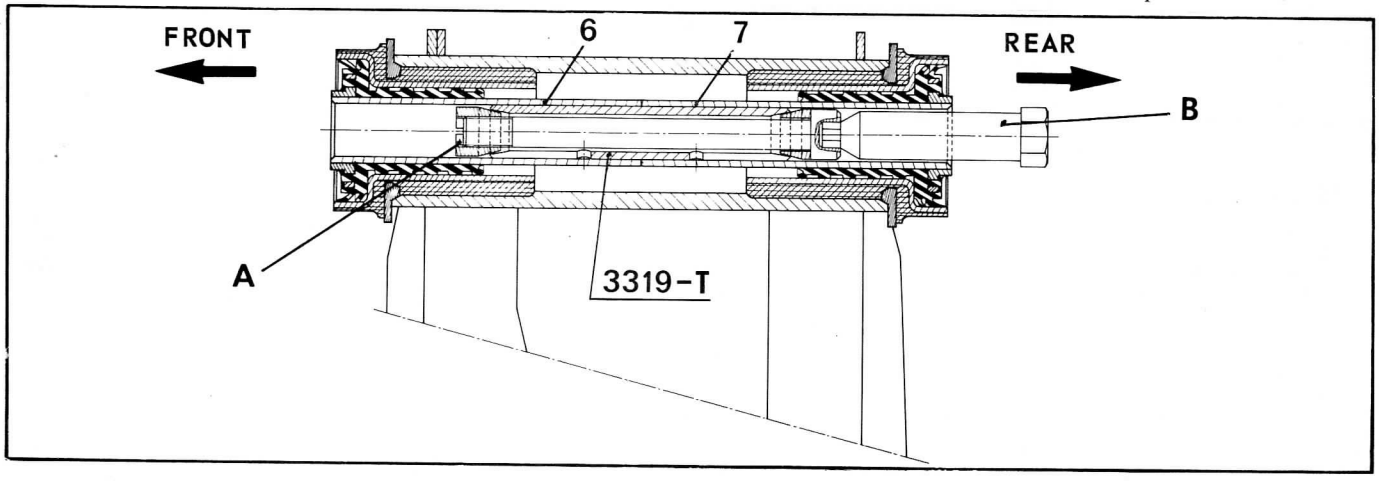
1. **Raise the vehicle.**
   Put the vehicle in *high position* to allow for the jack to be underneath.
   Raise the front of the vehicle *with the wheels off the ground.*
2. **Release the pressure in the circuits :**
   Slacken the pressure regulator bleed screw.
   Place the manual height control lever in the *normal position.*
   Wait until the rear suspension has stabilized, and then put the manual height control lever into the *high position.*
3. Remove the wheel.
4. Remove the three bolts (1) and the steel plate protecting the anti-roll bar bearing.
5. If the work is to be done on the right-hand side, remove the bolts (2) and the height corrector protective plate.
6. **Disconnect the lower ball joint :**
   Slacken the nut (3) by a few turns.
   Unstick the ball joint using extractor 1892-T or 1892-T bis.
   Remove the nut (3).
7. Slide away the sleeves (4).
8. **Remove the wheelarm :**
   Remove the nut and then free pin (5). If necessary slightly bend the wheelarch at « a ».
   Withdraw the wheelarm horizontally and then upwards.

FITTING

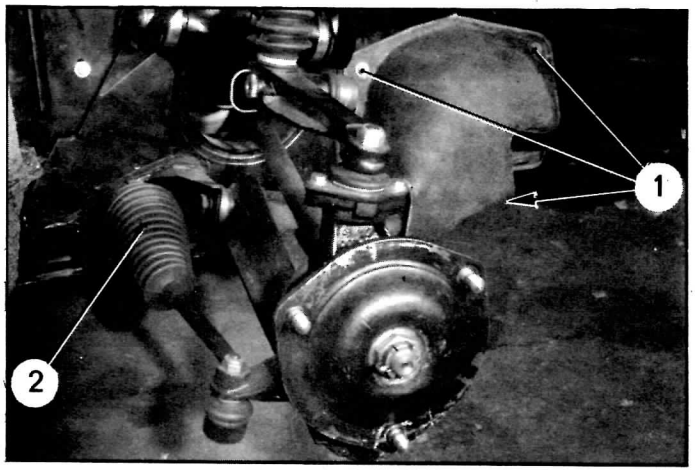
NOTE : The left-hand and right-hand wheelarms are different. The edge « b » must face forward when the arm is on the vehicle.

9. **Fit the wheelarm :**
   a) *First type of wheelarm :*
   Position the wheelarm, fit the shaft and fit a **new** NYLSTOP nut.
   Tighten to 80 to 88 m.N (8 to 8.8 m.kg) (58 to 64 ft.lb) *(use a torque wrench)*
   b) *Wheelarm of the type equipped with « fluid-bloc» bushes enclosed in rubber.*
   - Place the expandable section of tool 3319-T in the wheelarm *(see the figure for the positioning of screw A)*
   - Compress the wheelarm in a vice to bring into contact tubes (6) and (7).
   - Tighten the expandable section using Section B of tool 3319-T.
   - Position the wheelarm.
   - Slacken the expandable section and drive it out.
   - Fit the shaft with a **new** NYLSTOP nut.
     Tighten to 80 to 88 m.n (8 to 8.8 m.kg) (58 to 64 ft.lb) *(use a torque wrench)*

G.41-8



8441



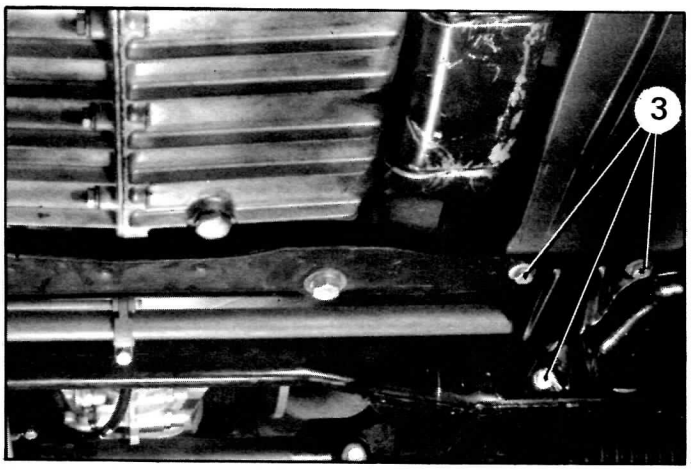
10. Couple the lower ball joint :

Check the rubber seal. If it is in bad condition, replace the ball unit.
Degrease the extremity of the ball and its housing using a piece of material dipped in solvent.
Fit a **new** NYLSTOP nut.
Tighten to 27 to 30 m.N (2.7 to 3 m.kg) (19 1/2 to 22 ft.lb) *(use a torque wrench).*

11. Fit the sealing sleeve (2) :
(Rubber ring)

With the steering in the « straight ahead » position, the length of the sleeve should be 155 ± 3 mm (6.1 ± 0.1 in).

8536



12. Fit the anti-roll bar bearing cover and tighten screws (3) (contact washers).

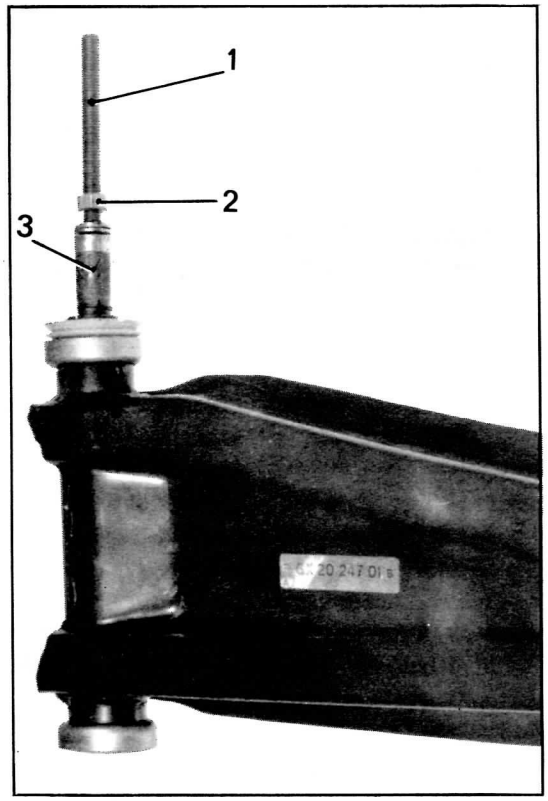
13. If the work is being carried out on the right-hand side, fit the height corrector protective plate. Tighten screws (1) (contact washer).

14. Fit the wheel.

15. Lower the vehicle to the ground.

III. REPLACING THE « FLUIDBLOC » BUSHES OF A LOWER WHEELARM

10 539



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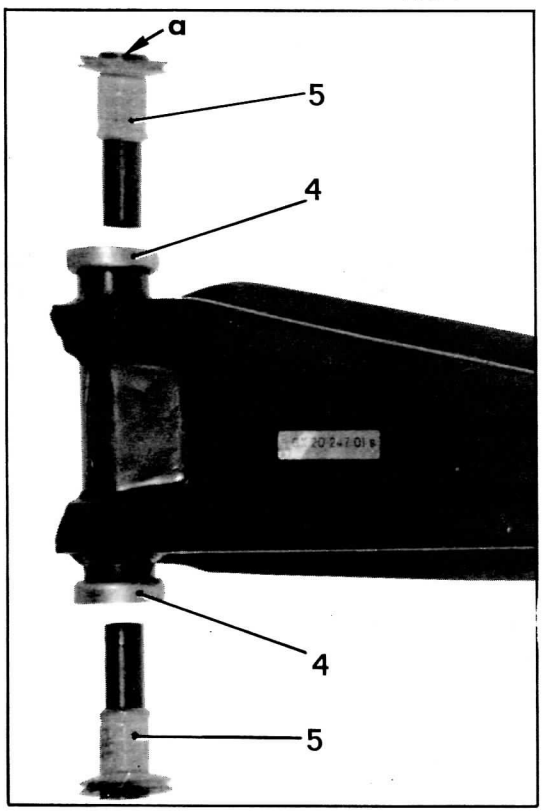


1. Remove the wheelarm :

2. Remove the « fluidbloc » bushes :

a) Clamp the arm in a vice (using soft jaws).

NOTE : Use a 8 mm (or 5/16 in) Rawlpin (3) (or similar type) to enable the bushes to be removed more easily.
Fit the pin with a threaded rod (1) and a nut (2).

b) Insert the pin (3) into the bush.
Tighten the nut (2) in order to expand the pin (3) until the bush can be moved.

c) Pull on the rod (1) while rotating the bush until the latter is completely withdrawn.

d) Disengage the pin (3) from the « fluidbloc » bush.

e) Proceed in the same way for removing the second bush.

3. Clean the arm.

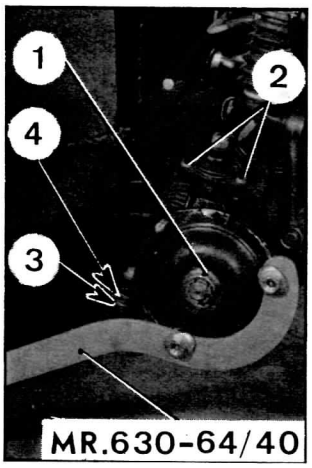
4. Grease the metal cups (4) and the thrust face of each « fluidbloc » bush (use TOTAL MULTIS grease).

5. Fit the new « fluidbloc » bushes.
Complete the fitting by tapping on side « a » of each bush, using a mallet.

6. Fit the wheelarm onto the vehicle.

I. REMOVING AND FITTING A COMPLETE SWIVEL OR BALL JOINT (UPPER OR LOWER)

8443



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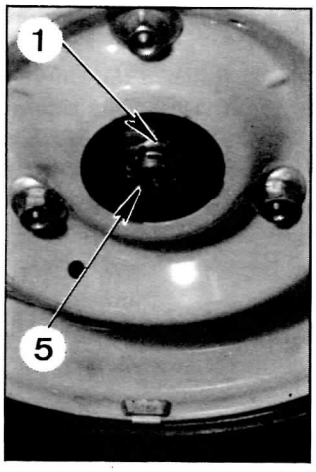
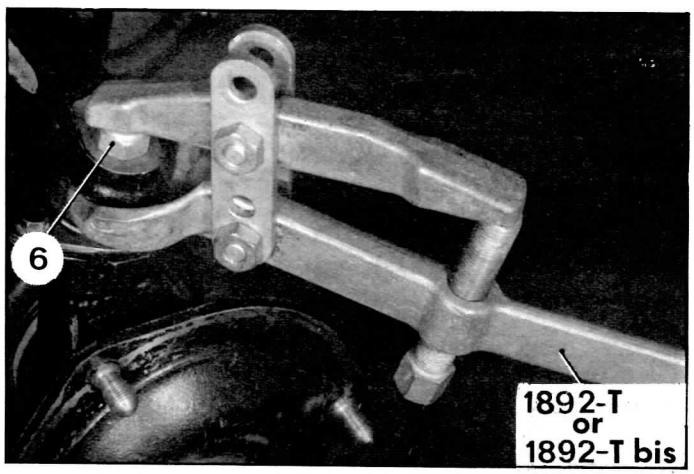
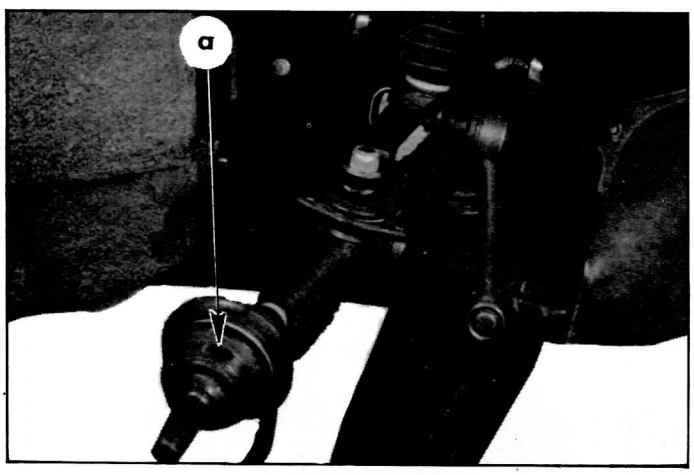




8444



REMOVAL.

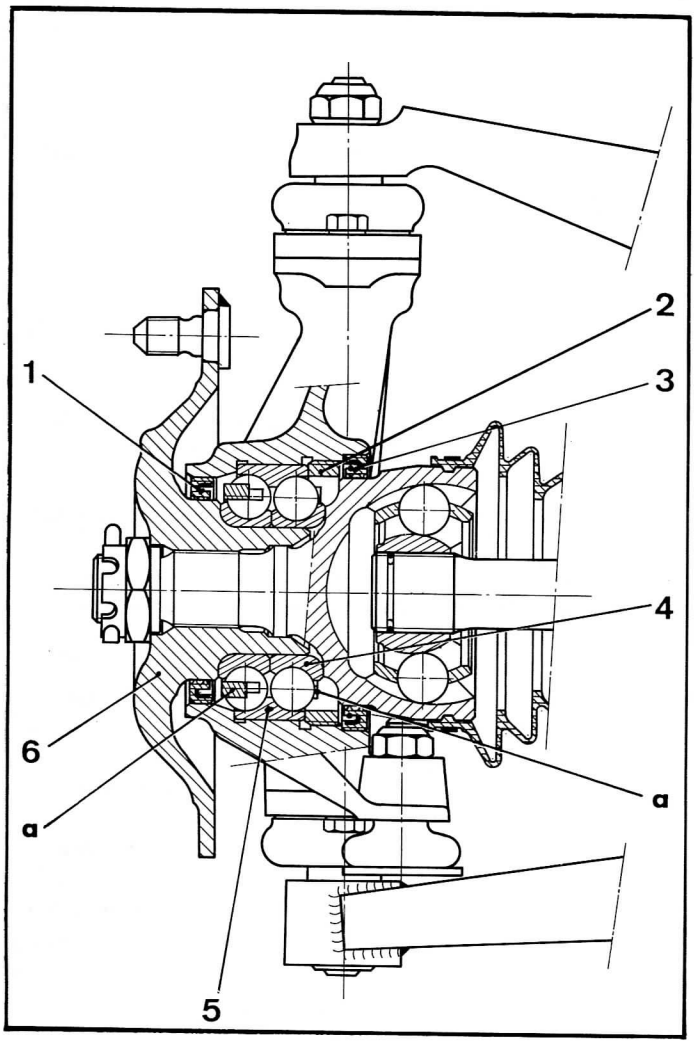
1. Put the vehicle *in the high position* so that the jack can be put underneath.
2. Remove :
   - the hubcap,
   - the split pin (5),
   - the nut (1).
3. Place the front of the vehicle on stands, *wheels free.*
4. Remove the wheel.
   NOTE : When the wheel has been removed, the nut (1) can be slackened using the tool MR. 630-64/40 or tool 6310-T.
5. **Disconnect the steering ball joint (3) from the swivel :**
   Slacken the nut and use the extractor 1892-T.
6. **Remove the upper and lower ball joints (if necessary) :**
   Use the extractor 1892-T (or 1892-T bis).
   Bear on the nut (6) previously slackened by a few turns.
7. **Remove the swivel :**
   Remove the bolts (2) holding the lower and upper ball joints.
   Push back the end of the drive shaft and free the swivel.
   CAUTION : *Do not pull on the drive shaft otherwise the ball joints will come out of the « tri-axe » transmission.*

FITTING.

8. **Fit the lower and upper ball joints :**
   Degrease the ball pin stems and their housings (using a cloth soaked in solvent).
   Replace the NYLSTOP nuts. Tighten them from 27 to 30 m.N (19 1/2 to 22 ft.lb) (torque wrench)
9. **Fit the swivel :**
   Position the swivel and fix the lower ball joint.
   Tighten the bolts (contact washer) to 18.5 m.N (1.8 m.kg) (13 ft.lb) (torque wrench)
10. **Fit the drive shaft :**
    Grease the surface « a » of the seal
    Fit the nut (1).
11. **Fit the upper ball joint :**
    Tighten the bolts (contact washer) to 18.5 m.N (1.8 m.kg) (13 ft.lb) (torque wrench)
12. **Connect up the steering ball joint (3) to the swivel :**
    Check the rubber seal (4). If it is in poor condition replace the track rod assembly.
    Degrease the ball joint stem and its housing (cloth soaked in solvent).
    Replace the NYLSTOP nut and tighten it from 18 to 20 m.N (13 to 14 1/2 ft.lb) (torque wrench)
13. Tighten the nut (1) *(faces and threads greased)* from 350 to 400 m.N (253 to 290 ft.lb) (torque wrench).
    Use tool MR. 630-64/40 or tool 6310-T. Lock the nut with a pin.
    NOTE : The nut (1) may be tightened with the wheel fitted and the vehicle on the ground.
14. Fit the wheel and lower the vehicle to the ground.

Supplement N° 1 to Manual 810-2 (CORR)

II. REMOVING AND BEARING, SEALS OR HUB.



G. 41-1

REMOVAL.

1. **Remove the swivel.**

2. **Remove the sealing ring (3).**

3. **Remove the ring-nut (2) :**
   NOTE : The ring-nut must only be removed if the bearing has to be replaced.
   Using a 4 mm drill, clear the peening locking the ring-nut.
   Fit the central part of the assembly 3321-T fitted with the key 3320-T. Position the bolt A.

4. **Remove the hub (6) :**
   Screw the extractor 1893-T in the place of the ring-nut.

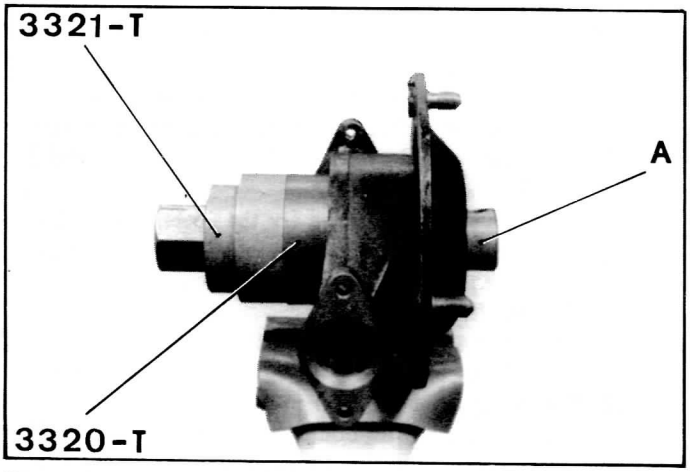
5. **Remove the sealing ring (1).**

6. **Remove the hub bearing.**

FITTING.

7. **Fit the hub bearing :**
   Smear the bearing with grease. Take out the inner race (4) and fit the bearing into the swivel, using a press and the mandrel MR. 630-31/96. The mandrel should bear on the outer race (5). Fit the inner race (4).
   CAUTION : The projecting part « a » of the ball races should face the outside of the bearing (see drawing).

8. **Fit the ring-nut (2) :**
   Use the central part of the assembly 3321-T, fitted with the key 3320-T. Position the bolt A. Tighten the ring-nut from 400 to 500 m.N (40 to 50 m.kg) (290 to 362 ft.lb) (torque wrench) and lock it by two blows with a punch at diametrically opposed points.



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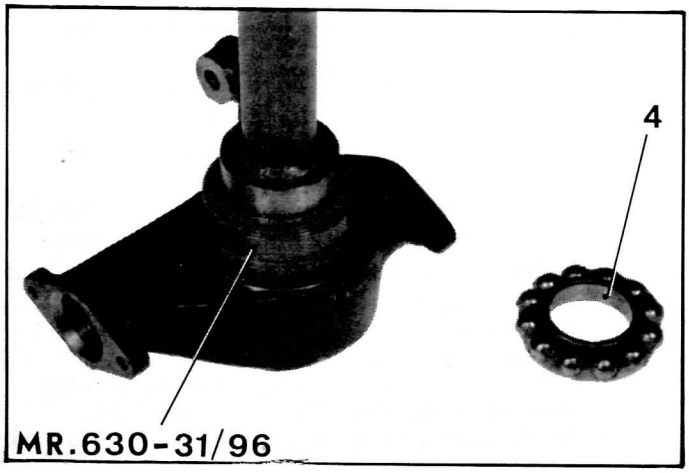

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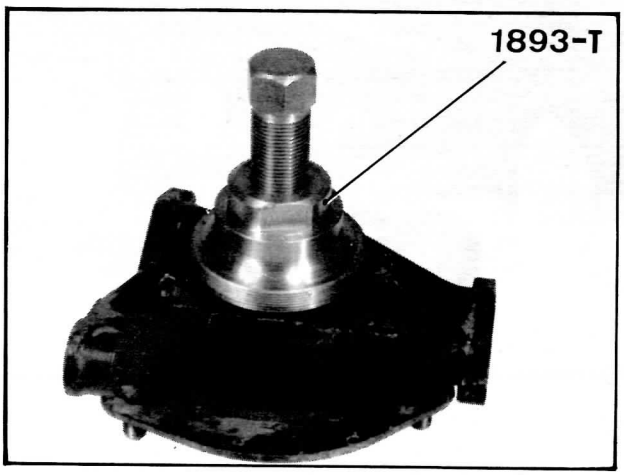

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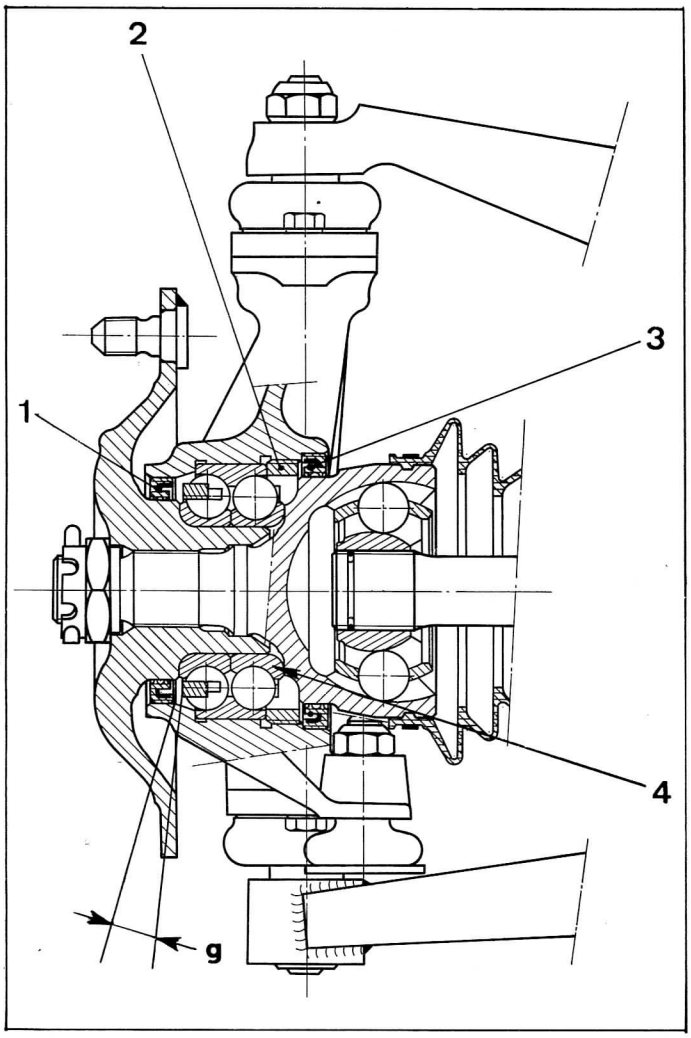
G. 41-1



9. Fit the sealing ring (1) :

Use the mandrel MR. 630-31/97 to give the clearance « g » between the ring and the ball cage..

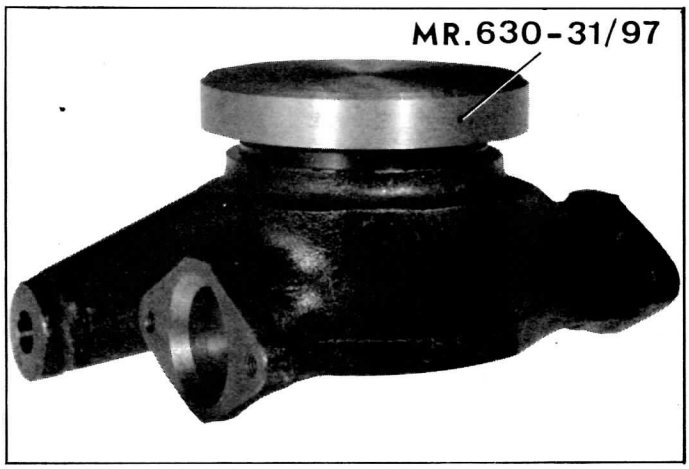
10. Fit the hub :

Grease the inner lip of the ring (1) and where it touches the hub (at « a »).

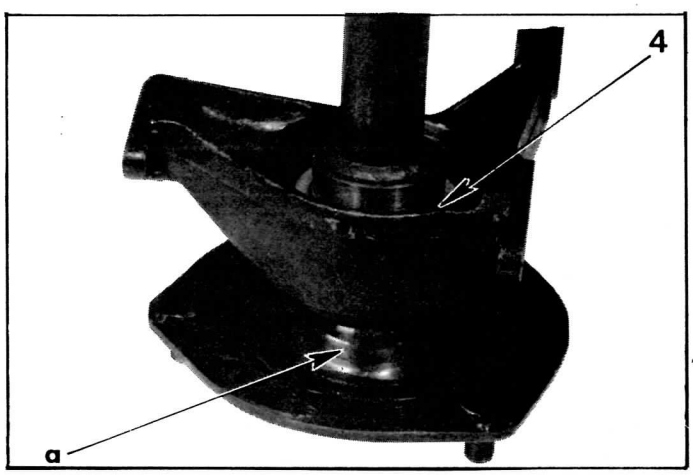
Fit the hub using a press bearing on the *inner ball race (4) of the bearing.*

11. Fit the sealing ring (3) :

Push this ring right home into its housing.



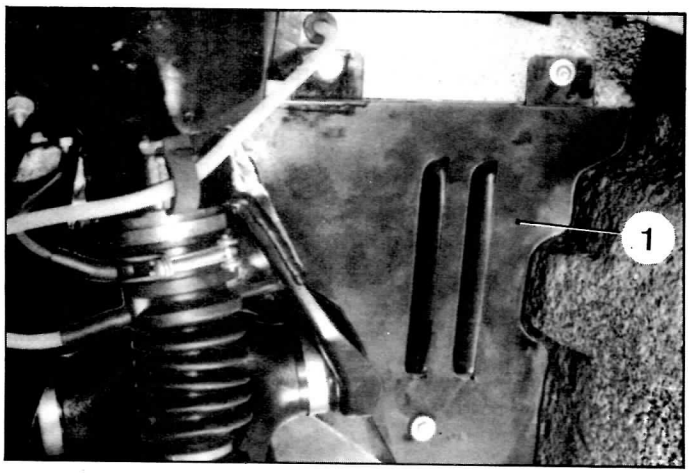
12. Fit the swivel to the vehicle.

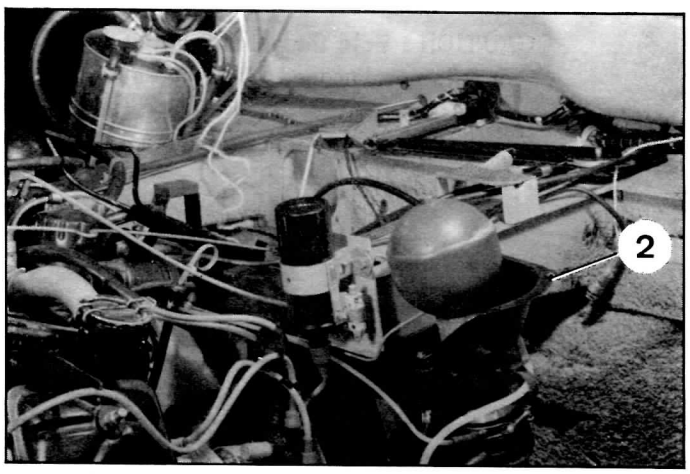


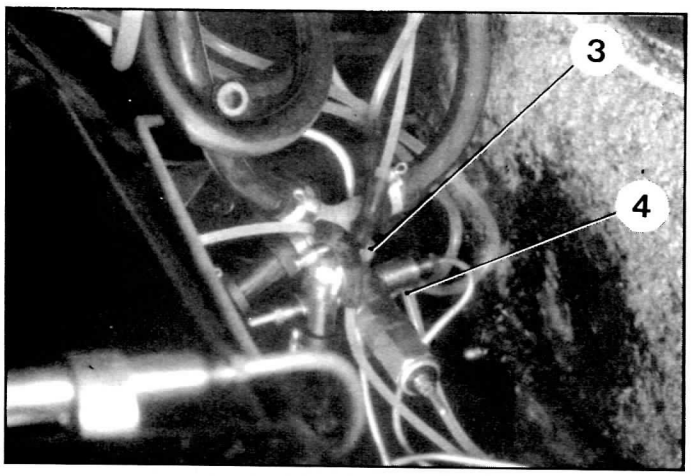
Supplement N° 1 to Manual 810-2 (CORR)

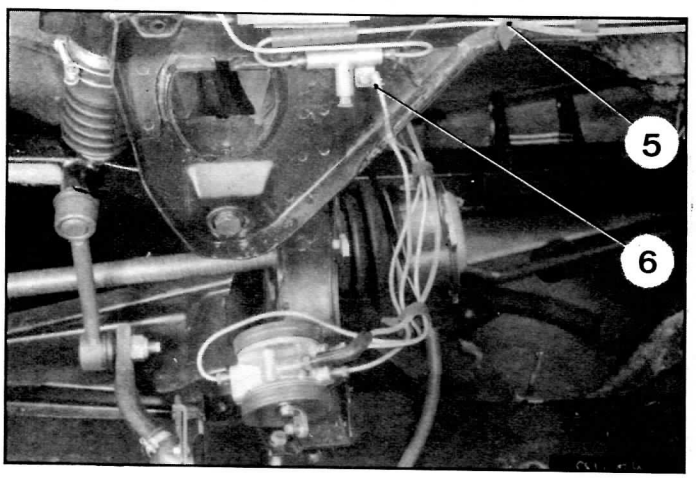
REMOVING AND FITTING A FRONT AXLE UNIT

(For exchange)









REMOVAL

1. Place the front of the vehicle on stands, wheels free.

2. Slacken the release screw on the pressure regulator.
   Set the manual height control lever to the *normal position.*

3. Remove the bolt holding the bonnet strut on the wheel arch.
   Raise the bonnet fully without touching the scuttle panel and secure it in this position, using a cord (protect the panel).

4. Remove :
   - the spare wheel,
   - the battery.

5. Disconnect the wiring harnesses supplying the headlamps, the indicator lamps, the horn, the alternator, the distributor and the lead for the oil pressure switch.

6. Remove the suspension spheres.
   Blank off each suspension cylinder with a plug.

7. Remove the front panel assembly and the lower valance.

8. **Remove the engine-gearbox unit.**

9. Remove the bolt holding the jointed steering column to the steering rack pinion.

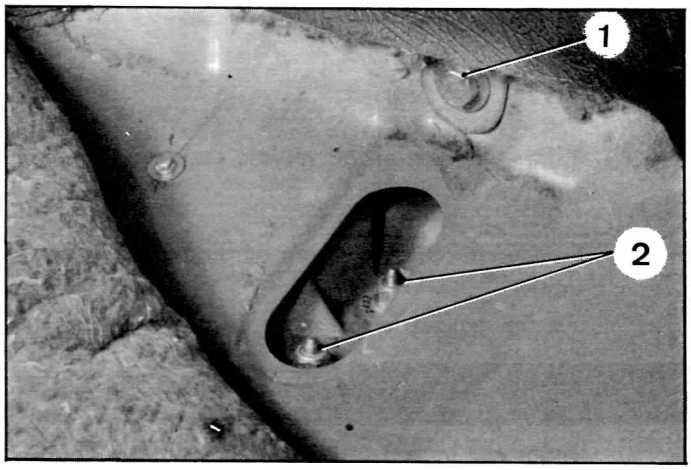
10. *On each side, remove :*
   - the plates (1) between chassis and axle unit,
   - the plates (2) protecting the suspension spheres.

11. Remove the bolts (3) and (4) holding the four-way union and the union for the overflow return pipes.
   Uncouple the supply union (6) from the height corrector .
   Disconnect the overflow return pipes from the front suspension cylinders and withdraw them from the collars (5).

12. Remove :
   - the bolts holding the right-hand anti-roll bar bearing,
   - the linkage rod from the manual height control lever.

13. Remove the drive shafts.

Supplement N° 1 to Manual 810-2 (CORR)



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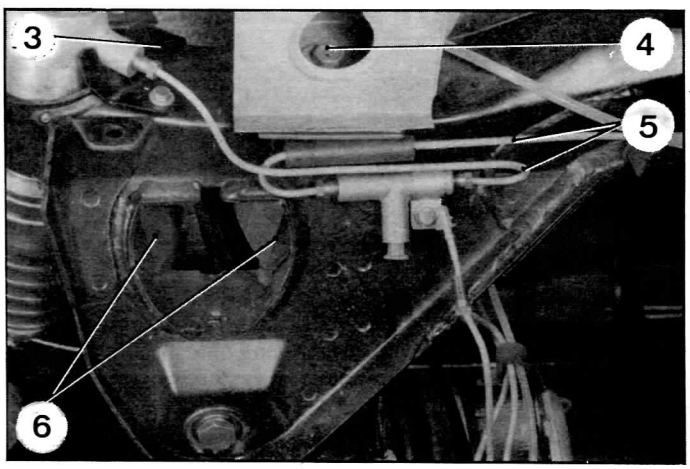

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14. Remove the axle unit :

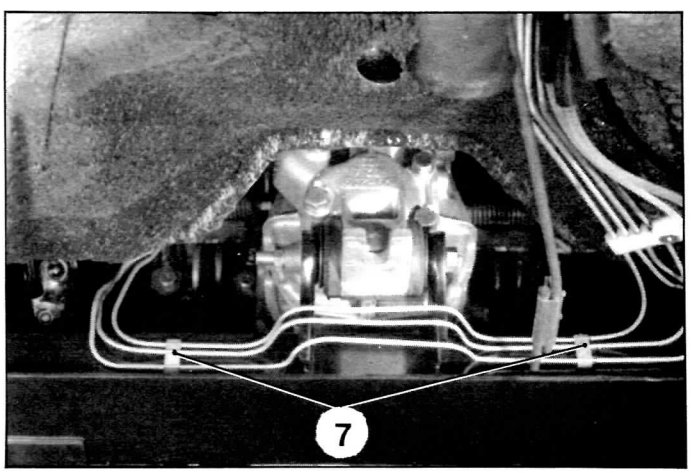
a) Place a jack, fitted with beam support 2510-T, under the front unit.

b) Lift up the front carpet under the pedals, and at each side remove the rear fixing bolts (1) and (2) of the unit.
Remove the bolts (4) from the two front extensions.
Free the hydraulic pipes from their brackets.

c) Detach the unit from the body shell.

IMPORTANT : Mark the position of the shims placed between the body shell and lower mounting at (1).

CAUTION : Hold the height corrector (8) so that it is not damaged when the suspension unit is removed.
Fix it to the extension after the unit has been taken away.



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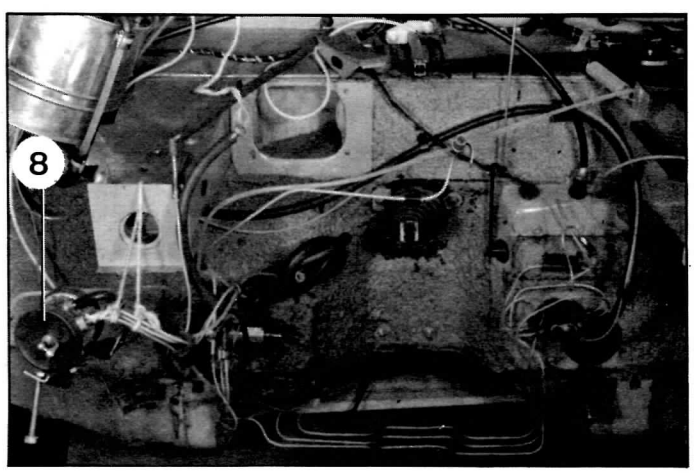
15. Strip down the axle unit :

Remove :

- the anti-roll bar,
- the automatic height control rod,
- the wheelarm and swivel assemblies,
- the track rods,
- the steering system,
- the brackets (3),
- the suspension cylinders,
- the bump stops (6),
- the pipes (5) and the three-way union,
- the brackets (7) of the hydraulic pipes,
- the spare wheel support



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Supplement N° 1 to Manual 810-2 (CORR)

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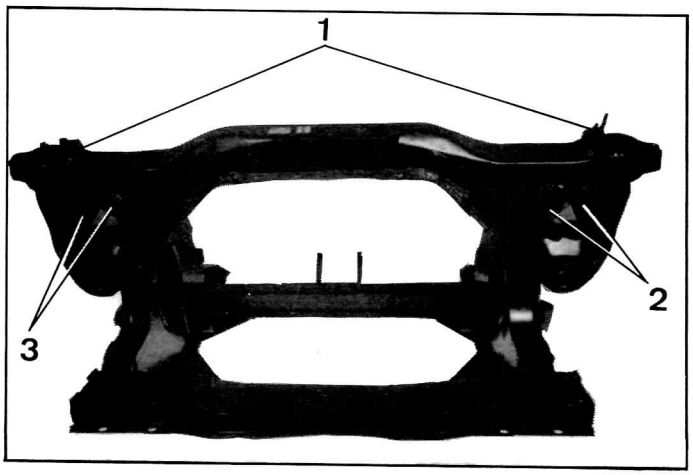

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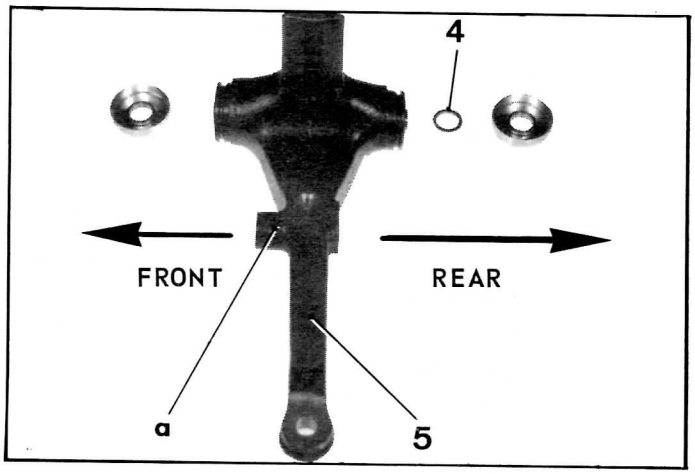

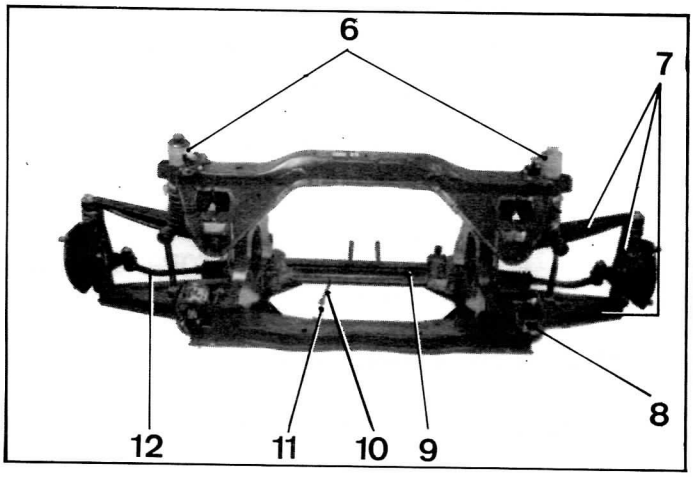

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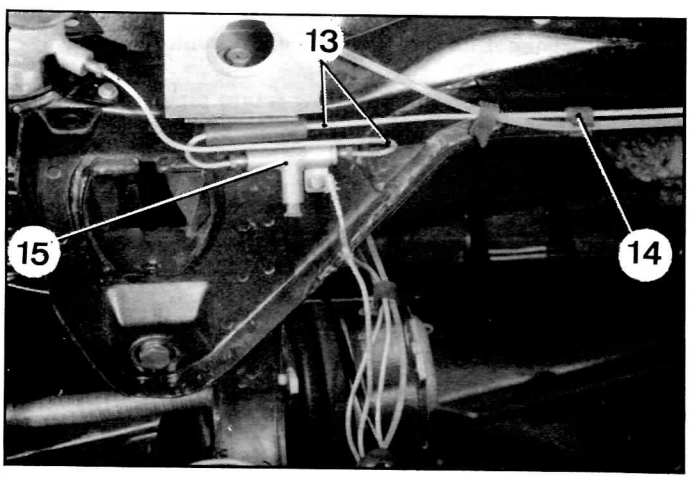

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PREPARATION

16. Assemble the axle unit :

a) Fit the bump stops (2) and (3) (using soapy water only).

b) Fit the wheelarm and swivel assemblies (7) and fit the pins :

- The threads on the pin holding the upper wheelarm (5) *must be directed towards the body* while that on the lower wheelarm *must be directed towards the front of the vehicle.*
- The shim (4) must be placed on the opposite side to the boss « a ».
- Fit a new NYLSTOP nut on each pin.
- Tighten the nut on the upper wheelarm from 59 to 65 m.N (42 1/2 to 47 ft.lb).
  The nut on the lower arm should be tightened from 80 to 88 m.N (8 to 8.8 m.kg) (58 to 64 ft.lb) (torque wrench)
- Operate the wheelarms and check that there is no play where they are connected to the unit.

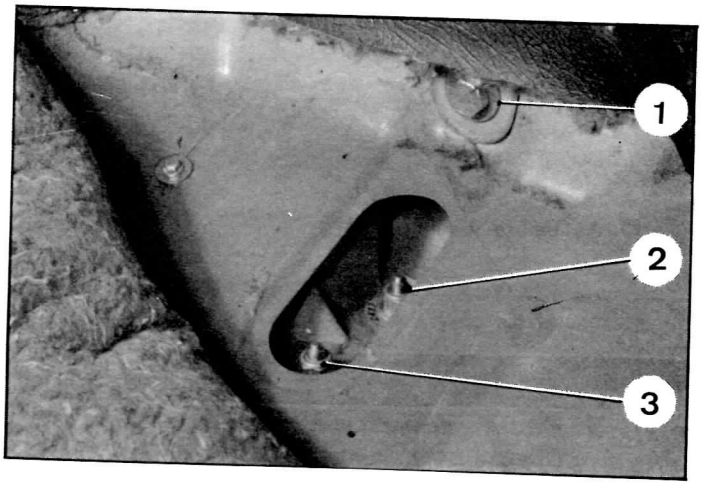
c) Fit the automatic height control rod (11). *Do not tighten the mounting flange on the anti-roll bar.*

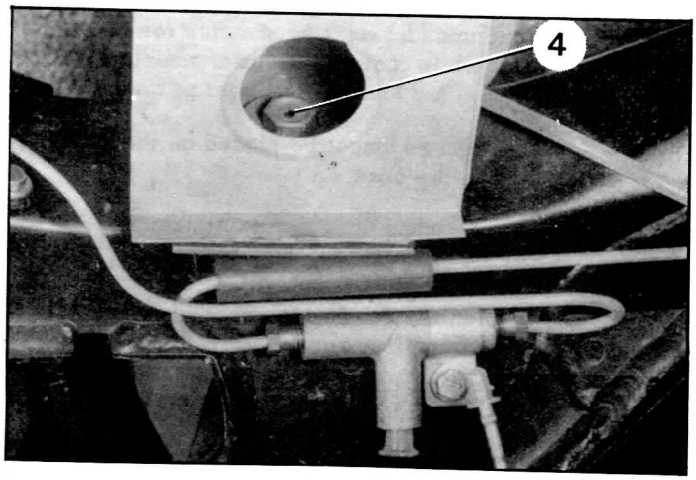
d) Fit :

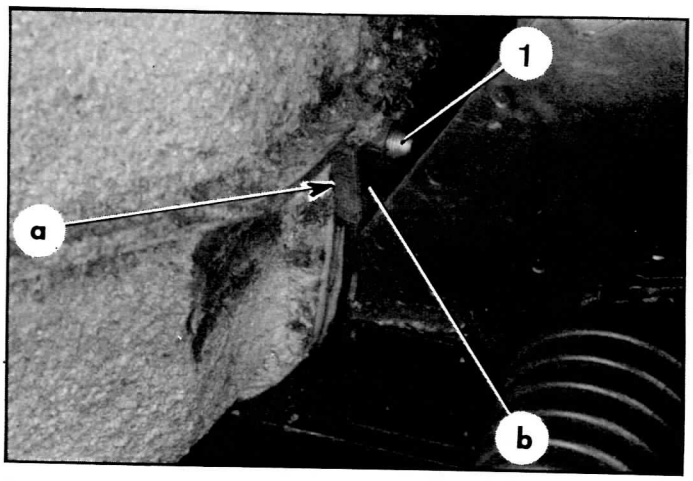
- the anti-roll bar (8),
- the steering system (9),
- the track rods (12),
- the suspension cylinders (6),
- the brackets (1) locating the cylinders (contact washer),
- the lugs (14) holding the supply pipe to the left-hand cylinder,
- the three-way union (15),
- the feed pipes (13) to the suspension cylinders,
- the linkage (10) to the manual height control lever.

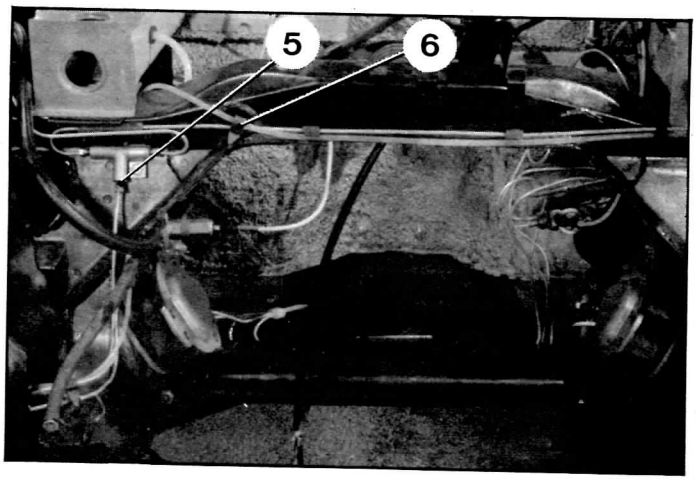
e) Adjust the position of the steering rack so as to give *equal clearance at each side of the housing.*

f) Fit the hydraulic pipe supports.









FITTING

17. Fit the axle unit to the vehicle :

a) Place the unit on a jack fitted with beam support 2510-T.
Bring the assembly under the chassis mounting points.

b) Set the steering wheel in the correct position : the arm should be on the left-hand side at an angle of 30° below the horizontal (in the « twenty to » position).
Engage the splines of the jointed steering column in the steering rack pinion without moving the steering rack (see paragraph 16 e).

c) Fit the mounting bolts to the unit.
At each side :
- Fit the bolts (2) and (4) by hand (flat washer under the bolt heads),
- Tighten the nut on the bolt (2) to 20 m.N (2 m.kg).(14 1/2 ft.Ib).
- Fit the bolts (3) (flat washer on the head).
- Tighten the bolts (2), (3) and (4) from 45 to 50 m.N (4.5 to 5 m.kg) (32 1/2 to 36 ft.Ib) and in the following order : bolt (4), (2) and (3).

d) Adjust the stress on the brackets « b » at the lower unit mounting :
At each side :
- Place the necessary thickness of shims at the point « a » to give *a maximum clearance of 0.5 mm* (between brackets and shims) *before tightening the mounting bolts (1).*
(There are two thicknesses of shim : 1 and 2 mm)
Tighten bolt (1) from 90 to 100 m.N (9 to 10 m.kg) (65 to 72 1/2 ft.Ib)
NOTE : Replace the NYLSTOP nuts whenever the unit is removed.

18. Fit the front height corrector.

19. Adjust the lateral play on the bar.

20. Pre-set the front heights.

21. Connect up the manual height control lever.

22. Connect up the overflow return pipes of the suspension cylinders.

23. Link up the union (5) (new seal).
Tighten from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib).

Fit the rubber collars (6) holding the overflow return pipe and the vent pipe of the left-hand suspension cylinder.

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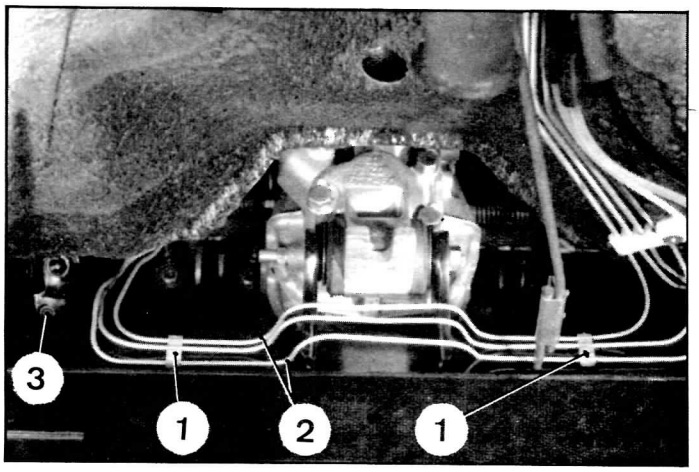

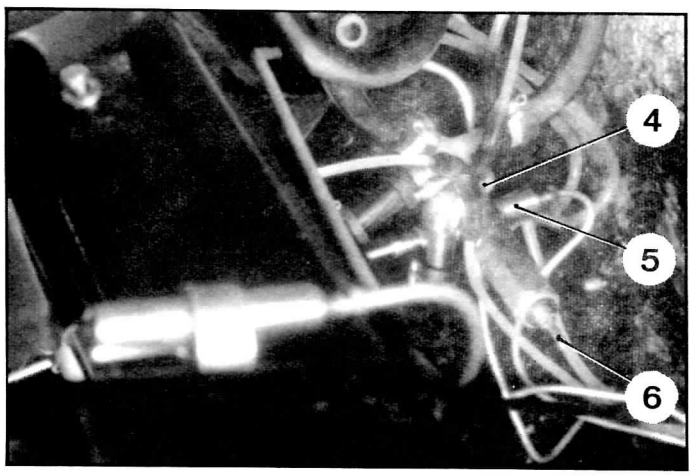

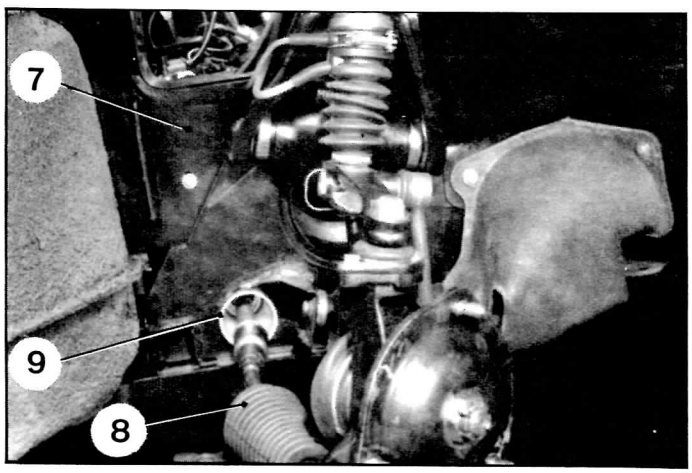

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Supplement N° 1 to Manual 810-2 (CORR)

24. Fit the bolt (3) (*new NYLSTOP nut each time*) and adjust the clearance between the steering column support tube and the stop ring for the steering column (1 to 1.5 mm).
Tighten the nut from 13 to 14 m.N (1.3 to 1.4 m.kg) (9 1/2 to 10 ft.Ib).

25. Fit the four-way union (5) and the union for the pipes (4) (contact washer).

26. Fix the pipes (2) with the brackets (1).

27. *On each side, fit :*

- the plate protecting the suspension spheres,
- the plate (7) between body shell and unit.

28. Fit the spare wheel support block.

29. Connect the lead to the pressure switch (6).

30. **Fit the engine-gearbox unit :**

31. Fit :
- the suspension spheres,
- the fan panel and lower valance assembly.

32. **Bleed the front brakes.**

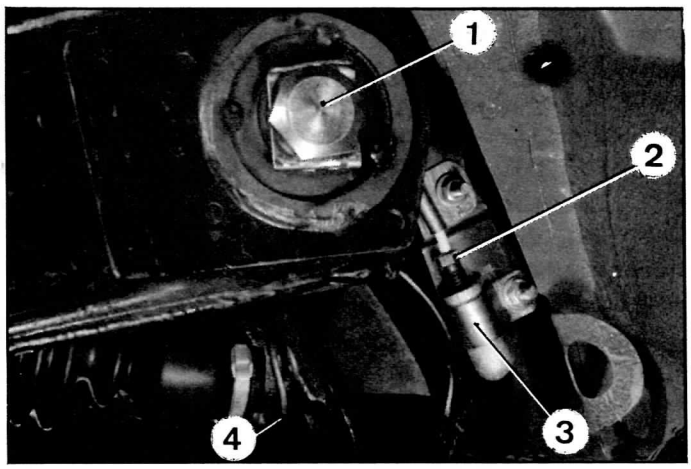
33. Fit the wheels and lower the vehicle to the ground.

34. **Check the toe-in of the front wheels :**
Fit the sleves (8) on the plastic sleeves (9) of the steering housing.

REMOVING AND FITTING A REAR WHEELARM

REMOVAL.

1. With the suspension *in the high position,* place a jack under the rear of the vehicle.



2. Lower the pressure in the circuits :

a) Slacken the bleed screw on the pressure regulator and set the height *into the normal position.*

b) Wait until the rear suspension has stabilized and then put the manual height control lever into the *high position* so that the vehicle settles completely.

3. Place the rear of the vehicle on stands, wheels free.
Remove the rear wheels.

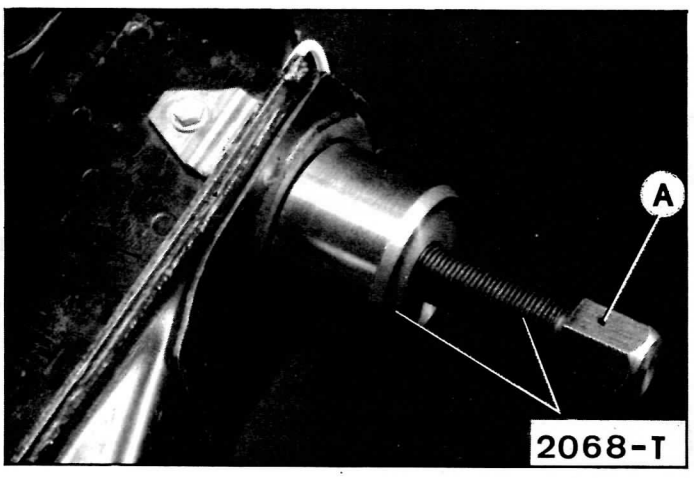
4. Remove the wheelarm :

a) Remove the pin (4) and push back the piston rod of the suspension cylinder.
NOTE : If there is still pressure in the suspension circuit, operate the manual control lever several times until the piston rod is free.

b) Slacken the collar (3) and uncouple the union (2).
Bend back the tab and remove the bolt (1).
If appropriate, remove the shims from behind the lock-plate.

c) Screw the assembly 2068-T in place of the bolt (1). Fit the extractor. Turn the bolt A to release the arm of the anti-roll bar.

d) Remove the extractor and the arm.



FITTING.

5. IMPORTANT NOTE :
The two arms are fixed on the ends of the anti-roll bar : the distance between them on this bar determines their lateral play.
This play is adjusted by means of shims placed behind the bolt lock-plate (1), *on only one of the two arms. The play must be reset whichever arm is removed* (with or without shims).

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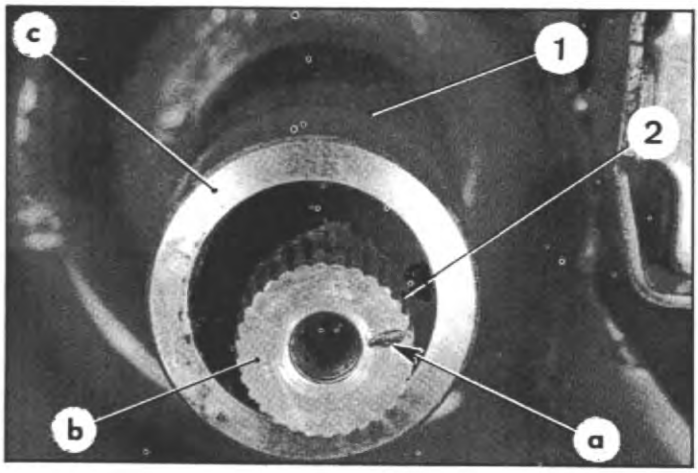

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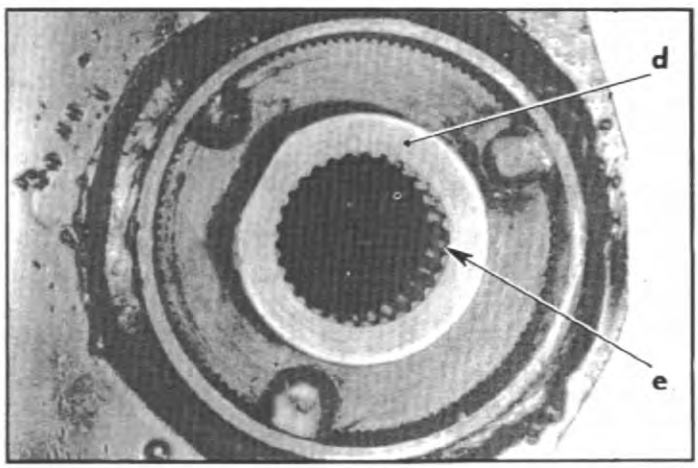
6. If the bearing face « c » of the support (1) shows traces of binding, skim it slightly using a stone.

a) Carefully clean :
- the support tube (1),
- the bearing surfaces « b » of the anti-roll bar and « d » of the arm.

b) Grease (bearing grease) :
- the face « c » and the surfaces of the bearings on the support tube,
- the bearings of the arm hub.



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7. Case 1 : Fit the arm with no shims :

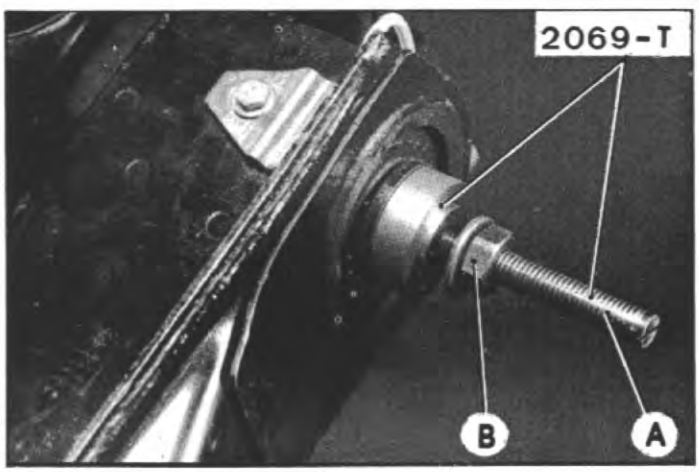
a) Engage the hub of the arm on the support-tube (1) and connect it to the anti-roll bar (2).
CAUTION : *The mark « a » on the bar (mark made by an electric scriber) must correspond with the mark « e » on the hub (one spline missing).*
NOTE : If the mark « a » is not visible, it is necessary to position the arms in relation to one another : *once fitted they must be in the same plane (without twisting the bar).*

b) Remove the stop bolt from the other arm on the anti-roll bar.

c) Position the tool 2069-T on the arm to be removed : tighten the bolt A in the anti-roll bar. *Fully tighten the nut B until the arm is in place,* (the face « c » of the support tube is then bearing on the friction washer placed in the arm hub). Remove the tool 2069-T.

d) Fit the stop bolt on the bar, together with its lock-plate.
NOTE : Smear the threads of the bolt and the lock-plate with CURTYLON.
Tighten the bolt to 18 to 20 m.N (1.8 to 2 m.kg).
Bend over the tab.

e) *Set the lateral play of the arms, at the opposite side (see paragraph 8).*



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8. Case 2 : Fitting the arm with shims :

a) Engage the hub of the arm on the support tube (1) and connect it to the anti-roll bar as indicated in paragraph 7 a above.

b) Adjust the lateral clearance of the arms as described in the following paragraph.

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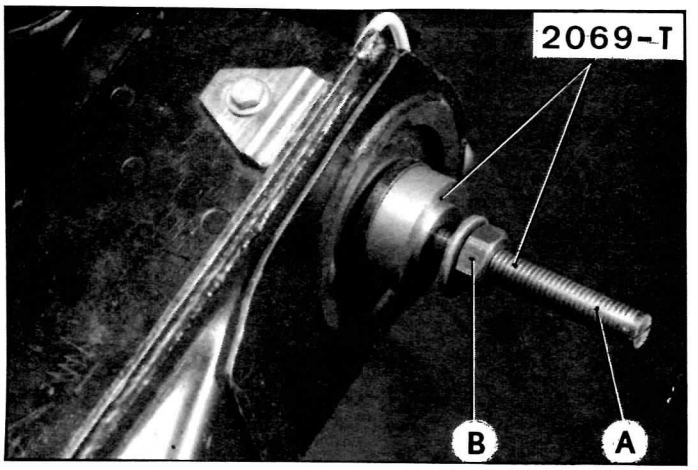

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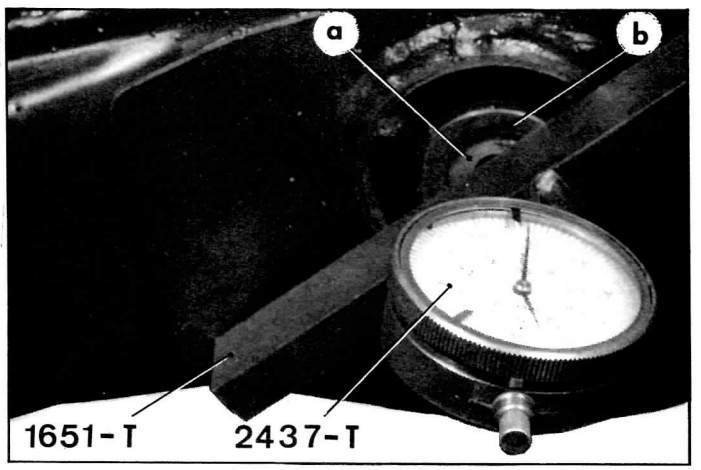

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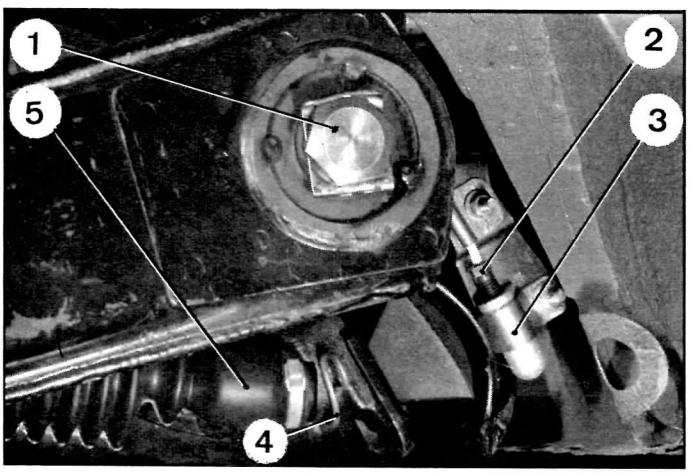


8. Adjust the lateral play of the arms :
(see note in paragraph 5)

a) Position the tool 2069-T : tighten the central bolt A in the anti-roll bar.
Tighten the nut B while moving the arm :
CAUTION : *Stop tightening when the arm falls slowly under the action of its own weight.*
(the end of the support tube is then bearing on the friction washer in the hub of the arm, causing slight friction).
Remove tool 2069-T.

b) Using a scale 1651-T, fitted with dial jauge 2437-T, measure the distance between the face « b » of the arm hub and the face « a » of the bar.
This distance *increased by 0.05 mm* indicates the thickness of shims to be placed on the end of the bar.

c) IMPORTANT : Using the extractor 2068-T, bring the bar out by 2 to 3 mm :
Remove the extractor.

d) Place the shims on the end « a » of the bar and fit the tool 2069-T.
Tighten the nut B moderately until the shims are in contact with the end « a » of the bar.
NOTE : Never use the locking bolt (1) for this operation. Since the splines are very carefully machined, the bolt would be subjected to anormal stress.
Remove the tool 2069-T (be careful of the shims).

e) Fit the locking bolt (1) fitted with its lockplate.
NOTE : Smear the threads of the bolt and the faces of the lock -plate with CURTYLON.
Tighten the bolt from 18 to 20 m.N (1.8 to 2 m.kg) (13 to 14 1/2 ft.lb). Peen the tab.

9. Insert the rod (5) of the suspension cylinder. Fit the stop pin (4).

10. Connect the union (2) (new seal) and tighten the collar (3).

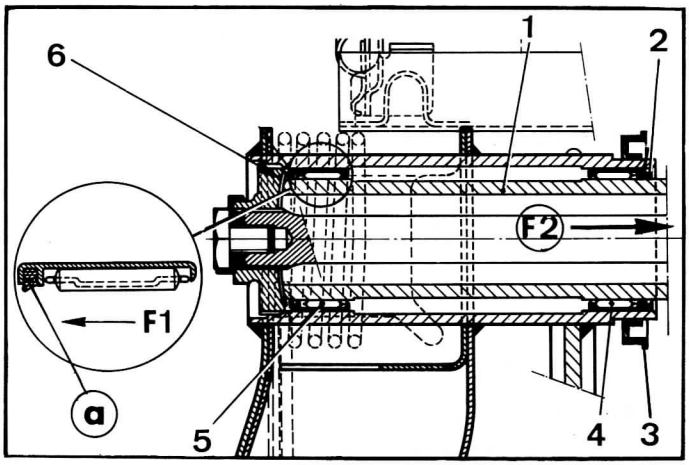
11. Start the engine. Tighten the pressure regulator bleed screw.

12. Bleed the rear brakes.

13. Fit the rear wheels and lower the vehicle to the ground.

REPLACING THE BEARINGS, THE SEAL OR THE FRICTION WASHER OF THE WHEELARM PIVOT TUBE

G.42-2 c



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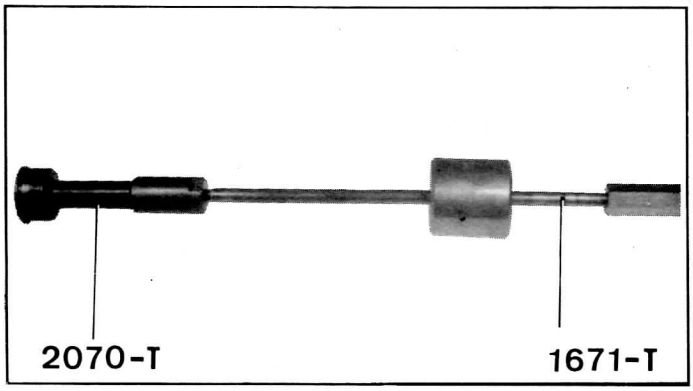

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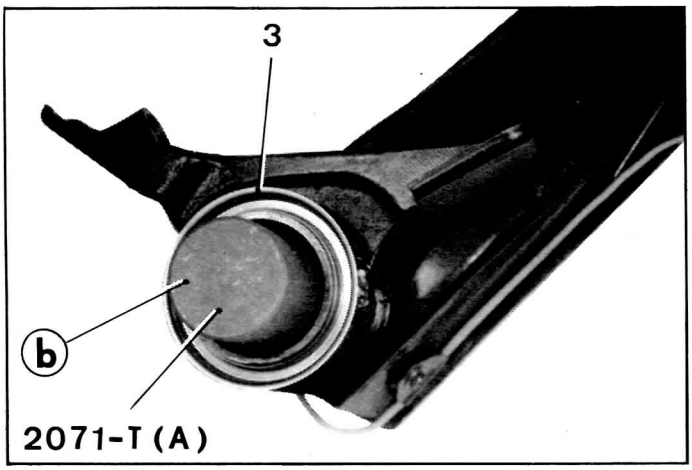

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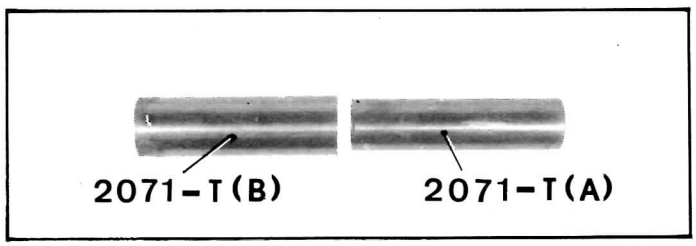

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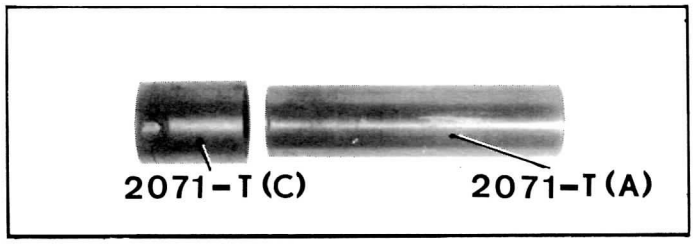


11356

REMOVAL

1. **Remove the wheelarm.**

2. If necessary, remove the deflector (3) of the arm hub.

3. **Remove the seal (2).**

4. **Remove the bearing from the pivot tube :**
   Use an extractor 1671-T fitted with an end piece 2070-T.

5. **Remove the friction washer (6).**

FITTING.

6. Carefully clean the inside of the wheelarm pivot tube and the support tube (1)
   Grease the bearing faces of the support tube.

7. **Insert the friction washer (6) :**
   Smear it with bearing grease on both faces and fit it into the pivot tube.
   NOTE : When new, the friction washer is flat. Replace it each time it has to be removed.

8. **Fit the pivot tube bearings :**
   IMPORTANT : These needle bearings are fitted with seals « a ». These must be fitted the right way round as shown on the drawing : the edge carrying the seal « a » must be placed in the direction of the arrow F1 for the bearing (5) and in the direction of the arrow F2 for the bearing (4).

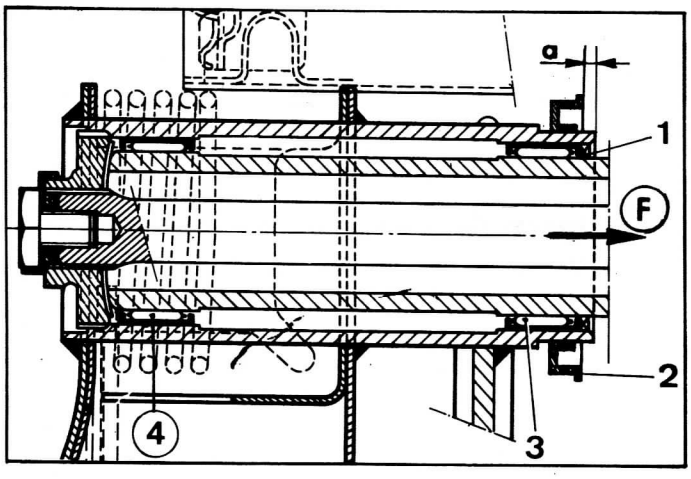
   a) Place the guide mandrel A (assembly 2071-T) inside the wheelarm pivot tube. Fit the bearing (5) on the mandrel A *the correct way round as described above.* Push it using the socket B until it comes into contact with the end « b » of the mandrel.

   b) Proceed in the same way for fitting the bearing (4), using the socket C. *Once again, this has to be fitted the right way round as described above.*

   NOTE : The correct position of the bearings is determined by the length of the sockets B and C.

c) Remove the assembly 2071-T.
Smear the needles of bearings (3) and (4) with bearing grease.

G.43-2c



9. Fit the seal (1) :

Put the face carrying the inscriptions towards the outside of the hub (direction of the arrow F) and push the seal until it is in contact with the bearing (3).

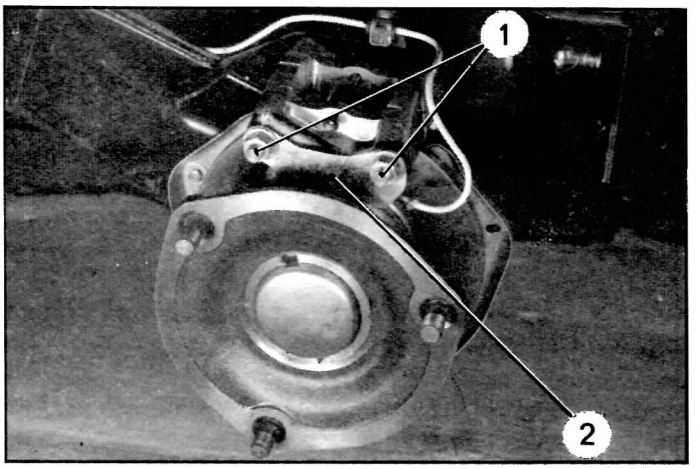
10. If necessary, fit the deflector (2) :
This must be inset with relation to the edge of the pivot tube by :

$$a = 2 \text{ to } 3 \text{ mm}$$

11. Fit the wheelarm.

REMOVING AND FITTING A BRAKE DISC, A HUB OR A BEARING.

8958



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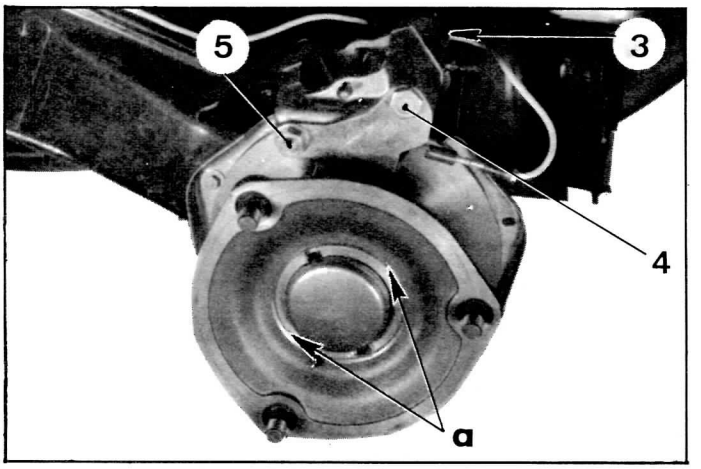
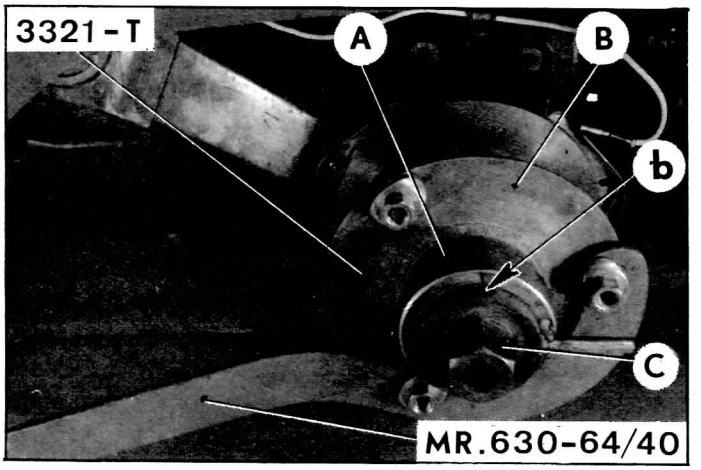


Supplement N° 1 to Manual 810-2 (CORR)

8967



REMOVAL.

1. Place the rear of the vehicle on stands, wheels free.

2. Place the manual height control lever *in the normal position.*
Slacken the pressure regulator bleed screw.

3. Remove the wheel.

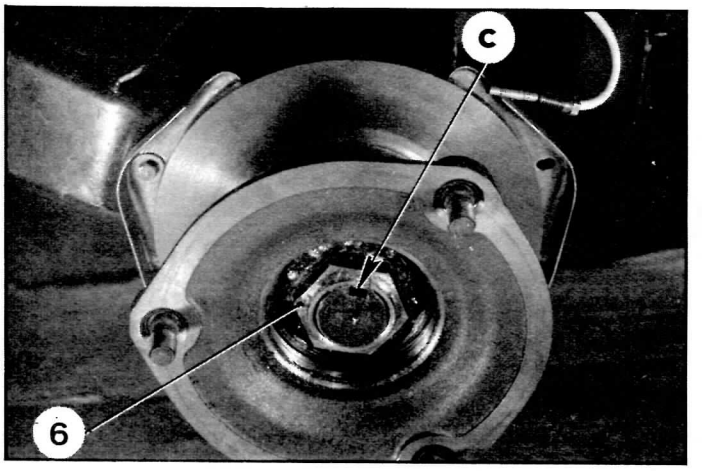
4. **Remove the unit :**
NOTE : To avoid separating the two halves of the unit, proceed as follows :
- Disconnect the pipe (3).
- Partly slacken the nuts (1) holding the unit.
- Remove the bolt (4) (bleed screw side). Lift the wheelarm to release it.
- Swing the unit then replace the bolt (4) and tighten the nut (be careful of the feed tube (3)).
- Remove the other bolt (5).
- Remove the unit (2).

5. **Remove the ring nut :**
Using a 4 mm diameter drill, remove the peening at « a » locking the ring nut.
Use the assembly 3321-T and the key 3304-T.
Fit the plate B to the hub.
Hold the hub using tool MR. 630-64/40.
Position the key 3304-T and the end fitting C.
Screw in the nut A but do not tighten.
Place a peg in the hole « b » to lock the end bolt C and the nut A.
Unscrew the ring nut.

6. **Remove the nut (6) :**
Using a cold chisel, remove the peening at « c ».

7. **Remove the hub :**
Repeat the same operation as for removing the ring nut, without key 3304-T.
Hold the assembly using tool MR. 630-64/40 (see figure).
Using the bolt D of assembly 3321-T extract the hub.

8968



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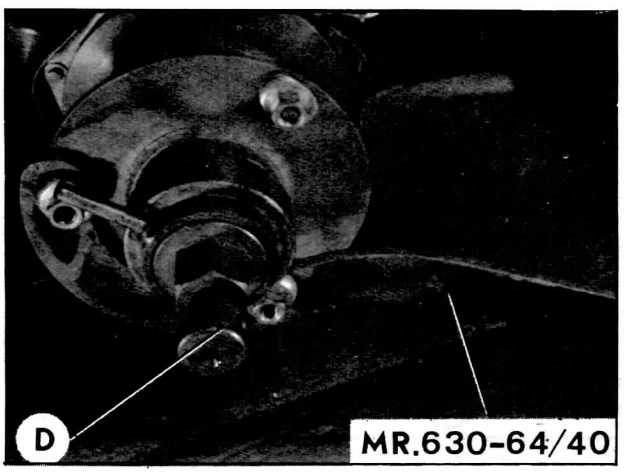

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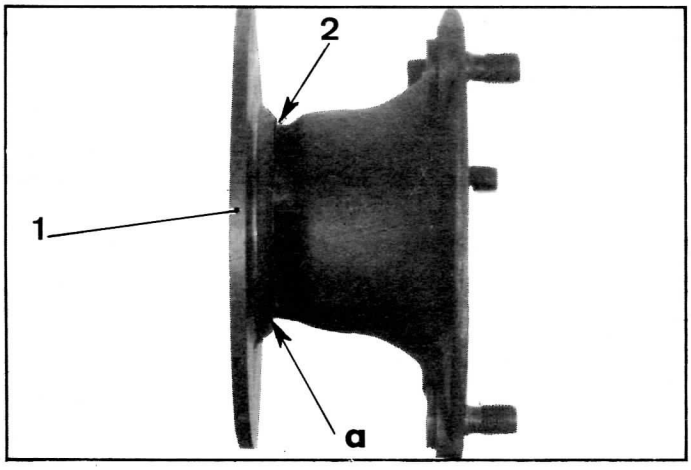

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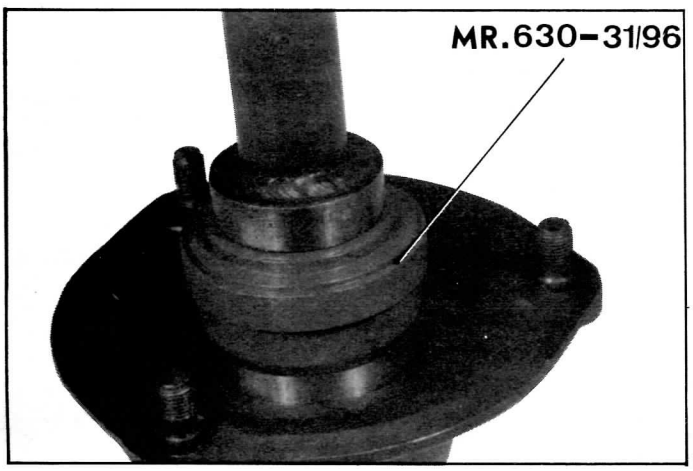
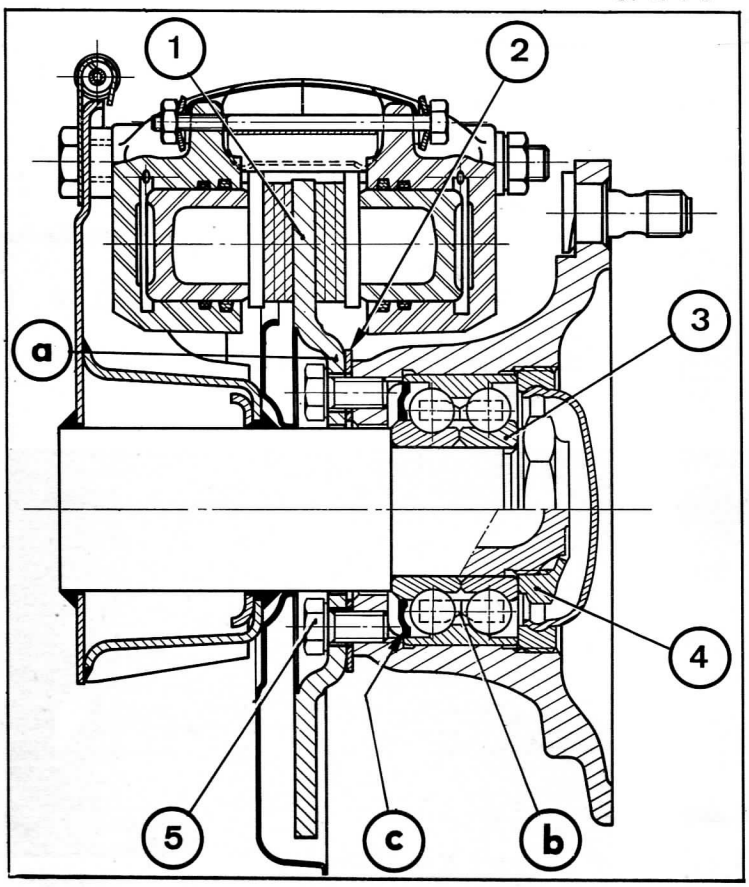


G. 45-3 b



8. Remove the brake disc :

Remove the bolts (5) (see drawing) and separate the disk (1) from the hub.
Do not lose the bearing plate (2).

9. Remove the hub bearing.

FITTING.

10. Fit the brake disc :

Position the disc on the hub.
CAUTION : The disc (1) must be fitted the right way round (see drawing) : the edge « a » must be at the hub side.
Fit the bearing plate (2) between the disc and the hub.

Fit and tighten the bolts (5) from 45 to 50 m.N (4.5 to 5 m.kg) (32 1/2 to 36 ft.Ib) (torque wrench)

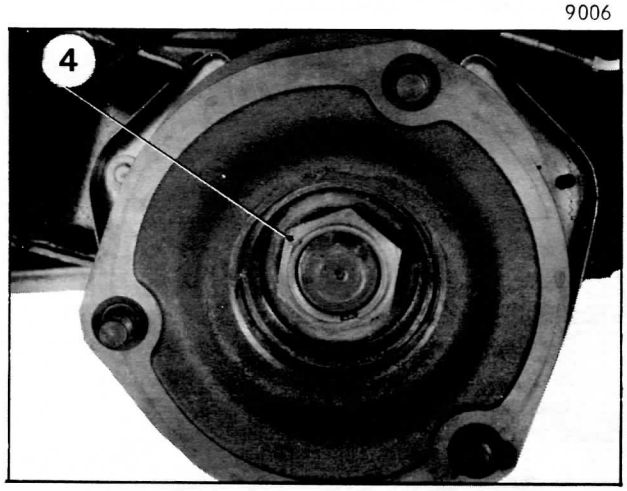
11. Fit the bearing :

Remove the inner race (3) with its balls to allow access for the mandrel MR. 630-31/96.
Position the bearing (sealed side « c » facing the disc) on the hub.
Fit using the press.

12. Fit the hub :

Position the assembly on the stub axle.
Engage the bearing (without its inner race (3)) and start to position it by tightening the nut (4).
Remove the nut (4) and fit a spacer with inside diameter 37 mm, thickness 7 mm.
Refit the nut (4) and finish fitting the bearing.
Fit the inner race (3) (with the face « b » of the nylon cage to the inside. The faces « b » of the two cages should face one another) (see drawing).
Fit a new nut (face and threads greased).
Tightening torque = 350 to 400 m.N (35 to 40 m.kg) (253 to 289 ft.Ib) torque wrench.
Using a mallet, peen the tab of the nut into the milled slot of the stub axle.

9006



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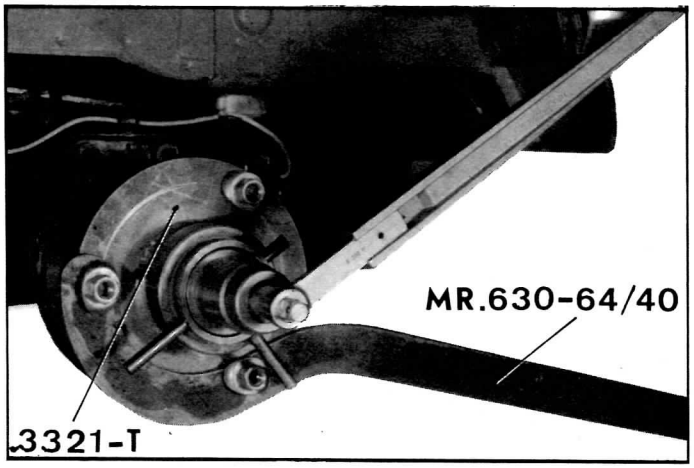
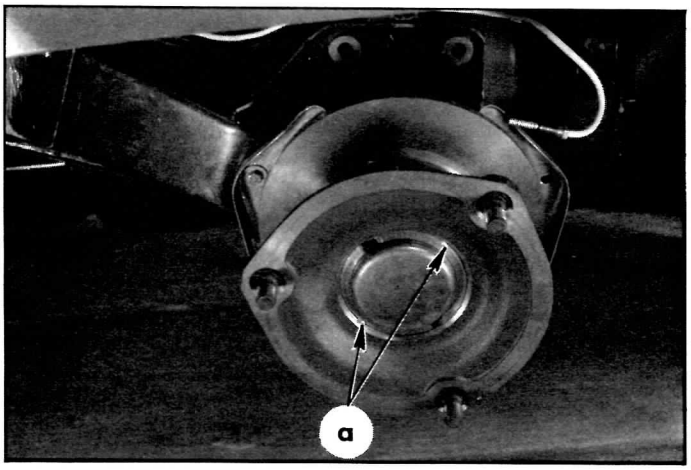


13. Fit the ring nut :

Use assembly 3321-T and key 3304-T.
Hold the hub using tool MR. 630-64/40.
Put bearing grease in the plug of the ring nut.
Fit the ring nut having *greased both faces and the threads.* Tighten from 350 to 400 m.N (35 to 40 m.kg) (253 to 289 ft.lb) (torque wrench).
Lock it in position by tapping with a punch at two diametrically opposed points at « a ».

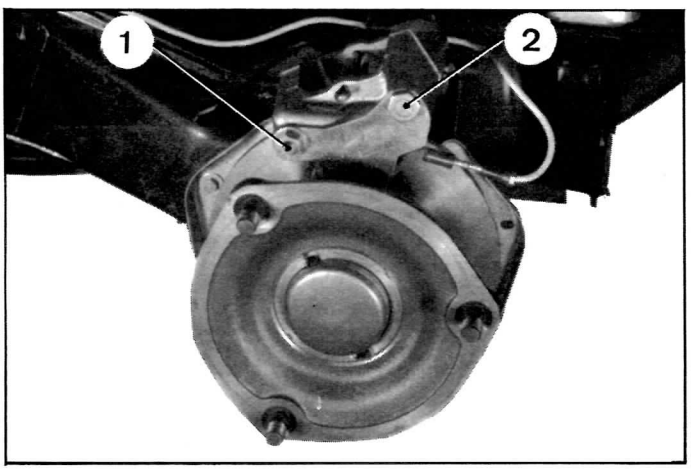
8966



14. Fit the brake unit :

Position the unit on the disc and carefully position the brake pads.
Fit the bolt (1) *with its head to the inside* and fit the nut without tightening it (contact washer).
Remove the other bolt (2) and swing the unit to position it.
Refit the bolt (2) *with its head to the inside.*
Tighten the nuts (3) (contact washer) from 36 to 40 m.N (3.6 to 4 m.kg) (26 to 29 ft.lb) (torque wrench) (face and threads greased).

Supplement N° 1 to Manual 810-2 / CORR

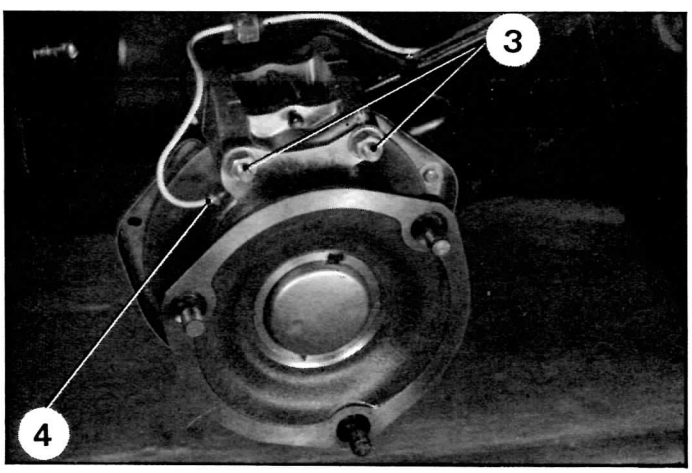


9080

15. Fit the union (4) :

Replace the seal.
Tighten the union from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.lb).

16. Start the engine.
Tighten the pressure regulator bleed screw.
Place the manual height control lever *in high position.*
Where appropriate, move the rear wheelarms to cause the pressure to rise.
Bleed the brake unit and check for leaks.

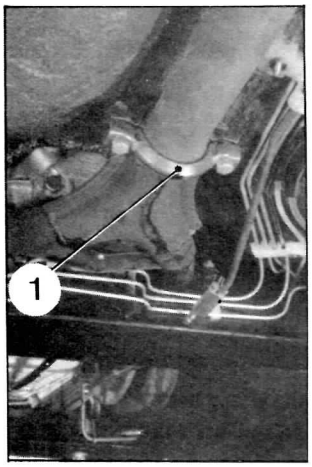


8958

17. Fit the wheel.
Lower the vehicle to the ground.

REPLACING THE REAR AXLE UNIT

8537



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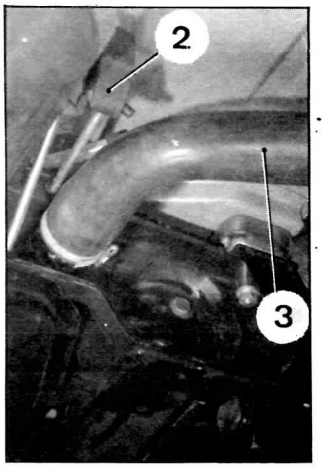

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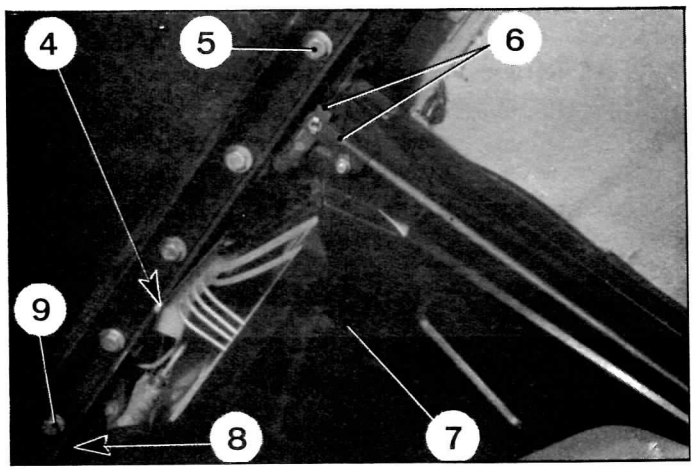

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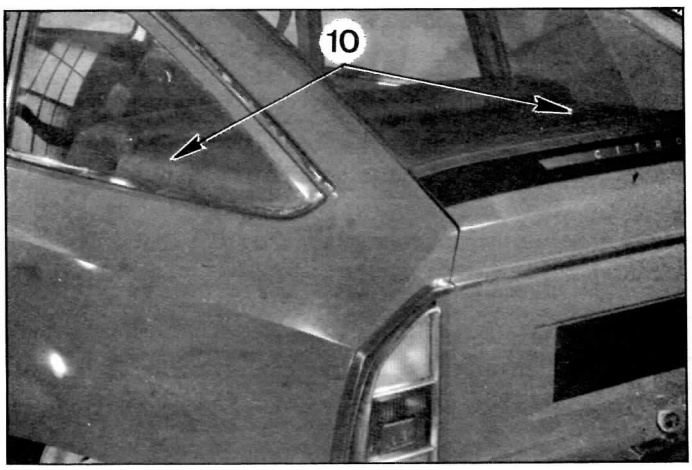
8332



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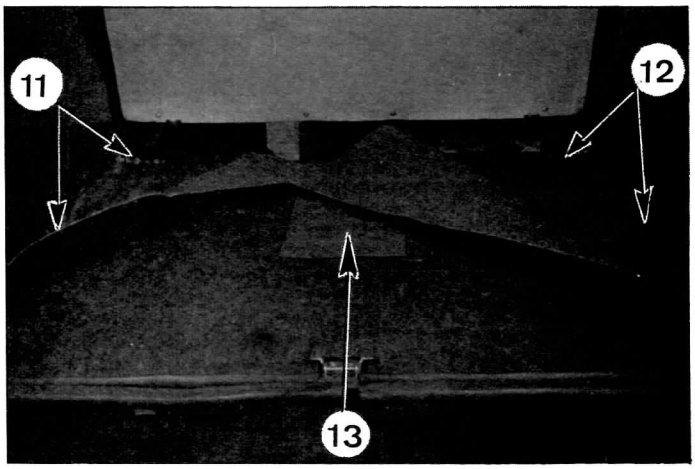


REMOVAL

1. Put the vehicle in the *high position* so that a jack can be put under the rear.

2. **Lower the pressure in the circuits :**
Slacken the screw on the pressure regulator and place the manual height control lever *in the normal position.*
Wait until the rear suspension has stabilized and then put the manual height control lever *in the high position* until the vehicle settles completely.

3. Place the rear of the vehicle on stands, wheels free.

4. Disconnect the lead from the negative terminal of the battery.

5. **Remove the exhaust pipe and silencer assembly :**
Remove :
- the collar (1),
- the flexible mountings (2).

6. **Disconnect the tank filling pipe (3) :**
Drain the tank if necessary.

7. *Underneath the vehicle :*
Disconnect the manual control rods (6).
Remove the two bolts (5) and (9) holding the protective plate (7).
Remove the bolt (4) holding the pipe bracket.
Disconnect the union (8)

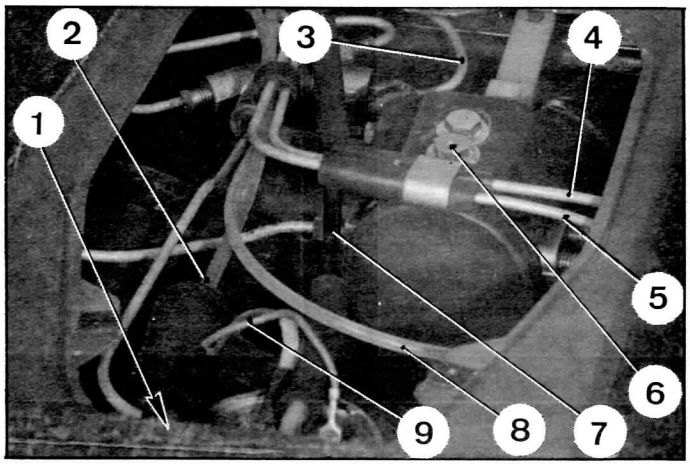
8. **Swing the rear seat forward :**
Slide the embellishers (10) towards the rear to uncover the upper mounting bolts and remove these bolts.
Swing the seat forward and chock it in that position.

9. In the boot, unstick the carpet at both sides to give access to the attachments (11) and (12) of the suspension unit flexible mountings.

10. **Remove the axle unit :**

a) Remove the inspection plate (13) in the floor of the boot.

b) Place a jack, fitted with support 2510-T, under the suspension unit, equidistant between the spheres and the suspension arm swivels.
Remove the securing nuts (11) and (12).
Using a jack, lower the unit by no more than 10 cm, so that the different pipes can be disconnected through the inspection plate (13).



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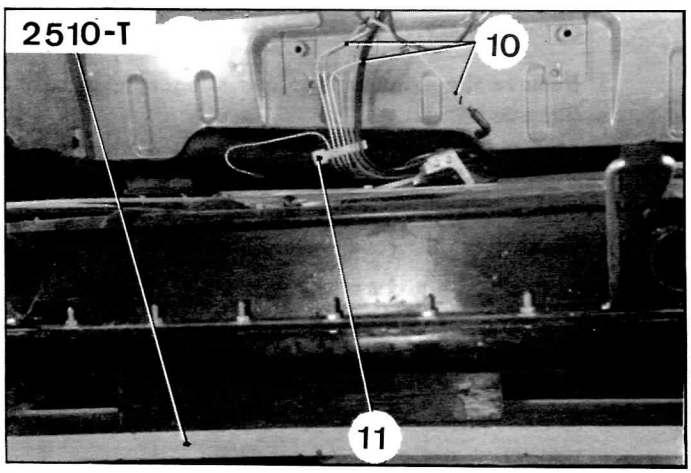

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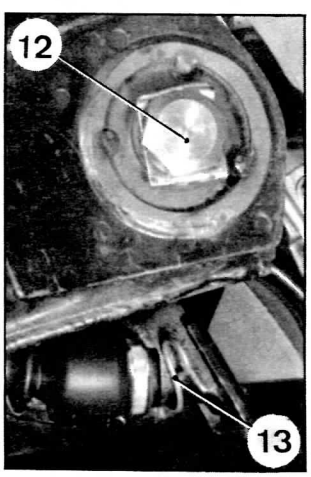

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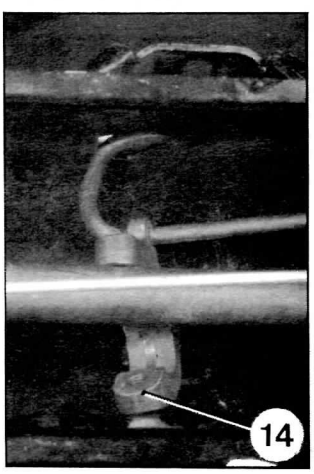

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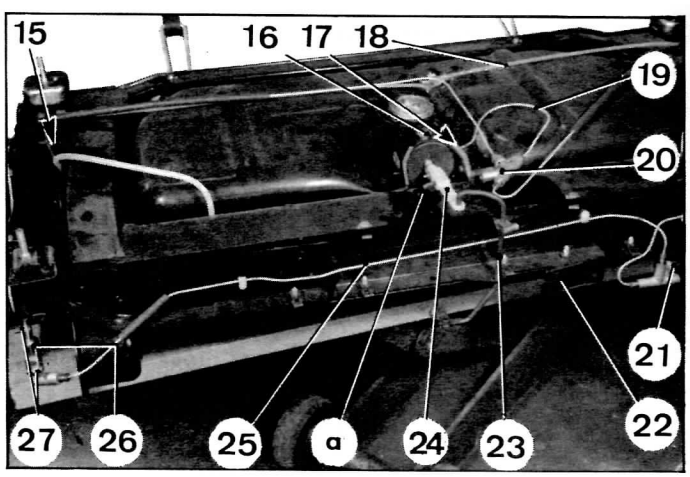


9121

c) Remove the bolt (6) from the clamp holding the pipes.
Disconnect :
- the pipes (4) and (5) and the flexible pipe (8) from the corrector,
- the flexible pipe (2), from the overflow return union,
- the flexible pipe (7) from the petrol tank gauge unit,
- the tank vent pipe (1),
- the leads (9) from the petrol gauge,
- the tube (3) from the four-way union.

d) Completely lower the suspension unit.

CAUTION : Make sure that the pipes (10) and the pipe support (11) do not foul the unit.

STRIPPING DOWN

11. Remove the brake feed pipe (25) :

Remove the bolt (21) holding the three-way union.
At each side, slacken the two collars (27) and the union (26).
Remove the pipe (25).

12. Remove the suspension cylinder feed pipe (19) :

Disconnect :
- the union (17) from the corrector,
- the unions (15) from each cylinder.

Remove the bolt holding the four-way union (20).
Remove the assembly consisting of the pipe (19), the overflow return pipe (18) and the four-way union (20).

13. Remove the assembly consisting of support plate and torsion bar (23) :

Remove the bolts holding the plate and the bracket (22).
Remove the assembly.

14. Remove the corrector :

Remove the bolt (16).
Slacken the automatic control collar on the anti-roll bar, and free its end « a » from the lever (24).

15. *At each side :*

Remove :
- the pin (13) and detach the end of the rod,
- the bolt (12).

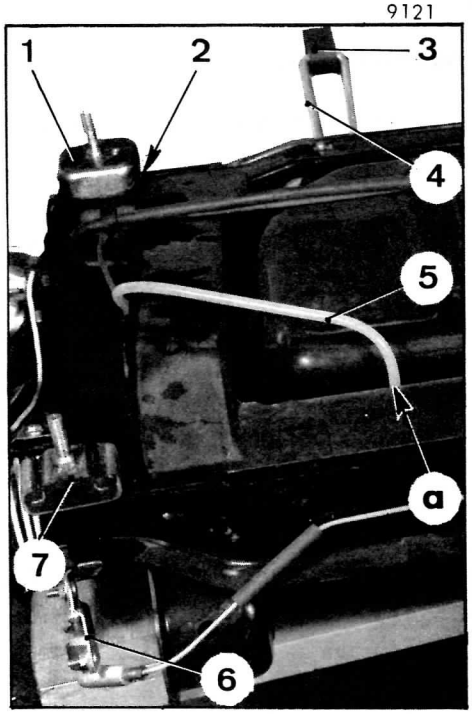
16. Remove one wheelarm only :

Remove the arm at the side where the lateral play shims are placed (do not lose them) using the extractor 2068-T.

17. Remove the other wheelarm and the anti-roll bar :

Remove the bolt from the clamp (14) holding the automatic control system.
Open out the clamp (14) to release the anti-roll bar.
Remove the assembly of arm and anti-roll bar.

9121



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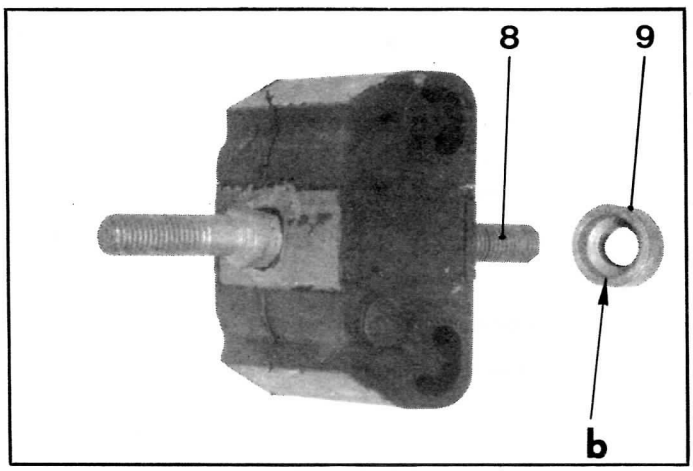

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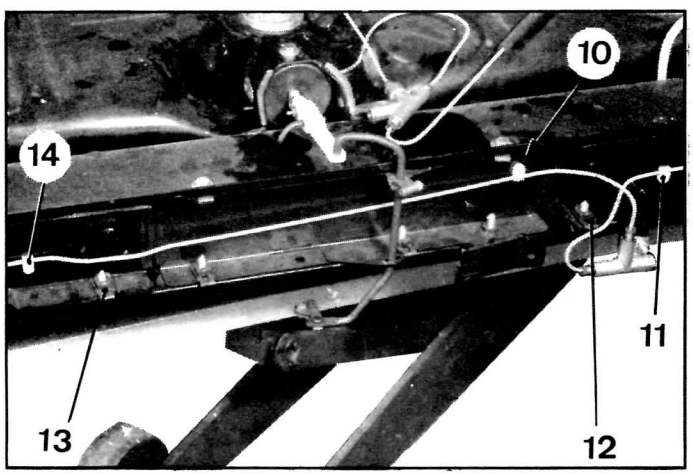


18. Remove the suspension cylinders :
At each side :

Remove the vent pipe (5).
Remove the bolt and collar holding the cylinder.

19. Remove the flexible supports (1) and (7) :
Do not lose the shims (2) and the brackets (6).

20. Remove the exhaust pipe mountings (4).

21. Remove the petrol tank.

22. Remove the bump stops.

23. Remove the clamps (12) and (13) and the plastic supports (10), (11) and (14).

RE-ASSEMBLING

24. Fit :
- the clamps for fixing the collars that hold the suspension cylinders,
- the clamps (12) and (13) for holding the tank.

25. Fit the plastic clamps (10), (11) and (14).

26. Fit the bump stops (using soapy water only)

27. Fit the petrol tank :

Tighten the bolts (contact washer).
Connect up the inlet pipe and fit the filter.

28. Fit the exhaust supports :

Replace the rubber blocks (3) if necessary.
Fit the locking pin.

29. Fit the elastic supports :

a) Fix the supports on the suspension unit :
- *Front supports (7) :* Place a bracket (6) and a contact washer under the nut holding each support on the unit.
- *Rear supports (1).* Fit :
  - a shim (2) under each support,
  - a spacer (9) and a contact washer under the nut holding each support on the unit.

NOTE : Do not tighten the nuts.

b) Fit a spacer (9) on each mounting stud (8) of the supports on the chassis.

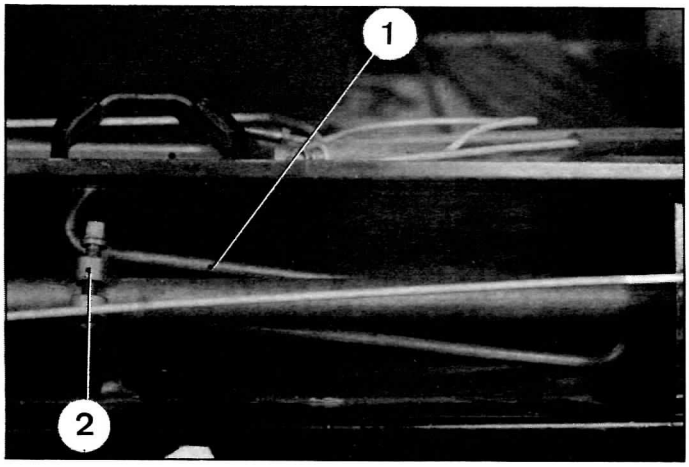
NOTES :
- the greatest inside diameter « b » of the spacer (9) should face the flexible mounting.
- the spacers (9) of the front and rear supports are different.

30. Fit the suspension cylinders :

Place the vent pipe (5) in the hole at « a » of the unit.

Supplement N° 1 to Manual 810-2 (CORR)

9129



31. Fit the wheelarms :

IMPORTANT NOTES :

A - Since the diameters of its ends are different, *the anti-roll bar must be fitted the right way round* (when the bar is removed).

right-hand side : 30 splines
left-hand side : 32 splines

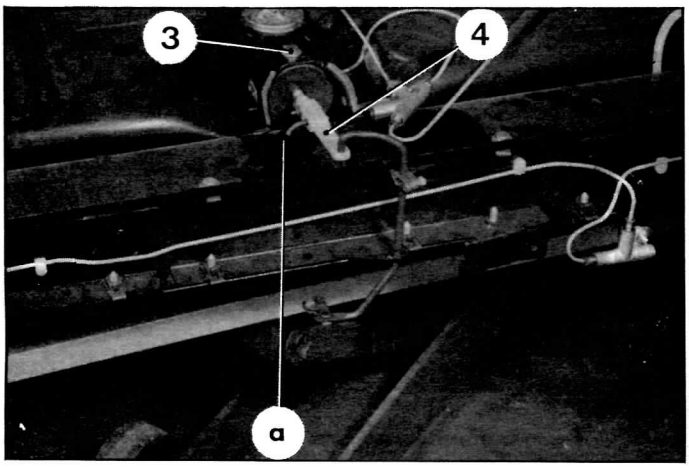
B - Once assembled with the anti-roll bar, *the two wheelarms must have their centre lines in the same plane.*

To do this, the mark (electric scriber) at each end of the bar should coincide with the mark (spline missing) of the corresponding wheelarm.

a) *Fit the assembly of wheelarm and anti-roll bar :*

Place the automatic control rod (1) in the unit.
Engage the anti-roll bar in the unit, guiding the clamp (2). Position the wheelarm and fit the bolt to the collar (2).
Fit the locking bolt (smear the threads with CURTYLON) and its tab on the anti-roll bar.
Tighten the bolt from 18 to 20 m.N (1.8 to 2 m.kg) (13 to 14 1/2 ft.lb)

9121



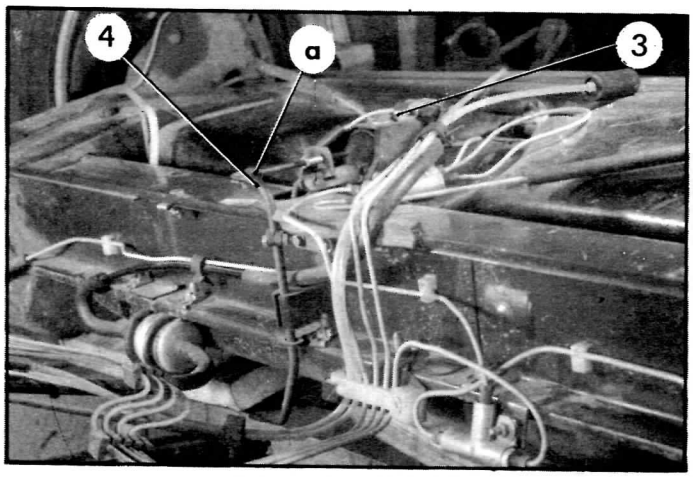
b) *Fit the wheelarm only :*

Position the wheelarm and engage it on the splines of the bar, so that the marks on the bar and the wheelarm coincide (see note B).

c) *Adjust the lateral play of the wheelarms*

(see corresponding operation).

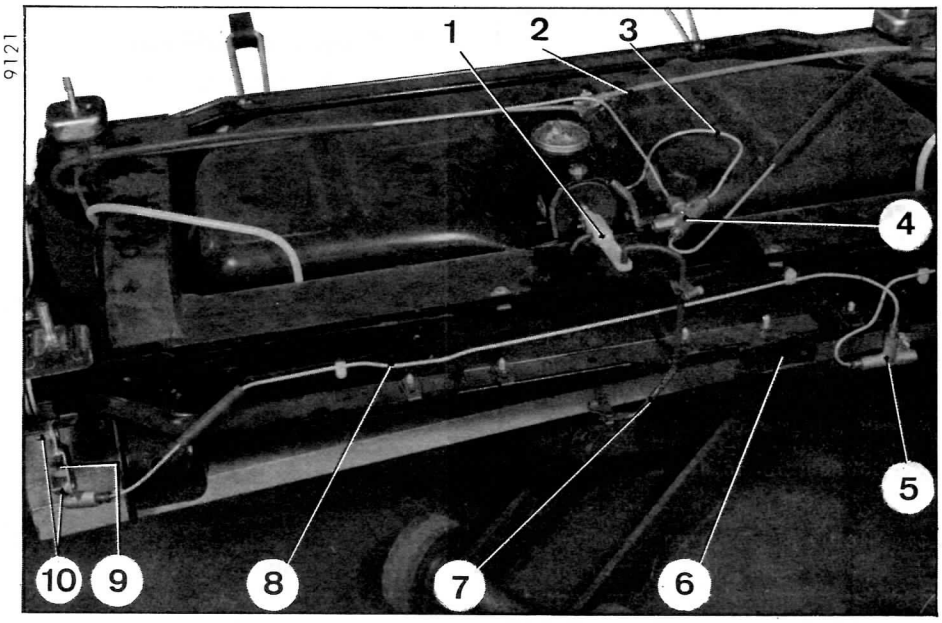
12 029

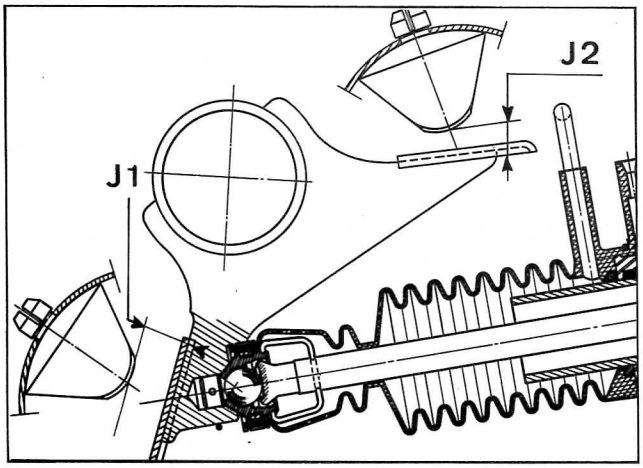


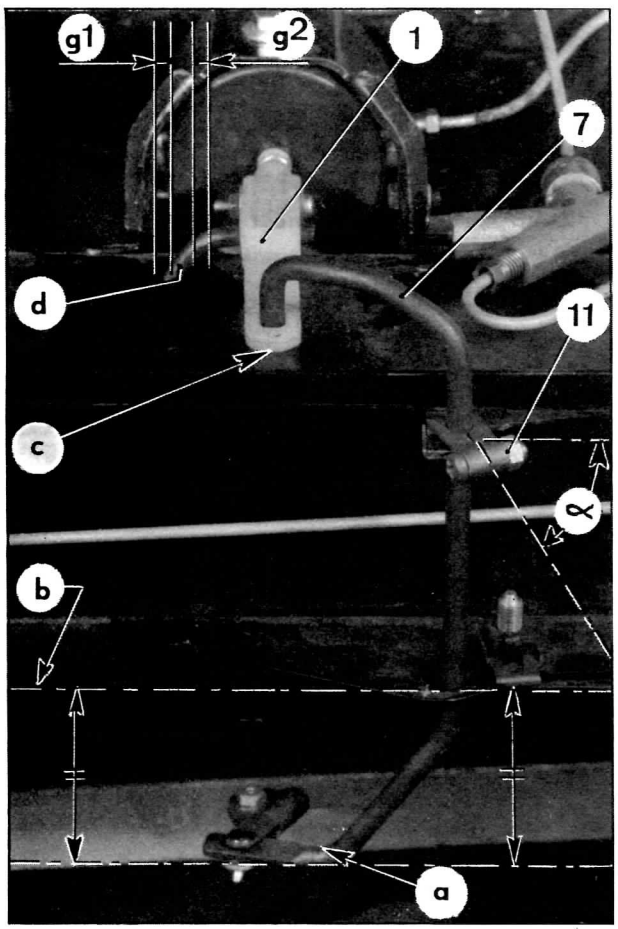
32. Fit the height corrector :

Fit the end « a » of the automatic control rod (1) into the lever (4).

Position the corrector at the centre of the mounting slot. Tighten the bolt (3) (contact washer).







33. **Fit the assembly of support plate and manual control rod (7) :**

Position the assembly by engaging the end of the rod (7) in the lever (1). Interpose the bracket (6) and tighten the bolts.

34. **Fit the suspension cylinder feed pipe (3) :**

Position the assembly of pipe (3); overflow return pipe (2) and the four-way connector (4).
Tighten the union by hand.
Connect the overflow return pipe (2) to the cylinder dust cover.
Tighten the union from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib) (Replace the seals).

35. **Fit the brake feed pipe (8) :**

Fix the three-way connector (5).
At each side :

- tighten the union (9) by hand,
- tighten the two collars (10),
- engage the pipe (8) in the plastic supports.

Tighten the union from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib) (Replace the seals).

36. **Preset the automatic height control :**

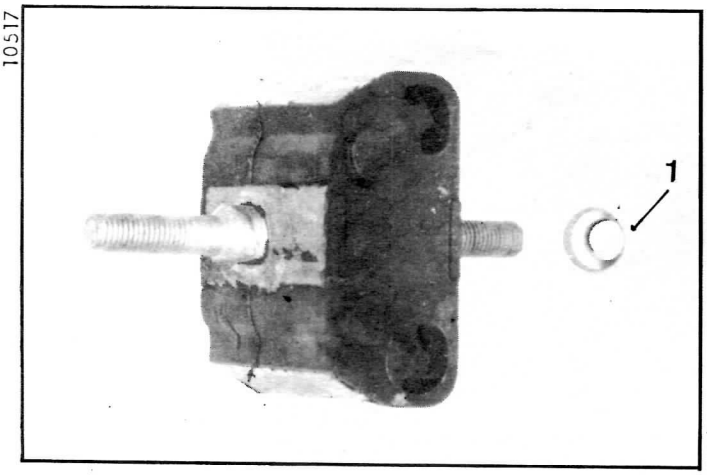
Using a jack, raise and support the wheelarms so that J1 = J2 (see drawing).
Check that the corrector is in the neutral position and tighten the collar on the anti-roll bar.
Make sure that the end « d » or the rod is positioned centrally in the hole in the unit (g1 = g2).

37. **Set the position of the manual height control rod (7) :**

Adjust the collar (11) so that :

- the lower part « a » is parallel to the edge « b » of the plates of the unit.
- the upper end « c » projects not more than 1 mm beyond the lower face of the lever (1).
- the centre line of the collar (11) makes an angle α = 45° to 60° with the edge of the unit plates.

10517



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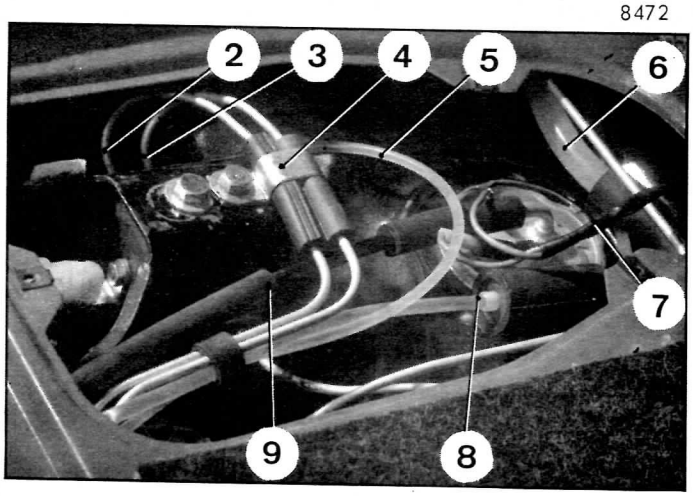

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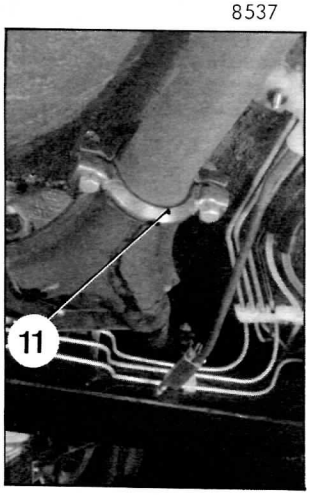

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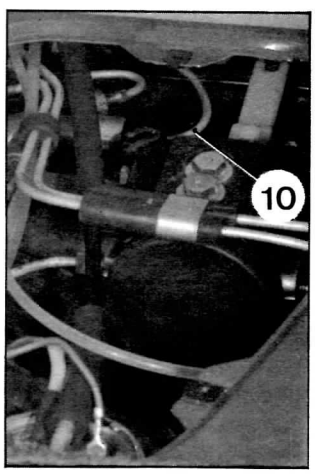

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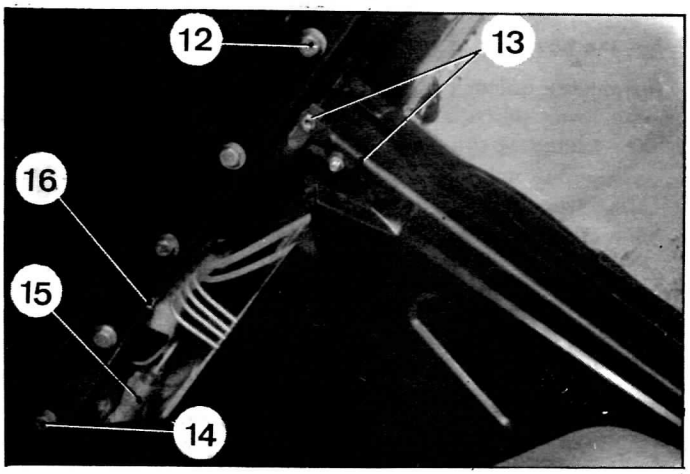


FITTING

38. Position the axle unit :

a) Check that the spacers (1) are in position on the flexible support studs of the unit.

b) Using a jack fitted with beam 2510-T, offer up the suspension unit to the chassis to within about 10 cm so that the different pipes can be positioned.

CAUTION : Carefully guide the hydraulic circuit pipes to avoid damaging them.

39. Connect up the hydraulic pipes :

Connect the pipes (2) and (3) and the flexible pipe (5) to the corrector.
Connect the pipe (10) to the four-way union. (Tighten the union by hand).
Connect :
- the flexible pipe (8) to the cylinder overflow return union,
- the flexible pipe (9) to the petrol intake pipe,
- the vent pipe (6) to the tank,
- the leads (7) to the petrol gauge.

Fit the collar (4) to the rubber sleeves.
Tighten the mounting bolt (contact washer).
Tighten the unions from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.lb) (Replace the seals).

40. Fit the axle unit :

Raise the unit and engage the studs of the flexible mountings into their chassis housings.
Fit the nuts holding the unit to the chassis (contact washer and thick washer).
Tighten the nuts on unit and chassis to 34 m.N (3.4 m.kg)(24 1/2 ft.lb)

41. *Under the vehicle :*

Connect the rear brake supply pipe to the three-way union (15). Tighten from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.lb) (Replace the seal)
Fix the pipes with the bracket (16). Tighten the bolt (contact washer).
Fit the protective plate. Tighten the bolts (12) and (14) (contact washer).
Connect up the manual control rods (13).

42. Fit the exhaust/silencer assembly :

Fit the flexible mountings of the silencer.
Fit the collar (11).

43. Connect up the petrol tank filler pipe.

Tighten the collar.

44. Connect the lead to the negative terminal of the battery.
Start the engine.
Tighten the pressure regulator bleed screw.
Check that all the unions are leak-tight.

45. Lower the vehicle to the ground.

46. Adjust the heights :

Front = 189 ± 10 mm Rear = 272 ± 10 mm

47. Check the operation and setting of the manual height control.

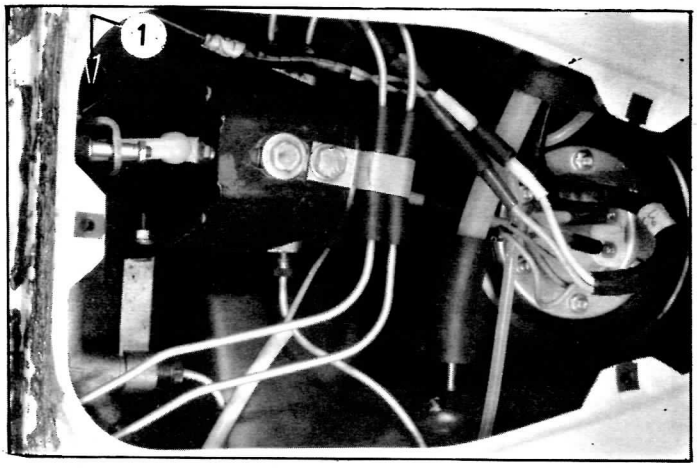
48. Bleed the rear brakes.

49. Fit the inspection cover to the floor of the boot. Stick the carpet back in place on the boot walls.

50. Fit the rear seat.

REPLACING A REAR WHEELARM SUPPORT TUBE

12450



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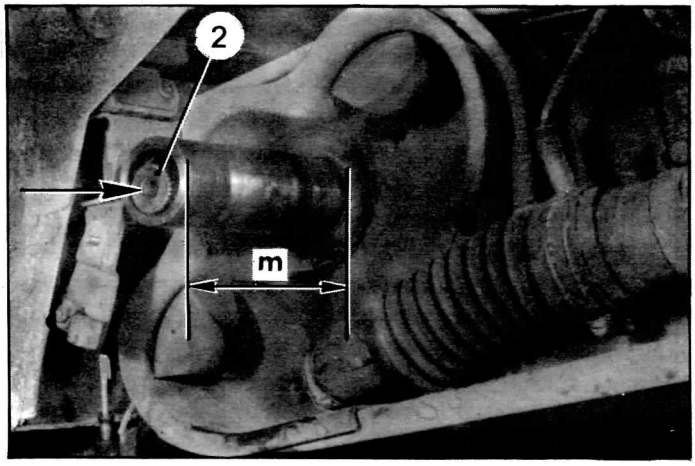

Supplement N° 1 to Manual 810-2 (CORR)

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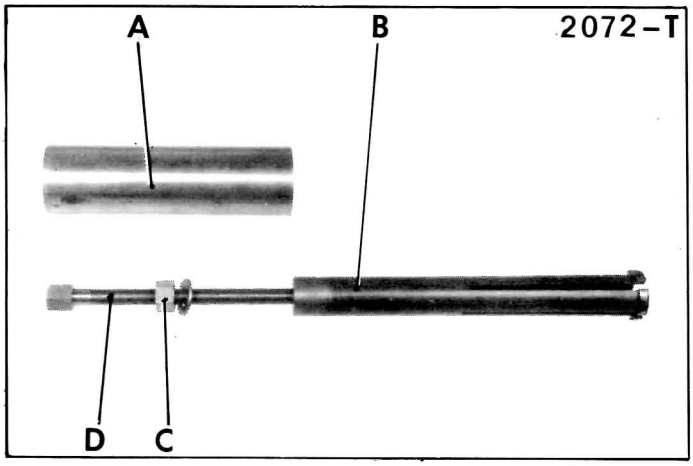

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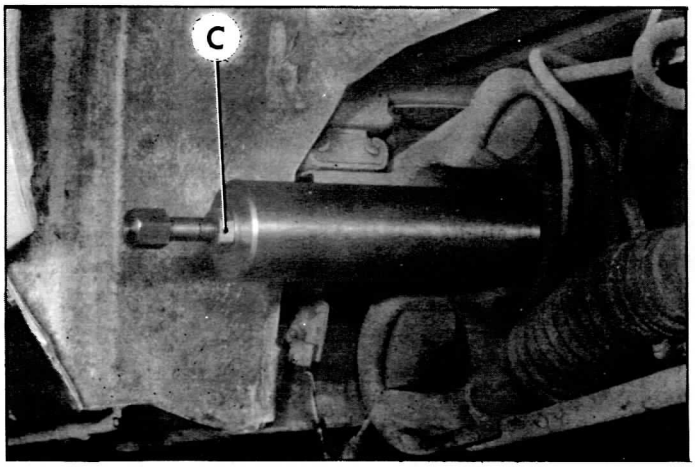


REMOVAL

1. **Remove the rear wheelarms**

   (see the corresponding Operation).

2. Remove the inspection cover from the floor of the boot.

3. Slacken from two to three turns the automatic height control nut (1) on the anti-roll bar so that the bar can slide in its collar.

   WARNING : **The nut must remain on the collar.**

4. Slide the anti-roll bar (2) *(in the direction of the arrow)* so that section **B** of tool 2072-T can be inserted.

   NOTE : *So as to facilitate the subsequent positioning of the support tube, measure and note the distance « m » by which it protrudes.*

5. **Remove the wheelarm support tube :**

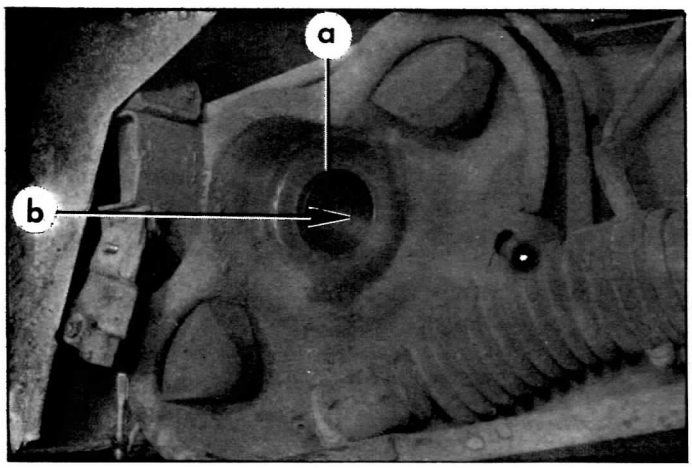
   a) Position, in the support tube, section **B** of tool 2072-T.

   b) Fit the cap **A** over the tube.

   c) Screw threaded rod **D** some 15 to 20 mm into section **B** and insert the assembly into the support tube as far as it will go, so as to engage the dogs in the latter (sharp noise).

   d) Tighten nut **C** so as to free the support tube from its housing in the suspension unit.

10757



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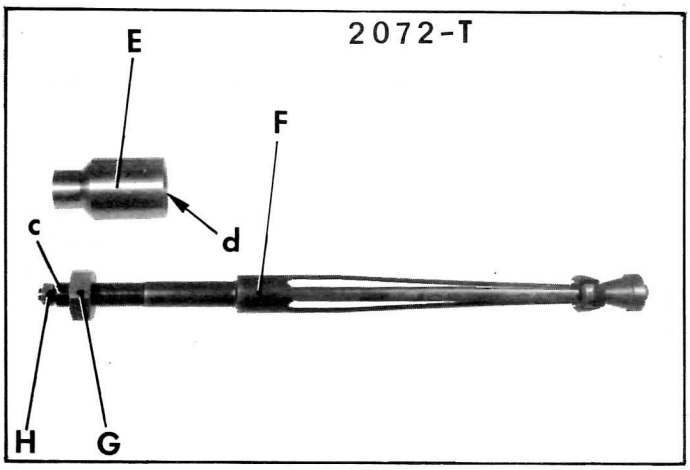

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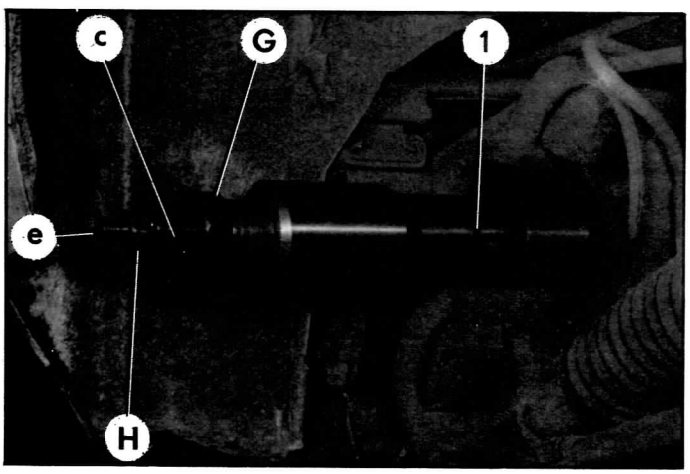

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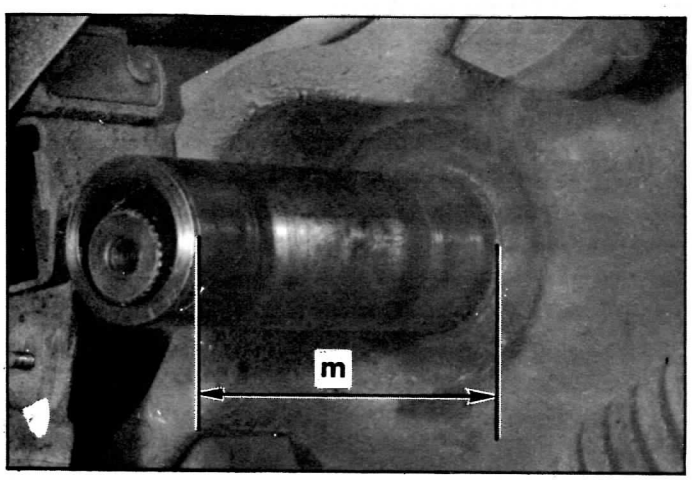


REFITTING

6. Clean bearing surfaces « a » and « b » of the wheelarm support tube in the suspension unit.

7. Fit the support tube :

IMPORTANT : *When fitting a rear wheelarm support tube, it is necessary to proceed as indicated below so as to avoid breaking or damaging the strips on part F,. Furthermore, two people are necessary to carry out the operation.*

a) Positioning the tool.
Position section **F** in the support tube, after having removed nuts **G** and **H** as well as cap **E,**
Insert the assembly into the suspension unit.
Position cap **E** after having smeared the interior section « d » with grease.
Grease the threads of nut **G,** as well as the face which will be in contact with the cap.
Screw in nut **G** onto section **F** until section « c » protrudes.
Fit nut **H** and its washer, and fully tighten it while holding the rod using groove « e ».

b) Tighten nut **G.**
Tighten nut **G** by hand until the parts are in contact.
Hold the support tube and tool assembly in position in the suspension unit.

Ask another person to hold part « f », using section « c ».

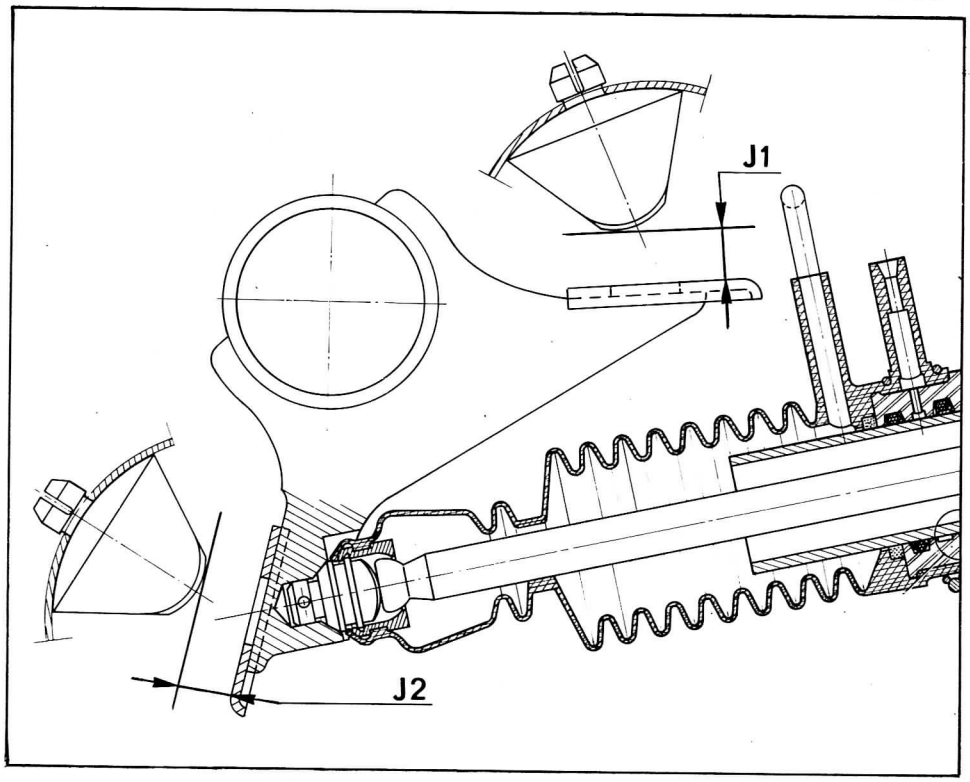
Tighten nut **G** to complete the positioning of the support tube.

The tightening torque remains quite high during the whole operation, and becomes very high when the component is in position.

WARNING : The same precautions must be taken when undoing nut **G** after the support tube has been positioned.

8. Remove cap **E,** and measure amount « m » of the protrusion of the support tube, which must be approximately the same as that of the support tube which has been removed.

G. 43-3 c



9. Remove tool 2072-T, and position the anti-roll bar, without tightening the nut on the clip securing the automatic height control rod.

10. Fit the wheelarm, and adjust the side-play of the anti-roll bar

(See the corresponding operation).

11. Pre-set the automatic height control rod :

Lift and maintain (using a jack) the wheelarms so as to obtain

J1 = J 2 (see diagram)

Check that the height corrector is in the neutral position, and tighten the automatic control rod fixing clip on the anti-roll bar.

Fit the inspection cover on the floor of the boot.

12. Bleed the rear braking system

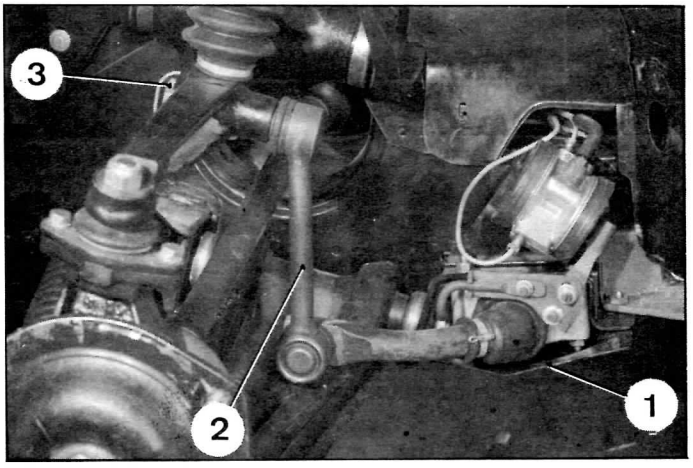
13. Check the height of the rear of the vehicle

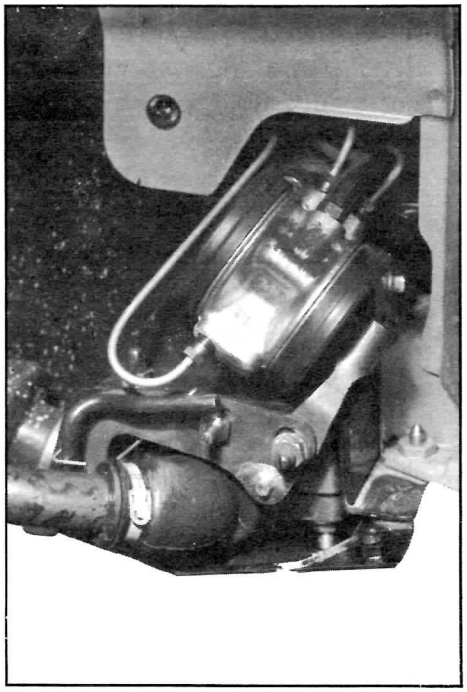
(See corresponding operation).

Supplement N° 1 to Manual 810-2 (CORR)

REMOVING AND FITTING A FRONT ANTI-ROLL BAR

8442





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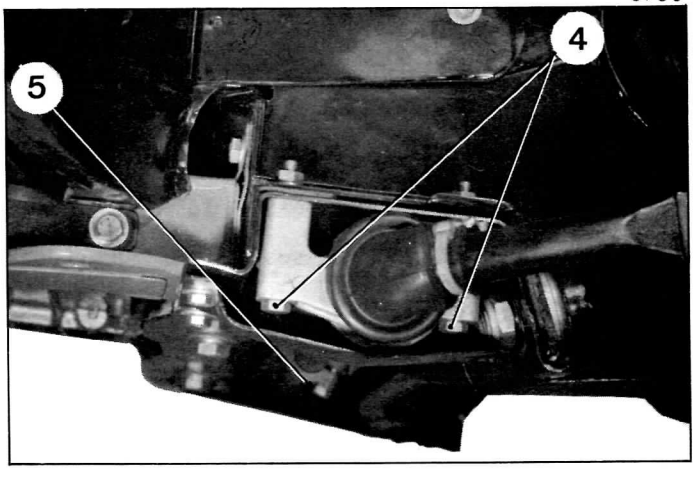


REMOVAL

1. Place the manual height control lever in the *high position* so that a jack can be pushed under the vehicle.
   Place the front of the vehicle on stands, wheels free.
   Slacken the bleed screw on the pressure regulator and place the manual height control lever in the *normal-running position.*
2. Remove the front wheels

3. *On the right hand side,* remove the protective casing for the height corrector.

4. Remove the bush nuts (3) and uncouple the connecting rods (2) from the upper suspension levers.

5. Remove the plates (1) which protect the anti roll bar bearings.

6. Disconnect the automatic height control rod from the anti-roll bar : remove the bolt from the clamp (5) and open it (the automatic control system should remain in position on the suspension unit).

7. Remove the bolts (4) holding the anti-roll bar bearings.

   Remove the bar and bearing assembly.

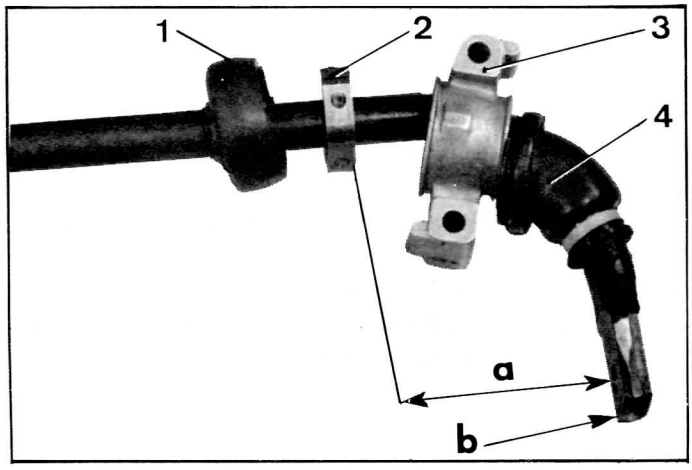
   NOTE : Do not lose the plastic bearing of the automatic control rod located in the right hand bearing.

8. If necessary, disconnect the two connecting rods from the anti-roll bar. (Extractor 1892-T).

9. Strip down the anti-roll bar.

Supplement N° 1 to Manual 810-2 (CORR)

8952



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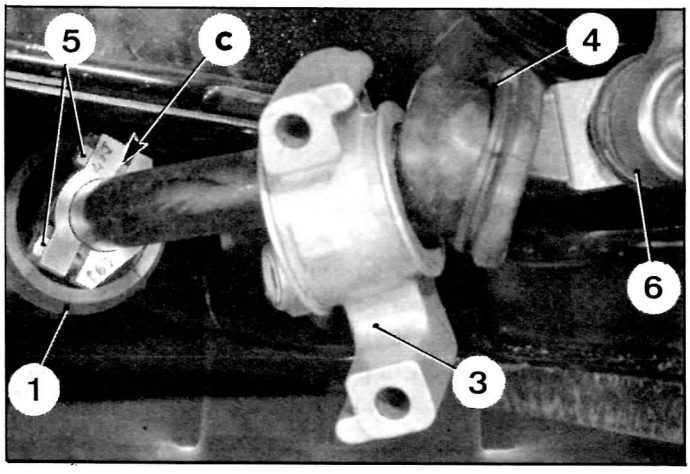

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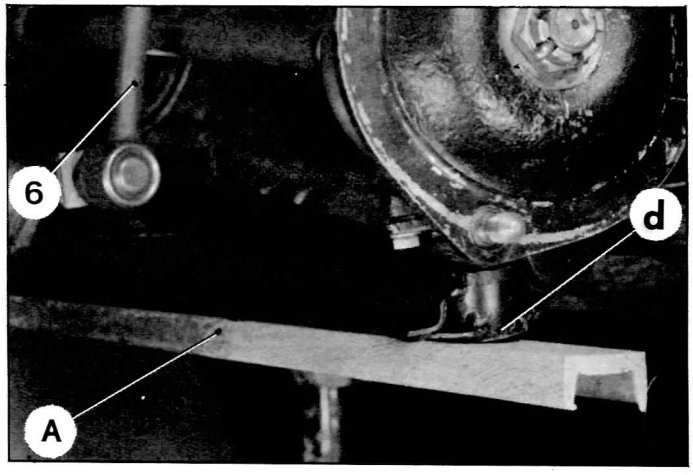

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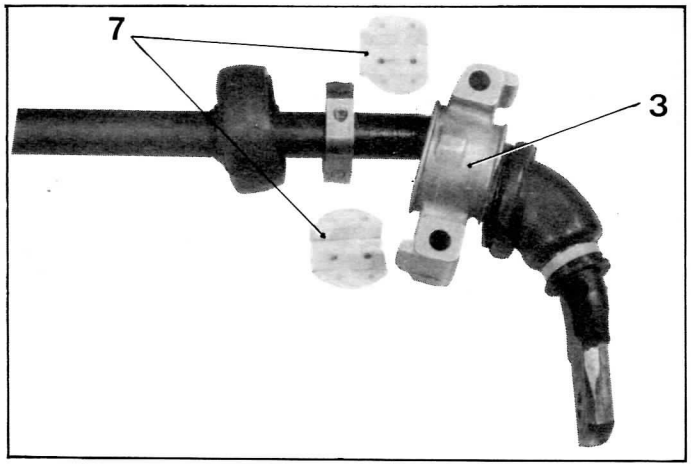


FITTING

10 Prepare the anti-roll bar :

At each end of the bar :

a) Fit the inner dust cover (1).

b) Fit the clamp (2) (the two clamps are identical).

Adjust the position of the clamp so that :

$a = 93$ mm

(distance between the outer face of the clamp and the machined part « b » of the bar).

Locate the clamp so that the heads of the bolts (5) face forward and that the section « c » of the half-clamps are perpendicular to the plane of the bar.

Fit the flexible washers (on bearings which are so fitted).

c) Fit the bearing (3).

NOTE : The bearings are different : the right-hand bearing has a housing for the plastic bearing of the automatic height control rod.

d) Fit the outer dust cover (4).

e) Fit the connecting rod (6) (the left-hand rod differs from the right-hand one).

Tighten the nut from 55 to 70 m.N (5 5 to 7 m.kg (40 to 51 ft.lb).

11. Fit the anti-roll bar :

a) Adjust the position of the wheelarms :
Place a jack fitted with a beam A (1.50 m length) and bearing under each lower end « d » of the wheel swivels).

Raise the wheelarm assembly until the beam A bears against the underside of the suspension unit (at each side).

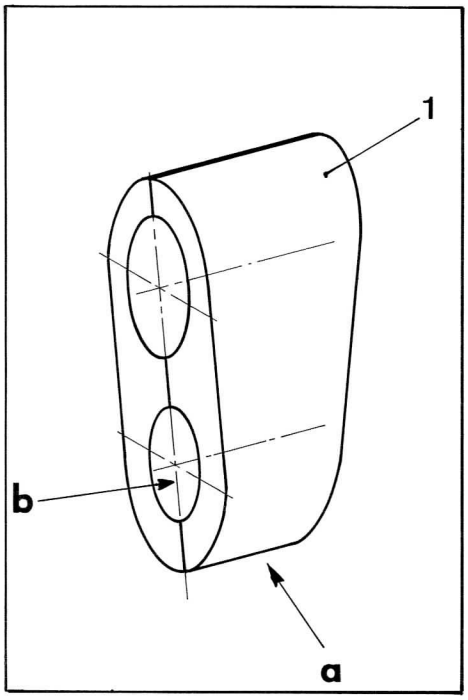
b) Position the anti-roll bar

Couple the connecting rods (6) to the upper suspension levers.

Tighten the nuts from 25 to 30 m N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb).

c) Fit the nylon shells (7) (grease the inside) in the bearings (3) of the bar.

G. 43-10



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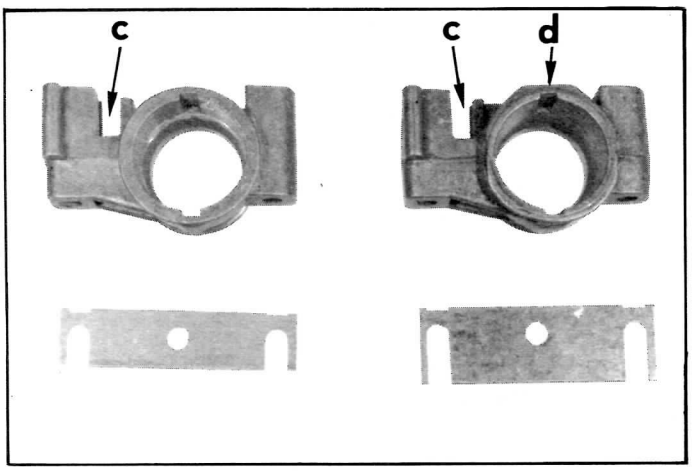

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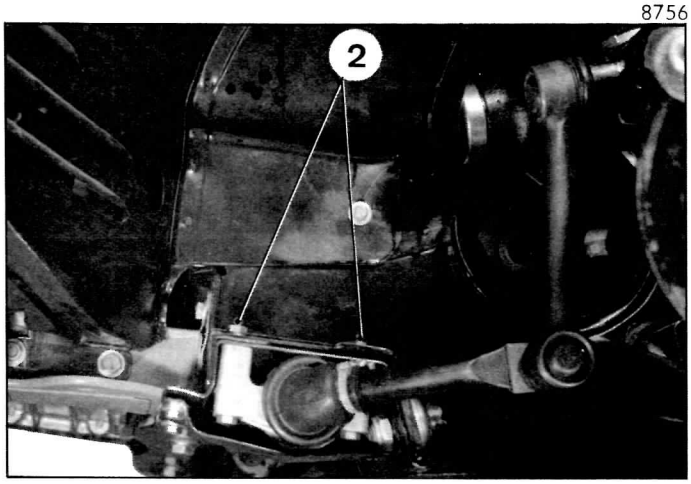


d) *On the right-hand side,* fit the plastic shells on the automatic height control rod.

CAUTION : When the shells are joined together, the assembly (1) should be *wedge shaped.* The automatic control rod should be in the hole « b » (smallest diameter) situated near the thinnest end « a »).

Fit the bearing (1) into its housing on the right-hand bearing of the anti-roll bar : the thinnest part « a » should be at the bottom of the housing,

NOTE : If the bearing (1) is correctly put together, *it should be possible to fit it easily into its housing.*

12. Fix the anti-roll bar :

a) Raise the bar until it is possible to fit the bolts and nuts (2) (contact washer). Engage the nuts by a few threads only (so as to hold the bar, but without the bearings touching the unit.

Check that the bearing of the automatic control rod is in its housing.

b) Continue to raise the bar by its centre until one of the bearings comes into contact with the suspension unit.

CAUTION : If the other bearing does not touch the unit, insert shims between this bearing and the unit until *it can be fixed without any stress on the bar.*
(There is only one thickness of shim : 1 mm).
Tighten the nuts (2) from 18 to 21 m.N (1.8 to 2.1 m.kg) (13 to 15 ft.Ib).

NOTE :

On vehicles produced before *1st September 1971,* the bearings have no collar (at « d ») which grip the upper part of the rubber dust covers.

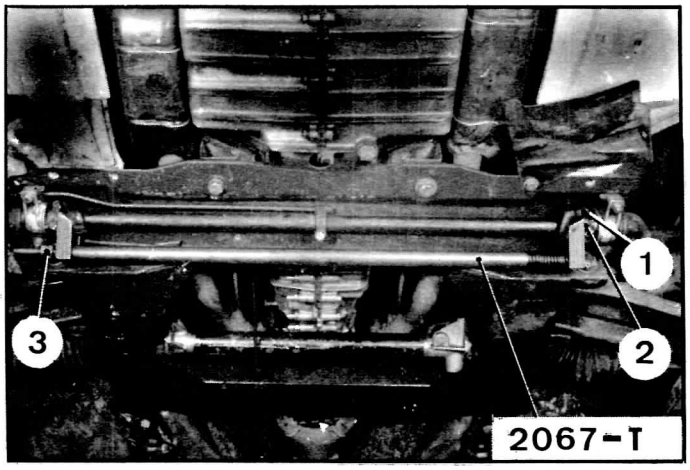
To facilitate subsequent fitting of the dust cover, systematically interpose between each bearing and the suspension unit :

a) Two shims (GX. 20 230 01 A), if there is no shim under one or the other bearing

b) A single shim, if one shim is already under one of the two bearings.

There is only one type of shim (thickness 1 mm).

9931



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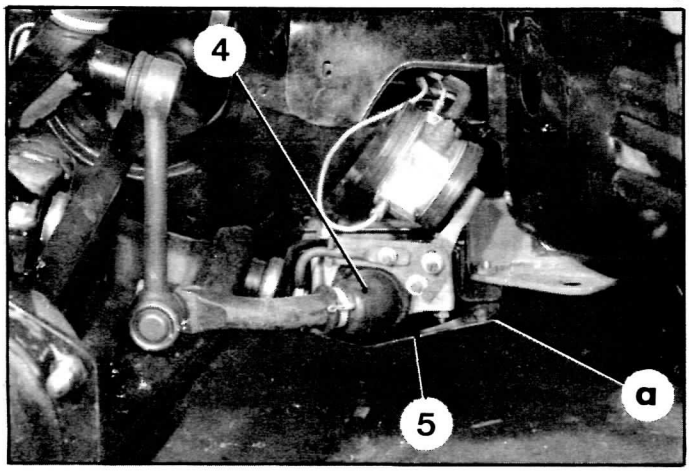
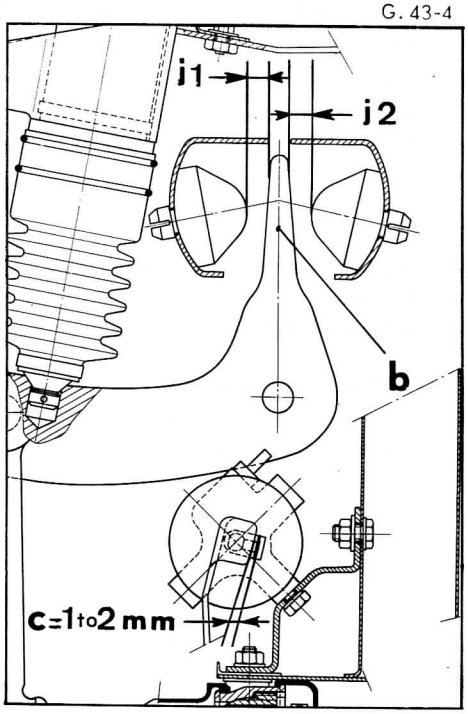


G. 43-4



13. Prestress the bearing shells :

For this use tool 2067-T.

a) Slacken one of the bolts (1) of the collar (2).

b) Place the tool 2067-T up against the collar (2) Slacken the nut (3) so that the tool can exert a stress on the shells.

c) Tighten the bolt (1) from 10 to 11 m.N (1 to 1.1 m.kg) (7.2 to 8 ft.lb).

d) Remove the tool 2067-T.

e) Fit the dust covers to the bearings.

14. Fit the dust covers to the bearings.
(Do not twist them).

Fit :
- the locking ring at the bearing side.
- the collar at the bar side.

15. Fit the bearing protection plates (5)

Check that the anti-roll bar does not touch the bearing protection plates.

Otherwise add a flat washer between the plate and *the nuts at « a » only.*

16. Fix the automatic height control rod :

Connect the rod to the anti-roll bar.
Fit the bolt to the collar without tightening it.

a) Check that the manual control lever is in the *normal running position.*

b) Leave the wheelarm in the position described in paragraph 11.

NOTE : In this position the wheelarm stop levers « b » are halfway along their travel :

$$J1 = J2 \pm 2 \text{ mm}$$

c) Tighten the collar on the anti-roll bar from 8 to 9 m.N (0.8 to 0.9 m.kg) (5 1/2 to 6 1/2 ft.lb), checking that the ball joint on the corrector tie-rod is not clamped in the operating yoke. *c = 1 to 2 mm*

17. Fit the corrector protective casing.

18. Remove the jack and the beam.

19. Fit the front wheels.

20. Start the engine and tighten the bleed screw on the pressure regulator.

21. Lower the vehicle to the ground.

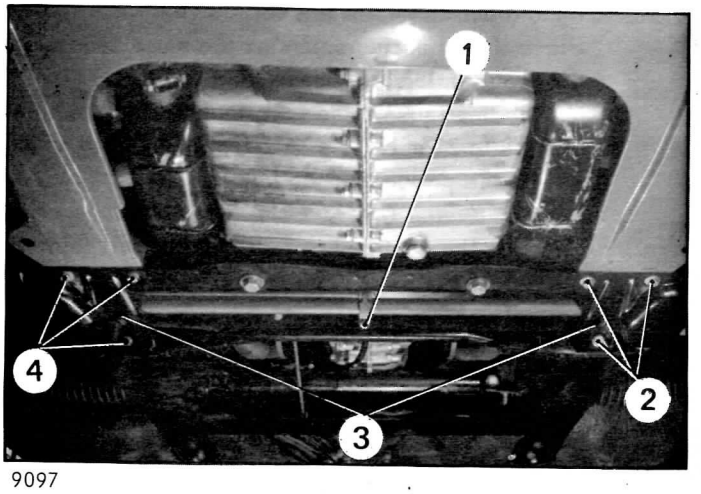
22. Check the heights and adjust if necessary.

front height = 189 ± 10 mm

rear height = 272 ± 10 mm

REMOVING AND FITTING AN AUTOMATIC FRONT HEIGHT CONTROL

8536



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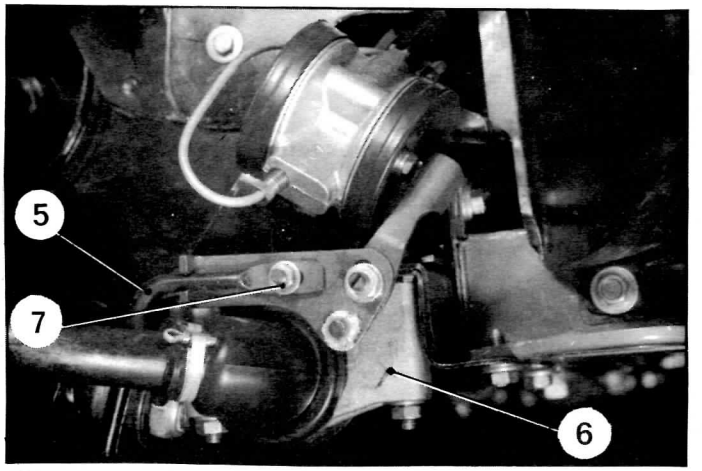

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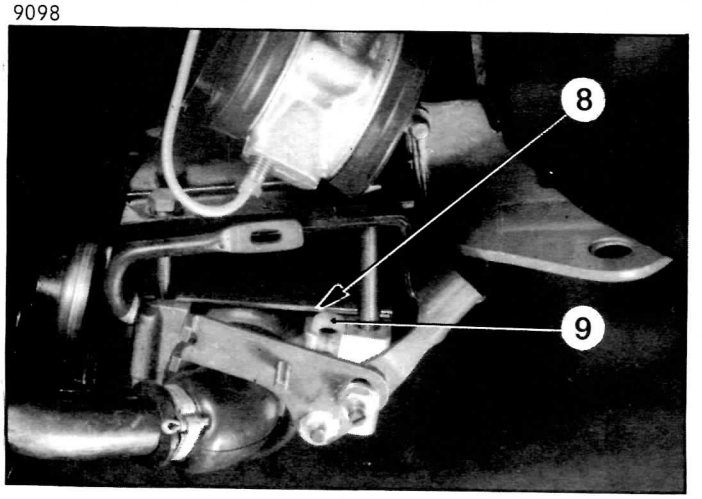

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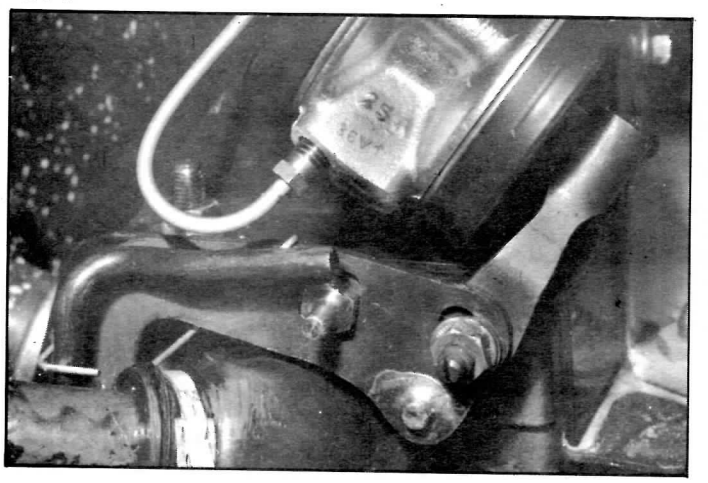


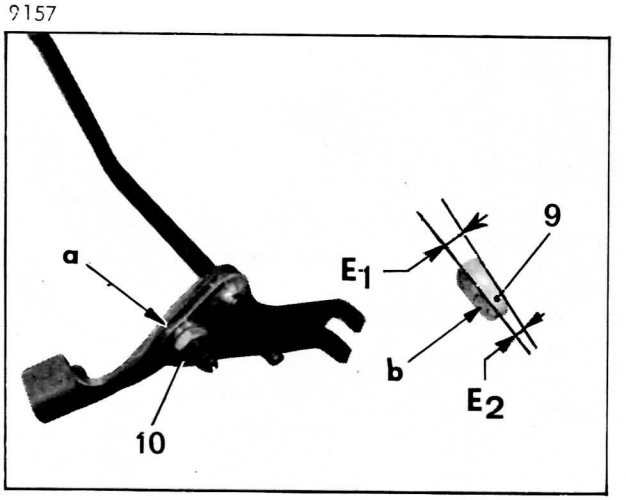
REMOVAL

1. Raise the front of the vehicle and remove the right-hand wheel.
2. **Remove the height corrector protective plate**
3. **Remove the protective plates (3) from the anti-roll bar bearings (right and left).**
   Remove the bolts (2) and (4).
4. **Remove the automatic control system :**
   a) Slacken the bolt (1) on the clip.
   b) Place the manual height control lever in the *normal position*, remove the nut (7) and disconnect the manual height control (5).
   c) Disconnect the anti-roll bar bearings (6) *(right and left)*.
   d) Remove the assembly of anti-roll bar and bearings downwards (do not lose the shims (8).
   IMPORTANT : The shims (8) may have been placed on the right or on the left, therefore **their position should be noted.**
   e) Remove the bolt (1) from the collar.
   f) Remove the automatic control system.
   Do not lose the bearing shells (9).

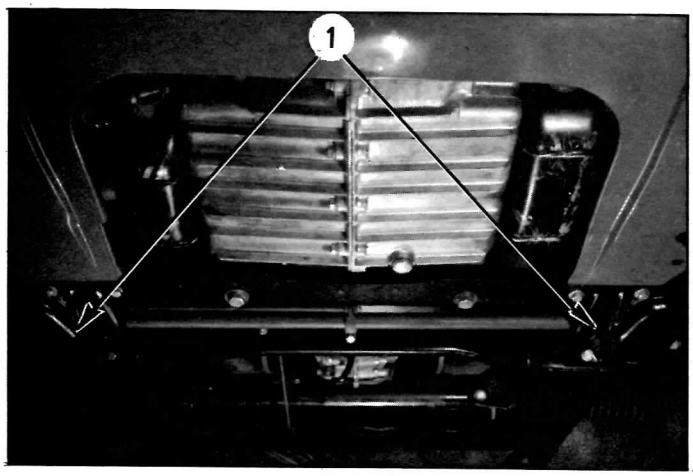
FITTING.

5. Check that the edges of the fixed lever and the moving lever are in the same plane at « a ».
   Tighten the nut (10).
6. **Fit the automatic control system :**
   a) Position the system on the anti-roll bar.
   b) Fit the bearing shells (9).
   IMPORTANT : When the two bearing shells are correctly assembled, *they should be wedge shaped (E1 > E2).*
   The narrower end « E2 » should be at the bottom.
   The automatic control rod should be placed in the hole « b » (smallest diameter).
   c) Fit the bolt to the collar (1) *without tightening.*

9157



Supplement N° 1 to Manual 810-2 (CORR)



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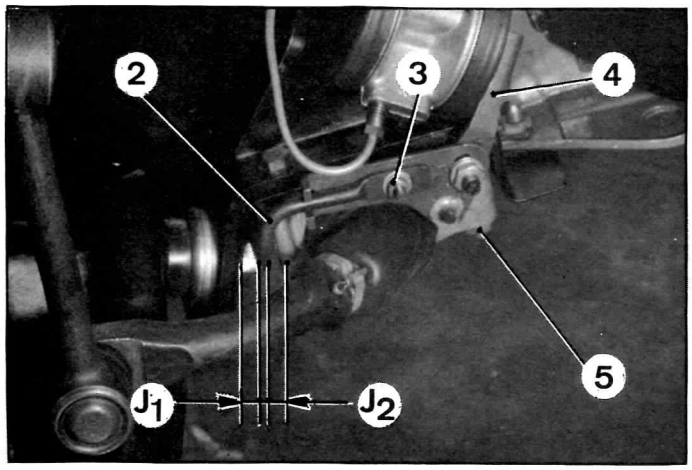

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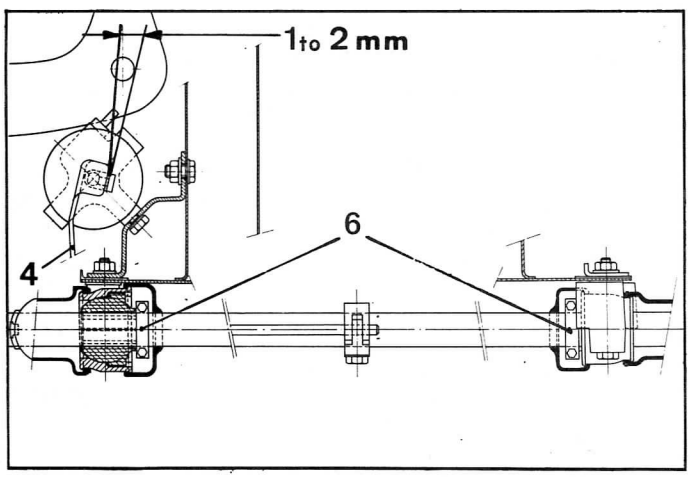


G. 43-4

7. Fit the anti-roll bar :

Undo a nut on one of the collars (6).
Place the adjusting shims on the same bearing they were on before dismantling.
Fit the bearings on the unit, and tighten the nuts (5) from 18 to 21 m.N (1.8 to 2.1 m.kg) (13 to 15 ft.Ib)
Adjust the preload on the bearing shells. (2067-T) *(See Operation G. 434-1).*
Position the control lever (4) on the ball joint of the height corrector, and connect the manual height control (2).

- *First fitting :* Make sure clearance J1 and J2 are equal. Tighten nut (3) (contact washer).
- *Second fitting :* The lever (8) must not contact adjusting screw (7), Leave a clearance of approximately 5 mm.

8. Preset the automatic control unit :

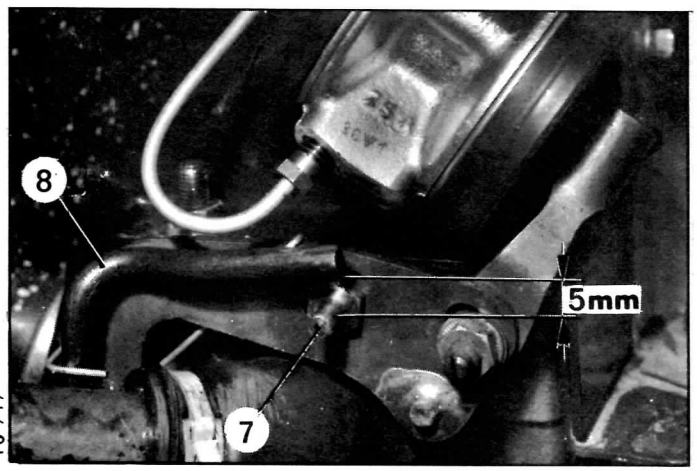
Using a beam A (length = 1.50 m (5') placed on a trolley-jack, raise the two half-axles until beam A comes into contact with the subframe.
Make sure there is a clearance of 1 to 2 mm between lever (4) and the height corrector ball-joint.
Tighten the automatic control securing collar.

9. Fit the anti-roll bar bearing protective covers.
Fit the fixing screws (contact washers).

10. Check the front ride height.

11. Check the adjustment of the manual height control lever (for the front).

12. Fit the front height corrector dust cover.



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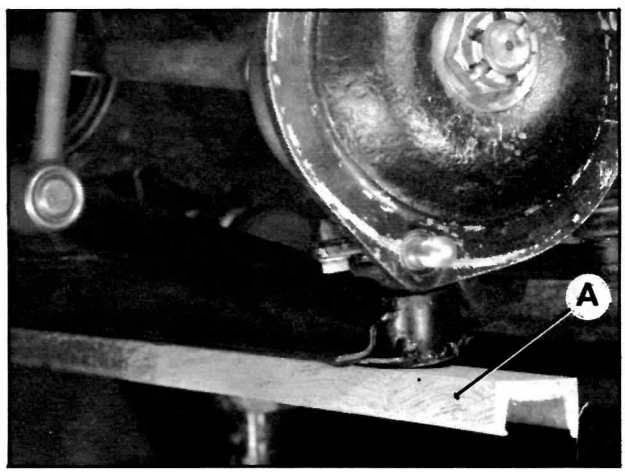

II. REMOVING AND FITTING A REAR AUTOMATIC HEIGHT CONTROL UNIT

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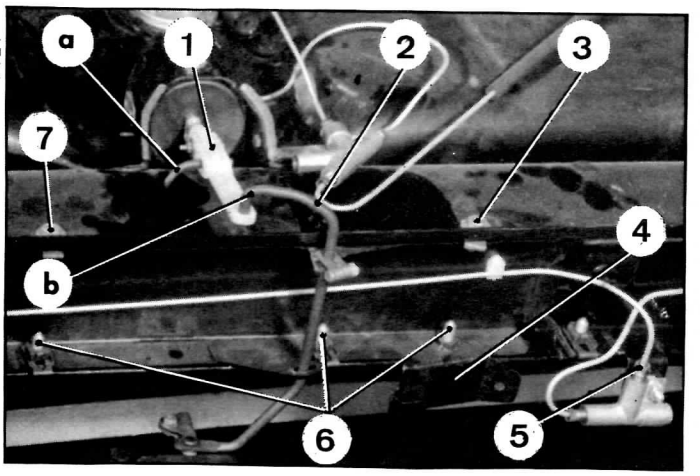

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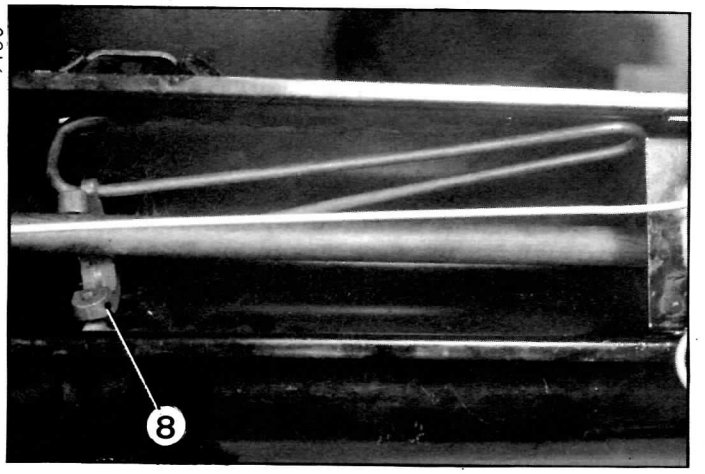
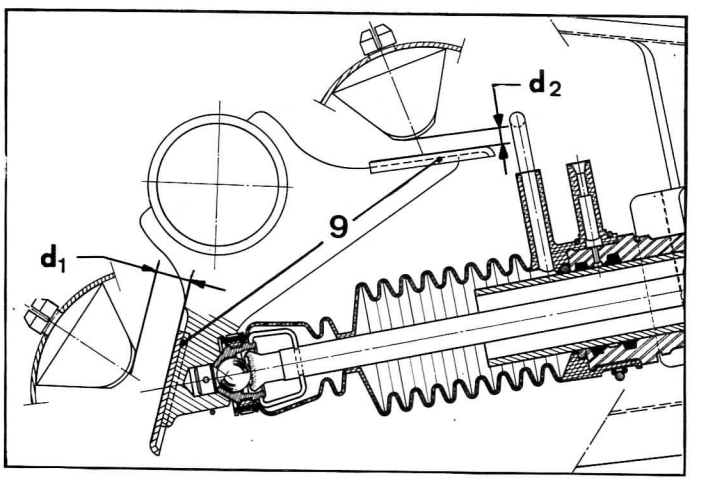
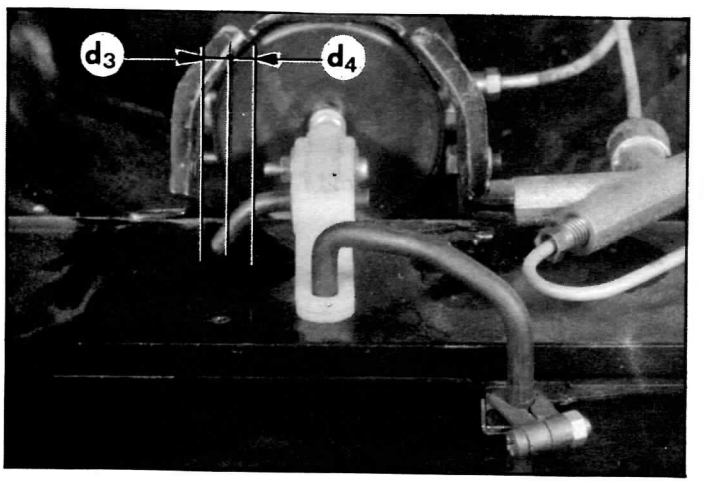




G.43-3



9119

Supplement N° 1 to Manual 810-2 (ADD)

REMOVAL

1. **Remove the rear subframe.**

2. **Remove the front plate of the unit :**

   Disconnect union (5).
   Withdraw the pipe from the plastic clip.
   Remove nuts (3), (6) and (7).
   (Do not lose bracket (4)).
   Withdraw the plate from the front, and lift it to withdraw extremity « b » of the height control rod.

3. **Remove the automatic height control unit :**
   Remove the nut from collar (8).
   Withdraw extremity « a » of the automatic control unit from lever (1).
   Remove the unit, as shown on the diagram.

FITTING

4. **Fit the automatic control unit :**
   Position the unit on the anti-roll bar, and engage extremity « a » in lever (1).
   Fit the nut onto collar (8) without tightening it.

5. **Pre-set the automatic control unit :**
   Position the wheelarms so that the plates (9) are at the same distance from their respective rubber bump-stops (d1 = d2).
   Tighten the nut on collar (8) from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib).

6. **Fit the front plate of the unit :**
   Engage extremity « b » of the control rod into lever (1).
   Fit nuts (3), (6) and (7) (contact washers) (Do not forget to fit bracket (4)).
   Fit union (5) (new seal) and tighten it from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib).

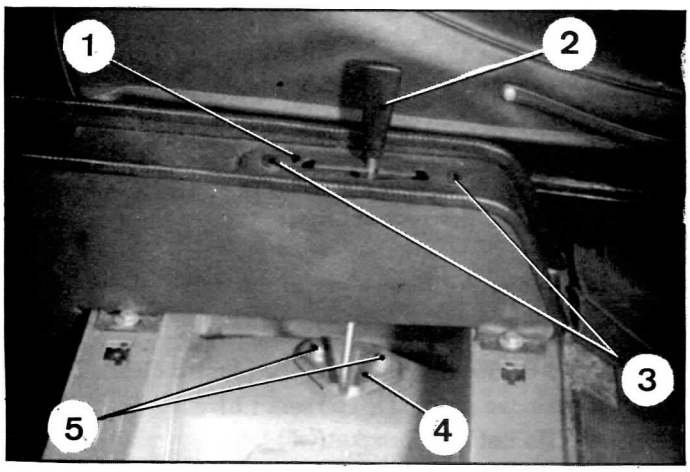
7. **Check the position of the control rod (2).**
   (See chapter III, paragraph 6).

8. **Fit the rear subframe.**

9. **Adjust the rear ride height.**

10. **Check the adjustment of the manual height control lever.**

III. REMOVING AND FITTING A MANUAL HEIGHT CONTROL UNIT



8509

REMOVAL

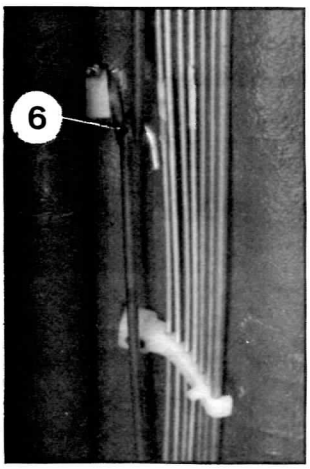
1. Remove the manual height control lever :

a) Remove the front left-hand seat with its sliders.

b) Remove nuts (3) and quadrant (1).

c) Remove nuts (5) and cap (4). Remove the bearer (7).

d) Remove lever (2) by rotating it towards the right so as to free hook (6) from the central control rod (8).



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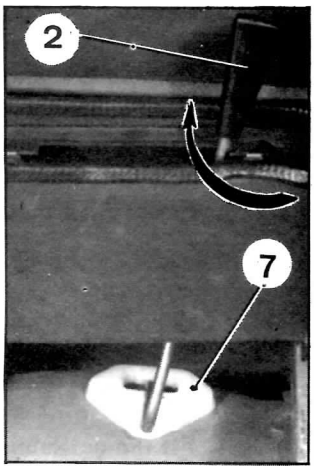

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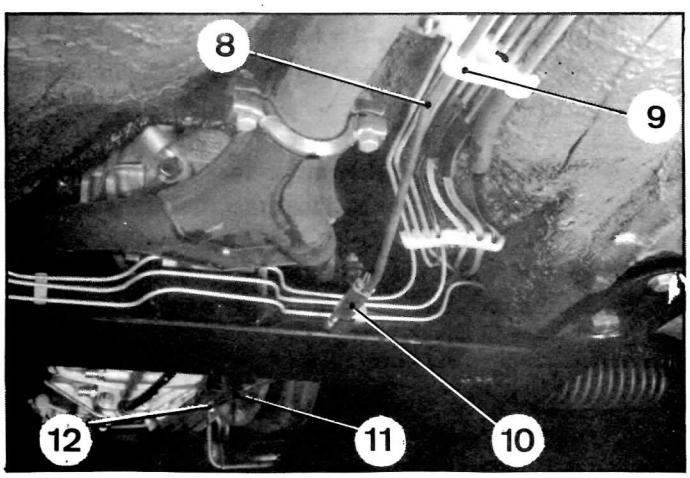


8537

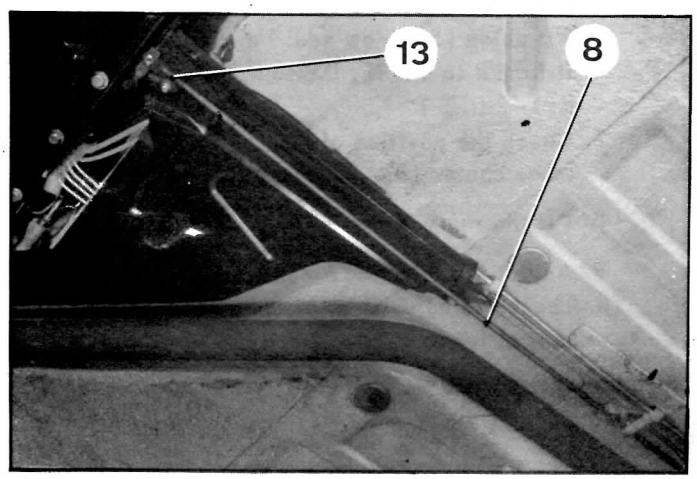
2. Remove the central control rod (8) :

a) Slacken the front clamp (10).
Slide the clamp to the rear, and withdraw the front extremity of rod (8).

b) Slacken the rear clamp (13) and withdraw the rear extremity of the rod.

c) Slide rod (8) to the rear so as to free it from the front bearer (9).
Then slide the rod to the front and remove it.

d) Remove the bifurcated rivet (12) and remove the fork-end link rod.



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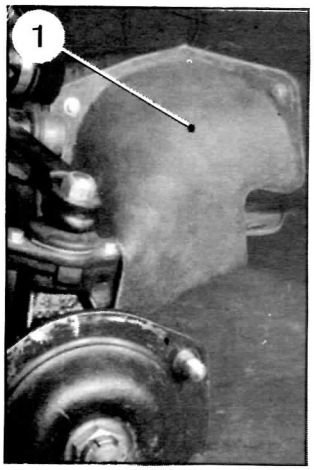

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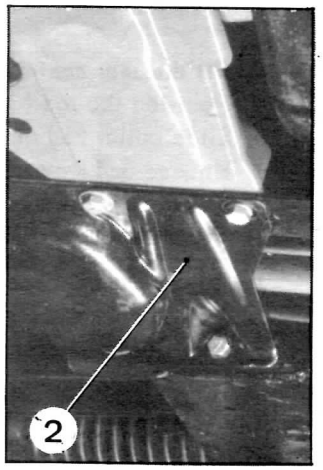
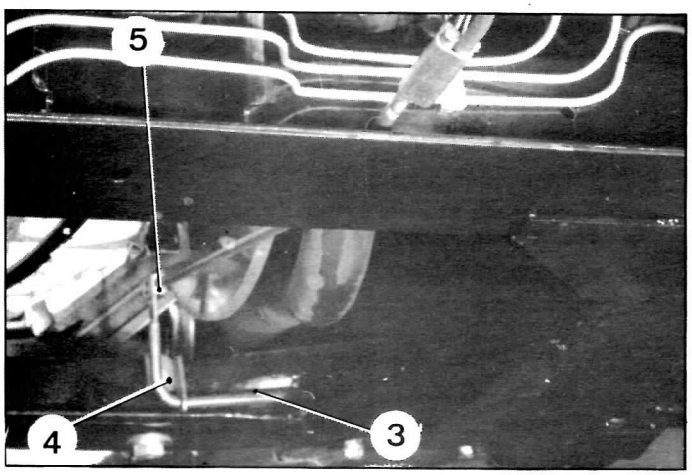


3. Remove the front control rod (3) :

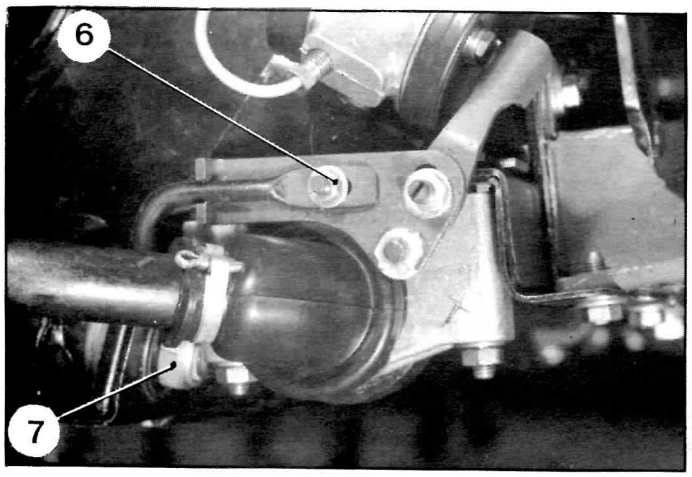
Remove, in the following order :
- the protective cover (1),
- the protective cover (2) for the right-hand anti-roll bar bearing,
- the securing bracket screw (4),
- the bifurcated rivet (5),
- the bolt (6) *(first fitting)*
- the securing bolt (7) for the lower wheelarm spindle (Slide the spindle back to remove the control rod).

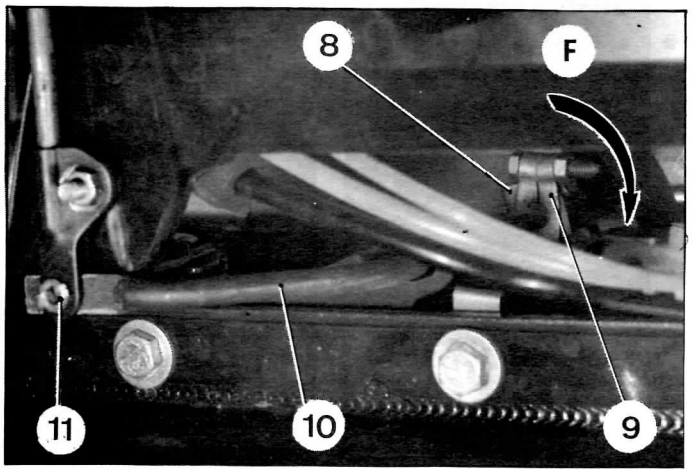
Remove the control rod (3).

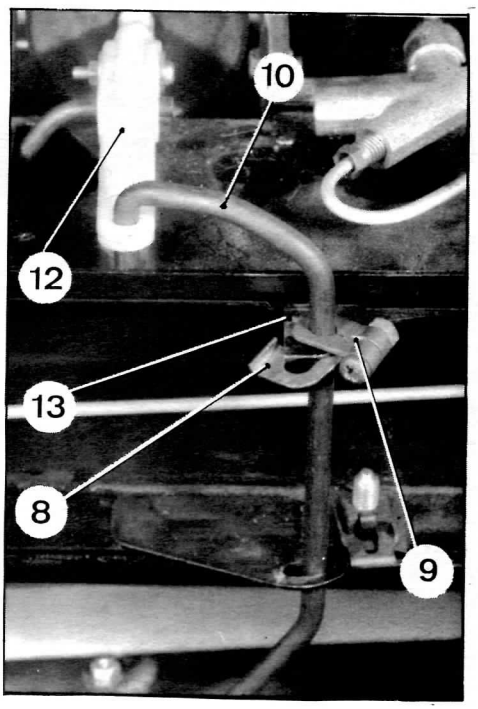


4. Remove the rear control rod (10) :

- Slacken the nut on collar (9).
- Remove the bifurcated rivet (11).
- Withdraw the lockplate (8).
- Turn collar (9) (in the direction of arrow F) so that the nut is parallel with the vehicle.
- Slide rod (10) to withdraw its extremity *from plastic lever (12).*
- Free rod (10) from bracket (13) and withdraw it from underneath the vehicle by sliding collar (9),







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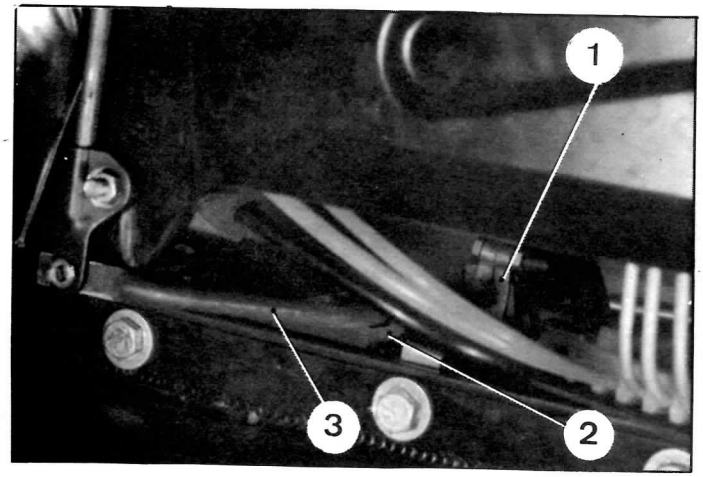
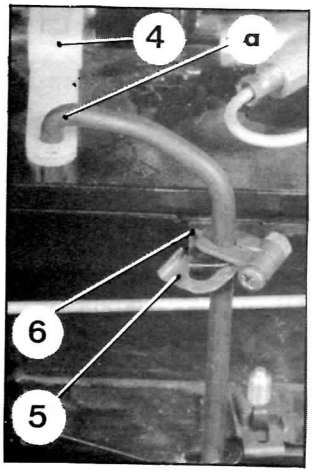
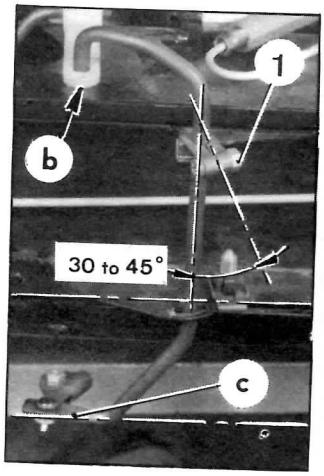
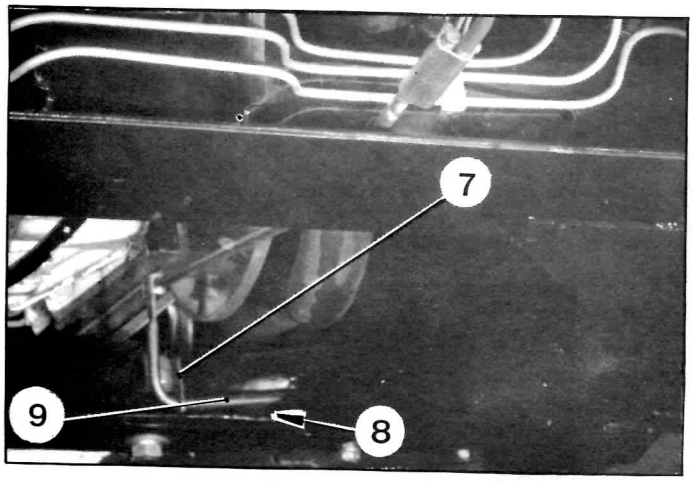
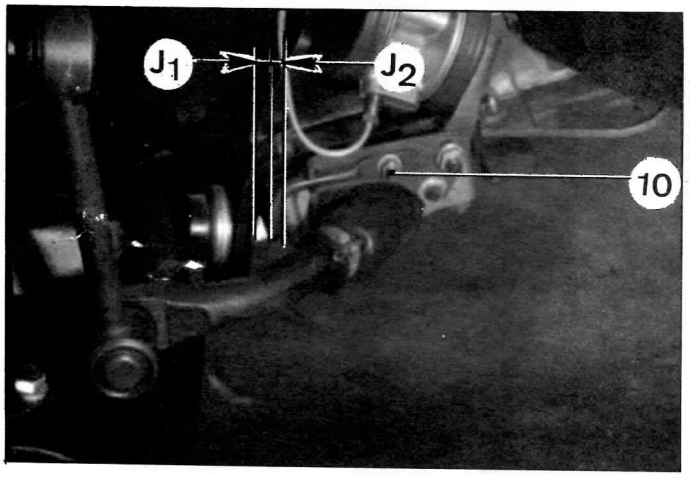










FITTING

5. Fit the rear control rod (3) :
Position the rod (3) in the lower bearer (2).
Slide collar (1) on rod (3).
Engage end « a » of rod (3) in the lever (4).
Position the collar on the support bracket (6).
Fit the lockplate (5).

6. Adjust the position of the rear control rod (3) :
Rotate clamp (1) so that :
- the lower section « c » of the rod (3) is parallel to the flange edge of the panels of the subframe,
- the upper extremity « b » of the rod (3) has a maximum protrusion of 1 mm in relation to the lower face of the plastic lever,
- the axis of the screw of clamp (1) is at an angle of 30 to 45° in relation to the flange edge panels of the subframe.

Tighten the screw on clamp (1).

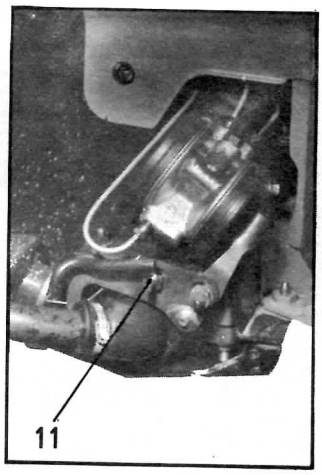
7. Fit the front control rod (9) :
Engage the slotted extremity into the orifice (8).
Position the rod on the automatic control unit.
Fit nut (10) without tightening it (contact washer).
Fit bracket (7) (contact washer).

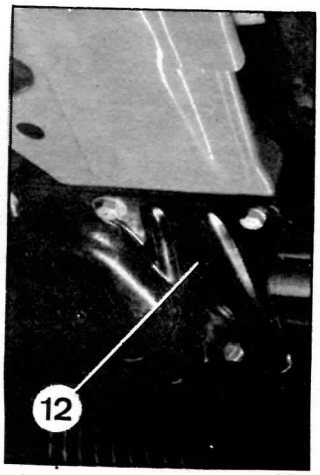
8. Fit the lower wheelarm spindle bolt :
Fit a new NYLSTOP bolt.
Tighten from 80 to 88 m.N (8 to 8.8 m.kg)
(58 to 64 ft.Ib) having greased threads and faces.
(use a torque wrench).

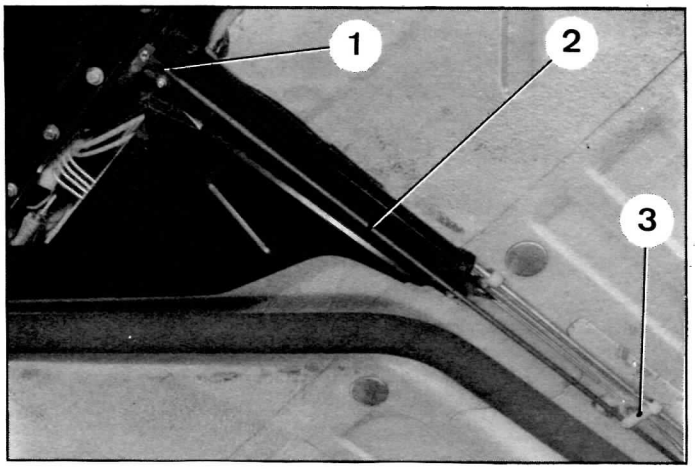
9. Adjust the position of the control rod :
First fitting :
Make sure clearances J1 and J2 are equal.
Second fitting :
Leave a clearance of approximately 5 mm between the rod and its adjusting screw (11).

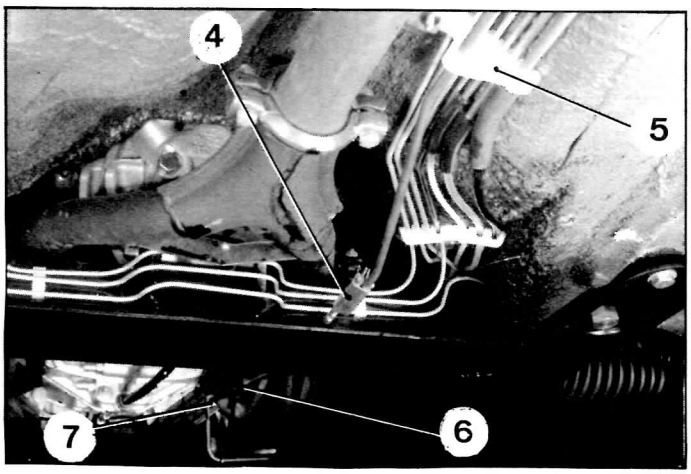
10. Fit the anti-roll bar bearing protective cover (12).

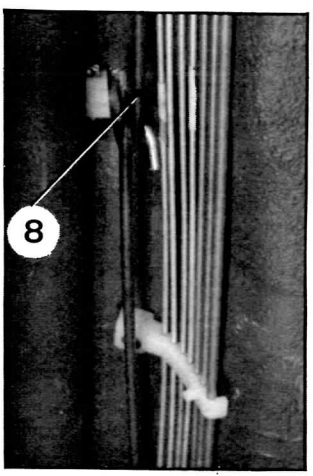
11. Fit the height corrector protective cover.

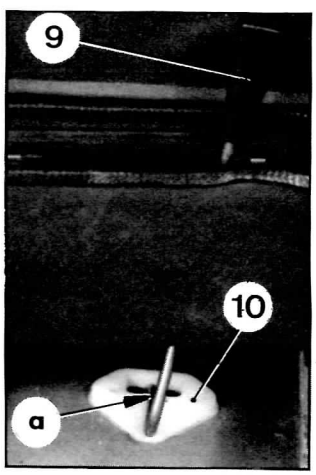












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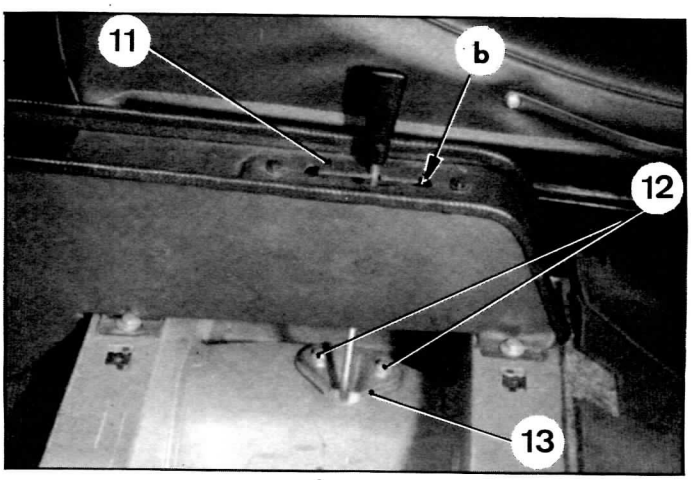


12. Fit the central control rod (2) :

a) Engage the rod onto the rear bearer (3) then slide it and engage it onto the front bearer (5).

b) Fit the fork-end link rod (6).
Fit the bifurcated rivet (7) (Flat washer).

c) Connect the two rods to the clamp (4).
Insert each rod the length of the clamp.
Provisionally tighten the clamp.

d) Connect the rear clamp (1). Engage the rod *as far as it will go* in the clamp, and tighten the nut.

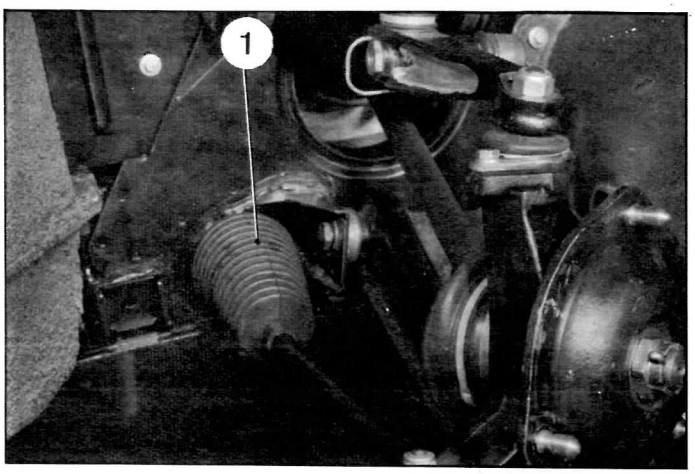
13. Fit the manual height control lever (9) :

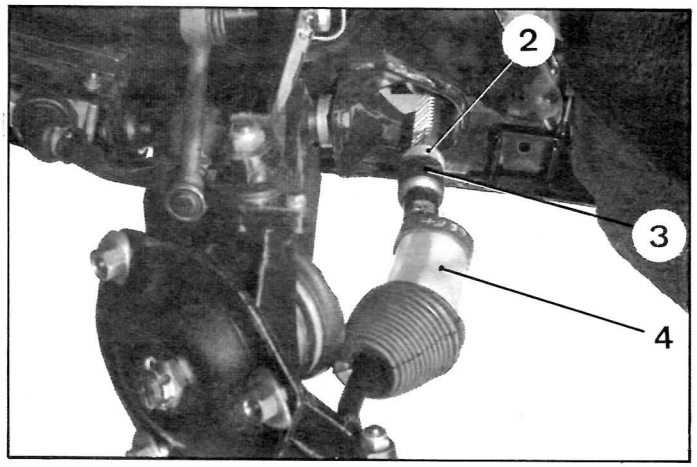
Position the lever with its bearer (1) (with the curved section « a » on the left-hand side).
Engage the extremity of the lever (9) in the hooked section (8) of the central control rod.
Position the bearer (10) and the cap (13).
Fit nuts (12) (contact washer).
Fit quadrant (11) and position it at the centre of the slots. Tighten the nuts (Make sure the quadrant is fitted the right way round : the slots «b» must be on the right-hand side).

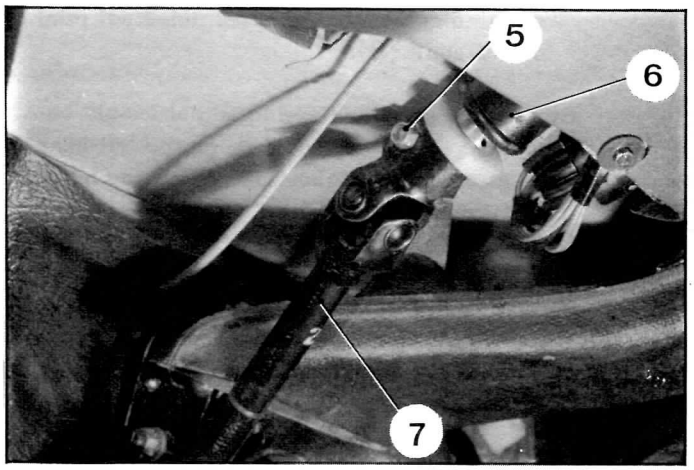
14. Fit the seat.

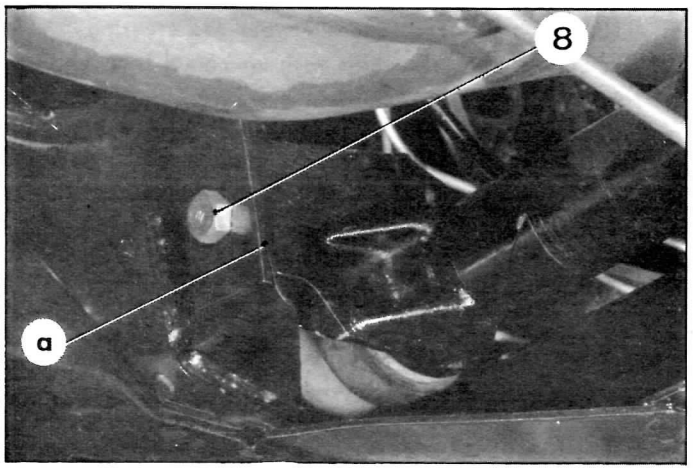
15. Adjust the manual height control lever.

REMOVING AND FITTING A STEERING SYSTEM.









REMOVAL.

1. Place the front of vehicle on stands (wheels free).

2. Remove the front wheels.

3. Move the sleeves (1) out of the way.

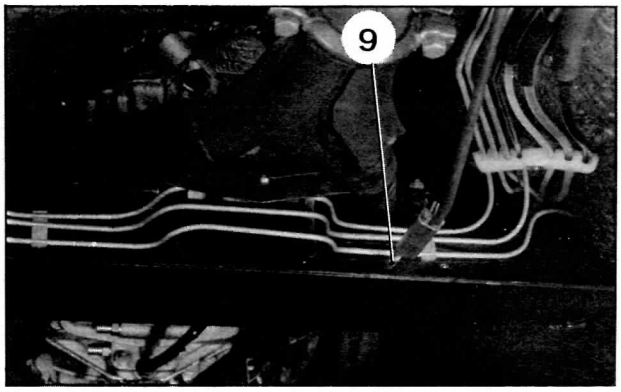
4. **Disconnect the track rods :**
   Unlock the tabs (2).
   Unscrew the track rod ball joints (3) (16 mm key with 15° and 75° angle openings, such as FACOM N° 34). *Hold the rack still during this operation.*

5. Free the plastic sleeves (4) from the rack.

6. **Remove the steering column**

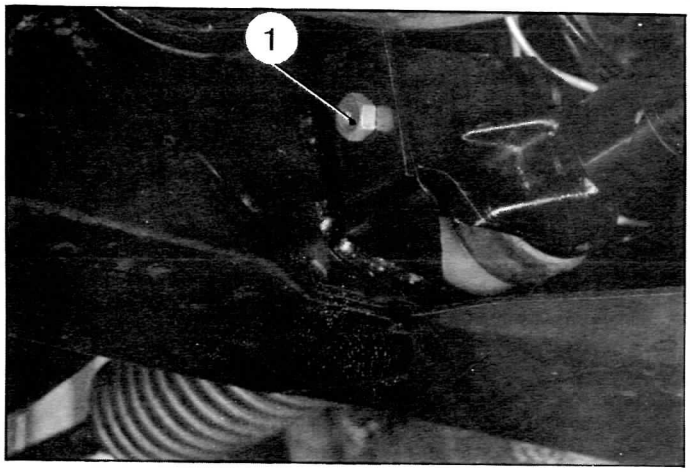
   IMPORTANT : Since the ends of the shaft with universal joint are not identical, mark their positions before removing.
   Remove the nut (5) holding the upper universal joint.
   Slacken the nut holding the lower universal joint.
   Free the steering column from the support tube (6).
   Remove the shaft with universal joint (7).

7. **Remove the steering unit (rack and pinion assembly) :**
   Remove the bolts (8) holding the steering on the front subframe.
   Remove the control rod (9) from the front height corrector (mark the position of the collar on the rod).
   NOTE : The height settings are not modified by removing the control rod of the height corrector.
   Free the steering box from its housing from underneath the vehicle.
   If necessary, file down each side at « a ».



Supplement N° 1 to Manual 810-2 (CORR)

FITTING.



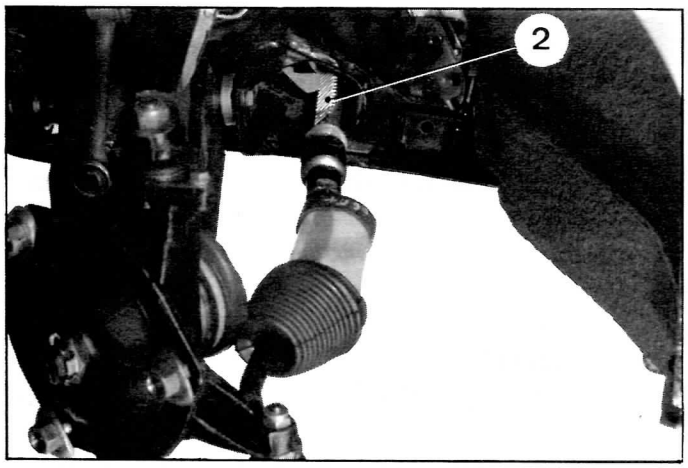
8. Fit the steering unit :

Fit the steering into its recess on the front axle unit. Tighten the bolts (1) from 36 to 40 m.N (3.6 to 4 m.kg) (26 to 29 ft.Ib) (bearing plate under bolt head).

9. Connect the shaft with universal joint and steering column :

CAUTION : Place the shaft with universal joint (6) in the position marked on removal.
The ends are not identical : at the steering column end, the groove for the bolt (4) must face the splines.

a) Engage the lower universal joint with the pinion.

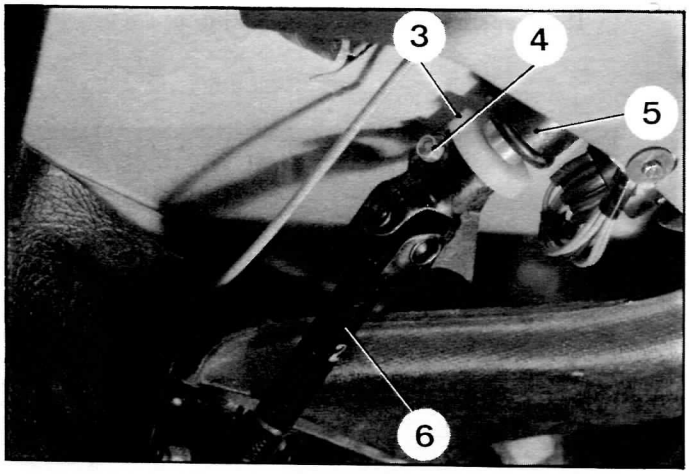


b) *Adjust the position of the rack (2) to give equal clearance at each side of the casing.*

c) Fit the steering column into the support tube (5).

d) Insert the plastic washer (3) and connect the steering column to the upper universal joint of the shaft (6).

Before coupling the steering wheel should be orientated : the arm should be on the left-hand side, at an angle of about 30° below the horizontal (the « twenty to » position).
Fit the bolt (4) (new NYLSTOP nut whenever this bolt is removed).
Hold the shaft with universal joint against the steering column and tighten the nut (4) from 13 to 14 m.N (1.3 to 1.4 m.kg) (9.4 to 10ft.Ib).

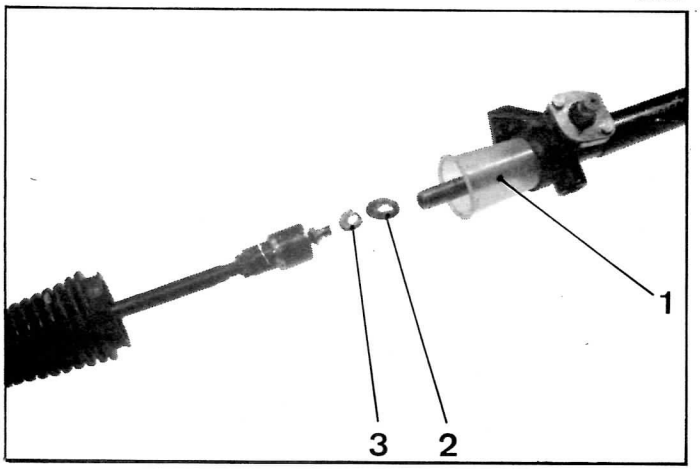


10. Adjust the clearance between the steering column and the shaft with universal joint :

a) Fit the lower universal joint of the shaft (6) to the pinion, to give a clearance of 1 to 1.5 mm between the washer (3) and the support tube (5). Tighten the nut from 13 to 14 m.N (1.3 to 1.4 m.kg) (9.4 to 10 ft.Ib) *(new NYLSTOP nut whenever the bolt is removed).*

b) Fit the sleeves (5) over the lower universal joint of the shaft (6).

8939



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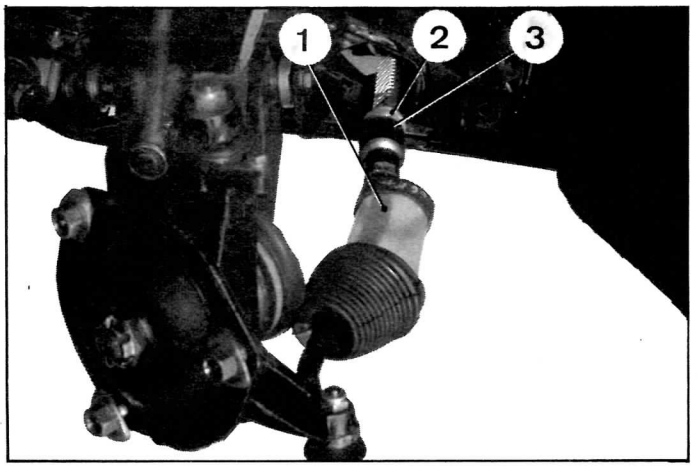

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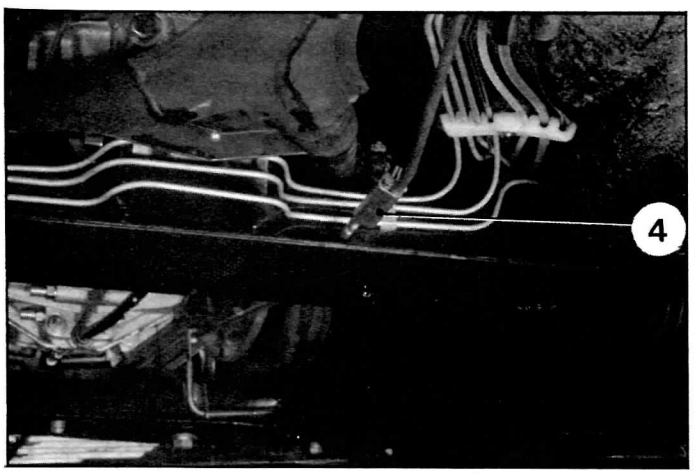

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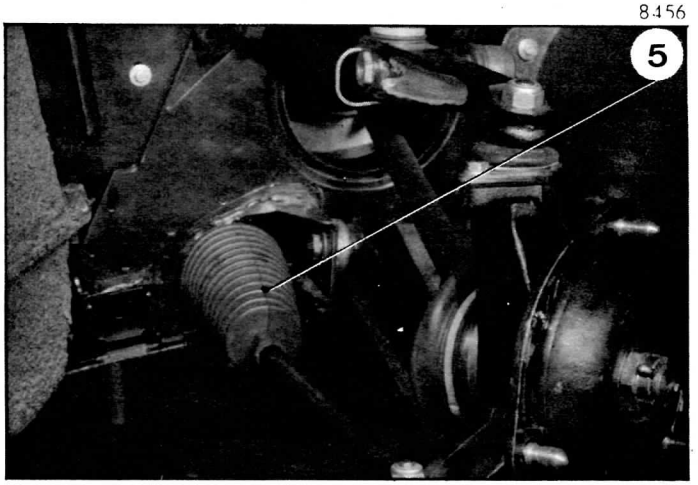


11. Connect up the track rods :

Fit the plastic sleeves (1) on the housing (elastic bands).

Screw the track rod ball joints fully home on the rack after interposing :
- the stop washer (2),
- the tab (3).

Hold the rack and tighten the ball joints from 36 to 40 m.N (3.6 to 4 m.kg) (26 to 29 ft.Ib).

Using a pair of pliers bend the tab back onto the flat section of the ball joint.

12. Connect the control rod of the front corrector :

If necessary, operate the height control to adjust the marks made when the collar (4) was removed.

13. Fit the front wheels.

14. Lower the vehicle to the ground.

Check the toe-in of the front wheels :
0 to 2 mm with the suspension in the normal position.

15. Place the sleeves (5) over the plastic sleeves (1).

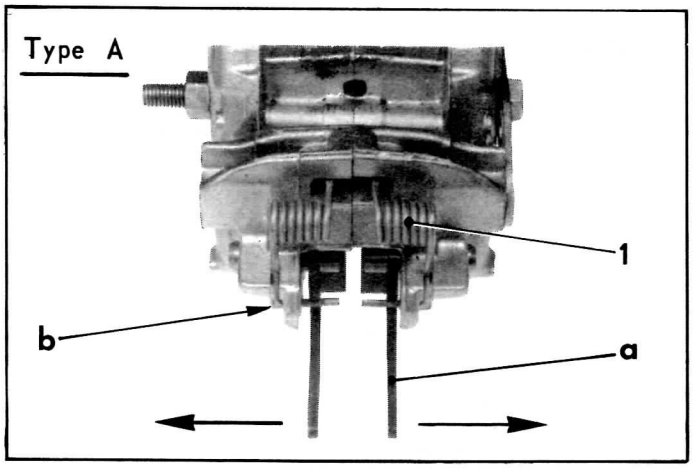
Adjust the position of the sleeves (5).

In the straight ahead position, their length should be : *155 ± 3 mm.*

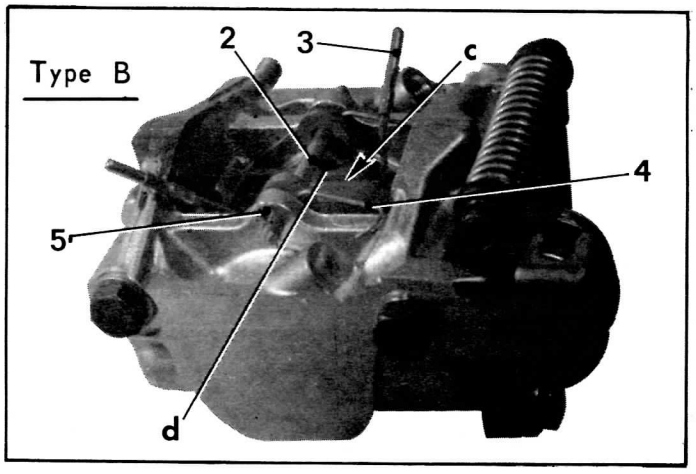
Supplement N° 1 to Manual 810-2 (CORR)

Supplement N° 1 to Manual 810-2 (CORR)

I. REPLACING THE MAIN BRAKE PADS.



8 901



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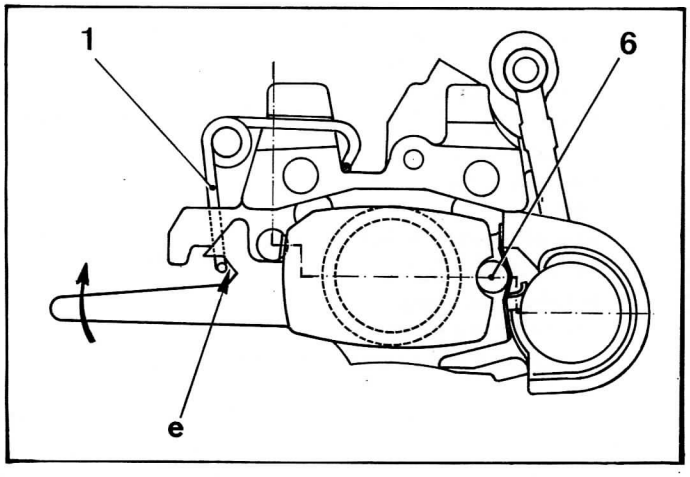
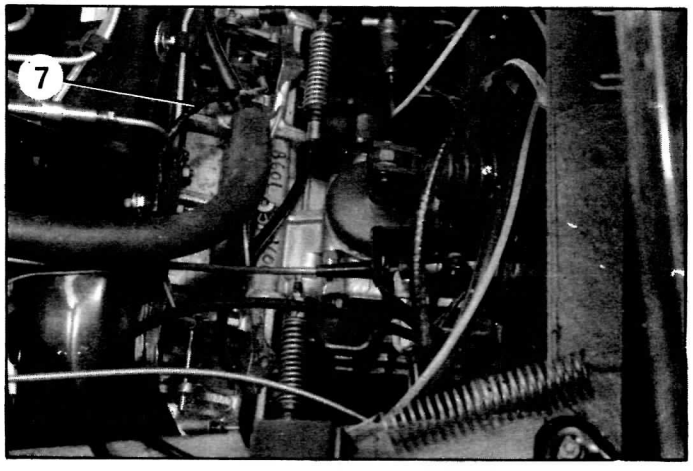


G. 45-2



11 209

REMOVAL.

1. **Remove the heater distributor box :**
Remove the box with its ducts and place it to one side.

2. **Remove the pads :**
Vehicles fitted with early type brake units (type A) :
a) Push on the ends « a » of the pads with the hand to push back the pistons, as shown on the figure (arrows).
b) Disconnect the leads for the brake pad warning lamp.
c) Pull on the end « b » of the pad springs : use a hook to pull the pad forward to release it.

3. **Remove the pads :**
(Vehicles fitted with new type units (type B) :
Push the pad at « c » with a screwdriver.
Remove the pin (5).
Push out the spindle (2).
Hold the pad by the wire (3) before this leaves the spindle,
Remove the spindle and the spring (4).
Remove the pads from above.
IMPORTANT : For even braking, the four pads should always be replaced together.

FITTING.

4. **Fit the pads :**
(Vehicles fitted with early type units) :
Fit the pad into the unit by pushing it as far to the rear as possible, so that the spigot (6) engages in the corresponding slot.

Lock the pad by raising its end so that the spring (1) engages in the notch « e ».

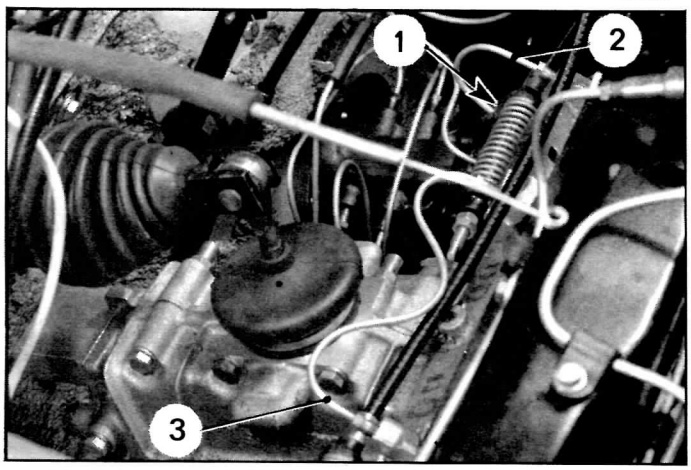
5. **Fit the pads :**
(Vehicles fitted with new type units) :
a) Fit the pad at the side of the gearbox housing. Hold the pad with a hook inserted in the hole « d » of the pad.
b) Fit the spring (4).
c) Insert the spindle (2) into the brake unit and into the upper hole of the pad after interposing the spring (4) below the spindle.
d) Repeat the same operation for the other pad.
e) Push home the spindle and fit the pin (5).
f) Connect the leads to the brake pad warning lamp.

6. Operate the brake pedal a few times and make sure that the pedal travel remains normal.

7. Fit the heater distributor box.

II. REMOVING AND FITTING A BRAKE UNIT

8460



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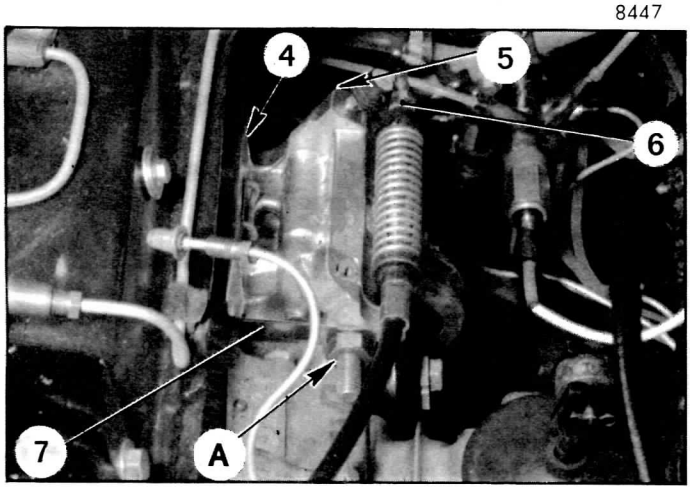

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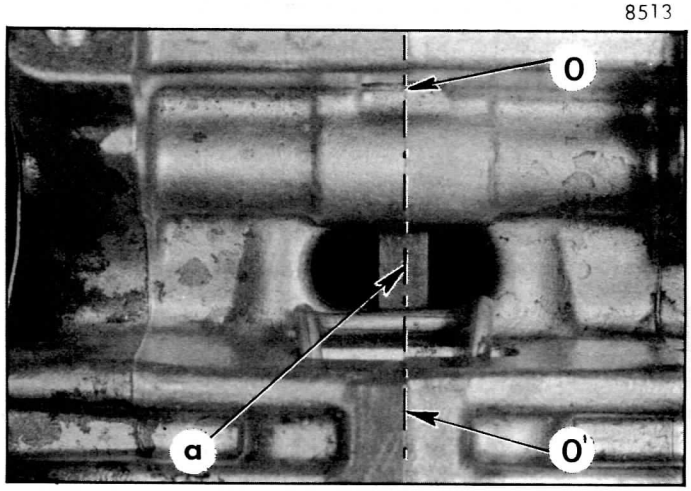


REMOVAL.

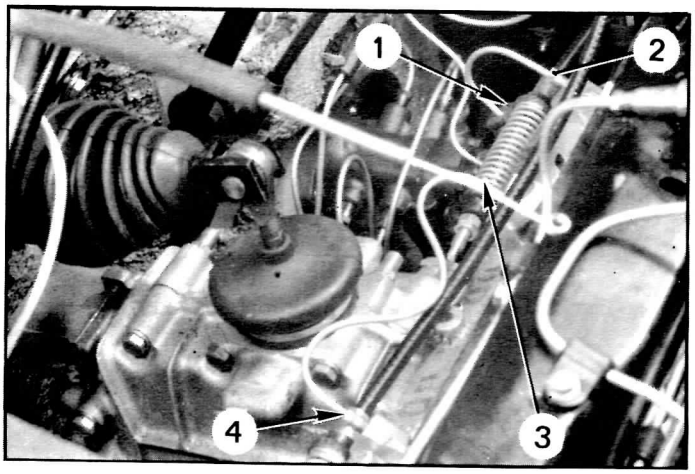
1. Place the manual height control lever *in the high position.*
2. Slacken the pressure regulator bleed screw.
   Disconnect the lead from the negative terminal of the battery.
3. **Remove the unit :**
   a) *On the right-hand side :*
      Remove the heater distributor box.
      Remove the box with its ducts and place it to one side.
      Uncouple the unit connection pipe (3).
   b) *Left-hand side :*
      Uncouple the unit connection pipe (3).
      Disconnect the feed pipe (2) and release it from the bracket (1).
   c) Partly slacken the bolts (4) and (5) which hold the unit.
      Remove the rear bolt (5). Swing the unit round.
      Replace the bolt (5). Fit a nut A (10 × 1,50) so as to maintain the two halves of the unit together.
   d) Disconnect the handbrake cable.
      Remove the locknut and the nut (6).
   e) Remove the front mounting bolt (4) and remove the unit.

FITTING

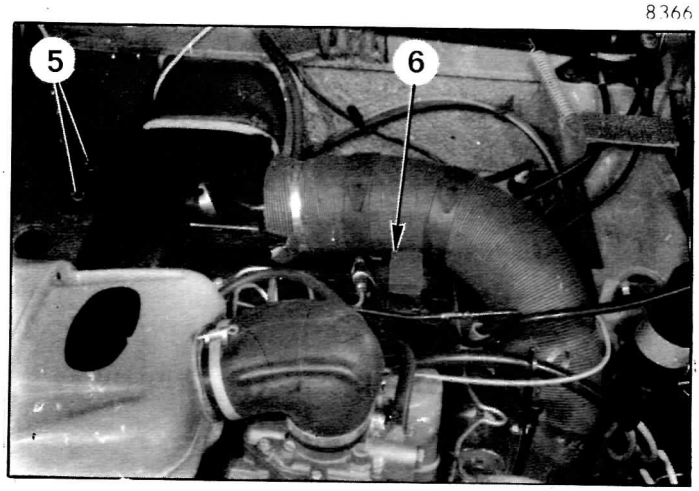
IMPORTANT : *Vehicles fitted with early type brake units only.*
The shim (7) located between the unit and the gearbox is used for positioning the unit with respect to the brake disc.
When exchanging a unit, it is necessary to check this position. After fitting, carry out this check as follows :
Make a mark « a » on the disc equidistant from the two faces and check that this mark is aligned with the seal plane « O - O' » of the two halves of the unit.
The difference between these two planes should not exceed 0.5 mm.

4. **Fit the brake unit :**
   a) Check the state of the bearing surface of the units on the gearbox. Scrape off any burrs.
   b) Position the complete unit, fitted with the original shim (7) *(early type unit)* and the handbrake pads (The two halves of the unit being assembled and held together by the bolt (5) and the nut A which were used during dismantling).
   c) Fit the front mounting bolt (4). Do not tighten it fully (flat washer on the right-hand side).
   d) Remove the nut A, swing the unit and tighten the bolt (5) (flat washer on the right-hand side).
      Check that the shim (7) is in place *(early type unit).*
      Tighten the bolts (4) and (5) from 45 to 50 m.N (4.5 to 5 m.kg) (32 1/2 to 36 ft.lb) *on early type units,* and 60 m.N (6 m.kg) (43 ft.lb) *on new type units.*
5. **Fit the main brake pads**
   (See corresponding operation)

8460



8366



6. Adjust the clearance of the handbrake pads :

7. Connect and adjust the handbrake cable

8. Connect up the supply pipes :

a) *Right-hand side :*
Fit the union (4)
(Replace the sleeve-seal).

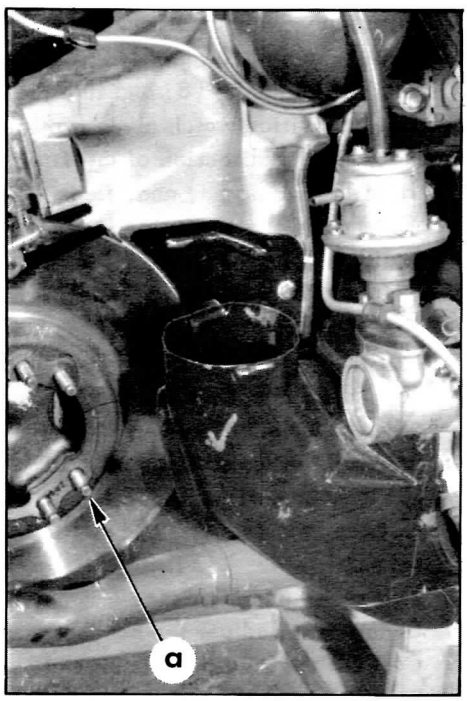
b) *Left-hand side :*
Fit the unions (2) and (3).
(Replace the sleeve-seals).
Insert the pipe in the bracket (1).
Tighten the unions from 8 to 9 m.N (0.8 to 0.9 m.kg) (5 1/2 to 6 1/2 ft.Ib)

9. Bleed the front brakes :
Connect the lead to the negative terminal of the battery.

10. Fit the heater distributor box :
Fit the bolts (5) (contact washer).
Tighten the bolt (6).

III. REMOVING AND FITTING A BRAKE DISC

8608



REMOVAL

1. Place the front of the vehicle on stands (wheels free) :
Place the manual height control lever *in the high position.*
Place the front of the vehicle on stands (behind the wheelarches), wheels free.

2. Release the pressure in the circuits :
a) Slacken the pressure regulator bleed screw and place the manual height control lever *in the normal position.*
b) Wait until the rear suspension has stabilized and place the manual height control lever *in the high position;* the rear suspension should settle completely.

3. Remove the brake unit :
Do not disconnect the handbrake cable.

4. Disconnect the drive shaft :
Remove :
- the wheel,
- the nuts and bolts (Tool 2418-T).

5. Remove the disc :
Remove the fixing studs
Remove the disc from above.

FITTING

6. Fit the disc
Position the brake disc and fit the studs on the gearbox drive outlet shaft (shouldered part « a » to the outside).

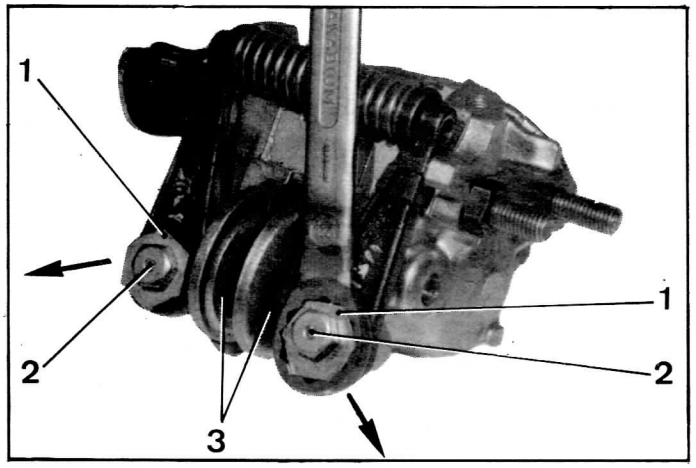
7. Connect up the drive shaft
Tighten the nuts to 50 m.N (5 m.kg) (36 ft.Ib)

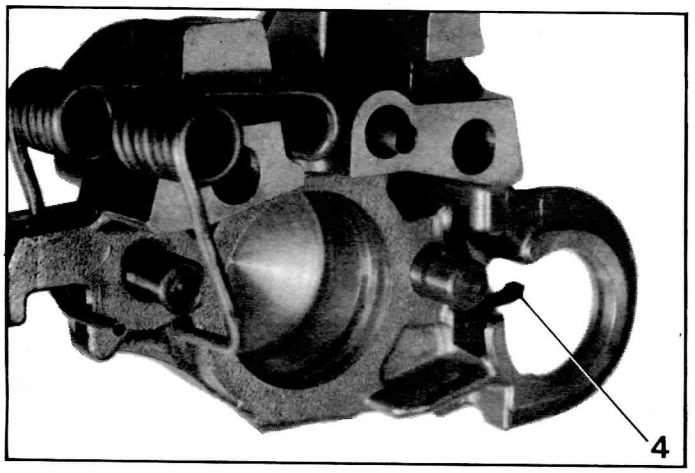
8. Fit the brake unit

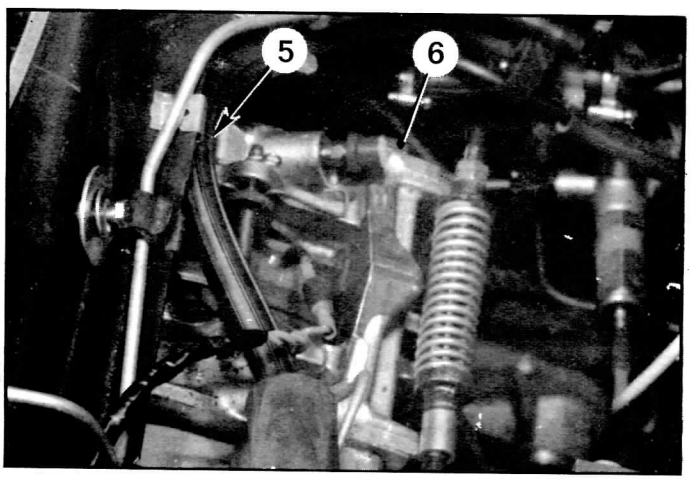
9. Lower the vehicle to the ground.

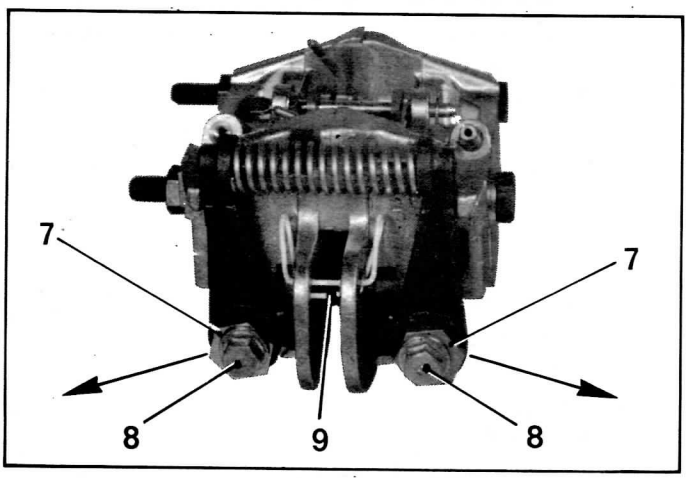
Supplement N° 1 to Manual 810-2 (CORR)

IV. REPLACING THE HANDBRAKE PADS









A - VEHICLES FITTED WITH EARLY TYPE UNITS

REMOVAL :

1. **Remove the brake unit :**
2. Remove the pads (3) and slacken the bolts (2) on the eccentrics.
   NOTE : For even braking, the four pads must always be replaced together.

FITTING

3. **Fit the pads :**
   a) Turn the eccentrics (1) to the position, which gives the maximum clearance at the pads (direction of the arrows).
   b) Fit the pads (3).
   c) Check that the anti-noise springs (4) are properly positioned.
4. **Fit the brake unit**
5. **Adjust the pad clearance**
6. **Adjust the handbrake cables.**

B - VEHICLES FITTED WITH NEW TYPE UNITS

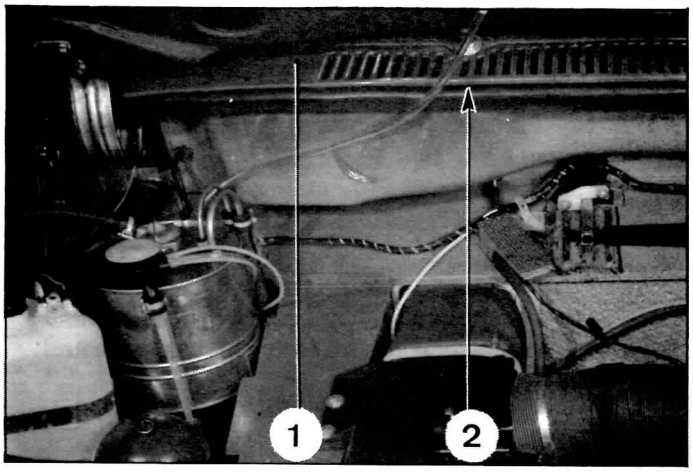
7. **Remove the pads :**
   Remove the heater distributor box.
   Disconnect the pipe from the unit.
   Partly slacken the bolt (5).
   Remove the bolt (6).
   Disconnect the handbrake cable
   Swing the unit towards the front of the vehicle
   Slacken the bolts (8) and turn the eccentrics (7) to the position which gives maximum clearance at the pads (direction of the arrows).
   Hold the spring (9) and release the pads.
   Proceed in the same way for the other brake unit.

FITTING

8. **Fit the pad :**
   Lift the spring (9) and fit the pad to its support (Repeat the same operation for the other pads).
9. **Replace the brake unit :**
   Fit the bolt (6)
   Tighten the bolts (5) and (6) to 60 m.N (6 m.kg) (43 1/2 ft.Ib).
10. **Adjust the pad clearance**
11. **Connect and adjust the handbrake cables.**
12. **Connect the unit connection and supply pipe**
13. **Bleed the front brakes.**
14. Fit the heater distributor box.

I. REMOVING AND FITTING A WINDSCREEN WIPER MOTOR.

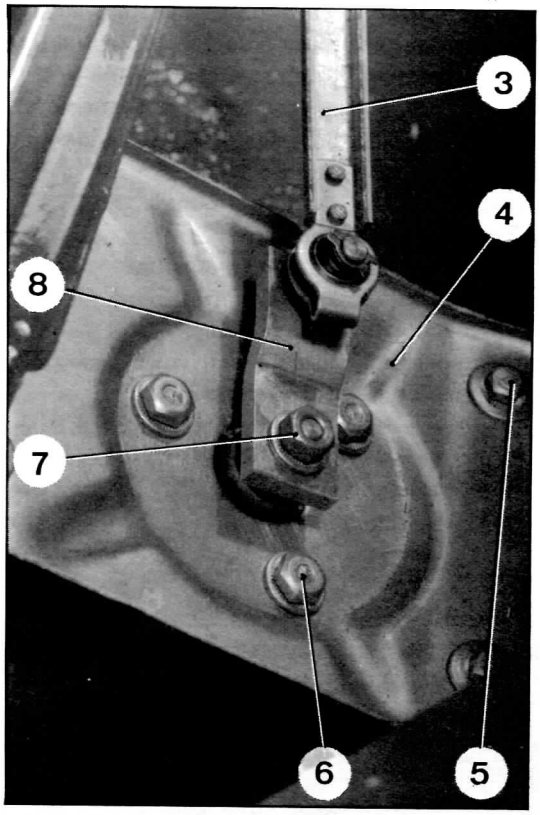
8366



REMOVAL.

1. Disconnect the earth lead from the negative terminal of the battery.
2. Remove the bonnet .
3. Remove the plate (1) from the ventilation intake after removing its seal (2).
4. Remove the nut (7) holding the lever and release this from the spindle of the windscreen wiper motor.
5. Remove the three bolts (6) holding the motor to its support plate (4).
6. Remove the four bolts (5) holding the support plate to the chassis.
7. Disconnect :
   - the windscreen wiper motor wiring harness from the vehicle wiring harness
   - the motor earth lead from the chassis
8. Remove the support plate, then the motor and its electrical connections.

8874



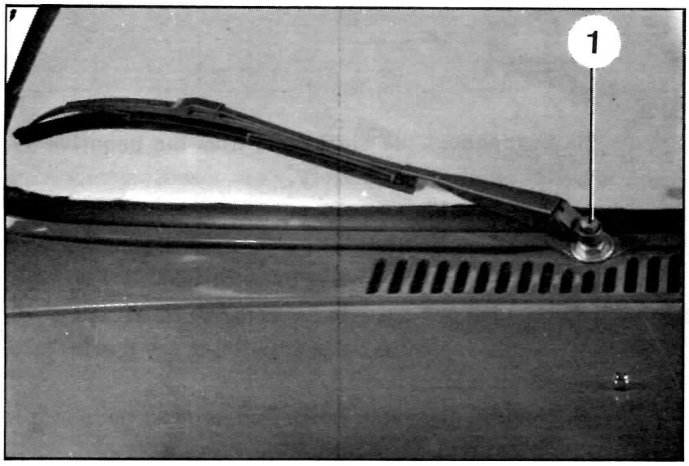
FITTING.

9. Fit the motor and its electrical connections into the ventilation air intake.
10. Fit the support plate (4) on the motor. Tighten the three bolts (6) (serrated washer) from 3.5 to 4 m.N (0.35 to 0.4 m.kg) (2 1/2 to 3 ft.Ib)
11. Fit the motor and support plate assembly to the chassis.
    Tighten the four bolts (5) (serrated washer) to 5 m.N (0.5 m.kg) (3 1/2 ft.Ib)
12. Connect :
    - the motor wiring harness to the vehicle wiring harness
    - the motor earth lead to the chassis (bolt holding the bonnet hinge).
13. IMPORTANT : *Before fitting the lever (8) to the motor, make sure that the latter is in the « automatic stop » position.*
    To do this :
    - Connect the battery (negative terminal).
    - Switch on the ignition for about 5 seconds and then switch it off again.
    - Disconnect the battery (negative terminal).
14. *Fit the lever (8) on the motor spindle and in alignment with the connecting rod (3).*
    Tighten the nut (7) from 4.5 to 5 m.N *(3. 1/4 to 3 1/2 ft.Ib) (serrated washer)*
15. Fit the ventilation air intake plate and its seal.
16. Fit the bonnet.
17. Connect the lead to the negative terminal of the battery.
18. Check the operation of the windscreen wiper.

Supplement N° 1 to Manual 810-2 (CORR)

II. REMOVING AND FITTING A WINDSCREEN WIPER MECHANISM

8780



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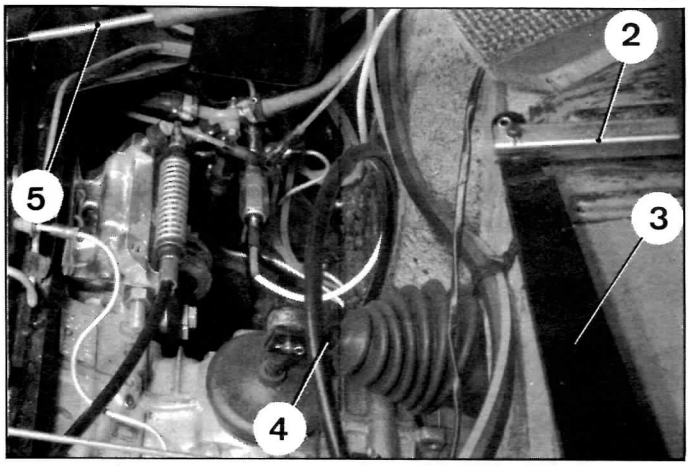

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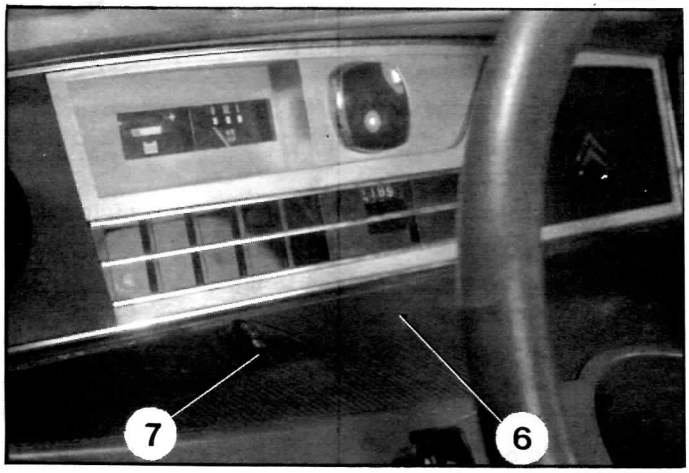

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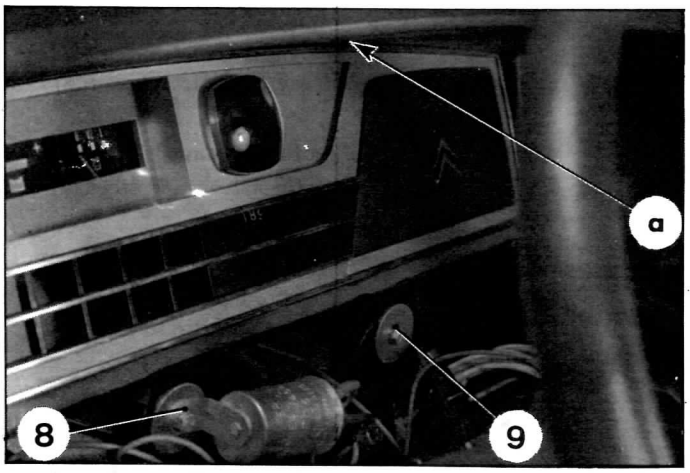
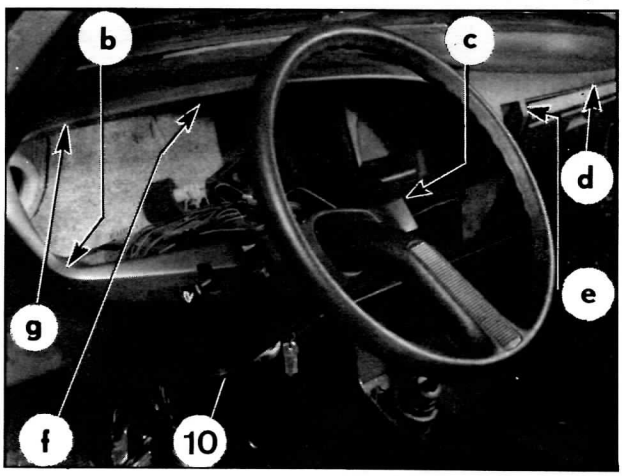


NOTE : Illustrations are of a left-hand vehicle

REMOVAL

1. Disconnect the lead from the negative terminal of the battery.
2. Remove the bonnet.
3. Remove the ventilation air intake plate and its seal.
4. Remove the nut holding the lever and free this from the windscreen wiper motor spindle.
5. Remove the nuts (1) holding the wiper blade holders and free these from their tapered splined shafts.
6. Disconnect :
   - the choke cable from the carburettor,
   - the control cable (5) from the heater flap,
   - the handbrake control rod (2) from the control lever (3),
   - the gear lever (4) from the selector fork operating lever,
   - the speedometer cable from the speedometer.
7. **Remove the instrument panel :**
   a) Remove the cover (6), push it forward in order to remove it from the back.
   Disconnect the leads from the switch or switches (7) (according to model).
   b) Remove the two bolts (8) and (9).
   Remove the panel from the dashboard : begin by pulling downwards on the right-hand and then on the left-hand side (press lightly at « a » on the dashboard, to facilitate the operation).
   c) Disconnect the connector or connectors (according to model) of the different leads on the panel.
   d) Remove the instrument panel.
8. **Remove the dashboard :**
   a) Remove the handbrake handle,
   b) Remove the knobs controlling the heater and demister (pull them out).
   c) Disconnect all the electrical connections.
   d) Remove the steering wheel.
   e) Remove the seven bolts holding the dashboard : at « b », « c », « d », « e », « f » and « g » and the bolt (10).
   f) Remove the dashboard.

8871



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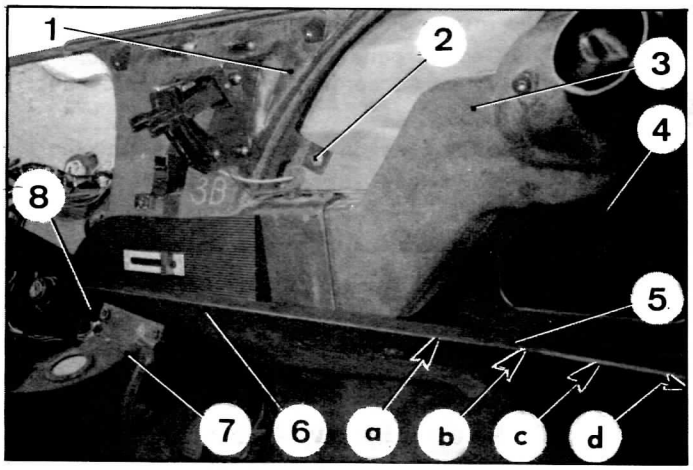

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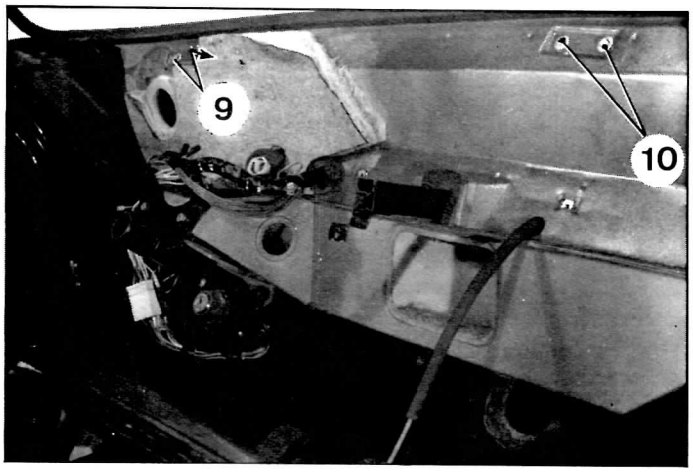

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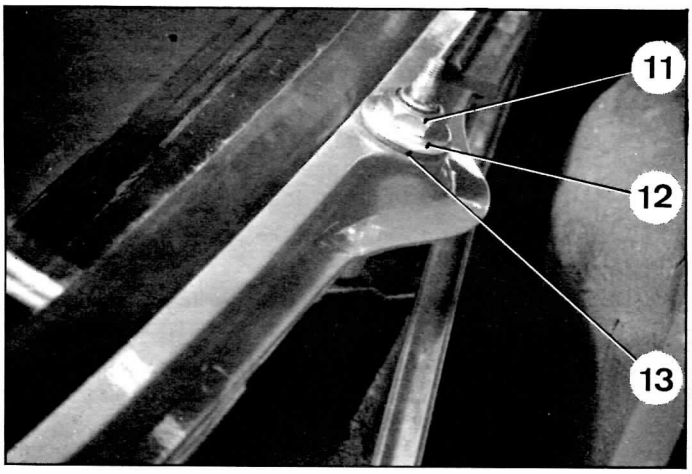

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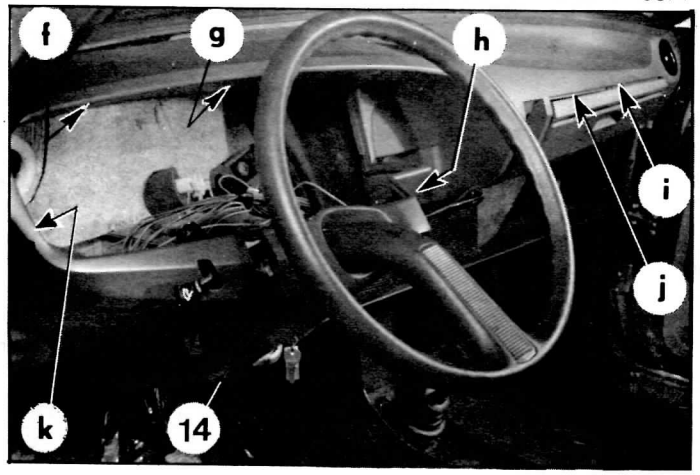

9. Remove the shelf (5) by removing the six bolts : at «a», «b», «c», «d» and the bolts (6) and (8).

10. Remove the two bolts (4) and free the duct (3).

11. Remove the bolts holding the console (7) and pull it a little way towards the rear.

12. Remove the four bolts (2) holding the pipe (1) and free it.

13. Remove the bolts (9) and (10) holding the windscreen wiper bushes on the dashboard

14. Remove the nut (11) from each spindle, the cap washer (12) and the seal (13).

15. Remove the mechanism from the dashboard.

FITTING.

16. Fit the mechanism together with the lever of the windscreen wiper motor.

17. With the bushes placed on the dashboard plate: to each spindle fit the seal (13), the cap washer (12) and the nut (11). Temporarily tighten this by hand.

18. Fit the bolts (9) and (10) holding the bushes to the dashboard, without tightening them (serrated washer).

19. Tighten the nuts (11) on the cap washer to 9 m.N (0.9 m.kg) (6 1/2 ft.Ib)

20. Tighten the bolts (9) and (10) of the bushes from 3 to 3.5 m.N (0.3 to 0.35 m.kg) (2 to 2 1/2 ft.Ib)

21. Fit the pipe (1). Tighten the four bolts (2) (serrated washer)

22. Fit the duct (3). Tighten the two bolts (4) (serrated washer).

23. Fit the shelf (5). Tighten the six bolts at «a», « b », « c », « d », (6) and (8) (serrated washer)

24. Fit the console and fix it in position.

25. Fit the dashboard.
Fit and tighten the bolts at « f », « g », « h », « i », « j », « k » and (14).
Connect the wiring harness to the different switches.

26. Fit the steering wheel.

27. Fit the handbrake handle and the control knobs for the heater and demister.

Supplement N° 1 to Manual 810-2 (CORR)

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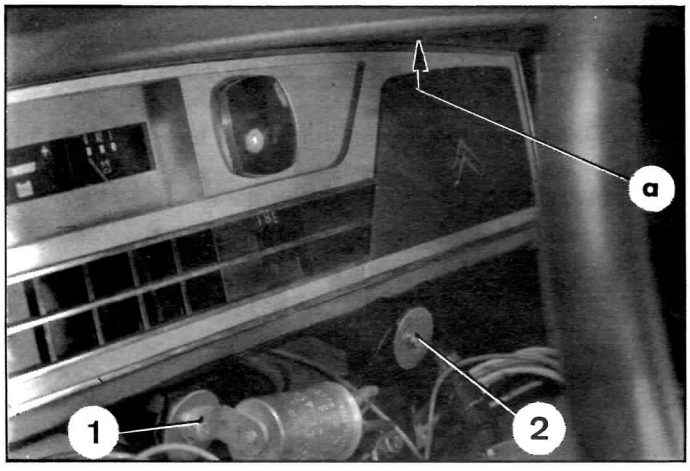

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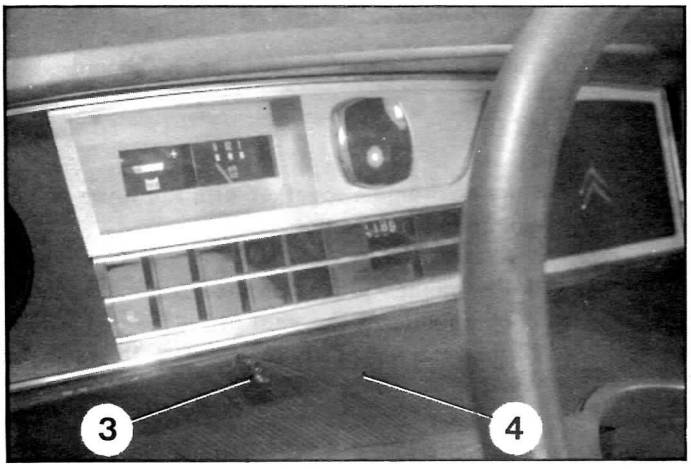

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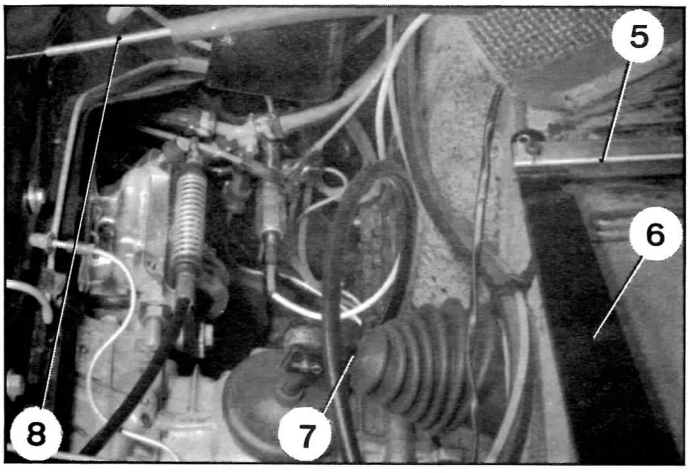

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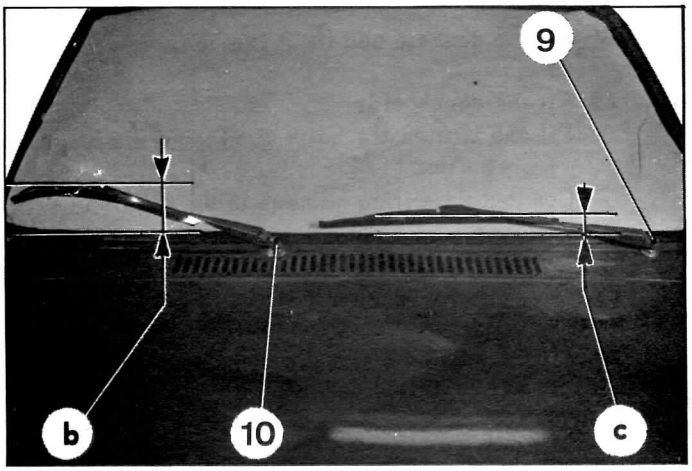


28. Fit the instrument panel :

a) Position the panel, plug in the connector/ connectors (according to model) and connect the leads.

b) Place the panel in its housing : incline the top of the panel towards the front of the vehicle to insert it under the cowl at « a ». Fix it in position using two bolts (1) and (2), interposing the bracket of the flasher unit (see figure).

c) Position the cover (4). Connect the leads to the switch or switches (3) (according to model or options fitted).
Fit the cover : insert it behind the instrument - panel and then slide it towards the rear to lock it in position.

29. Connect up :
- the handbrake control rod (5) to the control lever (6),
- the choke cable to the carburettor,
- the control cable (8) to the heater flap
- the gear lever (7) to the selector fork operating lever,
- the speedometer cable to the speedometer.

30. With the windscreen wiper motor *in the « automatic stop » position* (see page 1, same operation paragraph 13) :
Fit the lever (12) to the spindle of the windscreen wiper motor and *line up with the connecting rod (13).*
Tighten the nut (11) from 4.5 to 5 m.N (P.45 to 0.5 m.kg) (3 1/4 to 3 1/2 ft.lb) (serrated washer)

31. Fit the windscreen wiper blades.
Position them as shown in the figure below so that :

b = 60 ± 10 mm and c = 35 ± 10 mm

Tighten the nuts (9) and (10) to 9 m.N (0.9 m.kg) (6 1/2 ft.lb) (Spring washer)

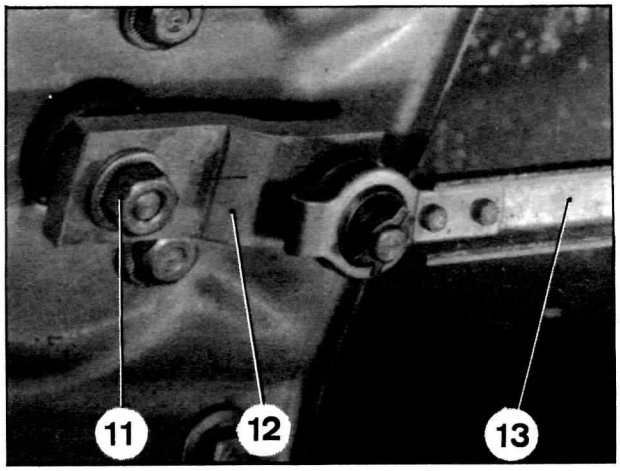
32. Fit the ventilation air intake plate and its seal.

33. Fit the bonnet.

34. Connect the lead to the negative terminal of the battery.

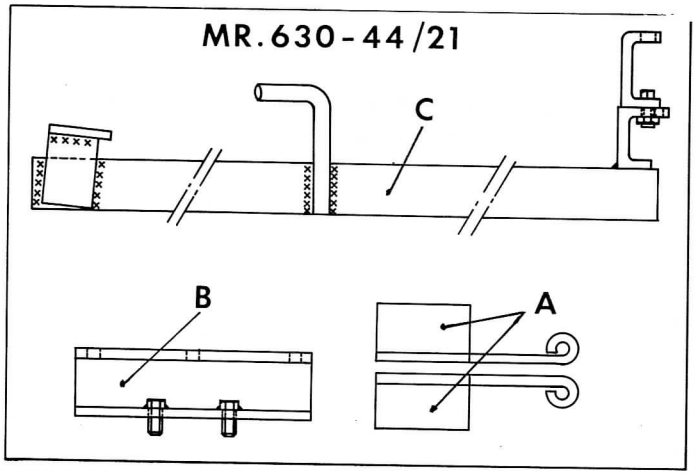
35. Check the operation of the windscreen wipers.

8874



REMOVING AND FITTING THE BODY SHELL

G 80-36



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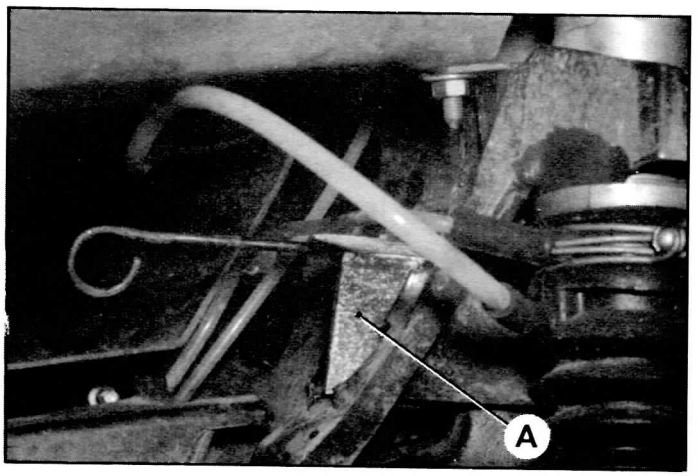
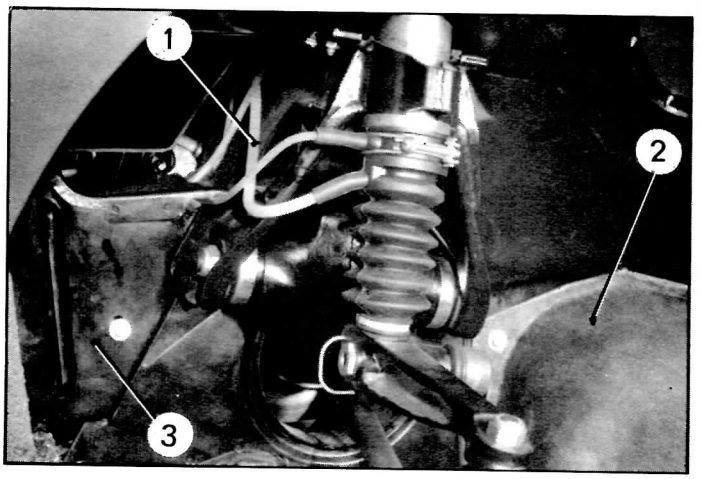


Supplement N° 1 to Manual 810-2 (ADD)



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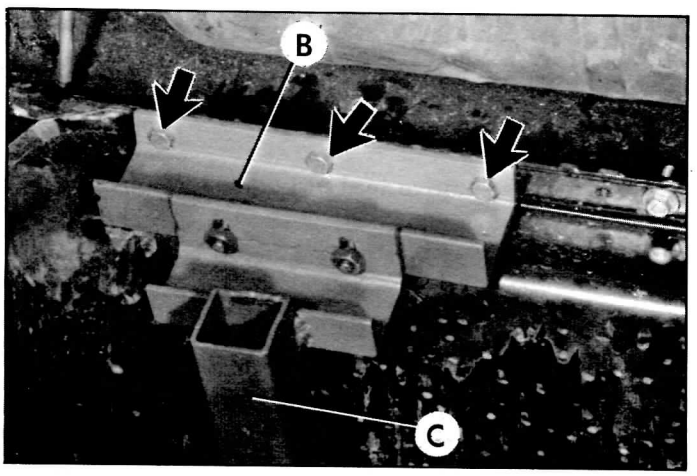

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REMOVAL

1. Fit the chocks (A) of kit MR. 630-44/21 :

- Put the vehicle in the high position.
- Place chocks (A) between the wheelarm fins and the front subframe.

2. Place the vehicle on stands :
(If a car-lift or a pit is not available)

- Disconnect the battery.
- Release the pressure in the hydraulic system.

3. Remove the following :

- The front wheels and the spare wheel,
- The blanking panels between the shell and the subframe.
- The wheelarch attachments on the subframe.
- The height corrector protective cover.
- Withdraw the ventilation pipes (1) of the suspension cylinders from the body shell extension boxes.

4. Uncouple the clutch cable from the control fork :

5. Empty the fuel tank

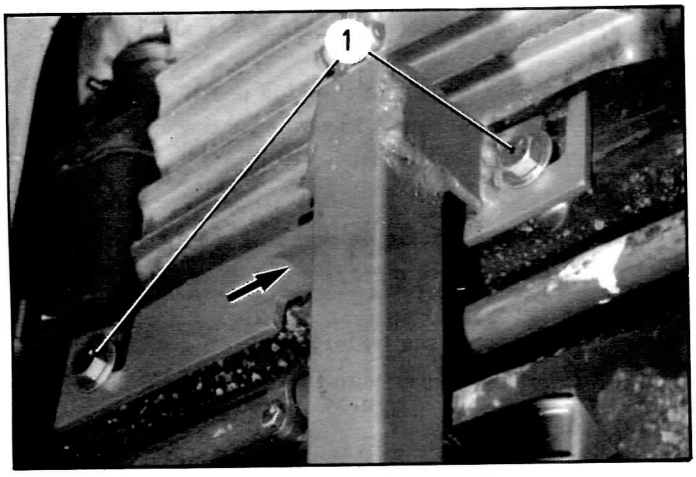
Disconnect the tank filler neck.

Fit stiffening plate C of kit MR. 630-44/21 :

a) Fix plate B on the rear left-hand section of the rear subframe (Securing screws for the fuel tank).

b) Slacken the engine mounting securing nuts (1).

14 403



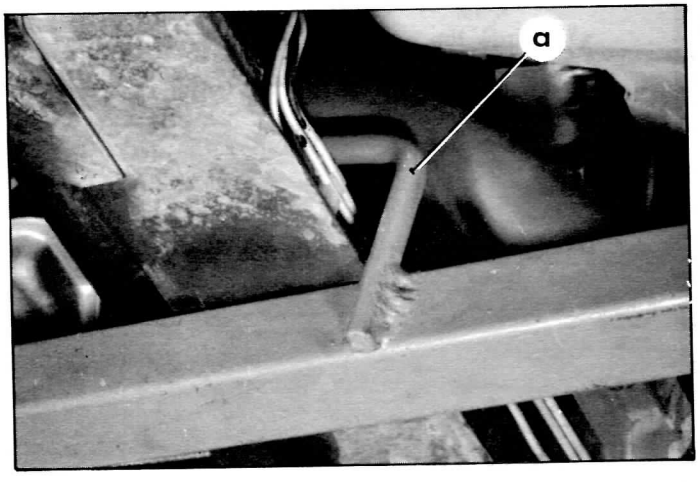
c) Engage section « a » of the rod onto the sub-frame, and the nuts (1) into the slots.
Lock the rod in position (*direction of arrow*).

d) Fix the rod at tne rear.
Tighten the engine mounting nuts (1).

7. Fit the front wheels, and lower the vehicle to the ground :

8. Disconnect the bonnet catch release pull.
Disconnect the leads from the alternator.

14 402



9. Remove the following :

- The grille
- The headlamps and the indicators
- The trim support panel
- The lower valance
- The heater distribution box
- The front suspension spheres (*Blank off the orifices with plugs*).

10. Disconnect the following :

- The carburettor controls
- The gear-change linkage
- The speedometer cable from the speedometer
- The handbrake cables.

11. Disconnect the following :

- The positive lead and other leads from the starter-motor
- The lead from the engine oil pressure switch
- The leads from the coil to the distributor
- The brake pad warning lamp leads and the lead from the engine oil temperature switch
- The lead from the hydraulic pressure switch
- The stop lamp switch wiring harness.

12. Remove the following :

- the two brake valve fixing nuts :
- the steering column with universal joint (*mark its correct position before removing*).

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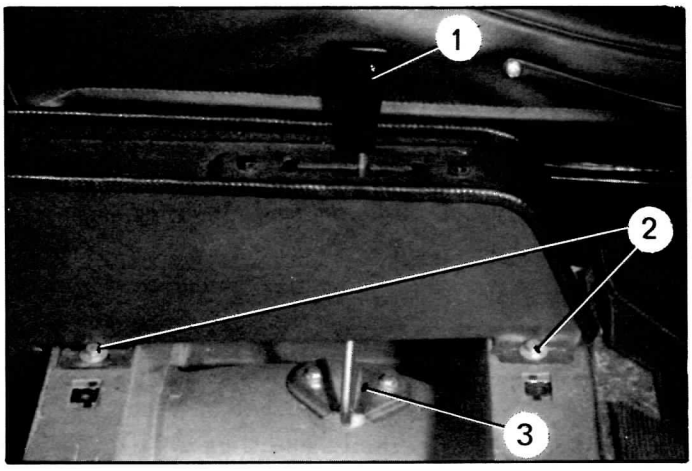


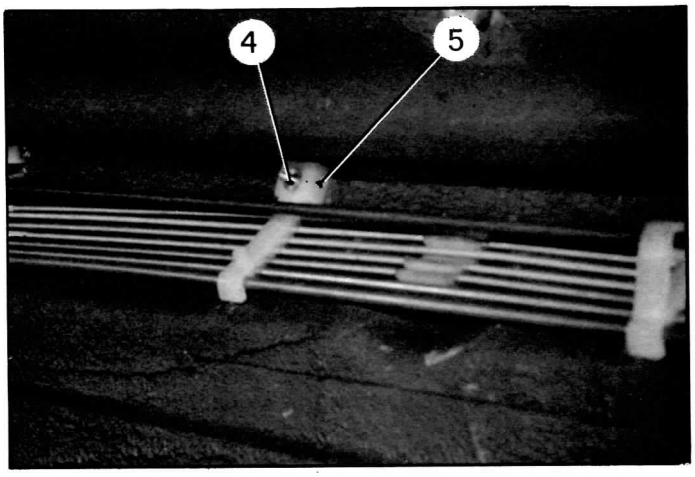
13. Withdraw the following :

- The feed pipe for the front brake units from its attachments on the body shell
- The brake-valve overflow return pipes from the securing collar on the body shell
- The negative lead of the battery, from its attachment
- The high pressure pump suction tube from its securing collars

14. Remove the following :

- The left-hand front seat
- The rear fixing screws for the console *(later type console only)*
- The manual height control lever bearer assembly. Withdraw lever (1) from the central control rod.
- The two right-hand seat belt fixing nuts.

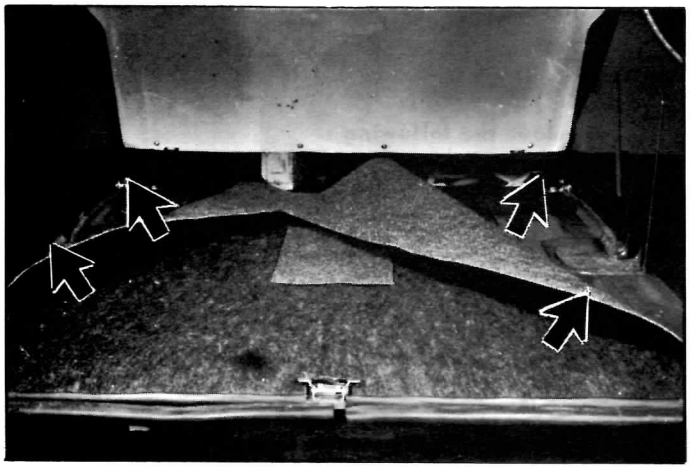
8544

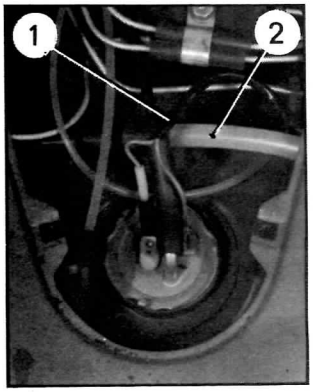


15. Remove the carpeting :

Remove the fixing screws (4) for the hydraulic pipe bearers (5). (*Warning : One screw under the rear section of the later type console*).

16. Slide back the embellishers and remove the upper fixing screws for the rear seat.





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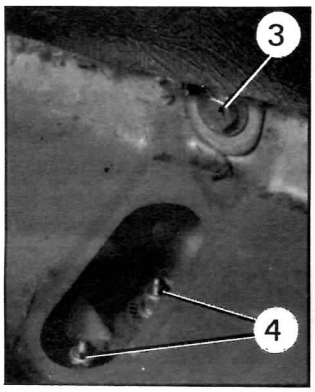

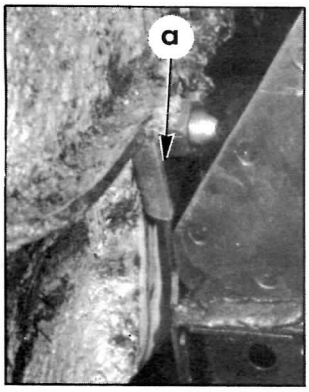

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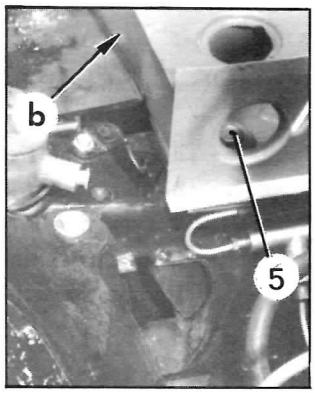

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17. Withdraw the boot carpeting and remove the inspection cover for the rear height corrector Disconnect :
- the fuel tank breather (2)
- the fuel gauge wiring harness (1).

18. Remove the bolts (⟶) fixing the rear subframe to the body shell.

19, Remove the following :

(On each side)

- the rear fixing screws (3) and (4) for the front subframe,
- the fixing screws (5) on the body shell extension boxes,

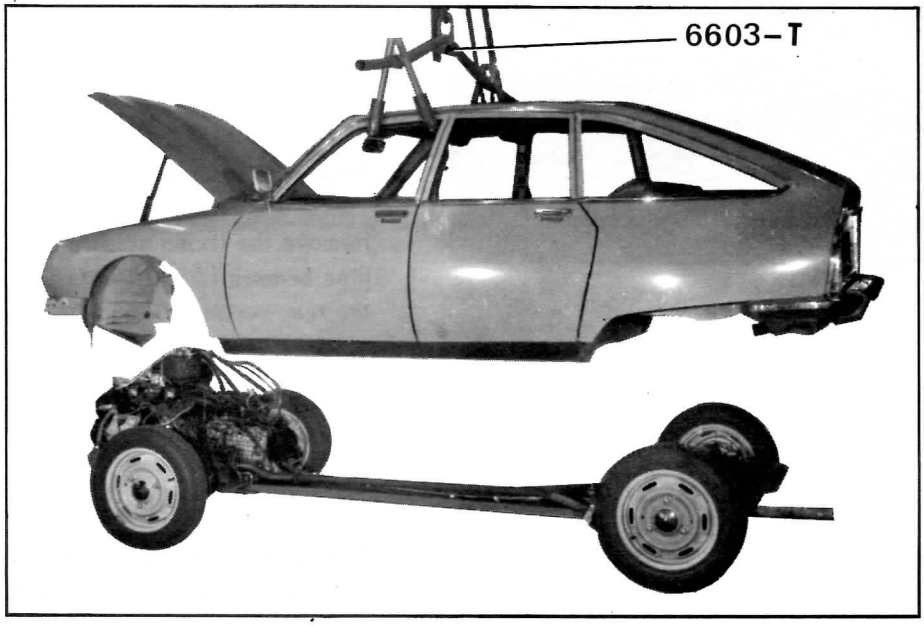
IMPORTANT : *Mark the position of the shims placed at « a ».*

20. Remove the wheelarch fixing nut on the extension box at « b » *(if necessary)*.

21. Raise the body shell using sling 6603-T :

When the body shell is freed from the subframes withdraw the hydraulic return tubes from the body shell, or disconnect them from the reservoir.

Secure the LHM reservoir to the engine.



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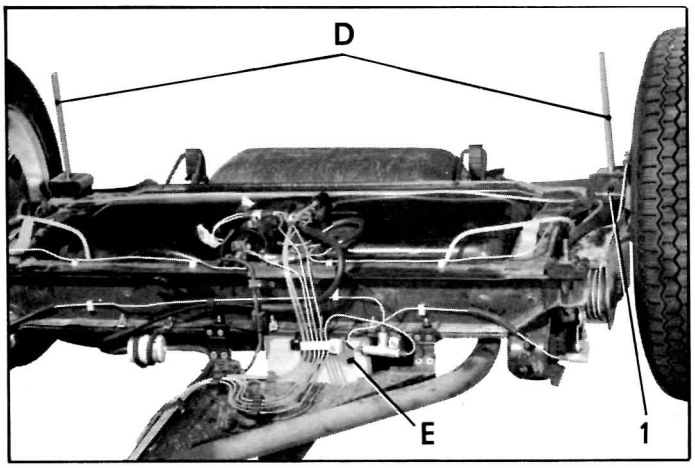

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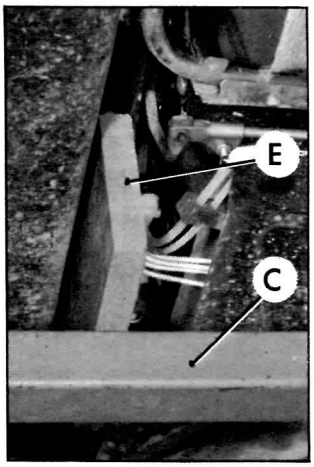

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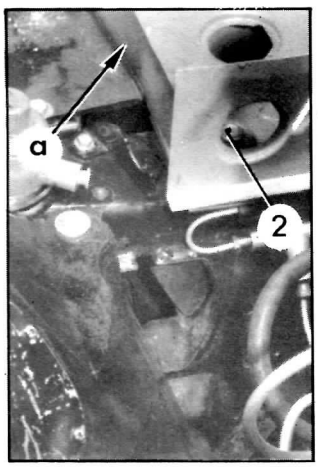

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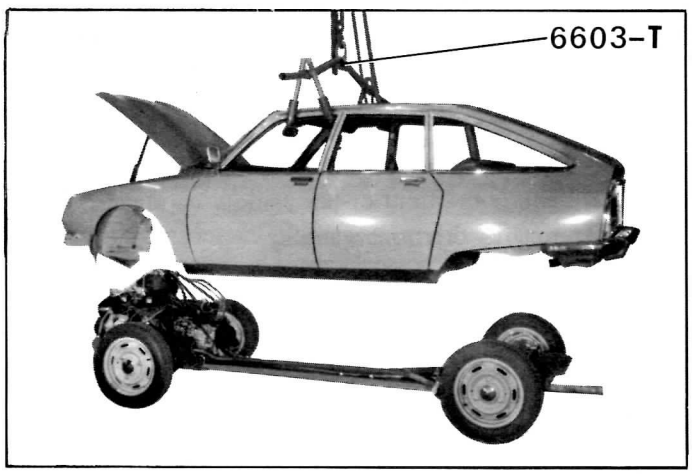

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Supplement N° 1 to Manual 810-2 (ADD)

FITTING

22. Prepare the mechanical units :

- Fit guide pins D of kit MR. 630-44/21 to the rear rubber bearers (1)
- Fit a chock E between the rear subframe and rod C so as to position the rear subframe

Dimensions of chock E (wood)

Length : 170 mm (6.7 in)
Width : 100 m (4 in)
Thickness : 20 mm (3/4 in)

23. Lower the body shell onto the mechanical units using sling 6603-T

- Check that the body is engaging onto its guide pins at the rear
- Position the hydraulic return pipes between the wheelarch and the body shell extension boxes or connect them to the reservoir

WARNING : Take care not to knock the following :

- the distributor
- the front height corrector

Secure the wheelarch to the extension box at « a » *(If necessary).*

Fit the hydraulic fluid reservoir.

24. Fit the front subframe fixing screws.

On each side :

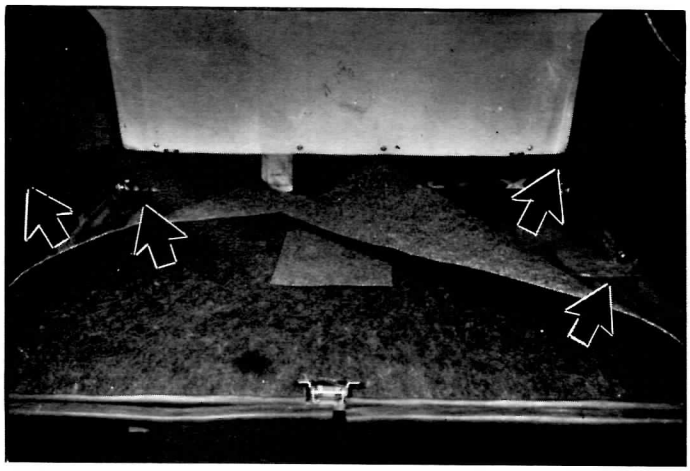
a) Temporarily tighten by hand nuts (4) and (2) *(flat washer under the screwhead).*

Tighten nut (4) (first tightening) to 20 m.N (2 m.kg) (14 1/2 ft.lb).

Fit nut (5) (flat washer under the screwhead.

Tighten nut (2) (4) and (5) from 45 to 50 m.N (4,5 to 5 m.kg) (32 1/2 to 36 ft.lb)

and in the following order : (2), (4) and (5).

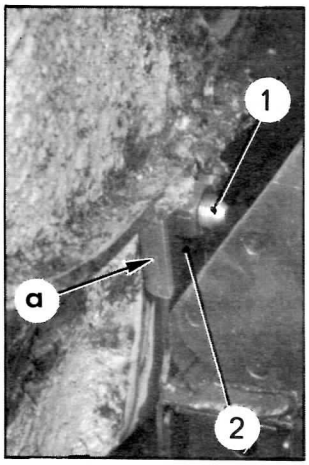


b) Adjust the load on the inferior fixing lugs (2) of the subframe

On each side :

- place at « a » the necessary shims to obtain *a maximum clearance of 0,5 mm* (between the shim and the lug) *before tightening the fixing nut (1)*
  (There are two thicknesses : 1 and 2 mm).
- **tighten nut (1) from 90 to 100 m.N (9 to 10 m.kg) (65 to 72 1/2 ft.lb)** *(flat washer under the screwhead).*

NOTE : Replace the NYLSTOP nuts after each dismantling.



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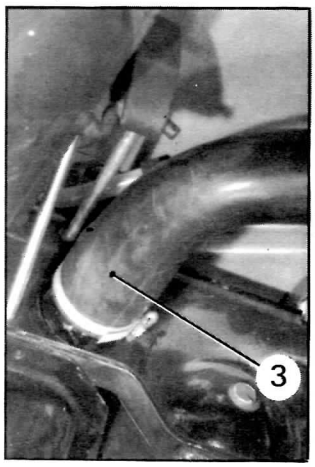
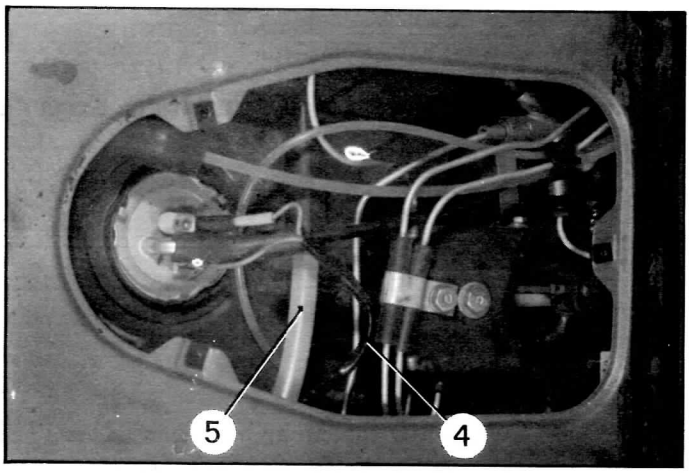


25. Fit the rear subframe fixing nuts :

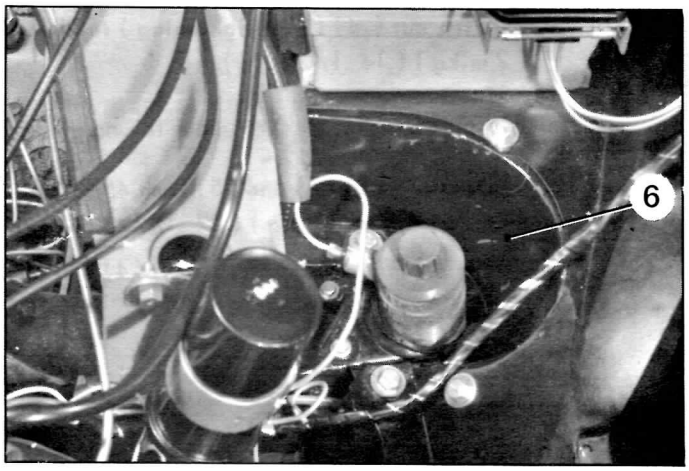
- Remove guide pin **D** of kit MR. 630-44/21.
- Tighten nuts (➡) from 30 to 40 m.N (3 to 4 m.kg) (21 1/2 to 29 ft.lb) *(Serrated washer and thick flat washer).*



26. Connect the following :

- the breather (5) to the fuel tank.
- the wiring harness (4) to the fuel gauge
- the filler neck (3) to the fuel tank.

27. Place the front of the vehicle on stands, and remove the front wheels.



28. Fit the following :

(On each side) :

- the nuts and fixing screws of the wheelarch on the subframe and on panel (6) *(contact washers under the nuts, and flat washers under the screwheads).*

29 . Connect the steering column with universal joint to the support tube :

WARNING : Place the steering column in the position it was in when removed. The extremities are not identical : at the steering-wheel end, the groove for the tightening nut (1) must face the spines.

a) Engage the lower section of the steering column onto the steering rack pinion.

b) *Adjust the position of the rack to obtain an equal protrusion on either side of the casing.*

c) Engage the steering tube into the support tube (3).

d) Fit the plastic washer (2) and connect the steering tube to the upper half of the steering column with universal joint (4).

Before connecting, position the steering wheel. The spoke must be on the left-hand side and be at an angle of approx. 30° towards the bottom with the horizontal. ("Twenty to" position).

Fit screw (1) *(new NYLSTOP nut after each dismantling).*
Hold the steering column (4) against the steering tube **and tighten nut (1) from 13 to 14 m.N (1.3 to 1.4 m.kg) (9 1/2 to 10 ft.lb).**

30. Adjust the clearance between the steering tube and the steering column :

a) Position the lower half of the steering column (4) on the steering rack pinion, so as to obtain a clearance of 1 to 1.5 mm between the washer (2) and the support tube (3).

Tighten the fixing nut from 13 to 14 m.N (1.3 to 1.4 m.kg) (9 1/2 to 10 ft.lb)
(Fit a new NYLSTOP nut after each dismantling).

b) Fit the protective sleeve of the lower half of the steering column (4).

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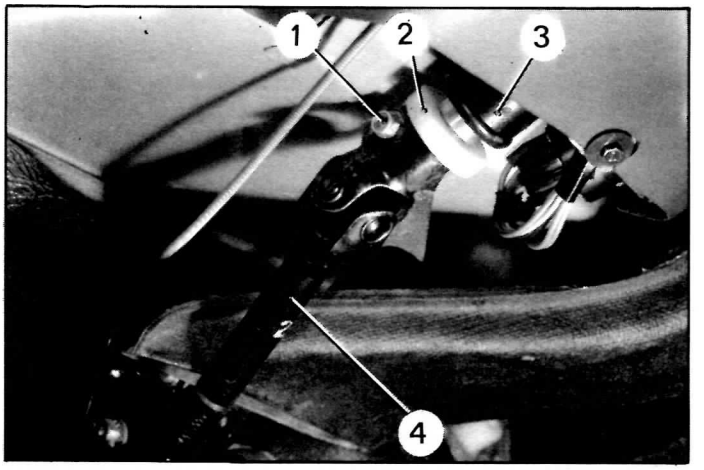

31. Fit the brake valve :

Tighten the nuts from 17 to 18 m.N (1.7 to 1.8 m.kg) (12 1/2 to 13 ft.lb) *(serrated washer).*

Fix the front brake unit feed pipe onto the body shell.

32. Connect the following :

- the gear lever
- the speedometer cable to the speedometer
- the handbrake cables to the front brake units, and adjust their tension.

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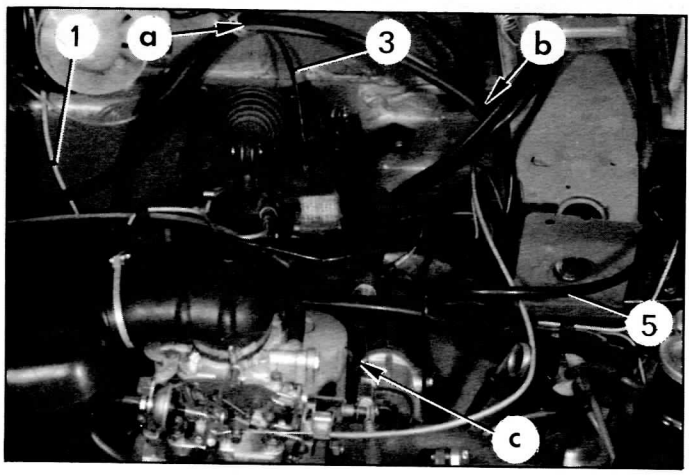


33. Connect the following :

- the wiring harness (3) for the stoplamp switch,
- the lead (1) to the hydraulic fluid pressure switch,
- the wiring harness and the feed lead (5) to the starter motor,
- the lead to the engine oil pressure switch,
- the harness for the brake pad and engine oil temperature warning lamp,
- the leads from the coil to the distributor.

34. Fit the following :

- the earth lead from the battery to « c » *(serrated washer)*,
- the clips at « a » and « b »,
- the high pressure pump suction pipe to the wheelarch,

35. Connect the carburettor controls to the carburettor.

36. Fit the following :

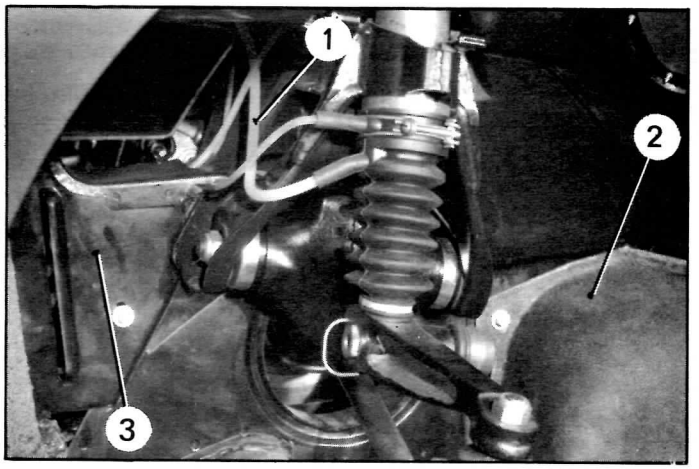
- the trim support panel,
- the lower valance,
- the headlamps and the indicators,
- the grille,

Connect the alternator leads.

Connect the bonnet release pull.

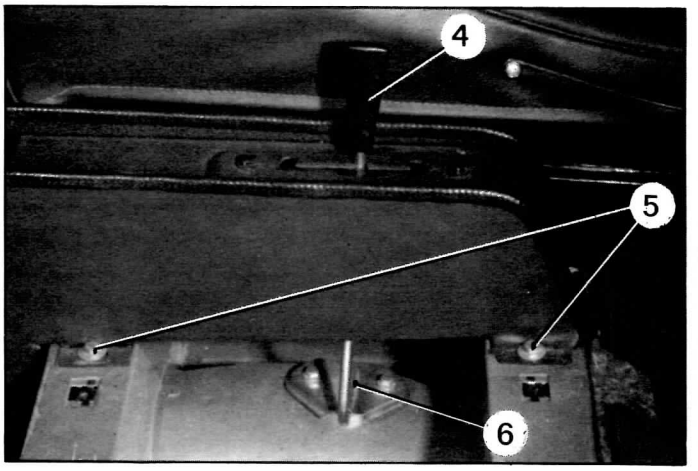
37. Position the suspension cylinder breathers (1) in the body shell extension boxes.

8441



Fit the following :
- the closing panels (3) between the body shell and the subframe,
- the height corrector protective casing (2).

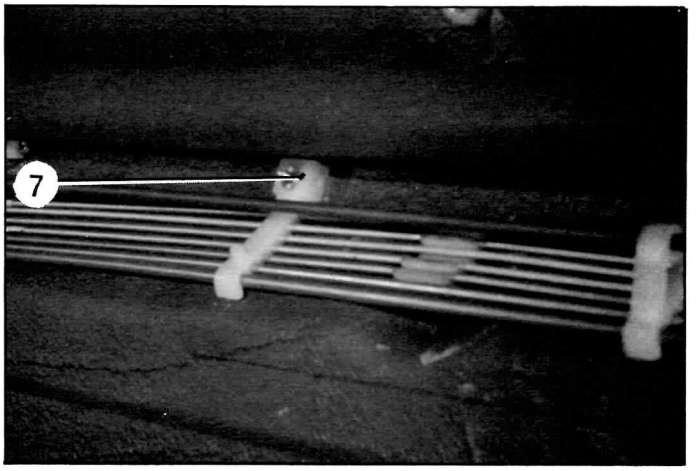
8509



38. Connect the clutch cable to the clutch control fork :
(Check that the cable is not disconnected from the pedal).

Adjust the clutch free play (15 to 20 mm at the pedal).

8544

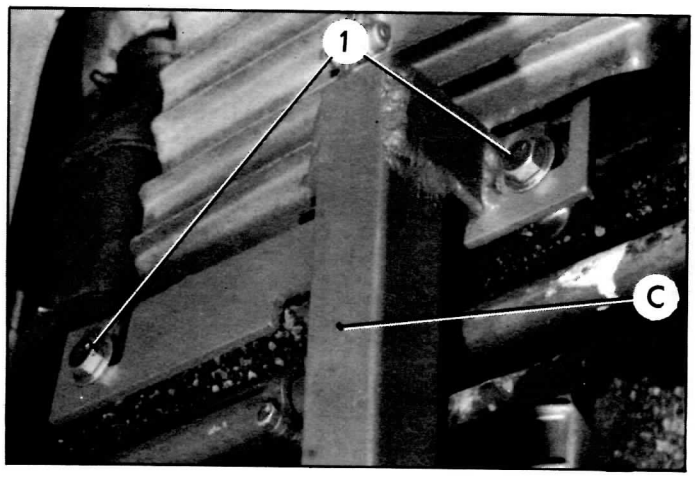


39. Connect the manual height control lever (4) to the central control rod.
- Attach the bearer assembly (6).
- Attach the hydraulic pipe supports (7).
- Fit the carpeting.
- Attach the console.
- Attach the right-hand seat belt *(the thickest spacer must be at the central fixing).*
- Fit the front seats, and attach the rear seat (Fit the screw embellishers).

Supplement N° 1 to Manual 810-2 (ADD)

Fit the wheels, and place the vehicle over a pit or a car-lift.

14403



40. Remove the stiffening rod **C** or kit MR. 630-44/21 **Tightening torque for the engine mounting fixing screws : 40 to 45 m.N (4 to 4.5 m.kg) (29 to 32 1/2 ft.lb)** *(flat washer).*

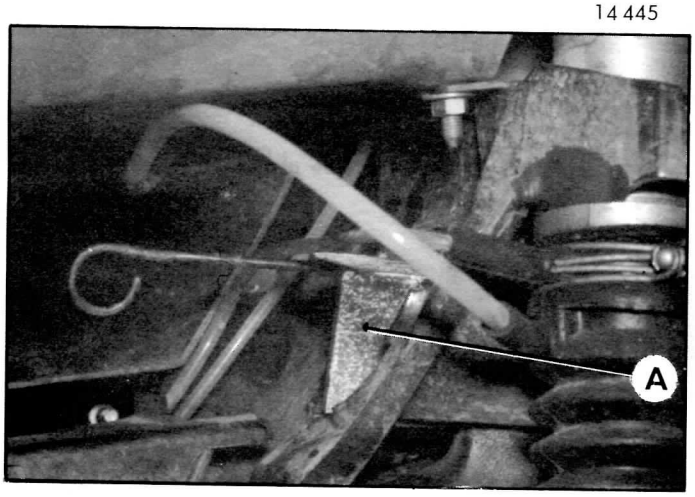
Remove the chocks **A.**

41. Adjust the heights *(if necessary).*

Front height : 189 ± 10 mm
Rear height : 272 ± 10 mm

42. Bleed the brakes *(if necessary)*

14445



43. Check the headlamp adjustment.

44. Check the alignment and the camber of the front wheels *(if necessary)*

45. Fit the following :

- the rear height corrector inspection cover,
- the heater distribution box,
- the spare wheel.

LIST OF THE SPECIAL TOOLS MENTIONED IN THE FIRST SECTION OF MANUAL 810-2

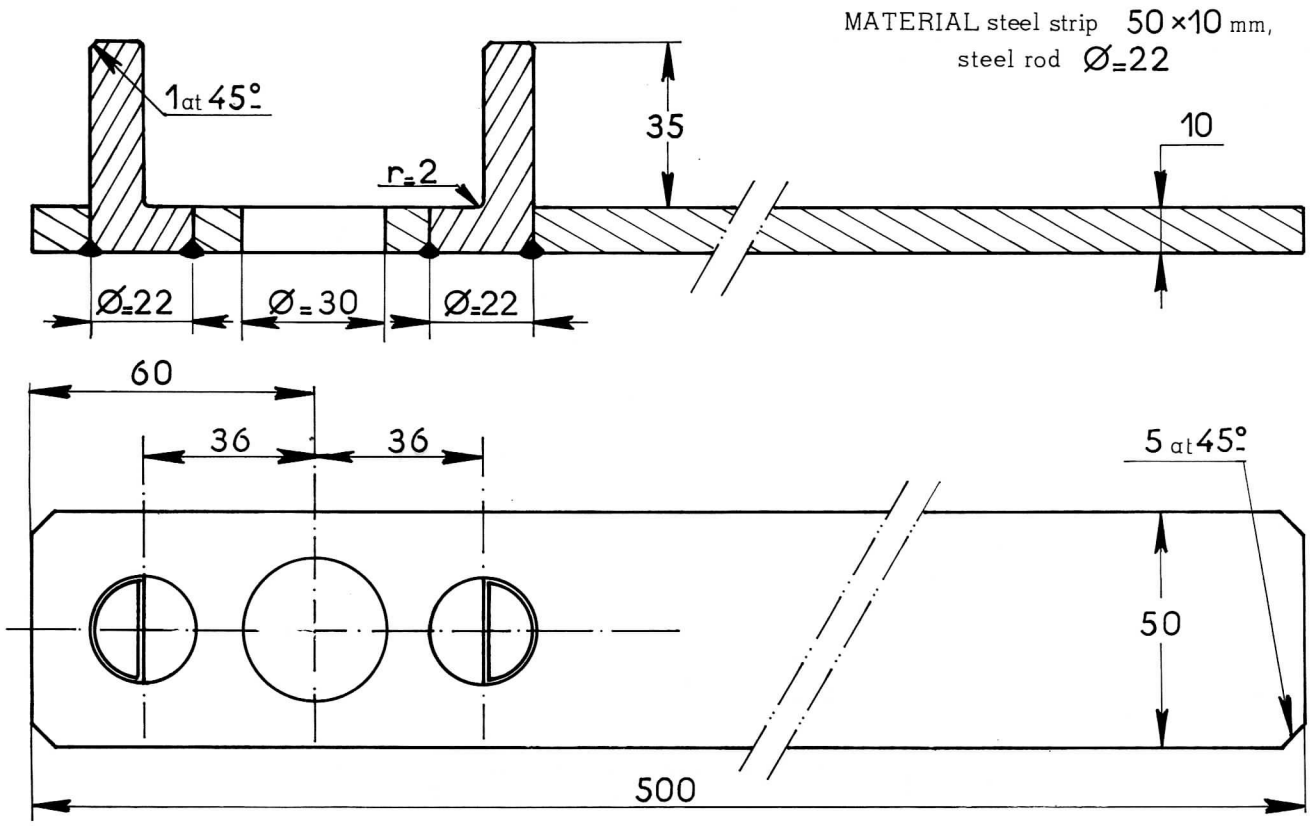
DESCRIPTION	NUMBER Methods - Repairs	REFERENCE of tool on sale
Beam for lifting vehicle		2510-T
(2) ENGINE		
Valve spring compressor		1652-T or 1652-T bis
Key for filter cartridge		1683-T
Tool for fitting seal to distributor drive		1695-T
Tool for fitting a camshaft seal		1697-T
Key for removing and fitting an engine with converter		1790-T
Stand for engine on work bench		2508-T
Sling for hoisting engine-geabox assembly		2511-T
Piston ring compressor 1015 cc Engine		3010-T
Piston ring compressor 1220 cc Engine		4007-T
Segment for adjusting centrifugal advance		3093-T
Key for tightening cylinder head nuts (for 12 mm A/F nuts)		3094-T
Key for tightening cylinder head nuts (for 13 mm A/F nuts)		4006-T.D + 4006-T.F
Key for carburettor (11 mm A/F)		3096-T
Tool for holding a camshaft wheel	MR. 630-11/26	
Extension series K. 210 (3/4" square) modified for removing fan nut	MR. 630-17/1	
Rocker shaft extractor	MR. 630-25/8	
Mandrel for fitting gudgeon pin		1699-T
Rod for setting distributor	MR. 630-51/70	
Union for checking engine oil pressure		3099-T
Shim for fitting oil pump drive		4001-T
Tool for holding flywheel		3064-T.E
(3) (4) CLUTCH - GEARBOX		
Key for nuts holding gearbox to engine		1791-T
Bracket for holding converter on gearbox		3186-T
Mandrel for extracting a pin or control lever from selector fork shafts	MR. 630-31/84 a	
Mandrel for fitting a pin or control lever to selector fork shafts	MR. 630-31/84 b	
Mandrel for centering clutch disc	MR. 630-31/85	
Shims for clutch drive contacts : - « minimum » shim : thickness 1.4 mm - « maximum » shim : diameter 1.5 mm		3112-T
(5) DRIVE SHAFTS		
14 mm ball joint key (length = 700 mm)		2418-T
Tool for fitting sleeves	MR. 630-64/55	
Tool for holding front wheelhub	MR. 630-64/40	6310-T

Supplement N° 1 to Manual 810-2 (CORR)

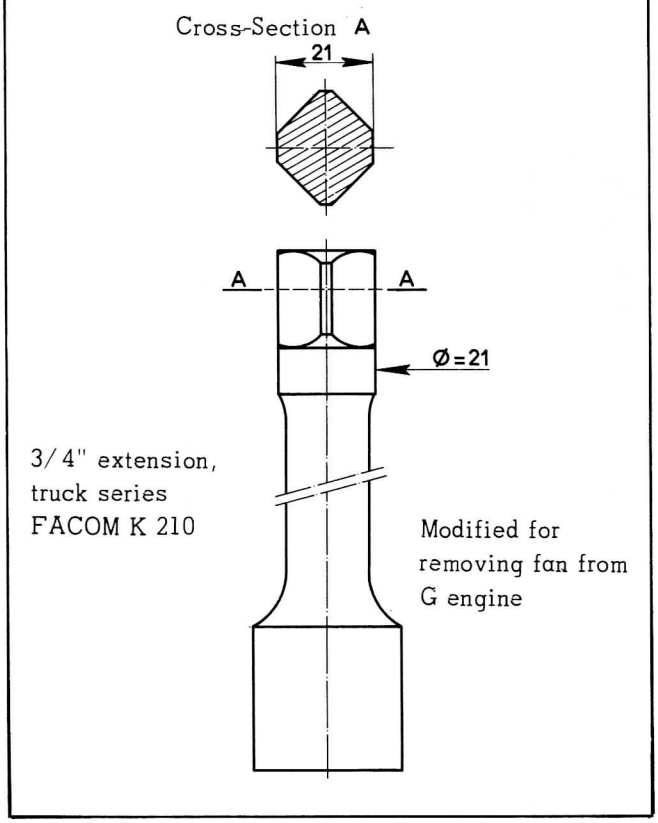
LIST OF THE SPECIAL TOOLS MENTIONED IN THE FIRST SECTION OF MANUAL 810-2

DESCRIPTION	NUMBER Methods - Repairs		REFERENCE of tool on sale
(7) (8) FRONT AND REAR SUSPENSION UNITS			
Ball joint extractor			1892-T or 1892-T bis
Front hub extractor			1893-T
Unit for adjusting stress on front anti-roll bar bearings			2067-T
Rear wheelarm extractor with nut			2068-T bis
Unit for fitting rear wheelarms			2069-T
Extractor for rear wheelarm bearings			2070-T
Mandrel and sockets for fitting rear wheelarm bearings			2071-T
Key for rear hub plug			3304-T
Key for front hub bearing nut			3320-T
Assembly for removing and fitting the front or rear hub nut			3321-T
Mandrel for fitting the front or rear hub bearing	MR. 630-31/96		
Mandrel for fitting the front hub seal	MR. 630-31/97		
Tool for holding the front or rear hub	MR. 630-64/40	or	6310-T
Tool for removing and fitting the support tube of the rear wheelarm			2072-T
Rawlnut for fitting the lower wheelarms			3319-T
(11) BRAKES			
Key for adjusting handbrake			2115-T
(13) BODYWORK			
Tool kit for removing and fitting the body shell	MR. 630-44/21		

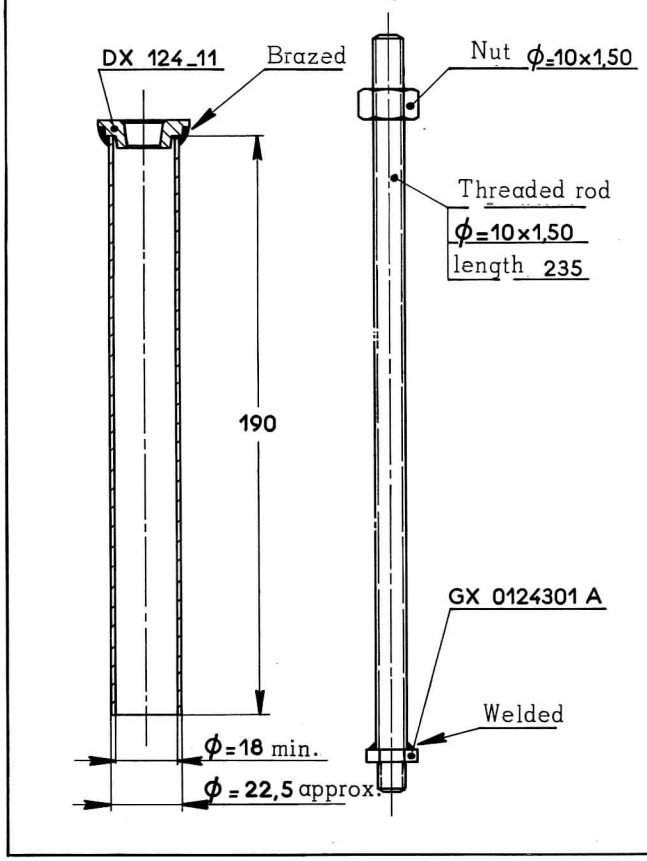
MR 630_11/26



MR 630 – 17/1

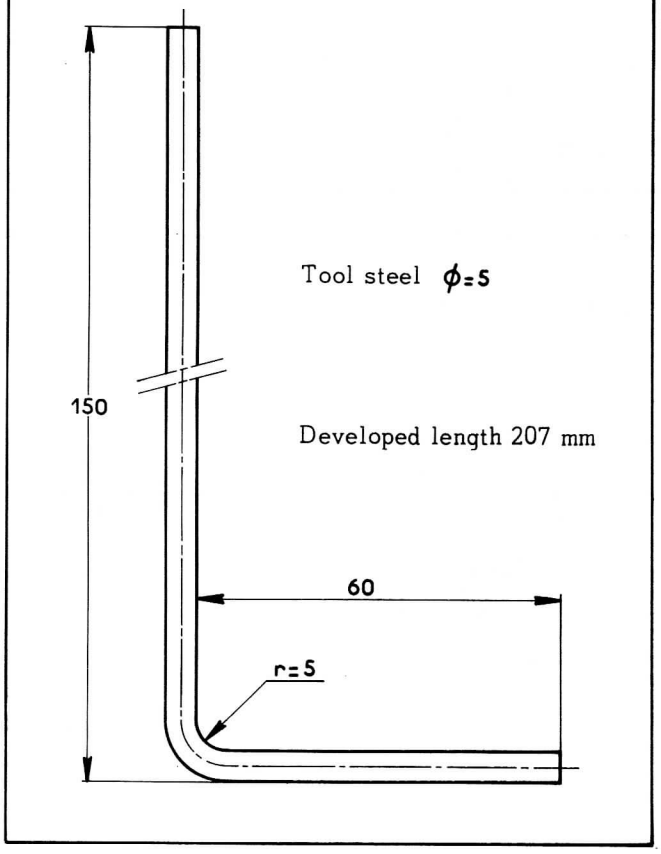


MR 630_25/8

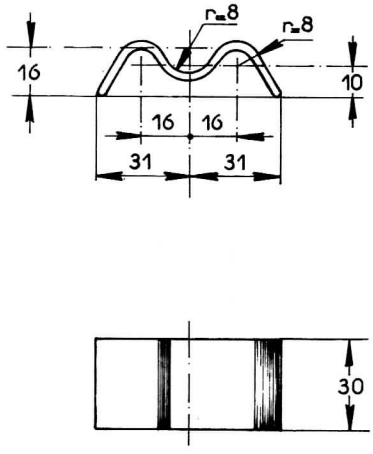


Supplement N° 1 to Manuel 810-2 (CORR)

MR 630_51/70

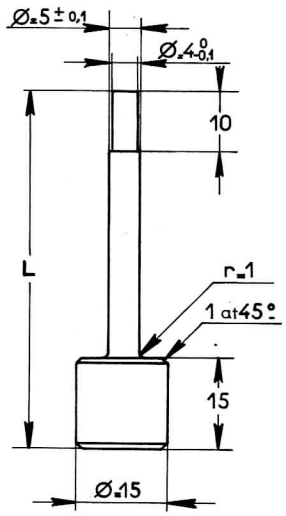


MR 630_64/43



MATERIAL : Steel strip 30 × 3

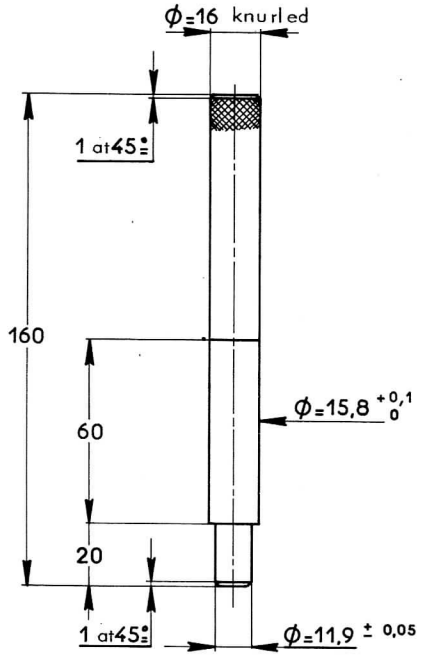
MR 630_31/84



1 Part. A; length 59 mm
1 Part B; length 37.5 mm

MATERIAL : semi-hard heat-treated steel

MR 630_31/85

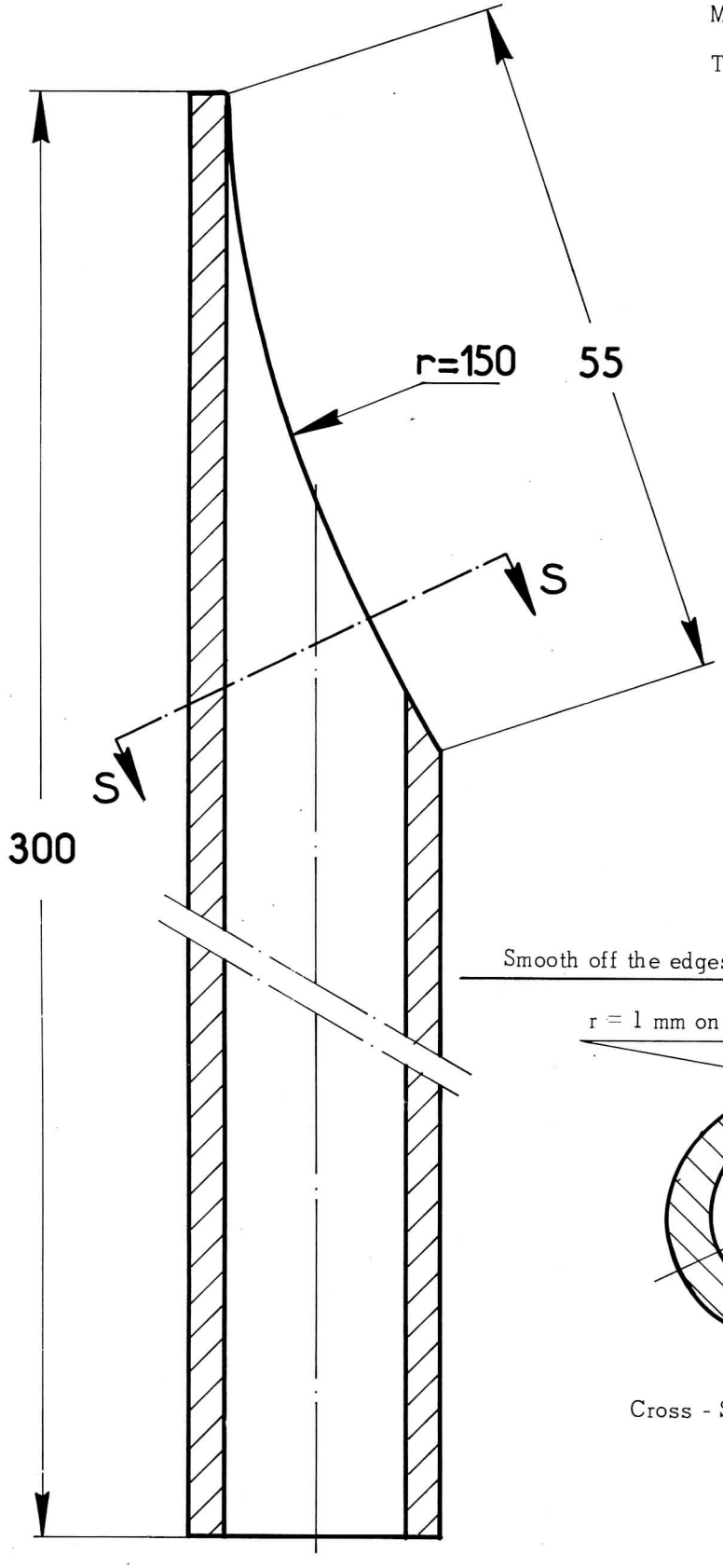


Semi-hard steel

MR 630 - 64/55

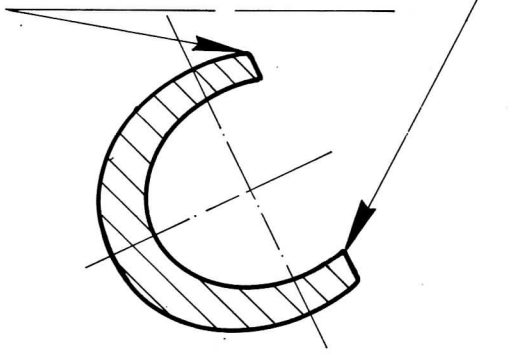
MATERIAL

Tube 15 x 21 mm



Smooth off the edges

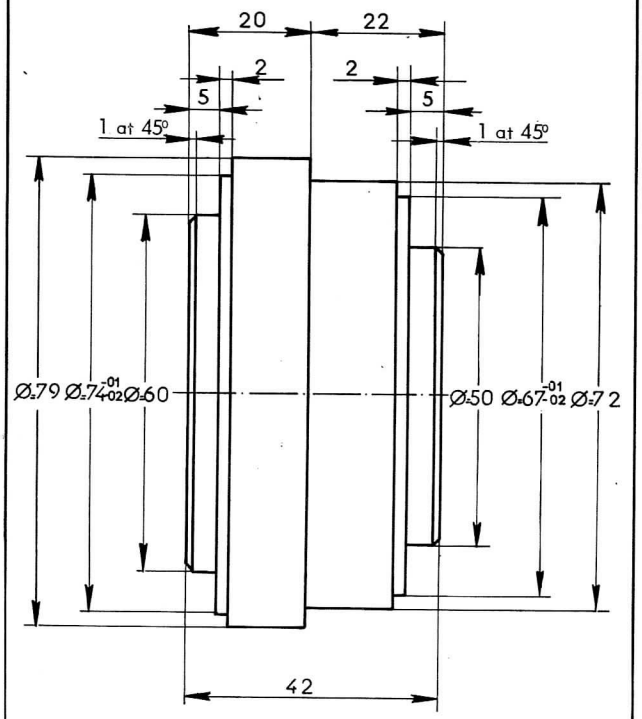
r = 1 mm on the circumference



Cross - Section . S

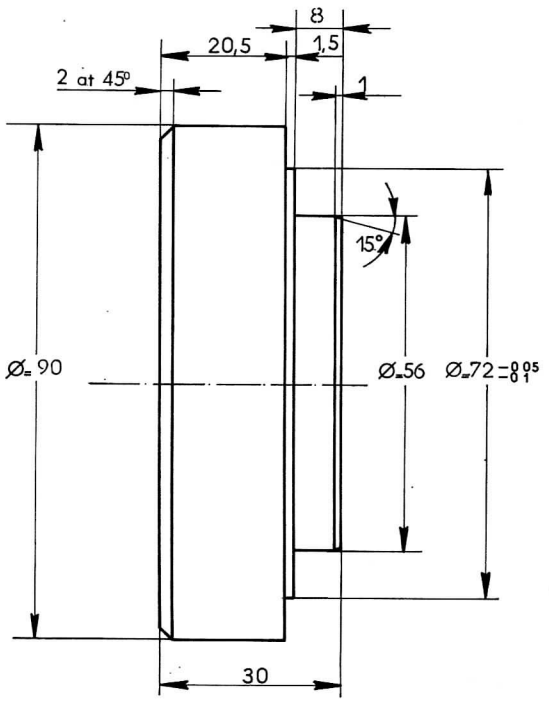
Supplement N° 1 to Manual 810-2 (CORR)

MR 630_31/96



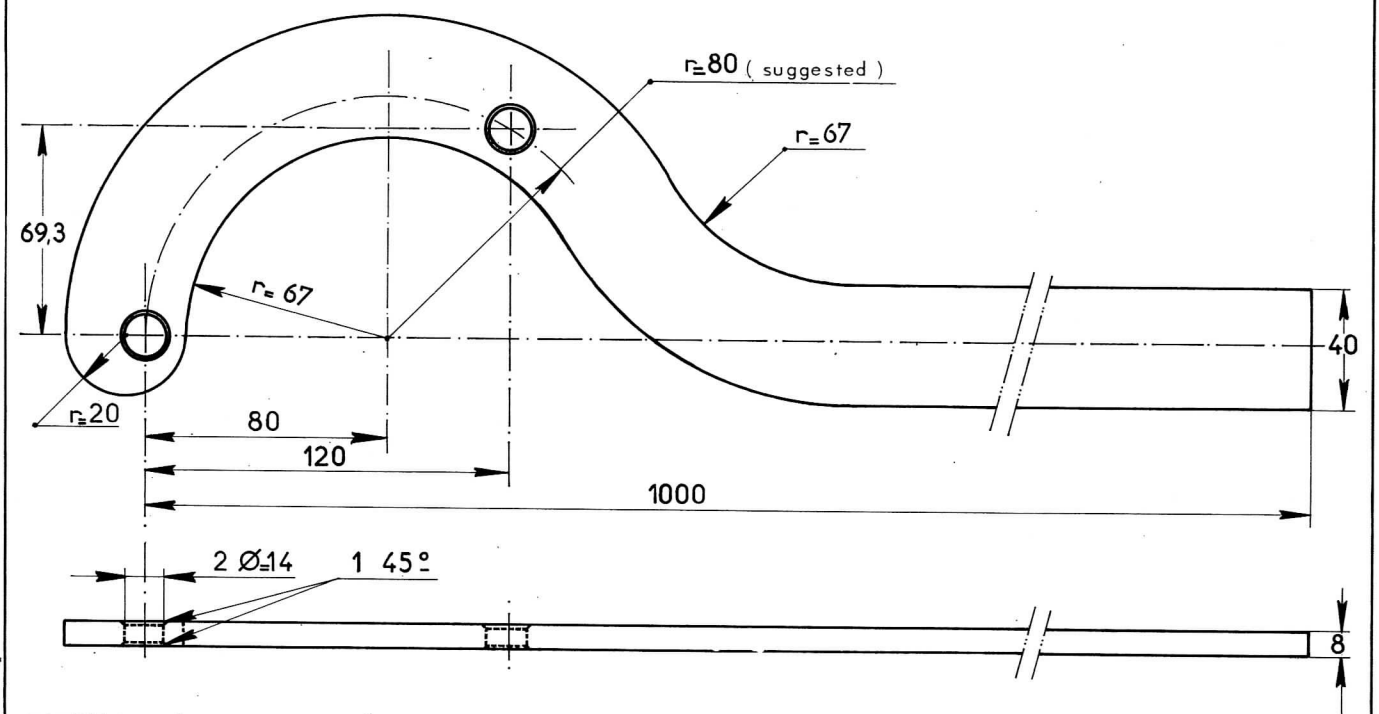
MATERIAL : semi-hard steel

MR 630_31/97



MATERIAL : semi-hard steel

MR.630_64/40

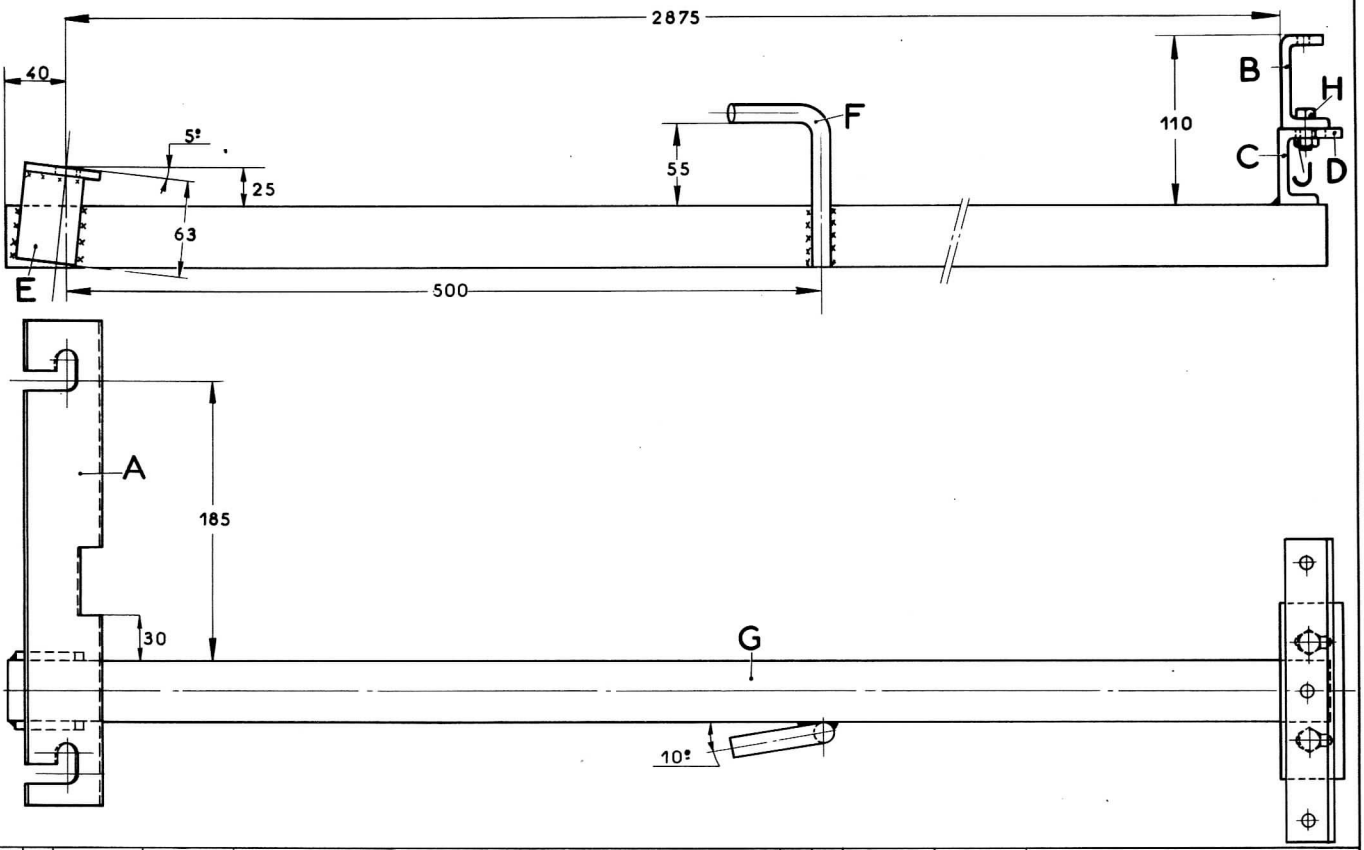


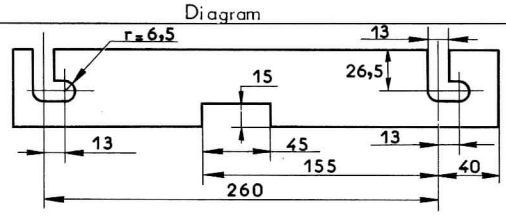
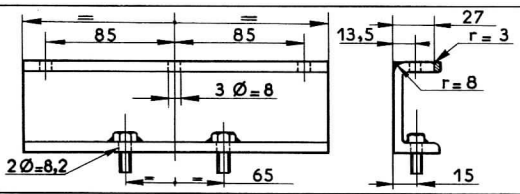
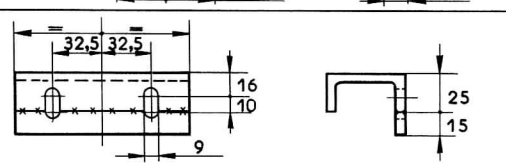
MATERIAL : Steel strip 40 × 8 mm

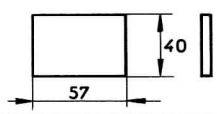
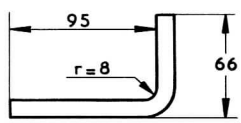
Developed length 1200 mm

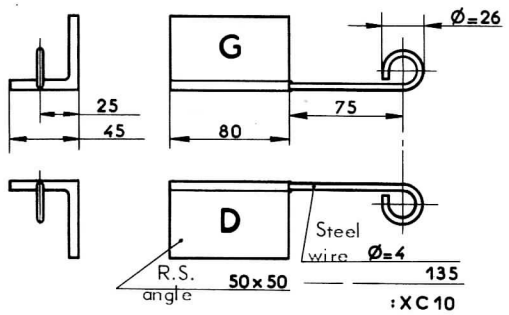
Supplement N° 1 to Manual 810-2 (CORR)

MR.630-44/21

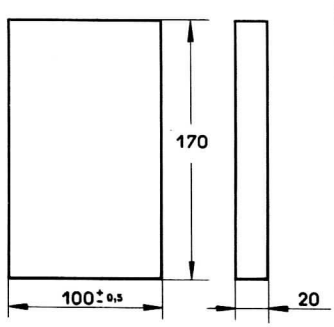


Item	No off	Material	Quantity	Diagram
A	1	Steel Strip	50x6 L=320	
B	1	R.S. U section	60x30 L=200	
C	1	R.S. U section	50x25 L=115	
D	1	Steel strip	15x5 L=115	

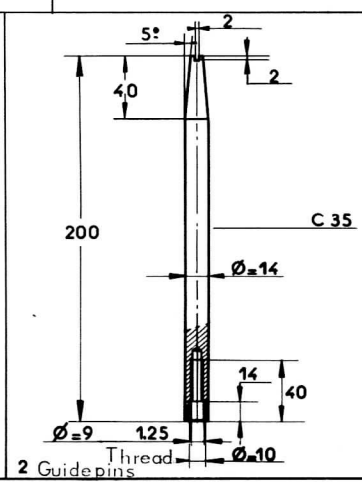
Item	No off	Material	Quantity	Diagram
E	2	Steel Strip	40x6 L=57	
F	1	Steel rod	Ø=12 =160	
G	1	Square tube	40x40	Length 2950
H	2	screw	5.1 x 20	
J	2	Nuts H8	H 8	



Set of 2 chocks for positioning the front axle . (1 L.H. 1 R.H)



1 Chock Material: Hardwood



2 Guidepins

Supplement N° 1 to Manual 810-2 (ADD)

SECOND SECTION

Manual 810-2

RECONDITIONING

LIST OF OPERATIONS
IN THE SECOND SECTION OF MANUAL 810-2

Operations where the number is preceded by the letter « G » are common to all « GS » vehicles
Operations where the number is preceded by the letters « GE » or « GF » are specific to the five-door or three-door « GS » Estate respectively
Operations where the number is preceded by the letter « Gea » are specific to vehicles fitted with a Torque Converter

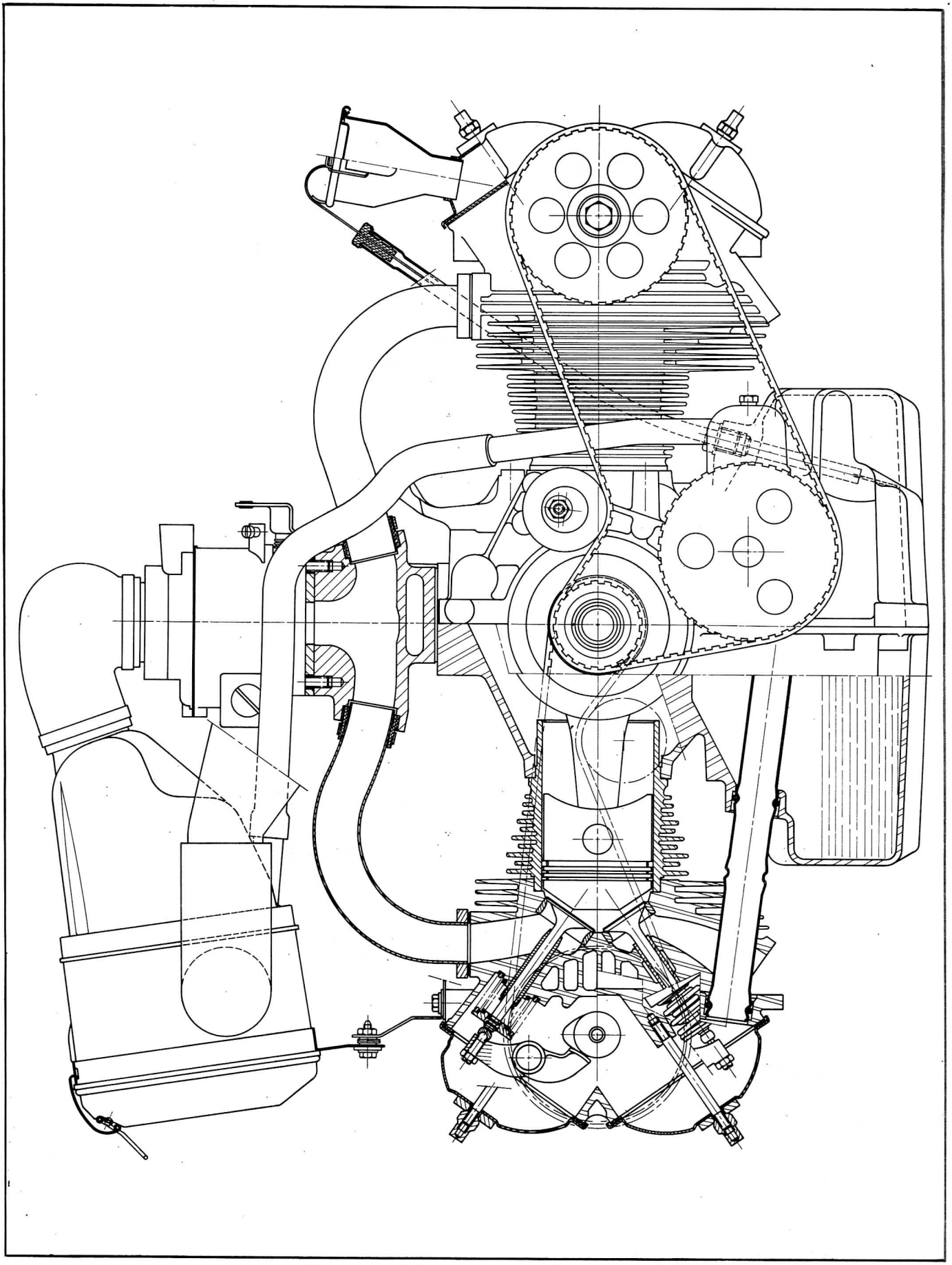
Operation Number	DESCRIPTION
	ENGINE
G. 100-3	Reconditioning an engine
G. 100-5	Stripping and assembling an engine
G. 112-3	Reconditioning a cylinder-head
	GEARBOX
G. 330-2	Stripping and assembling a gearbox (pedal-operated clutch)
G. 330-3	Reconditioning a four-speed gearbox (pedal-operated clutch)
Gea. 330-3	Reconditioning a three-speed gearbox (torque-converter)
	DRIVE-SHAFTS
G. 372-3	Reconditioning a drive-shaft
	FRONT AXLE
G. 412-3	Working on the front wheelarms
	REAR AXLE
G. 422-3	Reconditioning a rear wheelarm
	STEERING
G. 442-3	Reconditioning a steering system
	TOOLING
	List of special tools
	Manufacturing drawings for tools not sold

Supplement N° 1 to Manual 810-2 (CORR)

ENGINE

(All G 10 vehicles produced up to August 1972)

CROSS SECTION

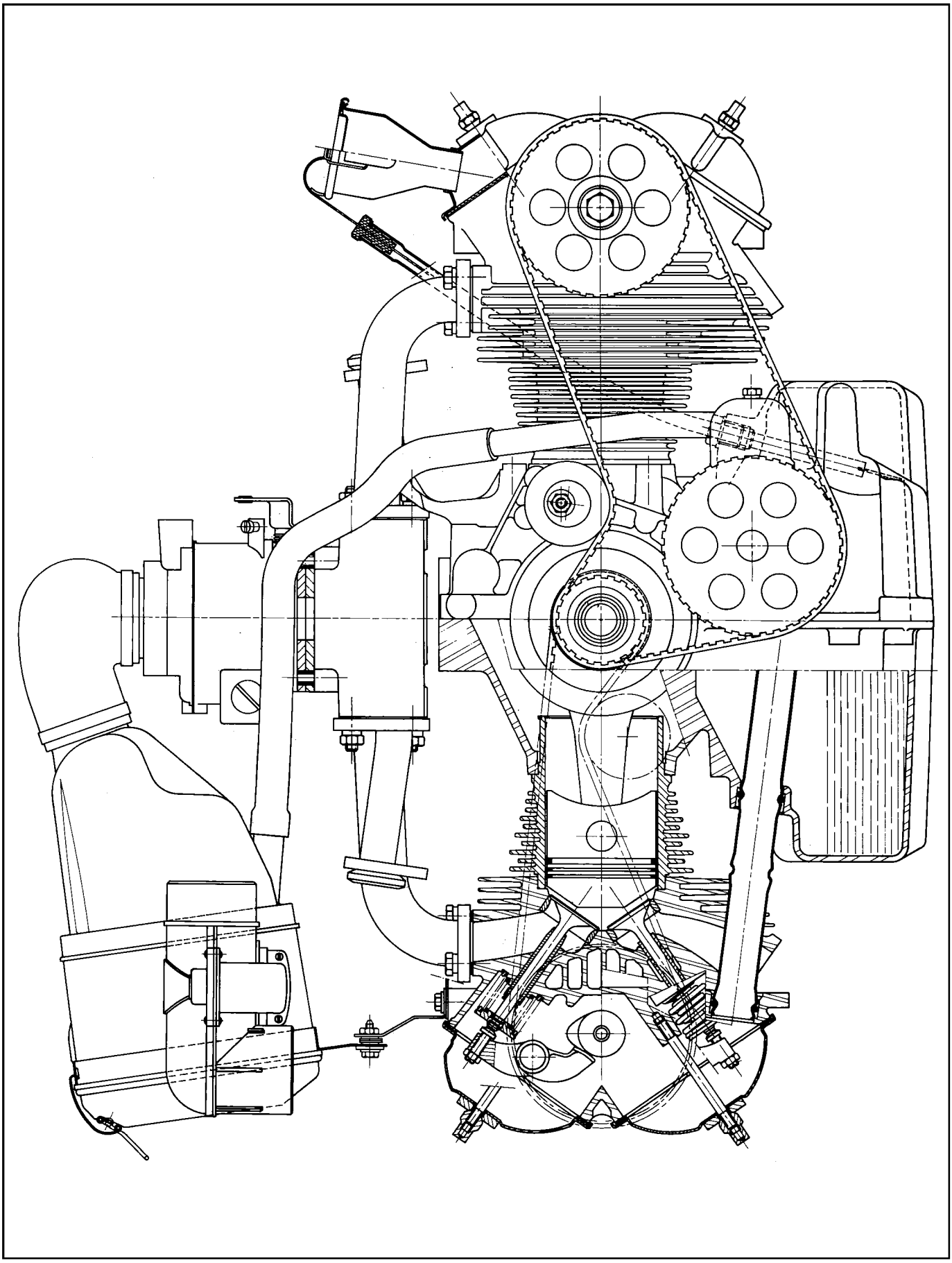


Supplement N° 1 to Manual 810-2 (CORR)

ENGINE

All G 10 and G 12 engines (except G 12/619) produced since August, 1972

CROSS SECTION

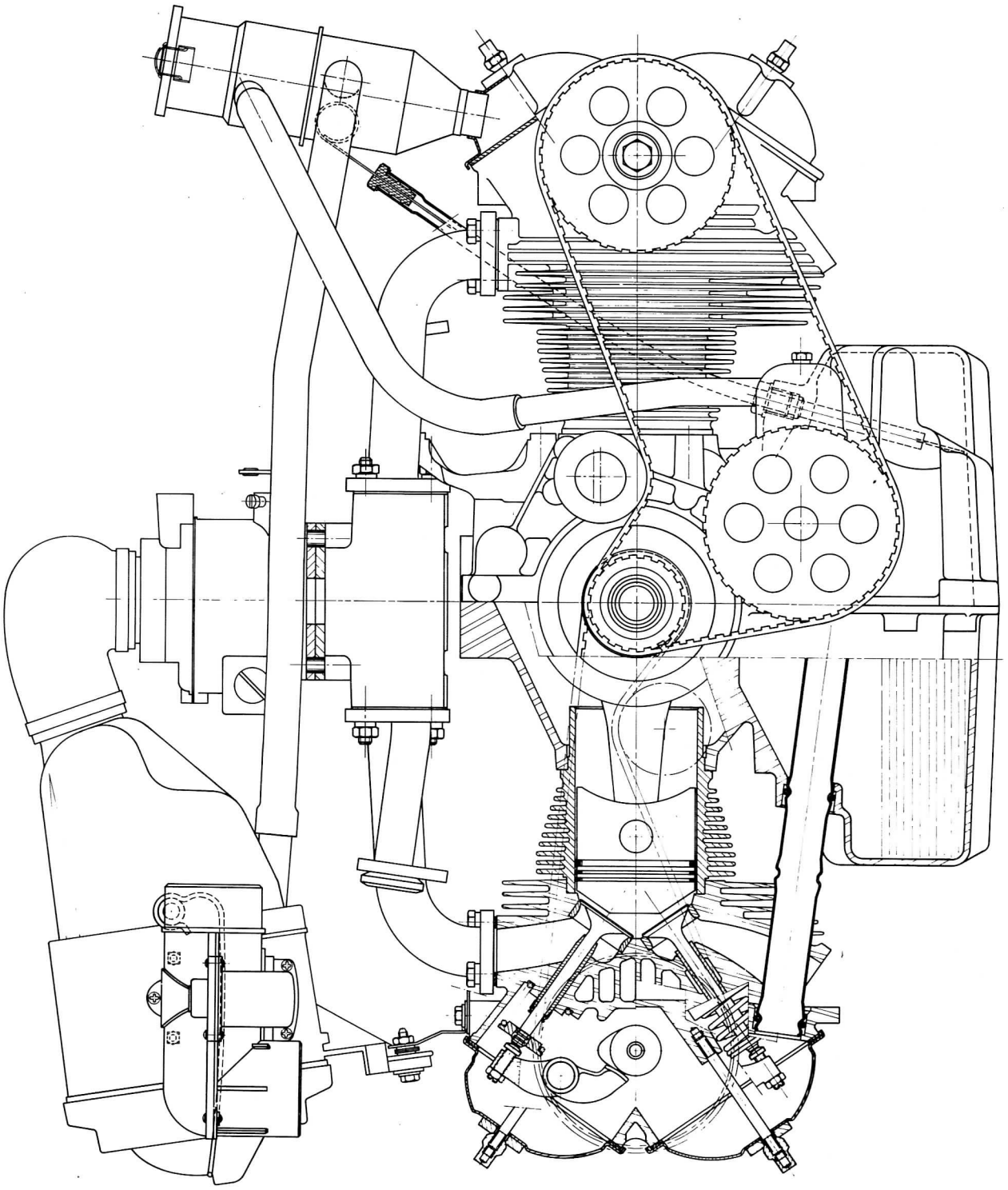


ENGINE

G 12/619 engines produced from October 1974

CROSS SECTION

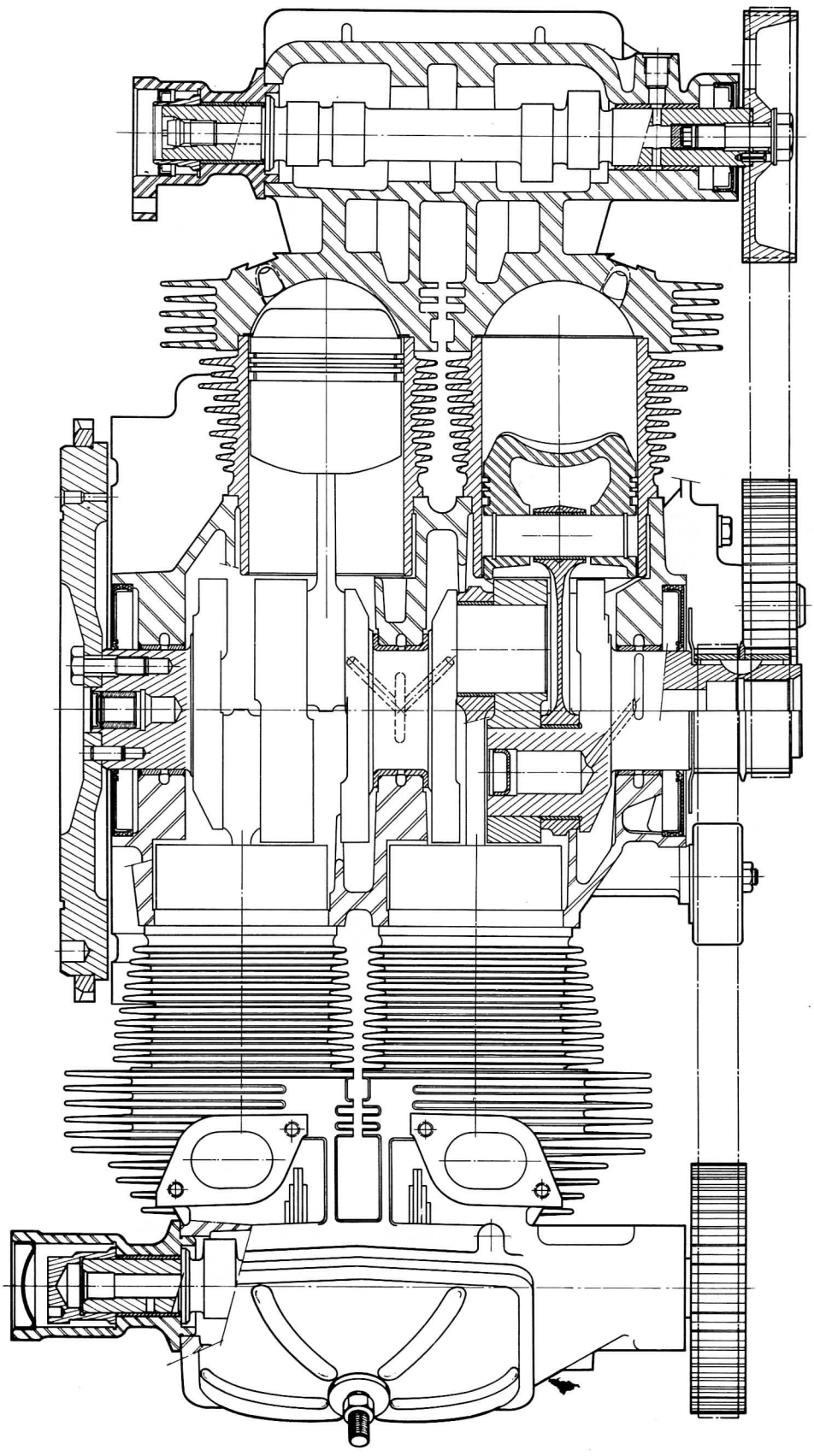
G. 10-2 c



Supplement N° 1 to Manual 810-2 (ADD)

ENGINE

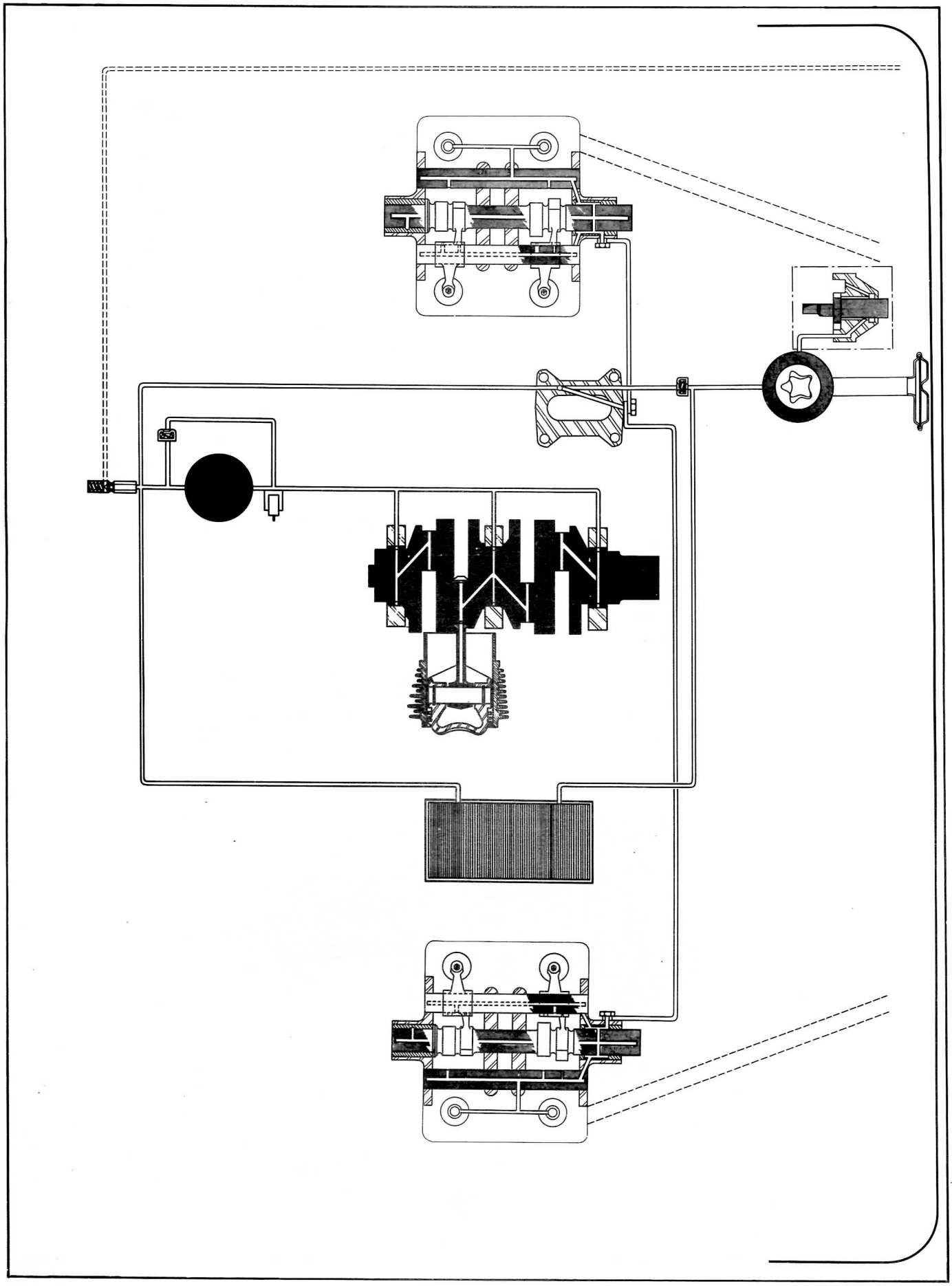
HORIZONTAL SECTION



Supplement N° 1 to Manual 810•2 (CORR)

DIAGRAM OF LUBRICATION SYSTEM

(All GX vehicles produced up to September 1971)

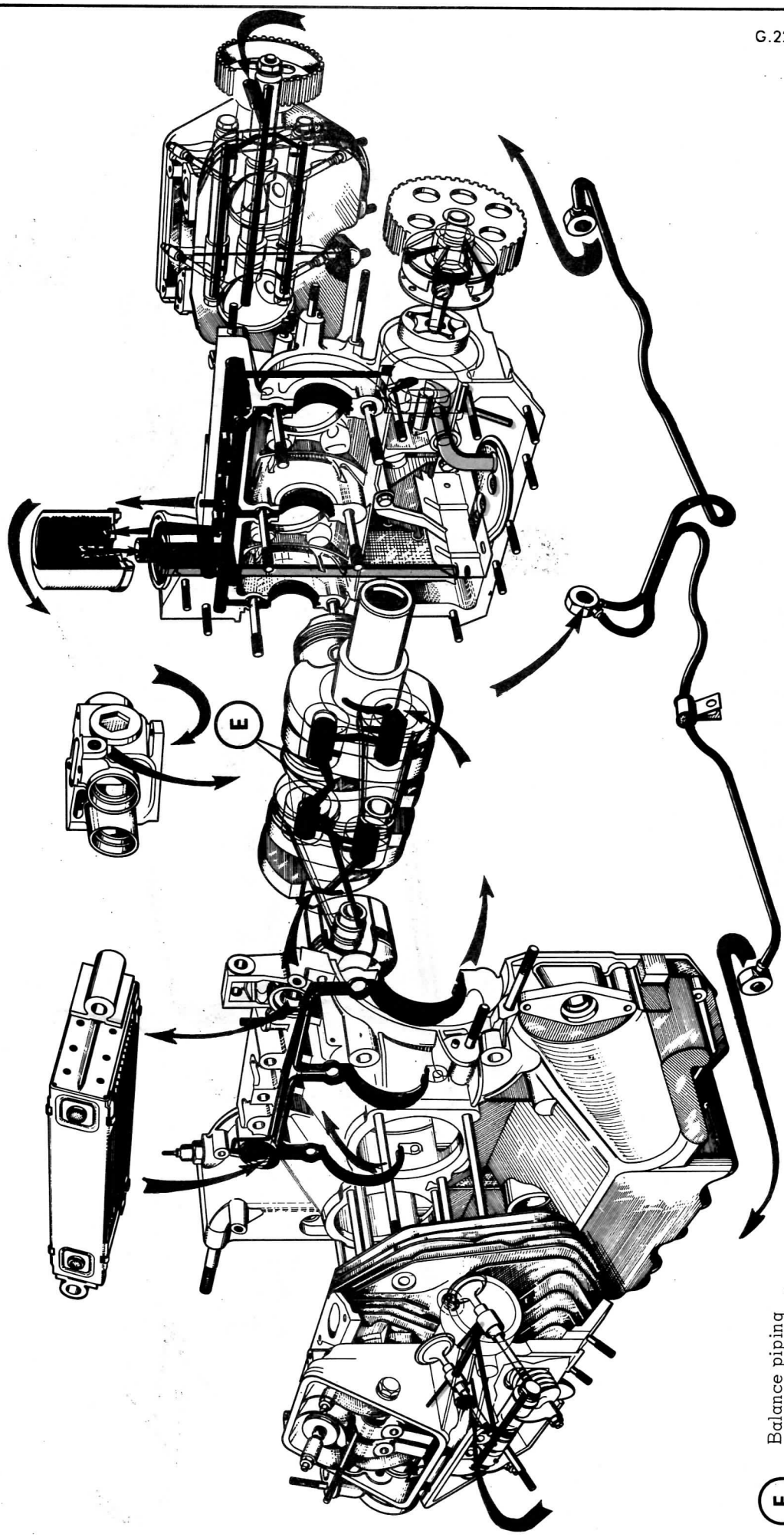


Supplement N° 1 to Manual 810-2 (CORR)

DIAGRAM OF LUBRICATION SYSTEM

(All GX vehicles produced from September 1971 to August 1972)

G.22-3

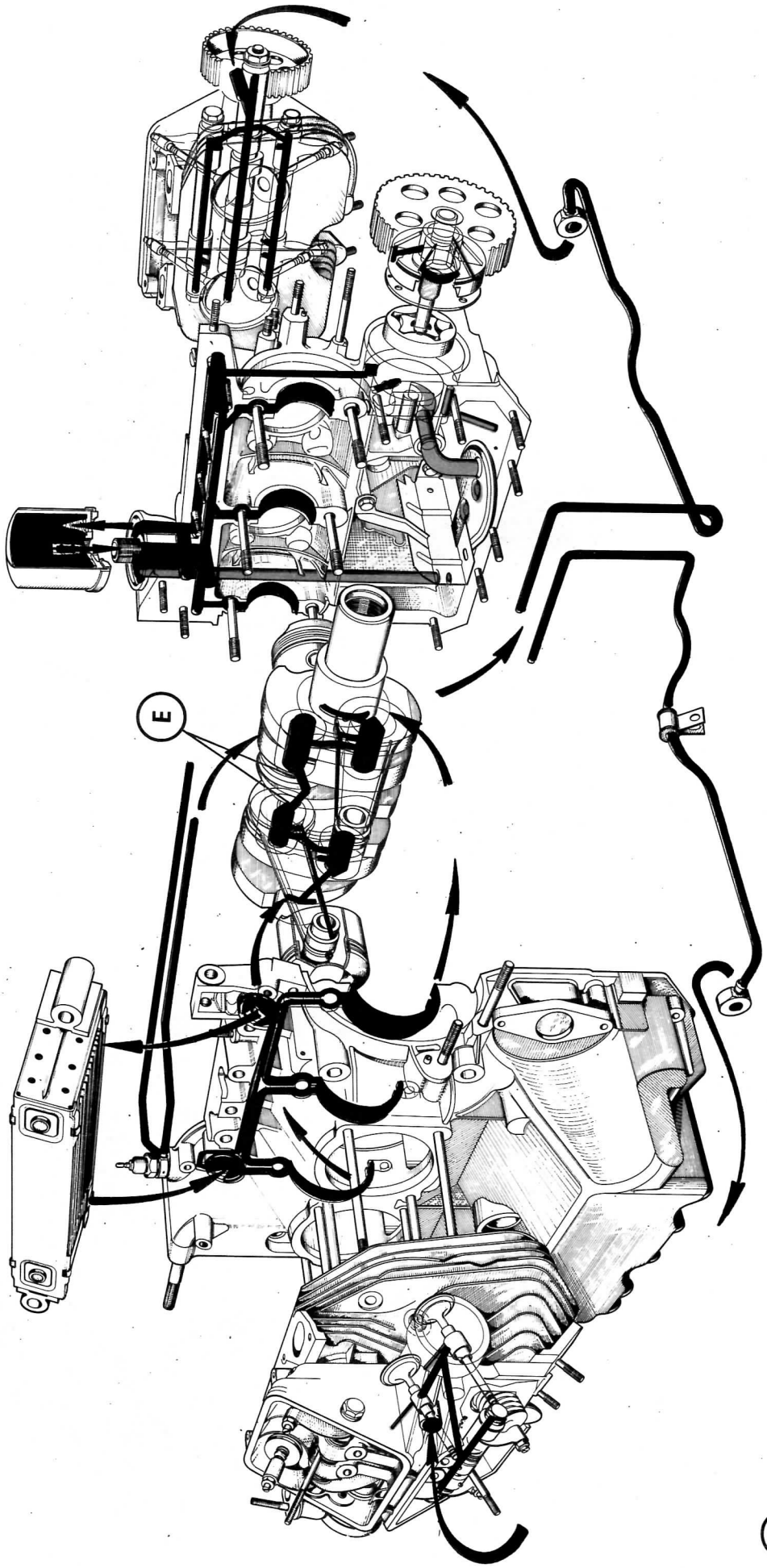


(E) Balance piping

A.22-4 a

DIAGRAM OF LUBRICATION SYSTEM

All GX vehicles produced since September 1972



(E) Balance piping

SPECIAL FEATURES

Crankcase

Tightening torques :

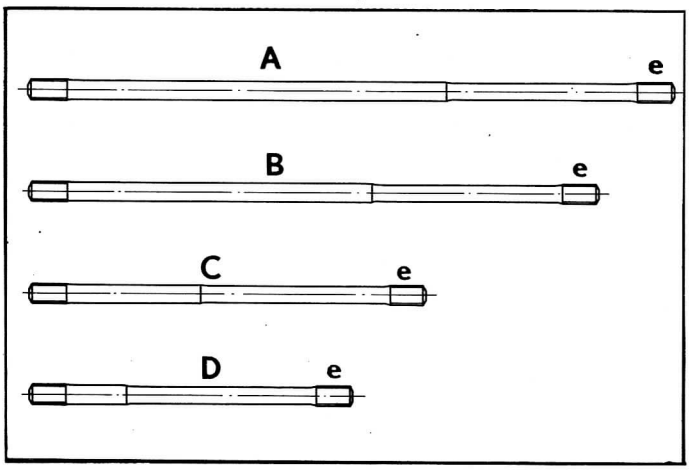
- Half-crankcase nuts ..... 12 to 15 m.N (1.2 to 1.5 m.kg) (8 1/2 to 11 ft.Ib)
- Bearing nuts ..... 34 to 45 m.N (3.4 to 4.5 m.kg) (24 1/2 to 32 1/2 ft.Ib)
- Engine mounting bolts on crankcase (they must be the same make) ..... 50 to 60 m.N (5 to 6 m.kg) (36 to 43 1/2 ft.Ib)
- Nut securing dipstick guide ..... 30 to 40 m.N (3 to 4 m.kg) (21 to 29 ft.Ib)
- Drain plug ..... 35 to 45 m.N (3.5 to 4.5 m.kg) (25 1/2 to 32 1/2 ft.Ib)
- Oil pump bearing screw ..... 15 to 18 m.N (1.5 to 1.8 m.kg) (11 to 13 ft.Ib)
- Screw of fixing nuts for inlet housing ..... 18.5 m.N (1.8 m.kg) (13 1/2 ft.Ib)
- Cylinder head studs (Loctite 572 - N° ZC 9851 106U) 6 to 8 m.N (0.6 to 0.8 m.kg) (4 1/2 to 6 ft.Ib)
- Oil strainer screw ..... 14 m.N (1.4 m.kg) (10 ft.Ib)
- For oil-tightness of half-crankcase, use Loctite 572-N° ZC 9 851 106 U

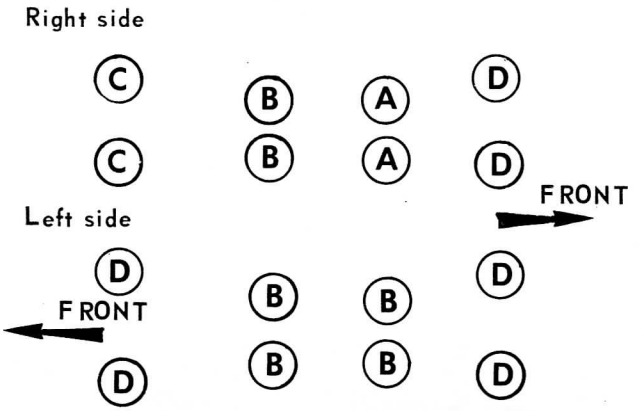
Cylinder head studs :

a) Four different lengths of studs :
Extremity « e » casing side (shortest threaded length)

NOTE : If the studs need replacing, refer back to the type of engine and its date of production

b) Location of different studs on engine casing.





Crankshaft - connecting rods :

- Flanged centre bearing : Interior diameter ..... 57.5 mm without marking *(first possibility)*
  57.4 mm red paint marking *(second possibility)*
  Overall total width ..... 29.9 $^{+0.05}_{0}$ mm
  Bearing surface support width .... 15.3 mm
- Front and rear bearings : Interior diameter ..... 57.5 mm without marking *(first possibility)*
  57.4 mm red painting marking *(second possibility)*
  Total width ..... 20.8 $^{+0.05}_{0}$ mm
  Bearing surface support width ..... 16.05 mm
- Lateral play of the crankshaft at centre bearing (not adjustable) ..... 0.09 to 0.20 mm

Do not scratch the front and rear bearings of the crankshaft (micro-turbine)

- Bore of small end bushes (1015 cc) ..... 20,005 $^{+0.011}_{-0.006}$ mm
- Bore of small end bushes (1220 cc) ..... 22.005 $^{+0.011}_{-0.006}$ mm
- Lateral play of connecting rods ..... 0.13 to 0.18 mm

Flywheel ;

- Maximum run-out of starter ring ..... 0,3 mm
- Orientation od starter ring : teeth entry towards gearbox

Tightening torques of fixing bolts :

- Flywheel nuts **to be replaced a eatch dismantling** (threads and faces greased) ..... 64 to 69 m.N (6.4 to 6.9 m.kg (46 to 50 ft.Ib)
- Converter nuts (use Loctite GX 01460 01 A) 16 mm A/F screws 105 to 115 m.N (10.5 to 11.5 m.kg) (76 to 83 ft.Ib)
  14 mm A/F screws 64 to 69 m.N (6.4 to 6.9 m.kg) (46 to 50 ft.Ib)
- Clutch mechanism ..... 18 m.N (1.8 m.kg) (13 ft.Ib)

Cylinders

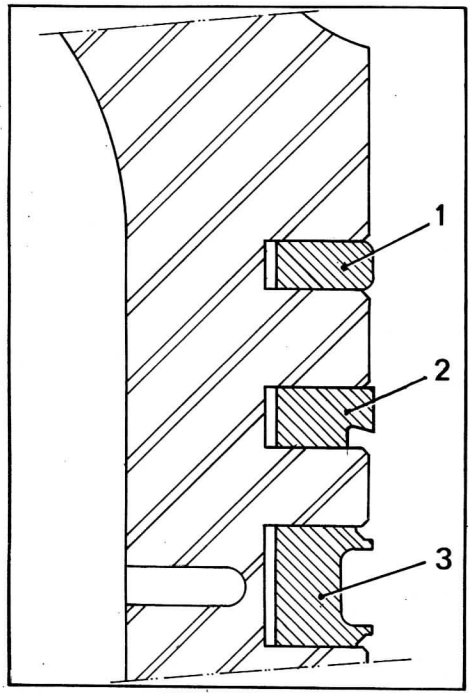
- Two types of cylinders according to their height

	G.10 Engine	G.12 Engine
red identification mark	75.78 to 75.80 mm	86.88 to 86.90 mm
green identification mark	75.80 to 75.82 mm	86.90 to 86.92 mm

- Fitting : WARNING : *The two cylinders on the same side of an engine must WITHOUT FAIL be of the SAME TYPE.*

Supplement N° 1 to Manual 810-2 (CORR)

Pistons - Rings



Pistons

- Fitting :

a) *Pistons without identification mark (arrow)*
After fitting the figure indicating the compression ratio must be legible the right way up

b) *Pistons with identification mark (arrow)*
(Offset gudgeon pistons) :
After fitting, the arrow must point towards the timing belts (front of engine)

- The gudgeon pins are of the floating type.

Rings :

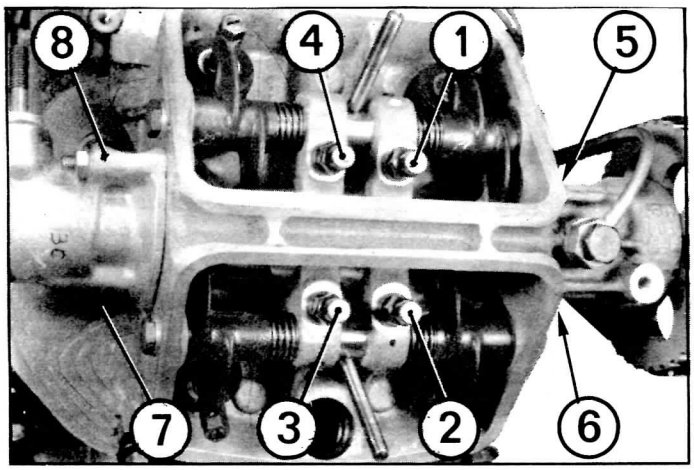
- The number (manufacturer's mark) should be uppermost
- Order of fitting : (from the piston crown)
  - 1 - compression ring
  - 2 - scraper ring
  - 3 - scraper-collector ring

Tightening torques :

- Cylinder head nuts :	
1st tightening	8 to 10 m.N (6 to 7 ft.Ib)
2nd tightening :	
- 12 mm bolts A/F	16 to 18 m.N (11 1/2 to 13 ft.Ib)
- 13 mm bolts A/F	20 to 25 m.N (14 1/2 to 18 ft.Ib)
- Rocker cover nuts	8 to 10 m.N (6 to 7 ft.Ib)
- Rocker shaft blanking bolt	17 to 18 m.N (12 1/2 to 13 ft.Ib)
- Nuts on exhaust flange	15 m.N (11 ft.Ib)
- Camshaft bearing studs (fitted with LOCTITE N° GX 01 45901A)	3 to 5 m.N (2 to 3 1/2 ft.Ib)
- Lubrication joint screw	18 to 20 m.N (13 to 14 1/2 ftIb)
- Rocker shaft set screw (fitting with LOCTITE N° GX 01 459 01 A)	(3 mm Allen key)
- Intake flange screw	18.5 m.N (13 1/2 ft.Ib)
- Camshaft bearing bolts	15 to 18 m.N (11 to 13 ft.Ib)

Cylinder heads

ORDER OF TIGHTENING FIXING BOLTS



Timing

- End float of camshafts (not adjustable) ..... 0.05 to 0.15 mm

A - THEORETICAL SETTING

With a clearance of 1 mm between rocker and valve at intake and exhaust

	G.10 Engine (1015 cc)	G 12/611 and G12/612 Engines (1220 cc)	G 12/619 Engine (1220 cc)
Advance intake opening BTDC	2° ± 1°30'	4°10' ± 1°30'	5°30' ± 1°30'
Retard intake closing ABDC	34° ± 1°30'	31°50' ± 1°30'	34°30' ± 1°30'
Advance exhaust opening BBDC.....	34° ± 1°30'	36°10' ± 1°30'	32° ± 1°30'
Retard exhaust closing ATDC	2°30' ± 1°30'	0°20' ± 1°30'	4°30' ± 1°30'

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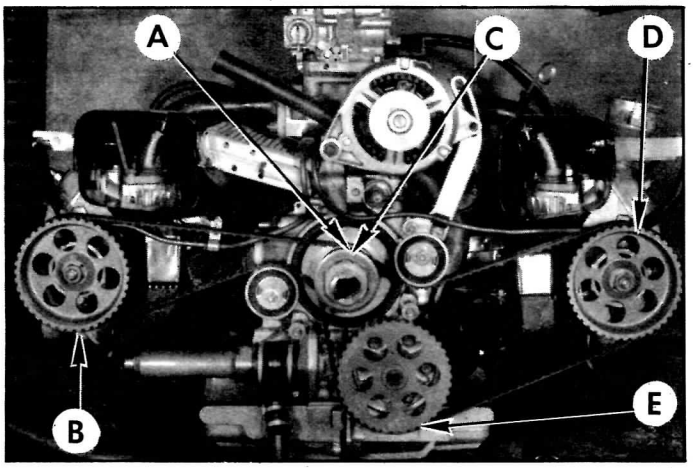

B - CHECKING THE TIMING BELT MARKS (G.10 engine - 1015 cc)

Right-hand toothed belt :

Total length ..... 866 mm
Total number of teeth 91
Two white marks A and B separated *(on the tensioner side)* by 42 teeth

Left-hand side toothed belt :

Total length ..... 981 mm
Total number of teeth 103
Two white marks C and D separated by 32 teeth
One yellow mark E (oil pump) such as EC = ... 25 teeth

B - CHECKING THE TIMING BELT MARKS (All G.12 engines - 1220 cc)

Right-hand toothed belt :

Total length ..... 885 mm
Total number of teeth 93
Two white marks A and B separated *(on the tensioner side)* by ..... 43 teeth

Left-hand toothed belt :

Total length ..... 1000 mm
Total number of teeth 105
Two white marks C and D separated by 33 teeth
One yellow mark E (oil pump) such as EC = ... 25 teeth

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Tightening torques :

- Tensioner unit ..... 18 m.N (13 ft.Ib)
- Camshaft wheel unit ..... 82 m.N (59 1/2 ft.Ib)
- Tensioner stud (fitted with LOCTITE N° GX 01 459 01 A) ..... 3 to 5 m.N (2 to 3 1/2 ft.Ib)

Rockers :

- Clearance *between rocker and cam (engine cold)*
  - Intake and exhaust ..... 0.20 mm

Set each clearance separately when the heel of the rocker is on the back of the corresponding cam

- Identification of the rocker shafts :
  - L.H. intake shaft identical to the R.H. exhaust shaft : unmarked
  - R.H. intake shaft identical to the L.H. exhaust shaft : marked ..... blind end bore at the centre of shaft

Lubrication system :

- Grade of oil ..... TOTAL Altigrade GTS 20 W 50 or GT 20 W 40
- Sump capacity : - after dismantling ..... 4 litres (7 pt Imp)
  - after draining ..... 3.5 litres (6.2 pt Imp)
  - between minimum and maximum ..... 0.5 litres (0.8 pt Imp)
- Oil pressure at 80° ± 50 C at 2000 rpm ..... 4.7 bars min (68 psi)
  at 6000 rpm ..... 6.2 to 7 bars (90 to 101 psi)
- Pressure switch calibrated to ..... 0.5 to 0.8 bar (7.1 to 11.3 psi)
- Temperature switch calibrated to : ..... 135 ± 3° C
- Relief valve spring calibration :
  - Free length ..... 51.6 mm (13 turns)
  - Length under load of 9 ± 0.5 kg ..... 33 mm
- « By-pass » valves calibration :
  - Filter (white marking) ..... 0.9 to 1.15 bar (12.8 to 16.2 psi)
  - Cooler (green marking) ..... 1.8 to 2.5 bars (25.6 to 35.5 psi)
- Filter cartridge : Colour of fitting instruction appearing on filter body
  up to 1000 km (600 miles) ..... red
  above 1000 km (600 miles) ..... white
- *Fitting of the oil suction tube in the crankcase with* ..... LOCTITE N° GX 01 460 01 A

Tightening torques :

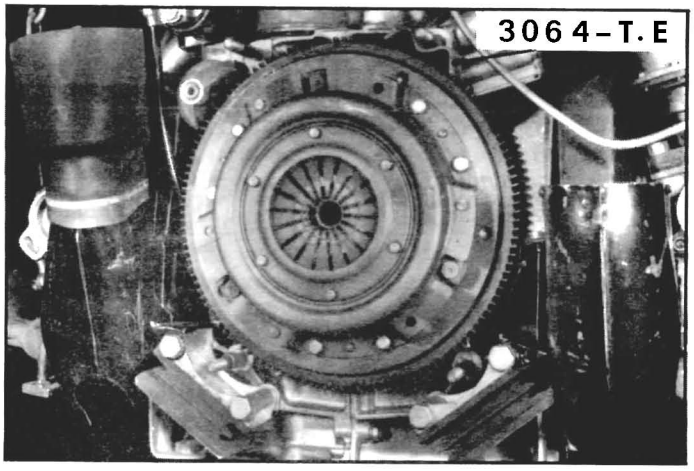
- Insert of filter cartridge (LOCTITE N° GX 01 459 01 A) ..... 13 to 22 m.N (9 1/2 to 16 ft.lb)
- Oil cooler fixing screw ..... 18 m.N (13 ft.lb)
- « By-pass » valve plug in the cooler (LOCTITE N° GX 01 459 01 A) ..... 45 to 50 m.N (32 1/2 to 36 ft.lb)
- Lubrication pipe union screw ..... 18 to 20 m.N (13 to 14 1/2 ft.lb)
- Plug for lubrication pipe ..... 35 to 40 m.N (25 1/2 to 29 ft.lb)
- Filter cartridge : Bring cartridge into contact with crankcase and tighten 1/2 to 3/4 of a turn (Joint oiled)
- Oil pressure switch ..... 22 m.N (16 ft.lb)
- Union for oil temperature switch ..... 50 to 55 m.N (36 to 40 ft.lb)
- Oil temperature switch ..... 25 m.N (18 ft.lb)

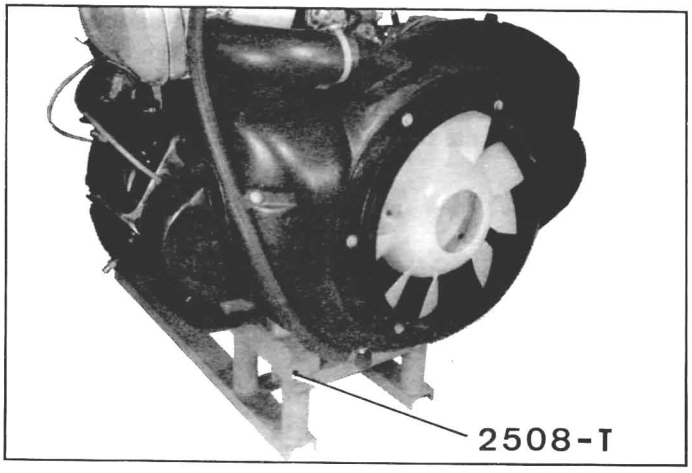
Fan :

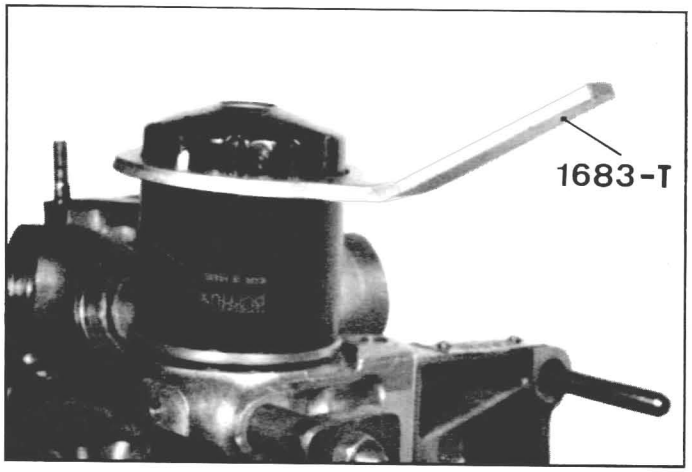
- External diameter ..... 290 mm
- Number of blades 9
- Adjustment of starting dog :
  a) *at TDC. line up starting dog horizontally*
  b) *projected portion of starting dog beyond lock nut after adjustment (approximately)* ..... 5 mm of thread
- Tightening torque of lock nut (face and threads greased) ..... 170 to 200 m.N (122 to 145 ft.lb)

If the locknut has a shoulder, this must be fitted towards the fan

RECONDITIONING AN ENGINE







I. DISMANTLING

1. Strip down the engine

2. Remove :
- the clutch (use Tool 3064-T.E, to hold the steering wheel),
- the front flexible mountings.

3. Place the engine on stand 2508-T.
Drain the oil

4. Remove :
- high pressure pump tubes,
- air filter,
- the carburettor and its distance piece or the carburettor-inlet chamber and manifold assembly,
- the covers of the upper ducts,
- the inlet pipes (*vehicles produced up to August 30, 1972*),
- the oil cooler,
- the air intake rubber seal for the cooler,
- the starter,
- the starting dog,
- the fan,
- the alternator drive belt,
- the fan cowl and its spacers,
- the distributor, its protective plate and the spark plug leads,
- the spark plugs,
- the petrol pump and its distance piece,
- the alternator and its tensioner,
- the oil pressure switch,
- the oil temperature switch,
- the high pressure pump,
- the exhaust manifolds,
- the flywheel,
- the heating ducts,
- the front and rear deflectors (right and left side),
- the ducts beneath the cylinders,
- the cooling ducts,
- the dipstick guide tube,
- the breather.

5. Remove the oil filter :

Use special wrench 1683-T.

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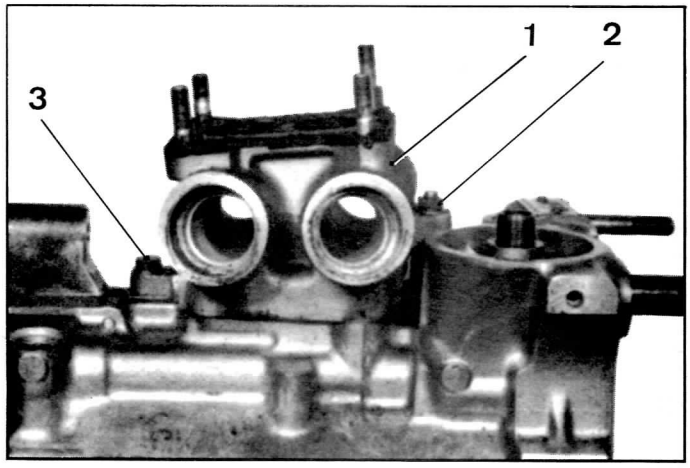

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6. Remove the oil pump (6) :

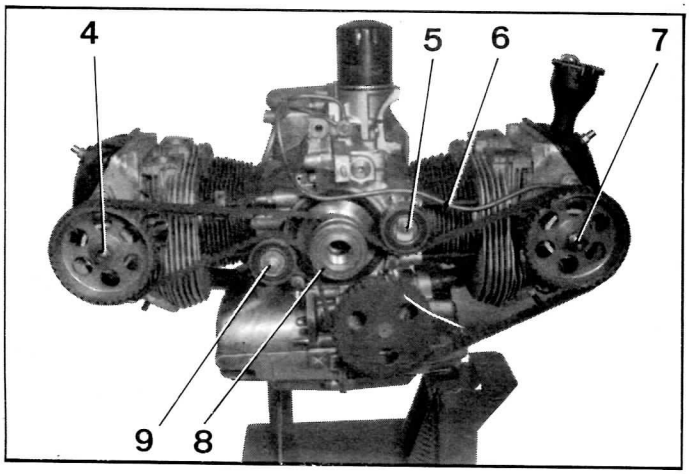
Remove :

- the union-screws on the right and left cylinder heads and on the heater box of the carburettor,
- the oil pressure switch.

7. Remove the heater box (1) of the carburettor *(according to fitting).*

To do so, remove :

- the fixing bolt (3) and nut (2) of the heater box,
- the O-ring between the box and crankcase.



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8. Remove the camshaft drive belts :

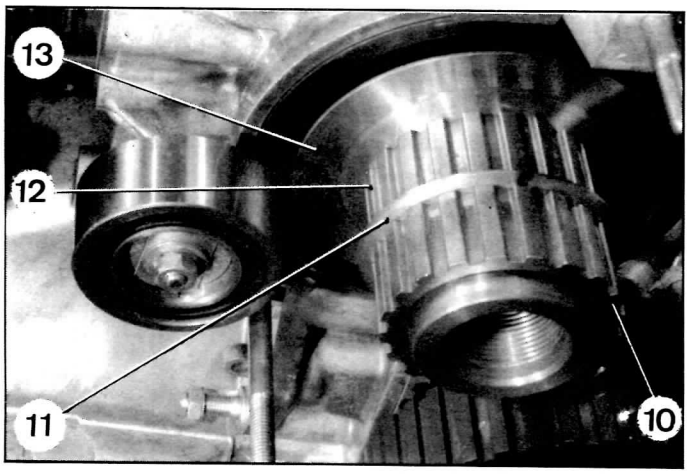
Remove the outer flange (8).
Loosen the nut (5), compress the tensioner and release the L.H. belt.
Release pinion (10) from the crankshaft,
Remove the intermediate flange (11).
Loosen nut (9) of the tensioner, compress the latter and remove the R.H. toothed belt.
Remove pinion (12) from the crankshaft.
Remove the key. Remove the protecting plate (13).

9. Remove the tensioners :

Remove the nuts (5) and (9).

Release the tensioners

(Do not mislay the thrust plates (14).



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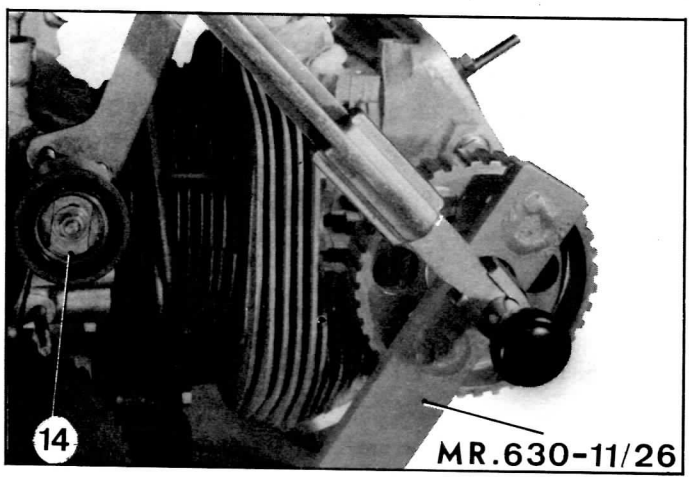
10. Remove the camshaft wheels :

Block the wheel with the aid of tool MR. 630-11/26.

Remove the nuts (6) and (7) and the camshaft wheels.



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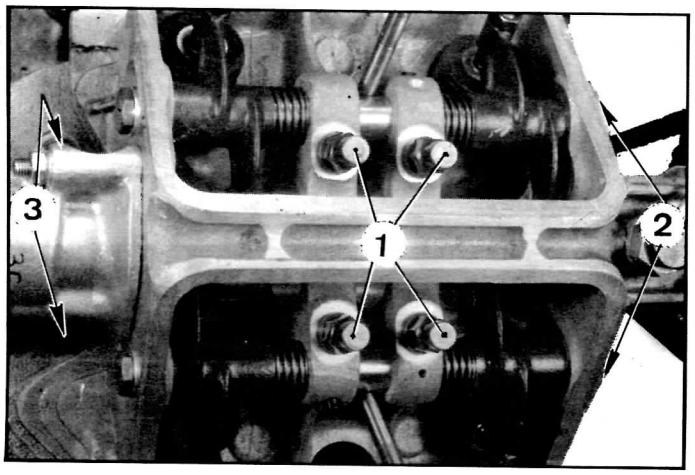
11. Remove the cylinder head covers.

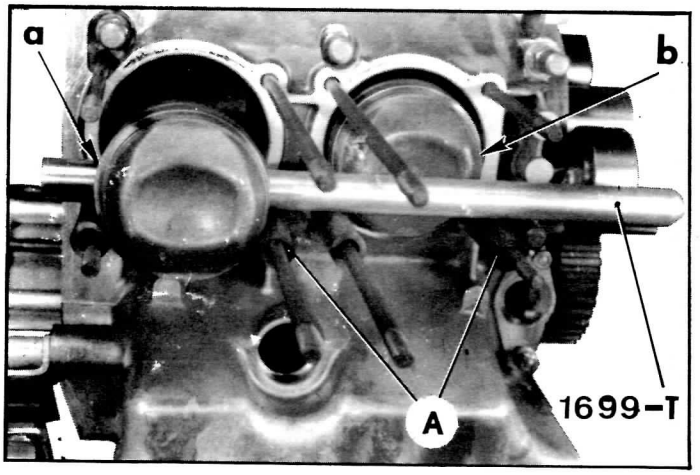


12. Remove the cylinder heads :

Remove fixing nuts (1), (2) and (3) of each cylinder head.

Release :

- the cylinder heads,
- the oil return tubes,
- the ducts beneath the cylinders (All G.12 engines).



13. Remove the cylinders :

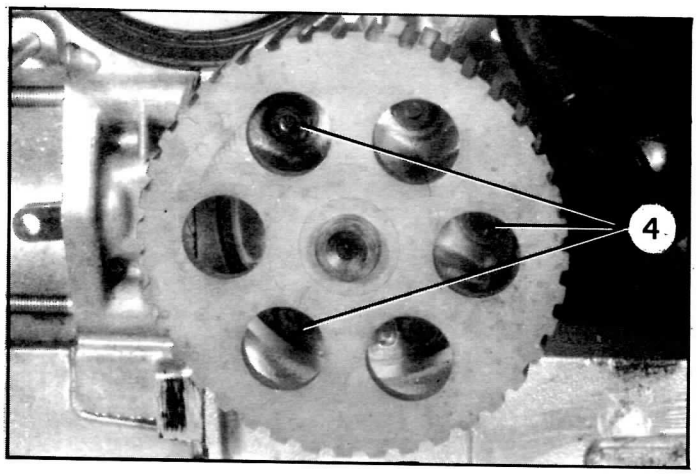
Remove the four cylinders.

NOTE :
Should the cylinders be used again, mark their respective positions.

Cap the studs with pieces of rubber tubing A to avoid scoring the pistons.

14. Remove the pistons :

- Remove the gudgeon pin circlips situated towards the outside of the engine in «a» and «b».
- Remove the gudgeon pin by hand using mandrel 1699-T.
- Release the pistons (place them in the corresponding cylinders if they are to be refitted)
- Remove the pieces of rubber tube A.



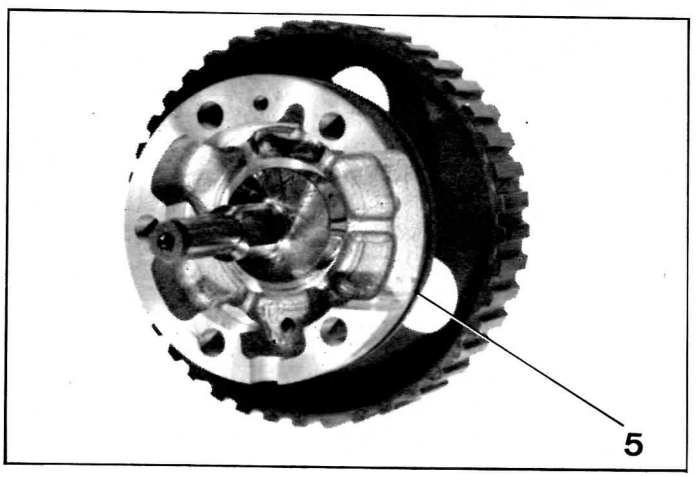
15. Remove the piston rings.

16. Remove the oil pump control lever :

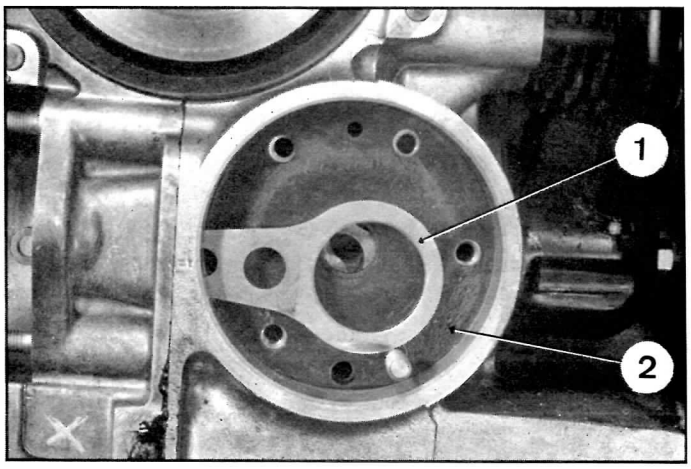
Remove the five fixing bolts (4).

CAUTION :

Remove the operating control by levering it at two diametrically-opposed points on the pulley to avoid damaging the pump bearing.



Remove the O-ring (5).



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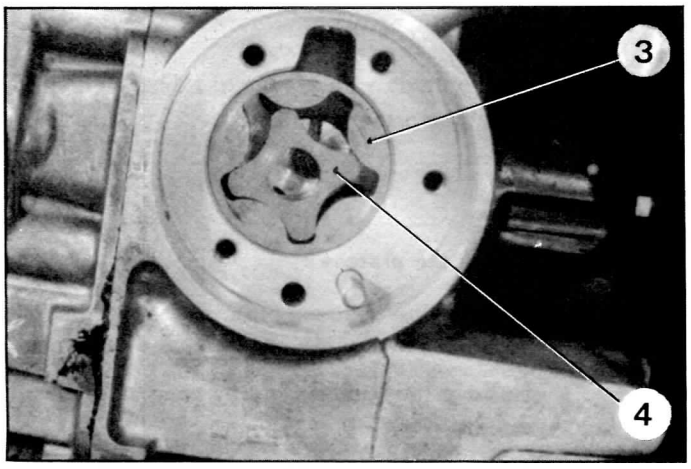
17. Remove the H.P. pump connecting rod :

Release the connecting rod (1).

18. Remove the oil pump pinions :

Remove :
- the cover plate (2),
- the pinions (3) and (4).

19. Place the engine as shown in the illustration with the L.H. crankcase half downwards.



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20. Remove the R.H. crankcase half :

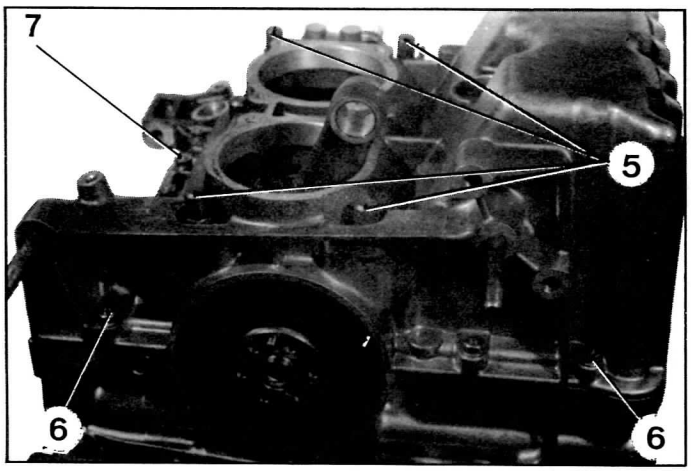
Remove :
- the nuts (5),
- the assembly nuts (6) and (7) of the crankcase halves.

Release the R.H. crankcase half

21. Remove the crankshaft :

Release the front and rear seals.

Remove :
- the crankshaft-connecting rod assembly,
- the half shells (8), (9) and (10).



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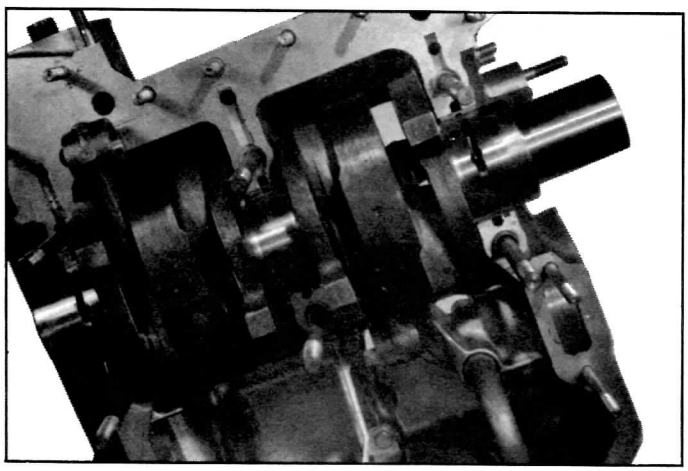
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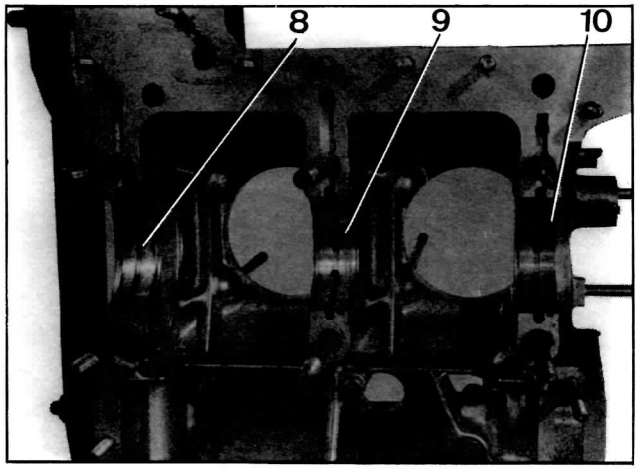

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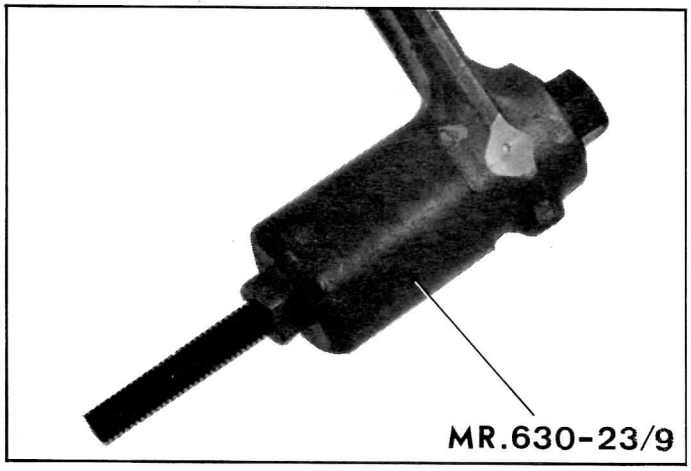
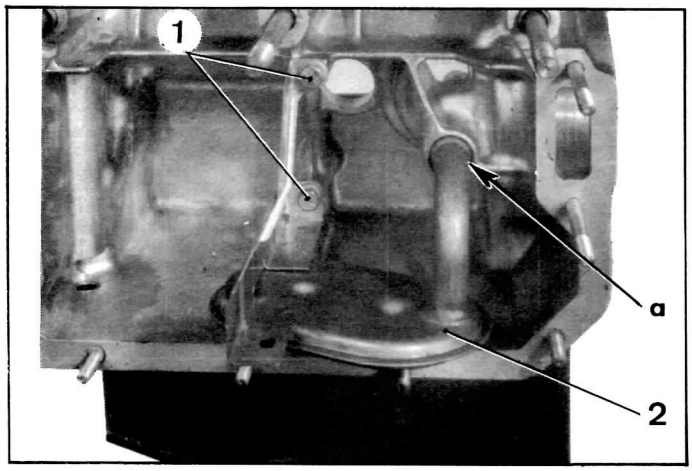


22. If necessary, remove the conrod small end bushes

NOTE :

This delicate operation is not advised. It can only be performed in a specialized workshop. Use extractor MR. 630 23/9.

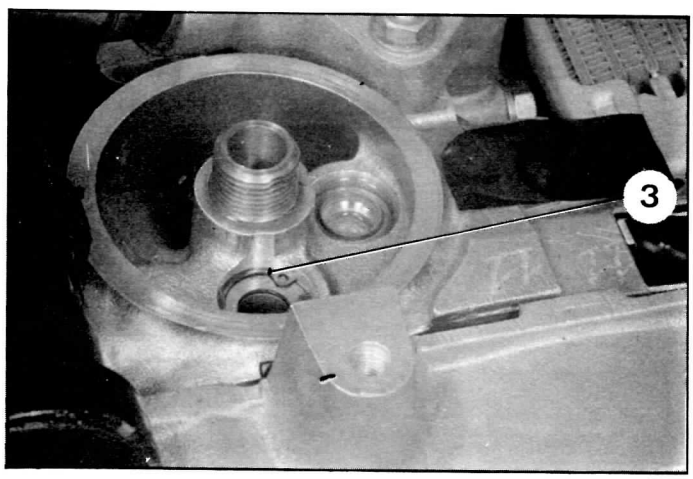


23. Remove the intake oil strainer :

Remove the bolts (1).
To facilitate removal, heat the crankcase in zone « a » surrounding the strainer pipe.
Remove the strainer (2).
Remove the sealing joint of the pipe.

24. Remove the relief valve :

Remove :
- the circlip (3),
- the washer (4),
- the spring washer (5),
- the piston (6),
- the spring (8),
- the jacket (7),
- the spring cap (9).

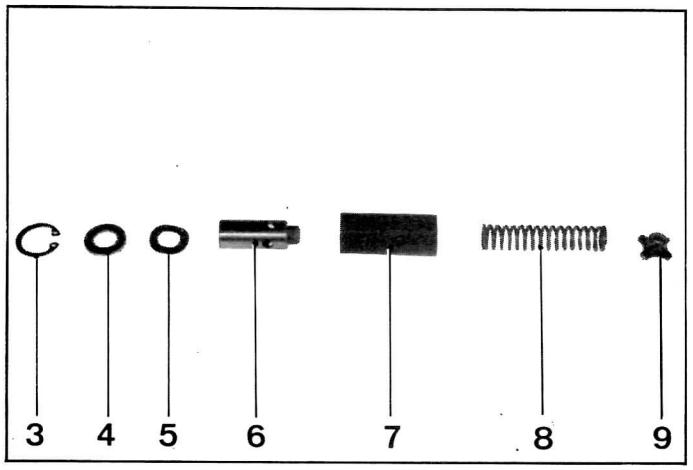


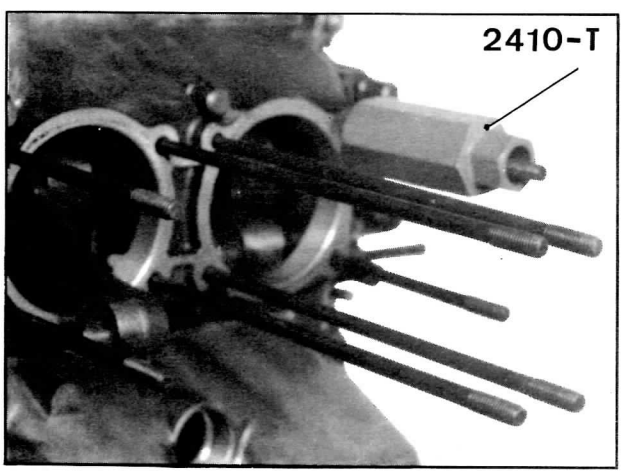
25. Remove the front and rear plugs of the lubrication system.
Remove the drain plug.

26. If necessary, remove the « by-pass » valves.

27. Remove the L.H. crankcase half from 2508 T.

NOTE : If the crankcase halves are to be exchanged :
- Remove the studs,
- Use extractor 2410-T for the cylinder head studs. Place the tool at the base of these.





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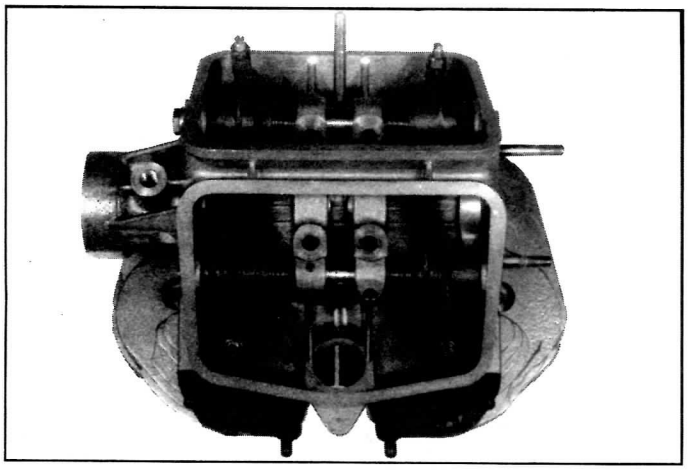

28. Strip down the cylinder heads :

Remove :
- the rocker shafts,
- the rocker,
- the camshafts,
- the valve springs,
- the seals.

29. Clean the parts.

IMPORTANT NOTES :

a) To ensure the sealing of the front and rear bearings, the crankshaft has a microturbine machined in each seal area.
Never use emery cloth in this zone, otherwise an oil leak could occur.

b) To thoroughly clean the oil cooler, immerse it in a bath of cellulose thinner for about an hour. Allow it to drip and blow through with compressed air.
However, if a bearing has been « run », replace the oil cooler and the oil intake strainer.

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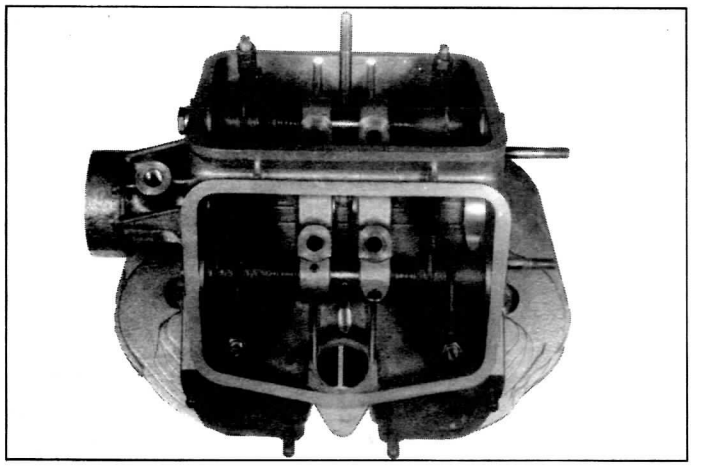

II. PREPARATION.

1. Prepare the cylinder heads :

a) If necessary, grind the valves and their seats.
b) Lap the valves.
c) Fit the valves and their springs.
d) Fit the camshafts.
e) Fit the rockers and their shafts.

2. Prepare the connecting rod small-ends :
(If necessary).

Fit the bushes in the connecting rod small-ends.

NOTE :

This operation can be performed only in a specialized workshop.

The bushes sold by the Replacement Parts Departement have a ground bore about 0.05 mm undersize.

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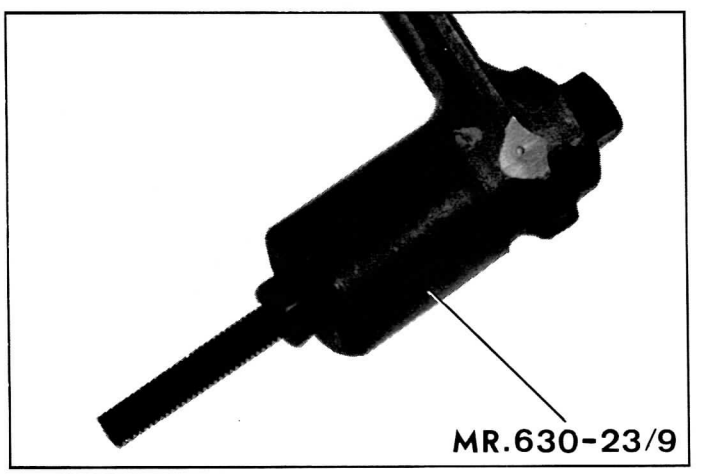


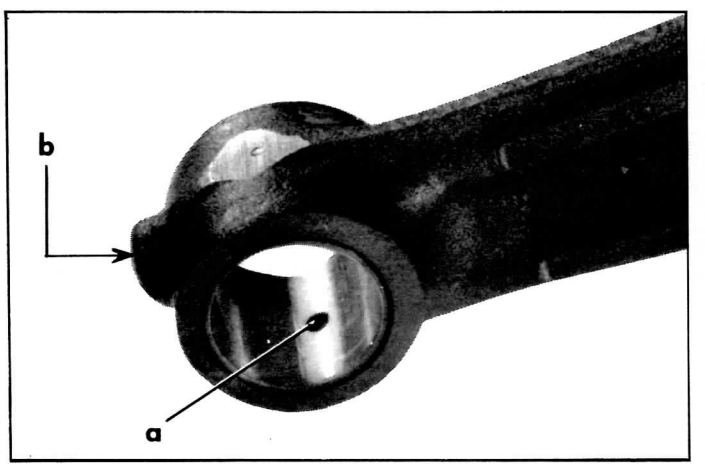
Blank the bores « a » with grease or tallow. Fit the prepared bush (extractor MR.630-23/9 so that the centre line of the lubrication holes in the bush is perpendicular to that of the connecting rod.

Ream the bush. This delicate operation must be carried out with the greatest care.

The bush should be reamed to :

G.10 Engine (1015 cc)	All G.12 Engines (1220cc)
$20.005 \begin{smallmatrix} +0.011 \\ -0.006 \end{smallmatrix}$ mm	$22.005 \begin{smallmatrix} +0.011 \\ -0.006 \end{smallmatrix}$ mm

If a gauge is not available, use the new pin to check the bore.



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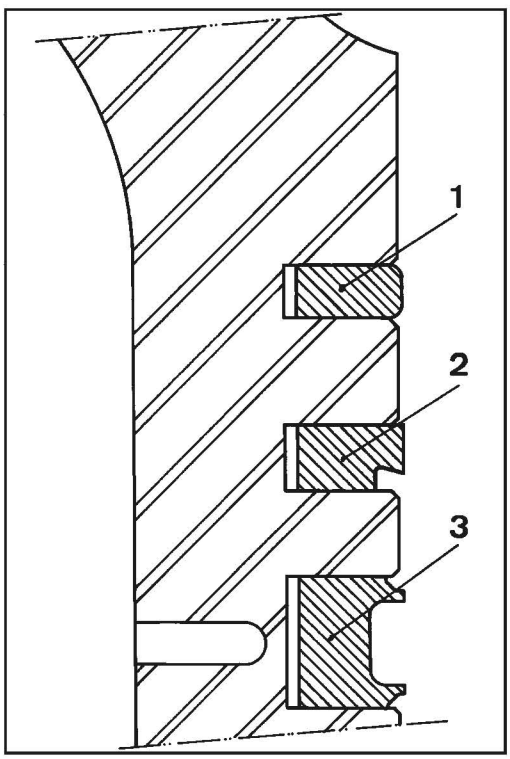
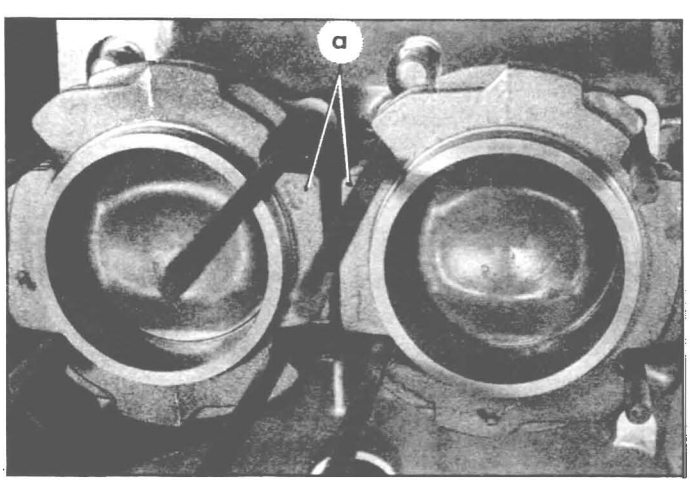
Blow compressed air through bore « b » to remove any grease or swarf.

Clean the bore of the bush.





3. Prepare the pistons :

IMPORTANT :

It is not possible to separately replace one or two cylinder-piston sets.

Since the difference in weight between two pistons must not exceed a few grams, the Replacement Parts Department *only sells sets of four piston / cylinder assemblies, which must not be fitted separately.*

4. Fit the rings :

The top compression ring (1), the scraper ring(2) and the scraper-collector ring (3) have a marking (HAUT, H or TOP) engraved on one of the faces near the gap.
When fitting, this marking must be positioned towards the crown of the piston.

Badly positioned rings will cause excessive oil consumption.

IMPORTANT : *U-FLEX ring :*
In its free state, the U-FLEX ring has a diameter greater than that of the piston which necessitates the use of the special ring compressor 3010-T or 4007-T for fitting it to the piston.

NOTE :

If the same pistons are to be used again after only replacing the rings, carefully clean the grooves with the aid of a used ring (ground section).

However, if there is excessive clearance in the groove, the piston must be discarded.

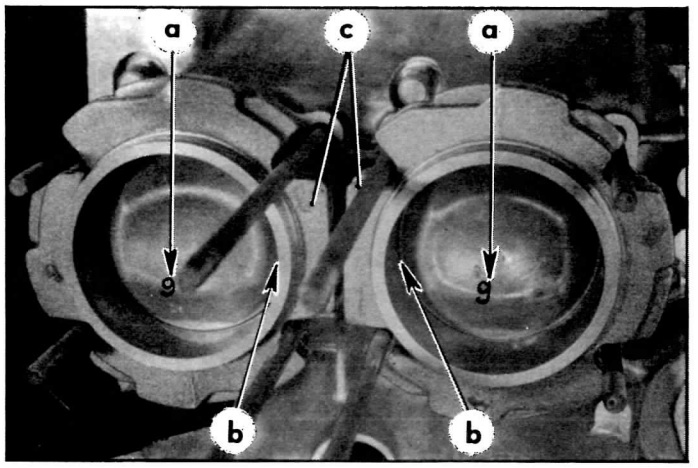
5. Prepare the cylinders :

CAUTION :

There are two classes of cylinders (different heights)marked by different coloured paint marks (green or red).

Both cylinders fitted to **ONE SIDE** of the engine **MUST BE OF THE SAME COLOUR** (identical class)

Place the cylinders in such a way that after fitting on the engine, the fins « a » are facing each other.



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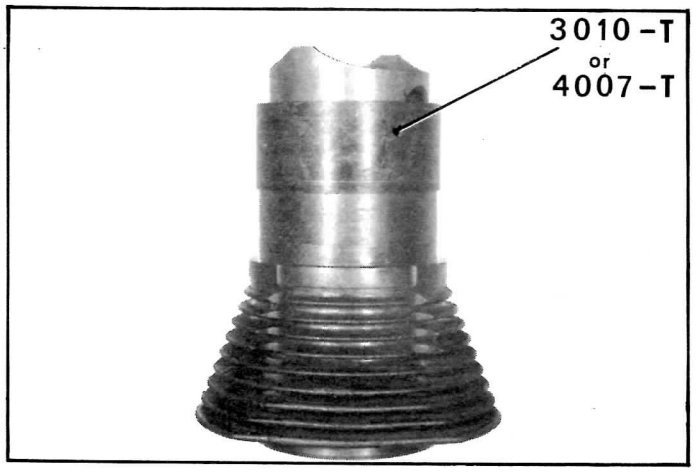

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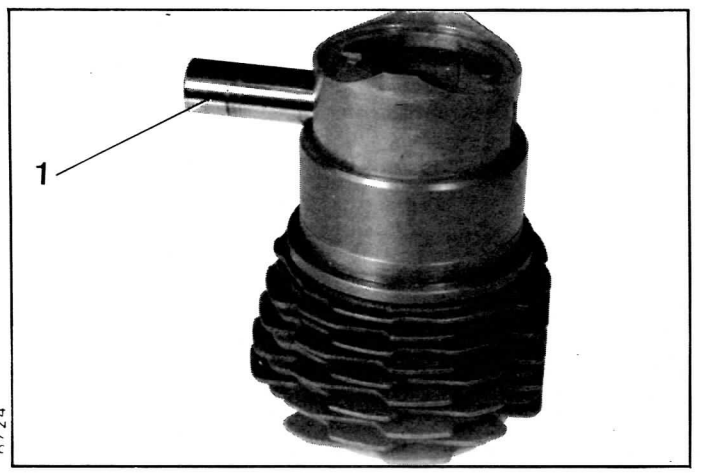

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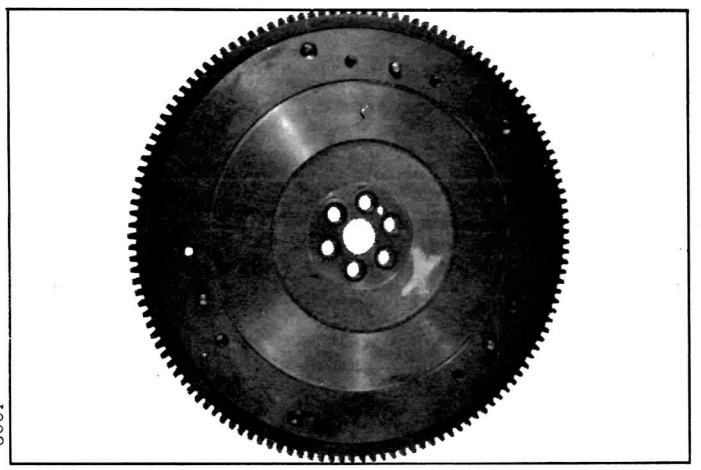

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Supplement N° 1 to Manual 810-2 (CORR)

6. Fit the pistons in the cylinders :

a) **Fitting**

Pistons with no identification mark (arrow)
After fitting, the figure at « a » indicating the compression ratio must be legible the right way up.

Pistons with identification mark (arrow)
(offset gudgeon pin pistons).
After fitting, the arrow must point towards the timing belts (front of the engine).

b) Before fitting the pistons :
Fit the gudgeon pin circlip which must be positioned at « b » on the side of the fins «c».
Space the piston ring gaps equally at 120° from each other.

c) Fit the pistons in the corresponding cylinders (marked when dismantling).
Use a 3010-T *(1015 cc engine)* or 4007-T *(1220 cc engine)* ring compressor : insert each piston in the lower part of the cylinder.

d) Partly insert the gudgeon pin (1) (oiled beforehand) into the boss (without the circlip) so as to provide a gap to enable the small end of the circlip to be fitted.

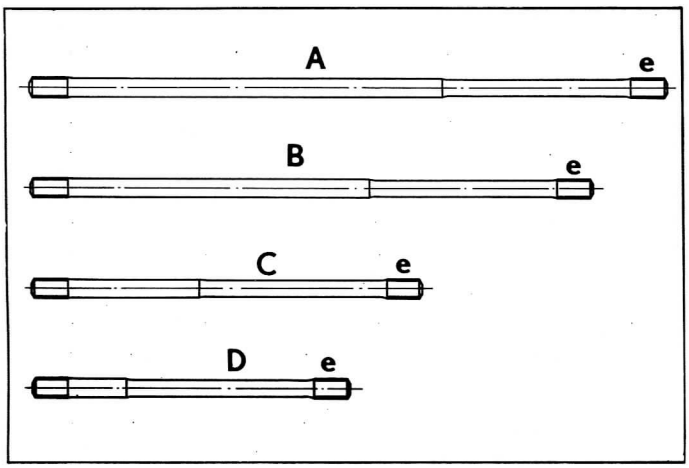
7. Prepare the oil pump :

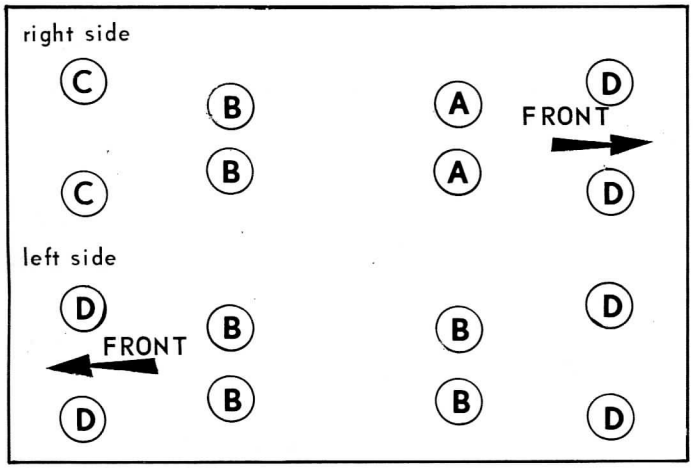
Check that the sealing faces of the oil pump body are not damaged or scored (crankcase side and cover side).

8. Replace the starter ring
(If necessary).

Drive out the ring with a mallet.
Clean the area of the ring which bears against the flywheel.
Heat the ring with a blow torch, moving it round the whole time to ensure an even expansion.
(around 200 to 250° C, colour : straw yellow).
Position the ring, with the teeth entry towards the gearbox.
Measure the run-out on the starter ring (0.3 mm max.).

G.11-3





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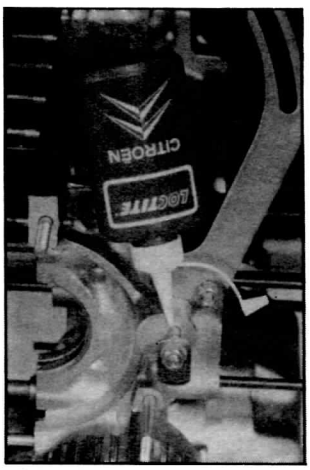

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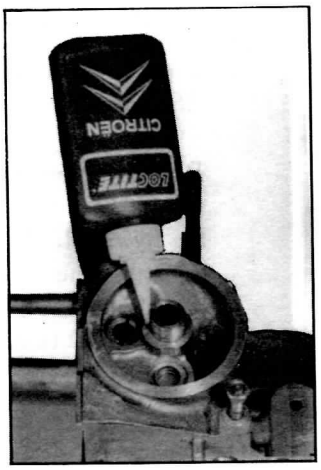


9. Prepare the distributor :

Check the condition of the contact points.

Change them if necessary.

10. Prepare the two crankcase halves

a) Check the condition :
- of the various tapped holes,
- the joint faces (they must be free from scores and perfectly clean).

b) If the two crankcase halves are being replaced, fit :
- the coupling studs of the engine-gearbox assembly,
- the cylinder head studs conforming to the layout shown opposite.
  End « e » (shortest thread) must be inserted in the crankcase.

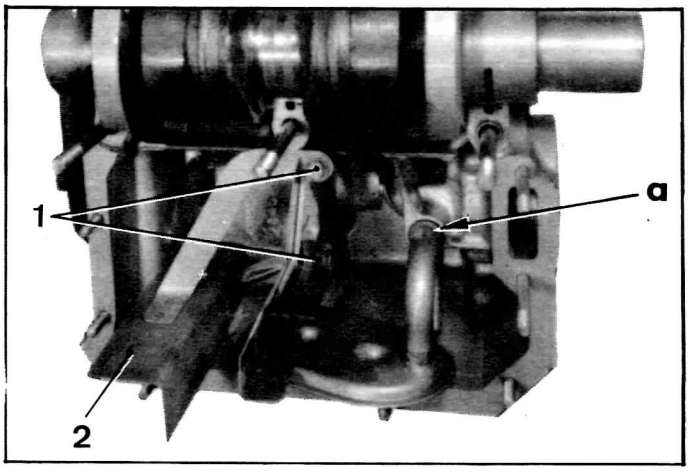
  NOTE : The studs for all G.12 engines (1220 cc) are longer than those for the G.10 engine (1015 cc).

  IMPORTANT : It is essential to coat the ends « e » of the bolts fitted on the R.H. crankcase half with LOCTITE 572 N° ZC 851 106 U.
  Tighten the bolts from 6 to 8 m.N (0.6 to 0.8 m.kg) (4 1/2 to 6 ft.lb).

c) *It is essential to use LOCTITE N° GX 01 459 01 A in fitting the following parts :*
- Studs for the tensioners
  Tightening torque : 3 to 5 m.N (0.3 to 0.5 m.kg) (2 to 3 1/2 ft.lb)
- Insert for the attachment of the filter cartridge.
  Tightening torque : 13 to 22 m.N (1.3 to 2.2 m.kg) (9 1/2 to 16 ft.lb).

d) Fit the drain plug (metallo-plastic gasket).
Tightening from 35 to 40 m.N (3.5 to 4 m.kg) (25 to 29 ft.lb).

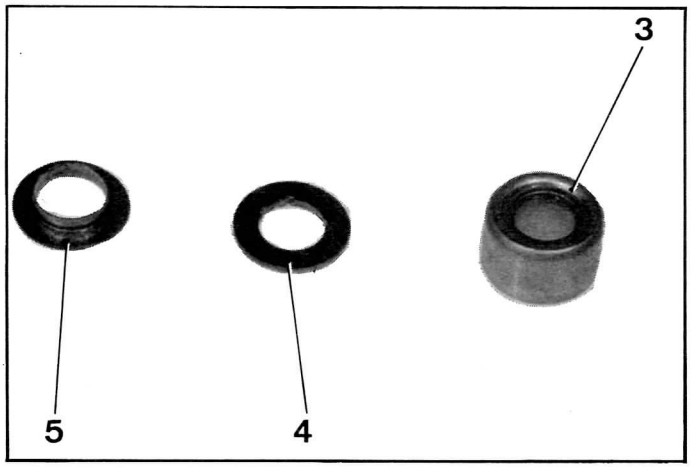
III. FITTING



1. Place the left-hand crankcase half on stand 2508-T.

2. Fit the intake oil strainer :

Fit the seal on the intake pipe of the strainer.
Smear the extremity of the pipe with LOCTITE GX. 01 460 01 A and insert it in its housing « a » on the crankcase.
Insert the anti-emulsion shield (2) between the crankcase and the intake strainer.
Tighten the securing bolts of the strainer and the anti-emulsion shield to 14 m.N (1.4 m.kg) (10 ft.Ib).

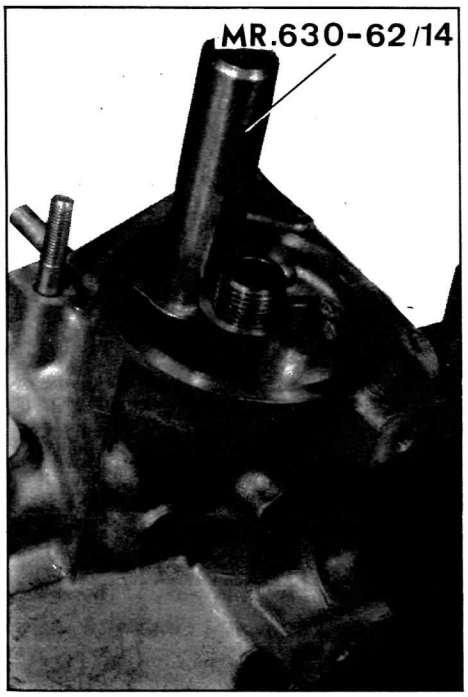


3. Fit the by-pass valves :

a) Cartridge by-pass valve (white mark) :
Fit :
- the valve (3),
- the washer (4).
Secure the cup (5) in the housing by tapping on it lightly, using tool MR. 630-62/14.

b) By-pass valve of the cooler (green mark) :
- proceed in the same way as described above.
Smear the plug thread with LOCTITE GX. 01 459 01 A and fit (copper joint).
Tighten from 45 to 50 m.N (4.5 to 5 m.kg) (32 1/2 to 36 ft.Ib)

4. Fit the plugs (6) and (8) of the lubrication system :
Smear their threads with LOCTITE N° GX. 01 459 01 A and fit them (copper joint).
Tighten from 35 to 40 m.N (3.5 to 4 m.kg) (25 1/2 to 29 ft.Ib).



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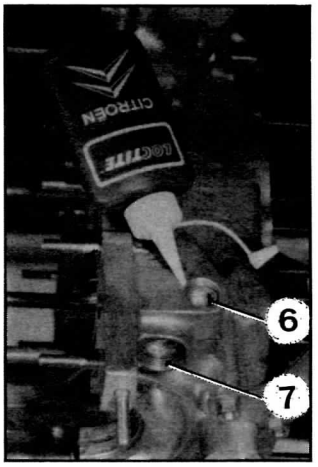

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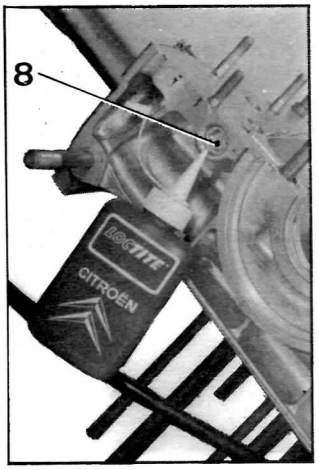

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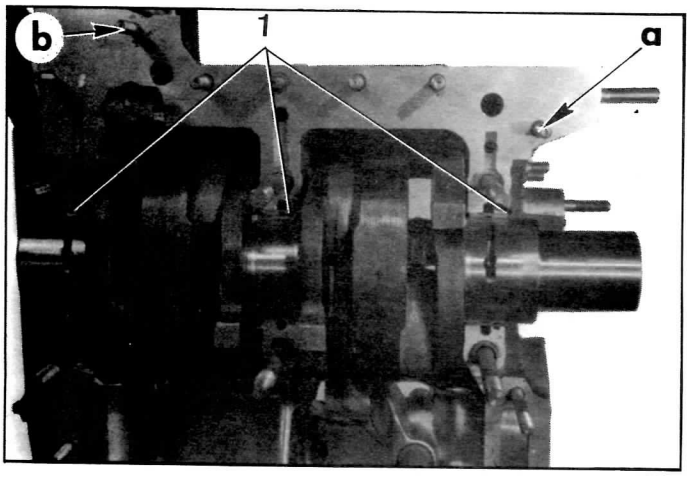
Supplement N° 1 to Manual 810-2 / CORR)



8733

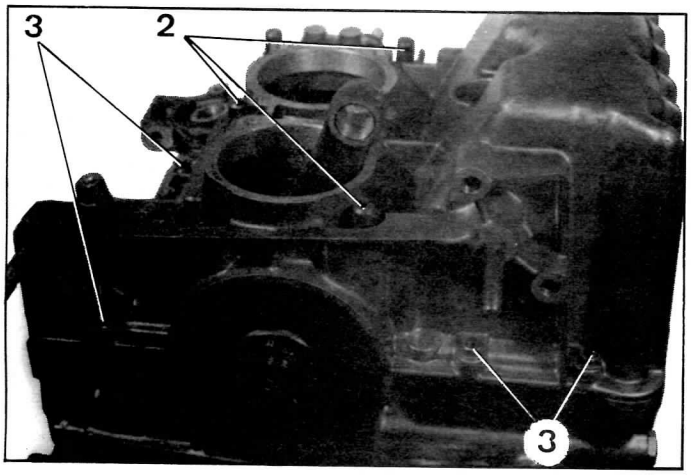
5. Fit the crankshaft :

a) Fit the bearing shells (1) into the left and right-hand crankcase halves.
Make sure that the bores of the engine crankcase halves are clean.
Make sure that the bearing shells are properly engaged in the locating pegs.

b) Fit the crankshaft.
Using a set of feelers, check the end-float of the crankshaft at the centre bearing. This must be :

0.09 to 0.20 mm

(not adjustable).



9475

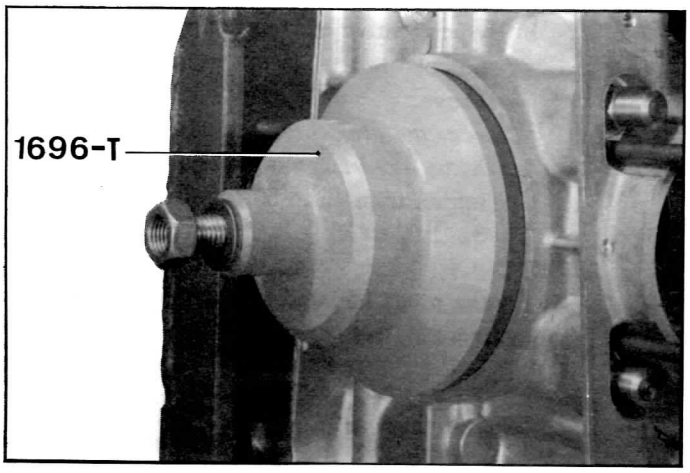
6. Fit the right-hand crankcase half :

Smear the joint faces of the crankcase halves with LOCTITE 572 N° ZC 9 851 106 U.

Place the right-hand crankcase half on the left-hand crankcase half.
Fit the nuts (2)on the bearing studs (copper seal).
Fit the fixing nuts (3) of the crankcase halves (flat washer).

IMPORTANT : All the crankcase half assembly studs are equipped with standard nuts (3) with the exception of the following two upper studs :
- in « a » next to front crankshaft bearing seal,
- in « b » next to oil pressure switch.

This two studs must be equipped with cap nuts N° GX 09 245 01 A.



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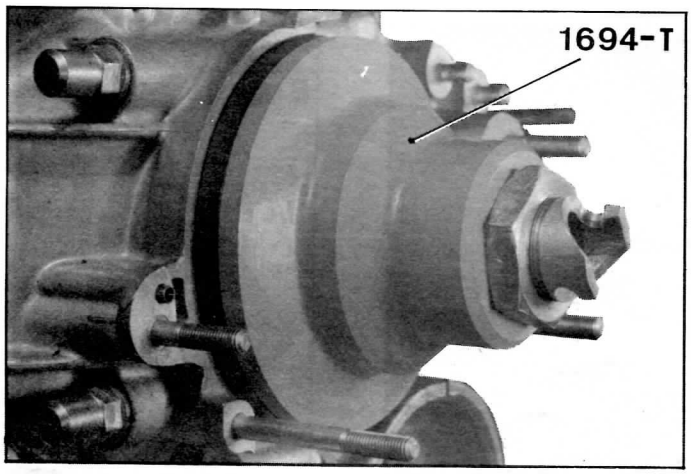
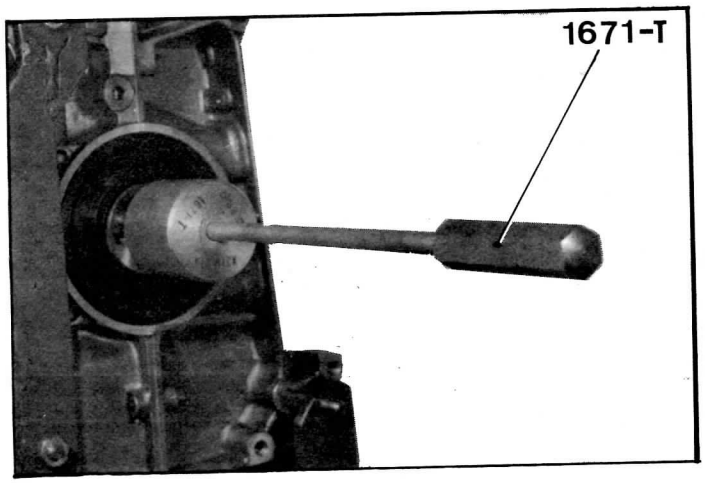


7. Fit the front and rear bearing seals :

a) Oil the lip of the rear seal and fit it using tool 1696-T.

b) Oil the lip of the front seal and fit it by means of tool 1694-T.
NOTE : Fit only seals sold by the Replacement Parts Department.
IMPORTANT :
The seals must be renewed after each engine dismantling operation.
Never fit them before assembling the crankcase halves, as this would crush the seals and cause oil leakage.

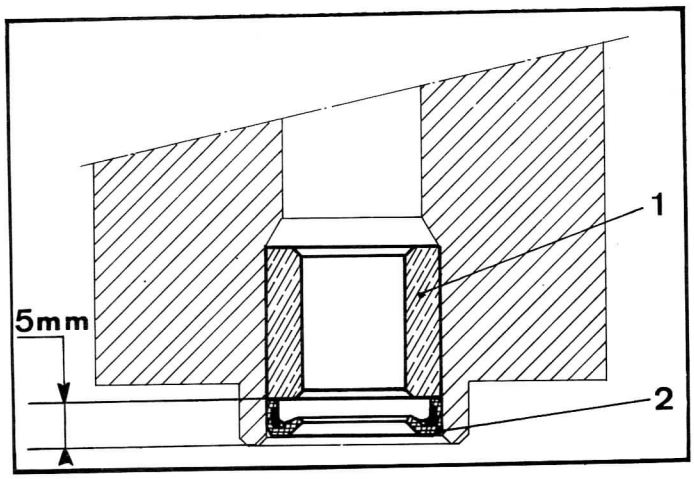
9547



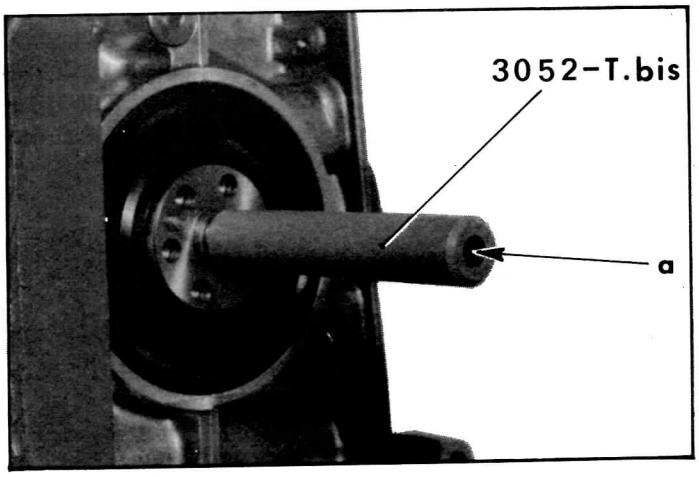
8. If necessary, replace the centering of the main shaft in the crankshaft :

a) Remove it with the aid of extractor 1671-T (equipped with expanding end-piece of 12 mm in diameter).

b) Fit the bush :
Immerse this bush for about an hour in engine oil at ambient temperature.
Allow it to drip.
It must be recessed by 5 mm in relation to the crankshaft shoulder.
Use mandrel 3052-T bis to meet this requirement.
(After fitting the bush, free the mandrel with the help of its central screw in « a »).

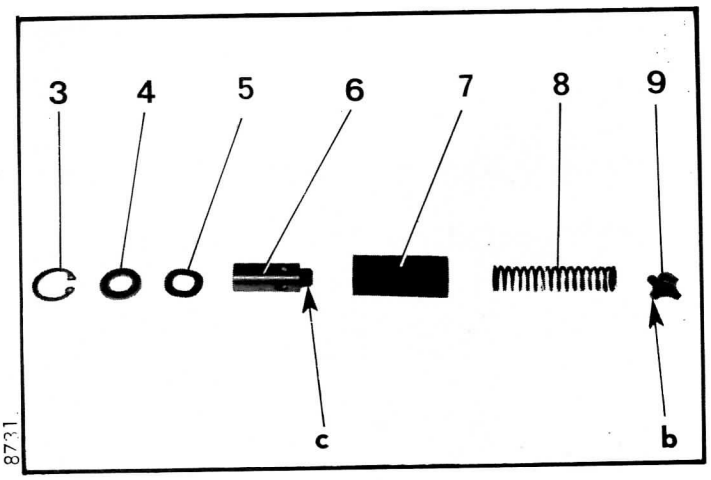


c) Fit the seal (2).
Position the seal : the face bearing the manufacturer's mark directed towards the outside of the engine.



9. Fit the relief valve :

Fit :
- the cup (9) (the lugs « b » towards the bottom of the housing),
- the jacket (7),
- the springs (8),
- the piston (6) (after having oiled it and the guide « c » on the spring side),
- the spring washer (5),
- the washer (4),
- the circlip (3).



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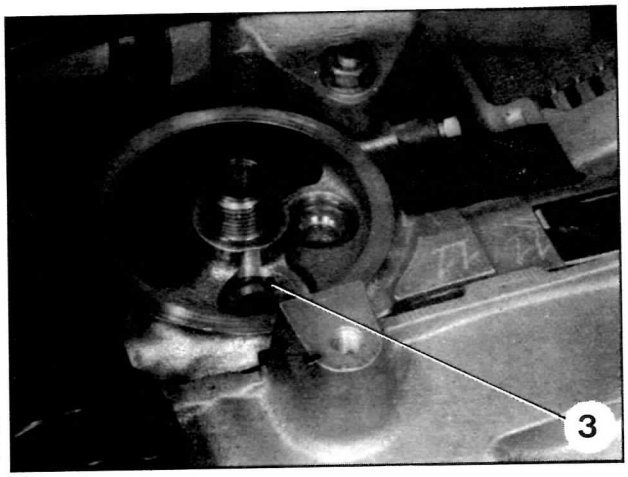

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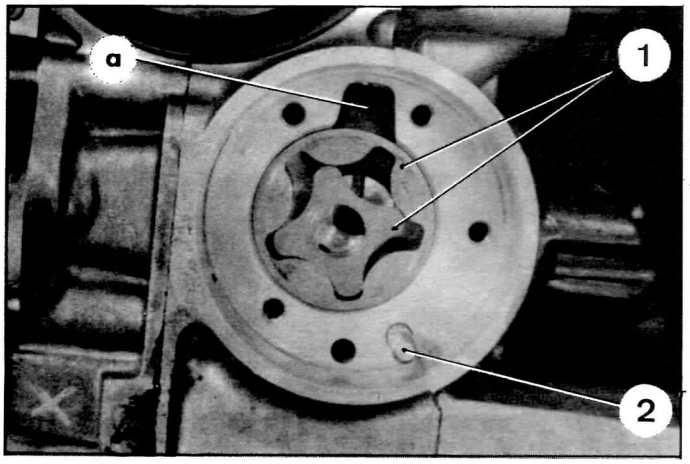


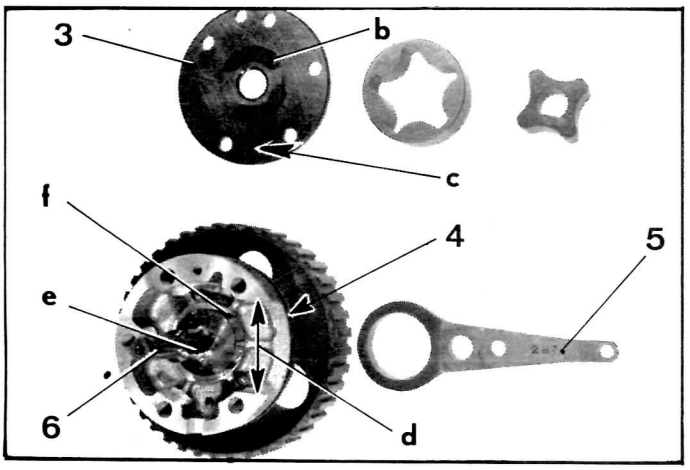
8000

10. Oil and fit the oil pump pinions :

NOTE : On the crankcases without guide studs it is recommended to fit these temporarily to facilitate fitting of the oil pump and operating mechanism.

11. Fit the cover plate (3) :

Position it so that the cavities « b » face the inside of the crankcase and the small hole « c » is opposite cavity « a » (compression).



8001

12. Fit the HP pump operating lever (5).

13. Fit the pump operating lever :

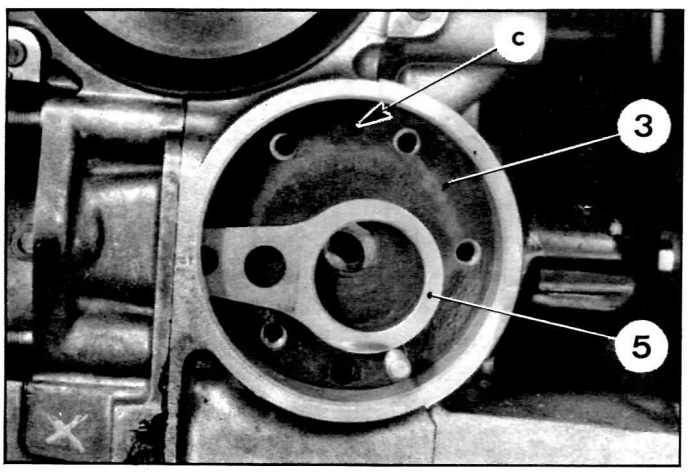
a) Replace the O-ring seal (4).
Oil the shaft (6) and eccentric « f ».

b) Place shim 4001-T between the wheel and the bearing in « g » to prevent squashing the sealing joint.

c) Position the pump operating lever on the guide stud (position the groove « d » of the connecting rod passage towards the HP pump) and engage the shaft in the central pinion.
Turn the shaft in order to engage the flat part « e » into the oil pump pinion.

d) Guide the connecting rod (5) in order to engage it on the eccentric « f » of the control lever.
Fit the bolts (8) (contact washer).
CAUTION : Alternately tighten the diametrically opposed bolts by fractions of a turn until the complete fitting of the pump operating lever.

- Tighten the bolts (8) from 15 to 18.5 m.N (1.5 to 1.8 m.kg) (11 to 13 ft.lb).
- Take out the shim 4001-T.
- Check that the pump control turns freely.



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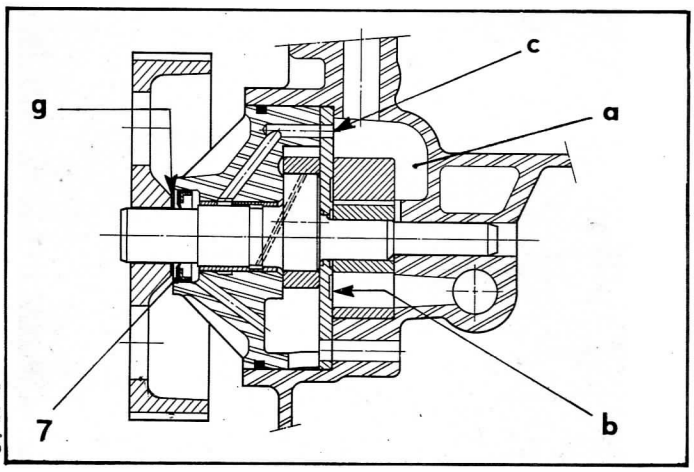
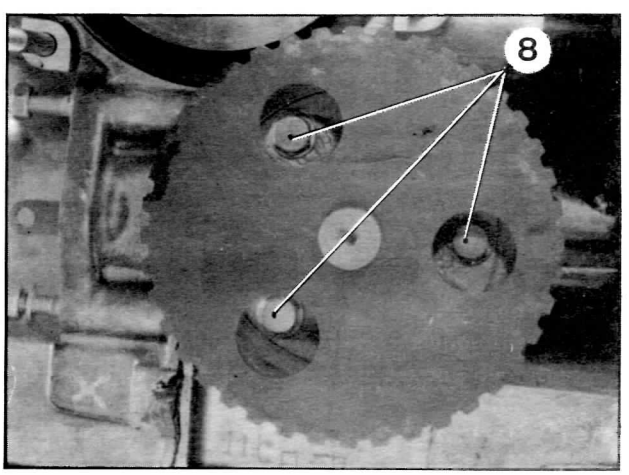


G. 22-2



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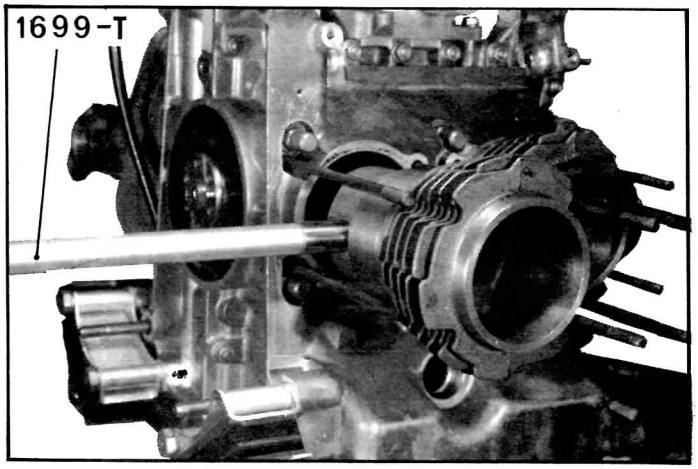

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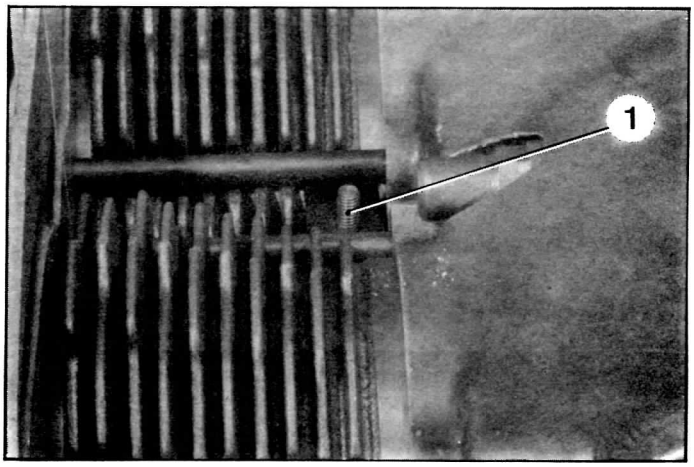

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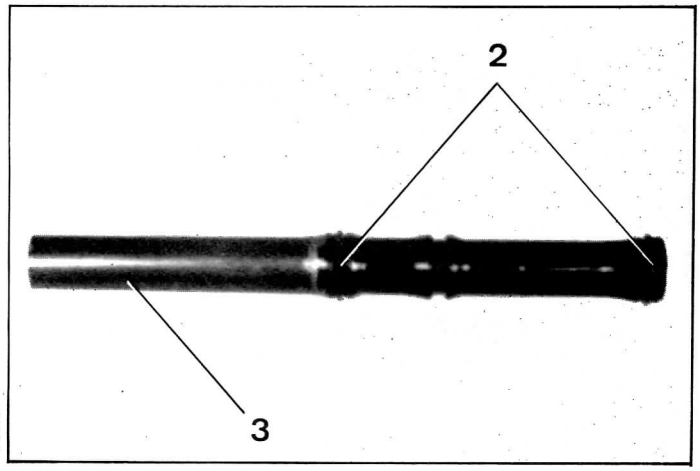

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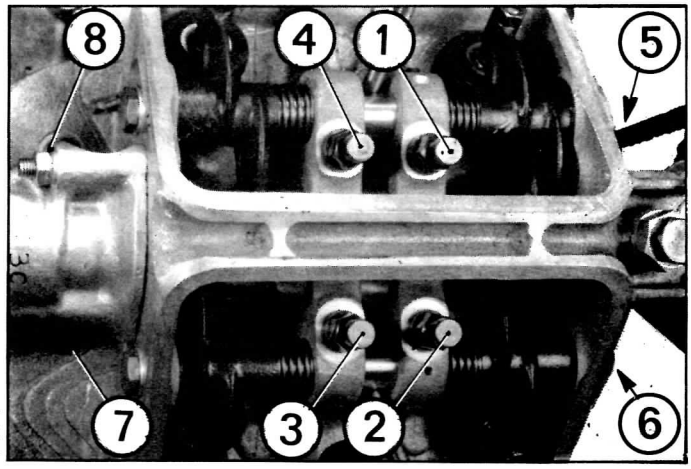
Supplement N° 1 to Manual 810-2 (CORR)

ORDER FOR TIGHTENING NUTS



7979

14. Fit the cylinders :

a) Oil the small ends of the connecting rod. Position the cylinder/piston assembly in relation to the connecting rods.

CAUTION : Direction of fitting (see pages 18 and 19, paragraphs 5 and 6).

Complete fitting of the gudgeon pin with the aid of mandrel 1699-T.

b) Fit the gudgeon pin circlips. Ensure that they are fully engaged in their grooves.

c) Oil the pistons and the inside of the cylinders.

Completely engage the cylinders.
All G.12 Engines (1220 cc).
Fit the pipes beneath the cylinders.

15. Fit the cylinder heads :

NOTE : Before tightening the R.H. cylinder head, position the cylinders to allow the clamp (1) to be fitted.

a) Lubricate the O-rings (2) of the engine oil return pipes (3) with engine oil. Engage the longest ends into their crankcase housings.

b) Turn the crankshaft to bring the pistons to their mid-stroke position.

Position the cylinder head while guiding the oil return pipes (3).

Fit and screw up the nuts by hand (thick flat washer) and then temporarily tighten them from 8 to 10 m.N (0.8 to 1 m.kg) (5 1/2 to 7 ft.lb), beginning at the centre.

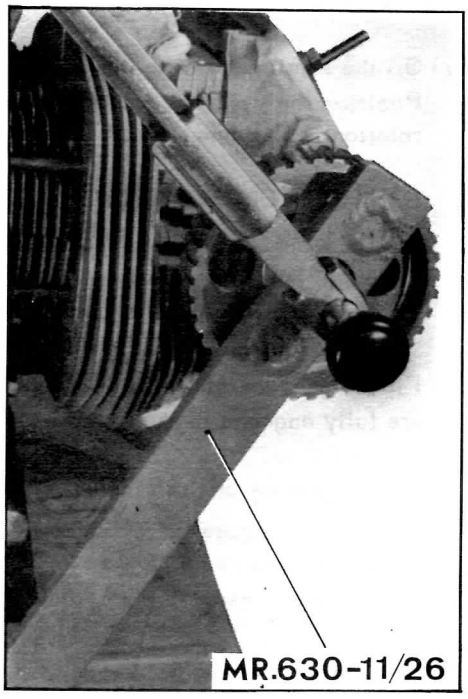
c) Tighten the cylinder heads :

Observe the tightening order shown in the illustration opposite :

12 mm A/F nuts = 16 to 18 m.N (1.6 to 1.8 m.kg) (11 1/2 to 13 ft.lb).

13 mm A/F nuts = 20 to 25 m.N (2 to 2.5 m.kg) (14 1/2 to 17 ft.lb)

Extended socket 3094-T or 4006-T.D.



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16. Fit the camshaft wheels :

NOTE : The two camshafts wheels are identical.

Engage one wheel on the end of each camshaft (setting pin).

Hold the wheel with the aid of tool MR.630-11/26 and tighten the nut (flat washer) to 82 m.N (8.2 m.kg) (59 ft.lb) (torque wrench).

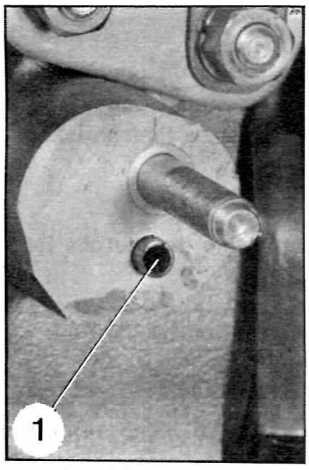
17. Fit the tensioners :

NOTE : The two tensioners are identical.

a) If necessary, engage the roll-pins (1) in their housings.

b) Position the tensioners (6) (support plate (2) outwards).

Fit the nuts (7) (contact washer) without tightening them.



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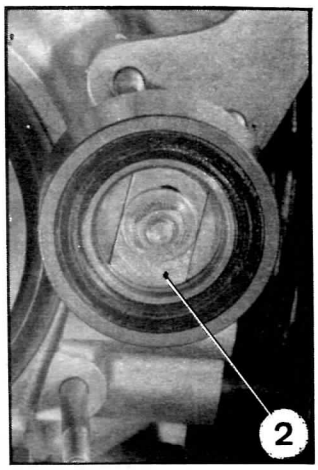
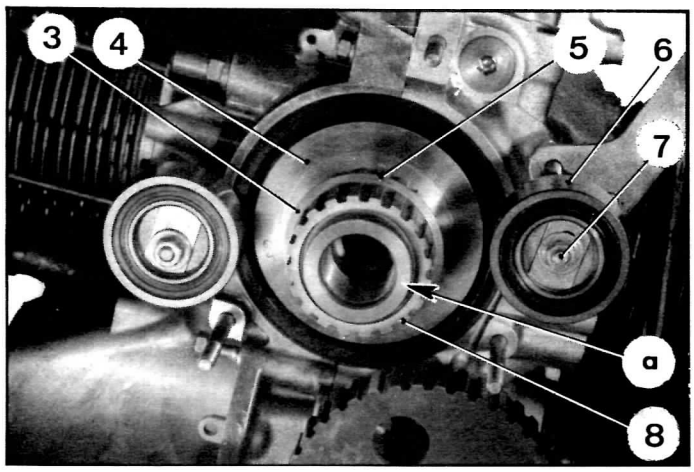


8030

18. Fit the timing gears on the crankshaft :

Fit :

- the protective plate,
- the key on the crankshaft,
- the pinions (5) and (8) after having interposed the central flange (3).



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CAUTION :

Position the pinions so that groove « a » is placed outwards on the pinion (8) and towards the crankcase on the pinion (5).

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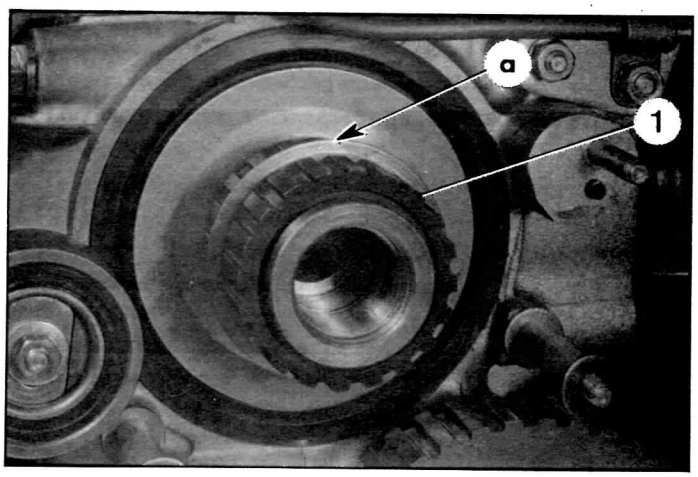

19. Fit the timing belts ;

IMPORTANT : Before fitting, make sure that the belts, pinions and tensioners show no trace of grease or oil.

NOTE : On a given engine, fit belts from the same supplier.

a) Turn the engine to bring the marking « a » (located on the intermediate flange toward the top of the centre line of the engine). Position the marks « b », « c » and « d » of the camshaft wheels and the oil pump as shown in the figure.

b) Compress the tensioners (direction of the arrows) Tighten the nuts (2) and (4).

c) Fit the right-hand belt so that its marks coincide with the markings « a » and « d » in such a way that :

ad = 42 teeth *tensioner side (G.10 Engine)*
ad = 43 teeth *tensioner side (All G.12 Engines)*
(in this position, the mark « d » is placed downwards).

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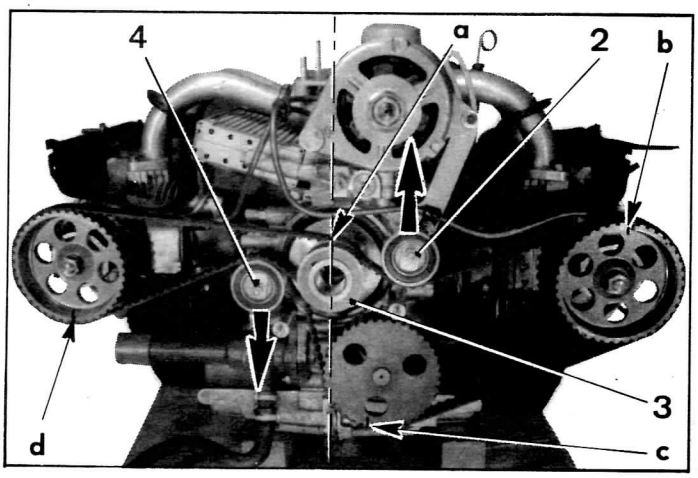


8046

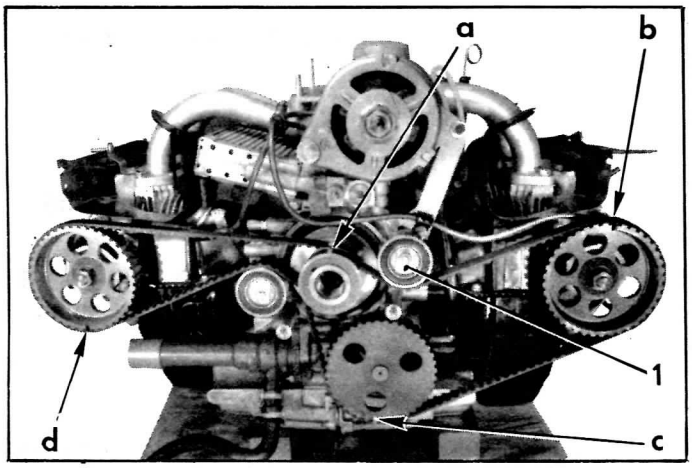
d) Fit the left-hand belt, so that the following coincide :
- the white marks with marks « a » and «b»
- the yellow mark with mark « c ».

In that position :
ab = 32 teeth *(G.10 Engine)*
ab = 33 teeth *(All G.12 Engines)*
ac = 25 teeth *(For both types of engine)*
(in this position, mark « b » is uppermost.)

e) Fit the outer flange (3).

f) Release the tensioners and retighten nuts (2) and (4).

8046



20. Adjust the valve clearance :

Successively adjust each of the rocker arms in the following manner :

a) Turn the engine so that the heel of the rocker to be adjusted is on the back of the corresponding cam (valve completely closed).

b) *Adjust the clearance between the heel of the rocker and the back of the corresponding cam in « e ».*
Intake - Exhaust = 0.20 mm.

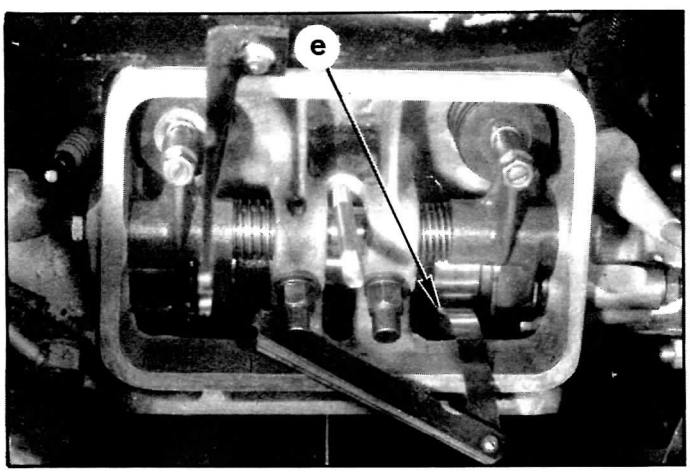
21. Tension the belts :

With the crankshaft mark and camshaft wheels placed as in the illustration in the margin, turn the crankshaft 90° in its normal direction of rotation.

Loosen nut (1) of the left-hand tensioner to release it and retighten it to 18.5 m.N (1.8 m.kg) (13 ft.Ib).

Turn the crankshaft one turn in its normal direction of rotation and carry out the same operation on the right-hand side.

8362



22. Fit the cylinder head covers :

IMPORTANT : Carefully oil the rocker arms, shafts and cams.

a) Ensure that there is no roughness on the joint faces which must be clean and dry.

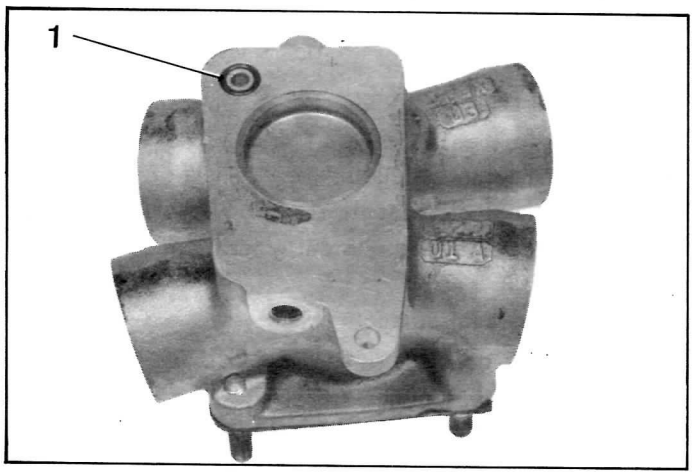
b) Stick the seal on the cylinder head cover (BOSTIK 1400 or MINNESOTA F.19 adhesive) Centre the cylinder head covers.

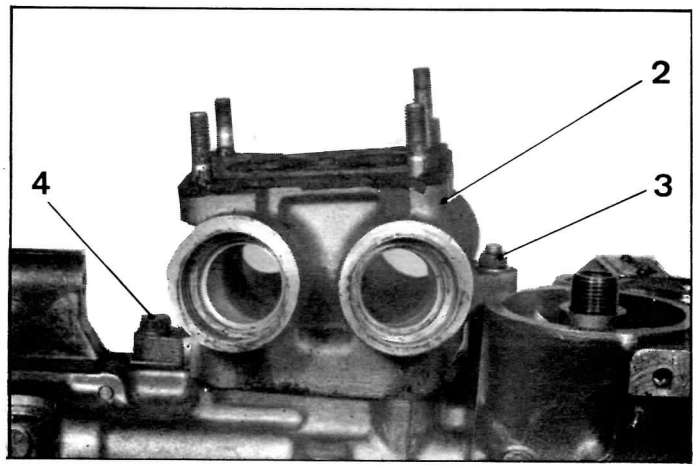
NOTE : The lower and upper cylinder head covers are different. Take care when fitting.

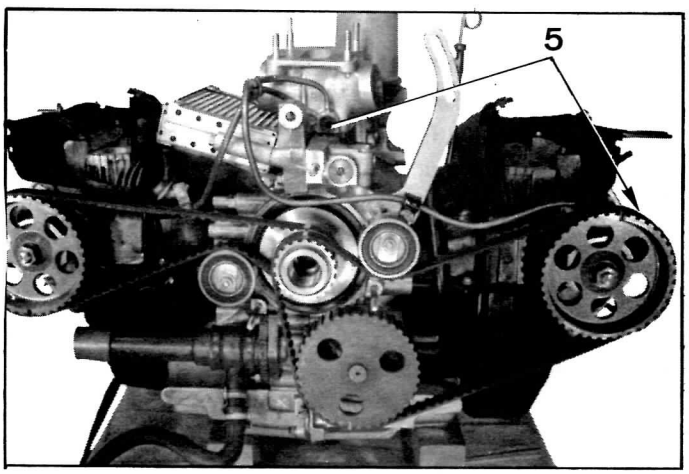
The cylinder head cover with the oil filler is fitted on the left-hand side.

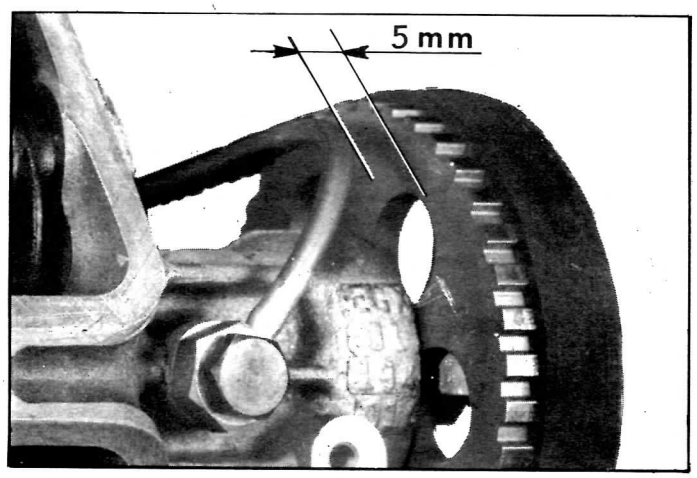
CAUTION : Incorrect fitting of the gaskets, a poor centering or insufficient tightening of the fixing nut could lead to loss of all the engine oil.

Tighten the nut from 8 to 10 m.N (0.8 to 1 m.kg) (5 1/2 to 7 ft.Ib).









23. Fit the exhaust heater box of the carburettor or the pipe-intake manifold and carburettor assembly

Fit the O-ring (1) in its housing.

Fit the box (2) or the intake manifold and carburettor assembly on the crankcase.

Tighten the nut (3) and bolt (4) to 18 m.N (1.8 m.kg) (13 ft.Ib) (contact washer).

24. Fit the oil piping :

Fit the union screws (5) for the cylinder head oil pipes (replace the seals).

Tighten the union screws from 18 to 20 m.N (1.8 to 2 m.kg) (13 to 14 1/2 ft.Ib).

Fit the oil pressure switch (replace the seal) and tighten it to 22 m.N (2.2 m.kg). (16 ft.Ib)

IMPORTANT : Check that there is a clearance of 5 mm minimum between the piping and the camshaft wheels.

25. Fit the oil cartridge :

Oil the seal.

Fit the cartridge by hand until it comes into contact with the engine.

Then tighten it 1/2 to 3/4 of a turn (tool 1683-T).

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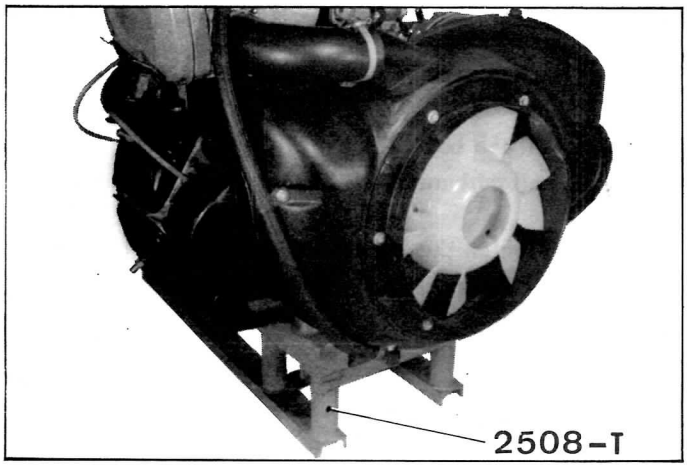
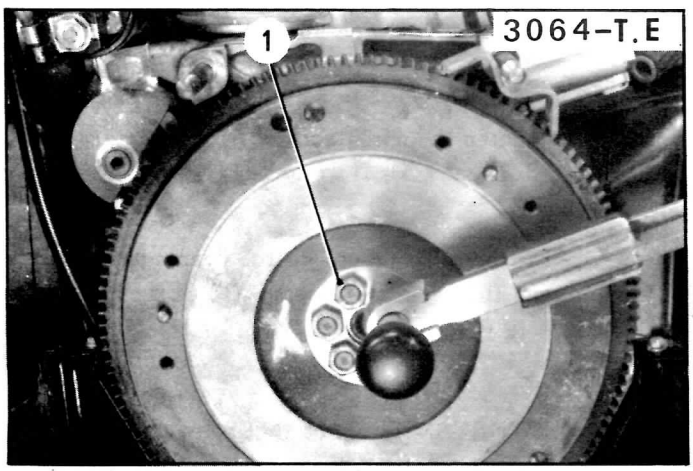
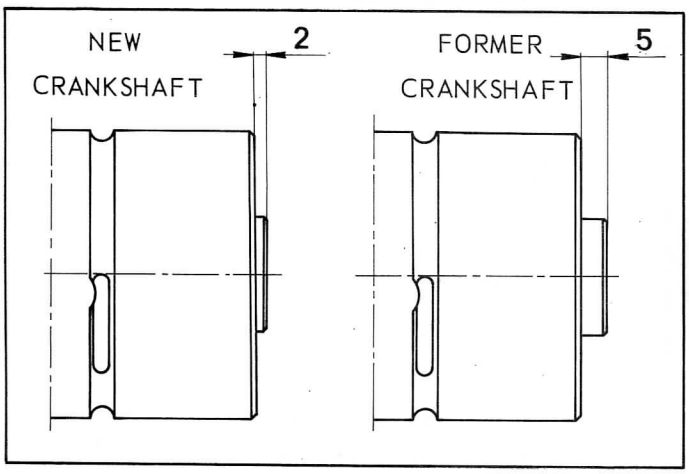
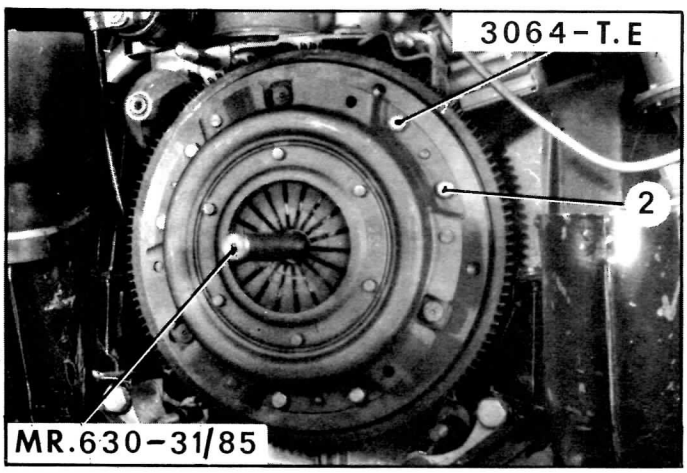








26. Assembling the engine :

Fit :

- the breather,
- the dipstick tube,
- the cooling ducts,
- the ducts beneath the cylinders,
- the front and rear deflectors (on the R.H. and L.H. side),
- the heating ducts,
- the exhaust manifold,
- the high pressure pump,
- the alternator and its tensioner,
- the petrol pump and its spacer,
- the sparking plugs,
- the distributor, its protective spacer and the H.T. leads,
- the fan cowl and its spacers,
- the drive belt of the alternator,
- the fan,
- the starting dog,
- the starter,
- the oil cooler,
- the inlet pipes *(according to fitting)*
- the upper duct covers,
- the carburettor and its spacer *(according to fitting)*.
- the air filter,
- the high pressure pump pipes.

27. Fit the engine flywheel *(pedal-operated clutch)* **or the diaphragm** *(torque converter)*

IMPORTANT : Replace the fixing bolts after each dismantling

a) *Pedal-operated clutch :*

Tighten bolts (1) (face and threads oiled) **from 64 to 70 m.N (6.4 to 7 m.kg) (46 to 50 ft.lb)**

Use a torque wrench, and hold the flywheel using tool 3064-T.E.

b) *Torque converter :*

The diaphragm fixing nuts must be fitted using LOCTITE N° GX 01 460 01 A.

Tightening torques (torque wrench)

14 mm A/F bolts = **64 to 69 m.N (6.4 to 6.9 m.kg) (46 to 50 ft.lb)**

16 mm A/F bolts = **105 to 115 m.N (10.5 to 11.5 m.kg) (76 to 83 ft.lb)**

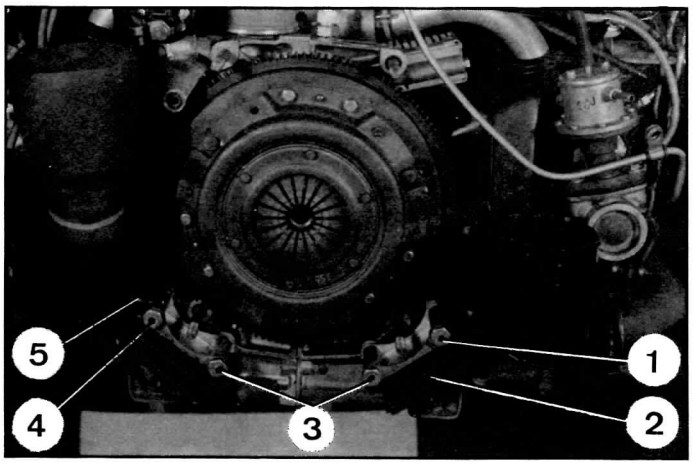
NOTE : The 16 mm A/F bolts must only be fitted on the new type crankshaft.

28. Remove the engine from stand 2508-T.

29. Fit the clutch :

Position the clutch disc and the clutch mechanism centre the disc using mandrel MR.630-31/85.

Tighten bolts (2) to 18 m.N (1.8 m.kg) (13 ft.lb) (spring washer).



30. Fit the flexible mountings :

NOTE : The flexible mountings must be from the same manufacturer.

Fit the mountings (2).

Fit the fixing bolts (3) by placing :
- a flat washer under the heads of bolts (1) and (3),
- a flat washer and the plate (5) under the head of the bolt (4).

Tighten the bolts from 50 to 60 m.N (5 to 6 m.kg) (36 to 43 1/2 ft.lb).

31. Fit the two centering bushes on the engine-gearbox coupling studs.

REMARKS :

After fitting the engine on the vehicle :
1°) Top up the oil
2°) Adjust the strobe setting (33° at 2,500 rpm, *vacuum advance disconnected*).
3°) Check the oil pressure
4°) Adjust the idling speed.

NOTE : At idling speed, the mark on the flywheel must be opposite the 10° mark on the graduated sector.

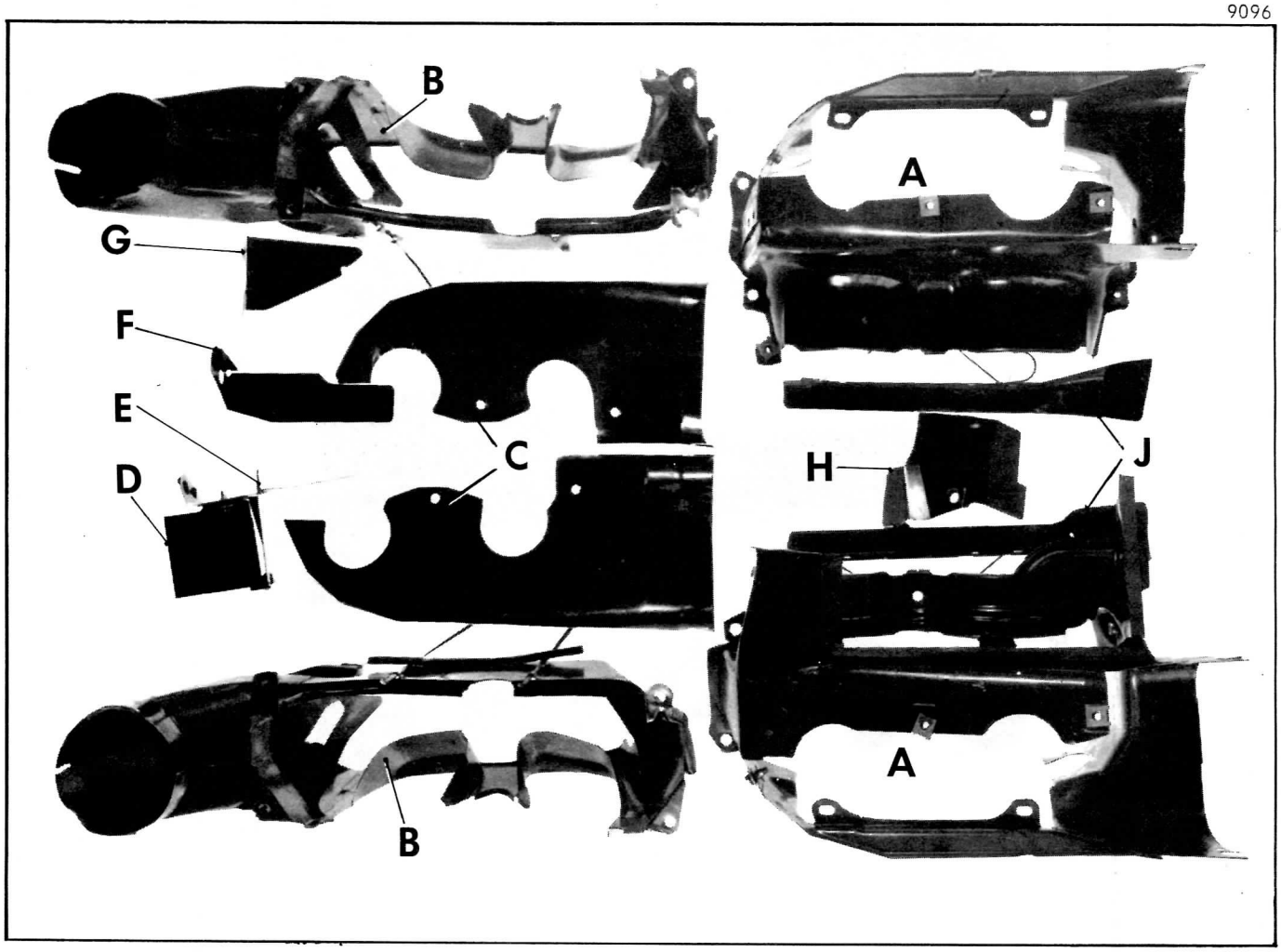
STRIPPING DOWN AND ASSEMBLING AN ENGINE

(For exchange or reconditioning)

Identification of the cooling ducts

G.10 Engine (1015 cc)

9096



A - Cooling ducts

B - Heating ducts

C - Duct covers

D - Deflector

E - Right-hand mounting plate

F - Left-hand mounting plate

G - Screen

H - Deflector, fitted towards fan cowl

J - Ducts under cylinders

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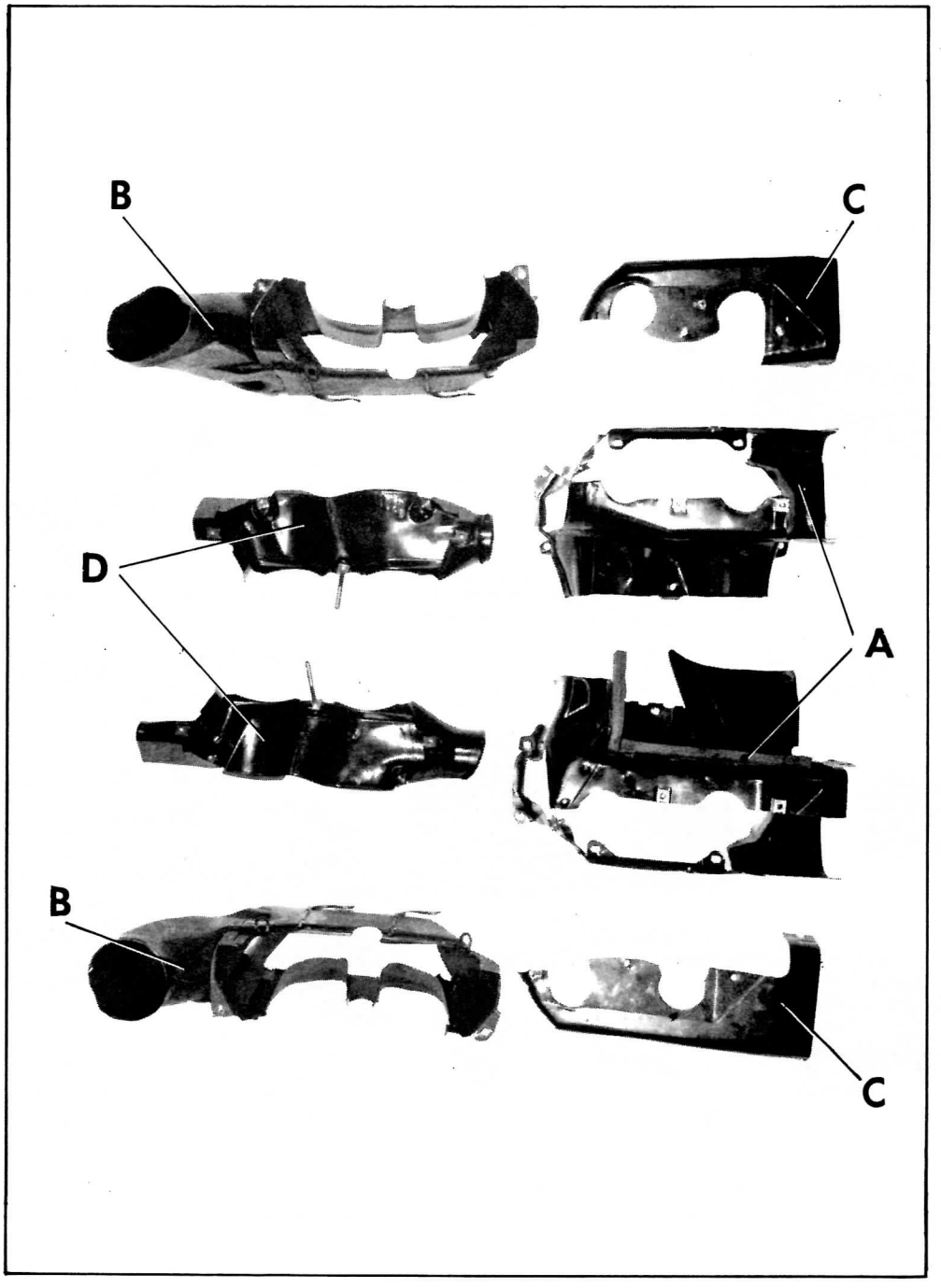
Identification of the cooling ducts

All G.12 Engines (1220 cc)



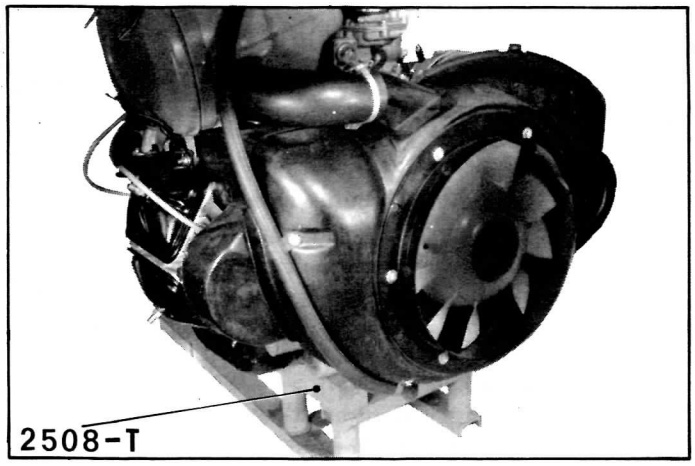
A - Cooling ducts

B - Heating ducts

C - Duct covers

D - Ducts under cylinders

7915



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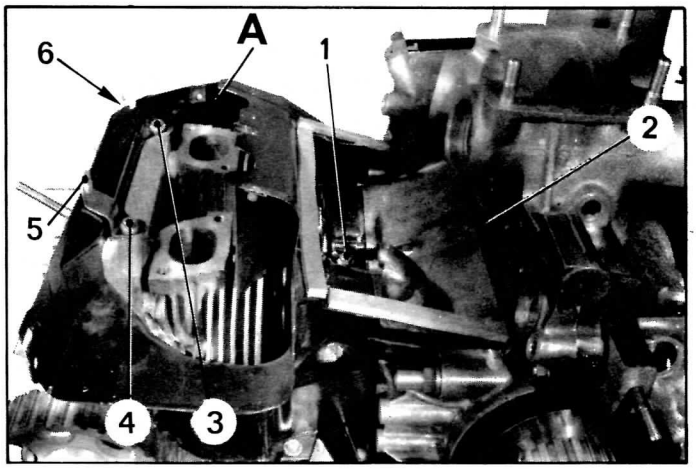


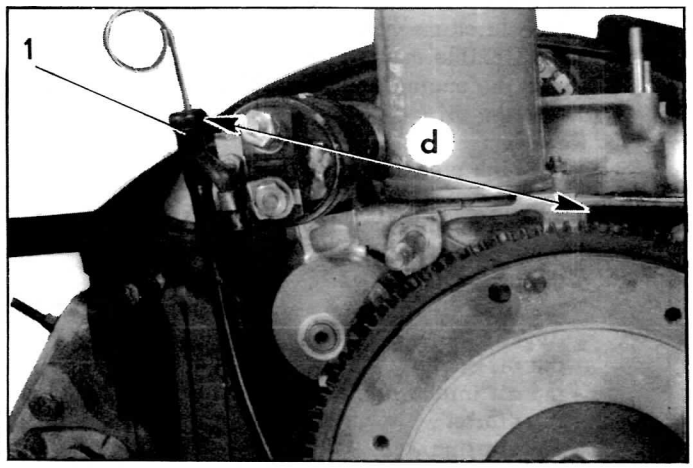
STRIPPING

1. Remove :
   - the clutch mechanism,
   - the flexible mountings.
2. Place the engine on stand 2508-T.
   Drain the oil.
3. **Remove :**
   - the high pressure pump pipes,
   - the air filter,
   - the carburettor and its spacer or the carburettor inlet chamber and pipe assembly,
   - the upper duct covers,
   - the induction pipes *(vehicles introduced up to August 30, 1972)*,
   - the oil cooler,
   - the air intake rubber seal for the cooler,
   - the starter,
   - the starting dog,
   - the fan,
   - the drive belt of the alternator,
   - the fan cowl and its spacers,
   - the distributor, its protective spacer and the H.T. leads,
   - the sparking plugs,
   - the petrol pump and its spacer,
   - the fixing studs of the petrol pump,
   - the alternator and its tensioner,
   - the oil pressure switch,
   - the oil temperature switch,
   - the high pressure pump,
   - the exhaust pipes,
   - the pipe fixing bolts,
   - the engine flywheel,
   - the heating ducts,
   - the front and rear deflectors (right and left hand side),
   - the ducts under the cylinders,
   - the cooling ducts,
   - the dipstick guide tube,
   - the breather pipe,
   - the coupling studs for the engine-gearbox ,

   NOTE : *All G.12 Engines (1220 cc)*
   The ducts under the cylinder D are removed for repair only : they must be refitted prior to the fitting of the cylinder heads.
4. Clean the parts.

ASSEMBLY

5. **Fit the engine-gearbox coupling studs**
   Tighten the studs to 10 to 15 m.N (7 to 11 ft.lb).
6. **Fit the cooling ducts A :**
   a) *Left-hand side :*
   Fix the duct on the crankcase.
   b) *Right-hand side :*
   Fit the clamp (1) *(G.10 Engine (1015 cc)*
   Fix the duct on the right-hand cylinder head.
   Fit the bolt (3) (contact washer) having interposed (under the duct plate) the rear support (6) of the air filter.
   Fit the bolt (4) (contact washer) having interposed (under the duct plate) the front support (5) of the air filter *(G.10 Engine 1015 cc only)*.
   Tighten the bolts. Stick the seal (2) to the crankcase (BOSTIK 1410 or MINNESOTA EC 1236).



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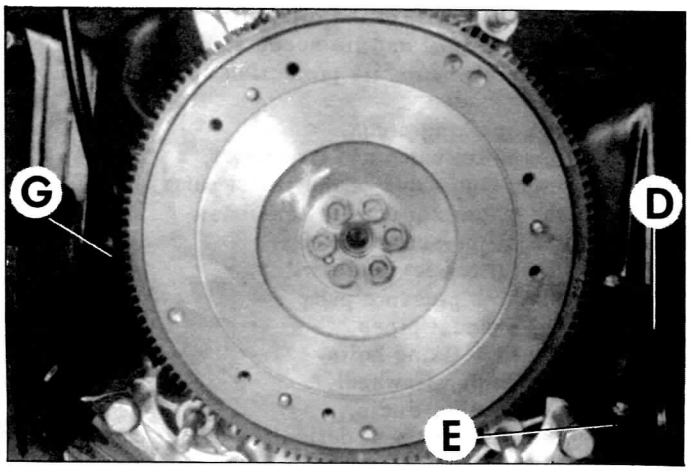

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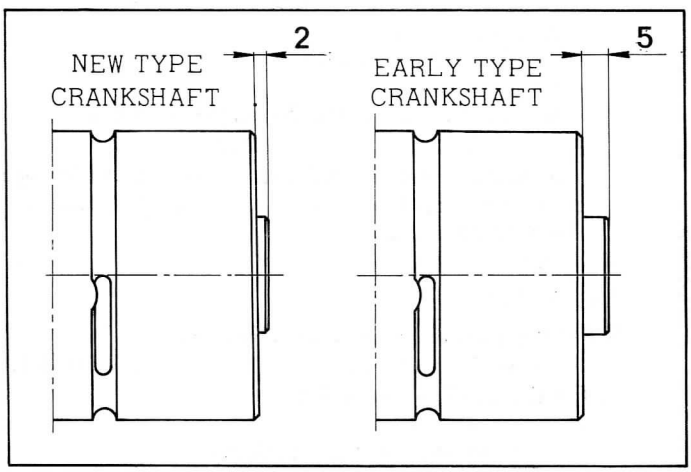

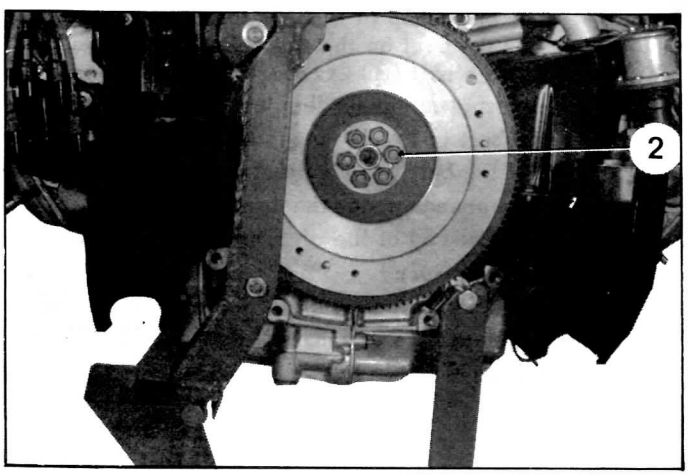

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7. Fit the breather tube :

Check the joint face on the crankcase.
Stick the seal to the breather tube (BOSTIK 1410 or MINNESOTA 1236).
Fit the deflector onto the breather, the rounded side inwards :
Fit a new seal on the bolt.
Fit the following :
- the bolt in the breather,
- the spring on the bolt.

Fit the breather on the crankcase.
Tighten the screw from 5 to 7 m.N (0.5 to 0.7 m.kg) (3 1/2 to 5 ft.Ib).
The breather pipe must not touch the cooling duct.

8. Fit the dipstick guide tube :

In fitting, position the concave portion of the guide tube towards the gearbox in such a way as to obtain d = 220 mm (distance between the crankcase seals and the end of the guide tube (1).

9. Fit the heating ducts :

Fit the front right-hand deflector H.
Fit the rear left-hand screen G.
Fit the assembly of rear right-hand mounting plate E and deflector D.
Connect the heating ducts B (Contact washer under all screw heads).

10. Fit the flywheel *(pedal-operated clutch)* **or the diaphragm** *(torque converter).*

IMPORTANT : Replace the fixing nuts after each dismantling.

a) *Pedal-operated clutch :*
Tighten bolts (2) (face and threads oiled) from 64 to 70 m.N (6.4 to 7 m.kg)
Use a torque wrench and hold the flywheel with tool 3064-T.E.

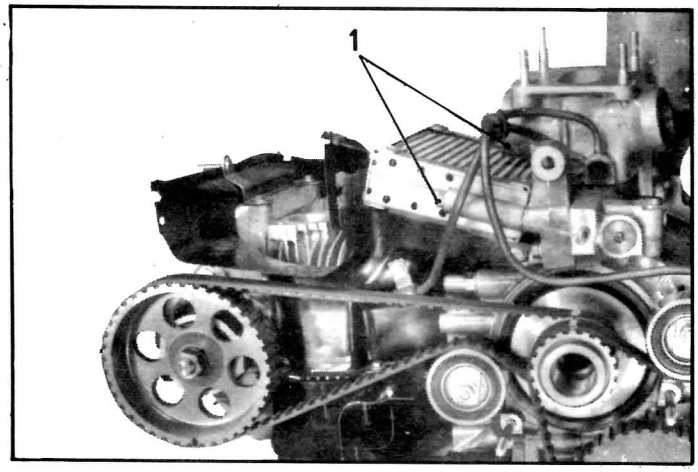
b) *Torque converter :*
The diaphragm fixing bolts must be fitted using LOCTITE N° GX. 01 460 01 A.
Tightening torques (use a torque wrench) :
14 mm A/F bolts : **64 to 69 m.N (6.4 to 6.9 m.kg) (46 1/2 to 50 ft.lb)**
16 mm A/F bolts : **105 to 115 m.N (10.5 to 11.5 m.kg) (76 to 83 ft.lb).**
NOTE : 16 mm A/F bolts must only be used on the new type crankshaft.

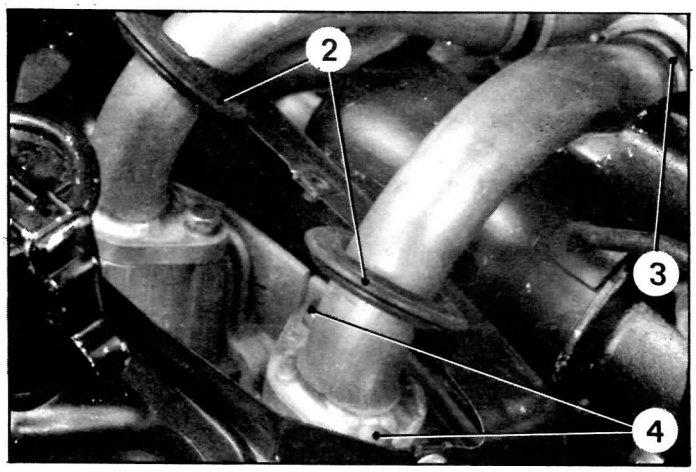
11. Fit the fuel pump :

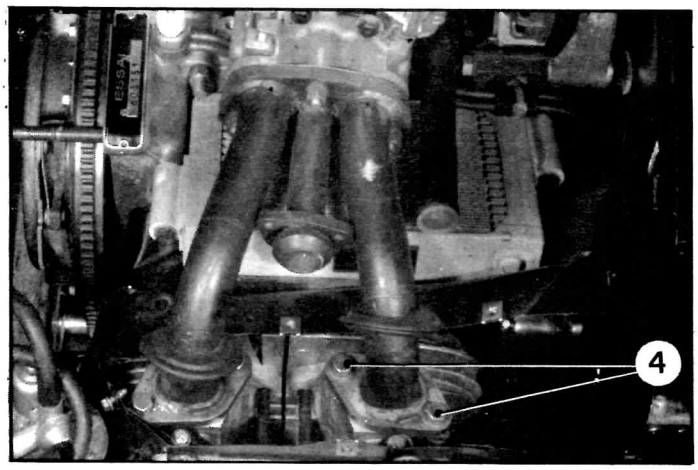
Screw the studs onto the bearing (the longer one on the outside).
Fit the spacer. Position the fuel pump.
Tighten the nuts to 21 m.N (2.1 m.kg) (15ft.Ib)

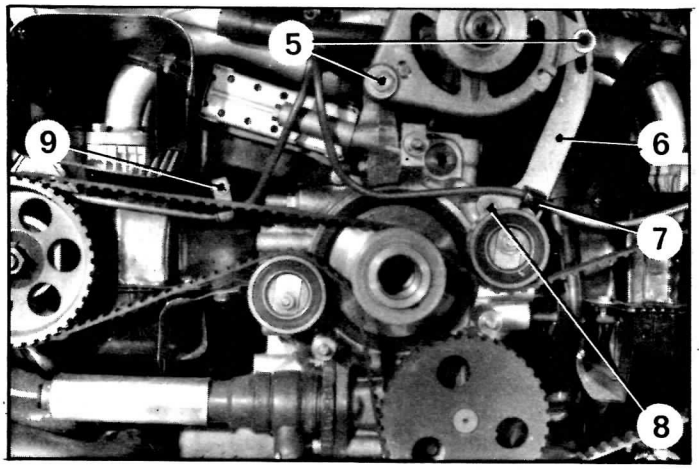
12. Fit the distributor :

Position the distributor protective plate.
Fit the distributor. Slightly tighten the nuts (contact washer).
(The final adjustment will be made once the engine is on the vehicle).









13. **Fit the exhaust pipes :**
Fit the studs.
Fit new gaskets.
Fit the pipes.
Tighten the nuts to 15 m.N (1.5 m.kg) (11ft.Ib)

14. **Fit the oil pressure switch :**
Fit a new seal on the pressure switch, tighten it to 22 m.N (2.2 m.kg).(16 ft.Ib)

15. **Fit the oil temperature switch :**
Fit a new seal on the union, tighten it from 50 to 55 m.N (5 to 5.5 m.kg) (36 to 40 ft.Ib).
Fit a new seal on the switch, tighten it to 25 m.N (2.5 m.kg)(18 ft.Ib)

16. **Fit the oil cooler :**
Fit new seals on each tube of the cooler.
Fit the cooler.
Tighten the bolts (1) to 18.5 m.N (1.8 m.kg). (13 ft.Ib).

17. **Fit the starter :**
Fit the starter on its mounting.
Tighten the fixing bolts to 18.5 m.N (1.8 m.kg) (13 ft.Ib) (contact washer).
The longest bolt fits in the upper bore.

18. **Fit the inlet pipes or the carburettor inlet chamber and pipe assembly :**
a) Fit the rubber closing rings (2) on the pipes (if necessary).
b) Check the condition of the rubber seals and their positions (1 to 2 mm inside the end of the pipe). Smear with tallow. Tighten the collars (3).
c) Engage the pipes in the inlet chamber (if necessary).
Fit the new gaskets, cylinder head side.
CAUTION : Check that the gas passage hole of the seal corresponds with that of the cylinder head.
d) Tighten the bolts (4) to 18.5 m.N (1.8 m.kg) (13 ft.Ib) (thick washer).

19. **Fit the high pressure pump.**

20. Fit the alternator tensioner (6).

21. **Fit the alternator :**
Do not tighten the bolts (5) (flat washer under the head of the bolt and nut).

22. **Fix the cylinder head oil pipes :**
Fit the supports (7) and (9).
Interpose a rubber ring between the tube and the support.
Tighten the two fixing bolts (8) of the tensioner (6) and the fixing bolt of the support (9).

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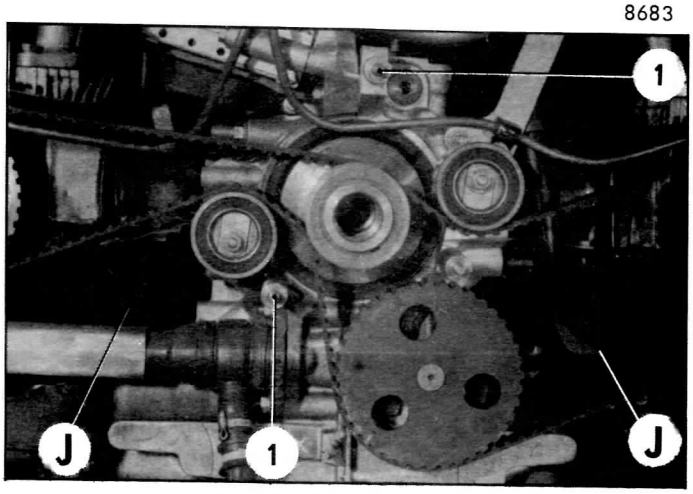

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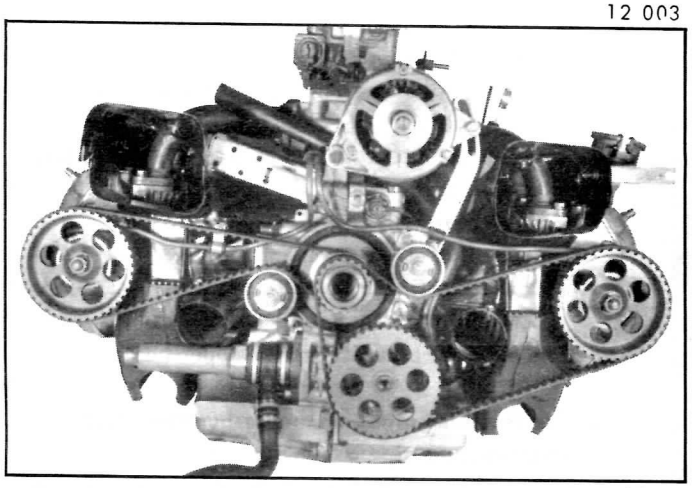

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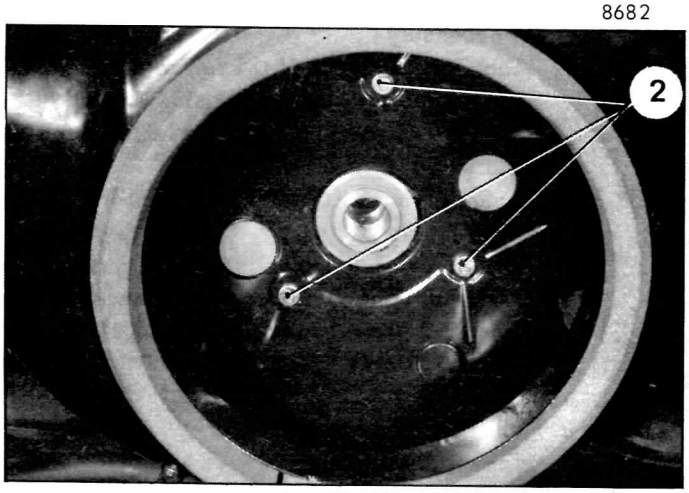
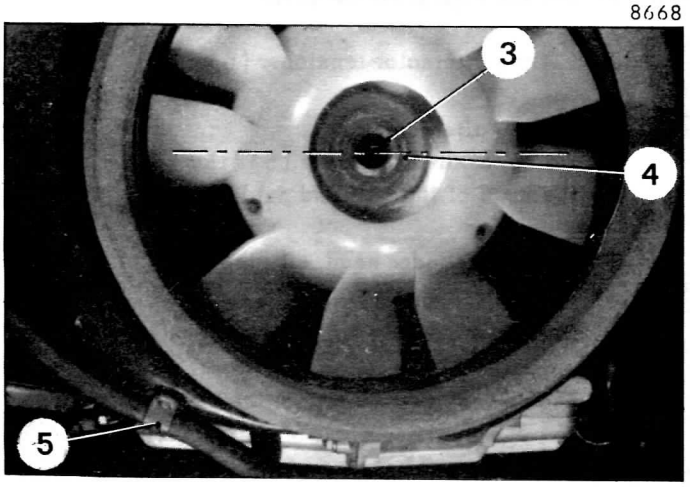


8668



23. Fit the ducts beneath the cylinders :

G. 10 Engine (1015 cc) :

Engage the ducts J on the oil return tubes of the cylinder heads.

REMARK : The upper part of the duct must be engaged between the third and fourth cooling fin of the cylinder, cylinder head side.

24. Fit the fan cowl :

Insert on each stud (1) a flat washer on each side of the spacer.

Engage the fan cowl on the studs.

Fit the flat washers.

Tighten the nuts (2).

25. Fit the fan :

Fit the belt on the alternator pulley.

Engage the belt on the fan pulley.

Fit the fan on the crankshaft end.
Make sure that the thrust washer is in place.
Fit the starting dog (3) equipped with a lock nut (4) *(face and threads oiled)*.
Position it so that it is horizontal when the engine is at ignition point.
Tighten the nut (4) from 170 to 200 m.N (17 to 20 m.kg) (123 to 145 ft.lb) (torque wrench and extension MR. 630-17/1).

NOTE : The starting dog should have 4 to 5 mm of thread visible after the tightening of the nut.

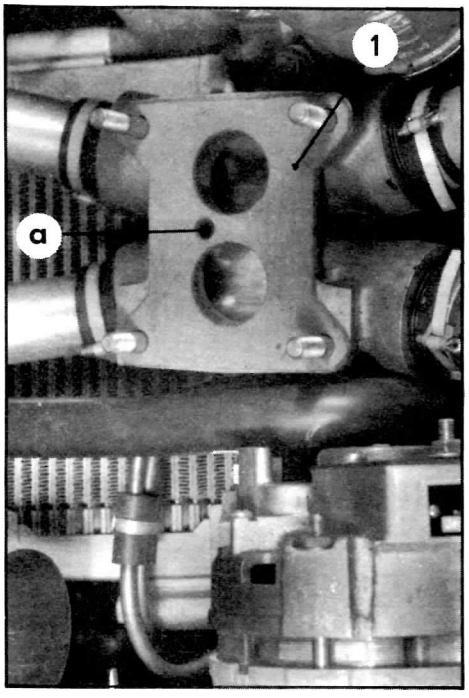
26. Fit the flexible feed pipe of the high pressure pump :

With the aid of clips (5) fit the flexible feed pipe on the fan cowl (contact washer).

27. Fit the covers of the upper ducts :

Left-hand side : place the support of the H.T. lead on the central fixing bolt.

9005



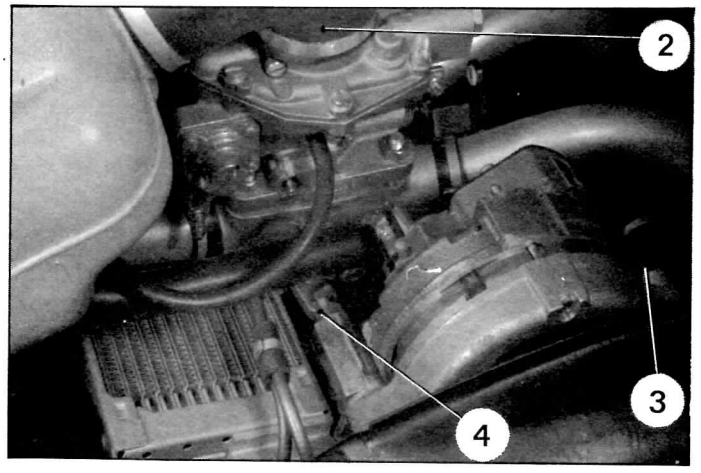
28. Fit the carburettor : *(Vehicles produced up to August 30, 1972)*

Smear the two faces of the spacer (1) with LOWAC sealing compound.
Fit the spacer on the box, the hole « a » positioned on the right-hand side.
Fit the carburettor.
Tighten the nuts.

29. Fit the intake silencer :

Fit a flat washer on each support.
Engage the lugs of the silencer on the supports.
Fit the spacers.
On the front support, fit a flat washer and a support for an H.T. lead.
Tighten the nuts (contact washer).
Connect up the pipe (2) to the carburettor.
Tighten the collar.
Connect the flexible pipe of the breather to the silencer.

7933



30. Tension the alternator belt.
Tighten the bolts (3) and (4).

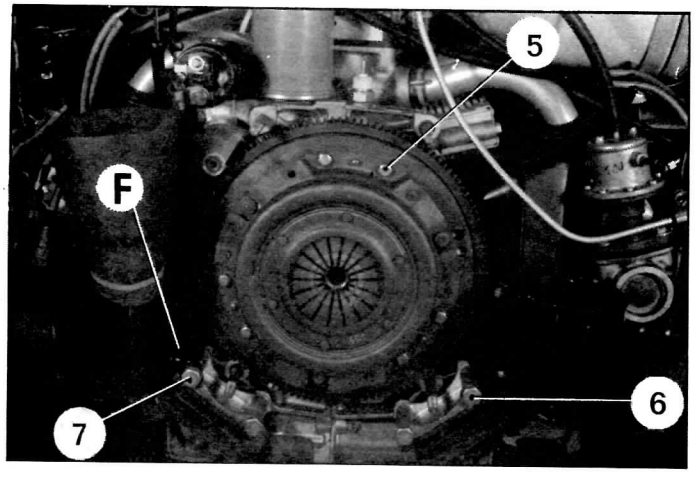
31. Fit the spark plugs.
Connect the H.T. leads.

32. Remove the engine from its stand 2508-T.

33. Fit the clutch :

Fit the clutch disc and mechanism.
Centre the disc with the aid of mandrel MR. 630-31/85.
Tighten the bolts (5) to 18.5 m.N (1.8 m.kg) (13 ft.lb) (spring washer).

8628



34. Fit the rubber mountings :

Fit the mountings. Fit the fixing bolts by placing :
- a flat washer under the head of bolt (6),
- a flat washer and the mounting plate F under the head of bolt (7).

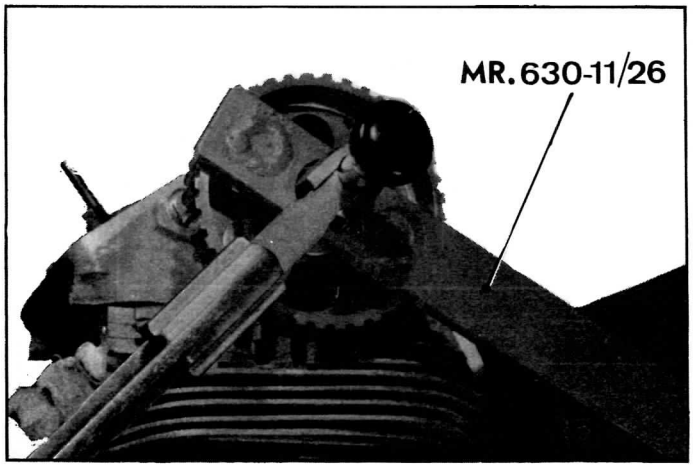
Tighten the bolts from 50 to 60 m.N (5 to 6 m.kg) (36 to 43 1/2 ft.lb).

35. Top up the engine oil.

Supplement N° 1 to Manual 810-2 (CORR)

RECONDITIONING A CYLINDER HEAD

8029



DISMANTLING.

1. **Place the cylinder head in a vice :**
   Use support MR. 630-34/31.

2. **Remove the camshaft wheel :**
   Use tool MR. 630-11/26 to hold the wheel.

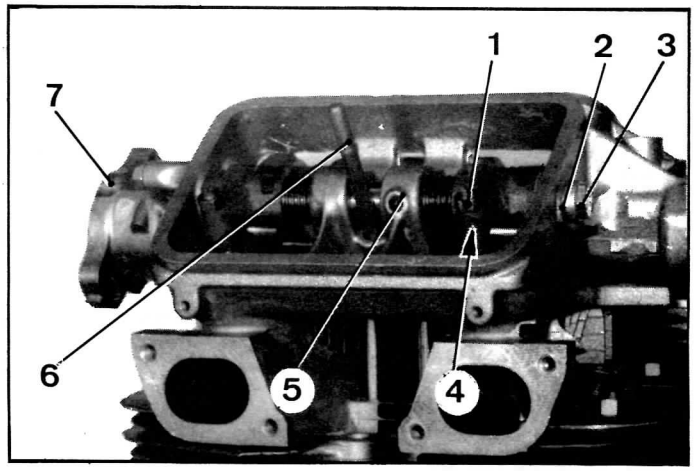
3. **Remove the rocker shafts :**
   a) Slacken the adjustment screw (1) on the rockers under stress.
   b) From each of the shaft extremities, remove :
   - the blanking bolt (3) and its copper seal (8),
   - the spacer (2) or (10),
   - the O-ring seal (9).

   c) Remove :
   - the studs (6),
   - the set screws (5) (3 mm Allen key).

   d) Extract the shafts with the aid of tool MR. 630-25/8.
   Take out :
   - the rocker arms (12),
   - the springs (11).

   NOTE : *On vehicles produced up to 15 February, 1971 :*
   Do not lose the cups (4) placed between the rocker arm adjuster screws and the valve stems.

9568



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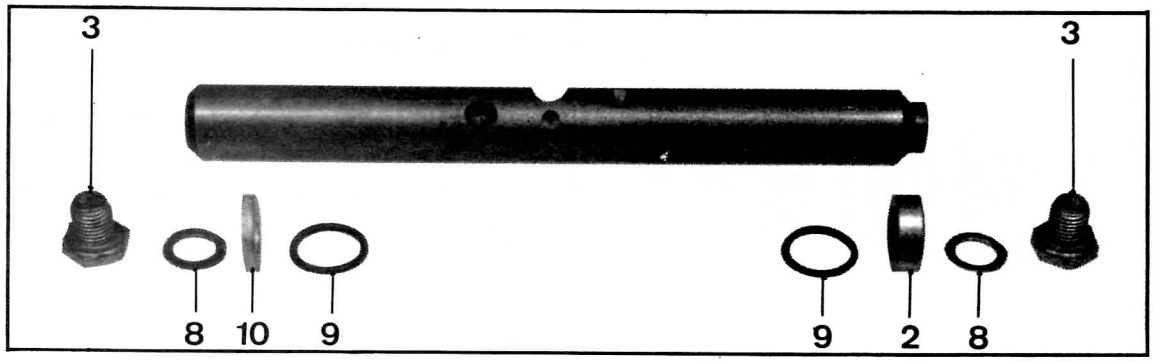
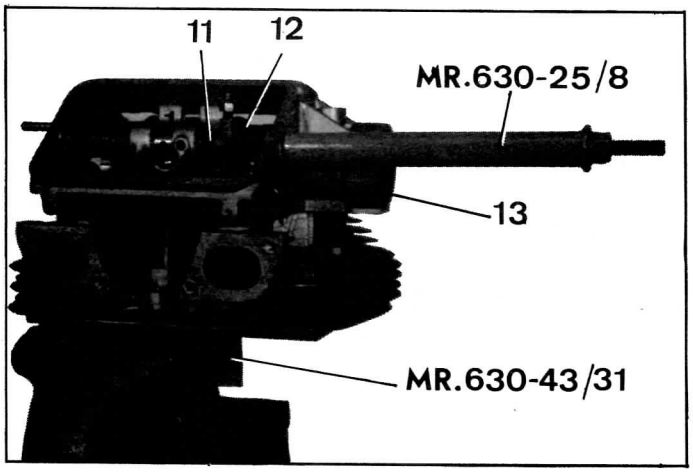




9569

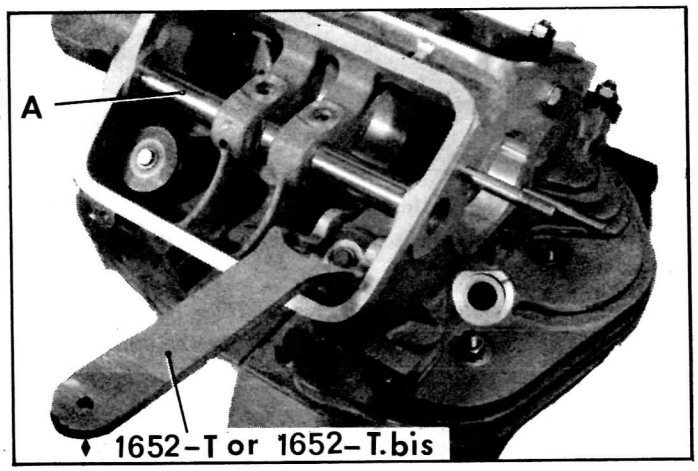
4. **Remove the camshaft :**

   a) Remove the fixing nuts of the rear bearing (7).

   b) Loosen the bearing (7) by tapping lightly with a mallet on the extremity of the camshaft and remove the assembly.
   NOTE : The camshaft and the rear bearing form an assembly which cannot be dismantled.

   c) Remove the front seal (13).

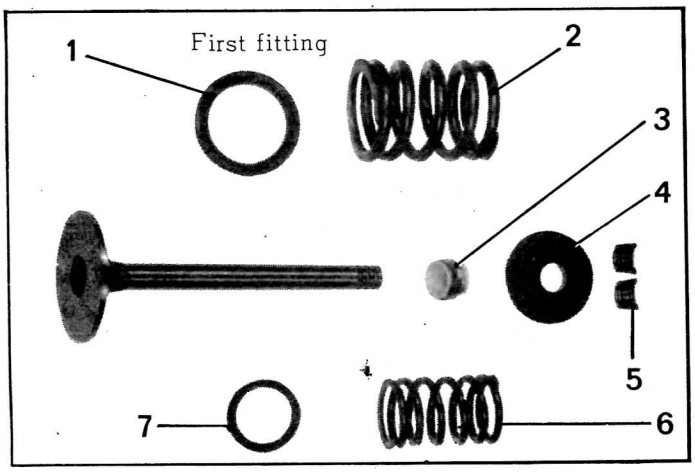
8028



5. Remove the valves :

a) Fit successively a rod A (diameter 16 mm, length 270 mm) in place of each rocker arm shaft.
Compress the valve springs with the aid of tool 1652-T or 1652-T bis.

10997

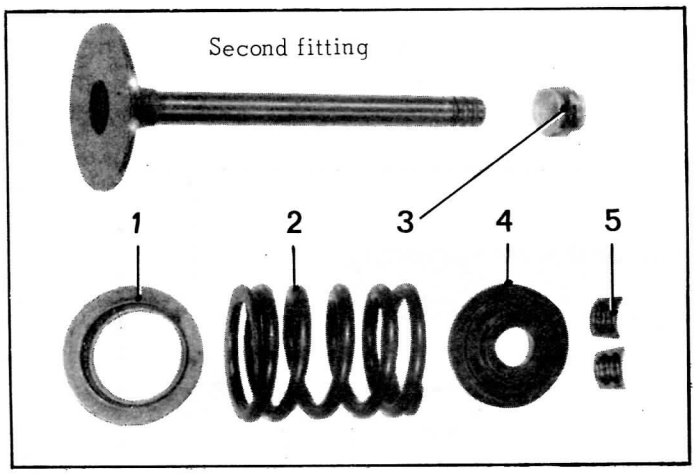


b) Remove :

- the split cotters (5),
- the cups (4),
- the springs (6) and (2),
- the thrust washers (1) and (7),
- the seals (3).

c) Remove the cylinder head from support MR. 630-43/31.
Remove :
- the valves,
- the rod A.

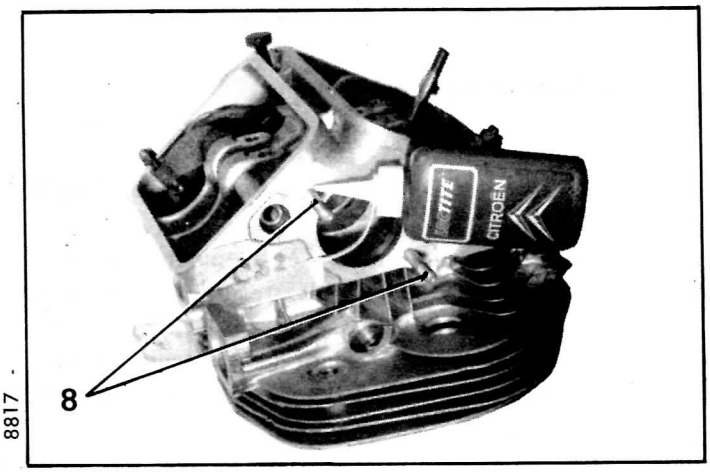
10998



6. Clean the parts.

IMPORTANT : To ensure tightness of the front bearing, each camshaft has a microturbine machined on the bearing surface of the seal. Never destroy this microturbine. This could cause an oil leak.

8817 -



PREPARATION

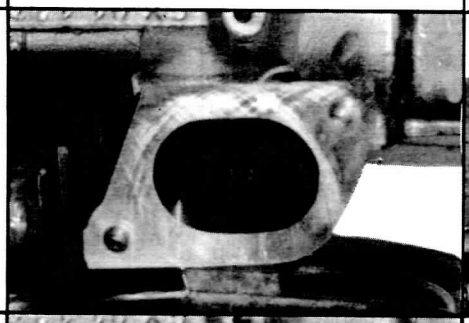
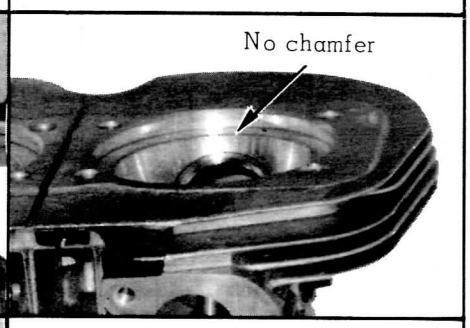
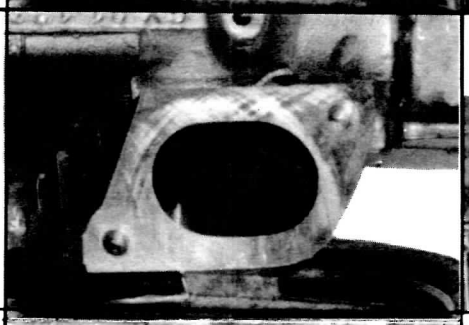
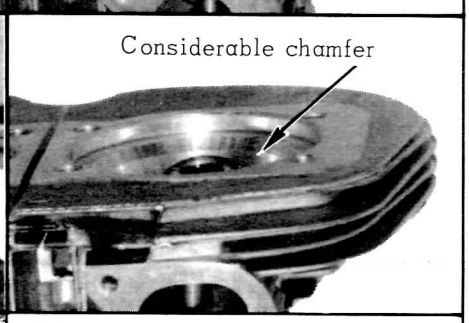
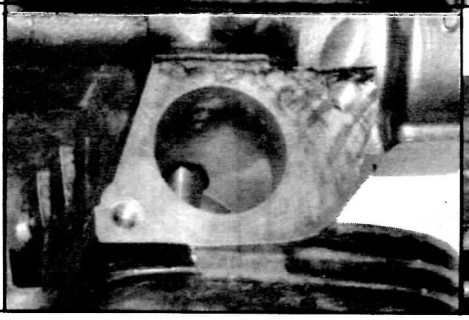
7. Case of cylinder head replacement :

IMPORTANT : The two fixing studs (8) of the rear bearing of the camshaft must be fitted with LOCTITE N° GX. 01 459 01 A.
Tighten them from 3 to 5 m.N (0.3 to 0.5 m.kg) (2 to 3 1/2 ft.lb).

8. Grind the valves seats :

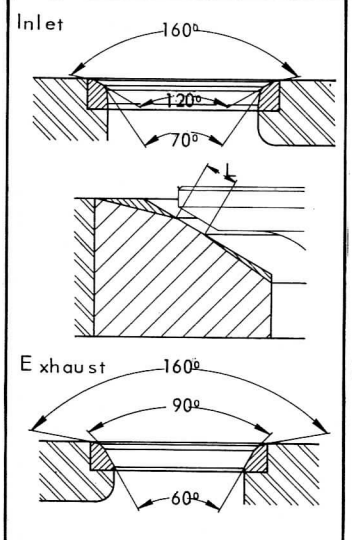
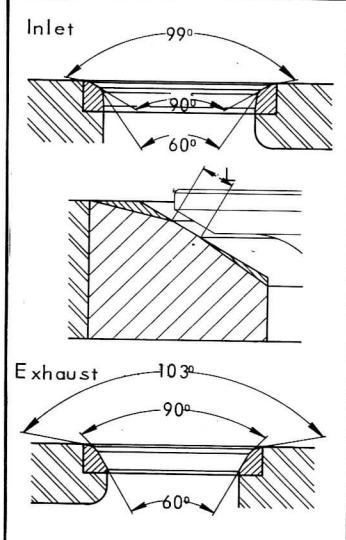
a) *Identifying the cylinder heads*

14691

Engine type	Shape of inlet duct	Combustion chamber
G. 10 (1015 cc)		
G. 12/611 and G.12/612 (1220 cc)		
G. 12/619 (1220 cc)		

b) Grind the valve seats

G.11-1

G.10 Engine (1015 cc) G.12/611 and G.12/612 Engines (1220 cc)	G.12/619 Engine (1220 cc)
	

The seals must be ground according to the angles on the diagrams on the left.

Supplement N° 1 to Manual 810-2 (CORR)

9. Grind the valves :

a) *Identifying the valves*

G. 10 (1015 cc) - G.12/611 and G.12/612 (1220 cc) Engines

Valves	Angles (degrees)	Head ϕ (mm)	Stem ϕ (mm)	Length (mm)
Inlet	120	39	8 $^{-0.005}_{-0.020}$	97.4
Exhaust	90	34	8.5 $^{-0.021}_{-0.036}$	96.3

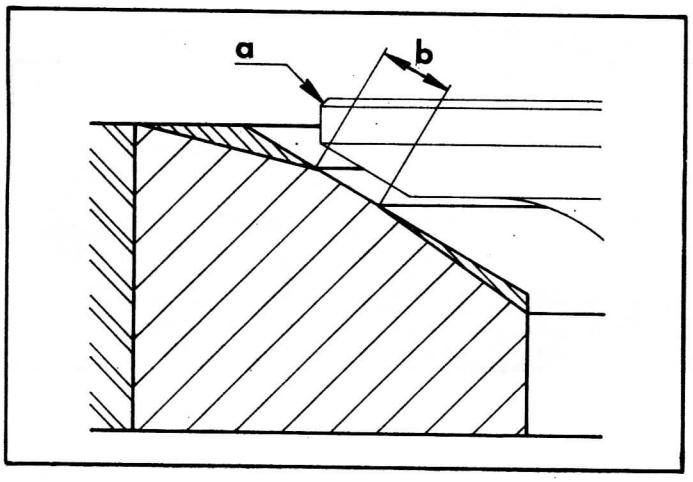
G.12/619 (1220 cc) Engine

Valves	Angles (degrees)	Head ϕ (mm)	Stem ϕ (mm)	Length (mm)
Inlet	90	38	8 $^{-0.005}_{-0.020}$	94.6
Exhaust	90	35.7	8.5 $^{-0.021}_{-0.036}$	93.8

b) Grind the seating faces of the valves according to the given values.

c) Grind a slight chamfer at « a » on the valve heads so as to break the sharp edge.

G.11-1



10. Grind in the valves

Use tool 1615-T.

Conditions :

- On the valve, the larger diameter of the contact face must be equal to the larger diameter of the head.
- On the valve seat : the width « b » of the valve contact face must have a maximum value of :

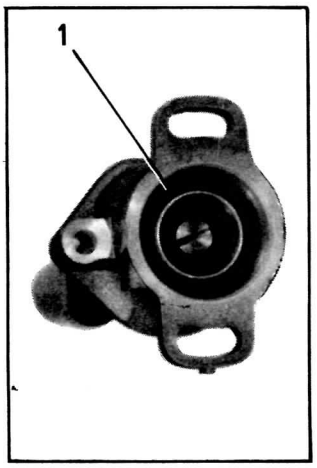
Inlet = *1.3 mm*

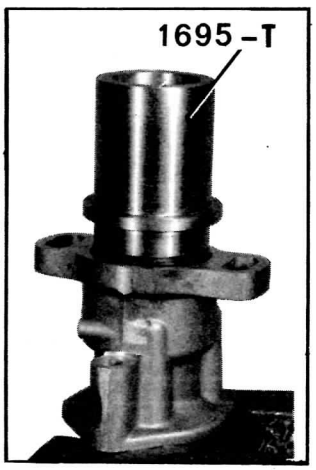
Exhaust = *1.8 mm*

11. Carefully clean the cylinder head to eliminate all abrasive particles from the gas ducting. Blow the gas ducting through with compressed air, as well as the lubrication passages. If the latter are blocked, soak the cylinder head in a bath of cellulose thinner for about an hour. Blow through once again with compressed air.

12. Valve spring calibration :

Springs	Length under load (mm)	Load (kg)	Length under load (mm)	Load (kg)	Direction of winding
G. 10 Engines up to *June 1972*					
2 springs					
Outer	32	14.8 ± 2	24.5	41.3± 1	Left-hand
Inner	26.8	9.9 ± 0.9	19.3	21.1± 1	Right-hand
All Engines from *June 1972*					
1 spring	32	25.4 ± 2.5	24	59.6 ± 2	Left-hand

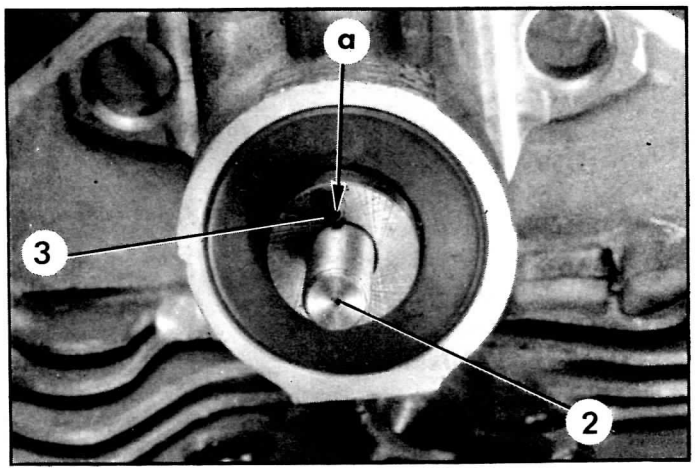




13. Prepare the camshaft (for the left-hand cylinder head :

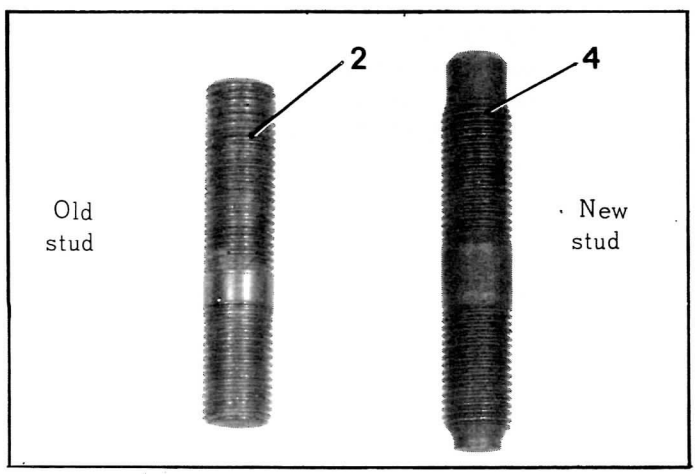
a) *Rear bearing :* Remove the seal (1). Fit the new ring.using tool 1695-T.

b) *Front end :* If necessary, replace the roll-pin (3) (pulley drive). Fit it with slot « a » positioned towards the outside of the camshaft.



14. In case of replacement of the camshaft stud (2) proceed as follows :

IMPORTANT : The fixing stud (2) of the wheel must be fitted with LOCTITE N° GX 01 459 01 A. Tighten it from 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.Ib).



NOTE : *Since May 10th 1971* the camshaft and the fixing stud (2) of the wheel have been modified.
It is not possible to fit a new stud in an old-type camshaft.
It is possible to replace an old type camshaft by a new one fitted with its stud.
In case the stud on an old-type camshaft is not oil-tight, fit the stud with a teflon washer on the thread in the camshaft.

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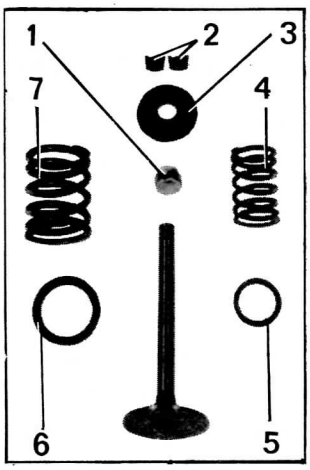
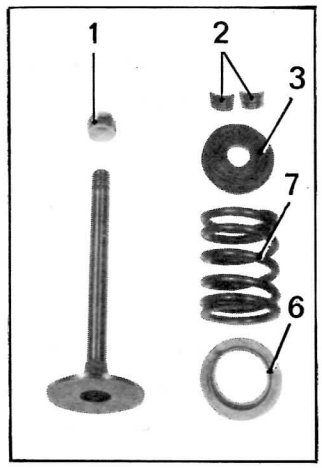
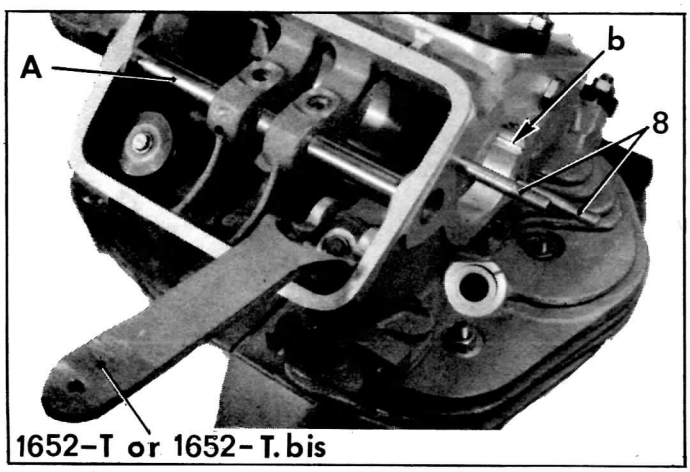
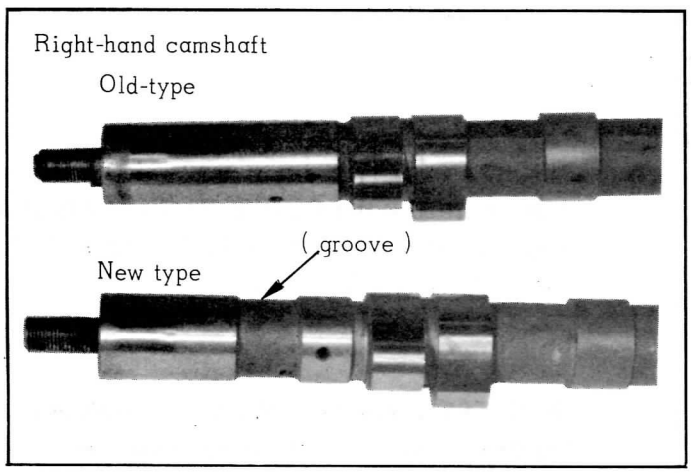
FORMER FITTING

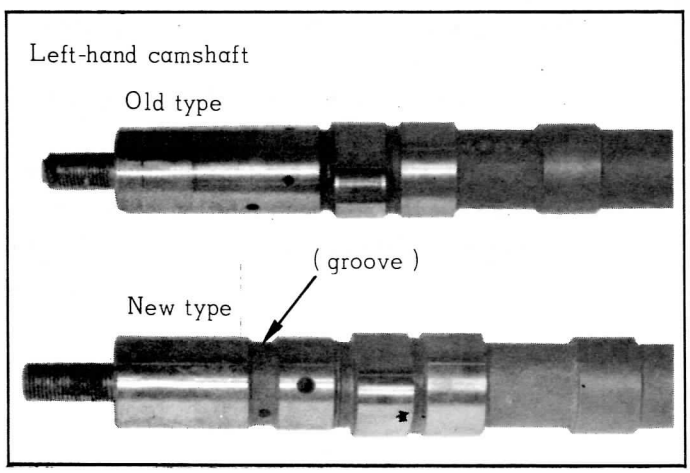


NEW FITTING









FITTING

IMPORTANT : *It is not possible to fit the single valve spring on the cylinder heads designed for valves with two springs.*

15. Fitting the valves :

a) Oil the valve stems and the valve guides. Position the valves.

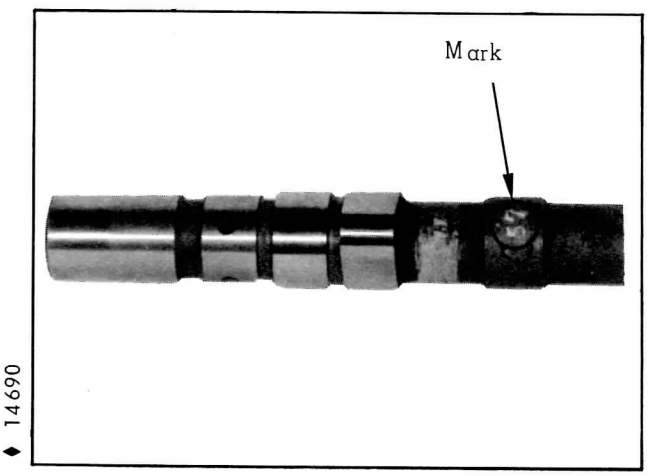
b) Hold the cylinder head in a vice (support MR. 630-43/31).

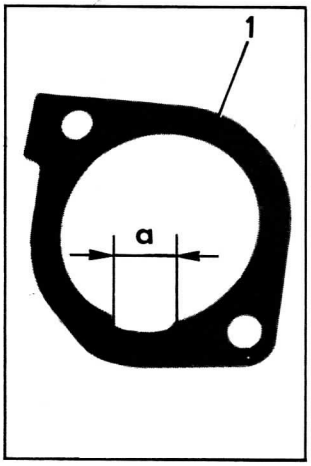
c) Position the seals (1) (change the seals after each dismantling).
WARNING : Interior diameter of seals (1) :
- Exhaust = 8.5 mm
- Inlet = 8 mm
Slide the seal (1) onto the valve stem until it is in contact with the guide.
(Use a tube of interior dia. = 8.5 mm, for the final positioning).

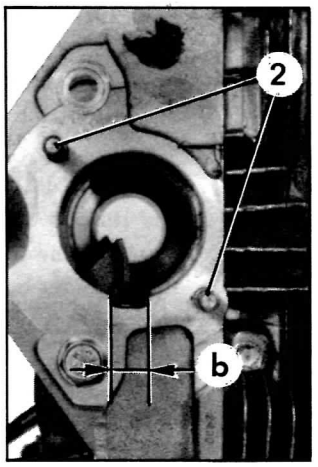
d) Successively fit rod A (see paragraph 5a) in place of each rocker shaft.
Fit on each of the valves, according to the case :
- the thrust washers (5) and (6),
- the springs (4) and (7),
- the cup (3).
Compress the springs using tool 1652-T or 1652-T bis.
Fit the split-cotters (2).
Remove rod A.

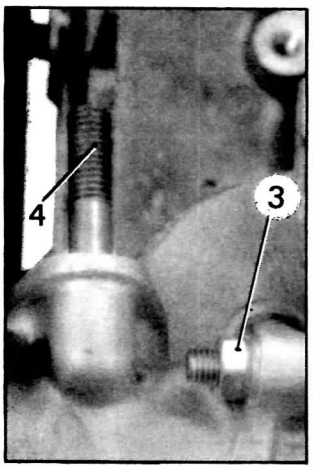
16. Fit the camshaft :

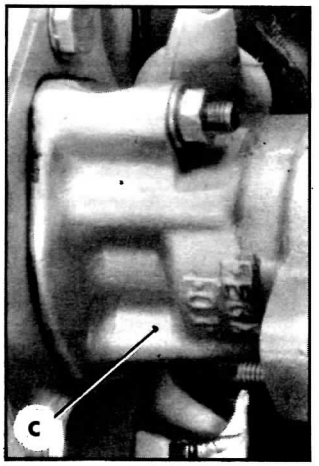
a) **Identifying the camshafts :**
Since January 1974, the camshaft bushes in the cylinder heads and in the rear bearings have been discontinued, which entails the modification of the camshafts and the cylinder-heads.
IMPORTANT : The old-type camshaft must not be fitted in a cylinder-head which does not have a bush.
On **G. 12/619 Engines,** the camshafts are different. Each of them has an identification mark stamped on it :
-figure 57 ⟶ left-hand camshaft
-figure 58 ⟶ right-hand camshaft

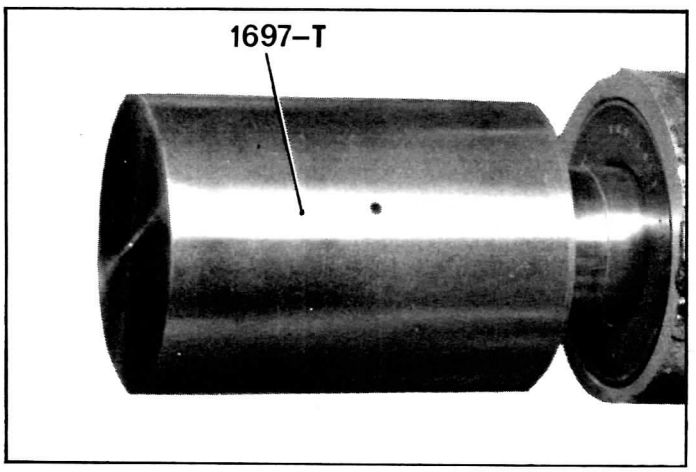












b) Fit the paper gasket between the rear camshaft bearing and the cylinder-head.
Fit each gasket (1) over the fixing studs (2) *making sure that slot « a » on the gasket coincides with the oil return passage « b » on the cylinder head.* Fit the gasket « dry ».
Oil the contact face of the front gasket with the camshaft.

c) Engage the camshaft into the cylinder head.
IMPORTANT : *Position the rear bearing : passage « c » (oil return) on the bearing must correspond with passage « b » in the cylinder head. i.e. it must face the exhaust outlets.*
(In the case of the right-hand side cylinder-head, the fuel pump fixing studs (4) must face the inlet ducts).

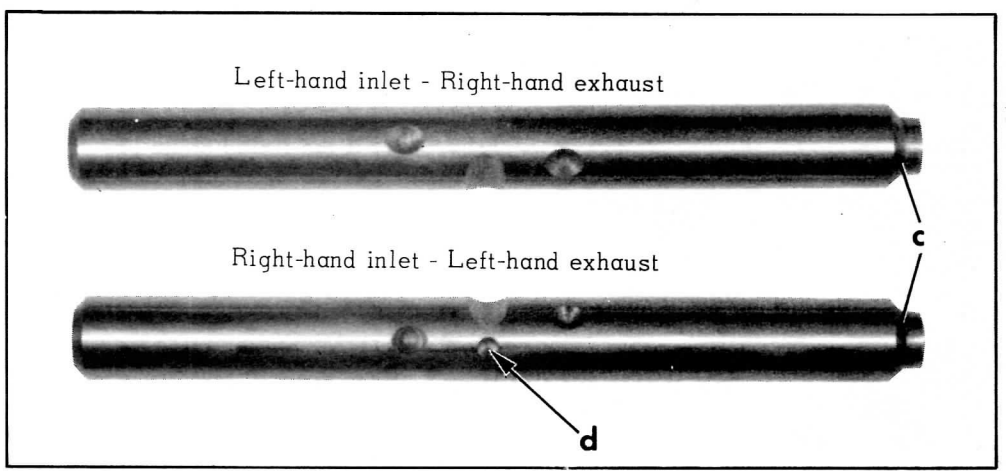
d) Tighten fixing nuts (3) (contact washer) from 15 to 18 m.N (1.5 to 1.8 m.kg) (11 to 13 ft.lb).

17. Fit the camshaft front bearing seal :

Use tool 1697-T.
NOTE : The seal must be fitted after the camshaft has been installed, otherwise the seal would be damaged when fitting the camshaft.

18. Fit the rocker shafts :

IMPORTANT : *Identification of the shafts :*
- The left-hand inlet and right-hand exhaust shafts are identical, and have no identification marking.
- The right-hand inlet and left-hand exhaust shafts are identical, and are identified by a blind hole « b ».
This identification mark is very important for the correct positioning of the lubrication passages.

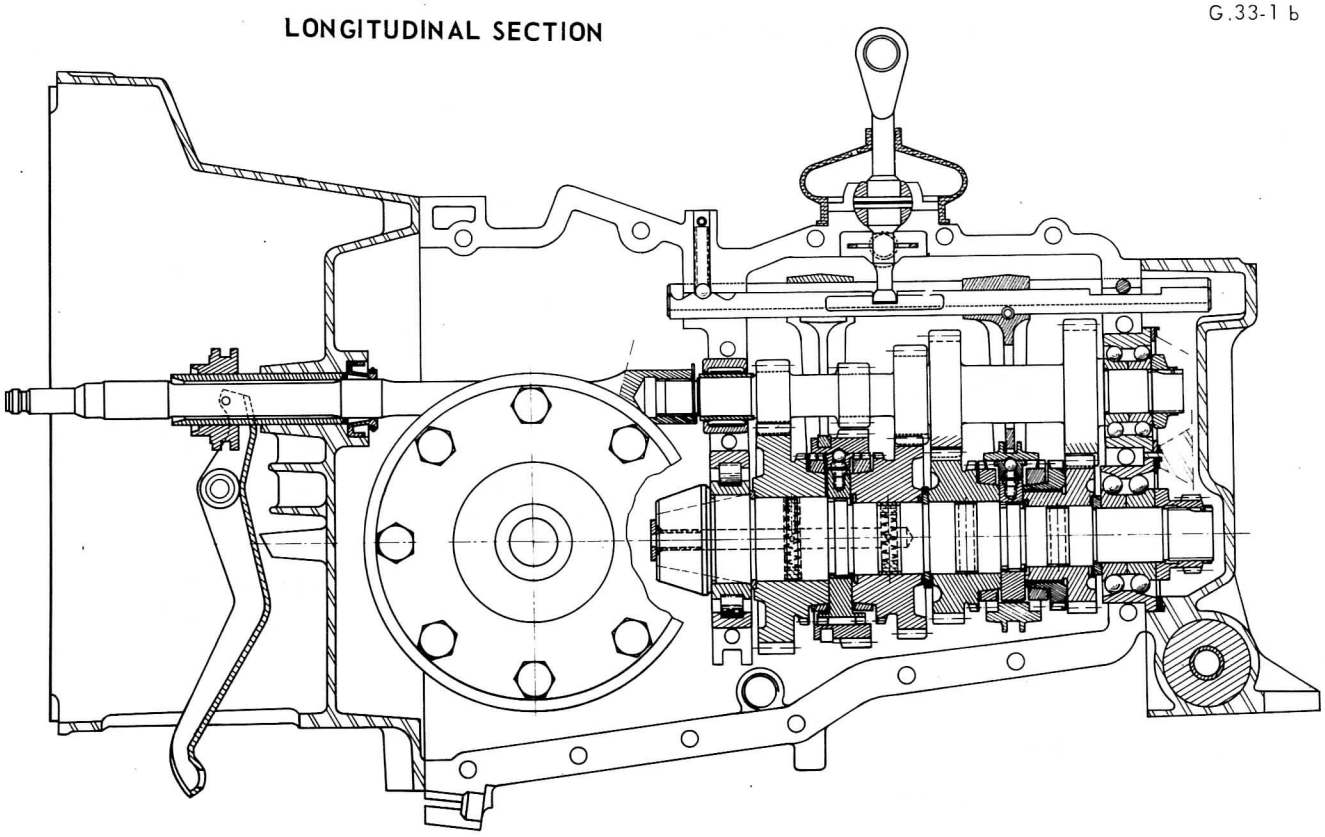


Supplement N° 1 to Manual 810-2 (CORR)

Vehicles equipped with a G.10 Engine (1015 cc) (produced up to February 1973)

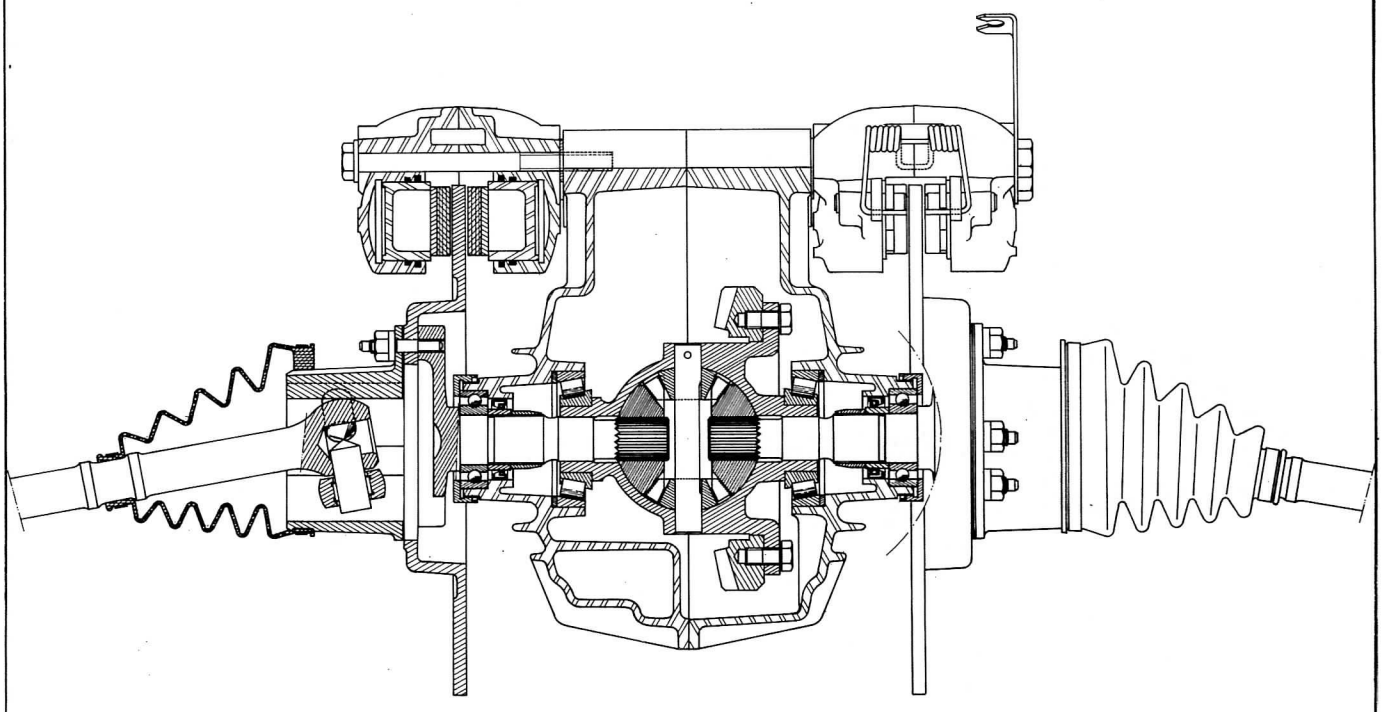
G.33-1 b

LONGITUDINAL SECTION



G.33-2 b

CROSS SECTION

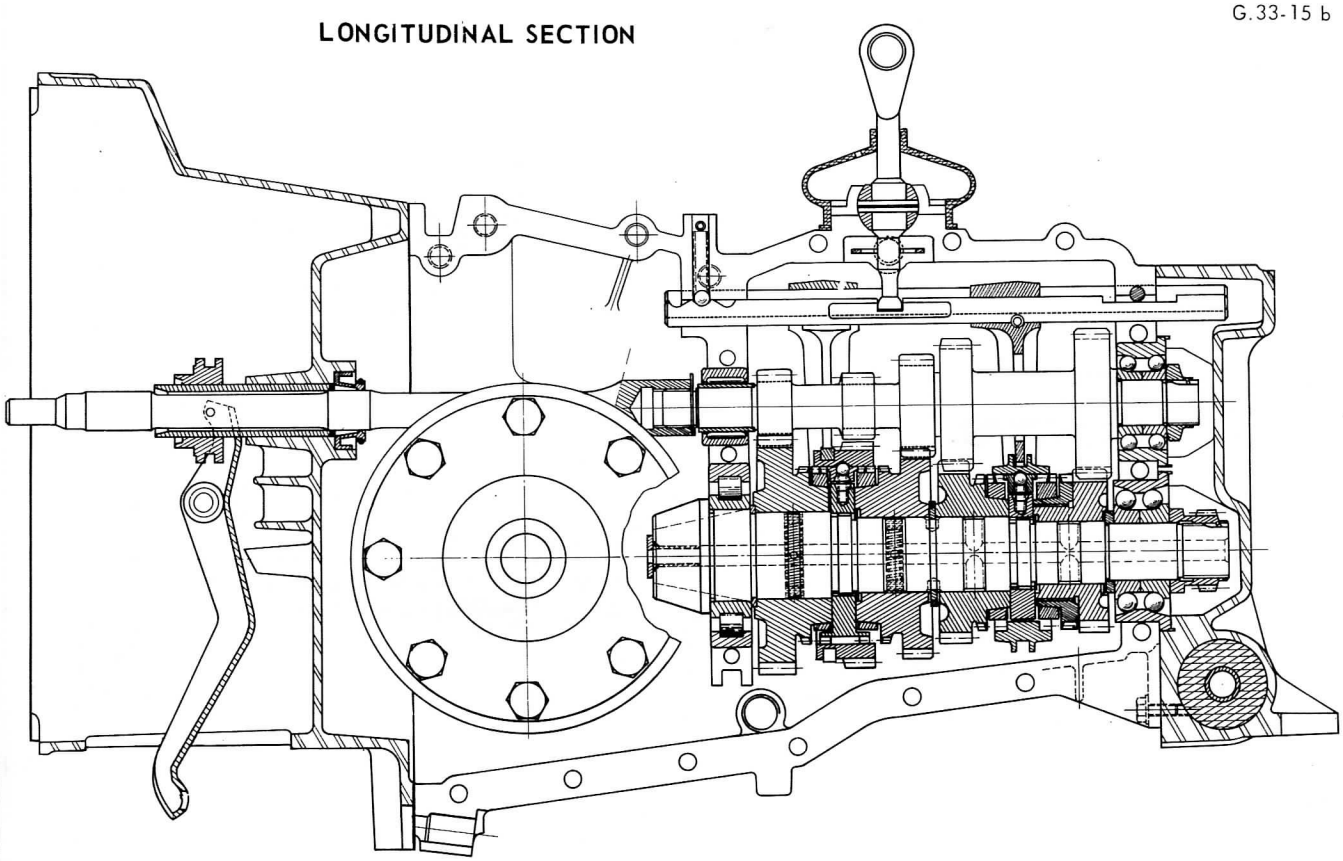


Supplement N° 1 to Manual 810-2 (CORR)

Vehicles equipped with any G.12 Engine (1220 cc)
Vehicles equipped with a G.10 Engine (1015 cc) (produced since February 1973)

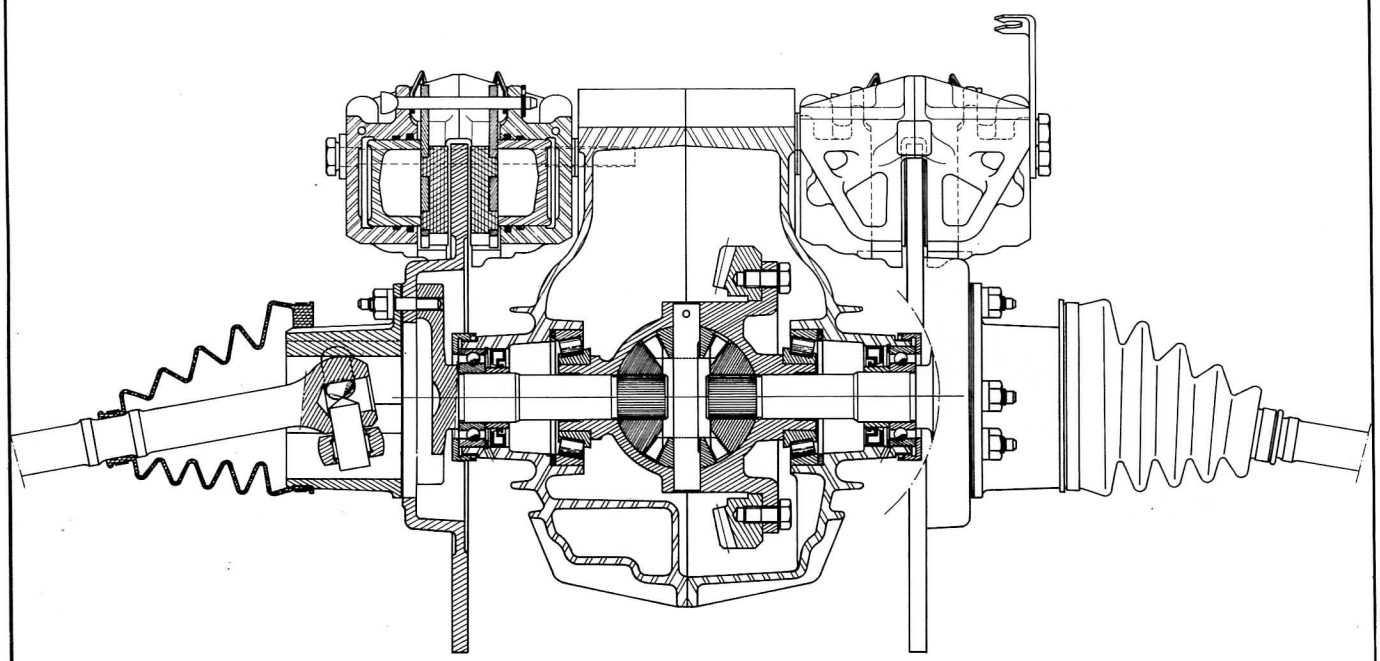
G.33-15 b

LONGITUDINAL SECTION



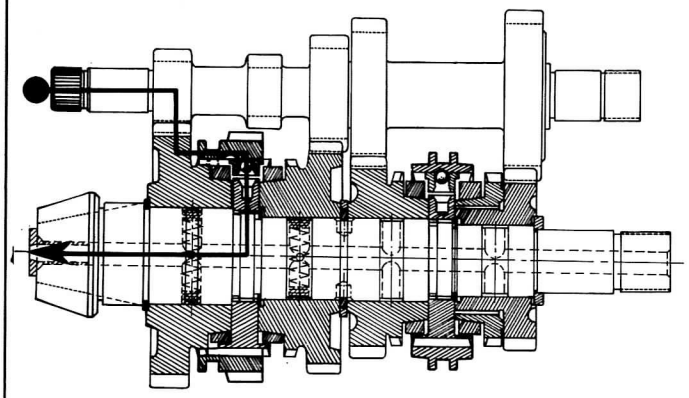
A.33-10

CROSS SECTION

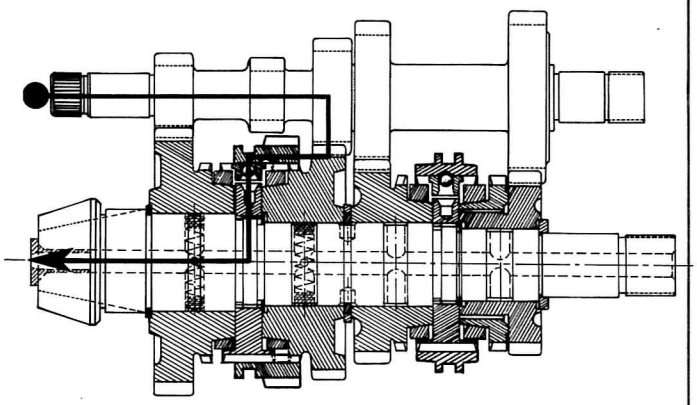


GEAR SEQUENCE

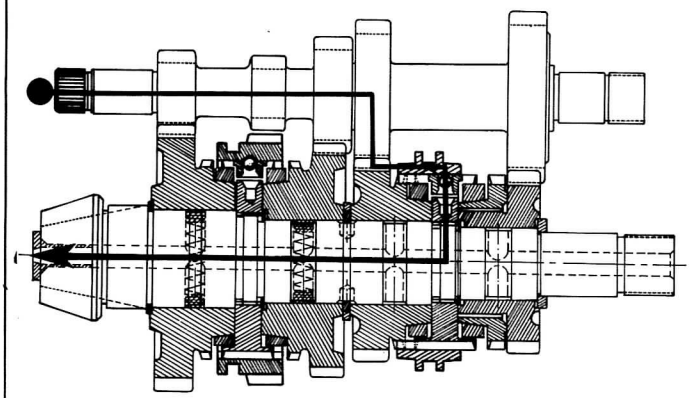
G. 33-4 c



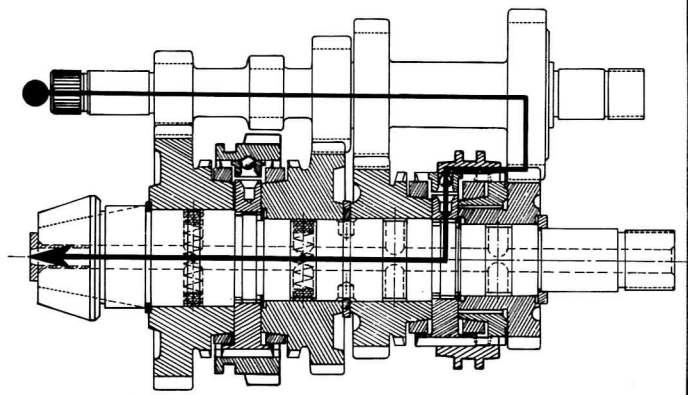
1st GEAR



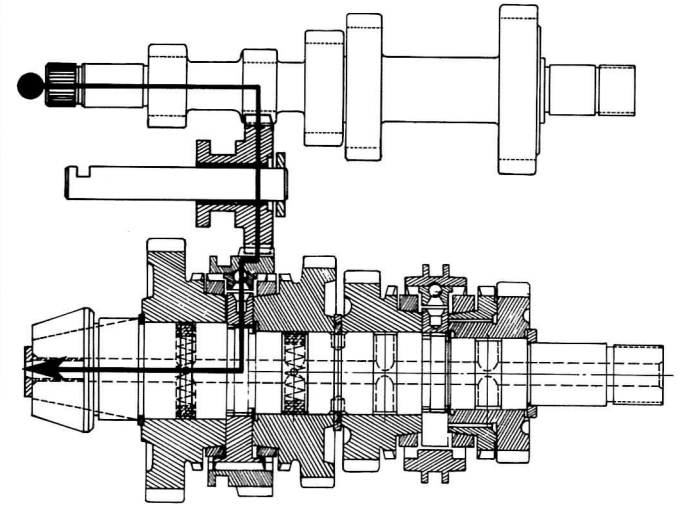
2nd GEAR



3rd GEAR



4th GEAR



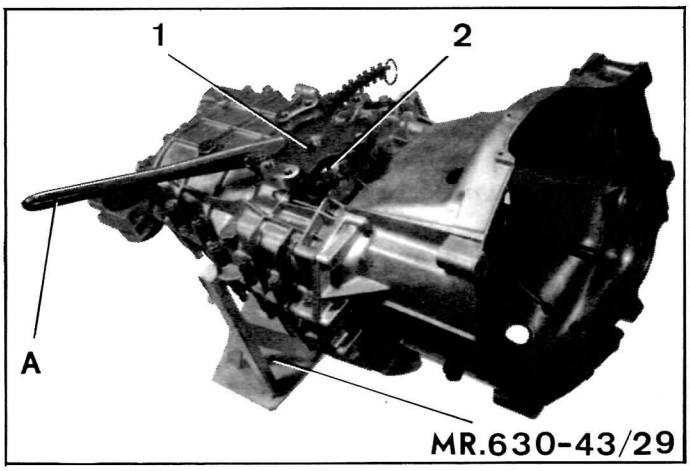
REVERSE GEAR

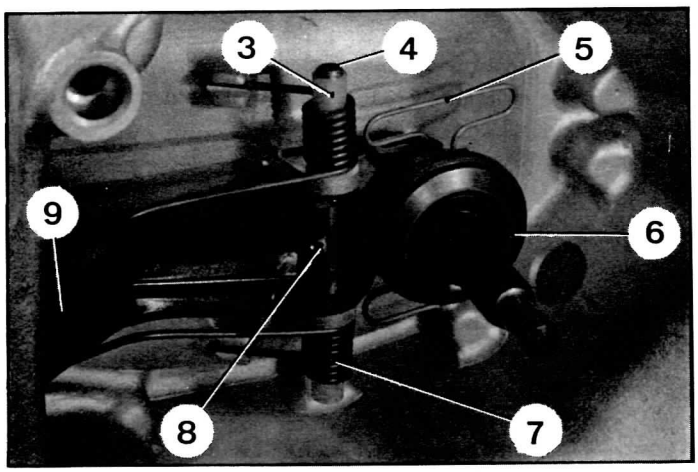
NOTE : The gears of the primary shaft are in constant mesh with the driven gears of the 1st, 2nd, 3rd and 4th gears.

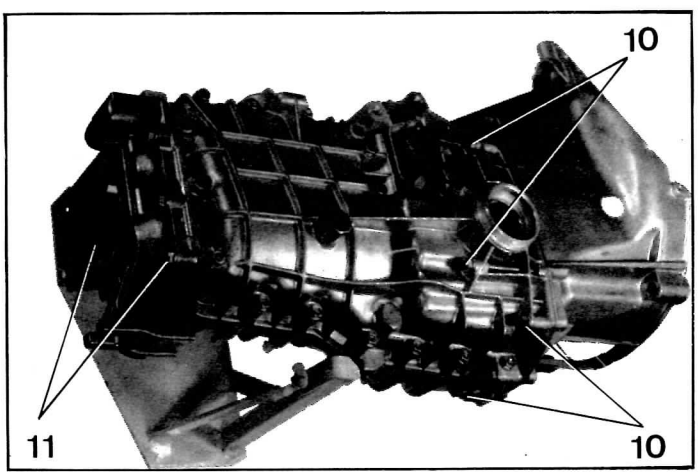
Supplement N° 1 to Manual 810-2 (CORR)

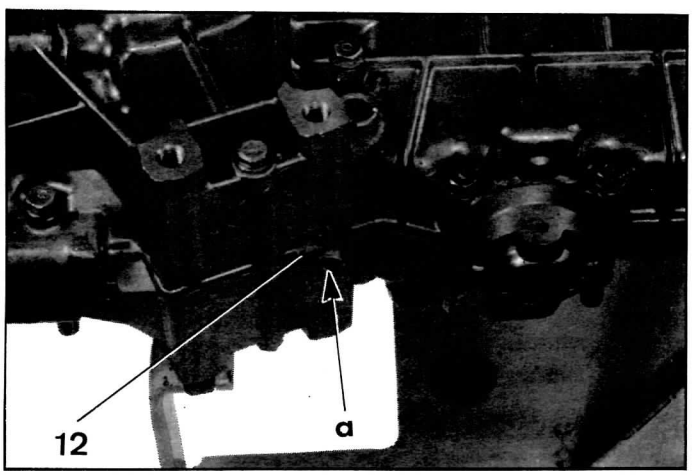
RECONDITIONING A FOUR-SPEED GEARBOX (PEDAL-OPERATED CLUTCH)

9168









I. DISMANTLING

1. Drain off the oil.
Place the gearbox on stand MR. 630-43/ 29 as shown in the photograph; the left-hand half gearbox casing resting on the stand.

2. **Remove the gearbox drive outlet shafts**

On each side :

Loosen the ring-nut (2) with the aid of chain wrench A.

Withdraw the gearbox drive outlet shaft (1) equipped with the ring-nut (2) and the bearing (if necessary tap lightly with a mallet).

3. **Remove the clutch thrust bearing and the control fork :**

- Remove the spring clip (5).
- Remove the thrust bearing (6).
- Remove the stopscrew (8) of the fork pin.
- Remove the pin (4) by passing it through one of the vents of the clutch housing.
- Remove the spring (7), the anti-rattle bushes(3) and the fork (9).

4. **Remove the rear gearbox cover :**

Remove the fixing bolts (11) and release the cover.

5. **Remove the clutch housing :**

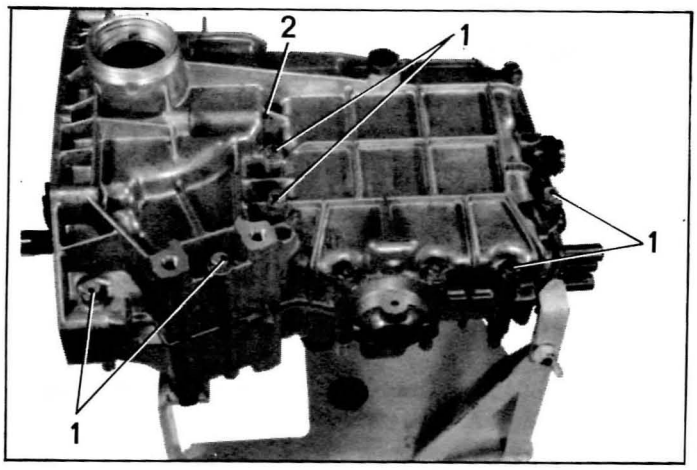
Remove the fixing nuts (10) and release the housing.

6. Blank off the orifice « a » with a finger.

Remove the split pin (12).

Release the blanking pellet from orifice « a ».

Supplement N° 1 to Manual 810-2 (CORR)



9177

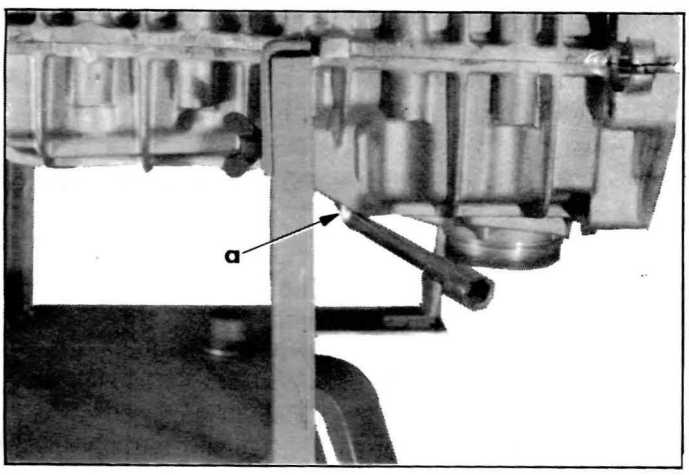
7. Remove the right-hand half casing of the gearbox :

Remove the securing bolts and nuts (1) and (2).

As the case may be, the bolt (2) is located on the right-hand or left-hand casing at « a ».

Remove the right-hand half casing.

CAUTION : Care must be taken that the locking ball (8), the ball (and socket) guide (6) and the guide thrust spring do not fall down (recover these three parts).



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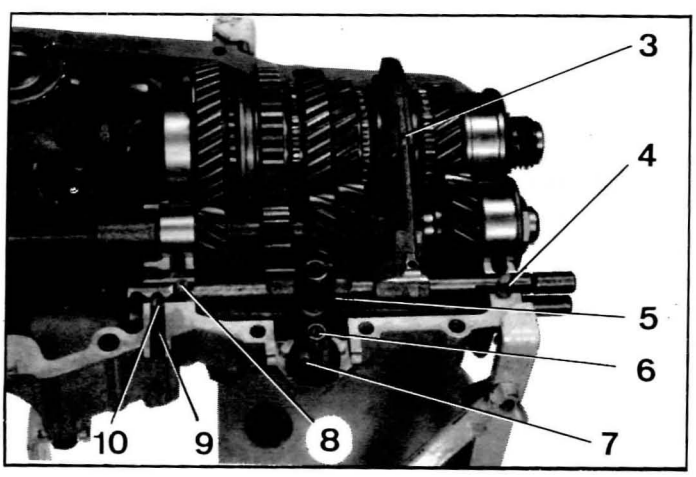
Remove :

- the plate (5) holding the return spring,
- the ball and socket (7),
- the plunger (4), the spring (9) and the locking ball (10).



9186

10. Remove the gear cluster assembly of the gearbox

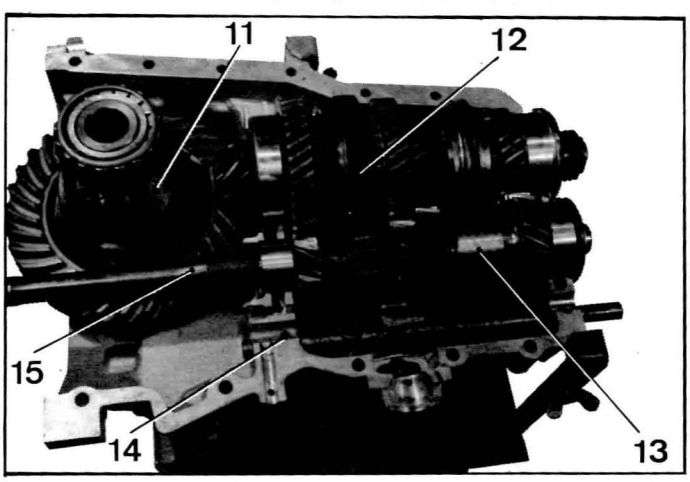
a) Remove :
- the shaft and fork (3) of the 3rd and 4th gear,
- the locking ball (14).

b) Remove the input shaft (15) and primary shaft (13) assembly,

c) Remove the bevel pinion assembly (12).

d) Remove the differential (11).

Remove the roller bearing outer races from the half casings. *Mark them with the corresponding bearings.*

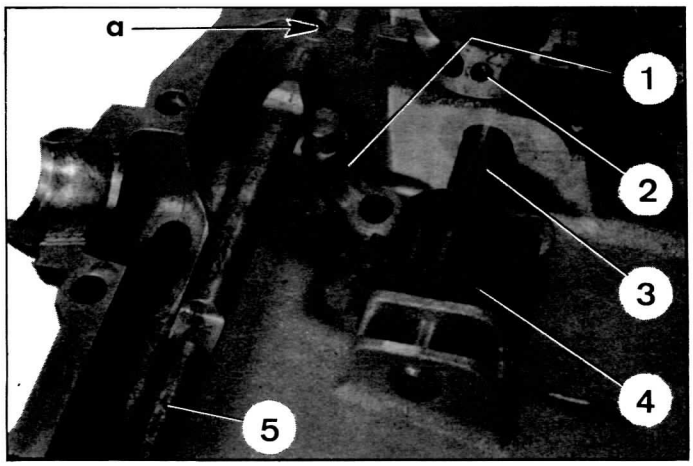


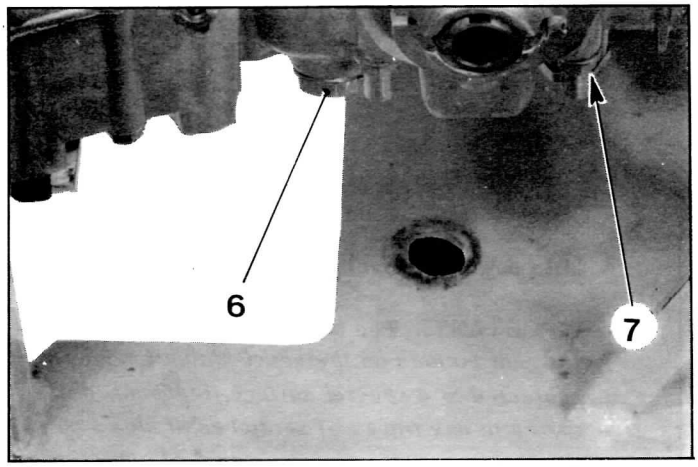
7573

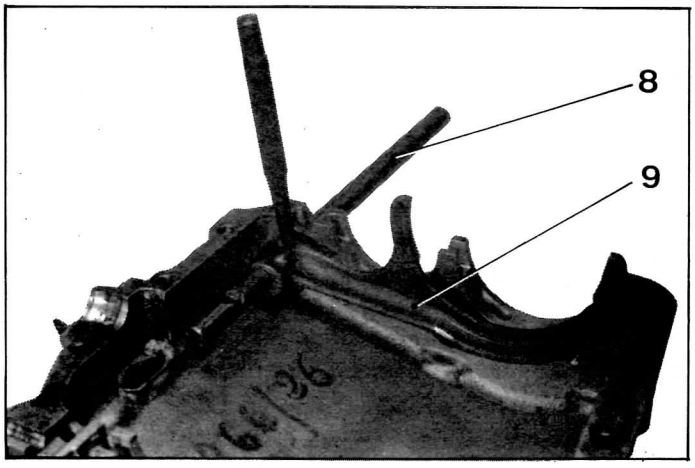
IMPORTANT NOTE : If reconditioning the gearbox does not entail changing the following :

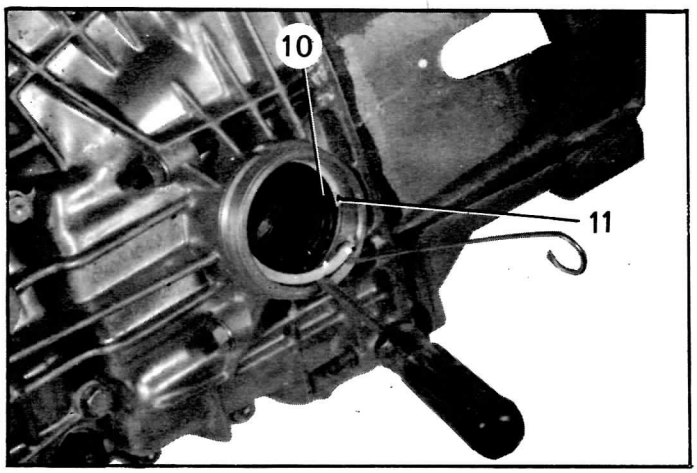
- the gearbox casing,
- the crown wheel and pinion,
- the differential bearings,
- the differential casing.

mark the position of the adjusting shims to avoid having to re-set the backlash.









II. STRIPPING DOWN THE ASSEMBLIES

1. Strip down the left-hand half-casing :

a) Remove the reverse gear intermediate wheel (4).
To do this :
- remove the cylindrical pin (2) (which is free in its housing),
- release the spindle (3) and remove the intermediate wheel (4).

b) Remove the reverse gear lever (1). To do this :
- remove the lever spindle (6) (unscrew it through the underside of the half casing,
- remove the lever (1).

c) Remove the blanking plug (7) (unscrew it through the underside of the housing).
NOTE : On « *Club* » vehicles the reversing light switch takes the place of plug (7).

d) Remove the reverse gear control shaft (5).
To do this :
- free the shaft (5) towards the rear by placing a finger on orifice « a » of the housing of the lock ball to avoid the latter springing out.
- remove the locking ball and its spring in « a ».

e) Remove the circlip (11) *(if fitted)*

f) Remove the seal (10) of the drive outlet shaft (Drive it out using a tube).

2. Strip down the right-hand half casing :

a) Remove the 1st and 2nd gear fork (9).
To do this :
- free the shaft (8) and fork (9) assembly towards the rear, by placing a finger on the locking ball orifice to prevent the locking ball springing out.
- remove the locking ball and its spring
- remove the roll pin from the fork (9) (Use a 5 mm diameter pin extractor).

NOTE : When removing the pin, place the shaft-fork assembly against the rear shaft bearing to avoid damaging it.

b) Remove the drain plug and the oil level plug.

c) Remove the circlip (11) *(if fitted)*.

d) Remove the drive outlet shaft sealing ring (10) (drive it out using a tube).

Supplement N° 1 to Manual 810-2 (CORR)

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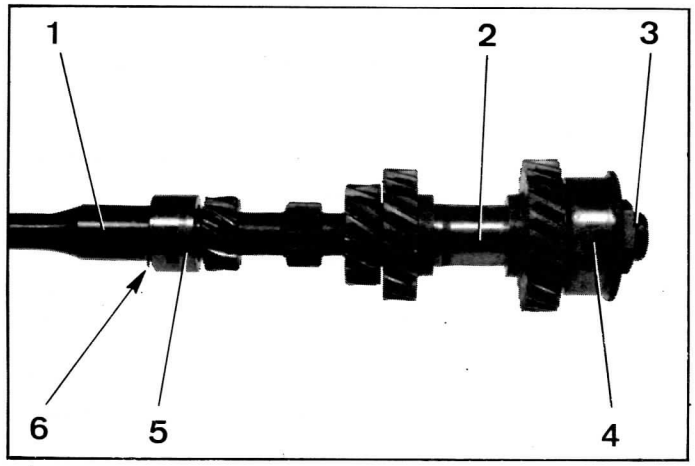


9087

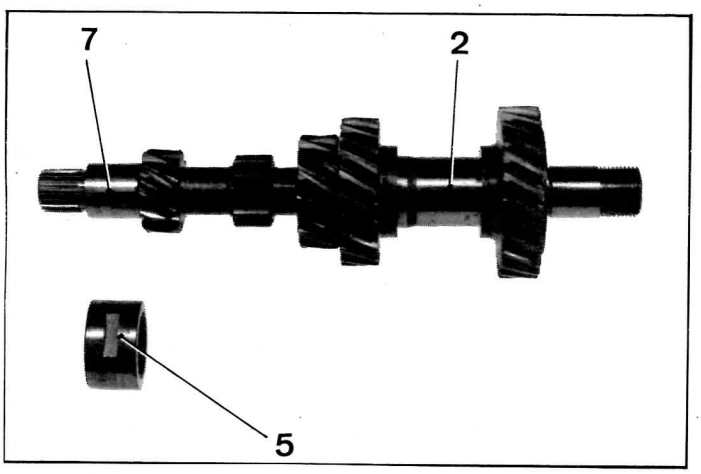
3. Strip down the input shaft/primary shaft assembly :

Remove the circlip (6) and uncouple the input shaft (1) from the primary shaft (2).

Remove :

- the needle bearing (5),
- the nut (3) (locked by peening)
- the bearing (4).

NOTE : The inner race (7) is not interchangeable.



9088

4. Strip down the bevel pinion :

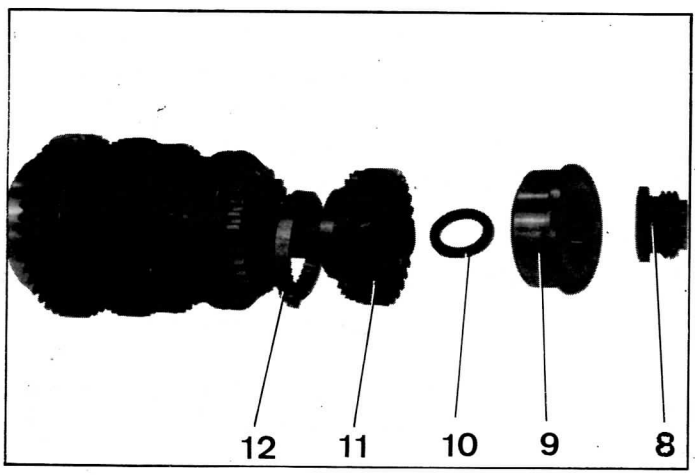
IMPORTANT : *The bearings of the 4th, 3rd and 1st gear pinions on the bevel pinion have been subjected to a special surface treatment, and therefore any traces of scratches or blows on the bearings risk causing seizure of operating parts.*

The necessary precautions should, therefore, be taken during the dismantling of the parts.

a) Remove :
- the screw-nut (8) (locked by peening),
- the bearing (9),
- the adjusting shim (10) (conic distance),
- the 4th gear idling pinion (11),
- the 4th gear synchro ring (12).

NOTE : If the gearbox is to be reconditioned without changing the following :
- the housing,
- the bevel gear,
- the bearing (9),

retain the adjusting shim (10) to avoid having to re-set the conic distance.



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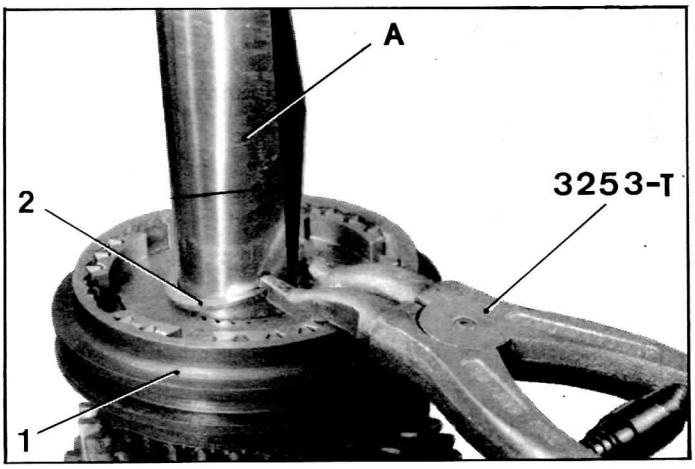
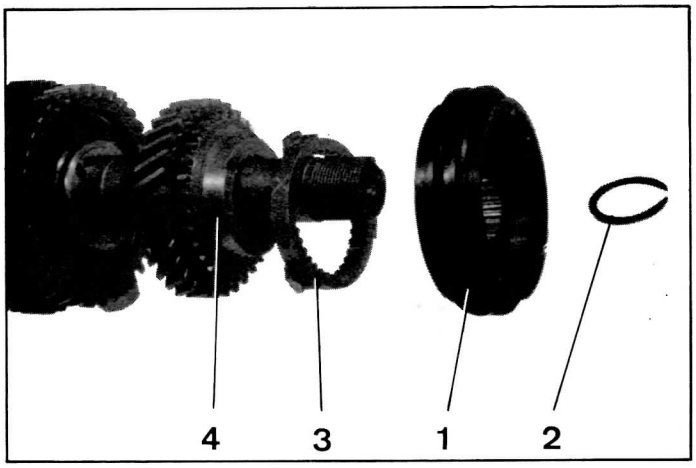


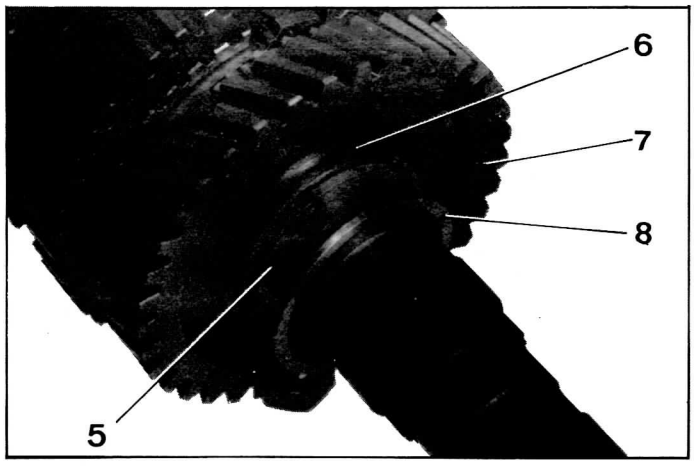
b) Remove the locking ring (2) from the synchro hub (1) of 3rd and 4th gear. To do so :
- wrap the end of the bevel pinion in a sheet of foil A (0.10 mm thickness). Hold it against the ring (2). Slightly separate the ends of the ring with the aid of plier 3253-T. Slip the foil under the ring (2).
Remove the ring, sliding on the foil.



- Remove :
  - the synchro hub sliding gear assembly (1) of 3rd and 4th gear,
  - the 3rd gear synchro ring,
  - the 3rd gear idling pinion (4).

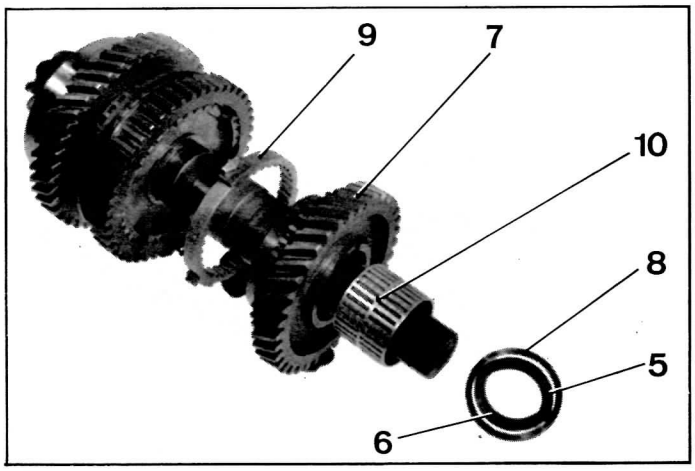
NOTE : The 3rd and 4th gear synchro rings are identical.

However, if these parts are not renewed, they must be left matched with the corresponding pinions.



c) Remove the 2nd gear idling pinion :

Release the washer (8) and remove the two half-washers (5) and (6).



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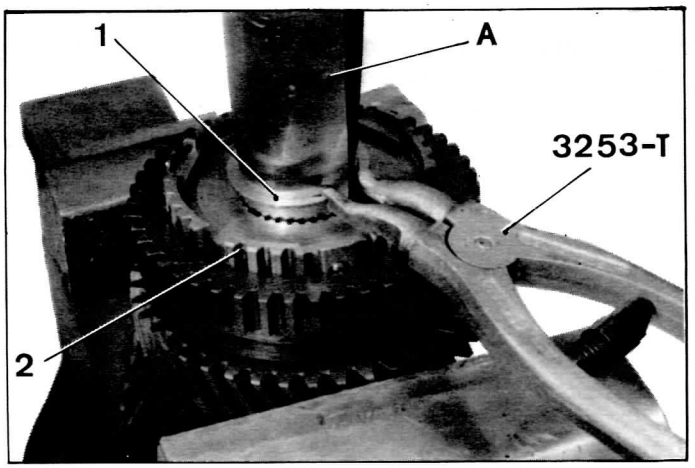
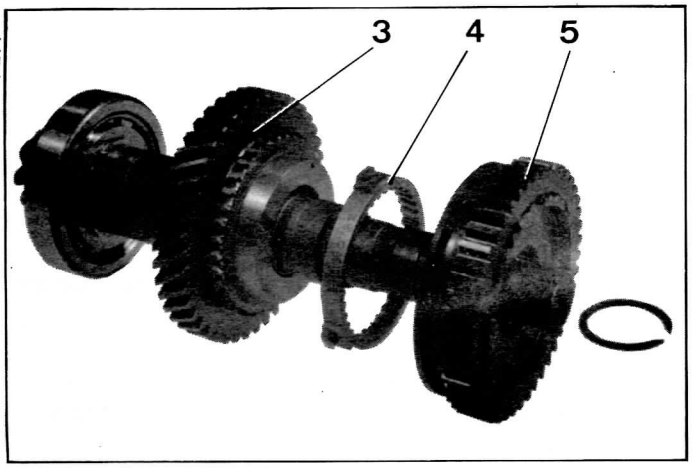
Remove :

- the 2nd gear pinion (7),
- the needle cage (10), or the dowels and their spring,
- the 2nd gear synchro ring (9).

7871



7299



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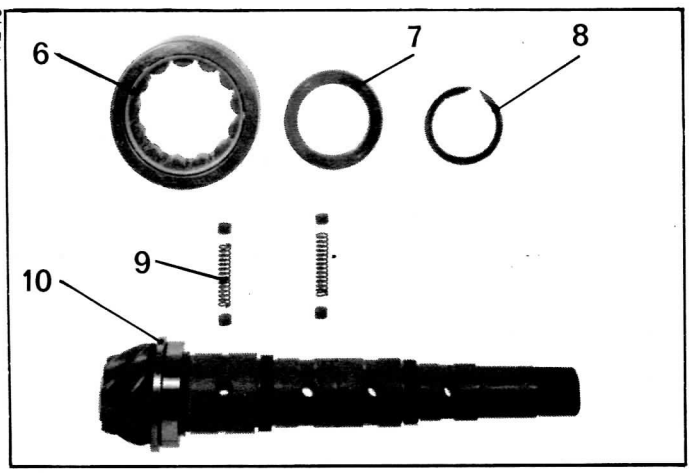


d) Remove the locking ring (1) of the 1st and 2nd gear synchro hub (2). To do so :
Wrap the body of the drive pinion with a sheet of foil (0.10 mm thickness).
Hold it against the ring (1).
Slightly separate the ends of the ring with the aid of plier 3253-T. Slip the foil under the ring (1). Slide the ring and the foil along the body of the pinion.
Remove :
- the 1st and 2nd gear synchro hub sliding gear assembly (5),
- the 1st gear synchro ring (4),
- the 1st gear idling pinion (3),
- the dowel pins and their springs (9) *(if fitted)*.

NOTE : The 1st and 2nd gear synchro rings are identical.
However, if these parts are not renewed, they must be left matched with the corresponding pinions.

e) If necessary, remove the front bearing of the bevel pinion. To do so :

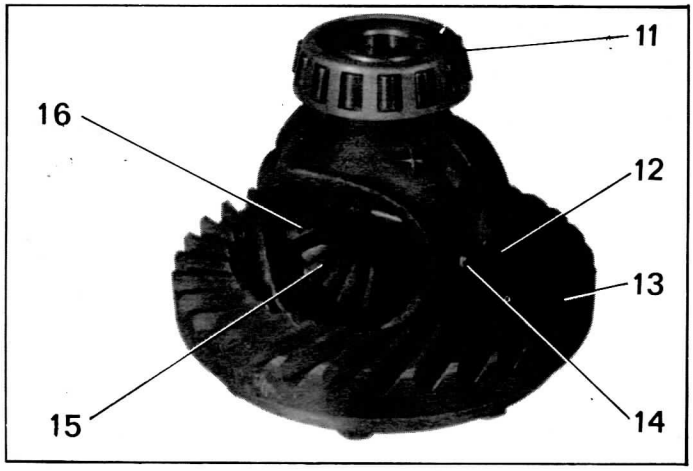
Remove :
- the locking ring (8),
- the thrust washer (7),
- the bearing (6).

Remove the inner ring (10) of the bearing press and tube (inside diameter = 50 mm, length = 60 mm).

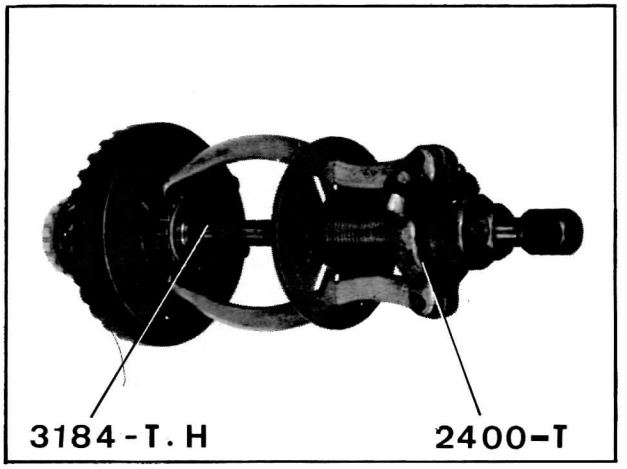
5. Dismantle the differential :

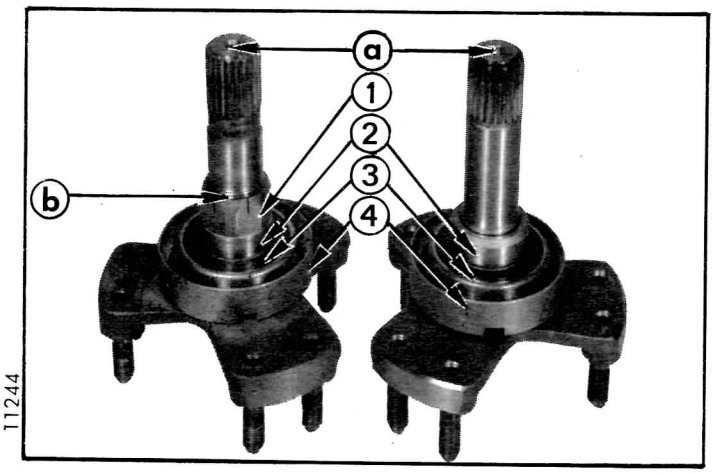
- Remove the pin (14) and clear the spindle (12).
- Release the satellite gears (16) and then the planetary gears (15).
- Remove the differential ring (13).
- Remove the tapered bearings (11) (Use the all-purpose extractor 2400-T and pad 3184-T.H).

7396



9463





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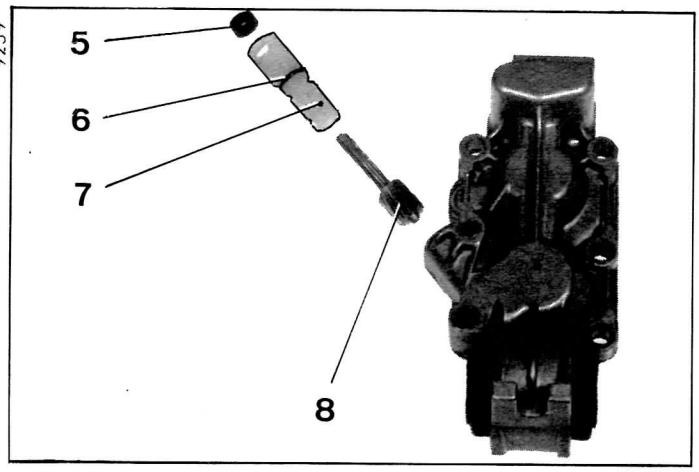
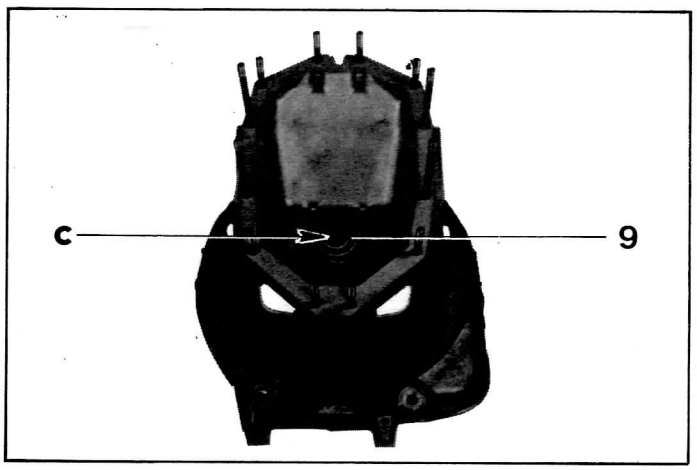
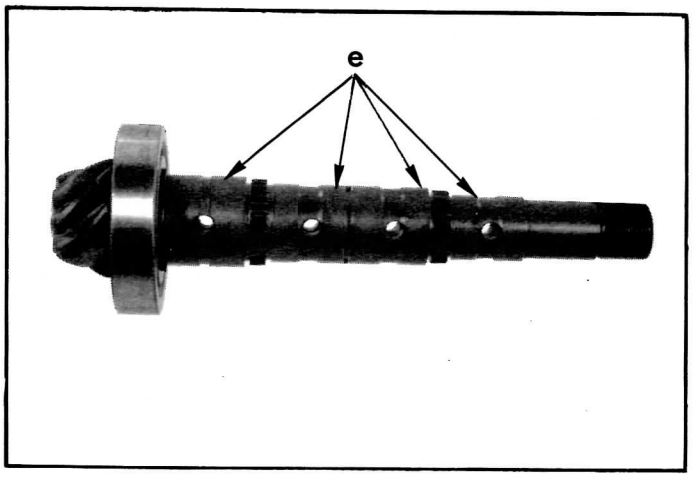


9239



9188



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Supplement N° 1 to Manual 810-2 (CORR)

6. Strip down the gearbox drive outlet shafts :

- Grease the visible portion « b » of the thread and remove the nut (1) (if fitted).
- Remove the bush (2).
- Remove the bearing (3) : use a universal extractor resting on the ring-nut (4) as close as possible to the shaft.

NOTE : The extractor used should have a central screw fitted with a ball to avoid damaging end « a » of the shaft.

7. Strip down the rear cover :

Release the speedometer socket (7) from the cover.

Uncouple the speedometer drive gear (8).

Remove seals (5) and (6).

8. Strip down the clutch housing :

Remove the studs (stud remover 2410-T).

Remove the seal (9) of the main shaft : the tip of a screwdriver under the metallic flange « c » of the seal and lever to free the seal from its housing.

9. Clean the parts :

IMPORTANT : The bearing surfaces « e » of the different gears on the bevel pinion should be free from defects.

CAUTION : Any grinding of these surfaces is strictly prohibited especially on the bearing surfaces of the 1st, 3rd and 4th gear wheels which have undergone special surface treatment.

III . PREPARATION OF THE ASSEMBLIES

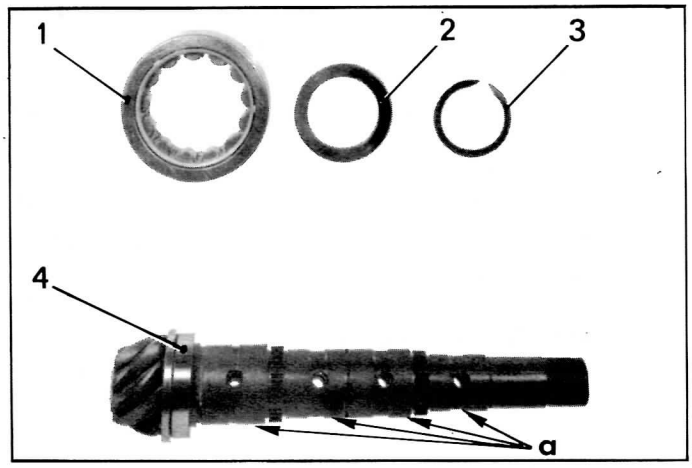
1. Prepare the gearbox drive outlet shaft :

Fit on each shaft :

- the bush-nut (4),
- the sealed bearing (3) (Press-fit the bearing using a tube having an inside diameter of 26 mm, an outside diameter of 34 mm and a length of 120 mm),
- the bush (2).

IMPORTANT : The bush (2) (against which the seal bears) must not show any trace of scratches or damage. If it does, renew it.

Fit and tighten the nut (1) from 140 to 160 m.N (14 to 16 m.kg) (101 to 116 ft.lb) (if necessary).



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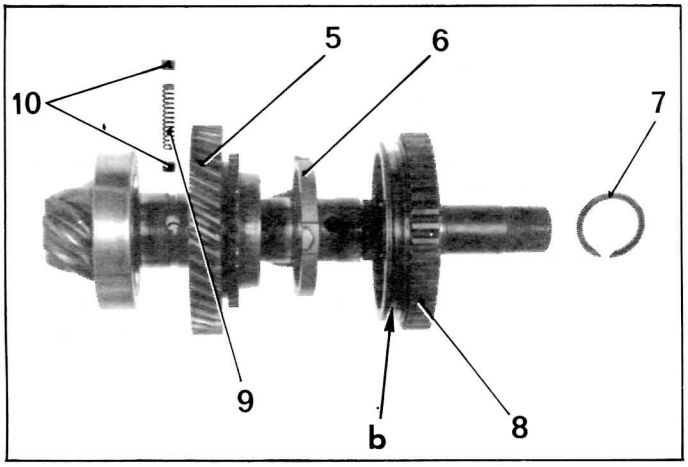

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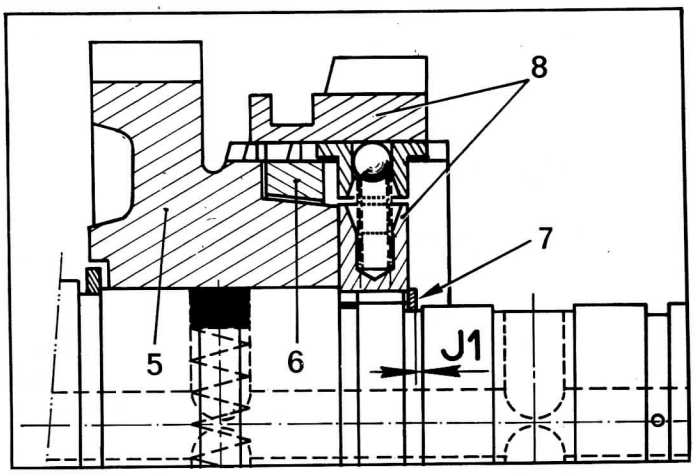
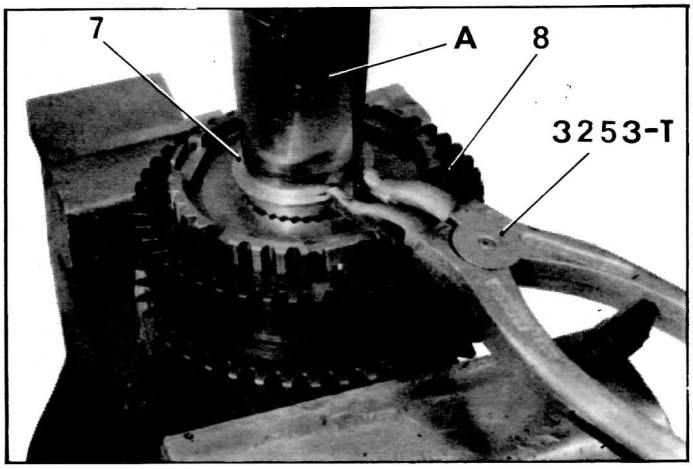


G. 33-19



7871

2. Prepare the bevel pinion assembly :

IMPORTANT : *The bearing surfaces « a » of the wheels of the 1st, 2nd, 3rd and 4th gears on the shaft having been given a special surface treatment, any traces of scratches or damage risk causing seizure of operating parts.*
The necessary precautions should, therefore, be taken during the dismantling of these parts.
Oil all parts before fitting.

a) Fit the roller bearing :
- Press fit the inner race (4) with the aid of a tube (inside diameter = 45 mm, length = 220 mm).
- Fit the roller bearing (1) with the smallest bore of the roller cage on the toothed side of the pinion.
- Fit the thrust washer (2), *the face not showing any inscription on the roller side.*
- Fit the locking ring (3) with the aid of pliers 3253-T.

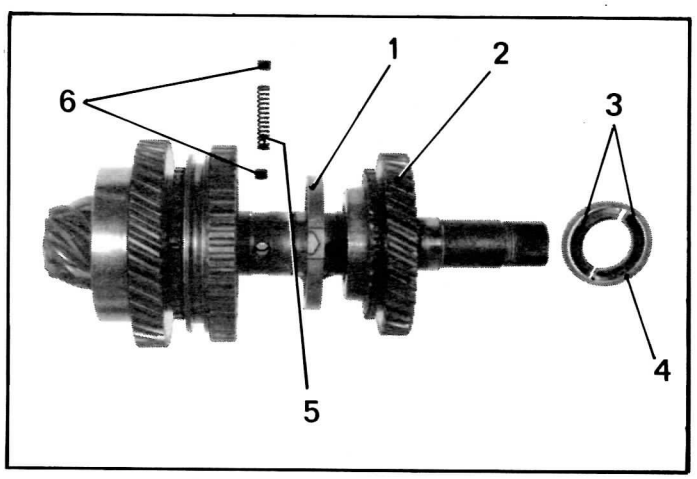
CAUTION : To avoid scoring the bearing surface of the 1st gear pinion, use a sheet of foil as indicated in paragraph d).

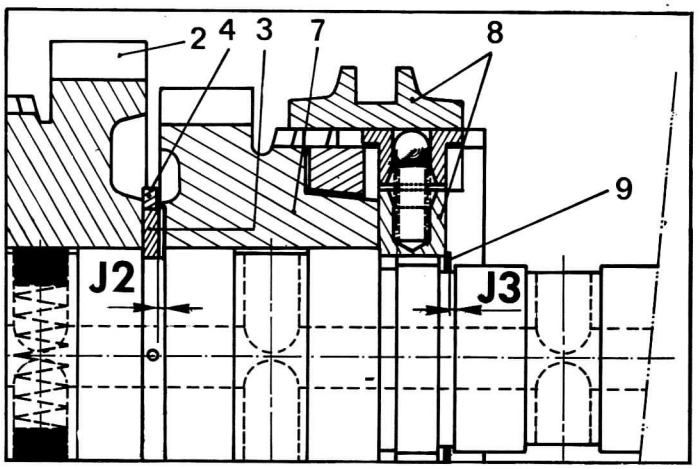
b) Fit :
- the retarding dowels (10) and their spring (9) *(if there are any)*, use pliers MR.630-27/18.
- the 1st gear pinion (5),
- the 1st gear synchro ring (6),
- the synchro hub-sliding gear assembly (8) of the 1st gear, *the groove « b » towards the 1st gear pinion.*

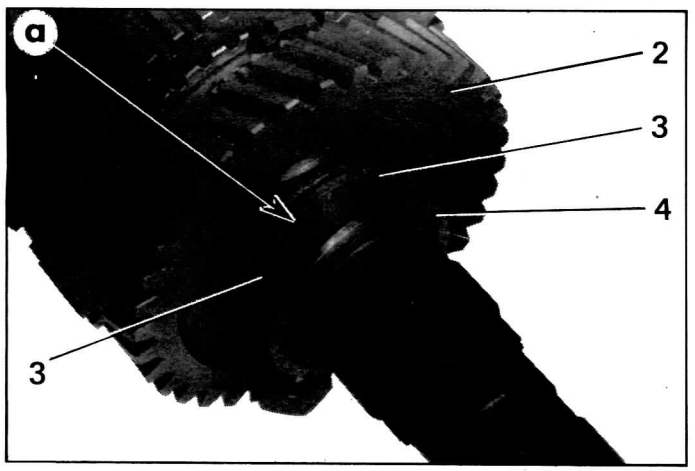
NOTE : *Since March 1, 1971,* the synchro rings and pinions of 1st and 2nd gears have been modified.
On the gearboxes produced prior to that date, the exchange of a ring entails the exchange of the corresponding pinion.

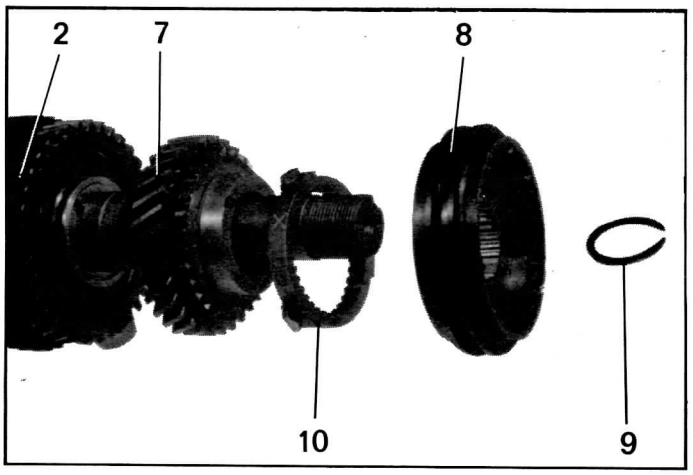
c) *Adjust the axial clearance of the synchro hub of 1st and 2nd gear :*
From the locking rings sold by the Replacement Parts Department select the one which will give maximum clearance **J1 = 0.05 mm** (a shim of 0.05 mm must not pass between the ring (7) and the side of the groove).
The ring thicknesses vary in steps of 0.04 mm.

d) Fit the locking ring (7):
Wrap the body of the bevel pinion with a sheet of foil A (thickness = 0.10 mm).
With the aid of pliers 3253-T, slightly separate the ring ends (7). Engage it on the foil. Slide the foil and ring assembly until the ring can insert itself in its groove.









e) Fit :
- the 2nd gear synchro ring (1),
- the retarding dowels (6) and their spring (5),
- or the needle cage *(if there is one)*,
- the 2nd gear pinion (2).

NOTE : *Since March 1, 1971*, the synchro rings and pinion of the 1st and 2nd gears have been modified.
On gearboxes produced prior to that date, the exchange of a ring entails the exchange of the corresponding pinion.

f) *Adjust the clearance of the thrust bearings of the 2nd and 3rd gear wheels by choosing the thickness of the adjusting half-washers (3).*

With the half-washers in place, there should be a maximum clearance **J 2 = 0.05 mm** between the half-washer and the side of the groove (a shim of 0.05 mm should not pass).
The thickness of the half-washers is graduated in steps of 0.03 mm. Choose the thickest half-washer than can be fitted in the groove.

NOTE : The two half-washers must have the same thickness.

Fit the two half-washers (3) on both sides of the stop lug « a ».
Fit the washer (4).

g) Fit :
- the 3rd gear pinion (7),
- the 3rd gear synchro ring (10),
- the 3rd and 4th gear synchro hub-sliding gear assembly (8).

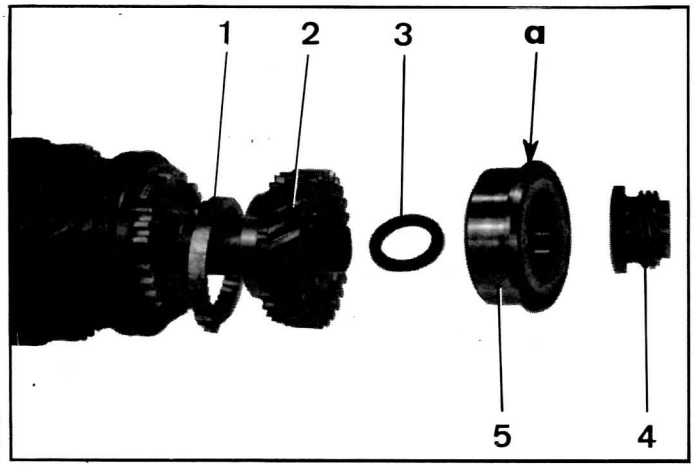
NOTE : The assembly (8) is symmetrical.

h) *Adjust the end clearance of the synchro hub of the 3rd and 4th gears :*
This clearance J 3 must be a maximum of 0.05 mm.

Proceed in the same way as for the synchro hub of the 1st and 2nd gears.
(See paragraph c)).

i) Fit the locking ring (9).

Proceed in the same way as for the synchro hub of the 1st and 2nd gears.
(See paragraph d)).



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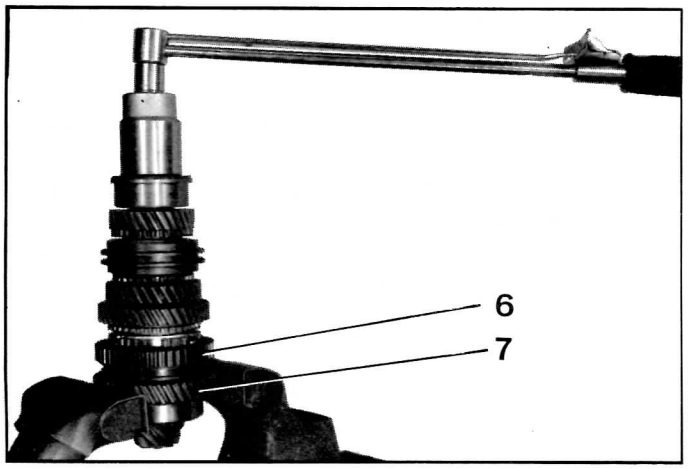
j) Fit :
- the 4th gear synchro ring (1) and pinion (2),
- an adjusting washer (3) of known thickness,
- the bearing (5), *the shoulder « a » pointed towards the rear of the bevel pinion,*
- the nut (4).

Tighten the nut (4) from 100 to 120 m.N (10 to 12 m.kg) (72 to 87 ft.lb) (torque wrench) *without peening.*

NOTE : To hold the bevel pinion still during this operation, clamp the first gear pinion (7) (interlocked with the bevel pinion by the slider (6) of the 1st and 2nd gears) in a vice fitted with soft jaws.

CAUTION : Never clamp the slider (6) of the 1st and 2nd gears in a vice.

IMPORTANT : For the conic distance adjustment operation of the pinion, it is imperative to fit an adjusting washer (3) and tighten the nut (4) with the torque wrench.



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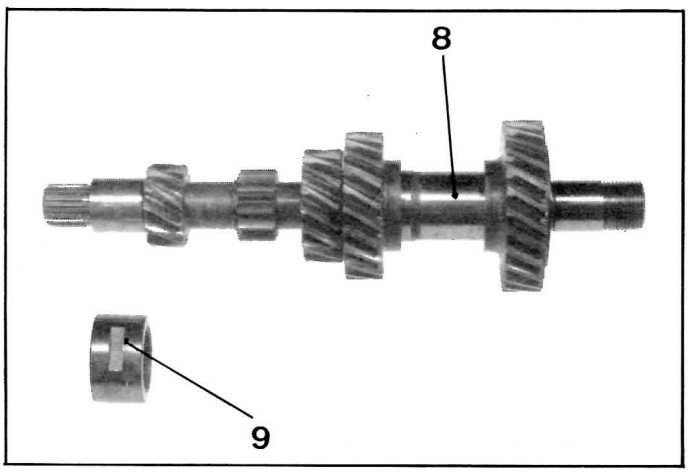


-9088

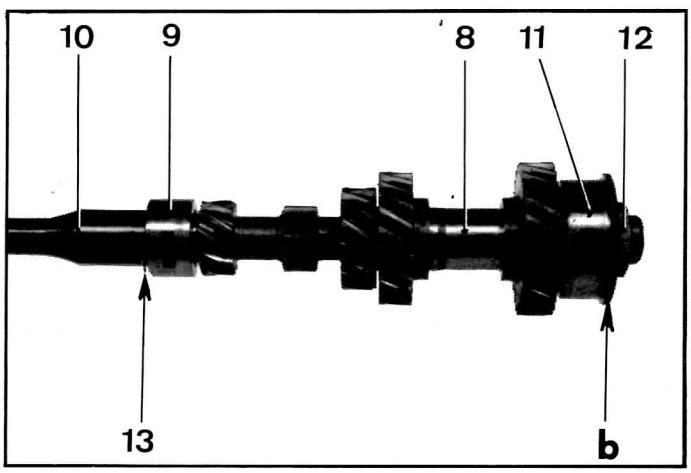
3. Prepare the input shaft/primary shaft assembly :

a) Fit the ball bearing (11), *with the shoulder « b » pointed towards the rear.*

Hold the primary shaft by one of its pinions clamped in a vice fitted with soft jaws.

Tighten the nut (12) from 70 to 85 m.N (7 to 8.5 m.kg) (50 to 61 1/2 ft.lb) (torque wrench).

Lock the nut by peening the metal in the groove of the shaft.



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b) Fit the needle bearing (9).

c) Couple up the input shaft (10) to the primary shaft (8) by slightly separating the ends of the locking ring (13).

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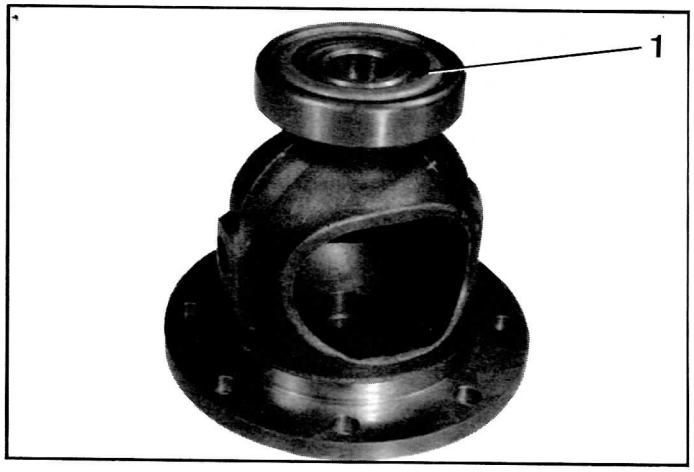
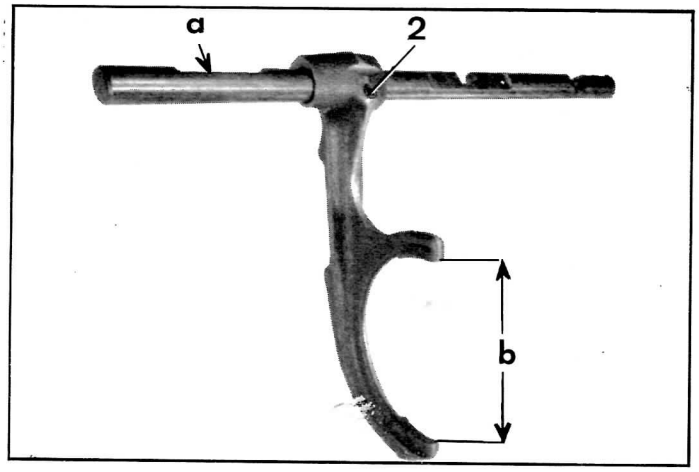
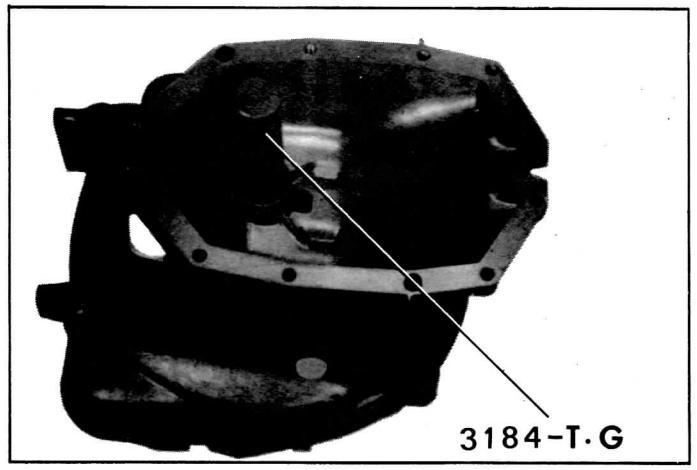
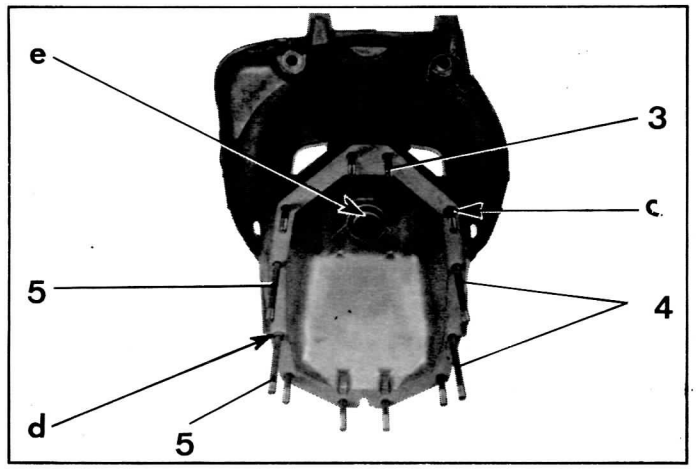








9188

4. Prepare the differential casing :

Press fit the conical roller bearings (1) with the aid of a tube (inside diameter = 36 mm, outside diameter = 45 mm, length = 40 mm).

NOTE :
- Do not reverse the outer races of the bearings.
- The differential casing should be completely fitted only after the adjustment on the bevel gear.

5. Prepare the 3rd and 4th gear fork :

NOTE :

- The opening « b » of the 3rd and 4th gear fork is smaller than that of the 1st and 2nd gear fork.
- The operating pin of the 3rd and 4th gears is recognizable by the flat part in « a » (interlock plunger passage).

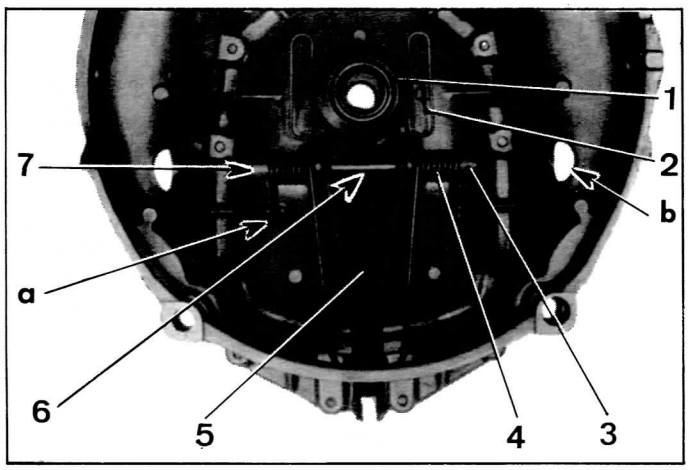
Couple up the fork to the pin (see illustration for positioning).
Fit the locking roll pin (2).
Lightly oil the spindle and grease the locking notches.

6. Prepare the clutch housing :

a) Fit the seal on the control shaft :
Smear the housing bore and the periphery of the seal with grease.
Fit the seal (metallic flange « e » visible on the studs side) with the aid of mandrel 3184-T.G and a mallet.

b) Fit the assembly studs (use tool 2410-T).
NOTE : The shortest threaded portion of the studs fits into the clutch housing.
The studs are of three different lengths.
Fit them in the following manner :
- in (4) and (5) : the four longest studs.
- in (3) : the average length stud.
- in the other locations : distribute the shortest studs.

NOTE : Make sure that there are two centring bushes present in « c » and « d ».



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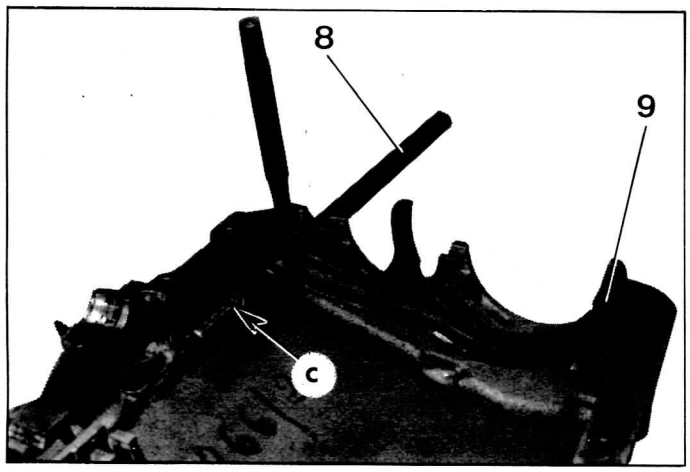
c) Fit the clutch release fork and the thrust bearing :
Fit the two anti-noise bushes (3) in the coils of the springs (4), the shoulders placed face to face.
Lightly oil the pin (7).
Hold the fork (5) and its spring (4) in place.
Engage the pin (7) through one of the orifices « b » of the housing and then in the spring of the fork and its bearings.
Position the pin and tighten the bolt (6) (shake-proof washer).
Fit the two free ends of the spring (4) resting on the bosses « a » of the housing.
Fit the bearing (1) (support previously oiled).
Fit the spring clip (2) locking the bearing on the fork.



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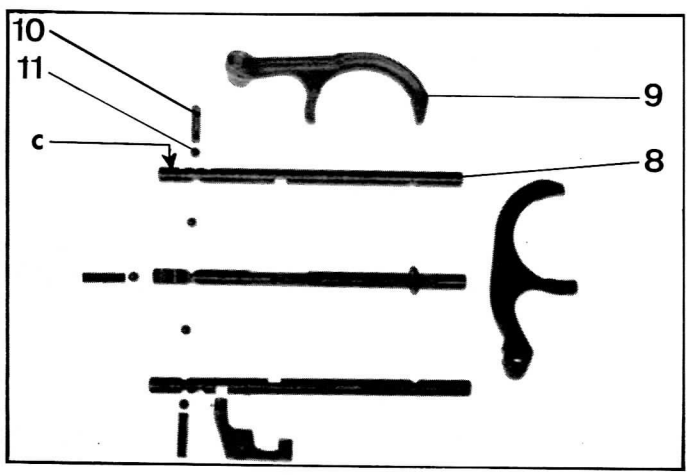
7. Prepare the right-hand half casing :

Lightly oil the spindle (8) and grease the locking notches.
- Engage the operating spindle (8) of the fork (9) of the 1st and 3nd gears in the rear bearing *(notches « c » towards the differential)*.
- Engage the fork (9) on the spindle (8).
- Fit the locking roll pin of the fork (9). (5 mm diameter pin-punch).

NOTE : When fitting the locking pin, place the spindle and fork assembly against the rear shaft bearing to avoid damage.

- Fit the locking spring (10) and ball (11) into their housing (greased beforehand).



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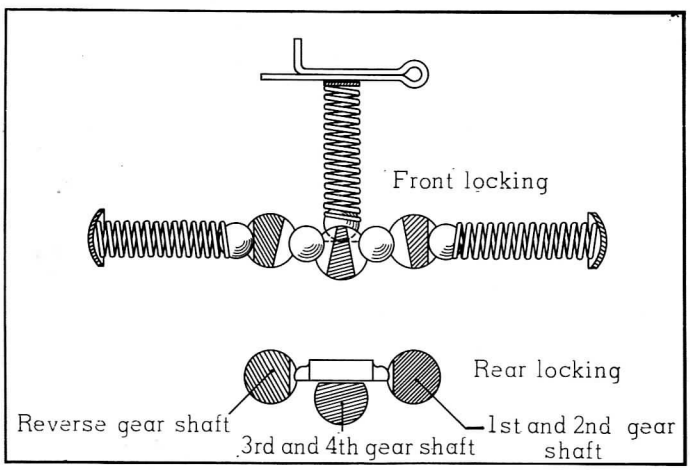
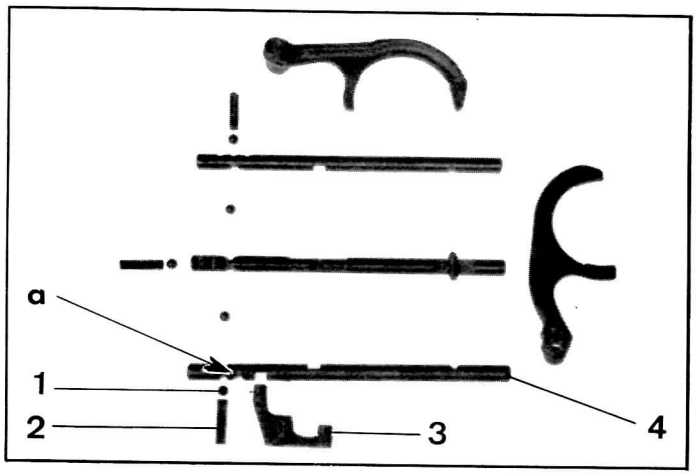
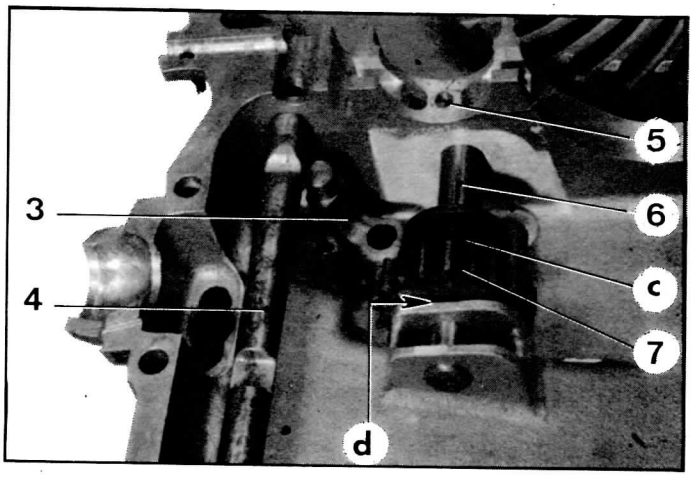
NOTE : The five balls and three springs of the locking device are identical.

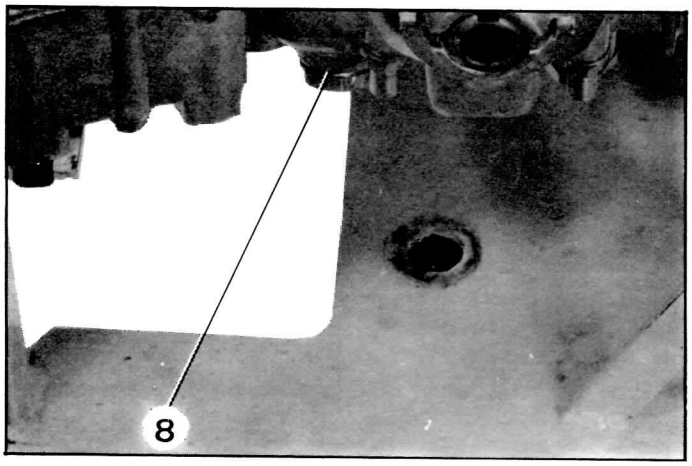
- Compress the ball and the spring (5 mm diameter rod) and engage the spindle (8) in the front bearing.



G. 33-11







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8. Prepare the left-hand half casing :

a) Fit the reverse idler pinion :
Oil the spindle (6), engage it in the rear boss : fit the stop notch towards the differential, approximately upright.

NOTE : *On vehicles produced since April 1971* a spacer is inserted in « d » between the pinion (7) and the rear boss.

Offer up the pinion (7), *with the groove « c » towards the differential*.

Complete the fitting of the spindle (6) and engage the cylindrical pin (5) fully in its housing.

NOTE : The pin (5) which locks the needle bearing of the primary shaft must slightly protrude beyond the thrust face of this bearing.

b) Fit the spindle operating the reverse gear lever :

- Oil the operating spindle (4) and grease the locking notches.
- Fit the spring (2) and the ball (1) of the locking device (greased beforehand) into housing « b » (See Note of paragraph 7)
- Engage the spindle (4) *(locking notches « a » towards the differential)* in the rear bearing.
- Compress the locking ball and spring (5 mm diameter rod) and engage the spindle (4) in the front bearing.

c) Engage the reverse gear lever (3) under the spindle (6) and fit it in the groove of the pinion (7) and the groove of the spindle (4).

Fit and tighten the spindle (8) of the lever (3) (greased beforehand) from 27 to 33 m.N (2.7 to 3.3 m.kg) (19 1/2 to 24 ft.lb).

9. Fit the seal on the gearbox drive outlet shafts :

On each half housing : grease the bore of the housing and the periphery of the seal.

Position the seal in its bore, *the lip towards the inside of the box.*

a) *Gearbox without bearing circlip :*

Fit the seal with the aid of mandrel E. (contained in kit 3184-T bis).

NOTE : After fitting, the seal is recessed by 3 ± 0.5 mm in relation to the thrust face of the gearbox drive outlet shaft bearing.

b) *Gearbox with bearing circlip :*

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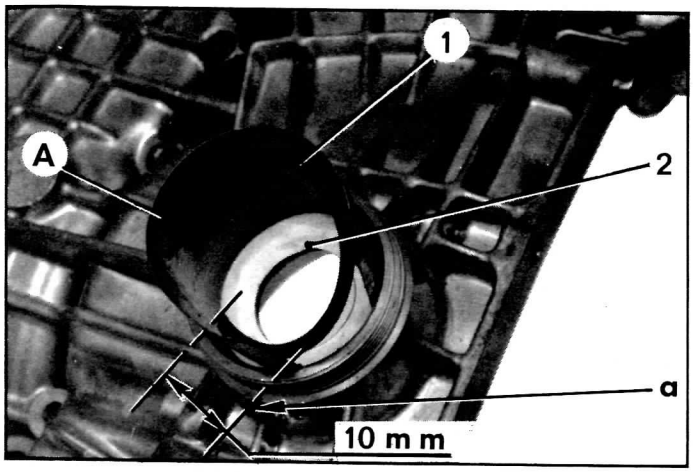


Fit the seal (2) with the aid of a tube, 51 mm diameter, or socket spanner 36 mm diameter.

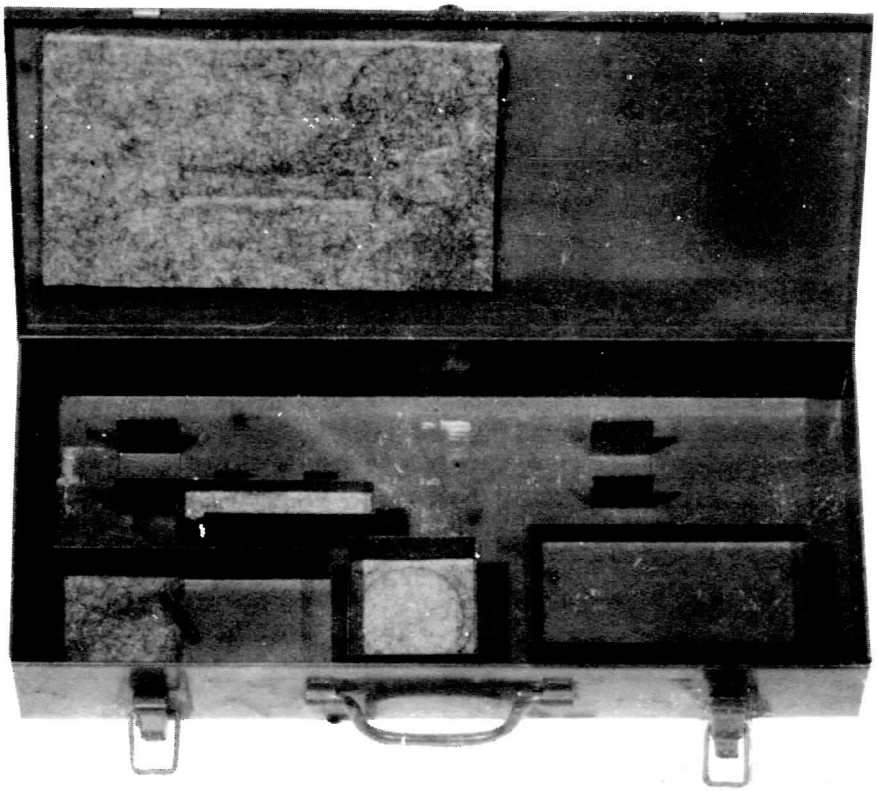
Insert the seal up to the level of the circlip groove. Insert the circlip (1) into the bore using a sheet of foil A with a length of 150 mm, thickness 0.20 mm and width 60 mm. Use the tube or the spanner to complete the positioning.

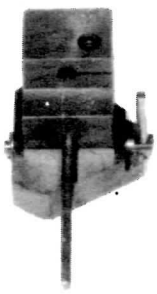
Remove the foil and finish fitting the circlip and the seal with the aid of a mandrel used for gearboxes without circlip.

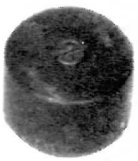
NOTE : After fitting, one of the edges of the circlip must be about 10 mm from the drain hole « a ».

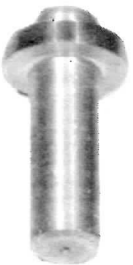
KIT 3184-T bis

14722





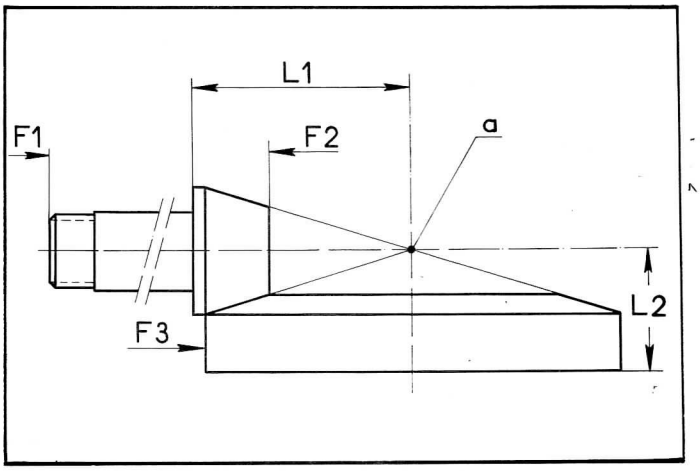




NOTE :
Kit 3184-T has been updated by the addition of the following tools :
- Mandrel 3184-T.G
- Thrust pad 3184-T.H

and is now referred to as 3184-T bis

G. 33-13



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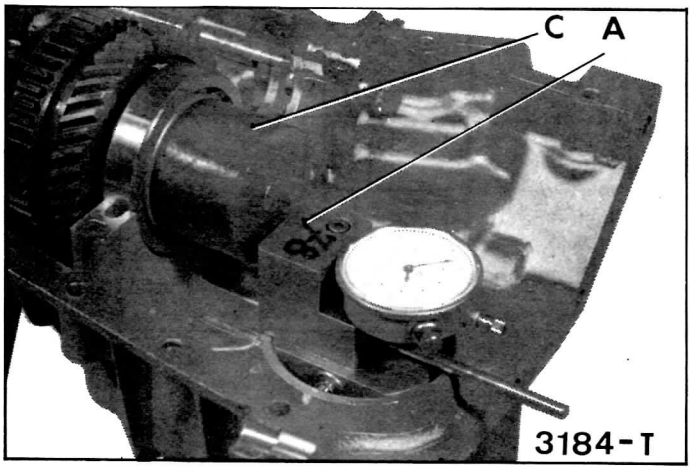

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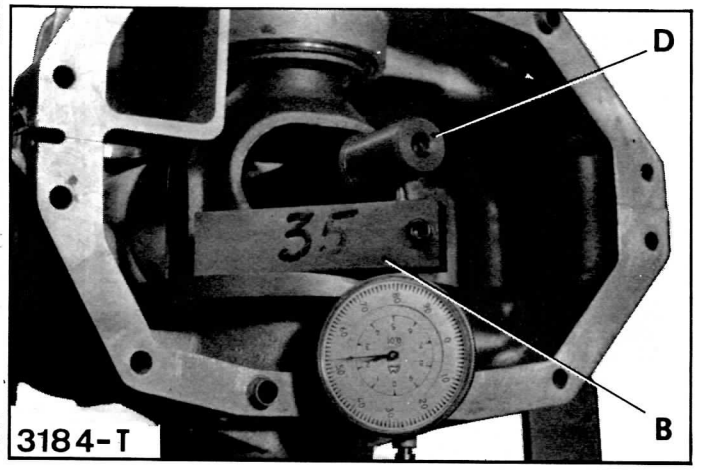

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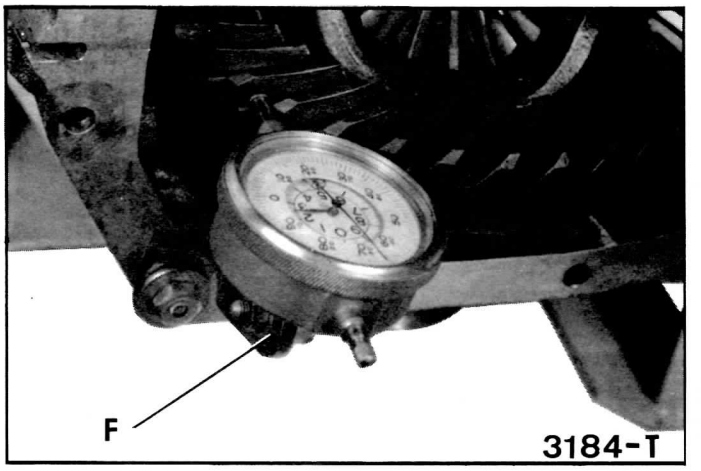

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IV. ADJUSTING THE CROWN WHEEL AND PINION

NOTE : This adjustment is of the utmost importance. Giving the teeth the correct setting will ensure silence and long service from the crown wheel and pinion.

The bevel pinion and the crown wheel are paired and marked with identical inscriptions engraved with an electrical scriber on face F 1 of the pinion shaft and the side F 3 of the crown wheel (always fit the same matched components of a bevel coupling).
NOTE : On some couplings, the pairing mark of the pinion is engraved not on face F 1 but on face F 2 of the pinion.

1. Adjustment principle :

In addition to the pairing mark, two dimensions are engraved on side F 3 of the wheel.

The larger dimension (ex. 82.05) represents the distance L 1 from the intersection « a » of the bevel gear centre lines to the thrust face for the roller bearing on the bevel pinion.

The smaller dimension (ex. 40.00) represents the distance L 2 of the intersection « a » of the bevel gear centre lines to the thrust face of the crown wheel on the casing.

To obtain these dimensions, it is necessary to adjust the position of the pinion and that of the wheel with the aid of washers whose thicknesses are to be determined.

The adjustment of the crown wheel and pinion must without fail be made by using the adjusting fixture 3184-T together with dial gauge 2437-T.

To adjust the position of the bevel pinion, use cap C and dial gauge support A.

To adjust the crown wheel, use mandrel D and dial gauge support B.

To check the backlash, use the dial gauge support F.

AL. 33-10

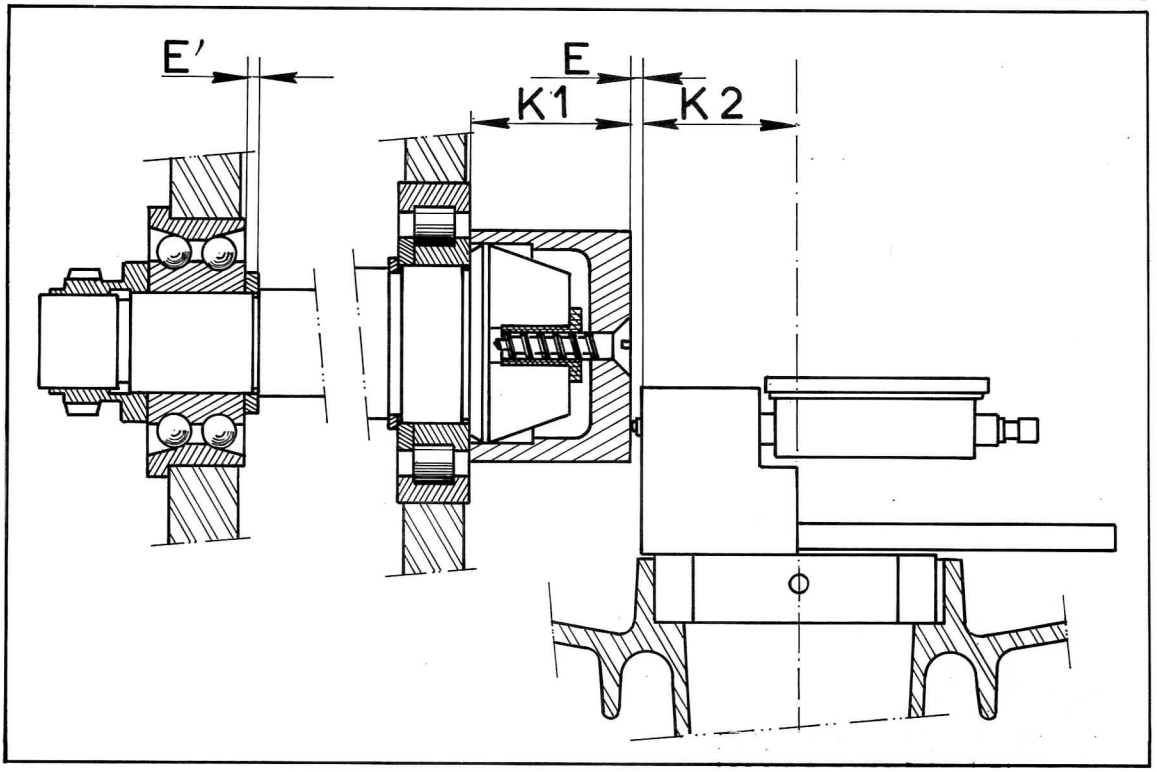

Figure 1

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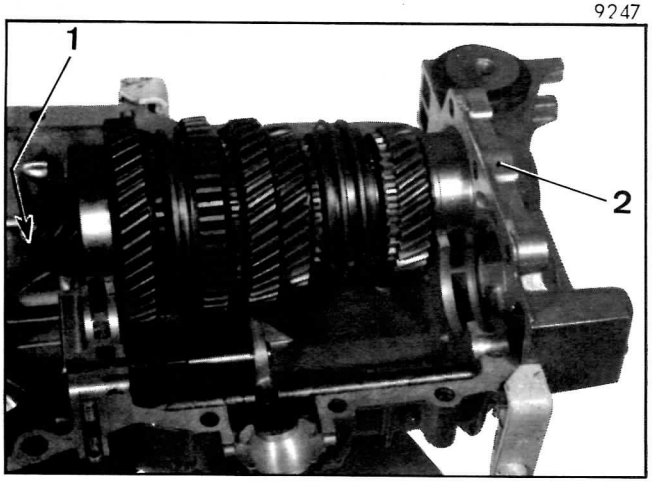

Figure 2

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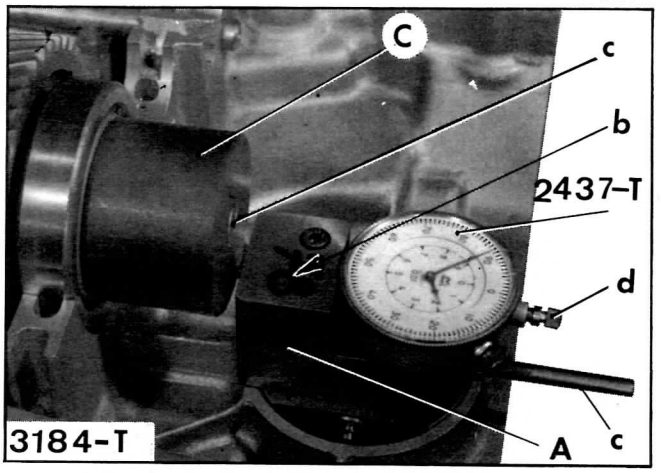

Figure 3

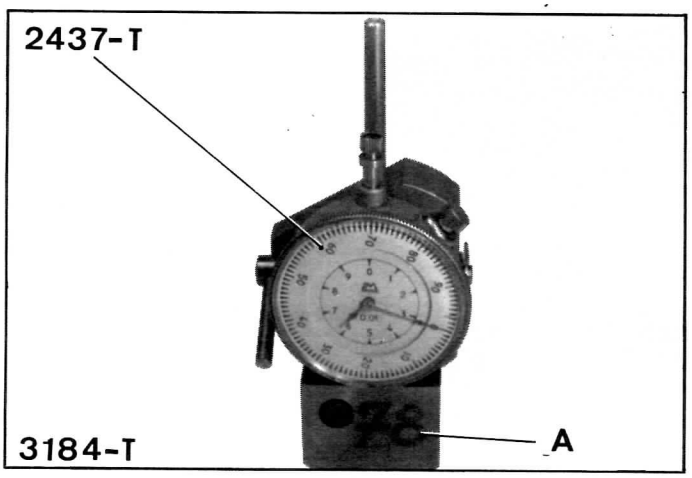

Figure 4

2. Adjusting the bevel pinion position :

a) Fit the bevel pinion and gear assembly in the left-hand half-casing. Fit the rear cover (2). Hold it in place with two bolts.
Note the larger dimension engraved on the crown wheel. It is for example : L1 = 82.00 mm.

b) Fit the cap C of assembly 3184-T as shown in figure (3). Hold in place with the screw « a » screwed into the plastic cap (1).

c) Carefully clean the differential bearing housing on the half-casing. : it should be free of any traces of blows or burrs (defects).

d) Fit dial gauge 2437-T on support A. Place the support on a surface-plate (see figure 4).
Bring the zero on the mobile dial opposite the large hand of the gauge. Mark the position of the total reading hand.
Example : Total reading hand between 6 and 7.
The assembly of cap C and support A with the dial gauge in the calibration position corresponds to a distance K + K2 = 78 mm. This dimension is engraved on the support A at « b ».

e) Fit support A into the casing. Fully engage it in the bore of the differential bearing.
Using handle « c », pivot the support first in one direction and then in the other, and immobilize it at the exact point where the large hand changes its direction of rotation.
Check the position of cap C : turn the bevel pinion : the gauge should show a maximum variation of 0.02 mm.
If not, change the position of cap A.

f) Ascertain the position of the bevel pinion :
Return the gauge hands to their calibration position (see paragraph d)
Example : Total reading hand between 6 and 7 and large hand on zero
Allow the dial gauge stem « d » to return slowly and count the number of revolutions and fractions of a revolution made by the large hand until the stem again contacts the cap.
Example : the large hand turns through 4.44 revolutions, therefore E 4.44 mm.
The position of the bevel pinion is therefore : K1 + K2 + E or 78 + 4.44 = 82.44 mm
The pinion is too far from the differential centre line : 82.44 - 82 = 0.44 mm
It is, therefore, necessary to replace the existing washer by one which is 0.44 mm thicker.
Example : the existing washer has a thickness of 2.50 mm.
It must be replaced by another with thickness : E = 2.50 + 0.44 = 2.94.

NOTE :
If the distance read is smaller than the dimension engraved on the bevel pinion, the latter is too close to the differential centre line and it is, therefore, necessary to replace the existing washer by a thinner one.

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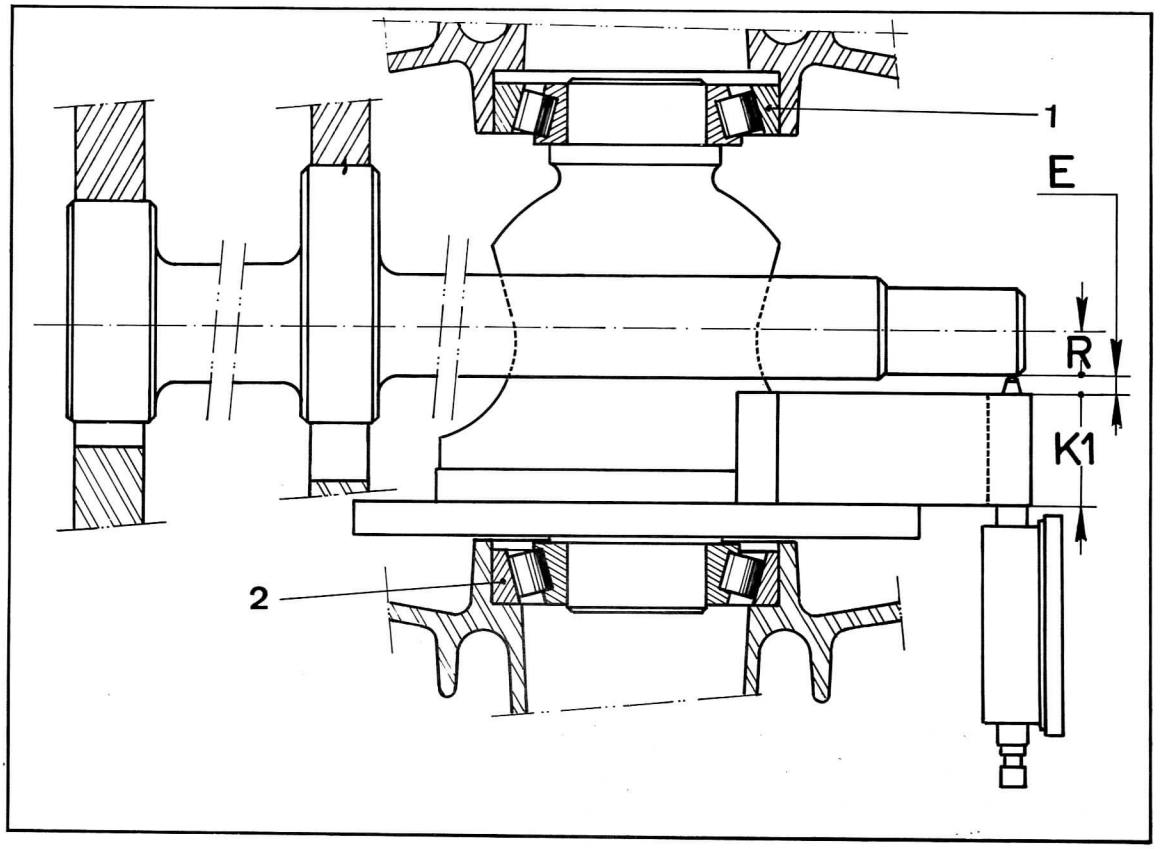
3. Remove the adjusting fixture, the rear cover and the crown wheel and pinion assembly.

4. Remove the nut from the bevel pinion.
Remove the bearing and the adjusting washer, replace it by a washer of known thickness.
NOTE : The washers sold by the Replacement Parts Department have thicknesses graduated in steps of 0.04 mm.
Choose a washer whose thickness comes closest to the value found.
Fit the bearing and the nut. Tighten from 100 to 120 m.N (10 to 12 m.kg)(72 to 87 ft.lb) (torque wrench)
Lock the nut by peening the metal into the groove of the shaft.



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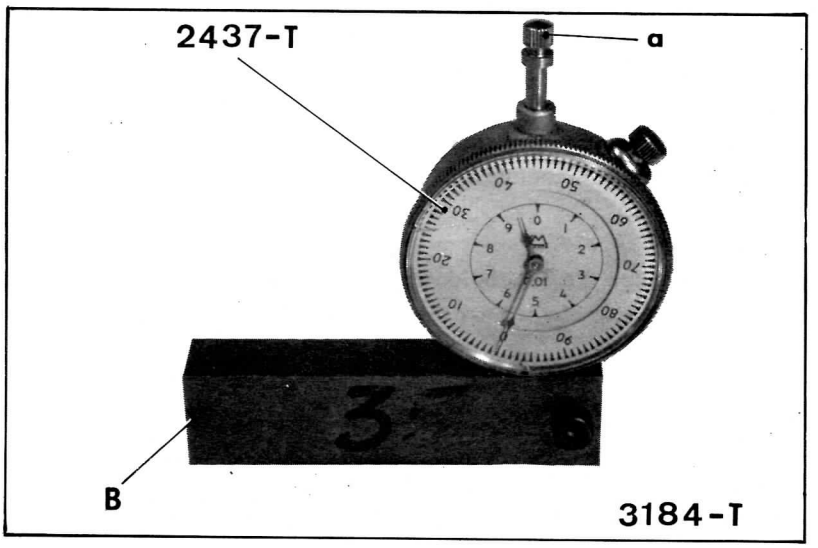

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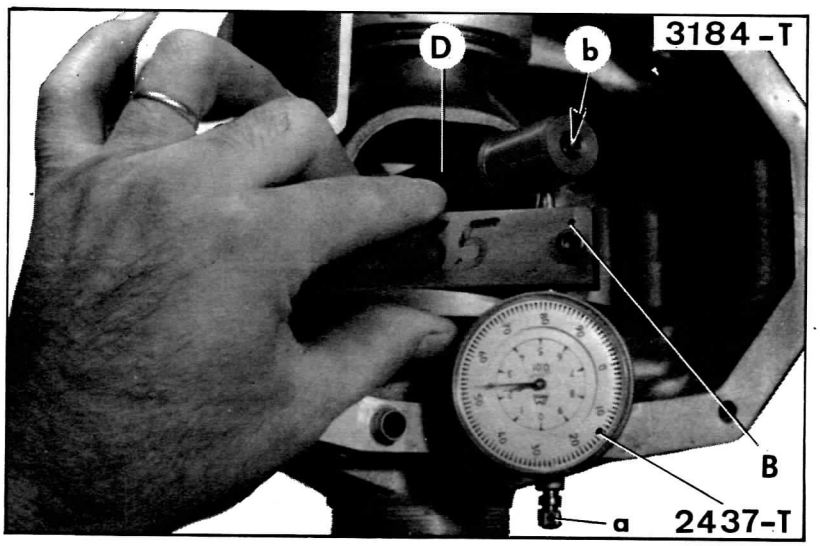

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5. Adjusting the position of the crown wheel :

a) Adjustment principle : Using shims, one must obtain the following result,

- first, the distance between the bearing face of the crown wheel on the casing and the centre line of the bevel pinion equals that engraved on the side of the wheel, thus giving correct backlash and contact area.

- secondly, a stress on the bearings to maintain the above settings under the action of the engine torque. This stress virtually corresponds to a pressure exerted on the bearing which is consequently forced inwards in its cages thus causing a displacement of the differential assembly expressed in millimetres. This must be taken into consideration in determining the thickness of the shims. It is evaluated at 0.025 mm per bearing, i. e., 0.05 mm for the two. In the adjustment operation, it is, therefore, necessary to take into account the casing recoil in determining the thickness of the left-hand shim (+ 0.025 mm) and the total stress on the two bearings (+ 0.05 mm) in determining the thickness of the right-hand shim.

b) Fit the outer race (2) of the left-hand differential bearing in its housing (without shim).
Fit the differential casing .
Position the mandrel C with its end « b » engaged in the orifice of the casing.
Fit the outer race (1) in its housing in the right-hand half casing (without shim).

NOTE : The bores for the bearing races must be clean and free of all marks of blows (defects). These races must slide freely.

- Fit the right-hand half casing.
- Fit the rear cover. Fit the bolts.
- Fit four of the fixing bolts of the half casings.
- Tighten the cover bolts and then those of the half casings.

NOTE : The fitting of the rear cover is necessary for positioning the half casings in relation to each other.

- Make sure that the differential casing is in place and that the outer race (1) is in contact with the rollers of the bearing.

c) Calibrate the ruler B and dial gauge assembly.
Fit ruler B with a dial gauge 2437-T, place it on a surface plate. Adjust the gauge position so that it will operate between 8 to 9 mm.
Bring the zero of the mobile dial opposite the large hand.
Mark the position of the total reading hand.

Example : Total reading hand between 8 and 9
The mandrel D and ruler B assembly with the dial gauge in the calibration position corresponds to a distance :

$$K1 + R = 35 \text{ mm}$$

This dimension is engraved on one of the sides of the ruler.

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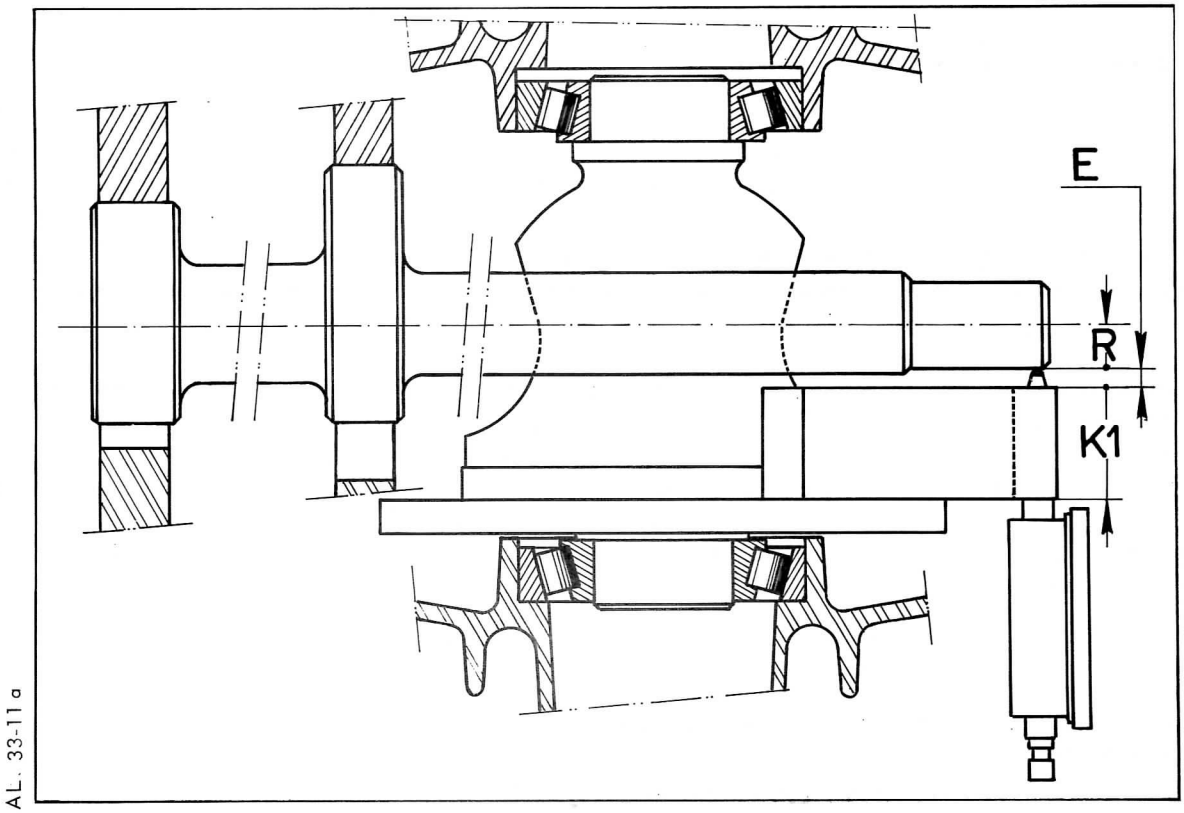

Figure 1

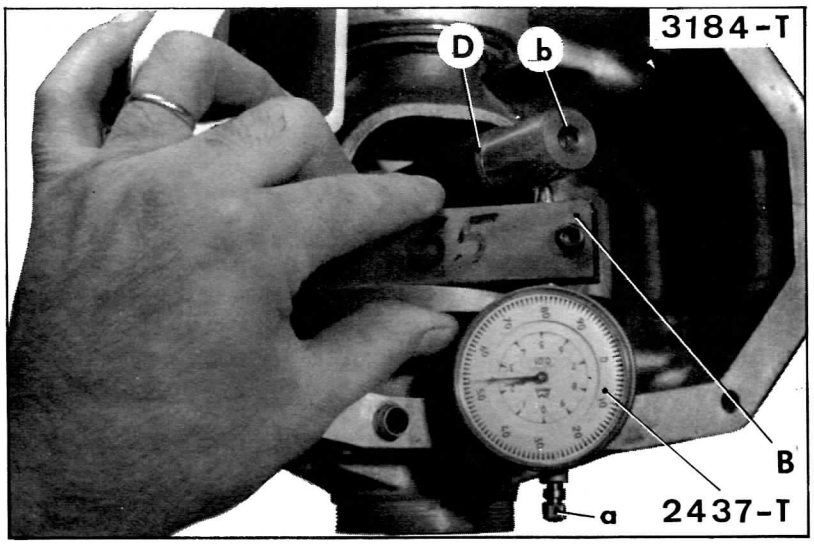

Figure 2

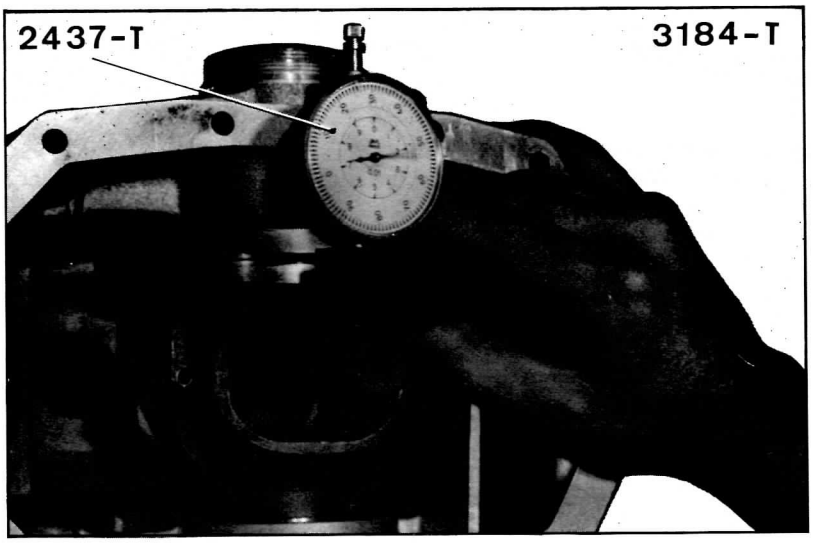

Figure 3

d) Fit ruler B on the bearing face of the cown wheel on the casing, the dial gauge stem touching the end « d » of the mandrel D.
IMPORTANT : *Before undertaking any measurement, rotate Mandrel D to check that it is not out of true.*
Hold the ruler against the casing and rotate the ruler casing assembly first in one direction, then in the other and immobilize it at the exact point where the large hand changes direction of rotation. Mark the position of the dial gauge hands.
Pull on the spindle « a » of the gauge to bring the hands to the calibration position. Then, release it slowly and count the number of revolutions or fractions of a revolution made by the large hand.

Example : The large hand turns through 7.46 revolutions, therefore : E = 7.46 mm.

The bearing face of the wheel is therefore at a distance from the bevel pinion centre line of :
35 + 7.46 = 42.46 mm

e) Ascertain the thickness of the shim to be placed in the left-hand half casing (see figure 2).

Note the dimension engraved on the crown wheel. For example, this dimension is 40.00 mm.

To obtain this dimension would require a shim of :
42.46 - 40 = 2.46 mm

It is necessary to add 0.025 mm for the bearing stress. The shim must, therefore, have a thickness of :
2.46 + 0.025 = 2.485 mm

The adjusting washers are sold by the Replacement Parts Department in steps of 0.05 mm; choose a washer whose thickness is nearest to the determined value : 2.50 mm.

f) Ascertain the thickness of the adjusting washer to be fitted in the right-hand half casing (see figure 3).

Release the gearbox from the support and place it on the work-bench *with the left-hand half casing uppermost.*

IMPORTANT : Make sure that the differential is in place, with the outer race of the bearing resting on the shoulder of the right-hand half casing. Also make sure that *the outer race of the left-hand bearing bears against the rollers.*

Check the calibration of the ruler/dial-gauge assembly.

Place ruler B against the bearing face of the crown wheel on the casing, with the dial gauge touching the end « b » of the mandrel D.

Hold the ruler against the casing and measure as previously indicated for the left-hand side.

Example : The large hand turns through 2.45 revolutions, therefore, E = 2.45 mm.

The bearing thrust face of the crown wheel is, therefore, at a distance from the bevel pinion centre line of :
35 + 2.45 = 37.45

Ascertain the thickness of the adjusting washer to be fitted in the right-hand half casing :
The dimension engraved on the crown wheel being 40.00 mm to obtain this dimension would require a shim of : 40 - 37.45 = 2.55 mm without taking into consideration the bearing stress, the total thickness (left and right) of the shims would be 2.46 + 2.55 = 5.01 mm. With the stress of 0.025 per bearing, therefore 0.05 mm for the two bearings, the total thickness would be 5.01 + 0.05 = 5.06 mm.

It has been determined that the left-hand side required a shim of 2.50 mm. Therefore, the thickness of the shim to be fitted on the right-hand side will be 5.06 - 2.50 = 2.56. Since the shims are available in steps of 0.05 mm, choose a 2.55 mm shim.

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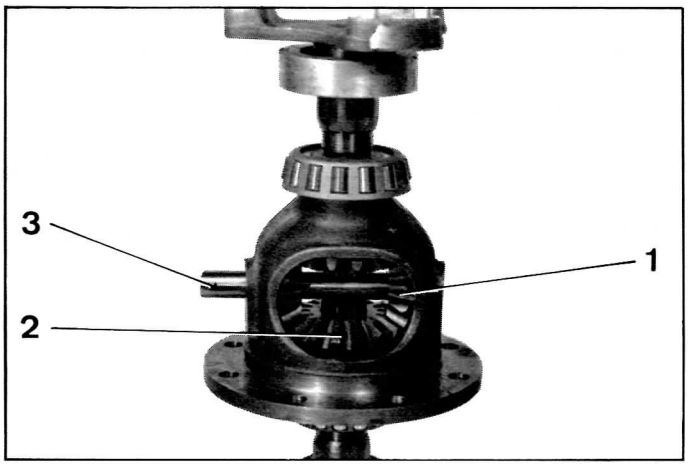

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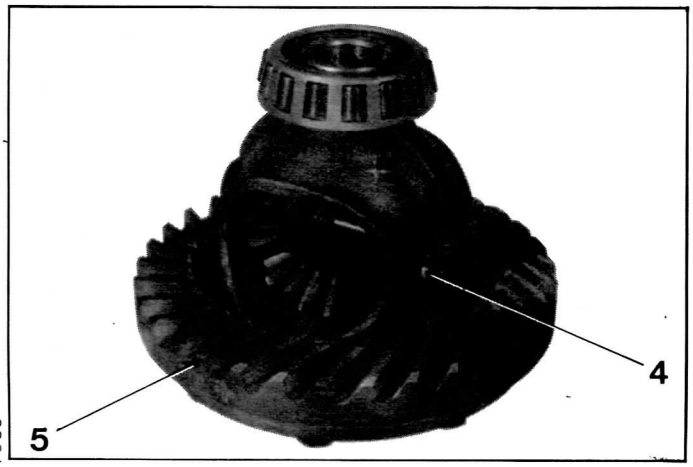

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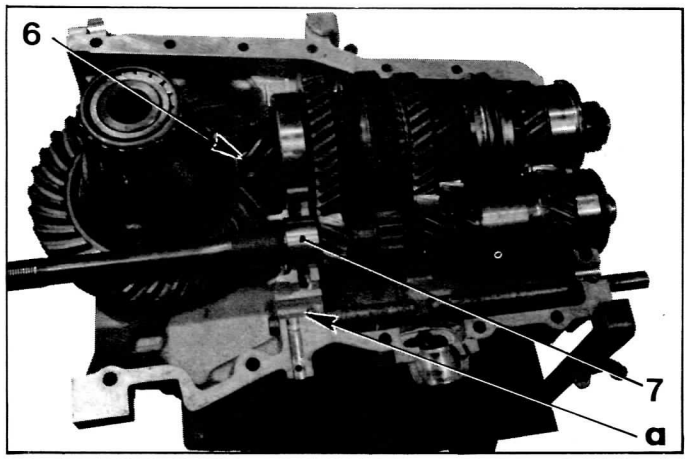

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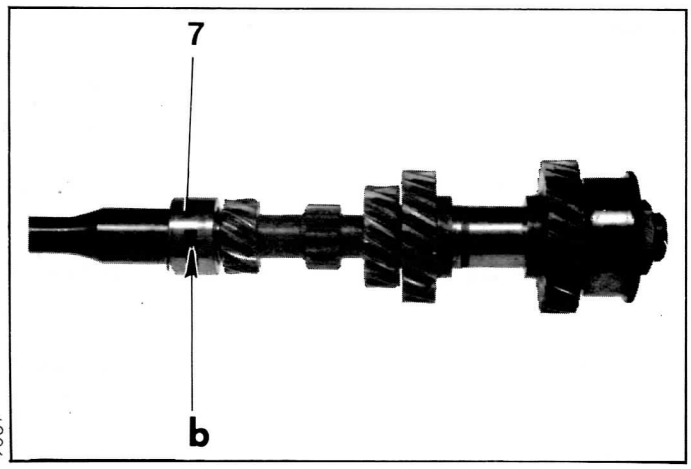

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V. FITTING.

1. Fit the differential :

a) Oil the parts. Fit :
- the two planet gears (2) and hold them in place with the aid of the two gearbox drive outlet shafts.
- the satellites (1) and engage the shaft while (3) correctly orientating the pin hole.

Fit the locking pin (4), or the roll pin and its safety stop.

b) Fit the crown wheel (5) :

The 9 mm diameter fixing bolts must be fitted with LOCTITE GX. 01 460 01 A and tightened from 48 to 54 m.N (34 1/2 to 38 1/2 ft.Ib)

The 10 mm diameter fixing bolts should have the face and threads greased. Tighten them from 80 to 90 m.N (58 to 65 ft.Ib)(torque wrench)

NOTES :
- Do not fit washers under the bolt heads.
- For correct positioning of the wheel, successively tighten the diametrically opposed bolts.

c) Fit the differential in the left-hand half casing.

2. Fit the bevel pinion :

Check the condition of the plastic plug (6). Replace, if necessary.

CAUTION : Be careful not to introduce foreign bodies in the central hole of the pinion, which could reduce lubrication to the bearing surface of the 1st gear pinion.
- Check that the reverse gear intermediate pinion is in its « neutral » position.
- Fit the assembly in the left-hand casing.

3. Fit the input shaft/primary shaft assembly:

Fit the assembly in the left-hand half casing. Turn the needle bearing (7) so that the end of the locking pin of the reverse gear intermediate spindle enters the locking notch in the bearing.

4. Fit the lock ball in its housing at « a » (grease beforehand).

NOTE : The five locking balls and three locking springs of the shafts are identical.

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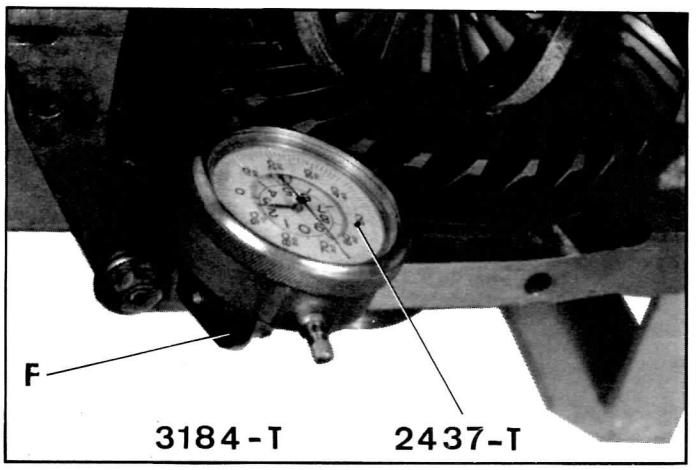
5. Checking the crown wheel and pinion backlash :

NOTE : If the adjustment of the conic distance has been carefully carried out, the backlash should be correct.
However, it is preferable to check it.

a) Fit the right-hand casing on the left-hand one (see that the 1st and 2nd gear fork is engaged in the groove of the corresponding sliding gear).
- Fit, but do not tighten, the four assembly bolts of the half casings.
- Fit the rear cover. Tighten the fixing bolts (the rear cover is necessary for the correct alignment of the two half casings).
- Tighten the four assembly bolts of the half casings.

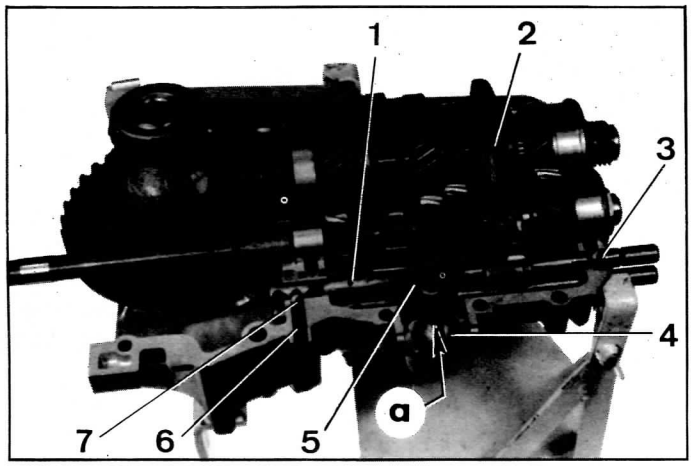


b) On the left-hand casing (as shown in the figure) fit the support F of the assembly 3184-T fitted with a dial gauge so that its moving stem rests perpendicularly on the flank of a tooth on the periphery of the crown wheel.
Measure the clearance by keeping the bevel pinion still, holding it by hand.
The backlash must be between 0.13 and 0.27 mm measured at the point of minimum clearance.

c) Measure and note the clearance on three teeth spaced at intervals of about 120°. Take the average of the three readings :
The difference between any two readings should not exceed 0.1 mm.
Otherwise, the wheel is out of true (it must be replaced), or there is a foreign body between the crown wheel and the differential casing.

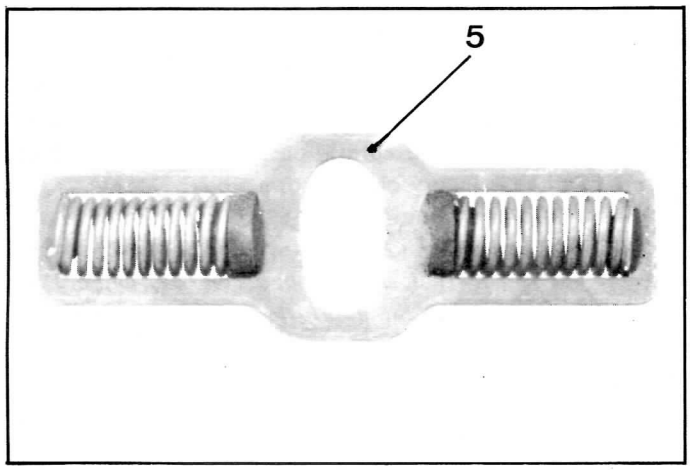
d) Remove :

- the dial gauge and its support,
- the rear cover,
- the right-hand half casing.



6. Fit the 3rd and 4th gear shaft and fork assembly :

- Lightly oil the shaft (1) and grease its locking notches.
- Check that the 3rd and 4th gear sliding gear is in its neutral position.
- Fit the shaft (1) and fork (2) assembly in the left-hand half casing by engaging the fork (2) in the groove of the sliding gear of the 3rd and 4th gear sliding gear.
- Grease the ball (7) and spring (6) of the locking mechanism of the 3rd and 4th gear selector fork shaft.
  Fit them.
  NOTE : The five locking balls and three locking springs of the shafts are identical.
- Grease and fit the interlock plunger (3) of the shafts of 1st, 2nd and reverse gear.

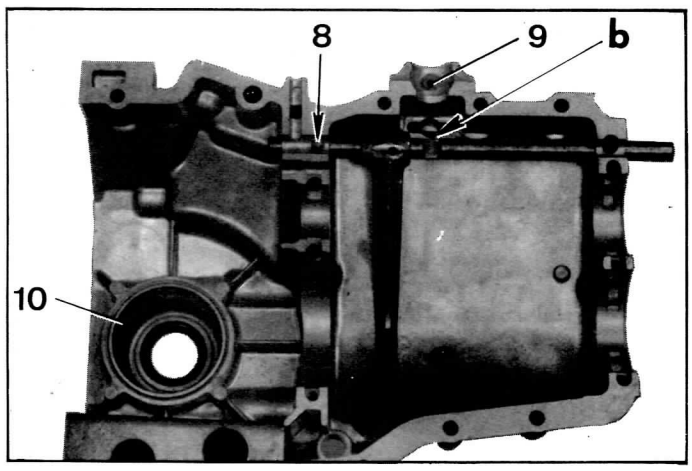


7. Grease and fit spring holder plate (5).
NOTE :
Since January 3, 1972, the reverse gear locking device on the gear lever has been replaced by a mechanism in the gearbox.
The springs of the plate (5) are different : the thicker spring should be placed towards the reverse gear intermediate pinion (in the left-hand casing).

Grease the ball joint (4), fit it in the left-hand half casing *(the guide groove « a » placed towards the right-hand half casing).*

8. On the right-hand half casing :
- Stick the lock ball (8) in its housing with grease.
- Stick the spring and guide (9) of the ball joint in their housing with grease.

9. Smear the joint faces of the two half casings with LOCTITE 572 N° ZC 9 851 106 U.

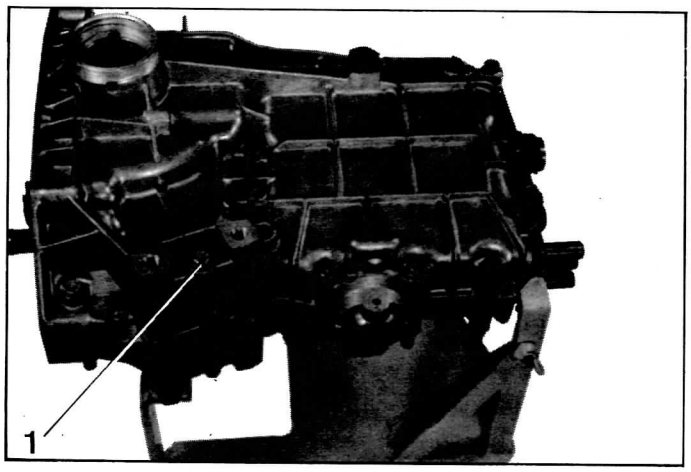


10. Fit the right-hand half casing onto the left-hand one :

Before fitting, check that the planetary gears are correctly positioned.

a) Fit the half casing.

b) During this operation, hold in place the outer race (10) of the differential bearing and engage the 1st and 2nd gear fork in the groove of the corresponding sliding gear. Simultaneously, guide the plate into its housing « b » in the right-hand half casing and make sure that the guide (9) does engage in groove « a » of the ball joint (4).



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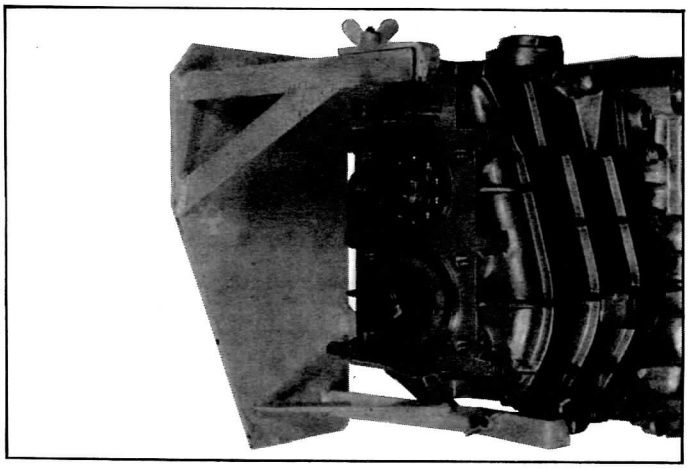
c) Fit the assembly bolts of the half casings (plain washers under the bolt heads and capnuts).

NOTE : The bolt (1) placed between the brake unit mountings, is the only one with a normal hexagonal nut.



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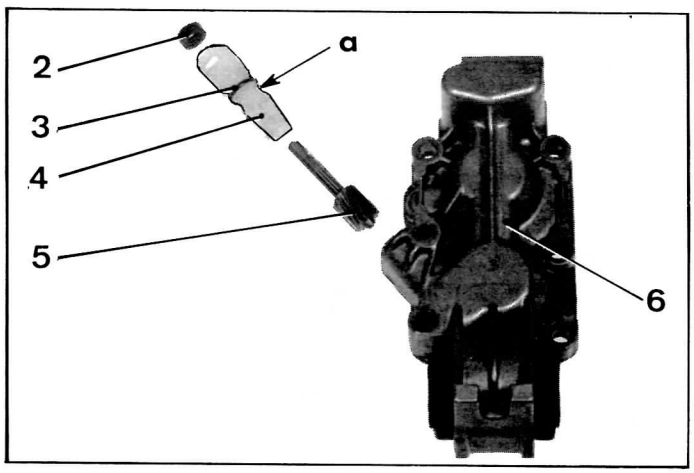
IMPORTANT : Fit the bolts but do not tighten them. Final tightening must be done after the rear cover has been tightened down.

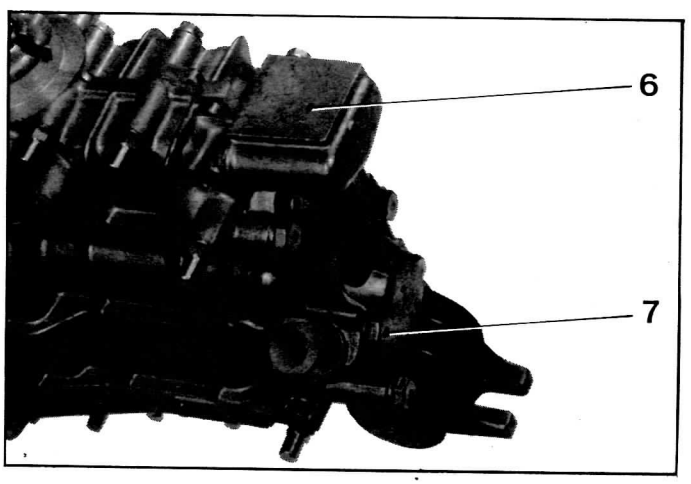
11. Fit the rear cover :



a) Fit the rubber seal (2) and the O-ring (3) on the bearing (4).

Fit the pinion (5) in the bearing (4).

Fit the speedometer drive assembly into the cover (6) and locate groove « a » to allow for fitting the bolt (7).



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b) Smear the joint face of cover and casing with LOCTITE 572 N° ZC 9 851 106 U.

Fit the rear cover on the gearbox casing.

Fit the fixing bolts, tighten them from 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb) (plain washer under bolt head).

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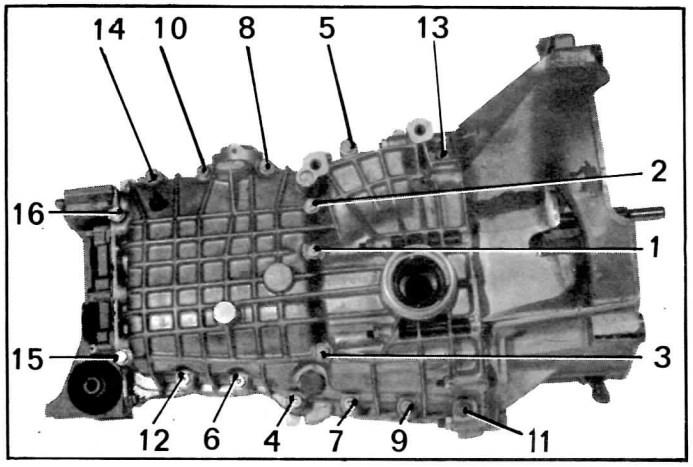
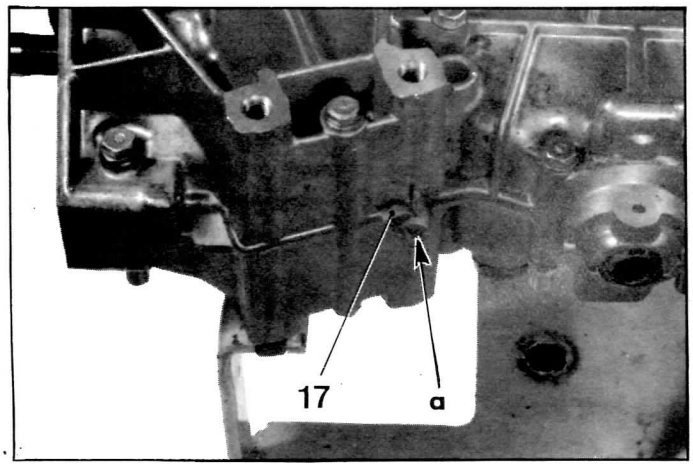
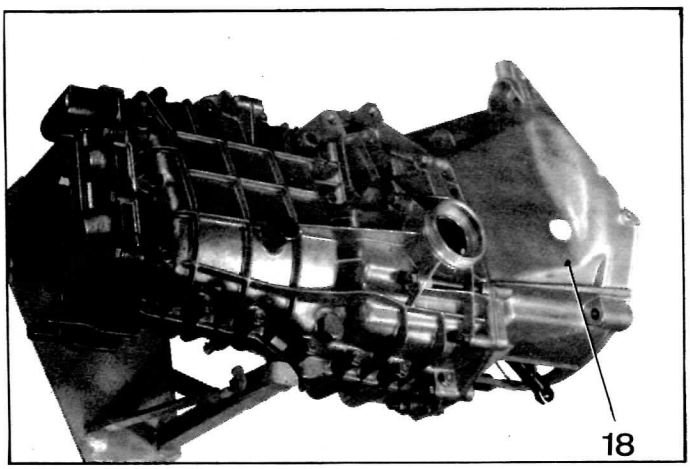
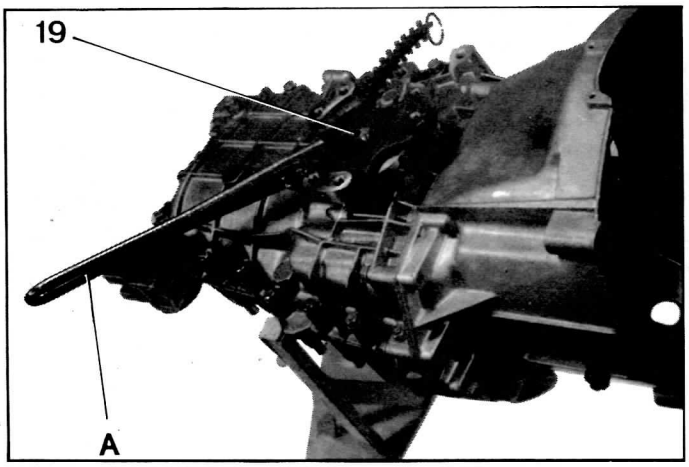








12. Finally tighten the assembly bolts of the half casings :

NOTE : The method for tightening these bolts is most important to ensure oil-tightness of the half casings.

a) Slightly loosen the bolts holding the rear cover on the right-hand half casing.

b) Finally tighten the assembly bolts of the half casing from 14 to 15 m.N (10 to 11 ft.lb) IMPORTANT : Take care of the tightening sequence shown in the illustration. (on some gearboxes, the bolt (3) may be on the left-hand half casing),

c) Retighten the bolts holding the rear cover on the right-hand half casing from 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb)

13. Fit at « a » the expanding plug for the spring housing and the locking ball of the 3rd and 4th gear fork.
Compress the pellet and the spring (5 mm diameter rod) and fit the pin (17).

14. Fit the assembled clutch casing :

a) Smear the joint faces with LOCTITE 572 N° ZC 9 851 106 U
(See note in paragraph 9).

b) Fit the casing (18) and tighten the assembly nuts (plain washer) from 14 to 15 m.N (1.4 to 1.5 m.kg) (10 to 11 ft.lb).

15. Fit the gearbox drive outlet shafts :

VERY IMPORTANT : Make sure that the planet wheels are securely in place and that, when fitting, the splines of the gearbox drive outlet shafts engage in the splines of the planetary gears (by turning the drive outlet shafts by hand in the same direction, the differential crown wheel should turn).

a) Fit the shafts (19) (tap lightly with a mallet to position the bearing).

b) Tighten the ring nuts with the aid of a chain wrench A from 60 to 75 m.N (43 1/2 to 54 ft.lb)

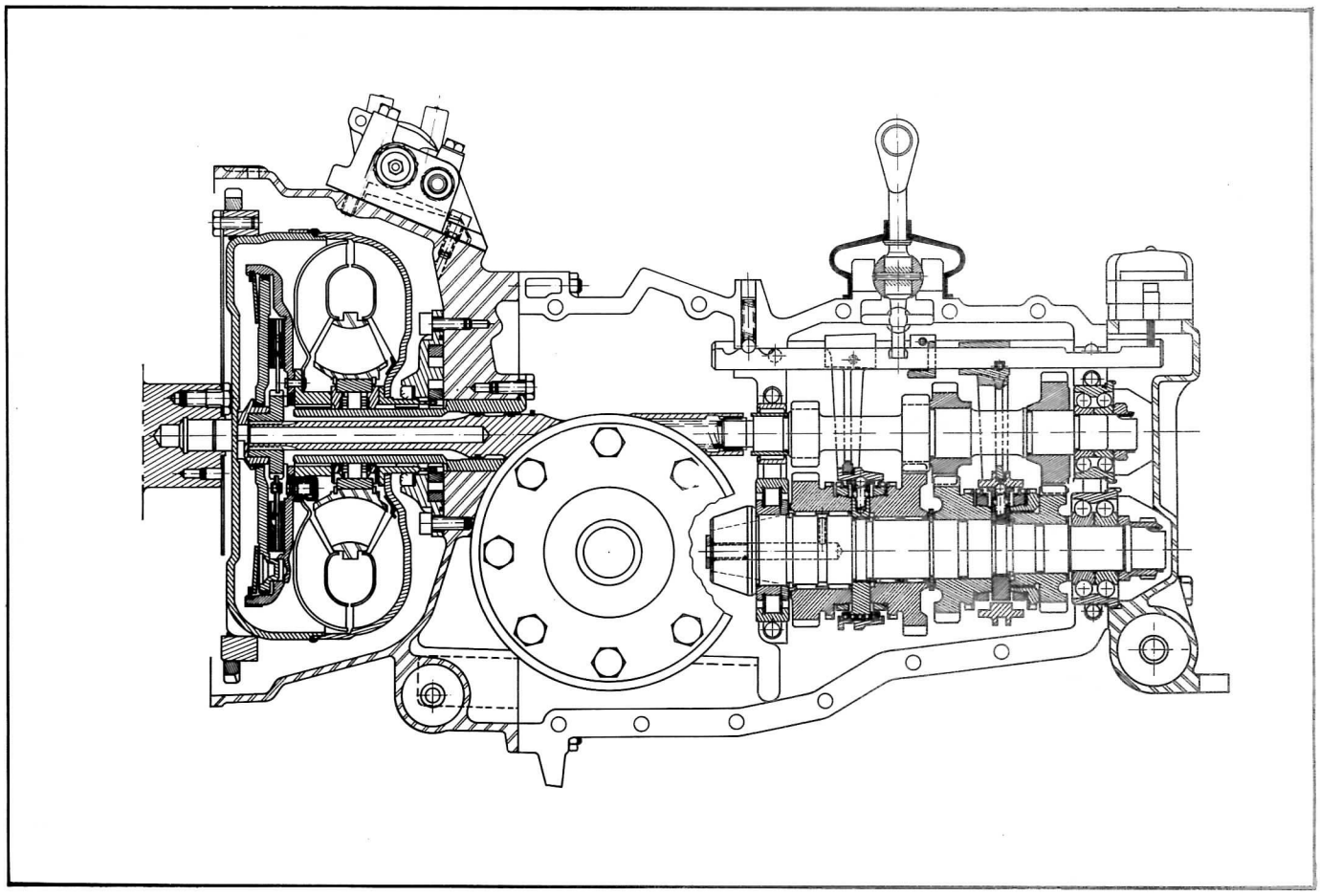
c) Lock the nuts by folding down the metal into the grooves machined in the casings.

16. Fit the drain, level and filler plugs *(blanking plug on « Confort » models)*. Tighten them from 35 to 45 m.N (3.5 to 4.5 ft.lb) (25 1/2 to 32 1/2 ft lb) (copper seal).

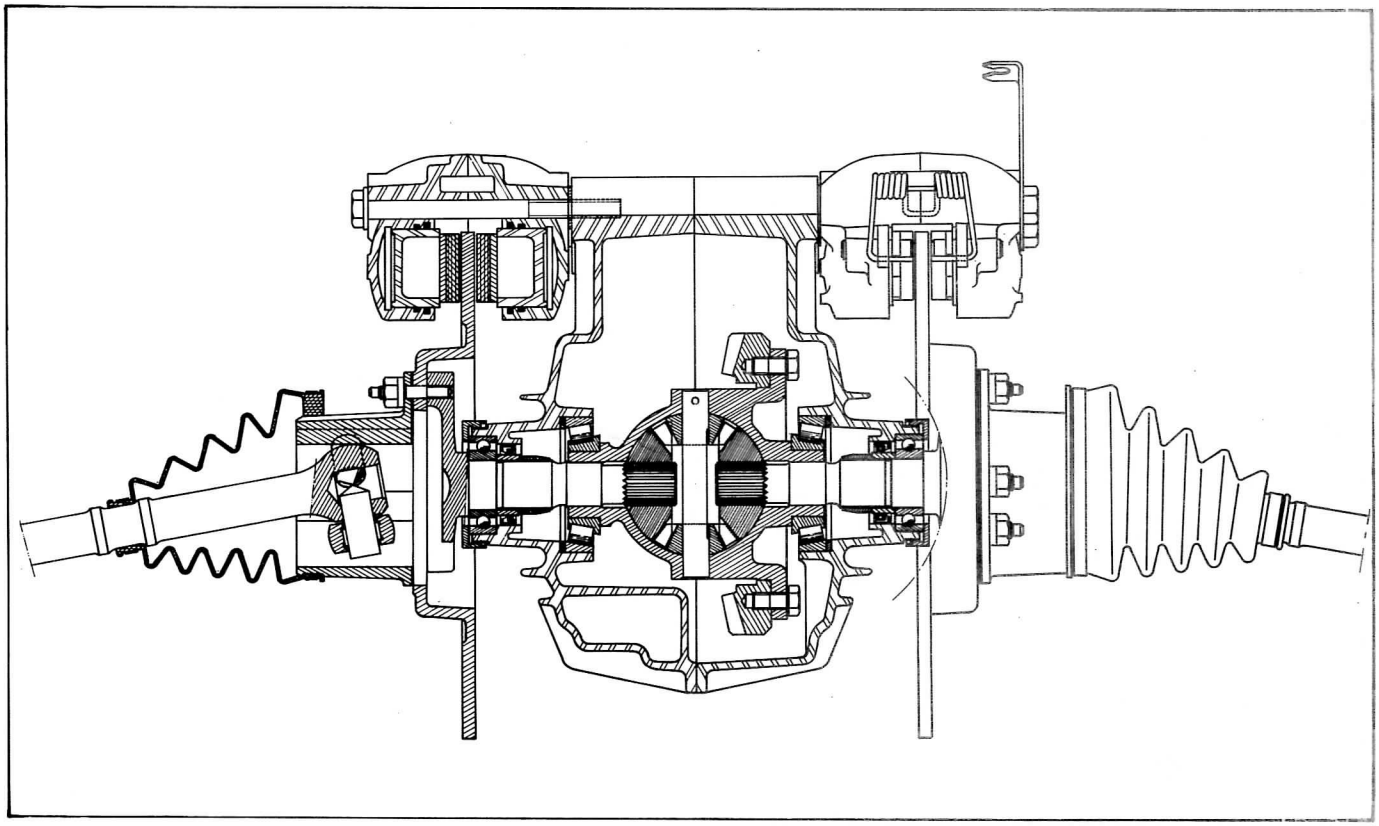
Fit the reversing light switch *(on « Club » vehicles)*. Smear the thread of the switch with MASTI-JOINT HD 37. Fit and tighten from 12 to 15 m.N (1.2 to 1.5 m.kg) (8 1/2 to 11 ft.lb).

Vehicles produced up to September 1, 1972

LONGITUDINAL SECTION



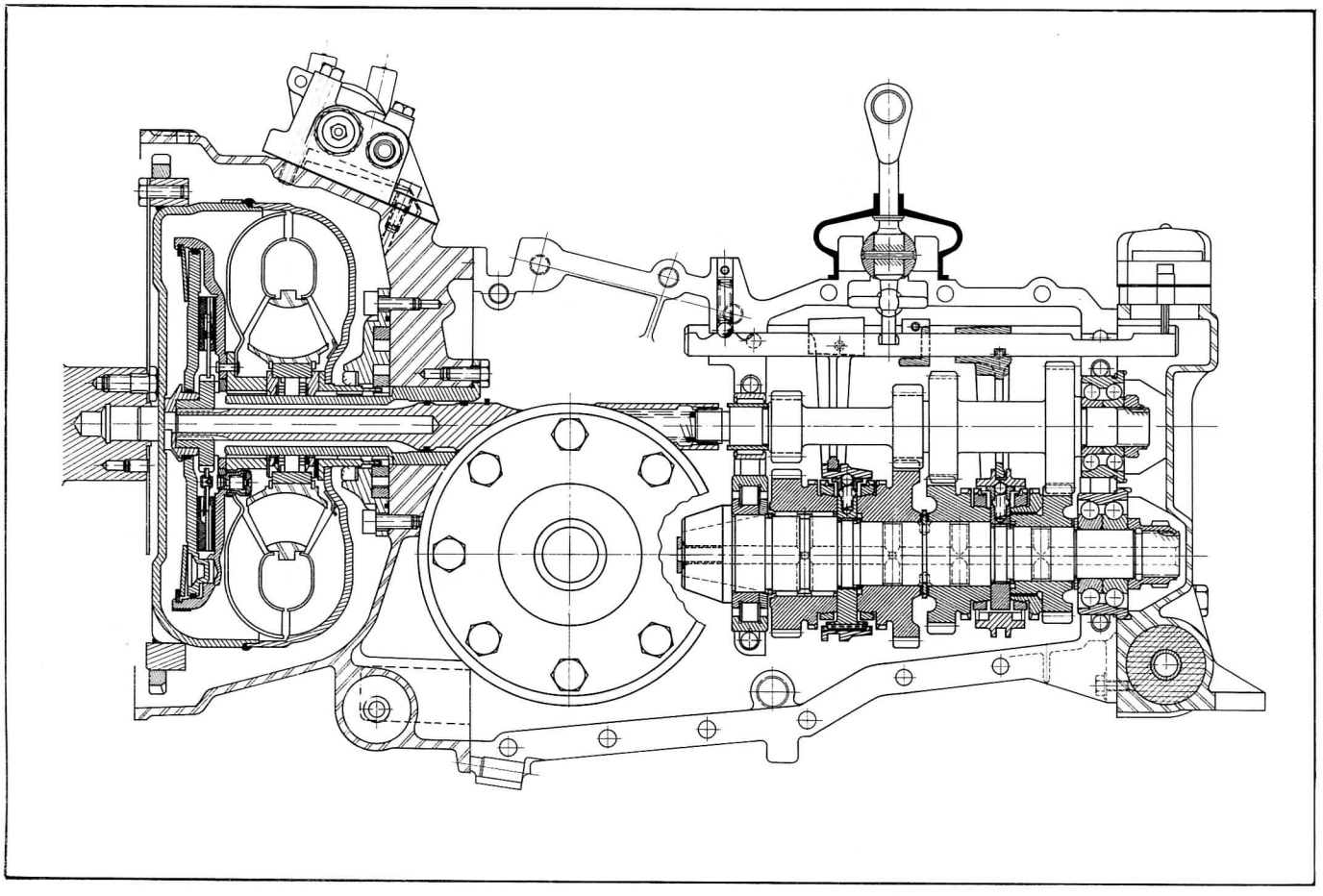
CROSS SECTION



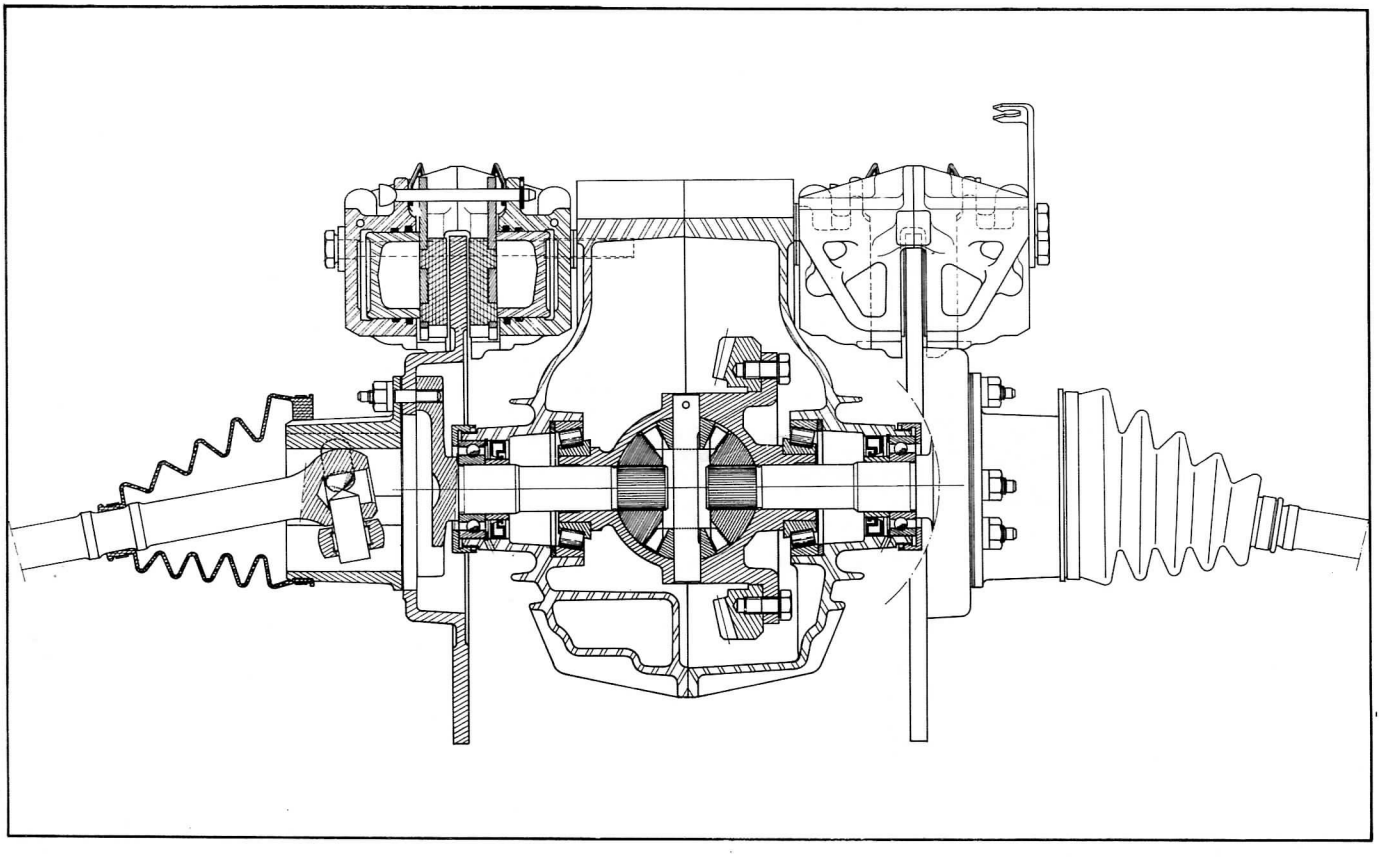
Supplement N° 1 to Manual 810-2 (CORR)

Vehicles produced since September 1, 1972

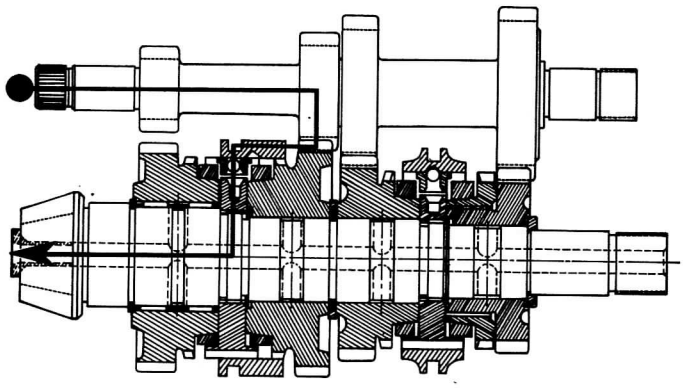
LONGITUDINAL SECTION



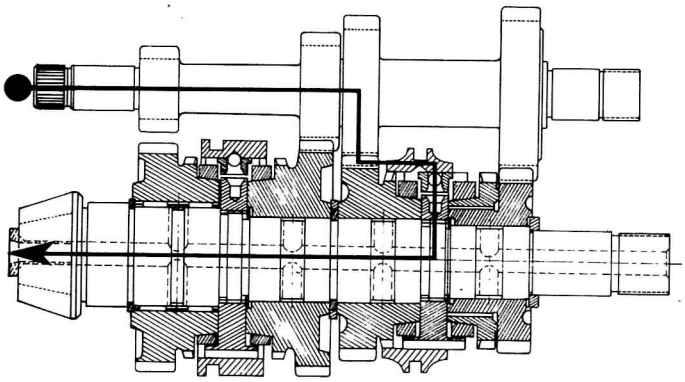
CROSS SECTION



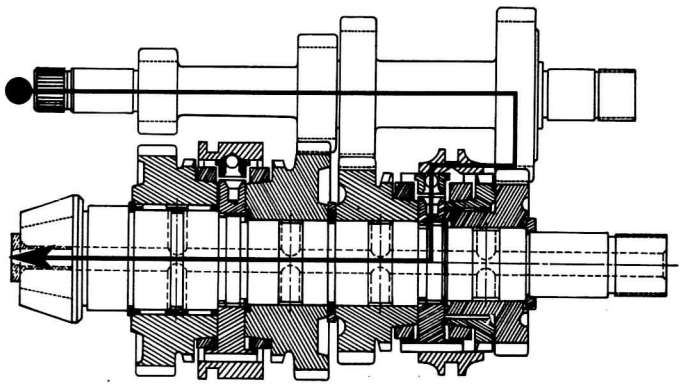
GEAR TRAIN



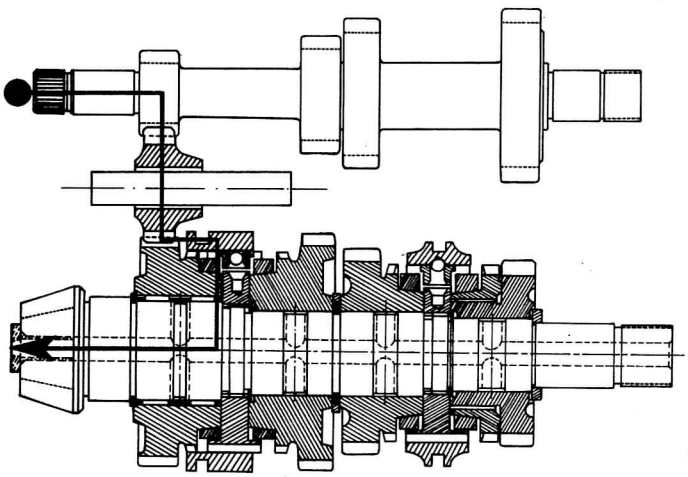
1st GEAR



2nd GEAR



3rd GEAR



REVERSE GEAR

NOTE : The primary shaft pinions are in constant mesh with the driven gears of 1st, 2nd, 3rd and reverse gears.

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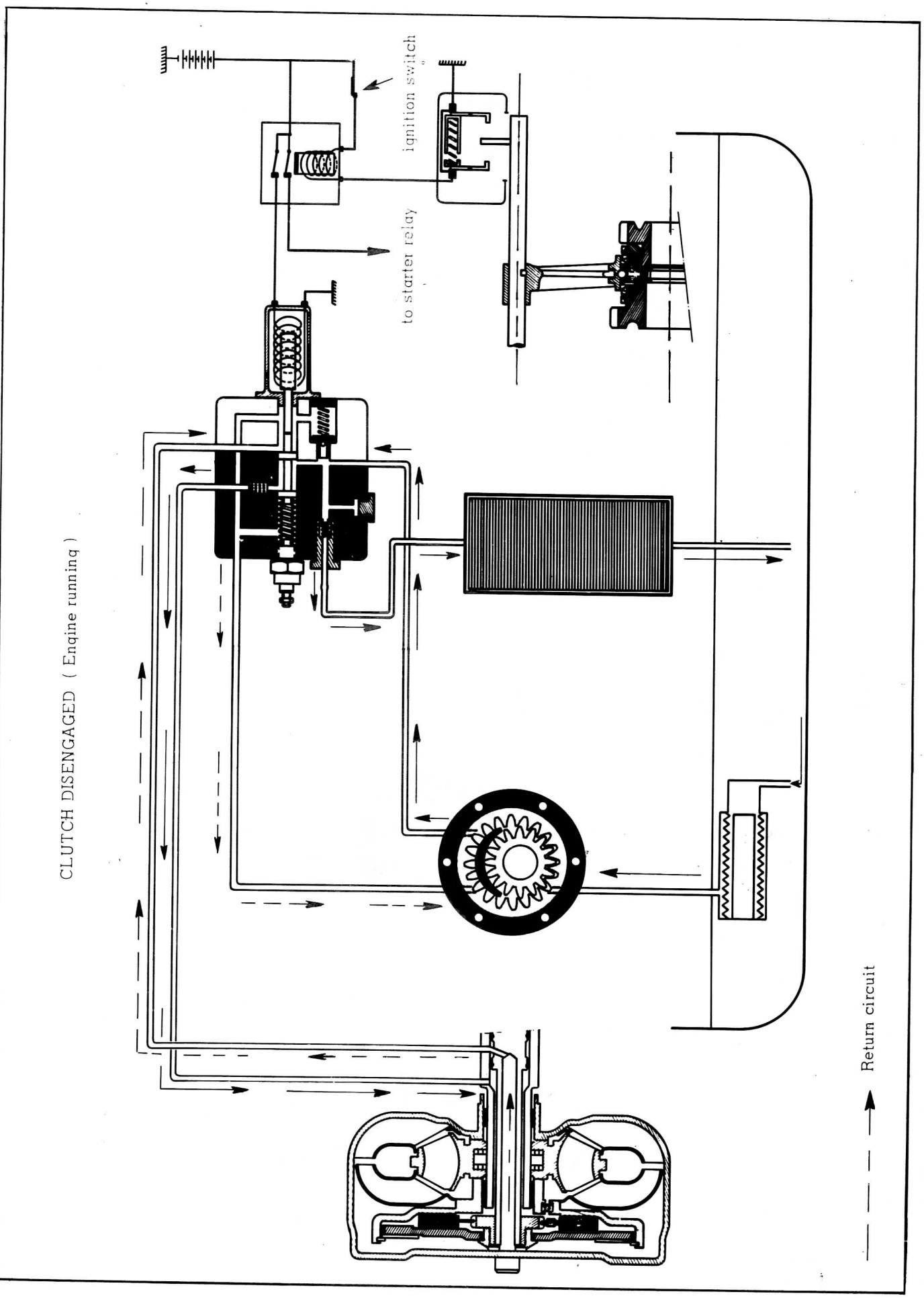
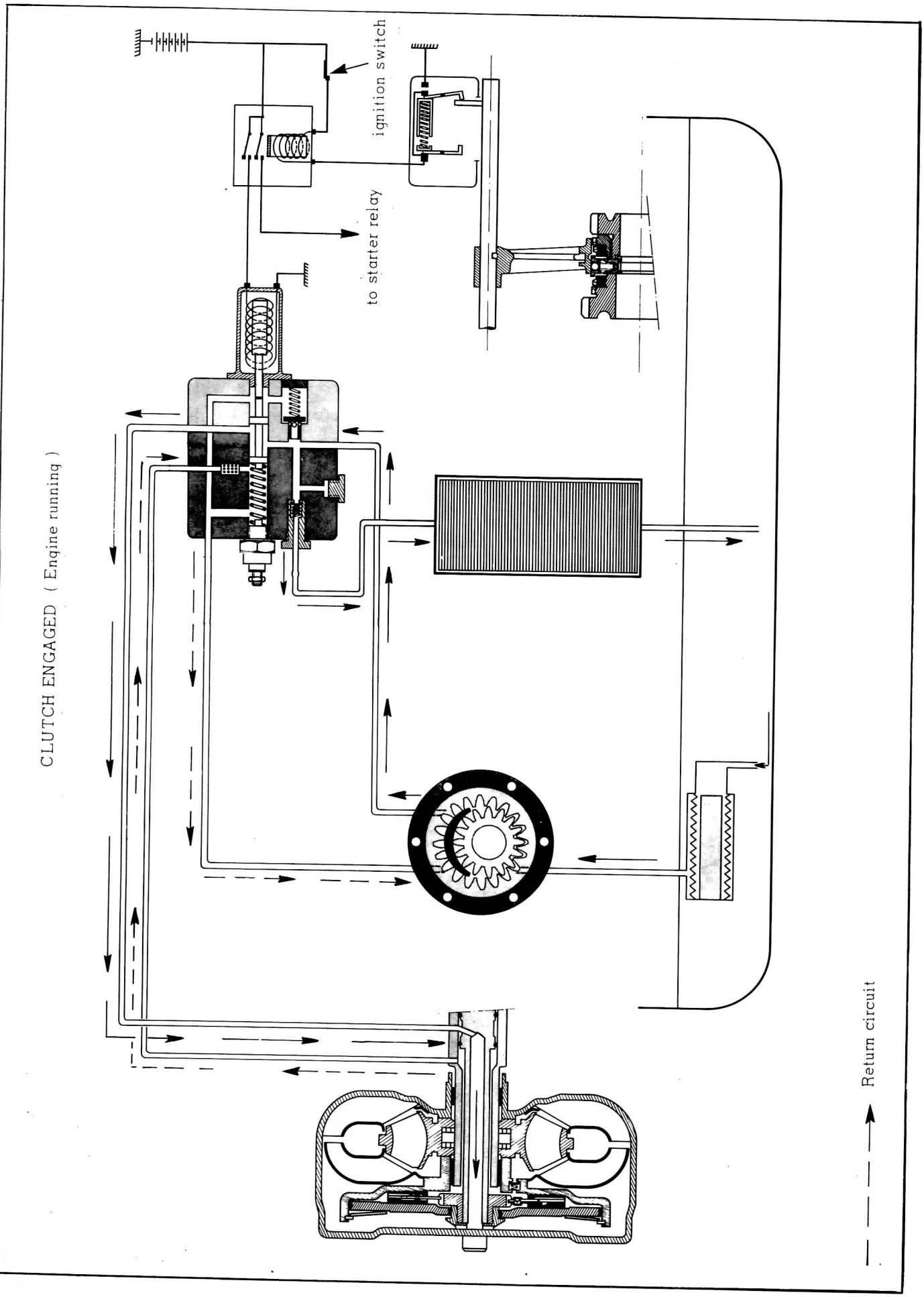
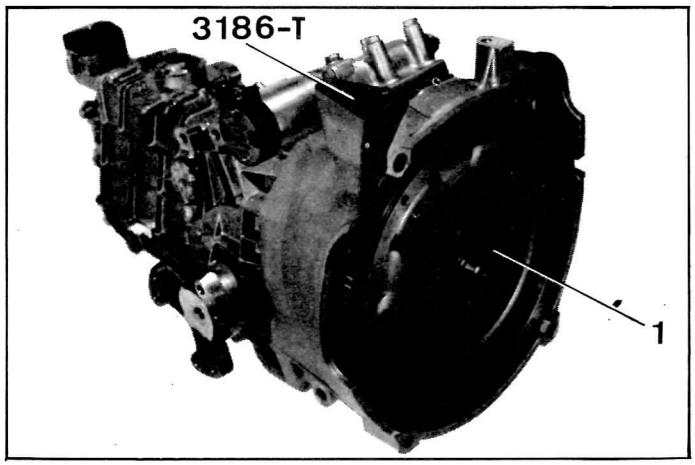
OPERATIONAL DIAGRAM OF A TORQUE CONVERTER

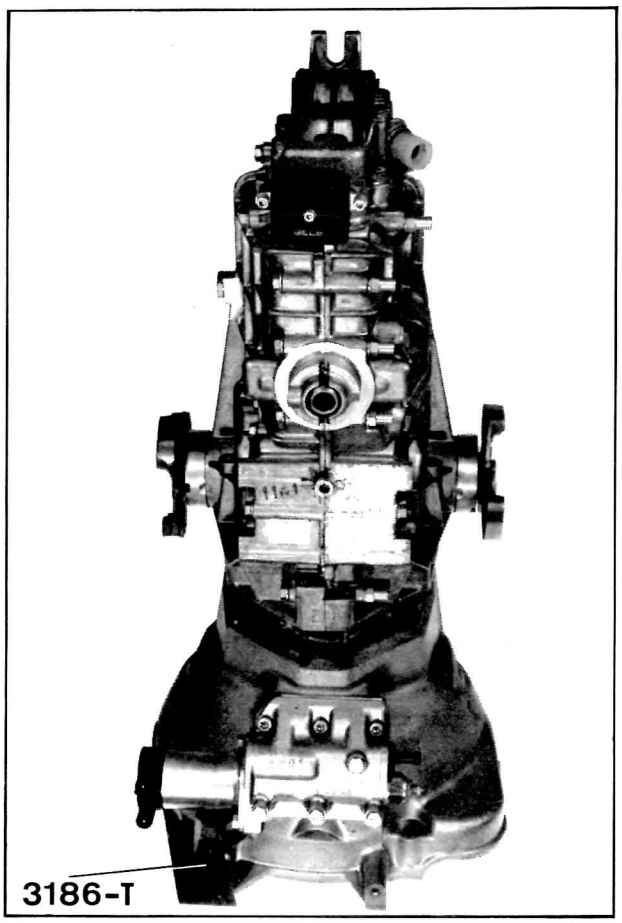


OPERATIONAL DIAGRAM OF A TORQUE CONVERTER



RECONDITIONING A THREE-SPEED GEARBOX FITTED WITH A TORQUE CONVERTER





I. DISMANTLING

1. Drain the oil from the gearbox.

2. Uncouple the gearbox from the casing and converter assembly :

a) Make sure that there is a 3186-T bracket holding the converter.

b) Place the gearbox on the bench in a vertical position, with the converter resting on the bench.

NOTE : The converter being still full of oil it is advisable to proceed in this manner to prevent oil from flowing out during this operation.

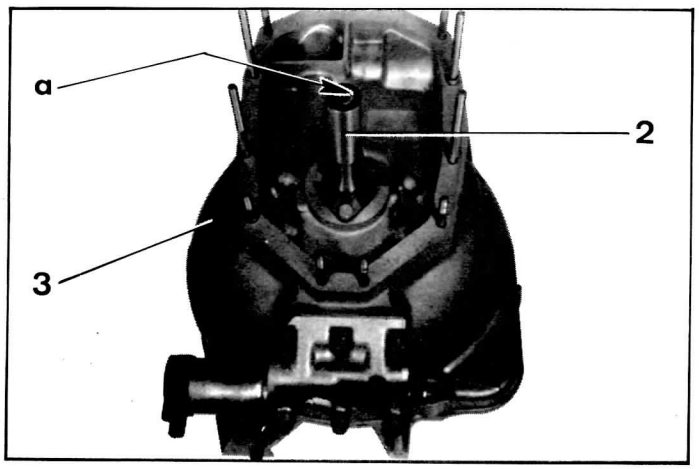
c) Remove the nuts and washers holding the gearbox casing on the converter casing.

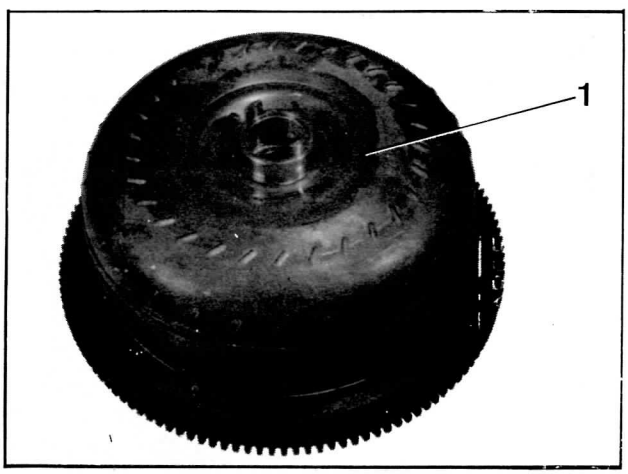
d) Remove the input shaft (2). Do not mislay the spring at « a ».

3. Separate the converter casing from the converter

Slide the converter casing assembly towards the edge of the bench and remove bracket 3186-T.

Vertically withdraw the casing (3) from the converter (1).





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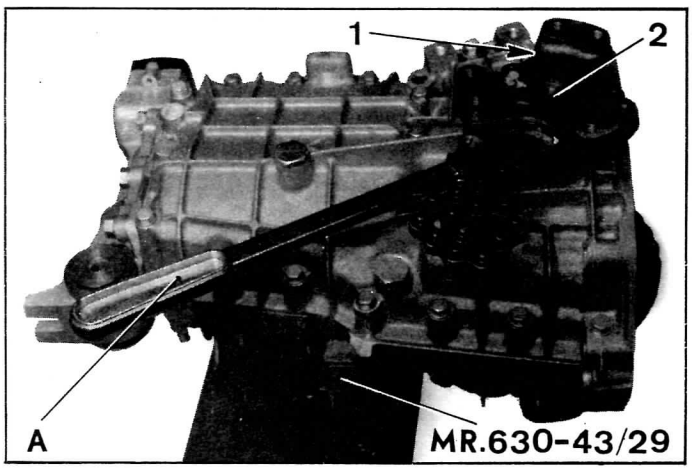
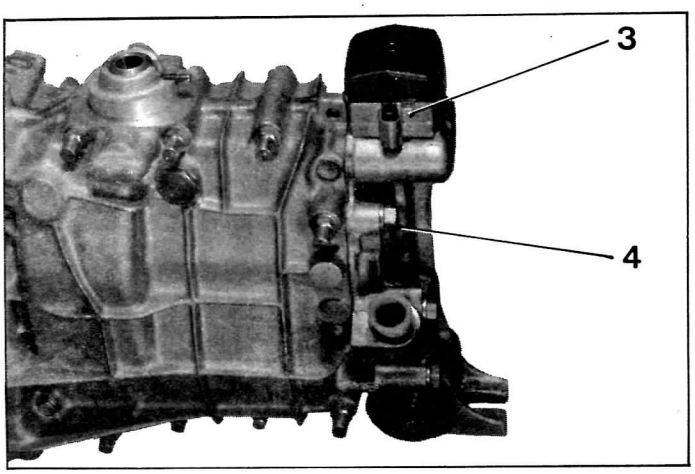
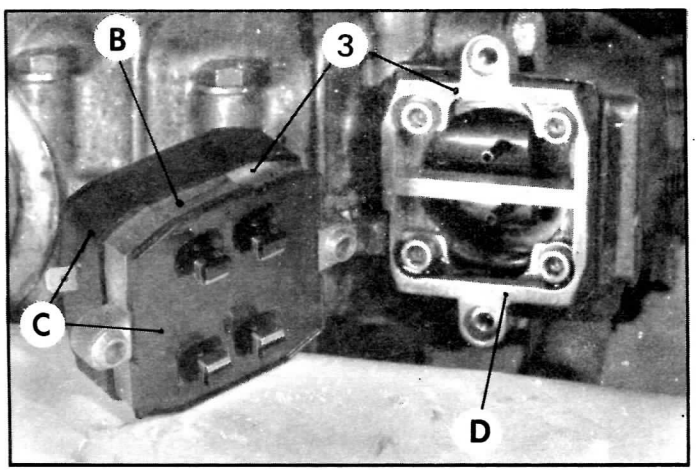




4. Remove the gearbox drive outlet shafts :

On each side :

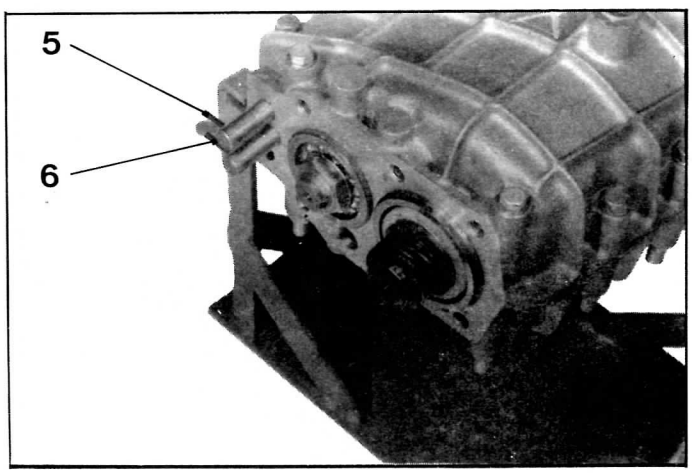
- Unbend the peening locking the ring nut (1).
- Fit the gearbox on support MR. 630-43/ 29 as shown in the illustration.
- Slacken the ring nut (1) using a chain wrench A.
- Release the shaft (2) complete with the ring nut and the bearing (if necessary tap lightly with a mallet).



5. Remove the control-switch unit on gearbox :

Remove :

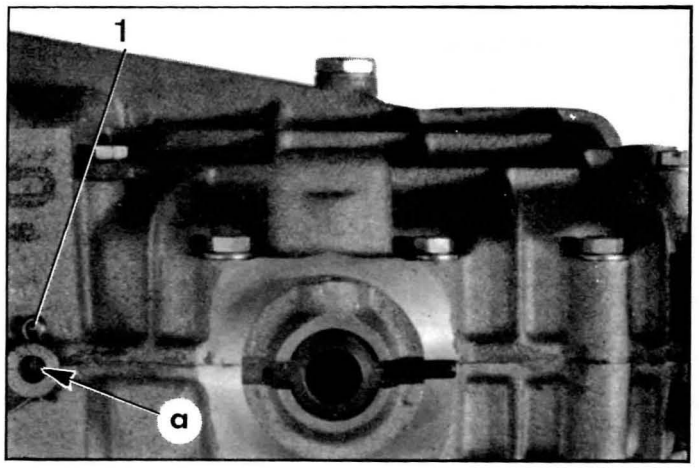
- the body B of the switch unit (3) fitted with its cover (4 mm Allen key),
- the rubber guards C,
- the switch unit base plate D (4 mm Allen key).



6. Remove the rear cover :

Remove the bolts (4) holding the rear cover.

Free the rear cover (be careful not to bend the roll pins (5) and (6) which operate the switch unit).



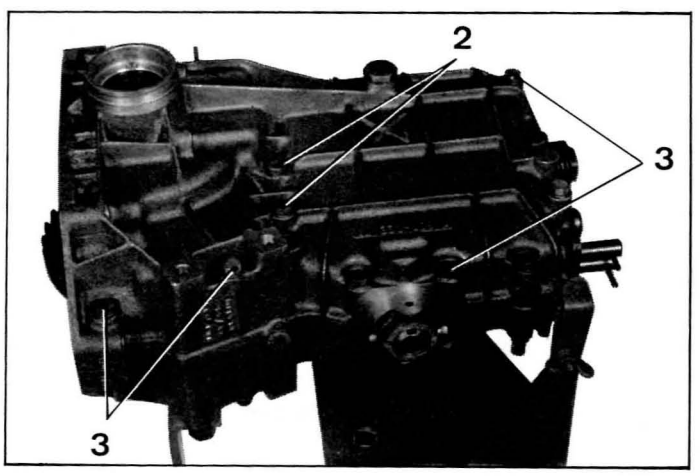
7. Close the orifice « a » of the 2nd and 3rd gear fork shaft locking mechanism with a finger.

Remove the split pin (1)
Remove the blanking pellet from orifice « a »

8. **Remove the right-hand half casing of the gearbox :**

Remove the assembly bolts and nuts (3) of the half casings.
Remove the assembly bolts (2) of the central bearing (two bolts towards the right-hand half casing, one bolt towards the left-hand half casing).
Remove the right-hand half casing.

CAUTION : The spring (8) and guide of the ball joint will fall out (retrieve these two parts).



9. Remove :

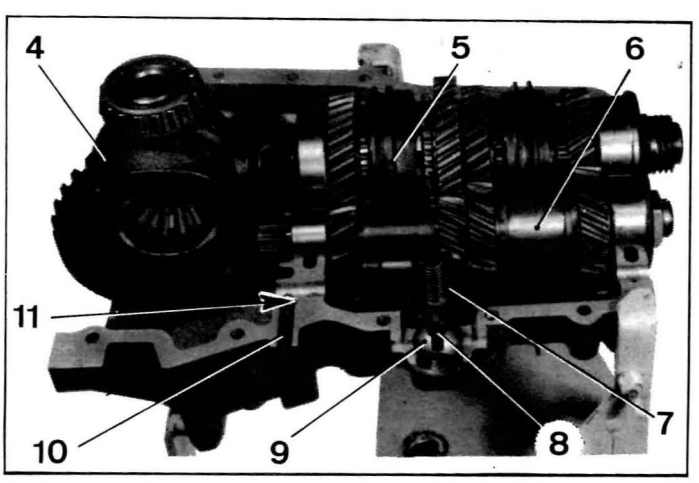
- the ball joint (9),
- the small plate (7) holding the return spring,
- the spring (10) and locking ball (11).

10. **Remove the gears from the gearbox :**

Remove :

- the primary shaft (6),
- the bevel pinion assembly (5),
- the differential (4).

Remove the outer races of the bearings in the half casings. *Mark them with the corresponding bearings of the differential.*



NOTE : If the gearbox is being dismantled for reconditioning without any of the following being exchanged :
- the gearbox casing,
- the crown wheel and pinion,
- the differential bearings,
- the differential casing.

mark the position of the shims (left-hand or right-hand) to avoid having to reset the backlash.

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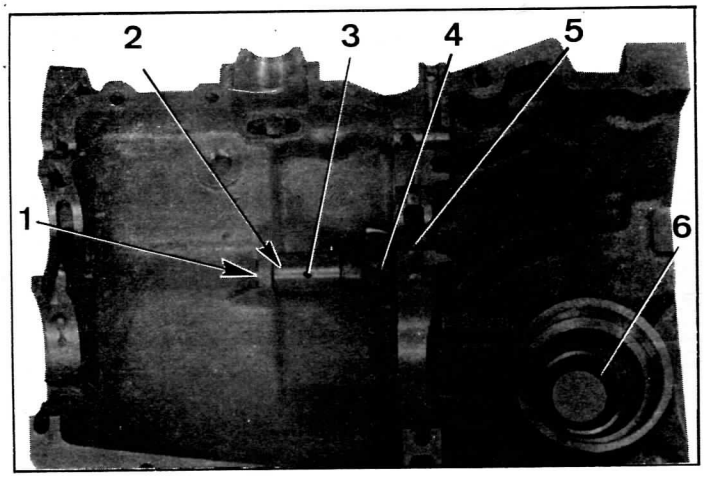
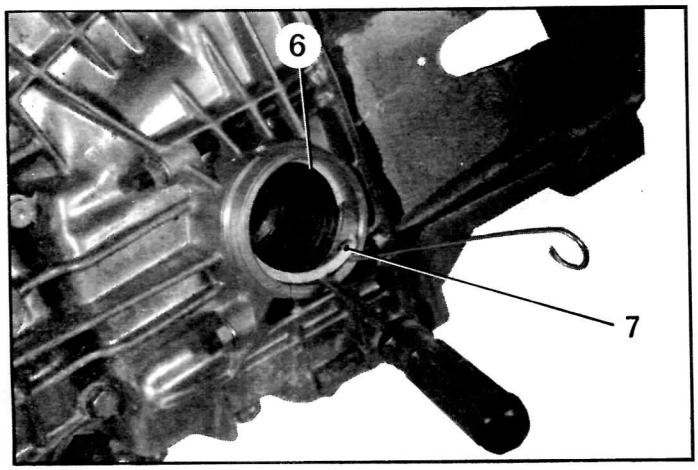
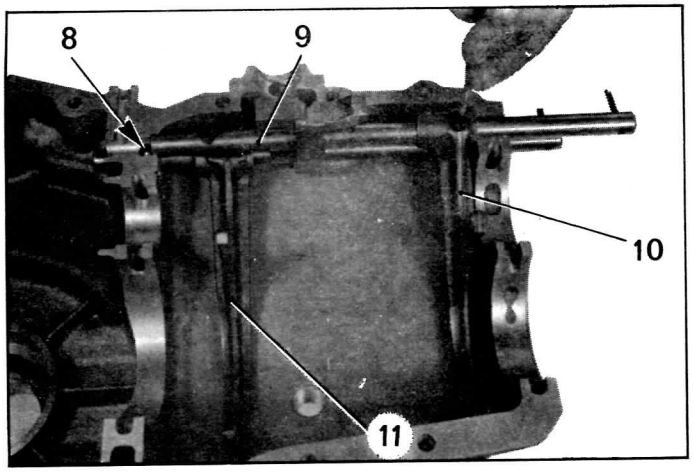
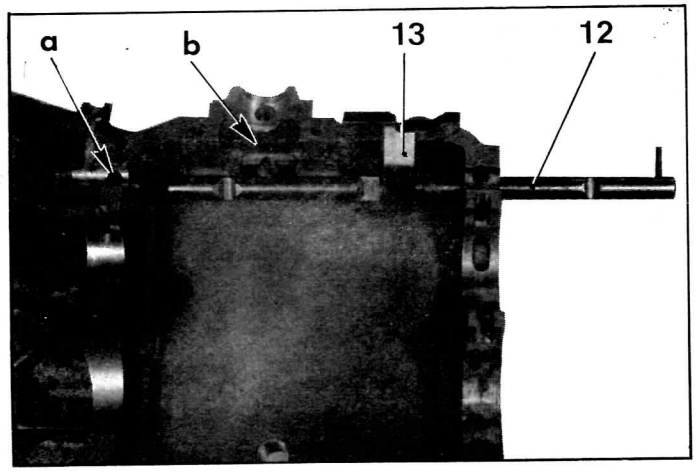








II. STRIPPING THE ASSEMBLIES

1. Strip the left-hand half casing :

a) Remove the cylindrical pin (5) locking the shaft (1).
Drive out the roll pin (2) holding the spacer (3) on the shaft (4 mm pin punch).
Drive out the shaft (1) with the aid of a bronze drift.
Remove the pinion (4) and the spacer (3).

b) If necessary, remove the circlip (7) from the output bearing.
Remove the seal (6).

c) Remove the filler cap (reversing light switch *on « Club » vehicles*).

2. Strip the right-hand half casing :

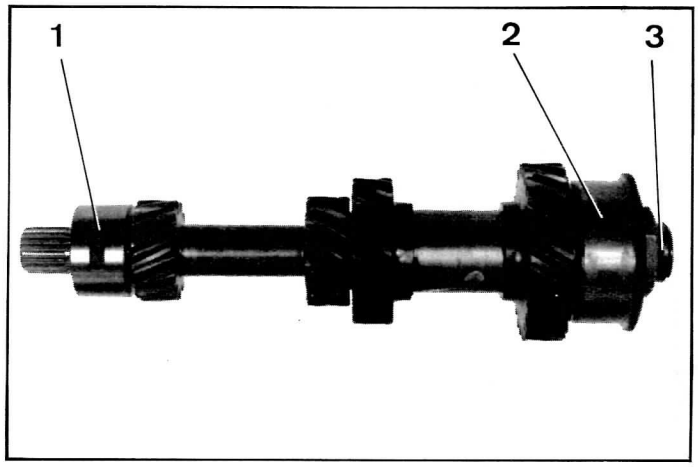
a) Remove the drain and level plugs.

b) Remove the fork (10) of the 2nd and 3rd gear.
To do so :
- shift the shaft (9) and fork (10) assembly as far as possible towards the rear,
- drive out the roll pin holding the fork on the shaft (4 mm pin punch),
- free the shaft from the rear,
- remove the fork (10),
- remove the locking ball (8).

c) Remove the reverse gear and 1st gear fork (11). To do so :
- shift the fork (11) and shaft (12) as far as possible towards the front (differential end).
- drive out the roll pin holding the fork on the shaft (4 mm pin punch).
- move the shaft (12) towards the rear by placing a finger on orifice « a » to avoid losing the locking ball.
- remove this ball and its spring.
- remove the fork (11).

d) Remove the intermediate control lug (13) which operates the reverse gear shaft. To do this :
- shift the shaft as far as possible towards the rear so that the control lug comes to rest against the rear wall of the casing.
- drive out the roll pin holding the control lug on the shaft. Completely release the roll pin by shifting the lug (13) towards the front and by swinging it into the recess « b ».
- free the shaft (12) from the rear.
- remove the intermediate lug (13) operating the reverse gear shaft.

e) If there are any, remove the roll pins from the control switch on the shafts (9) and (12) (2 mm pin punch).



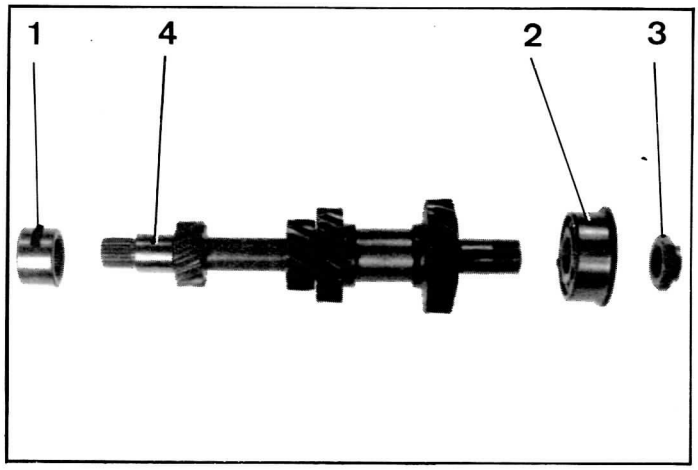
8281

3. Strip the primary shaft :

a) Remove the needle bearing (1).

NOTE : The inner race (4) is not interchangeable.

b) Fit the shaft in a vice equipped with soft jaws :
Remove :
- the nut (3) (locked by peening)
(29 mm spanner),
- the bearing (2).

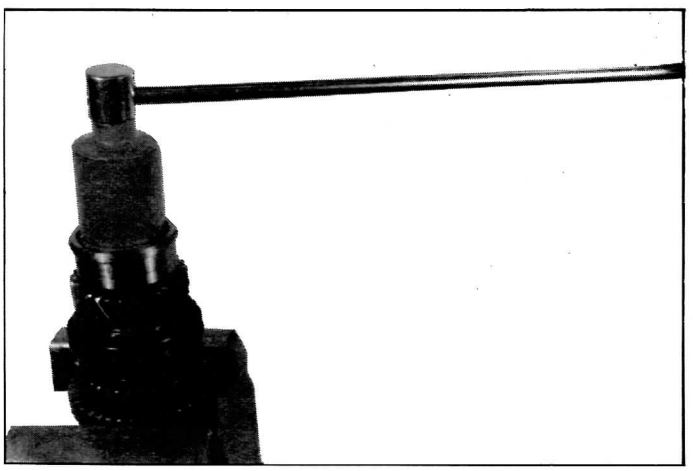


8264

4. Strip the bevel pinion shaft :

IMPORTANT : *Since the bearing surfaces of the pinions of 2nd and 3rd gear on the shaft have been given a special treatment, all traces of scratches or damage risk causing a « seizure » of the operating parts. If these parts are to be refitted take all the necessary precautions during dismantling.*

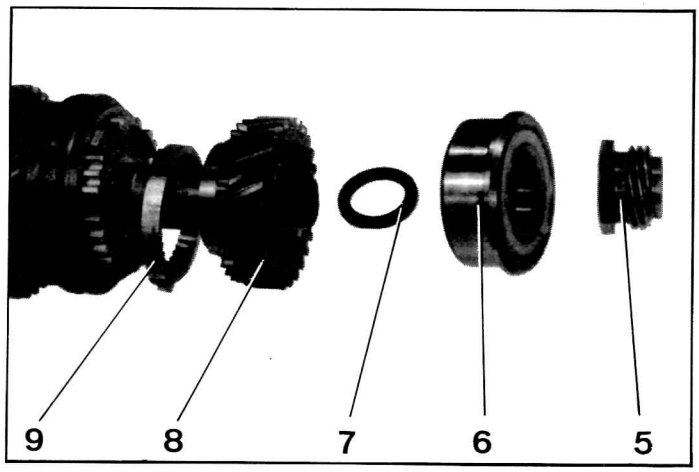
a) Fit the bevel pinion assembly in a vice equipped soft jaws, gripping either the reverse gear loose pinion or the first gear loose pinion.
Lock the bevel pinion rigidly with the pinion gripped in the vice by shifting the relevant slider in the appropriate direction.



8270

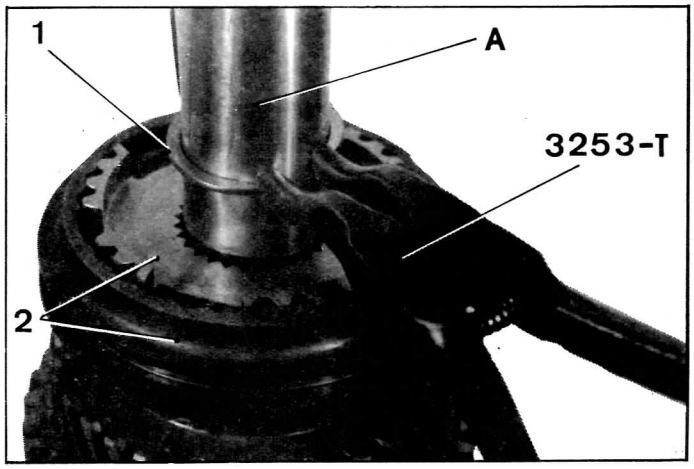
b) Remove :
- the hex.-head bolt (5) (locked by peening)
(36 mm spanner)
- the bearing (6),
- the adjusting washer (7) for the conic distance
- the 3rd gear loose pinion (8),
- the 3rd gear synchro ring (9).

NOTE : If the gearbox is being reconditioned without the following being exchanged :
- the gearbox casing,
- the crown wheel and pinion,
- the bearing (6)
retain the adjusting washer (7) to avoid having to reset the conic distance.

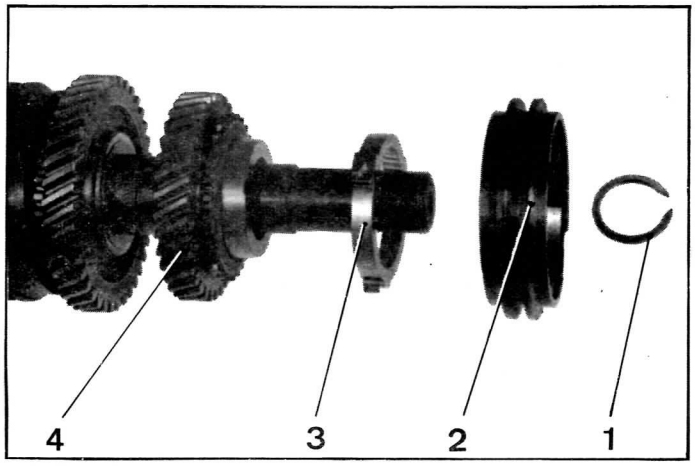


7292

Supplement N° 1 to Manual 810-2 (CORR)

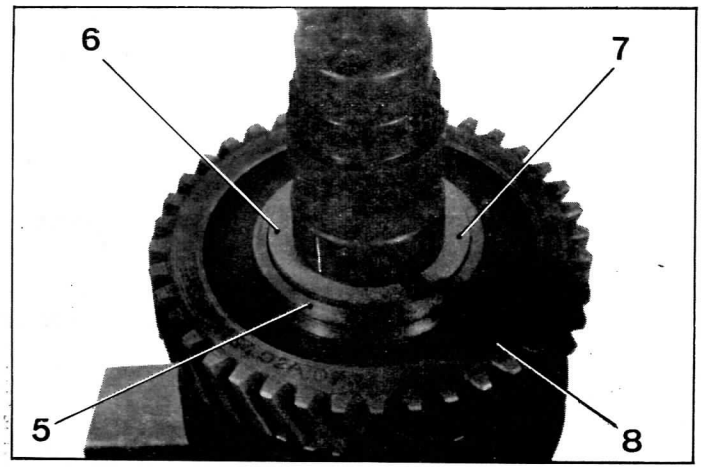


c) Remove the locking ring (1) from the synchro hub (2) of 2nd and 3rd gear. To do so :
- wrap the end of bevel pinion shaft in a sheet of foil A (0.10 mm thickness). Hold it against the ring (1). Slightly separate the ends of the ring with the aid of pliers 3252-T.
- slip the foil under the ring (1), remove the ring by sliding it over the foil.
- remove :
  - the 2nd and 3rd gear synchro hub slider assembly (2),
  - the 2nd gear synchro ring (3),
  - the 2nd gear loose pinion (4)



NOTE : The 2nd/3rd gear synchro rings are identical.
However, if these parts are not replaced, they must be kept paired with the corresponding pinions.

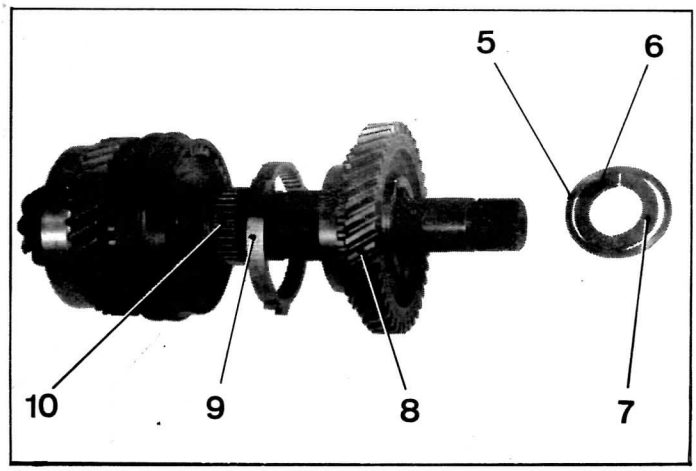
d) Remove the 1st gear loose pinion.
Release the washer (5) and remove the two half washers (6) and (7).
Remove :
- the 1st gear pinion (8),
- the 1st gear synchro ring (9),
- the needle cage (10).

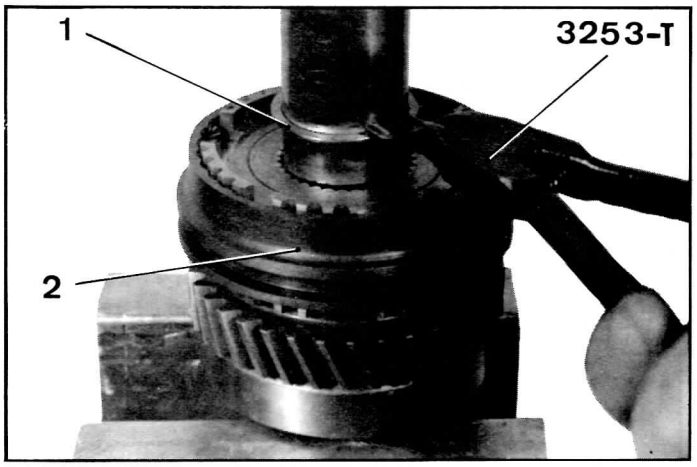


NOTES :

- The reverse and 1st gear synchro rings are identical.
  However, if these parts are to be refitted, they must be kept paired with the corresponding pinions.

- These synchro rings are different from those fitted to the four-speed pedal-operated clutch gearbox.





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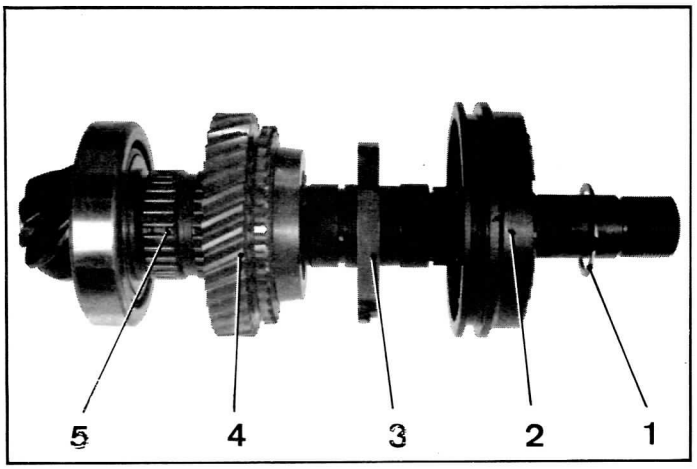
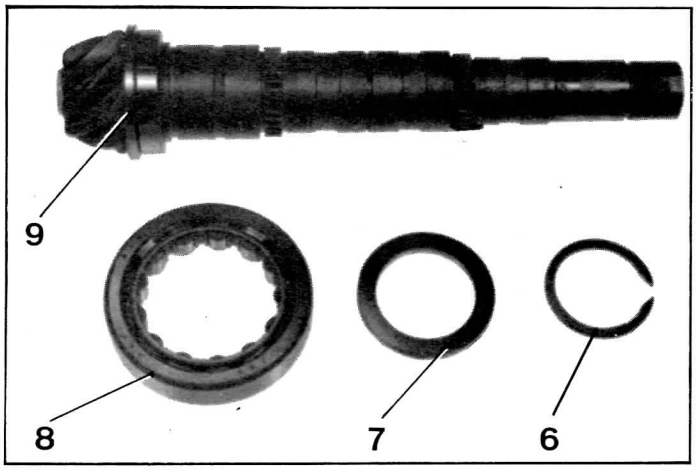
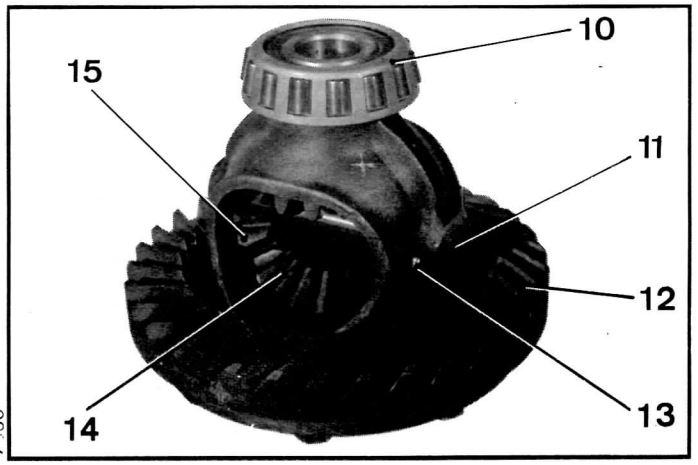




7300



7386

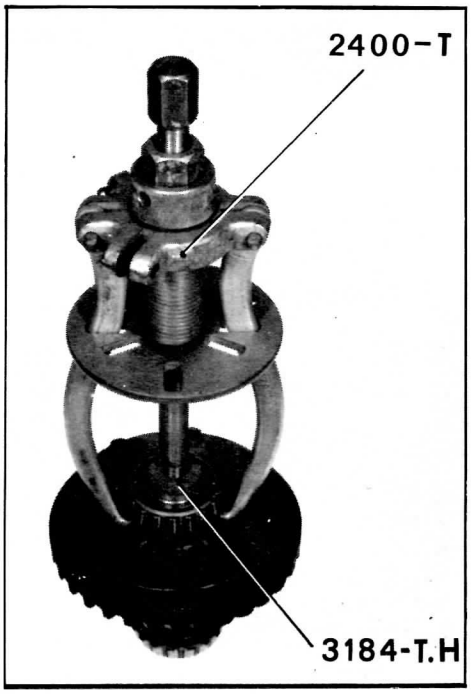
e) Remove the locking ring (1) from the reverse and 1st gear synchro hub; proceed in the same manner as for the removal of the locking ring of the 2nd/3rd synchro hub (paragraph c).
Remove :
- the reverse-1st gear synchro hub and sliding gear assembly (2),
- the reverse gear synchro ring (3),
- the reverse gear loose pinion (4),
- the needle cage (5).

f) If necessary, remove the front bearing of the bevel pinion.
To do so :
Remove :
- the locking ring (6) (take the same precautions as for the removal of the locking rings from the synchro hubs (see paragraph c),
- the thrust washer (7),
- the bearing (8),
- the inner race (9) of bearing (8),
Using a press and a tube 50 mm in diameter and 60 mm length.

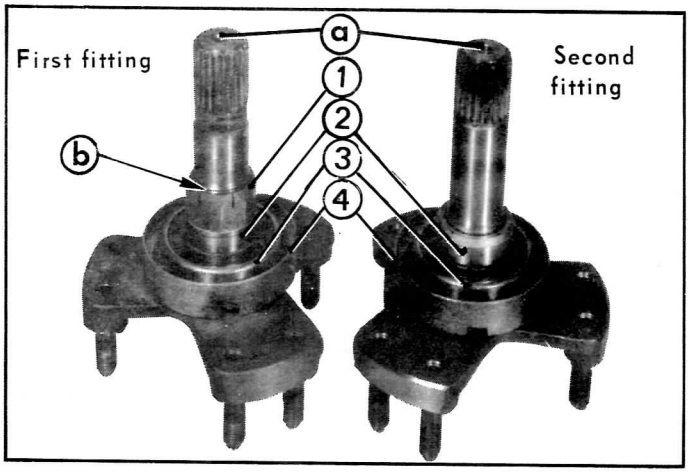
NOTE : The bevel pinion of the converter gearboxes does not have retarding dowels.

5. Dismantle the differential :

Remove the pin (13) and drive out the shaft (11).
Remove the two satellite gears (15) and then the two planetary gears (14).
Remove the crownwheel (12).
Remove the bevel bearings (10) (use universal extractor 2400-T and pad 3184-T.H).



9463

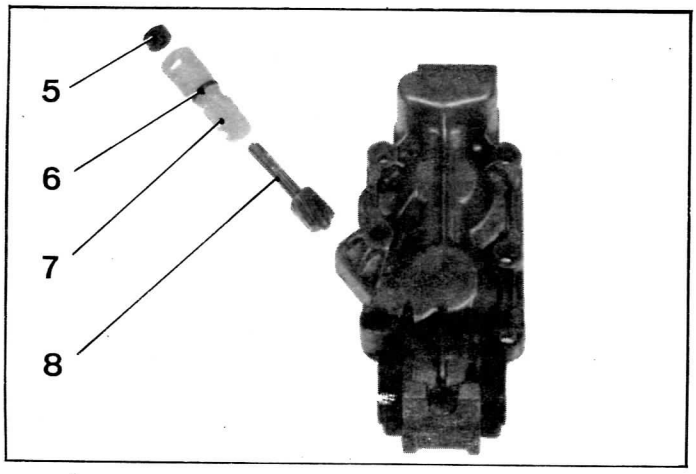


11244

6. Strip the gearbox drive outlet shafts :

Grease the visible portion « b » of the thread.
Remove :
- the nut (1) (if fitted),
- the bush (2),
- the bearing (3) and the ring-nut (4) (using an extractor bearing under the ring-nut (4) as close as possible to the shaft).

NOTE : The extractor used should have a central screw fitted with a ball to avoid damaging the end « a » of the shaft.



9239

7. Strip the rear cover :

Free the speedometer drive socket (7) from the casing.
Uncouple the pinion (8) from the socket.
Remove the seals (5) and (6).

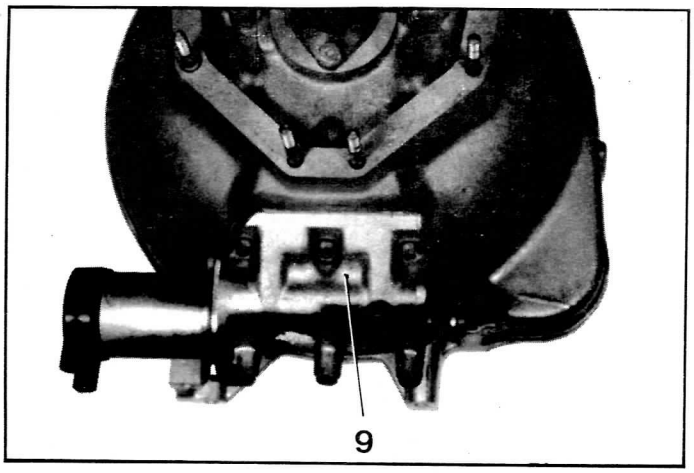
8. Strip the converter casing :

a) Remove the distributor assembly (9) (6 mm Allen key).

b) Remove the oil pump. To do this :
- mark the position of the pump in relation to the converter casing.

Remove :
- the bolts (10) holding the pump casing,
- the pump casing (11) and the pinions.

c) Remove :
- the pinions (13) and (14),
- the O-ring seal (15),
- the seal (12).



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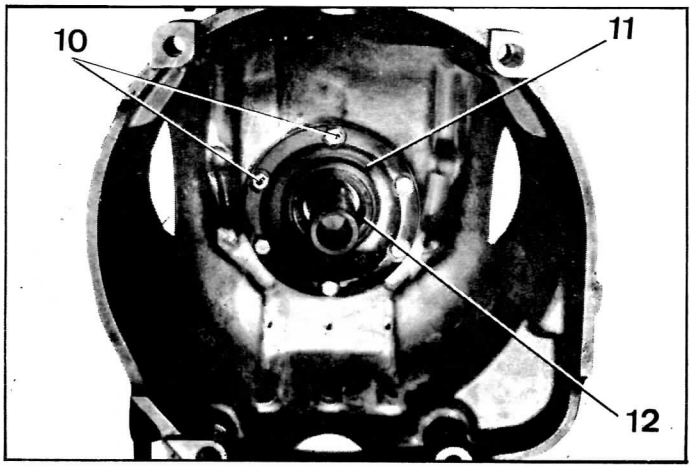

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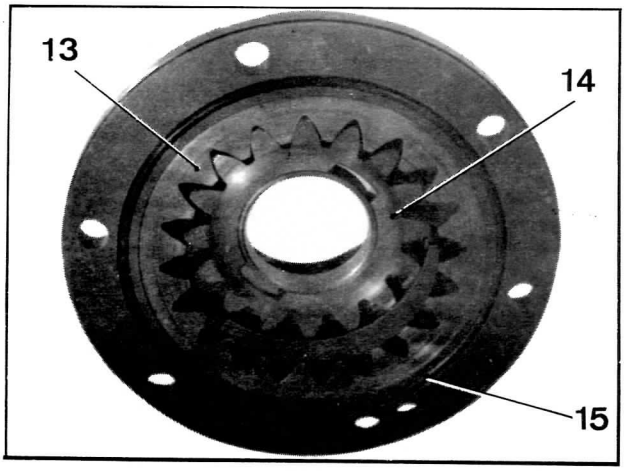

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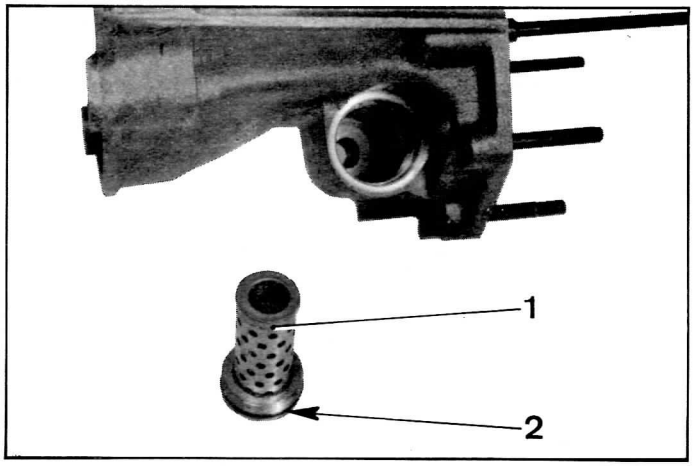

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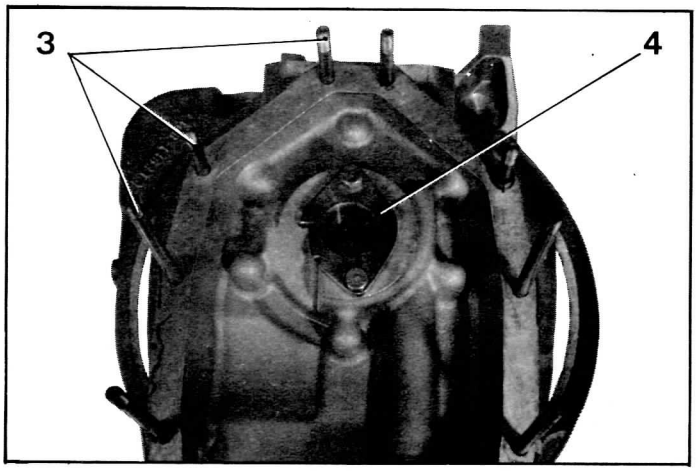

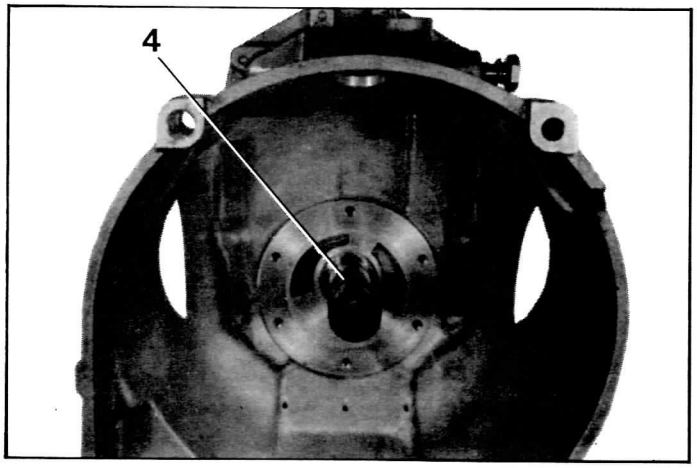

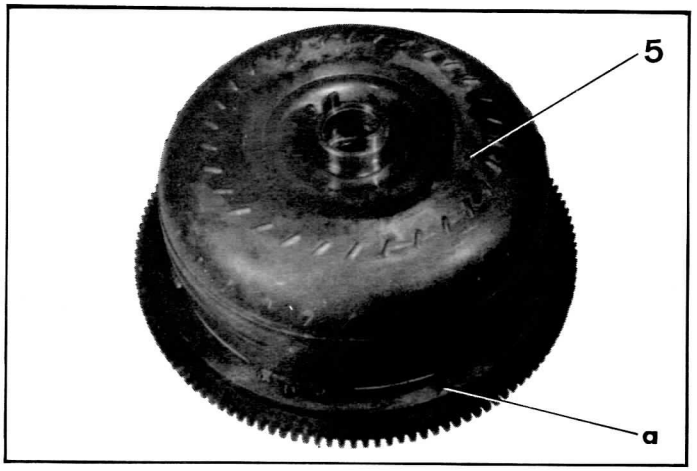

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d) Remove the oil strainer (1) and free the O-ring seal (2).

e) Remove the studs (3) if necessary (stud extractor 2410-T).
IMPORTANT : Never remove the stator sleeve (4). This part is not sold separately and can only be fitted in a repair workshop.

9. Drain the converter :

Turn the converter upside down over a container and allow to drain for several hours.

10. Remove the starter gear-ring (if necessary) :
To do so :

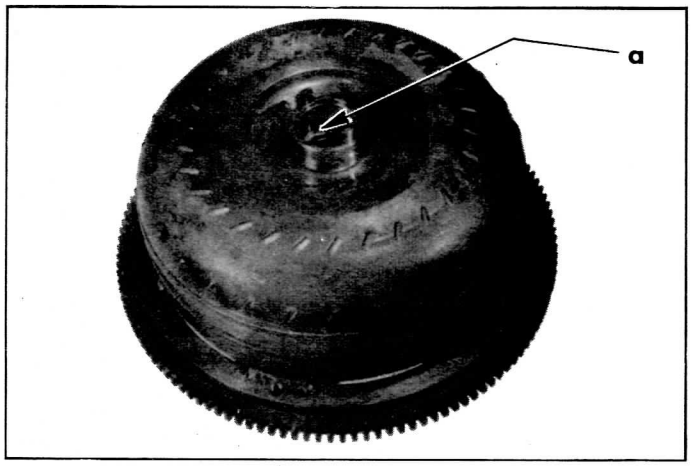
a) Saw the starter ring level with one of the slots « a » of flange « b »., and drive it out.

b) Fit the new starter gear-ring :
Turn the converter upside down and rest it on the planks.
Carefully clean the flange « b » at the location of the starter ring.
Heat the new starter ring using a blow-torch fitted with an 800 to 1000-litre jet.
Direct the flame towards the inside bore of the starter ring while continually rotating it so that expansion takes place uniformly.
Stop heating when the starter ring temperature reaches 200° C (pale straw colour).
Position the starter ring on the flange *with the non-machined face towards the shoulder of the flange.*
Perform this operation rapidly. Use a bronze drift if necessary.

11. Clean the parts :

NOTES :

- The bearing surfaces for the different pinions on the bevel pinion shaft should be free from defects. *These surfaces must not be given any treatment whatsoever.*
- Blow through the oil passages in the casing with compressed air.
- Complete the cleaning of the joint faces with alcohol.



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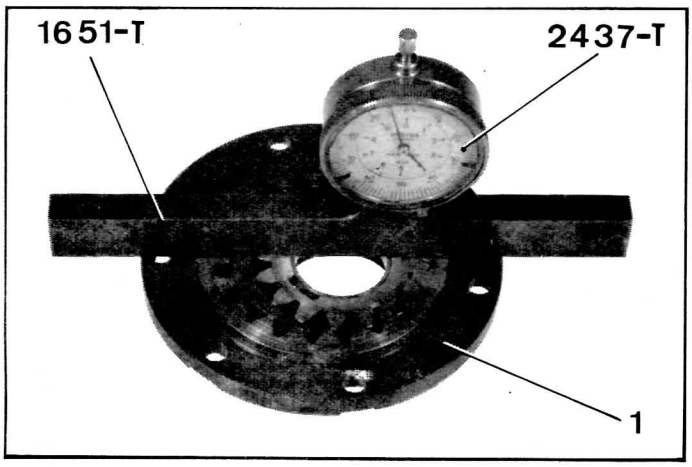

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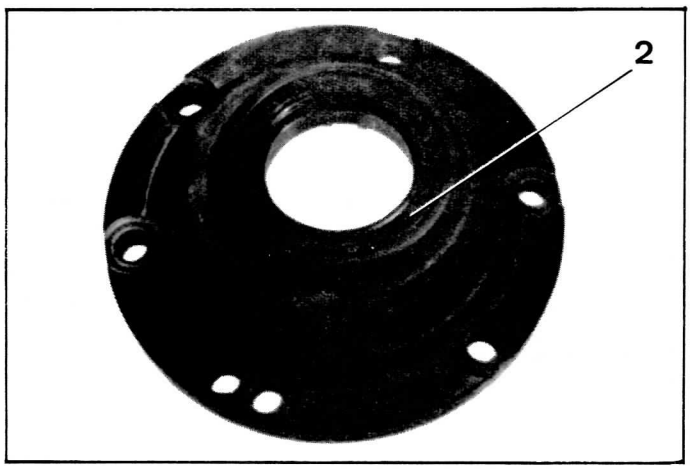

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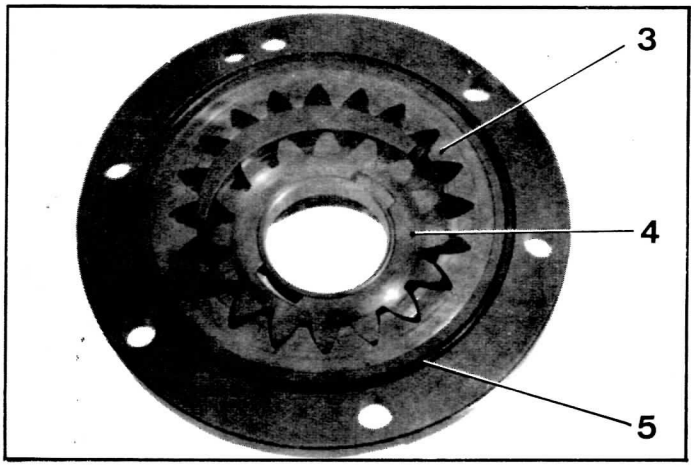

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III. PREPARING THE ASSEMBLIES.

1. Fill the converter with **TOTAL Fluid T oil** (this oil is used in the converter and the gearbox).

NOTE : For this operation, rest the converter flat on the bench. Fill the converter through the orifice « a » in stages because the oil takes a certain time to percolate through the various parts of the converter.

If the converter has been properly drained, it should take about 1.5 litre of oil. The converter must not be completely filled until after the gearbox has been fitted to the vehicle. (True oil capacity of the converter about 2.3 litres).

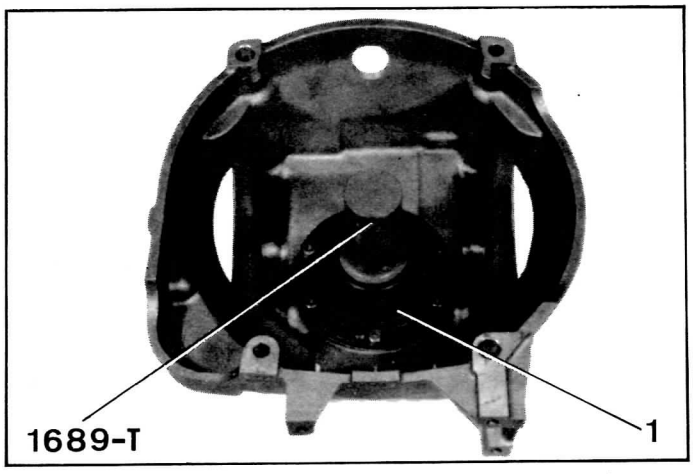
2. **Prepare the oil pump :**

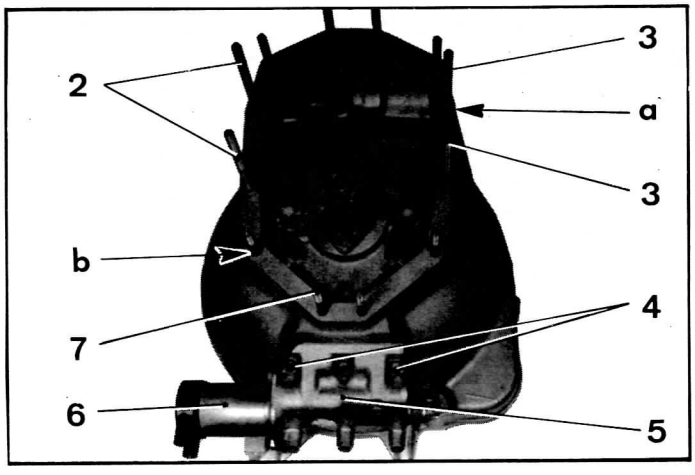
a) Check the lateral play of the gears :
Fit the gears in the pump casing (1).
Fit a dial gauge 2437-T on ruler 1651-T and calibrate the assembly on a surface plate. Fit the calibrated assembly on the pump casing and measure the clearance between the bearing face of the casing and each of the gears (3) and (4).
This clearance must be between 0.03 and 0.06 mm.

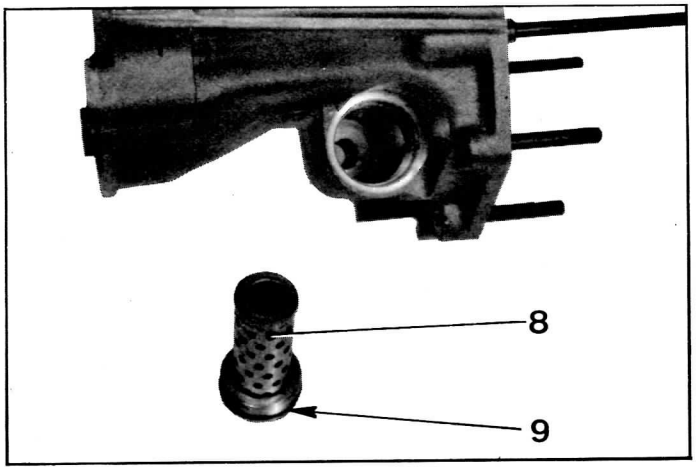
b) Fit the seal (2). To facilitate fitting, smear the cover bore and the seal periphery with grease.

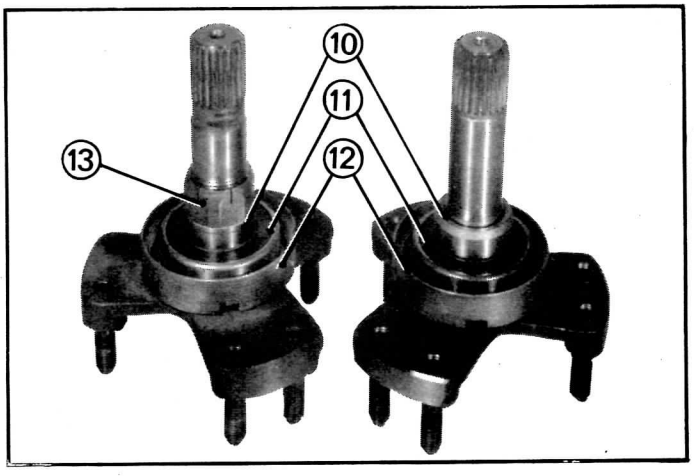
3. **Prepare the converter casing :**

a) Fit the oil pump :
- Oil the gears (3) and (4).
- Stick the O-ring seal in its groove using grease.









- Fit the oil pump (1) in the converter casing.
- *Centre the pump with the aid of a mandrel 1689-T.*
- Fit and tighten the bolts holding the pump to 19 m.N (1.9 m.kg) (13 1/2 ft.Ib) (no washer under the head of the bolt).

Make sure the pump rotates freely (using the drive slots). If not, loosen the pump fixing screws, and re-centre the pump using mandrel 1689-T, until the pinions rotate freely.

b) Fit the distributor.
Smear the distributor joint face (5) with CURTYLON sealing compound.
Fit the distributor on the converter casing the electromagnet (6) towards the right of the casing.
Fit and tighten the bolts (4) from 12 to 17 m.N (1.2 to 1.7 m.kg) (8 1/2 to 12 1/2 ft.Ib)

c) Fit the assembly studs (stud inserter 2410-T).
There are three different lengths of stud.
Fit them in the following way :
- at (2) and (3) : the four longest studs
- at (7) : the medium length stud
- in the other positions : the shorter studs

NOTE : Make sure that there are two centering bushes in « a » and « b ».

d) Fit the oil strainer.
Fit the O-ring (9) on the starter (8).
Make sure there is a rubber washer at « c ».
Screw the strainer into its housing on the converter casing, tighten it from 10 to 15 m.N (1 to 1.5 m.kg) (7 to 11 ft.Ib).

4. Prepare the gearbox drive outlet shaft :
Fit on each shaft :
- the ring-nut (12),
- the bearing (11) (press-fit using a tube with inside diameter 26 mm, outside diameter 34 mm, and length 120 mm).
- the bush (10).

NOTE : This bush should not show any trace of scratches or damage. Otherwise, replace it.
Fit and tighten the nut (13) from 140 to 160 m.N (14 to 15 m.kg) (101 to 115 ft.Ib) (if fitted).

5. Prepare the bevel pinion assembly :
IMPORTANT : *The bearing surfaces for the 2nd and 3rd gear loose pinions on the bevel shaft have a special surfacing treatment, therefore any trace of scratches or damage could cause « seizure » of the operating parts. It is, therefore, essential to take the necessary precautions when fitting these parts. Lubricate all parts before fitting.*

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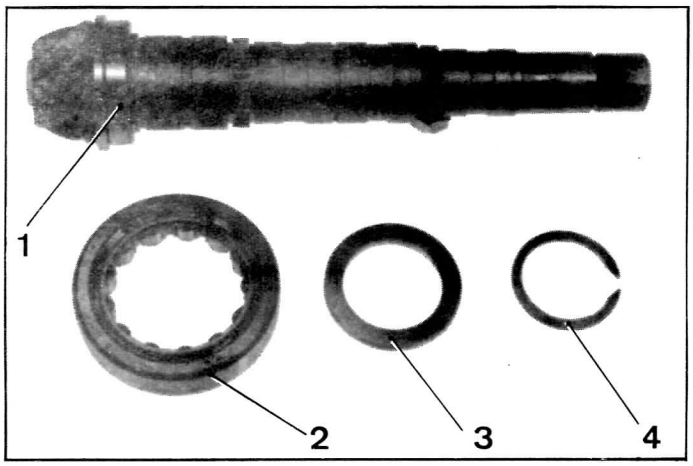
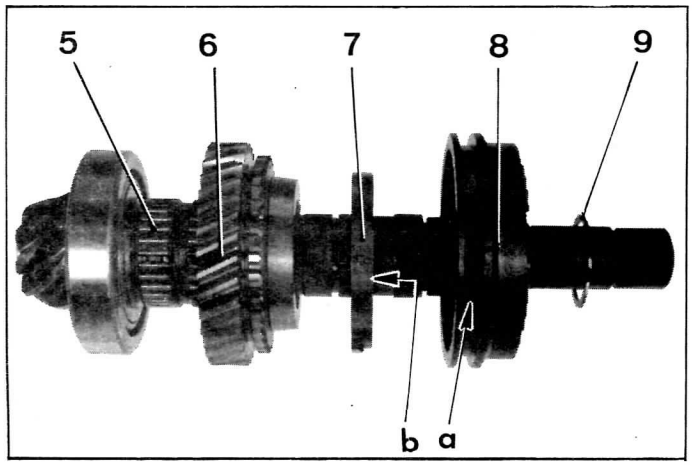
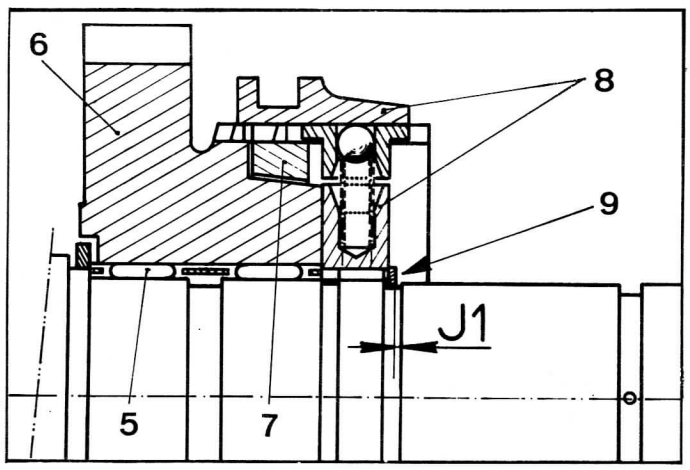
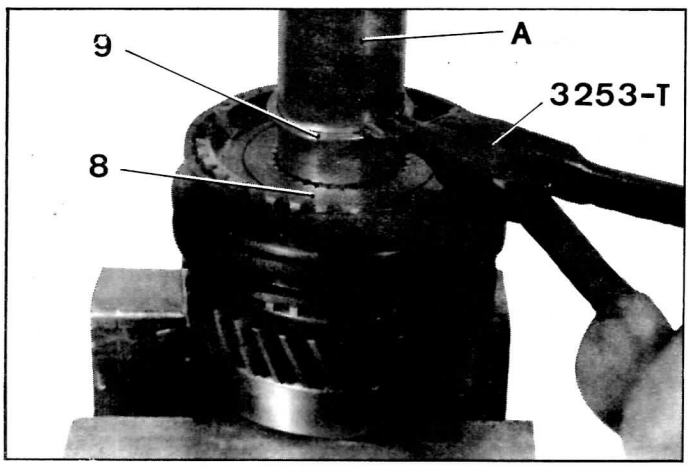








NOTE : The section of the ends of the locking rings is slightly tapered. Position the pointed part of the ends on the opposite side to the synchro ring so as to make it easier to remove the locking ring with circlip pliers 3253-T.

a) Fit the roller bearing :

Fit :

- press-fit the inner race (1) using a tube (inside diameter 45 mm, length 220 mm),
- the bearing (2) (the small diameter of the roller cage towards the pinion teeth).
- the thrust washer (3) (the face without markings towards the rollers).
- the locking ring (4) using pliers 3253-T, protecting the bearing surface of the reverse gear pinion with a sheet of foil (see paragraph d).

b) Fit :

- the needle cage (5),
- the reverse gear pinion (6),
- the reverse gear synchro ring (7),
- the reverse/1st gear synchro hub-sliding gear assembly (8) (groove « a » towards reverse gear pinion).

NOTE : The reverse/1st gear synchro rings are different from those of 1st and 2nd gear fitted on a four-speed gearbox.

They are marked with three equidistant bosses (120°) cast integrally (0.5 mm thickness) and fitted at « b » on the hub side face of the synchro.

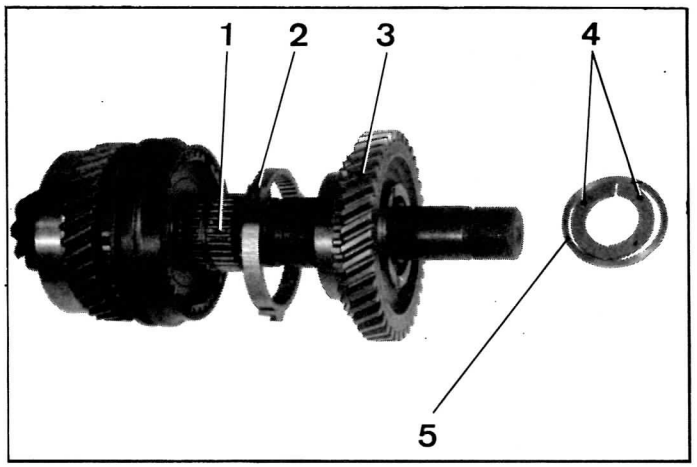
c) *Adjust the axial clearance of the reverse / 1st gear synchro hub :*

From the locking rings sold by the Replacement Parts Department, choose the one which gives a maximum clearance J1 = 0.05 mm (a 0.05 mm shim must not pass between the ring (9) and the side of the groove). The ring thicknesses are available in steps of 0.04 mm.

d) Fit the locking ring (9).

Wrap the bevel pinion with a sheet of foil A (thickness of 0.10 mm).

With the aid of pliers 3253-T, separate the ring ends. Engage the ring on the foil.
Slide the foil-ring assembly until the ring can enter the groove.



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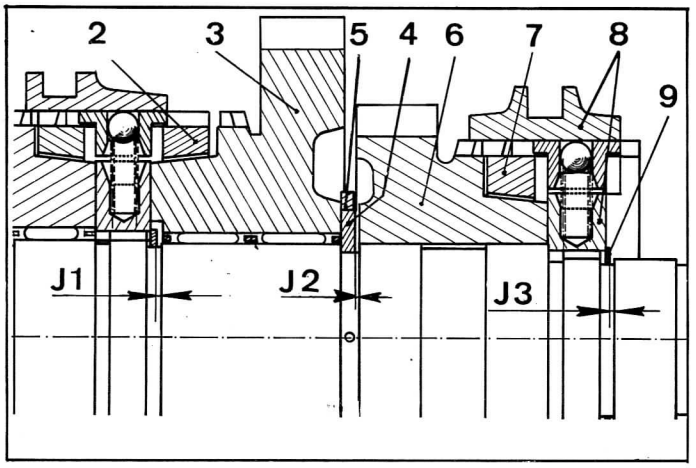

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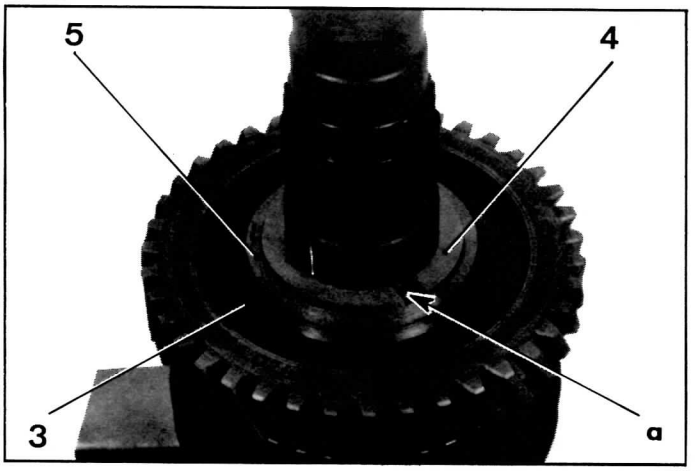

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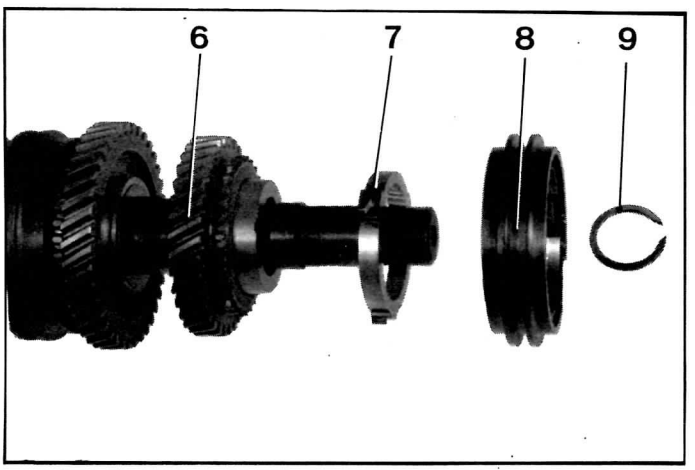

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e) Fit :
- the needle cage (1)
- the 1st gear synchro ring (2) (See note paragraph 5 b),
- the 1st gear pinion (3).

NOTE : *Since March 1, 1971* the 1st and 2nd gear synchro rings and pinions have been modified.

On gearboxes produced prior to that date, the exchange of a ring will entail the exchange of the corresponding pinion.

f) *Adjust the clearance of the 1st and 2nd gear wheels by choosing the thickness of the half-washers (4) :*

With the half-washers fitted, there should be a *maximum clearance J2 = 0.05 mm* between the half-washer and the side of the groove. (A 0.05 mm shim must not be able to pass). The half-washers are available in steps of 0.03 mm; choose the thickest half-washers which will fit into the groove.

NOTE : The two half-washers must have the same thickness.

Fit the two half-washers (4) on both sides of the stop pin « a ». Fit the washer (5).

g) Fit :
- the 2nd gear pinion (6),
- the 2nd gear synchro ring (7),
- 2nd/3rd gear synchro hub-sliding gear assembly (6).

NOTES :
- The assembly (8) is symmetrical.
- See Note in paragraph e).

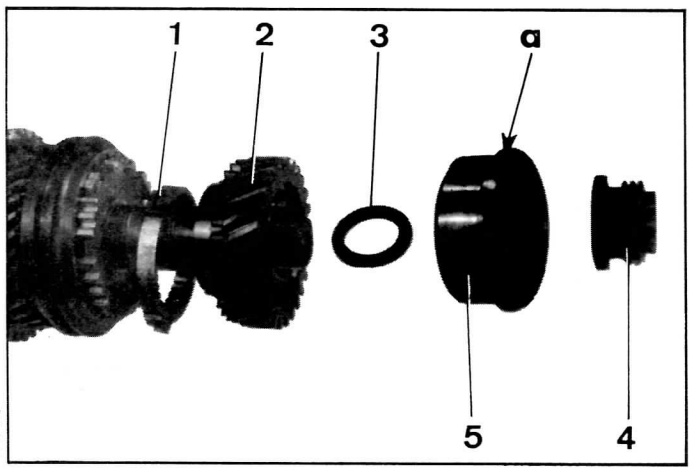
h) *Adjust the axial clearance of the 2nd/3rd gear synchro hub :*

There should be a *maximum clearance J3 = 0.05 mm.*

Proceed as for the 1st/reverse gear synchro hub (see paragraph c).

i) Fit the locking ring (9).

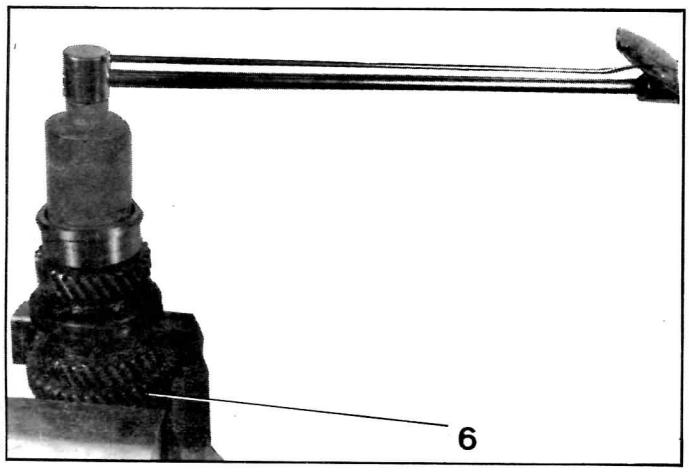
Proceed as for the 1st/reverse gear synchro hub locking ring (see paragraph d).



7292

j) Fit :
- the 3rd gear synchro ring (1),
- the 3rd gear pinion (2),
- an adjusting washer (3) of known thickness,
- the bearing (5) (the shoulder « a » facing the rear of the bevel pinion),
- the hex.-head bolt (4).

Tighten the nut (4) from 100 to 120 m.N (10 to 12 m.kg) (72 1/2 to 87 ft.Ib) (36 mm socket and torque wrench).
Do not peen the nut.
NOTE : To hold the bevel pinion during the operation clamp in a soft jawed vice the 1st gear pinion (6) locked with the bevel pinion shaft by the 1st/reverse gear slider.



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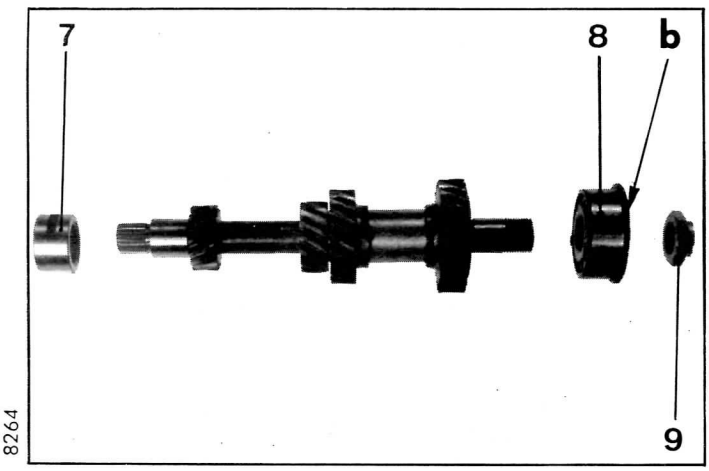
CAUTION : Never grip the sliders in a vice.

IMPORTANT : Before proceeding to the conic distance adjustment, it is essential to fit an adjusting washer (3) and to tighten the nut (4) to the required tightening torque.



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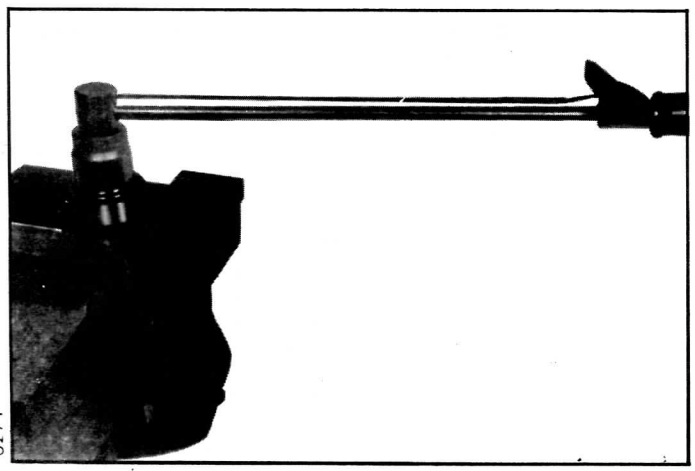
6. **Prepare the primary shaft :**

a) Fit the ball bearing (8) with the shoulder « b » towards the rear.

Hold the shaft by clamping one of its pinions in a vice fitted with soft jaws.

Tighten the nut (9) from 70 to 85 m.N (7 to 8.5 m.kg) (50 1/2 to 61 1/2 ft.Ib) (29mm key).

Lock the nut by peening.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b) Fit the needle bearing (7).

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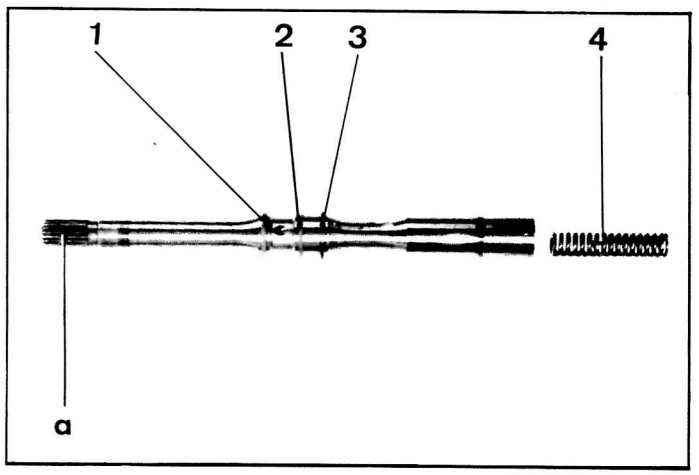

7. Prepare the input shaft :

Oil the seals (1) and (2), fit them on the shaft from the splined end of the shaft « a ».

Fit the circlip (3), replacing it if necessary.

NOTE : The spring (4) will only enter its housing when the shaft is fitted into the converter.

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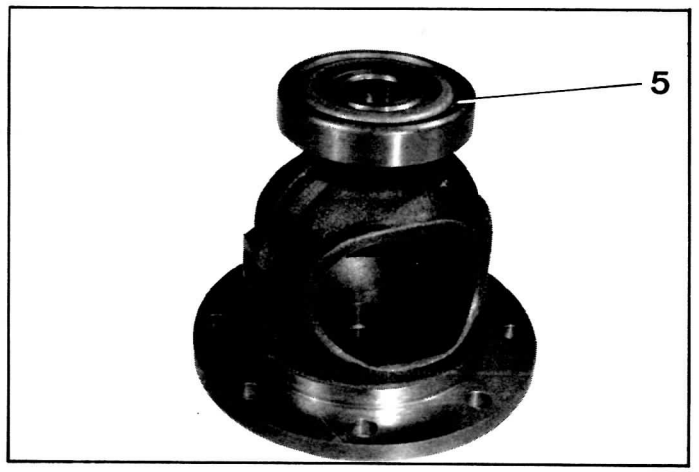

8. Prepare the differential casing :

Press fit the conical roller bearings using a tube (inside diameter = 36 mm, outside diameter = 45 mm, length = 40 mm).

NOTES :

- Do not invert the outer races of the bearings.
- The differential casing must not be completely built up until after the crownwheel and pinion have been adjusted.

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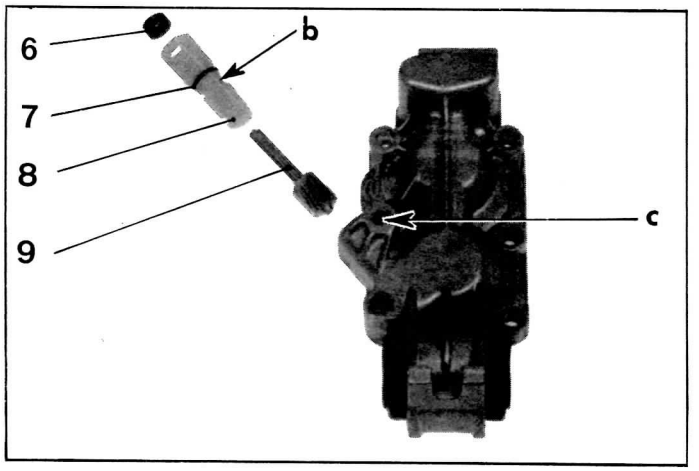


9. Prepare the rear cover :

Fit the rubber seal (6) and the O-ring (7) on the speedometer drive socket (8) (new seals).

Engage the pinion (9) (shaft greased beforehand). in the socket (8).

Engage the speedometer drive assembly into the cover with the groove « b » of the socket (8) orientated for the screw at « c ».

10. Fit the gearbox drive outlet shaft seals :

a) On each half casing : grease the casing bore and seal periphery.

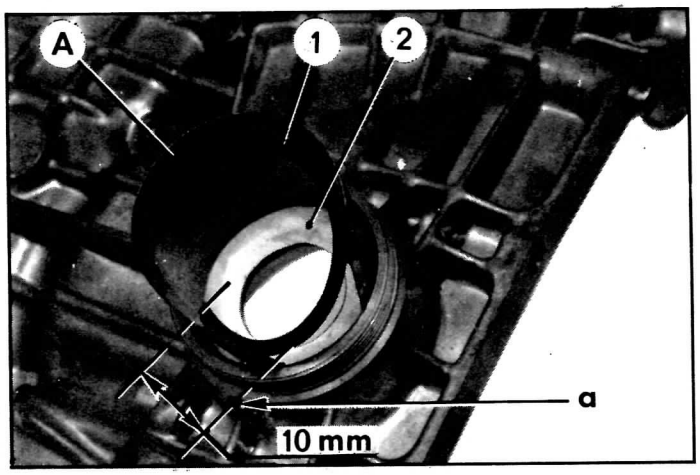
Position the seal in its bore, *with the lip towards the inside of the casing.*

b) *Gearbox without bearing circlip :*

Fit the seal using mandrel 3184-T.E (contained in tool box).

NOTE : After fitting, the seal is 3 ± 0.5 mm below the bearing face of the differential bearing.

c) *Gearbox with bearing circlip :*



Fit the seal (2), using a 51 mm diameter tube or a 36 mm socket spanner.

Press in the seal to the level of the circlip groove. Fit into the bore (1) the circlip using a sheet of foil A of length = 150 mm, width= 60 mm, and thickness = 0.20 mm . (Use the tube or the socket spanner to finally position the circlip).

Remove the foil and position the circlip and seal with the aid of the mandrel used for gearboxes without circlips.

NOTE : After fitting, one of the ends of the circlip must be about 10 mm from the drain hole « a ».

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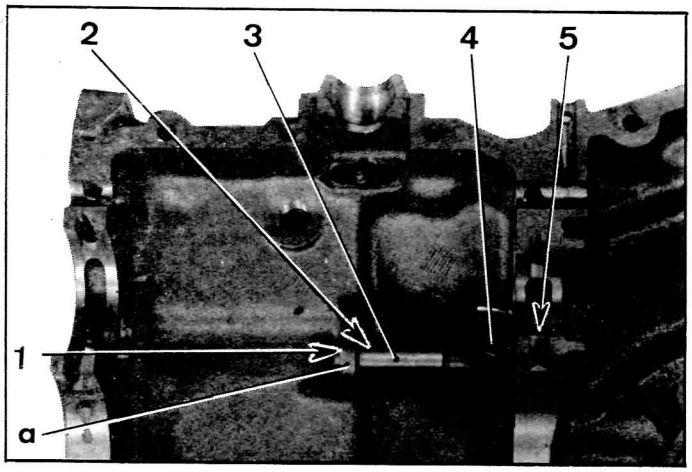
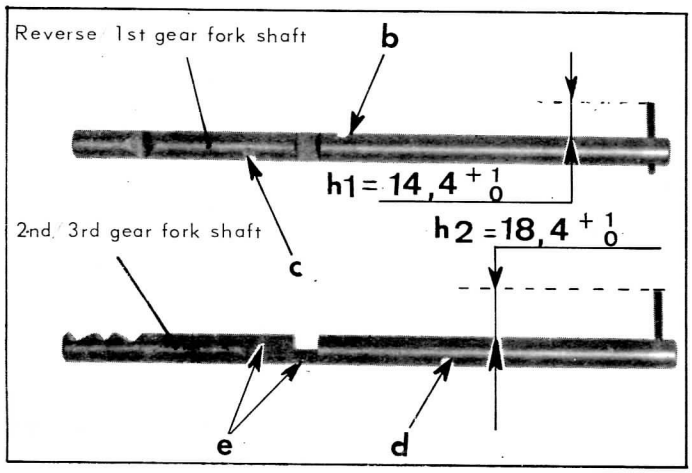
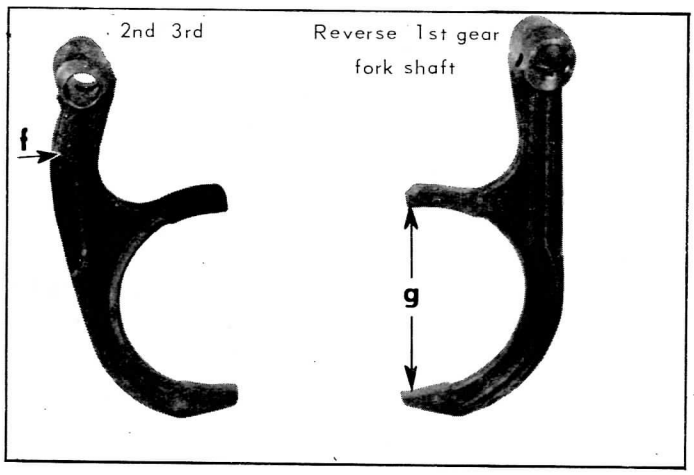
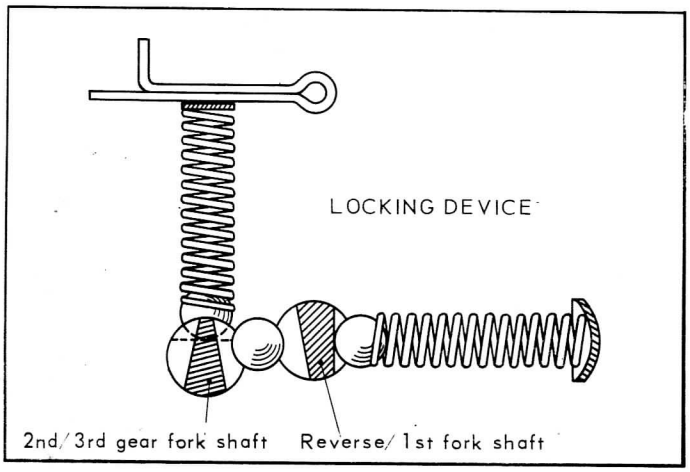








11. Prepare the left-hand half casing :

Position the spacer (3) and the intermediate pinion (4) of the reverse gear in the half casing (see photo top left for positioning the spacer and pinion).

Oil the shaft (1). Hold the spacer and pinion and engage the shaft (1) in boss « a » : the shaft end having the stop notch must be placed towards the differential.

Position the shaft so that the cylindrical pin (5) can be fitted.

NOTE : *The cylindrical pin (5) which locks the needle bearing of the primary shaft must stand slightly proud of the surface of this bearing.*

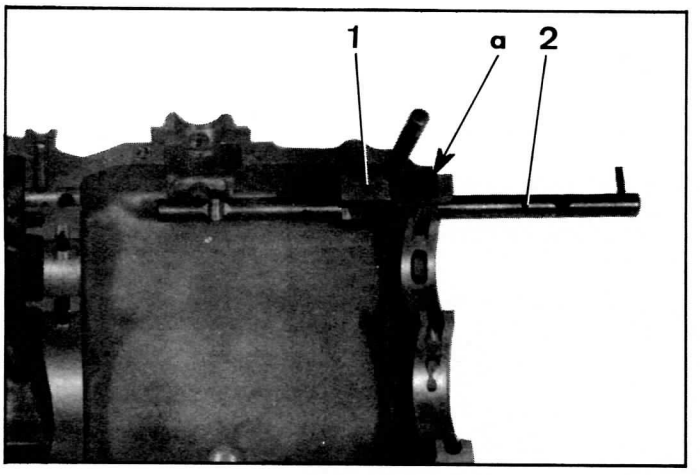
Fit the roll pin (2) which holds the spacer (3) on the shaft (1).

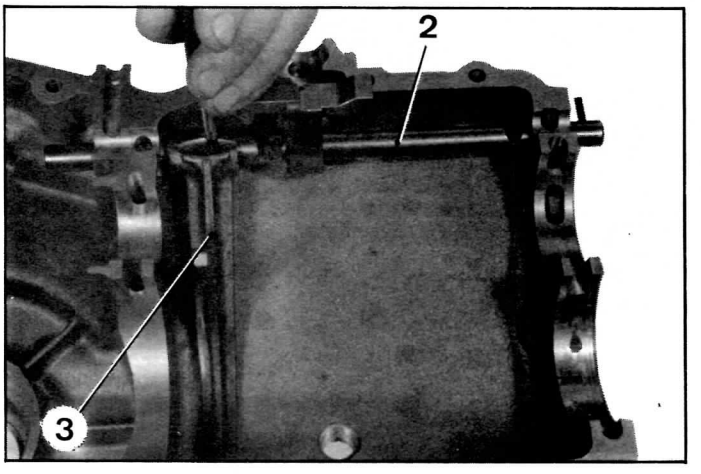
12. Prepare the right-hand half casing :

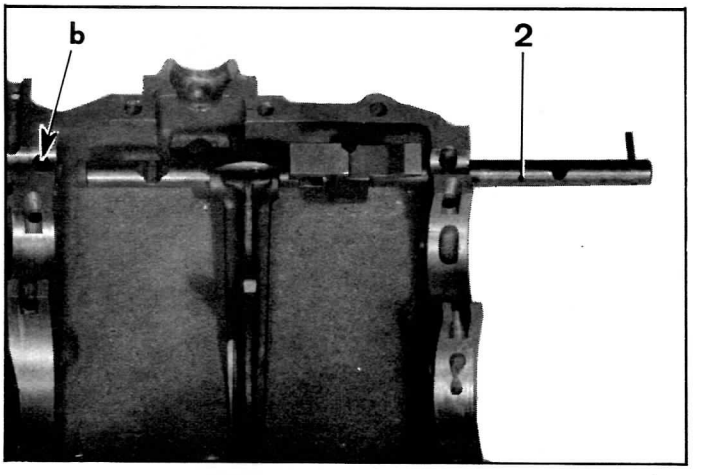
NOTES : Identification of shafts and forks :
- Shaft of reverse/1st gear fork : two notches for the fork locking pins at « b » and « c ».
- Shaft of 2nd/3rd gear fork : a single notch at « d » and two flats at « e ».
- Reverse/1st gear fork : distance « g » is greater than that on the 2nd/3rd gear fork which has a rounded rib at « f ».
- The three locking balls and springs are identical.

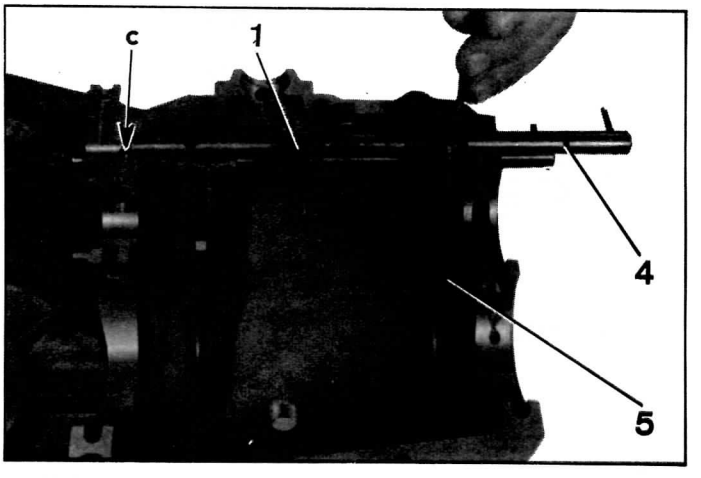
a) Fit the roll pins which operate the control switch unit on the fork shafts :
- Position the split of each pin perpendicular to the longitudinal axis of the fork shaft.
- Adjust the projection of each pin :
  - on the reverse/1st gear fork shaft :
    $b1 = 14.4 +1\ 0\ mm$
  - on the 2nd/3rd gear fork shaft :
    $b2 = 18.4 +1\ 0\ mm$

9549









8243

b) Fit the reverse/ 1st gear fork and shaft and the reverse gear operating lug :

CAUTION : *When fitting the roll pins which hold the lug or the fork on the shaft, hold the shaft-fork or shaft-lug assembly against one of the casing bearings to avoid bending the shaft.*

- Engage the shaft (2) in the rear bearing of the casing.
  Engage the reverse gear operating lug (1) on the shaft (the lead-in « a » towards the rear of the casing).
  Fit the roll pin which holds the lug by holding the lug-shaft.assembly against the rear bearing of the casing.
- Engage the reverse/ 1st gear fork (3) on the shaft (2).
  Move the shaft and fork assembly towards the front.
  Fit the roll pin holding the fork (3) against the front bearing of the casing.
- Move the shaft assembly (2), fork and lug towards the rear.
  Fit the locking ball and spring into their housing « b » (grease ball and spring beforehand).
  Compress the ball and spring (use 5 mm diameter rod) and insert the shaft (2) in the front bearing as far as the « neutral » position.

c) Fit the 2nd/ 3rd gear fork and shaft :
Grease and fit the ball between the reverse/ 1st gear shaft and the 2nd/ 3rd gear shaft at « a ».
Position the 2nd/ 3rd gear fork (5) in the casing.
Engage the shaft (4) in the fork (5) and then in the bore of the lug (1).
Fit the roll pin holding the fork (5) against the rear bearing of the casing.
Move the shaft (4) and fork (5) assembly as far as « neutral » position.

KIT 3184-T bis

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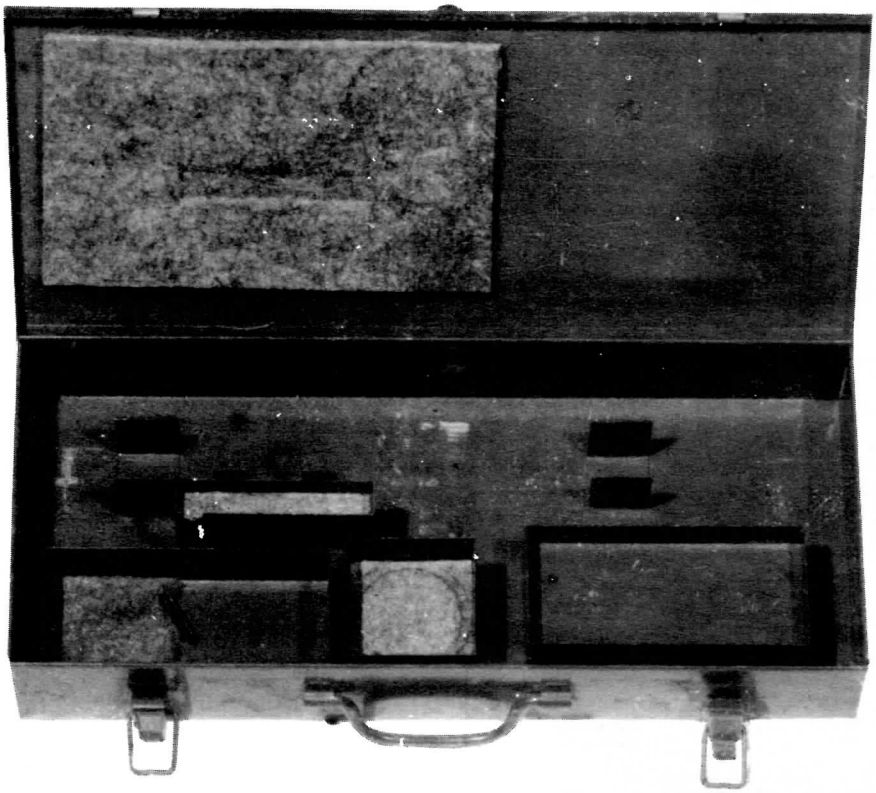
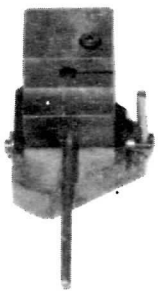
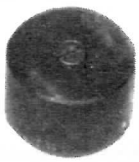
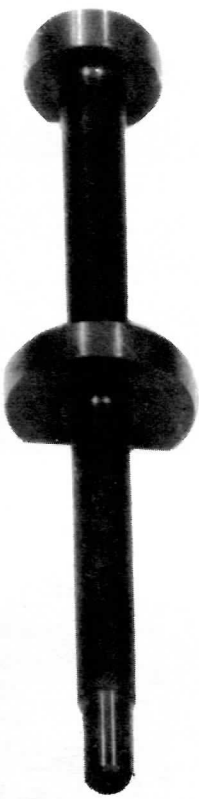
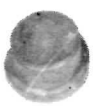


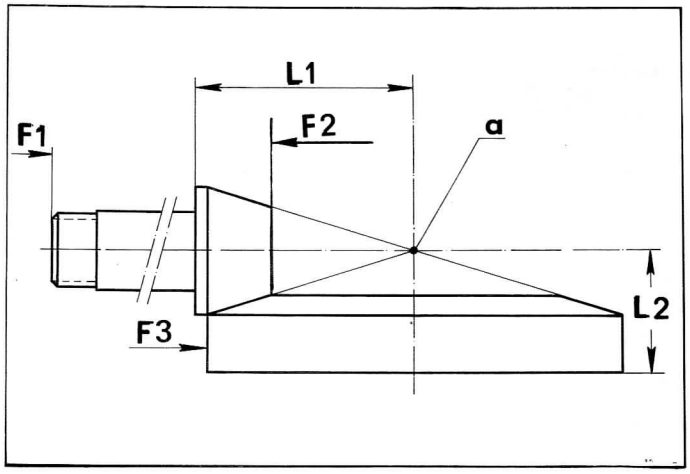


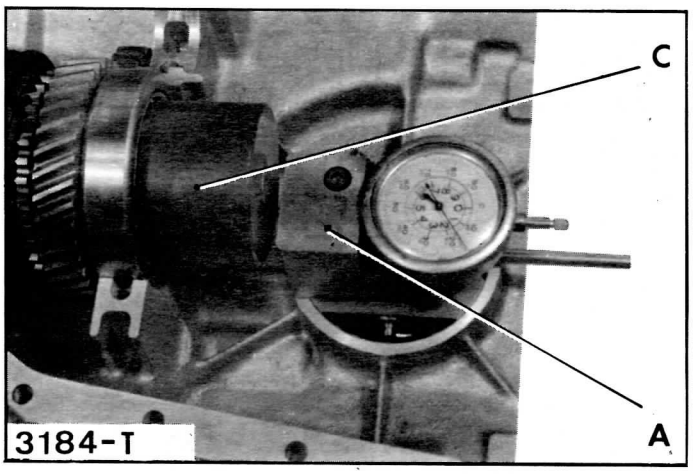


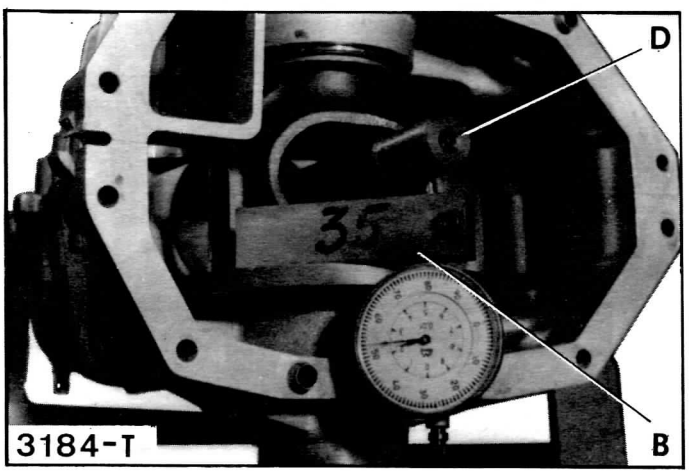


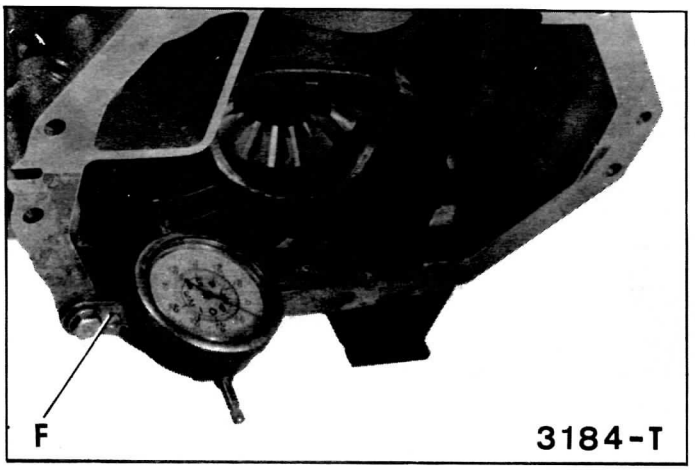


NOTE :
Kit 3184-T has been updated by the addition of the following tools :
- mandrel 3184-T.G
- pad 3184-T.H and is now known as 3184-T bis









IV. ADJUSTMENT OF THE CROWN WHEEL AND PINION

NOTE : This adjustment is highly important. By correctly setting the contact area it ensures silent operation and long service from the crownwheel and pinion..
The bevel pinion and the crownwheel are paired and marked with identical inscriptions engraved with an electric scriber on face F1 of the pinion shaft and on side F3 of the crownwheel (never separate a bevel pinion from its crownwheel).

NOTE : On some couplings, the pairing mark of the pinion is engraved not on face F1 of the shaft, but on face F3 of the pinion.

1. Adjustment principle :

In addition to the pairing marks, two dimensions are engraved on the side F3 of the crownwheel.

The larger dimension (example 82.05) represents the distance L1 from the intersection « a » of the differential centre lines to the thrust face for the bevel pinion bearing.

The smaller dimension (e. g. 40.00) is the distance L2 from the intersection « a » of the differential centre lines to the thrust face of the crownwheel on the casing.

To obtain these dimensions, it is neccessary to adjust the position of the pinion, then that of the crownwheel using adjusting washers whose thicknesses are to be determined.

It is essential that the crown wheel and pinion should be adjusted using fixture 3184-T and dial gauge 2437-T.

For adjustment of the bevel pinion position use cap C and dial gauge support A.

For the adjustment of crown wheel position use mandrel D and ruler B of the dial gauge.

For checking the backlash use dial gauge support F.

Supplement n° 1 to Manual 810-2 (CORR)

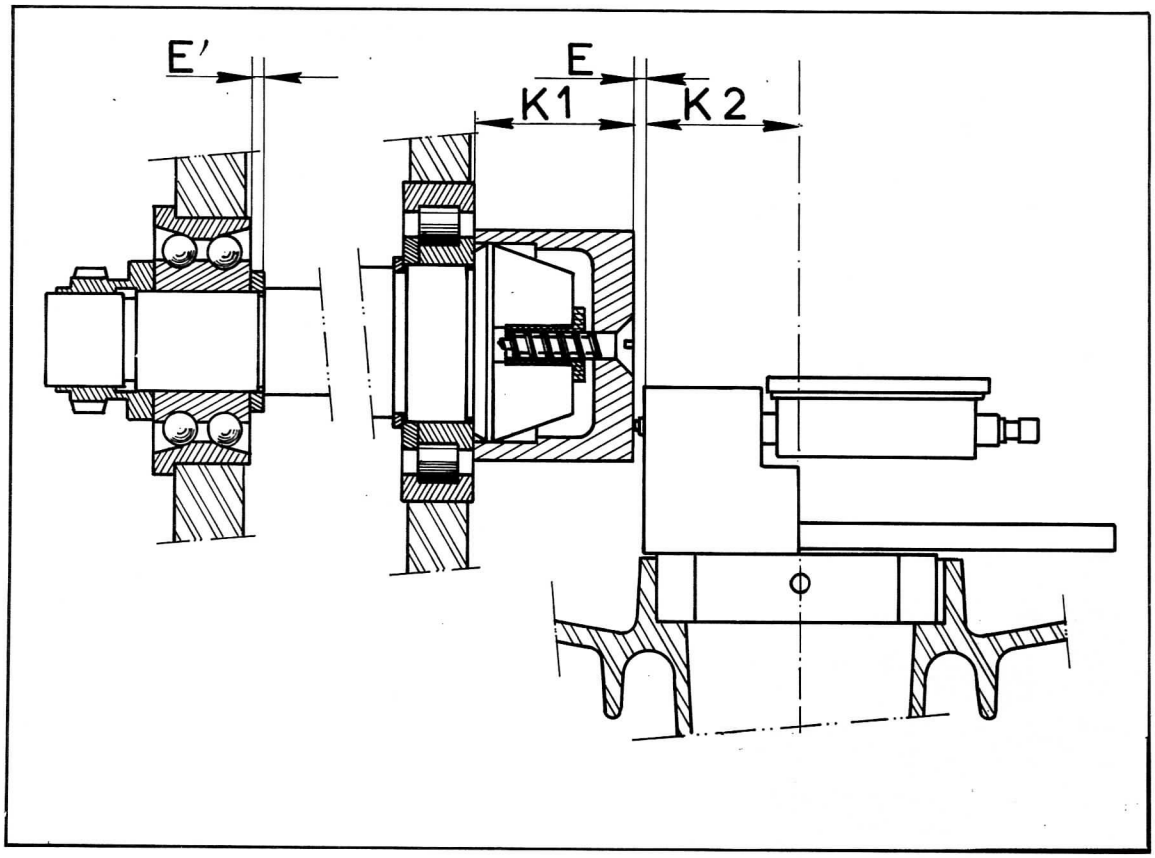


Figure 1

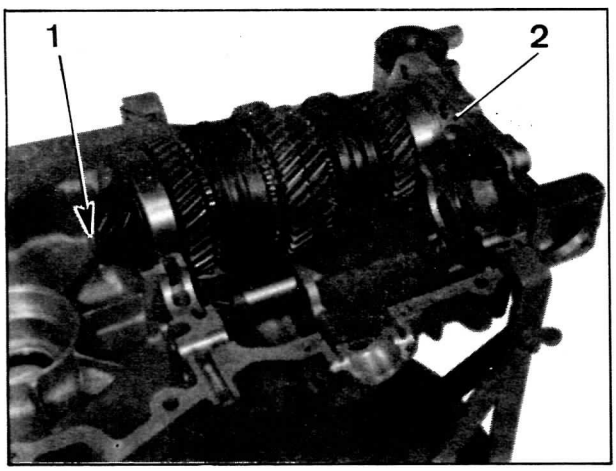


Figure 2

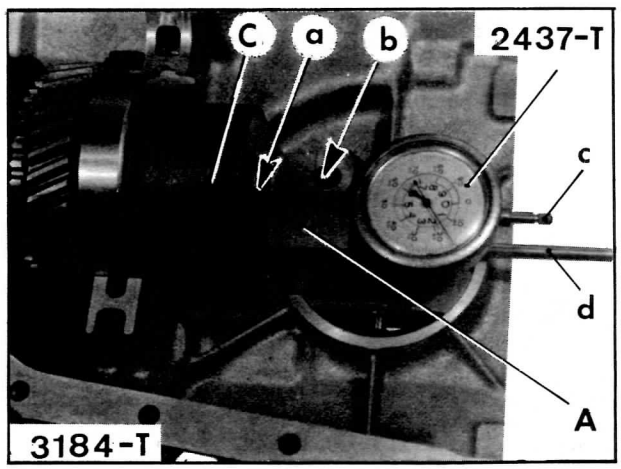


Figure 3

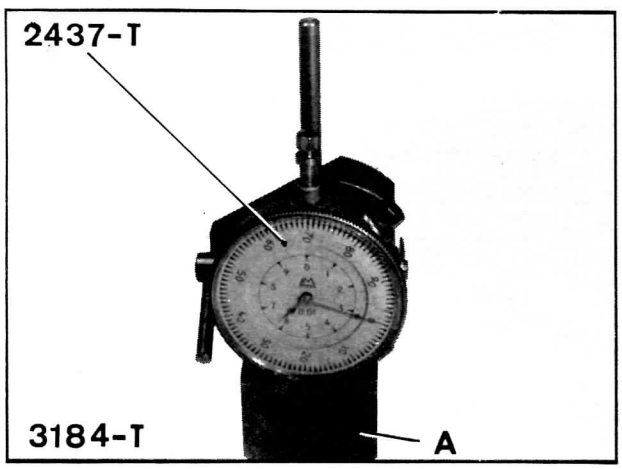


Figure 4

2. Adjustment of the bevel pinion position :

a) Fit the assembly of bevel pinion and gears in the left-hand half casing. Fit the rear cover (2). Hold it with the aid of two bolts.
Note the larger dimension engraved on the crownwheel. For example : L1 = 82.00 mm.

b) Fit the cap C of device 3184-T as shown in figure 3. Hold it with the aid of bolt « a » screwed in the plastic cap (1).

c) Carefully clean the housing of the differential bearing in the half casing : it should be free of all traces of damage or burrs.

d) Fit a dial gauge 2437-T on support A. Place the support on a surface plate (see figure 4) Bring the zero of the moving dial opposite the large hand of the gauge. Note the position of the total reading hand.
Example : total reading hand between 6 and 7.
The assembly of cap C and support A with the dial gauge in the calibration position corresponds to a distance K1 + K2 = 78 mm. This dimension is engraved on support at « b » (see figure 3).

e) Fit the support A in the casing. Thoroughly engage it in the bore of the differential bearing.
With the aid of handle « d » pivot support A first in one direction, then in the other and hold it at the exact point at which the large needle changes direction.
Check the position of cap C · rotate the bevel pinion; the dial gauge should show a maximum variation of 0.2 mm
If not, modify the position of cap C on the pinion.

f) Determine the bevel pinion position. :
Bring the dial gauge hands back to their calibration position (see paragraph d).
Example : total reading hand between 6 and 7 and the large hand on zero.
Slowly release the moving rod « c » of the dial gauge and count the number of turns or fractions of a turn made by the large hand until the gauge stem touches the cap.
Example : the large hand has made 4.44 turns therefore E = 4.44 mm.
The position of the driving pinion is therefore :

K1 + K2 + E or 78 + 4.44 = 82.44 mm

The pinion is too far from the centre line of the differential by :

82.44 - 82 = 0.44 mm

It is therefore, necessary to replace the existing washer by another which is 0.44 mm thicker.
Example : the existing washer has a thickness of 2.50 mm.
It must be replaced by one of thickness : E' = 2.50 + 0.44 = 2.94 mm.

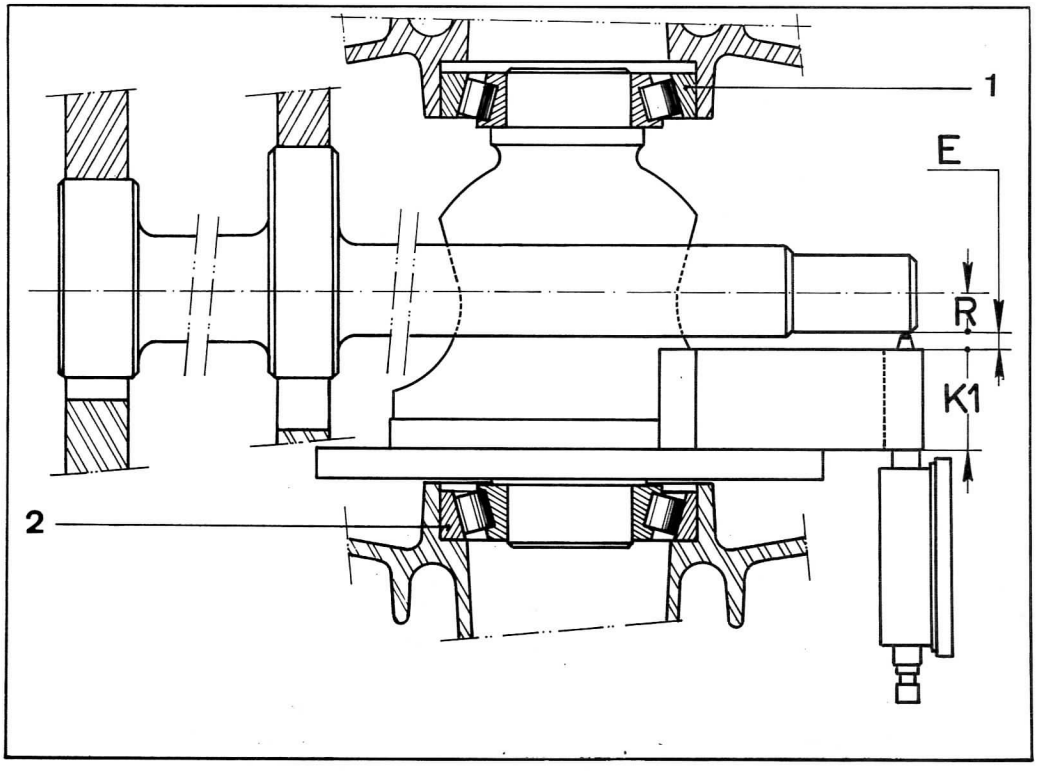
NOTE :
If the distance noted is less than the dimension engraved on the driving pinion, the latter is too close to the differential centre line and the existing washer must therefore be replaced by a thinner one.

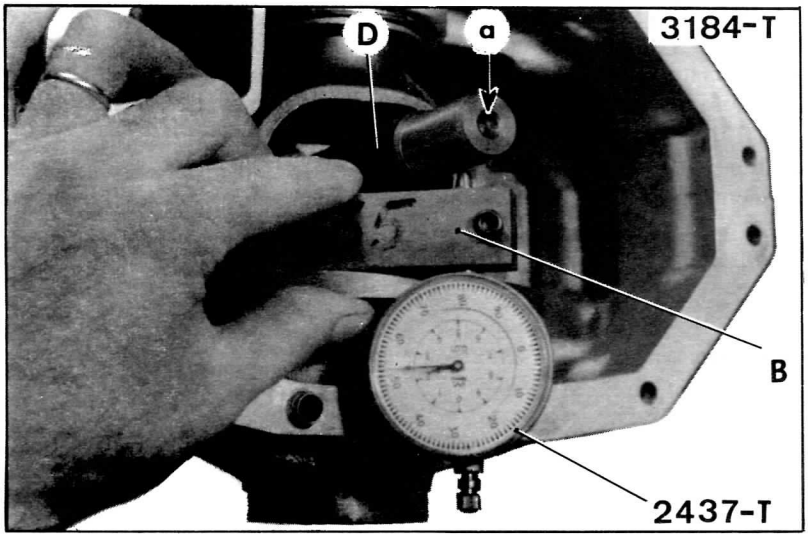
3. Remove the adjusting fixture and dial gauge, the rear cover, the crown wheel and pinion and gear assembly.

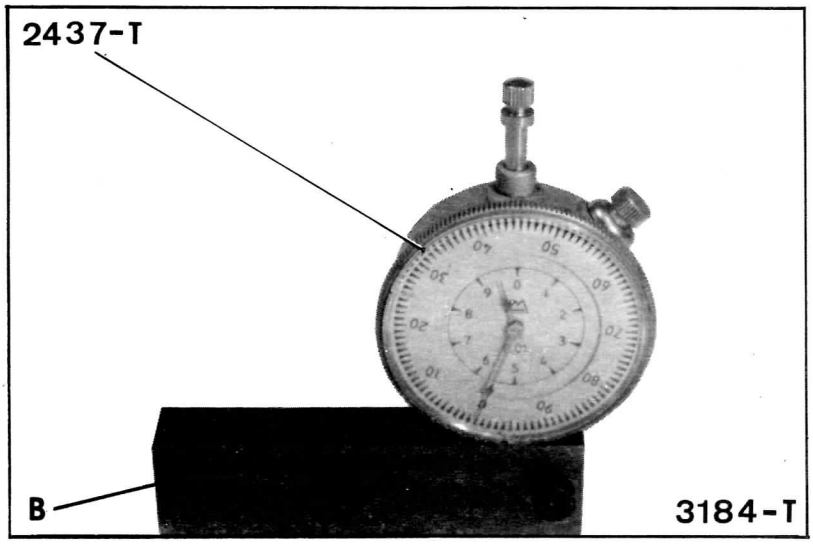
4. Remove the bevel pinion nut.
Release the bearing and the adjusting washer, replace it by a washer the thickness of which has just been pre-determined.
NOTE : The washers sold by the Replacement Parts Department have thicknesses graduated in steps of 0.4 mm. Select one, the thickness of which is nearest to the pre-determined dimension.

5. Fit the bearing and the nut. Tighten the nut from 100 to 120 m.N (10 to 12 m.kg) (72 1/2 to 87 ft.lb) (torque wrench).
Lock the nut by peening.

Supplement N° 1 to Manual 810-2 (CORR)


1
E
R
K1
2
AL. 33-11 a


D
a
3184-T
B
2437-T
7698


2437-T
B
3184-T
7705

6. Adjust the crownwheel position :

a) Adjustment principle : Using shims, the following result must be obtained.

- first that the distance between the crownwheel bearing face on the casing and the bevel pinion centre line is equal to that engraved on the side of the crownwheel which gives correct backlash and bearing surface area.

- secondly a stress on the bearings to conserve the preceding adjustment under the action of the engine torque. This stress corresponds in practice to a compression of the bearing in its bushes and therefore, to a displacement of the differential assembly measured in millimeters. This must be taken into account in determining the thickness of the shims. It is calculated at 0.025 mm per bearing and, therefore be made for the two bearings. In the adjustment operation, allowance will therefore be made for the recoil of the casing in the determination of the thickness of the left-hand shim (+0.025 mm) and the total stress on the two bearings (+ 0.05 mm) in the determination of that of the right-hand shim.

b) Fit the outer race (2) of the left-hand bearing of the differential in its housing (without shim).
Fit the differential casing.
Position the mandrel D with its end « a » engaged in the opening in the casing.
Fit the outer race (1) in its housing in the right-hand half casing (without shim).

NOTE : The bores taking the bearing rings should be clean and free from defects or burrs. The races must slide freely.

Fit the right-hand half casing.

Fit the rear cover. Fit the bolts but do not tighten them.

Fit and hand tighten four half-casing fixing bolts.

Tighten the rear cover bolts and those of the half casings.

NOTE : It is necessary to fit the rear cover in order to position the half casings in relation to each other.

Make sure that the differential casing is in place and that the outer race (1) is in contact with the rollers of the bearing.

c) Calibrate the dial gauge, ruler B assembly.

Fit the ruler B with dial gauge 2437-T and place on a surface plate. Adjust the gauge position so that it operates between 8 and 9 mm.

Bring the zero of the moving dial opposite the large hand.

Note the position of the total reading hand.

Example : Total reading hand is between 8 and 9
The assembly of mandrel D and ruler B with dial gauge in the calibration position corresponds to a distance :

$$K1 + R = 35 \text{ mm}$$

This dimension is engraved on one of the sides of ruler B.

Supplement N° 1 to Manual 810-2 (CORR)

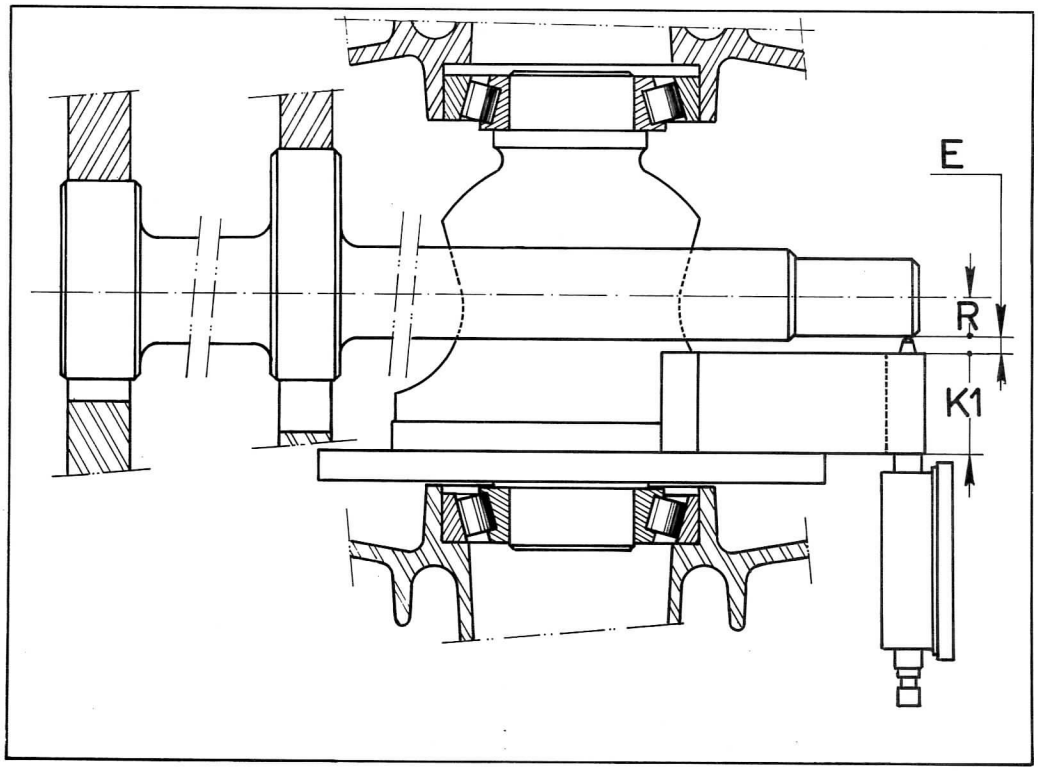


Figure 1

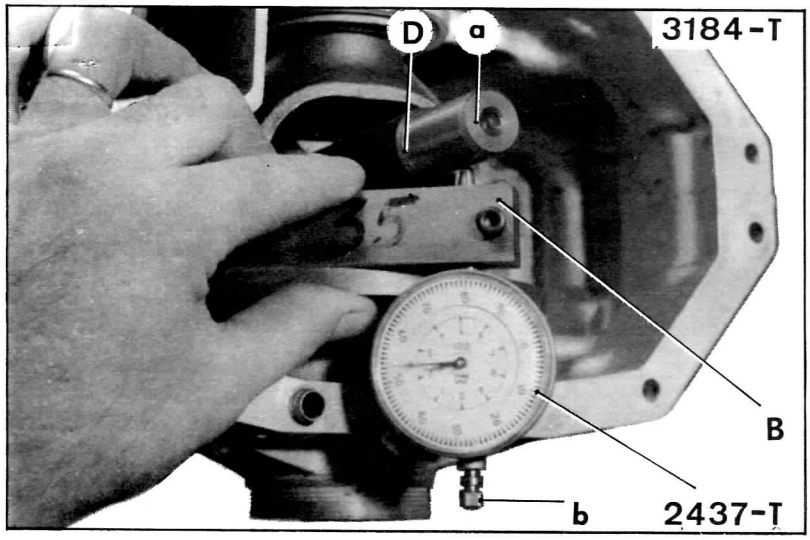


Figure 2

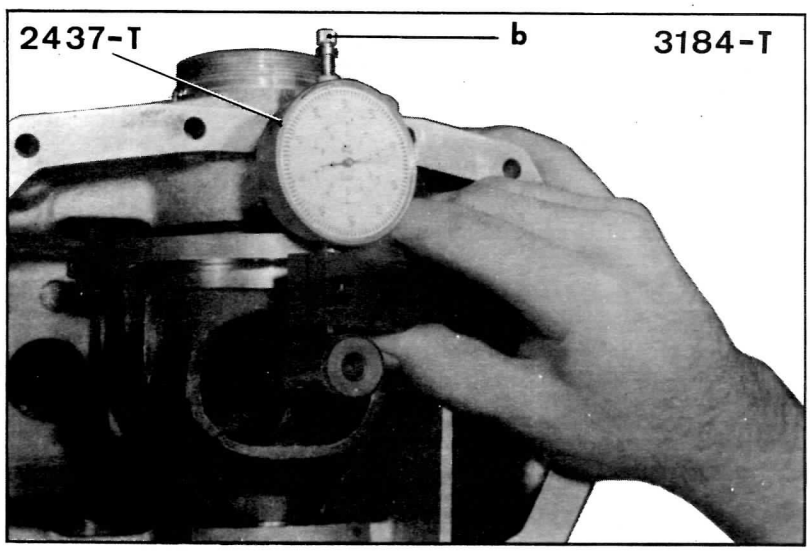


Figure 3

b) Fit ruler B on the bearing face of the crownwheel on the casing, the dial gauge stem touching the end « a » of mandrel D.

IMPORTANT : *Before taking a reading,* **rotate mandrel D to check that it is not out of true**

Hold the ruler resting on the casing and rotate the ruler/ casing assembly in one direction and then in the other and immobilize it at the exact point at which the large hand changes direction. Take note of the position of the dial gauge hands. Pull on moving spindle « b » of the gauge to bring the hands to the calibration position. Then slowly release it, and count the number of revolutions or fraction of a revolution made by the large hand.

Example : The large hand has made 7.46 revolutions, therefore E = 7.46 mm.

The distance of the bearing face of the crownwheel from the bevel pinion centre line is therefore :

$$35 + 7.46 = 42.46 \text{ mm}$$

e) To determine the thickness of the washer to be fitted in the left-hand half casing (see figure 2) :

Note the dimension engraved on the crownwheel. This distance is for example : 40.00 mm.

To obtain this dimension, it would be necessary to have a shim of :

$$42.46 - 40 = 2.46 \text{ mm}$$

It is necessary to add 0.025 mm for stressing the bearing. The shim should therefore have a thickness of :

$$2.46 + 0.025 = 2.485 \text{ mm}$$

The adjusting washers are sold by the Replacement Parts Department in steps of 0.05 mm. Therefore, choose a washer the thickness of which is nearest to the pre-determined value of 2.50 mm.

f) Determining the thickness of the adjusting washer to be fitted in the right-hand half casing (see figure 3) :

Remove the casing from the support and place it on the bench *resting on the right-hand half casing.*

IMPORTANT : Make sure that the differential is in place with the outer race of the bearing resting on the shoulder of the right-hand half casing. Also make sure that *the outer race of the left-hand bearing is resting on the rollers.*

Check the calibration of the ruler dial gauge assembly.

Fit ruler B against the bearing face of the crownwheel on the casing, the dial gauge stem touching the end « a » of the mandrel D.

Hold the ruler against the casing and proceed to measure as previously indicated for the left-hand side.

Example : The large hand has made 2.45 revolutions therefore E = 2.45 mm.

The distance of the bearing face of the crownwheel from the bevel pinion centre line is therefore :

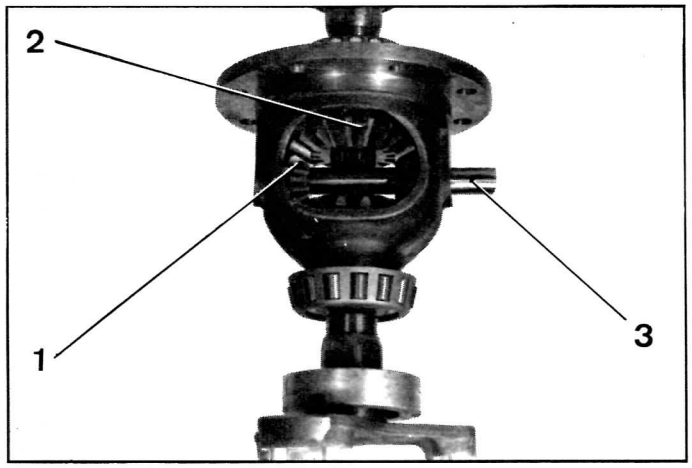
$$35 + 2.45 = 37.45 \text{ mm}$$

Determining the thickness of the adjusting washer to be fitted in the right-hand half casing.

The dimension engraved on the crownwheel being 40.00 mm, to obtain this size would require a shim of $40 - 37.45 = 2.55$ mm without taking into account the bearing stress. The total thickness (on the left-hand and right-hand side) of the shims would be $2.46 + 2.55 = 5.01$ mm. With a stress of 0.025 mm per bearing, therefore 0.05 mm for the two bearings, the total thickness would have to be $5.01 + 0.05 = 5.06$ mm.

For the left-hand side the thickness of the shim as stated in paragraph « e » must be 2.50 mm. Therefore, the thickness of the shim to be fitted on the right-hand side will be $5.06 - 2.50 = 2.56$ mm. The shims on sale are in thickness steps of 0.05 mm; choose a shim with a thickness of 2.55 mm.

Supplement N° 1 to Manual 810-2 (CORR)



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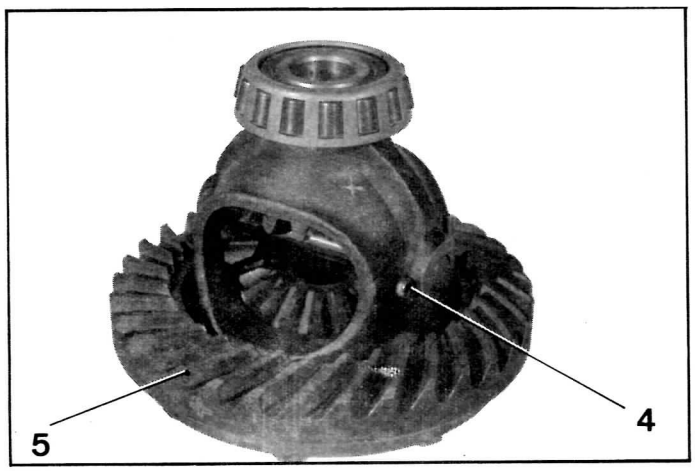

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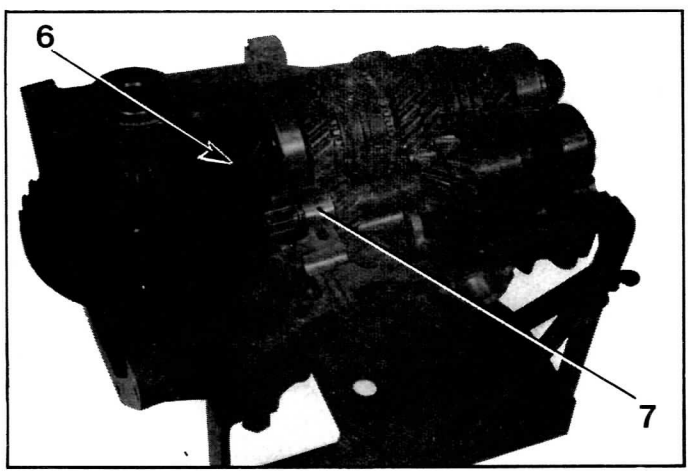

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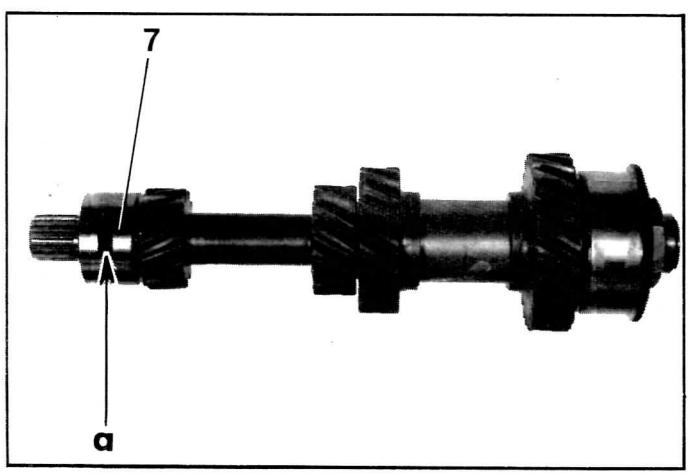


8281

V. FITTING

1. Fit the differential :

a) Oil the parts. Fit :
- the two planetary gears (2) (hold them in place with the aid of the two gearbox drive outlet shafts),
- the satellite gears (1) and engage the shaft (3), correctly positioning the hole for the pin.

Fit the locking pin (4), or the roll pin and its safety stop.

b) Fit the crownwheel (5) :

The 9 mm fixing bolts must be fitted with LOCTITE GX 01 460 01 A and tightened from 48 to 53 m.N (4.8 to 5.3 m.kg) (34 1/2 to 38 1/2 ft.lb) (torque wrench)

NOTES :
- Do not put washers under the bolt heads.
- To assure correct fitting of the crownwheel successively tighten the diametrically opposed bolts.

c) Fit the differential in the left-hand half casing.

2. Fit the bevel pinion assembly :

Check the condition of the plastic cap (6). Replace it if necessary.

CAUTION : Be careful not to introduce any foreign bodies into the central hole of the bevel pinion, which could interfere with the lubrication of the bearing of the reverse gear loose pinion.

Fit the assembly in the left-hand half casing.

3. Fit the primary shaft :

Fit the primary shaft in the left-hand half casing.

Turn the needle bearing (7) so that the end of the locking pin on the reverse gear intermediate shaft enters the groove « a » of the bearing.

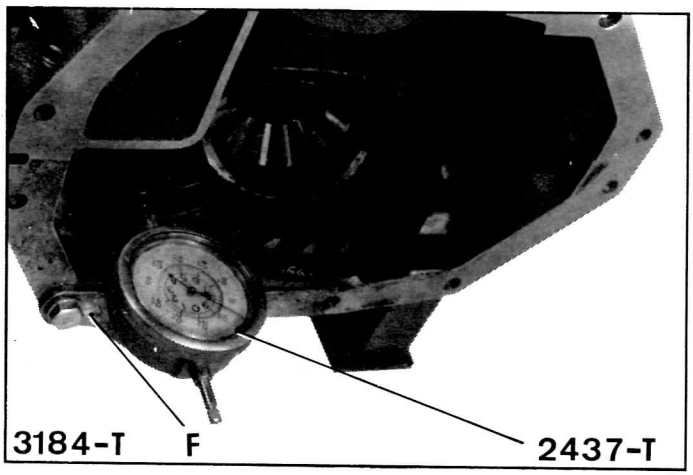
Supplement N° 1 to Manual 810-2 (CORR)

4. Checking the crownwheel and pinion backlash :

NOTE : If the adjustment of the conic distance has been carefully carried out, the backlash should be correct.

It is, however, preferable to check it.

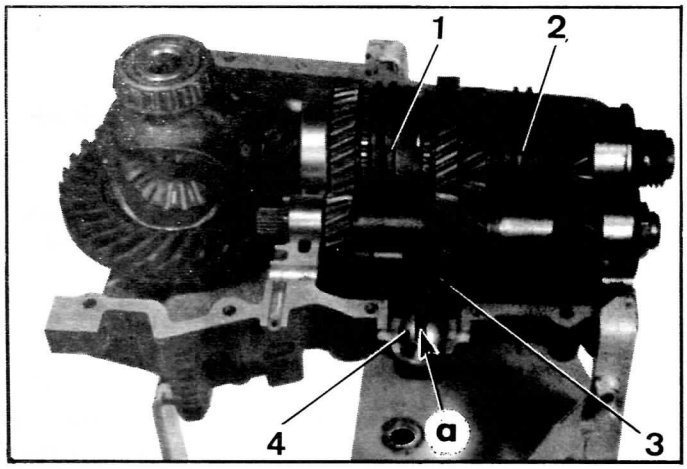
a) Fit the right-hand half casing on the left-hand one. (Take care that the forks engage in the corresponding sliding gears).
Fit four half casing assembly bolts but do not tighten them.
Fit the rear cover. Tighten the fixing bolts (rear cover is necessary for the correct alignment of the two half casings).
Fit and tighten the four half casing assembly bolts.

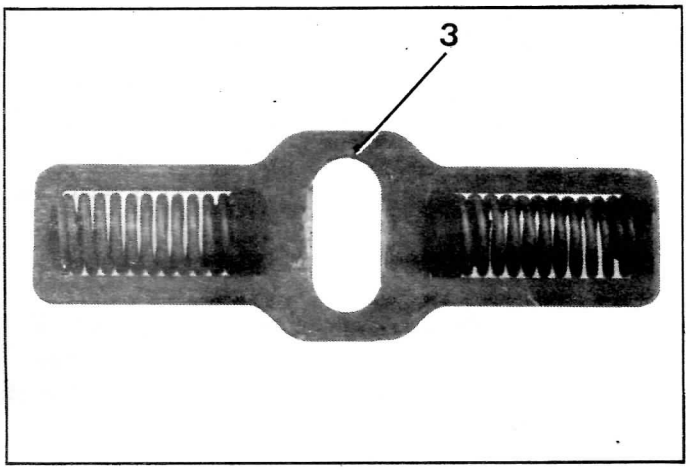


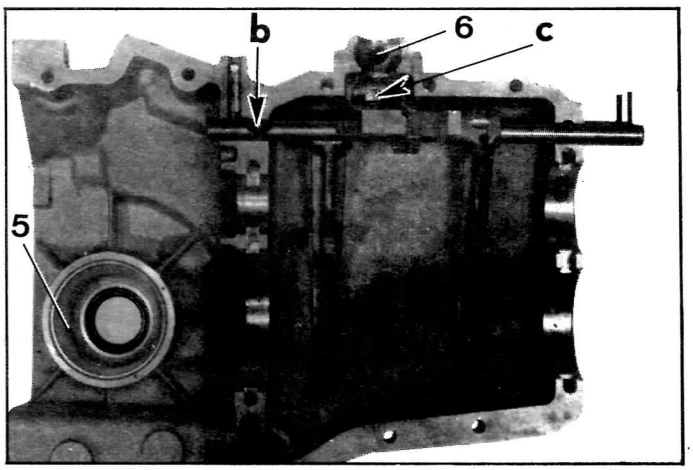
b) Fit (as shown in illustration) the support F of fixture 3184-T bis fitted with dial gauge 2437-T so that its moving stem bears perpendicularly against the flank of a tooth, on the crownwheel periphery.
Measure the clearance, immobilizing the driving pinion by hand.
The backlash must be between 0.13 and 0.27 mm measured at the point of minimum clearance.

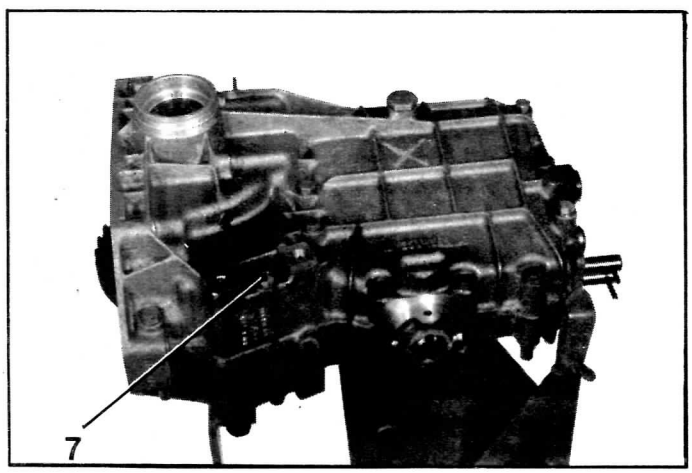
c) Note the clearance on three teeth spaced at about 120°. Take the average of the three measurements :
The difference between any two measurements must not exceed 0.1 mm.
Otherwise, the crownwheel is out of true (it must be replaced) or there is a foreign body between the crownwheel and the differential casing.

d) Remove :
- the dial gauge and its support,
- the rear cover,
- the right-hand half casing.









5. Fit the right-hand half casing on the left-hand one :

a) Smear the joint faces of the two half casings with LOCTITE 572 N° ZC 9 851 106 U.

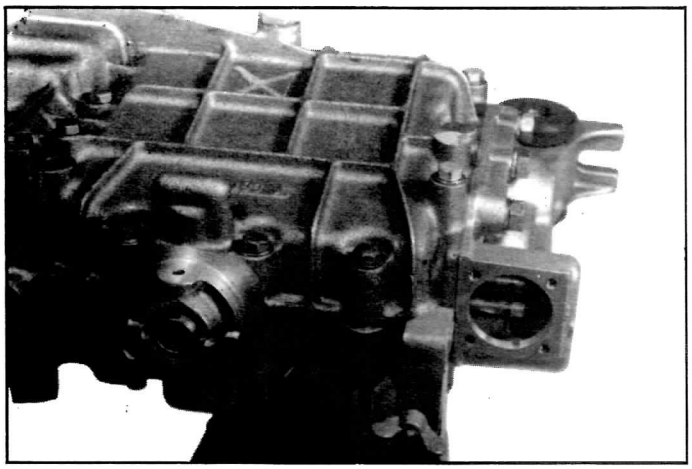
b) On the left-hand half casing :
Grease and fit the spring holder plate (3).
CAUTION : *Since January 3, 1972* the reverse gear locking device on the gear lever has been replaced by one in the gearbox.
The springs on plate (3) are different : the thicker spring must be fitted towards the reverse gear intermediate pinion (in the left-hand half casing).
Grease and fit the ball joint (4) with the guiding groove « a » towards the right-hand casing side.
Temporarily fit a gearbox drive outlet shaft to centre the planetary gears.
Make sure that the sliding gears (1) and (2) are in the « neutral » position.

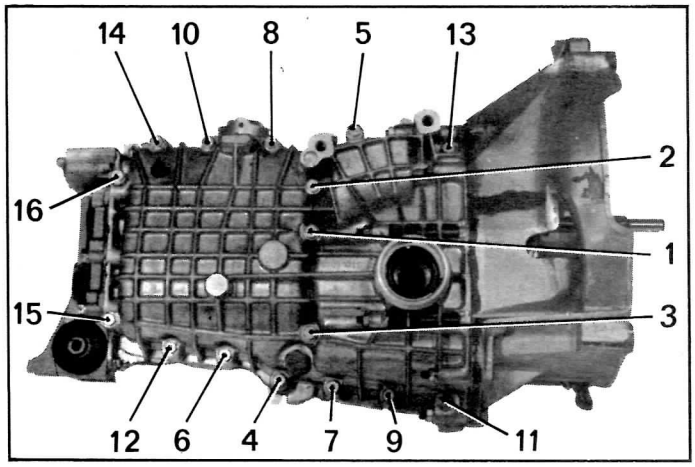
c) On the right-hand half casing :
Stick the spring and the ball joint guide (6) in their housing.
Make sure that the locking ball at « b » between the reverse/ 1st gear shaft and 2nd/ 3rd gear shaft is in place.
Also make sure that the forks are in the « neutral » position.

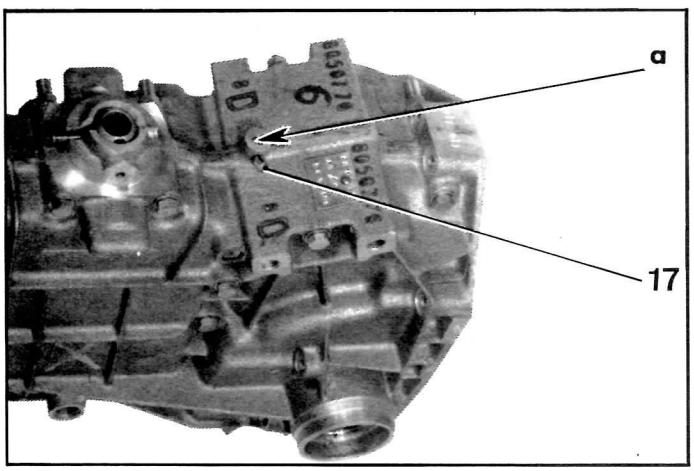
d) Fit the right-hand half casing on the left-hand half casing.
During this operation hold the inner race (5) of the forks in the corresponding sliding gears. At the same time, guide the spring holder plate into its housing « c » of the right-hand half casing. Make sure that the guide (6) enters the groove « a » of the ball joint (4).

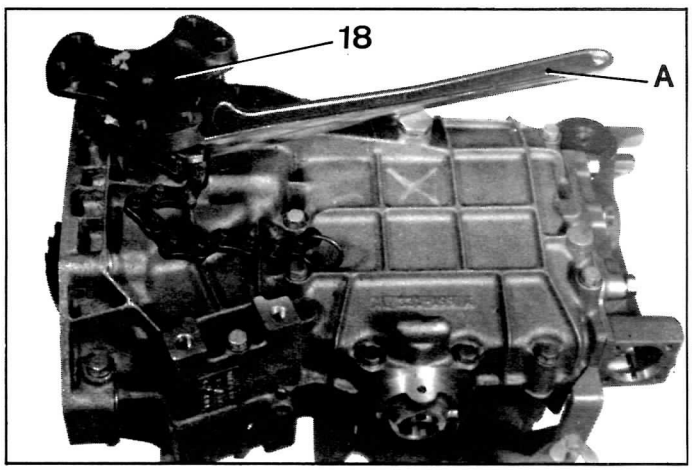
e) Fit the half casing assembly bolts :
Fit the assembly bolts, without tightening them. Final tightening should be done after fitting the rear cover (plain washer under the bolt head and capnut).

NOTES :
- The bolt (7) placed between the brake unit mountings is the only one with a normal hexagonal nut.
- Do not forget the bolt of the central bearing on the left-hand half casing side.









6. Fit the rear cover :

Smear the joint face of the rear cover with LOCTITE 572 N° ZC 9 851 106 U.

Fit the rear cover on the gearbox casing.

Fit the assembly bolts, tighten them from 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb).

7. Fully tighten the half casing assembly bolts :

NOTE : The method for tightening these bolts is most important to ensure oil-tightness of the half casings.

a) Slightly slacken the bolts holding the rear cover on the right-hand half casing.

b) Finally tighten the half casing assembly from 14 to 15 m.N (10 to 11 ft.lb).
IMPORTANT : Take care of the tightening sequence shown in illustration.
On some casings, the bolt (3) may be on the left-hand half casing.

c) Retighten the rear cover fixing bolts from 25 to 30 m.N (2.5 to 3 m.kg) (18 to 21 1/2 ft.lb).

8. Fit the locking mechanism to the 2nd/3rd gear fork shaft :

At « d » position the locking ball and spring and the blanking pellet.

Compress the spring by pressing on the plug (5 mm diameter rod) and fit the split pin (17).

9. Fit the gearbox outlet shafts :

Make sure that the planetary gears are in place and that at the time of fitting the shaft splines engage in the splines of the planetary gears.

Fit the shafts (18) (tap lightly with a mallet to position bearing).

Tighten the ring-nuts, using a chain wrench A, from 60 to 75 m.N (6 to 7.5 m.kg) (43 1/2 to 54 ft.lb) -

Lock the ring nuts by peening.

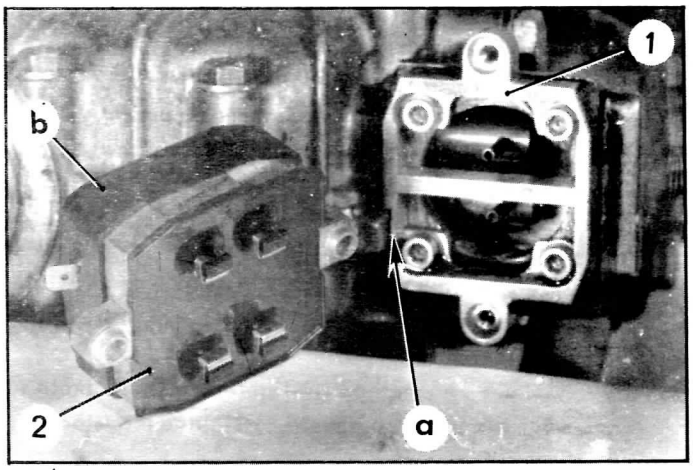
10. Fit and tighten the drain, level and filler plugs from 35 to 45 m.N (3.5 to 4.5 m.kg) (25 to 33 1/2 ft.lb) (copper seal)

Fit the reverse light switch on « *CLUB* » *vehicles*

Smear the switch threads with MASTI-JOINT HD 37.

Tighten the switch from 12 to 15 m.N (1.2 to 1.5 m.kg) (8 1/2 to 11 ft.lb).

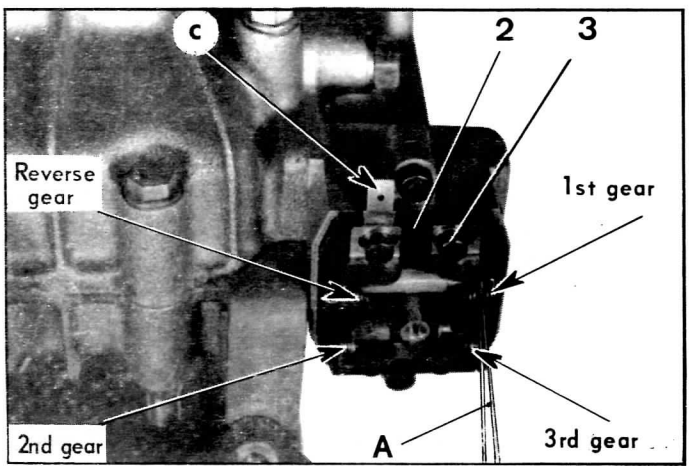
Supplement N° 1 to Manual 810-2 (CORR)



11. Fit the switch for the electro-valve :

a) Smear the seal face of the switch base plate (1) with CURTYLON sealing compound.
Fit the switch base plate on the rear cover (with the slot « a » towards the front of the gearbox (4 mm Allen key).

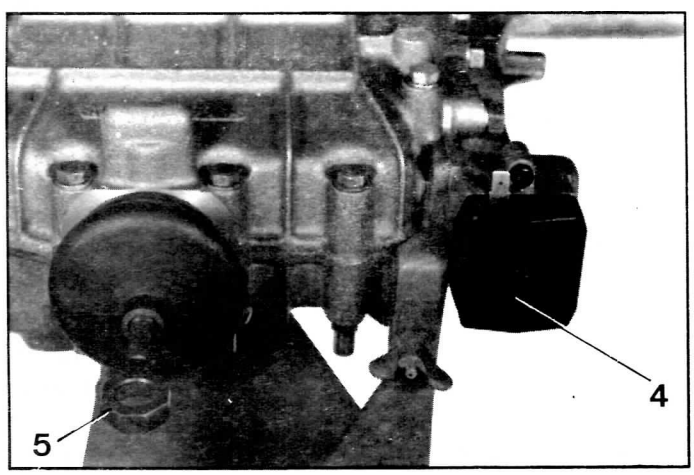
b) Engage the rubber seal (2) on the contact rods, with the heads towards the cover.
Fit the switch on the base plate (with the connector « c » towards the right-hand half casing (4 mm Allen key).

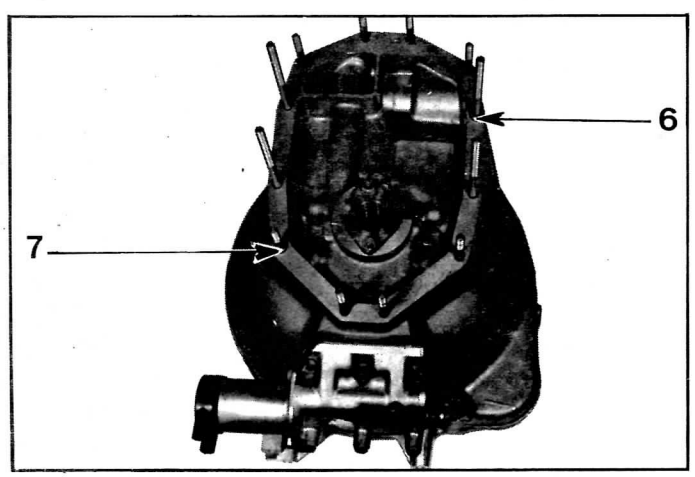


12. Adjust the contact gaps in the switch for electro-valve :

NOTE : For this operation, it is necessary to fit provisionally the gear lever, the gap of each point being adjusted with the corresponding gear engaged.
In « neutral » all the points should be closed.

Adjustment method :
- Use the lever (5) to engage a gear.
- Adjust the points gap to 1.4 ± 0.05 mm using a set of feelers A and shifting the moving point by means of screw (3). Moderately tighten the screw (3) (3 mm Allen key). Use the same method for the other gears.
- Fit the switch cover (4) (3 mm Allen key) and fit the elastic collar « b ».

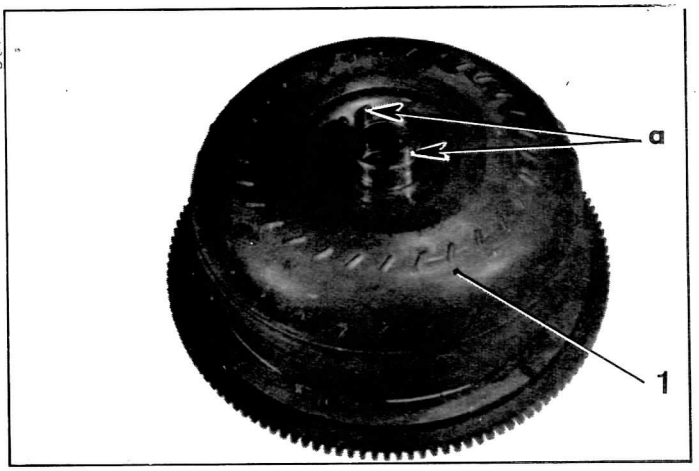




13. Fit the converter housing on the converter :

NOTE : The method of assembly given below is the best way of ensuring that the converter is properly fitted.

a) Check that the two locating dowels (6) and (7) are present.



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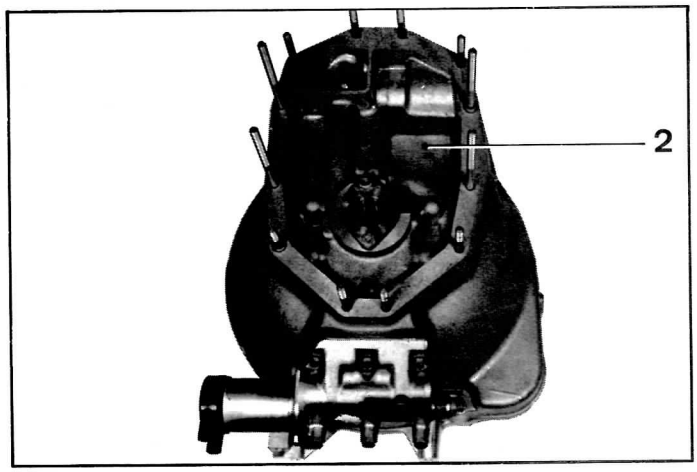
b) Place the converter (1) flat on the bench. Engage the casing (2) on the converter (Turn the converter so that the drive pins « a » engage in the corresponding notches of the pump gear.

14. **Fit the control shaft :**

Check that the seals (3) and (4) and the circlip (5) are present.

Engage the control shaft (7) in the rotor sleeve (8) and in the converter splines.

Fit the spring (6) in its housing at « b ».

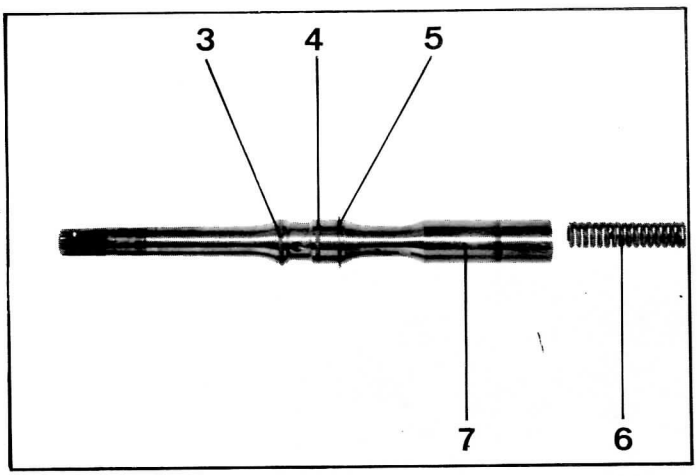


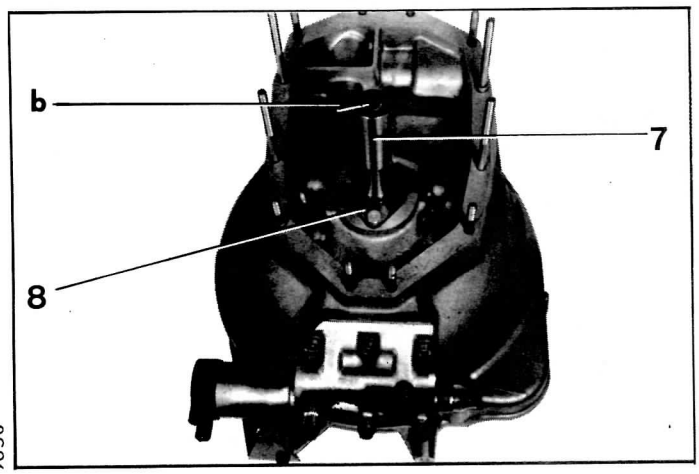
15. **Fit the converter holding bracket :**

Slide the assembly of converter and casing towards the edge of the bench.

Fit the converter holding bracket 3186-T with the aid of two bolts (diameter 7 mm, pitch 1 mm).

IMPORTANT : *The use of bracket 3186-T is essential : it prevents the dislocation of the converter which would block the engine-gearbox assembly and damage the driving pins « a ».*





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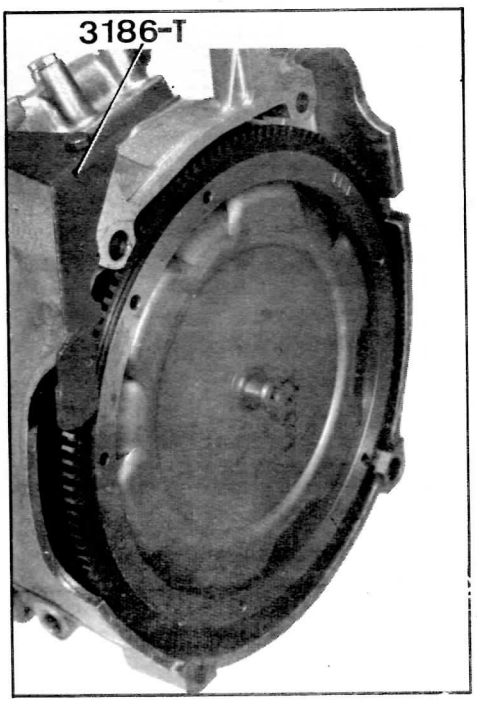

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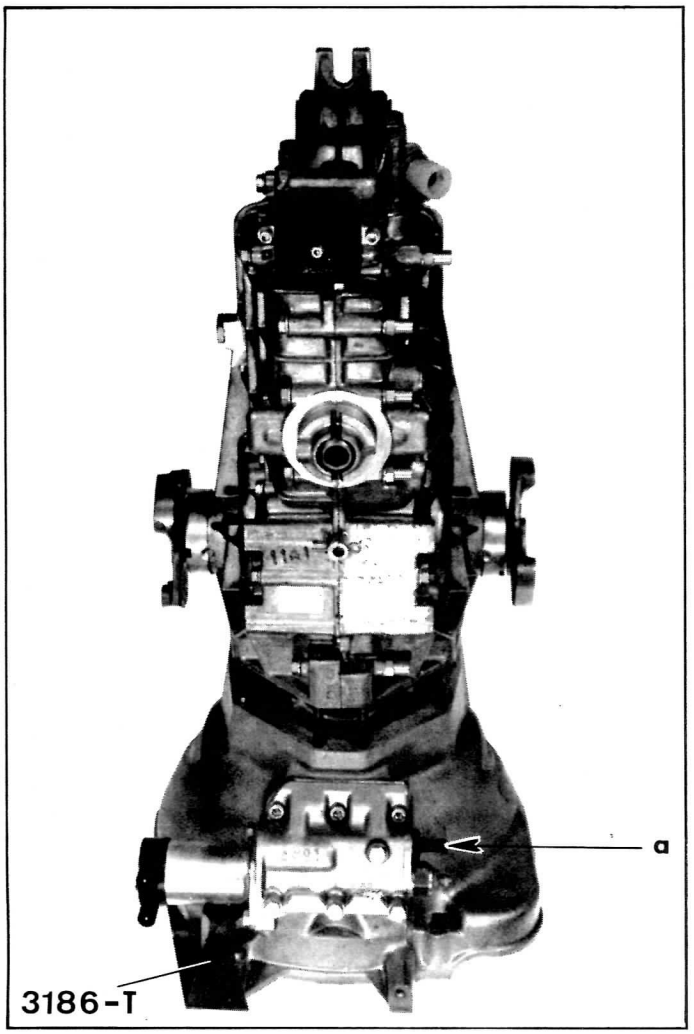


16. Couple the gearbox to the converter casing and converter assembly :
Coat the joint faces with LOCTITE 572 N° ZC 9 851 106 U.

NOTE : *If necessary, engage a gear using the temporarily-fitted lever and rotate the gearbox drive outlet shafts so that the primary shaft splines engage in the corresponding ones of the input shaft.*

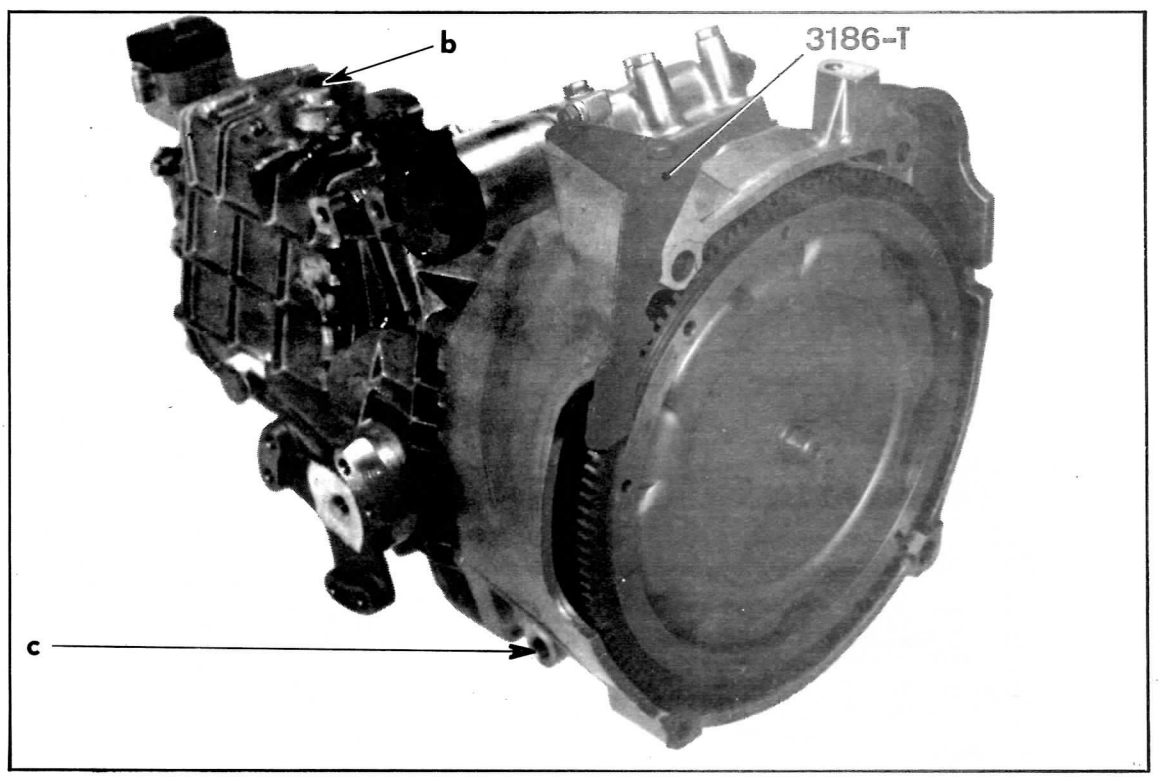
b) Fit the contact washers and the assembly nuts.

Tighten them from 14 to 15 m.N (10 to 11 ft.lb)

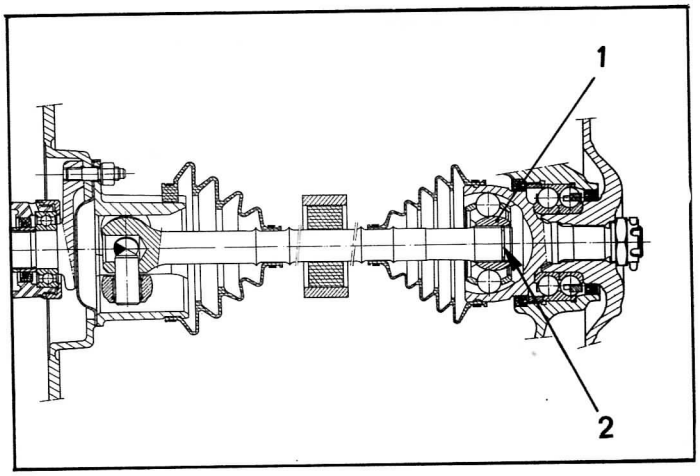
Place the gearbox in a horizontal position.

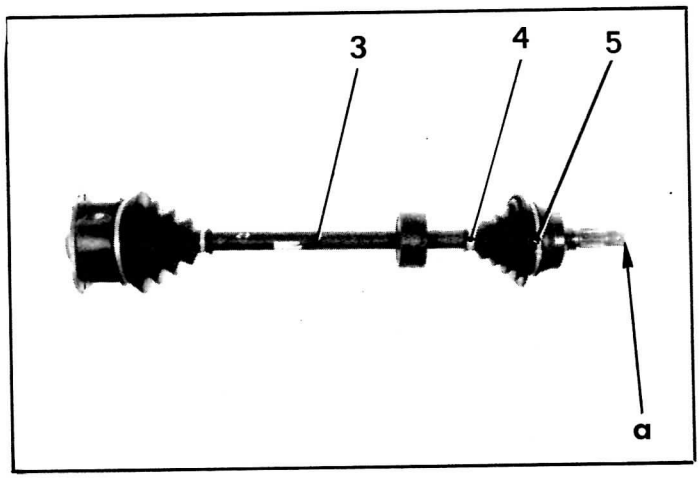
Blank the orifice « b » of the ball joint with adhesive paper.

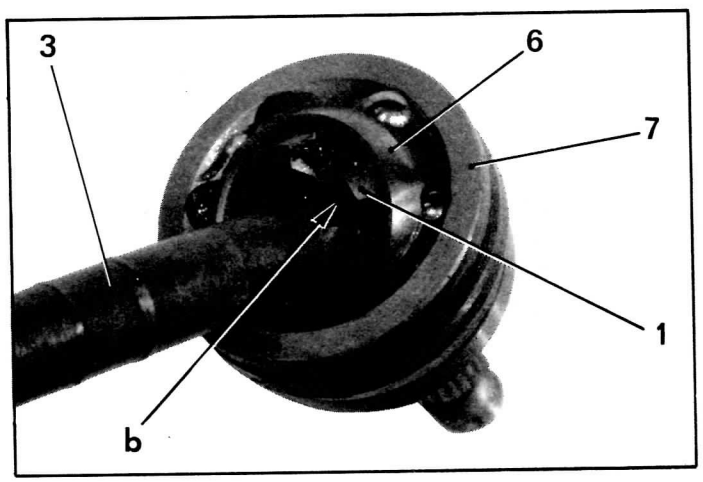
Blank orifices « a » and « c » of the oil outlet and inlet piping with rubber plugs.

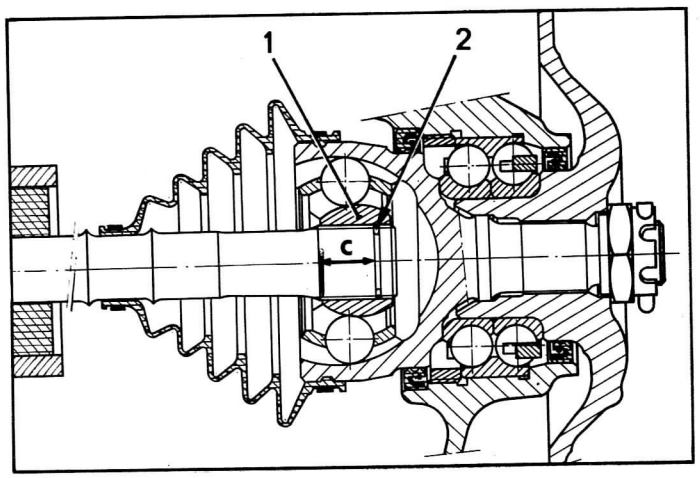


RECONDITIONING A DRIVE-SHAFT









NOTE : Only the new ball-joints are sold, the stub-axle diameter of which has been increased and has 25 splines. In case an old-type ball joint (22 splines) is being exchanged for a new type ball-joint (25 splines), the old wheel hub must be replaced by the new type.

1. Hold the drive shaft in a soft-jawed vice.

2. **Remove the ball-joint :**

a) Remove the ligarex hose clips (4) and (5) and withdraw the protective sleeve.

b) Withdraw the ball-joint assembly from the shaft. Use for this purpose a tool which has a flat blunt end.
Apply the tool on the extremity of the central claw (1) at « b » as near as possible to the shaft (3). Strike the tool until the assembly is completely free.
WARNING : *Never strike any blows to the ball cage (6) or to the joint housing (7).*

c) Remove the ring (2) from the extremity of the shaft (3). Remove the rubber sleeve.

d) Carefully clean the inside of the joint. Blow through with compressed air.

WARNING : *Never attempt to dismantle the joint.*

3. **Fit the ball-joint :**

WARNING : The positioning of ring (2) in the groove on claw (1) is only possible if the depth of fitting distance « c » = 16.5 mm is correct. Mark this distance on the drive-shaft before fitting.

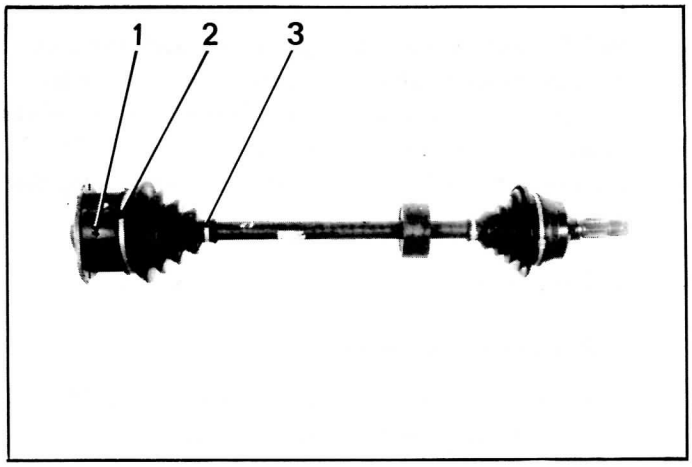
a) Fill the inside of the joint with grease (use TOTAL MULTIS M.S grease).

b) Engage the rubber sleeve on the shaft (3).
Fit a new ring (2).

c) Engage the central claw (1) onto the extremity of the shaft (3) : using a screwdriver, compress ring (2) to allow it to be passed inside the claw. Complete the fitting of the joint by tapping the extremity « a ».

d) Fill the inside of the sleeve with approximately 80 g of grease (TOTAL MULTIS M.S). Fit the ligarex hose clips (4) and (5).

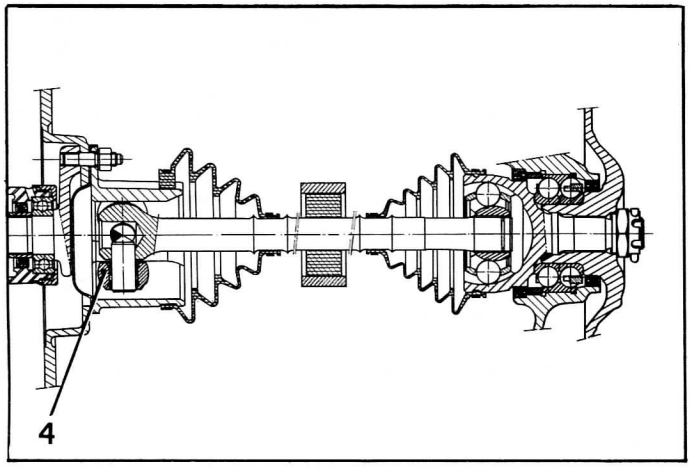
Supplement N° 1 to Manual 810-2 (ADD)



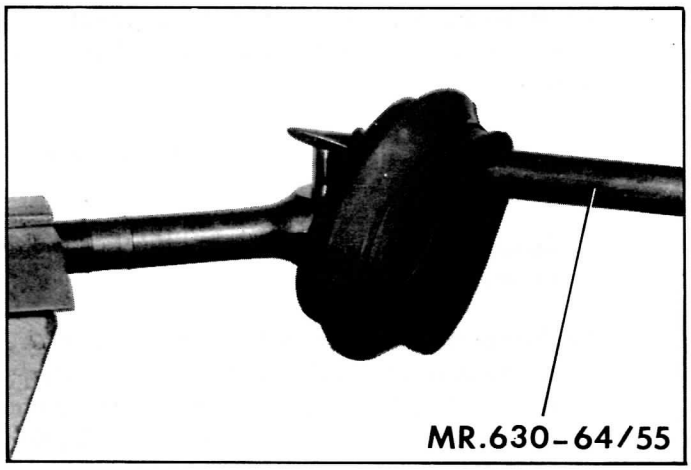
4. Remove the tri-axe :

a) Remove the ligarex hose clips (2) and (3), and withdraw the drive housing (1), the balls (4) (do not damage the needles). Remove the sleeve.

b) Carefully clean all the parts.



c) Position the protective sleeve, first slide it over one of the tri-axe arms.
Then slide the sleeve over the two other tri-axe arms, using tool MR. 630-64/ 55 to stretch it (see photograph) (grease both the sleeve and the tool).

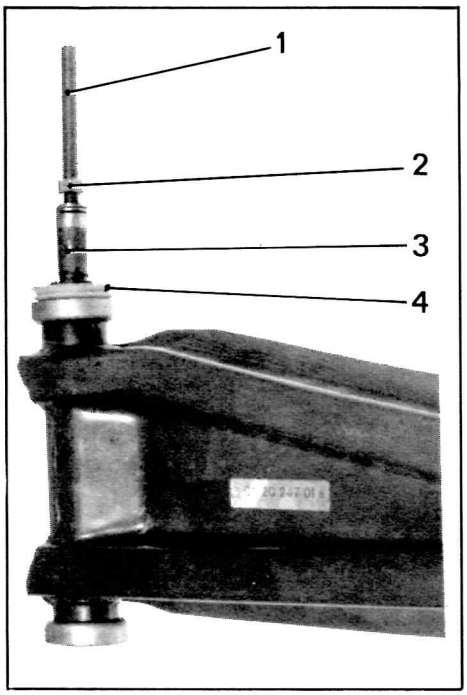


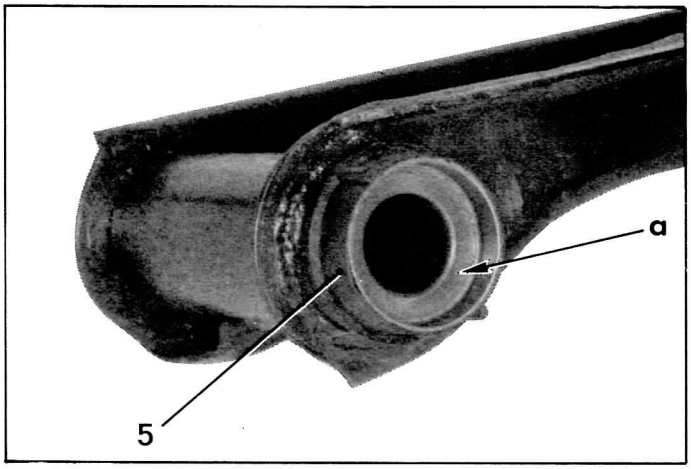
d) Smear the ball joints and the needles with grease (TOTAL MULTIS MS). Position them on the tri-axe.
Insert approximately 200 g (7 oz) of grease into the drive housing (1) and the sleeve.

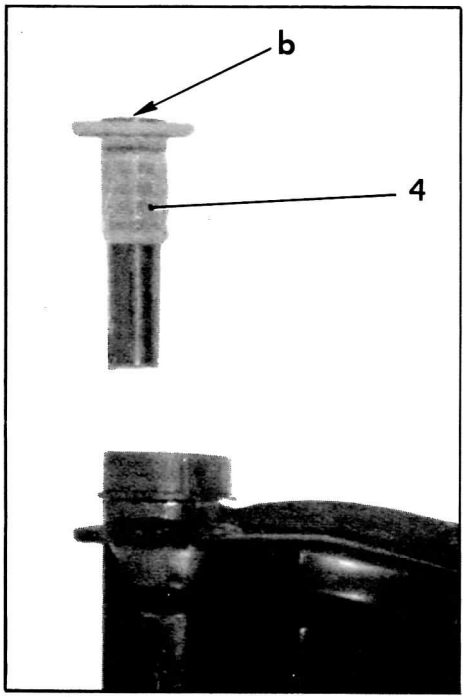
e) Position the drive housing and the sleeve.

Fit the ligarex hose clips (2) and (3).

REPLACING THE « FLUID-BLOC » BUSHES ON A LOWER WHEELARM







REMOVAL

1. Remove the plastic portion (4) of the « fluid-bloc »

a) Hold the wheelarm in a soft-jawed vice.
NOTE : In order to facilitate the extraction of the « fluid-bloc » use a 8 mm (or 5/16") rawlbolt.
Fit a threaded rod (1) and a nut (2) onto the rawlbolt.

b) Insert the rawlbolt (3) into the « fluid-bloc » (4). Tighten nut (2) so as to expand the rawlbolt until the « fluid-bloc » can be extracted.

c) Pull rod (1) while rotating the « fluid-bloc » until the latter is completely free.

d) Remove the rawlbolt from the « fluid-bloc ».

2. Remove the rubber portion (5) from the « fluid-bloc » :
(Second fitting only)
Heat the metal par « a » of the « fluid-bloc ».
Withdraw the « fluid-bloc ».

3. Remove the second « fluid-bloc ».

4. Clean the wheelarm

FITTING

5. Fit the rubber portion (5) of the « fluid-bloc »
(Second fitting only).
This operation is carried out using a press.

a) Smear with a rubber solution the portion of the « fluid-bloc » which is to be inserted into the wheelarm.
b) Fit the « fluid-bloc » by pushing against the metal part « a ».
c) Fit the rubber portion of the second « fluid-bloc ».

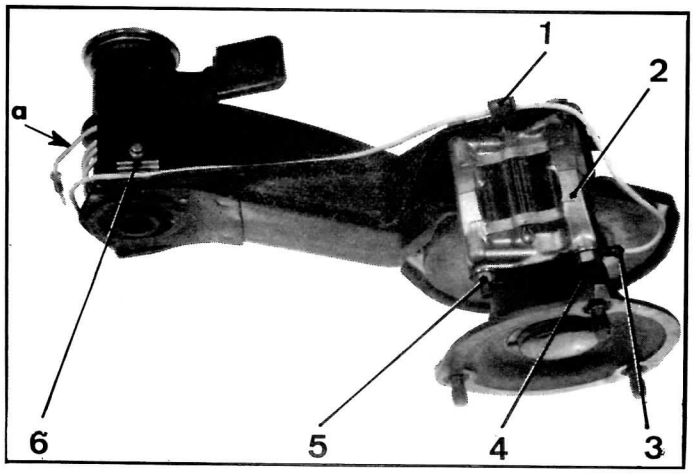
6. Fit the plastic portion (4) of the « fluid-bloc » :

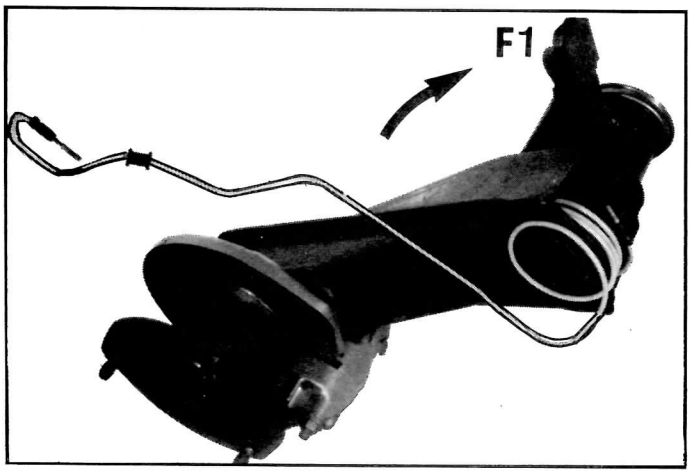
a) Smear it with silicone grease.
b) Insert the « fluid-bloc », and complete its positioning by tapping it at « b » with a mallet.

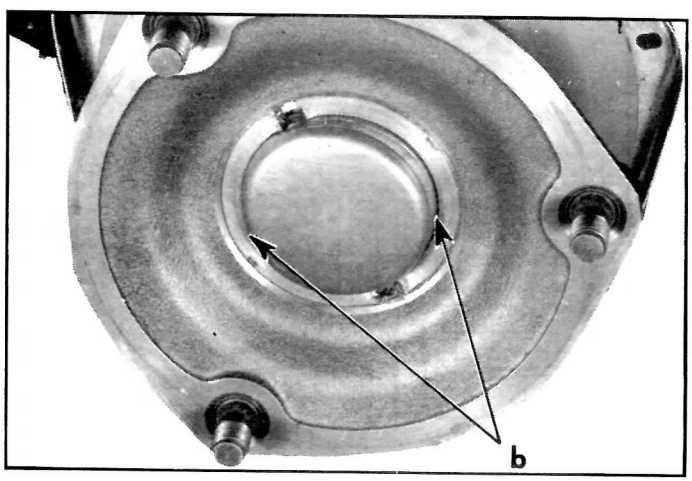
7. Fit the plastic portion of the second « fluid-bloc ».

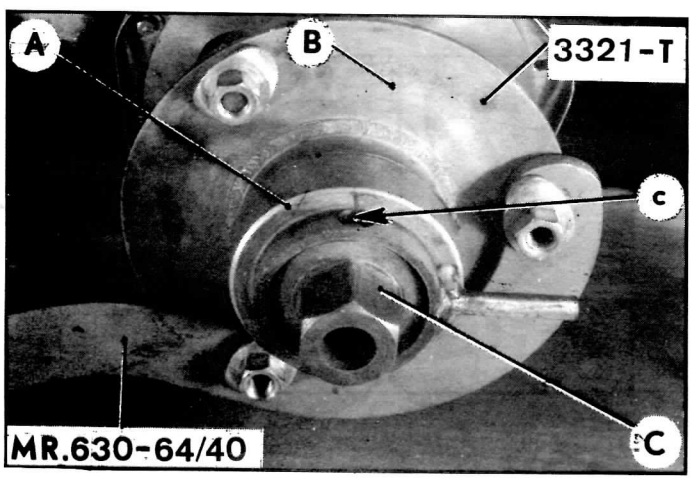
Supplement N° 1 to Manual 810-2 (ADD)

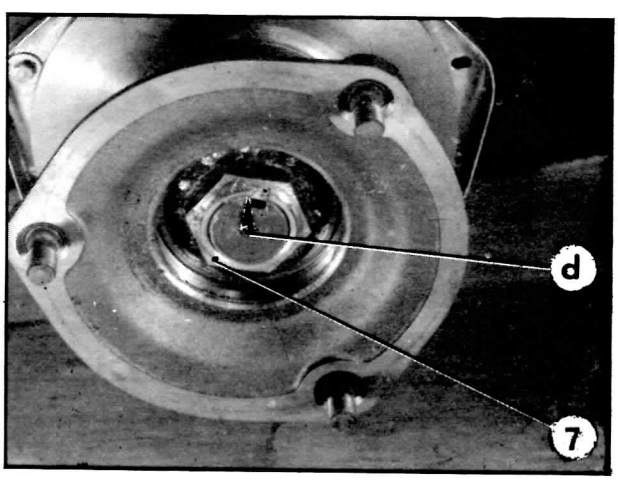
RECONDITIONING A REAR WHEELARM











DISMANTLING

1. Grip the wheelarm in a vice

2. **Remove the spiral brake pipe :**
Remove the fixing bracket (6).
Withdraw the pipe from the clip (1).
Disconnect the union (3).
Fold back end « a » of the pipe towards the inside of the wheelarm so as to give it the circular shape of the spiral.
Withdraw the pipe by rotating it in the direction of arrow F1 (see photograph) in order to «unscrew» the spiral from the wheelarm pivot tube.

3. **Remove the brake unit :**

NOTE : To avoid separating the 2 half-units proceed in the following manner :
- Slightly loosen the unit fixing screws (2).
- Remove screw (4) (on the bleed-screw side).
- Swing the unit round, refit screw (4) and tighten the nut.
- Remove the other screw (5).
- Remove the unit (2).

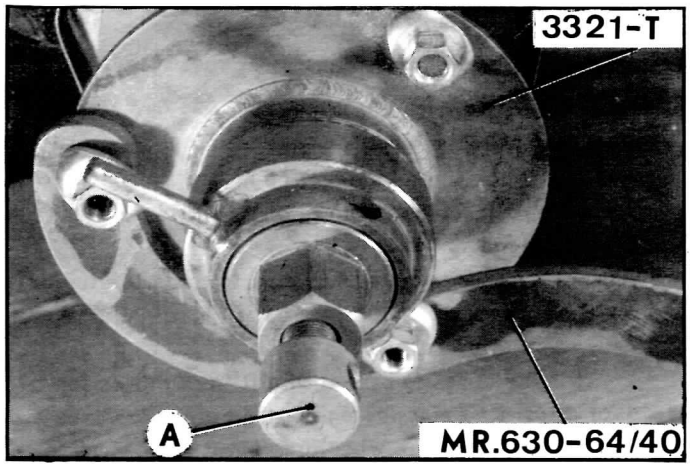
4. **Remove the ring-nut :**

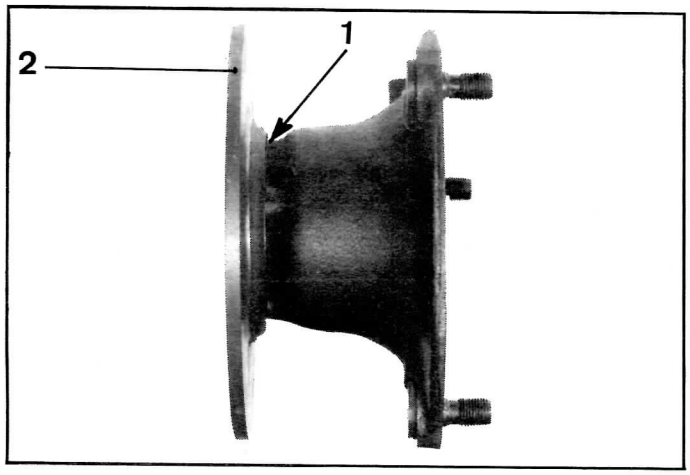
Using a drill with a 4 mm bit, drill away the peening locking the ring-nut. Use assembly 3321-T and tool 3304-T.
Fit plate B on the wheel-hub. Hold the wheel-hub with tool MR. 630-64/40 or 6310-T.
Position tool 3304-T and cap C. Screw in nut A without tightening it.
Place a pin in hole « c » to lock cap C and nut A.
Unscrew the ring-nut.

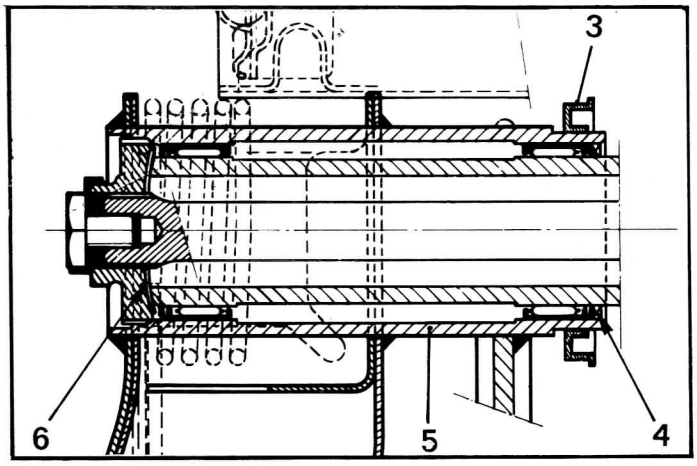
5. **Remove nut (7) :**

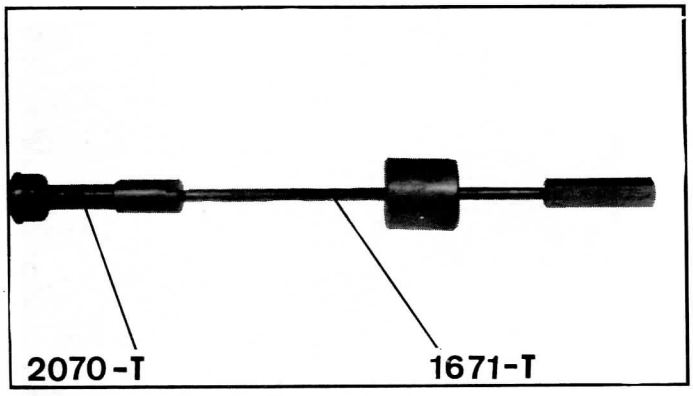
Bend back the peening at « d » using a chisel.

Supplement N° 1 to Manual 810-2 (ADD)

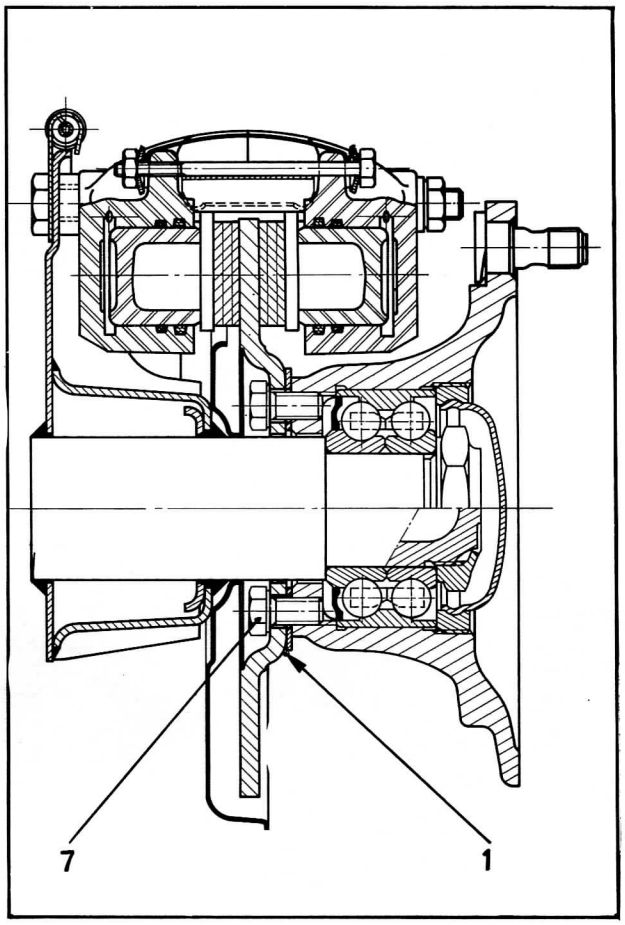


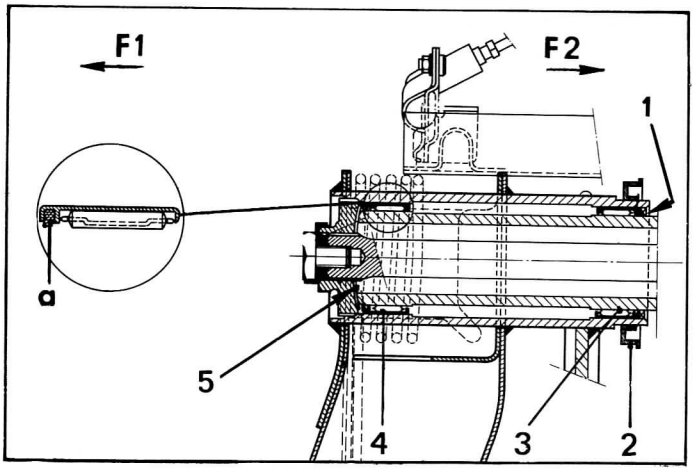


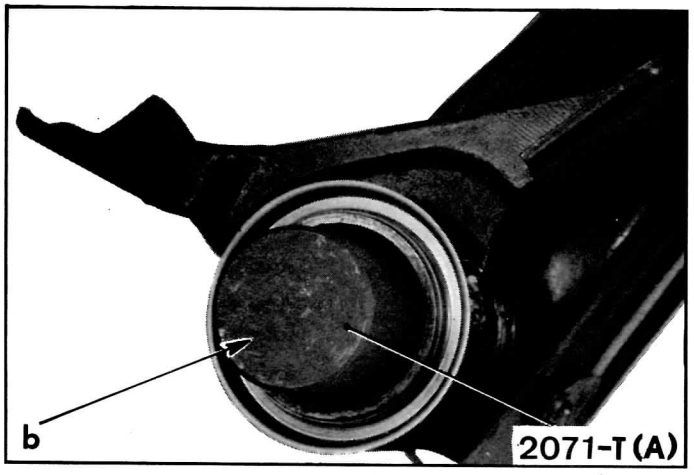


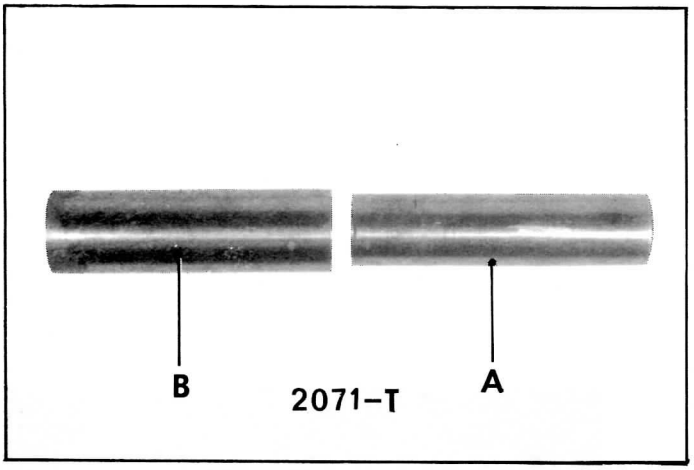


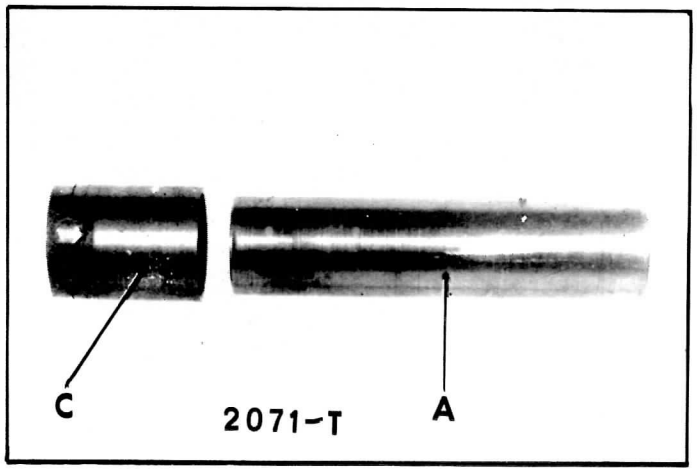
6. **Remove the wheel-hub :**
   Proceed in the same manner as for removing the ring-nut, using assembly 3321-T, but without tool 3304-T.
   Hold the assembly using tool MR. 630-64/ 40 or 6310-T.
   Extract the hub, using screw A of assembly 3321-T.
7. **Remove the brake disc :**
   Remove the brake disc fixing screws (7).
   Remove the disc (2) from the wheel-hub.
   Do not lose the spacer-plate (1).
8. **Remove the wheel-hub bearing :**
9. Remove the protective plate from the brake disc.
10. If necessary, remove the deflector(3) from the wheelarm.
11. **Remove the seal (4).**
12. **Remove the wheelarm pivot tube bearings.**
    Use extractor 1671-T equipped with a socket 2070-T.
13. **Remove the friction washer (6).**
14. Clean all the parts
    NOTE : Carefully clean the inside of the wheel-arm pivot tube and the support tube (5).











FITTING

15. Position the friction washer (5) :
Smear it with bearing grease (TOTAL MULTIS) on both faces, and place it in the wheelarm pivot tube.
IMPORTANT : When new, the friction washer is flat. *Replace it after each dismantling.*

16. Fit the wheelarm pivot tube bearings :
IMPORTANT : The needle bearings are fitted with oil-tight seals « a ». They must be fitted as indicated in the diagram : the plate carrying seal « a » must be fitted in the direction of the arrow F1 for the inner bearing (4) and of the arrow F2 for the outer bearing (3).

a) Place guide-mandrel A (assembly 2071-T) inside the wheelarm pivot tube. Engage the inner bearing (4) onto Mandrel A, *making sure it is the right way round.* and push it using socket B until the latter comes into contact with end « b » of mandrel A.

b) Proceed in the same manner for fitting the outer bearing (3), but using socket C, *and making sure it is the right way round.*
NOTE : The correct positioning of the bearings is determined by the lengths of sockets B and C.

c) Remove assembly 2071-T.
Smear the needles in bearings (3) and (4) with bearing grease (TOTAL MULTIS).

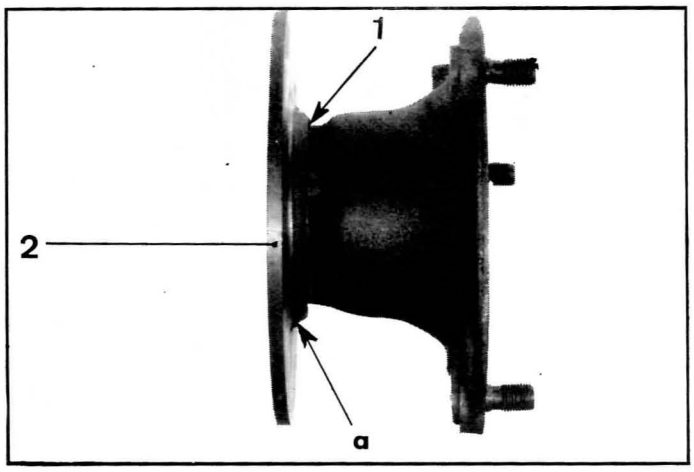
17. Position seal (1) :

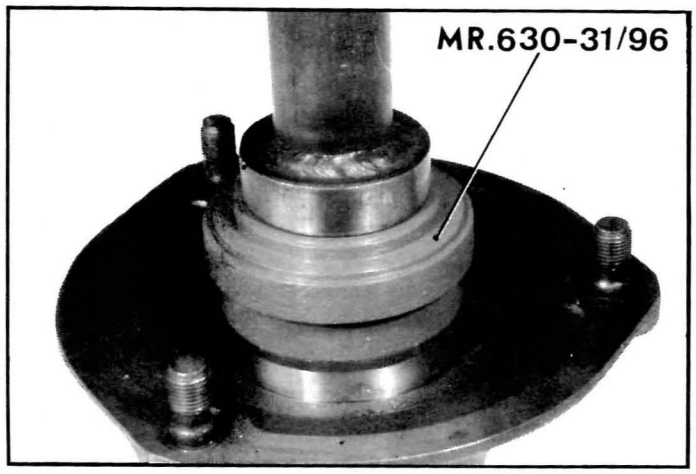
The face of the seal which bears the markings must face towards the outside of the pivot tube. Push the seal in until it comes into contact with the bearing (3).

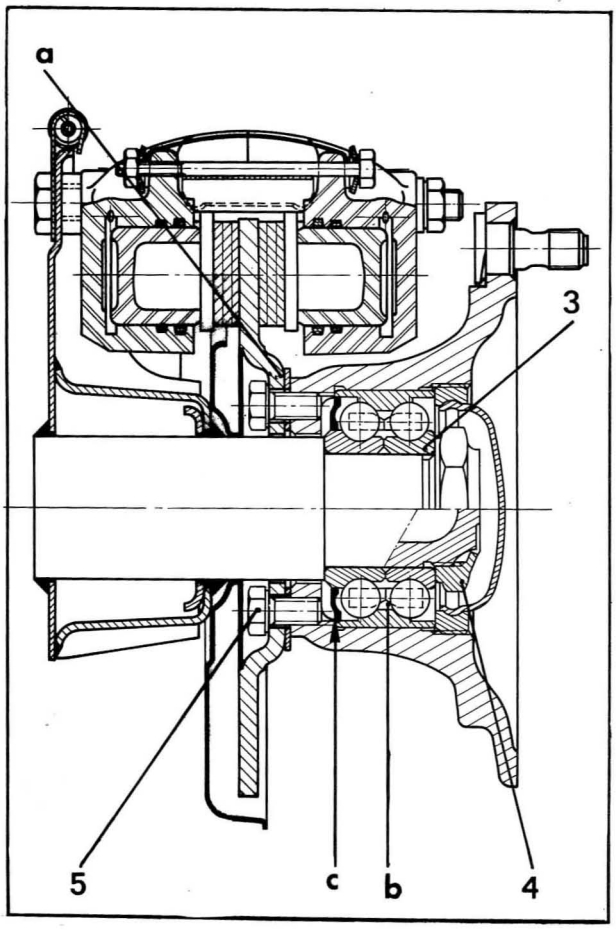
18. Fit deflector (2) if necessary :
It must be set back by 2 to 3 mm in relation to the edge of the wheelarm pivot tube.

19. Fit the brake disc protective plate.

Supplement N° 1 to Manual 810-2 (ADD)







20. Fit the brake disc :

Position the disc on the wheel-hub :

WARNING : Fit the disc (2) as indicated on the diagram.

The shoulder « a » must face the hub.

Fit the spacer-plate (1) between the disc and the hub.

Fit and tighten nuts (5) from 45 to 50 m.N (4.5 to 5 m.kg) (32 1/2 to 36 ft.Ib) (use a torque wrench).

21. Fit the wheel hub bearing :

a) Prepare the new bearing : remove inner race (3) which is not oil-tight, and the corresponding balls.

b) Position the bearing on the hub : the oil-tight face « c » towards the inside of the hub (facing the brake disc).

c) Press-fit the bearing using mandrel MR.630-31/96.

22. Fit the wheel hub :

a) Position the assembly on the stub axle, slide on the bearing (without its inner race (3)) and start locating it by screwing in nut (4).

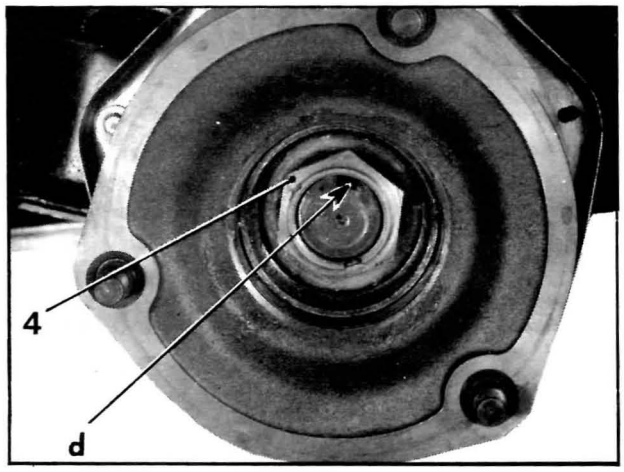
b) Remove nut (4) and place a spacer (interior diameter 37 mm, thickness 7 mm), once again screw in nut (4), and complete the positioning of the bearing.

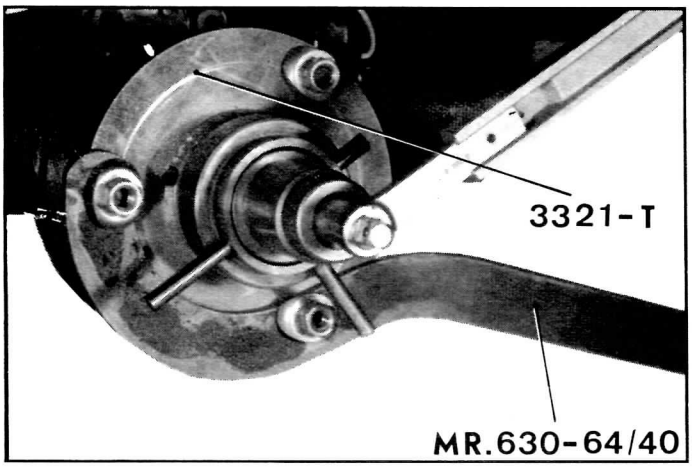
c) Fit the inner race (3), placing face « b » of the nylon ball cage towards the inside. (The faces « b » of the cages must be fitted facing each other; see diagram).

d) Fit a new nut (4), *face and threads greased.*

Tighten it from 350 to 400 m.N (35 to 40 m.kg) (253 to 290 ft.Ib) (use a torque wrench).

Using a peening punch, peen the shoulder of the nut in the slot provided at « d ».





23. Fit the ring-nut :

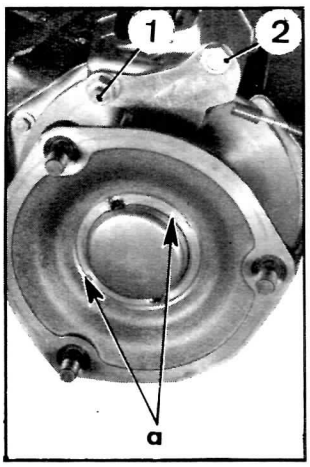
Use assembly 3321-T and tool 3304-T. Hold the wheel-hub using tool MT. 630-64/40.

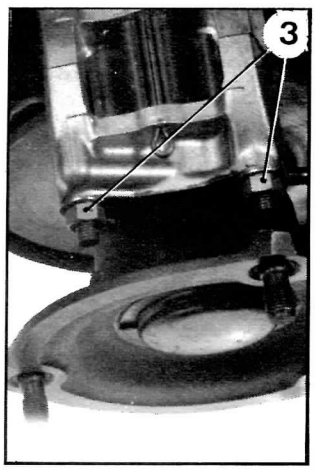
Put some bearing grease (TOTAL MULTIS) in the ring-nut cap.

Fit the ring-nut *with face and threads greased.*

Tighten it from 350 to 400 m.N (35 to 40 m.kg) (253 to 290 ft.Ib). (Use a torque wrench).

Lock the ring-nut by centre-punching at two diametrically opposed points « a ».





24. Fit the brake unit :

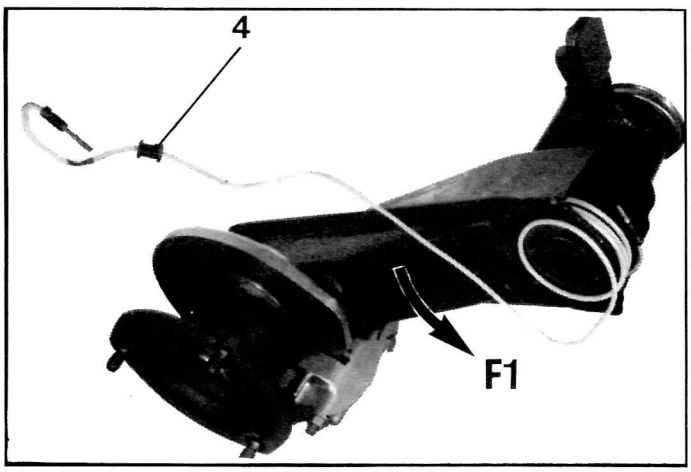
Position the unit on the disc and make sure the pads are properly located.

Fit screw (1), the screwhead towards the inside; fit the bolt without tightening it (contact washer).

Remove the other screw (2), and tilt the unit to put it into position.

Refit screw (2), with the screwhead towards the inside.

Tighten bolts (3) (contact washer) from 36 to 40 m.N (3.6 to 4 m.kg) (26 to 29 ft.Ib).



25. Fit the spiral brake pipe onto the wheelarm :

a) Put the pipe in position, and rotate in the direction of arrow F1 (see photograph) so as to « screw » the spiral pipe on to the wheel-arm pivot tube.

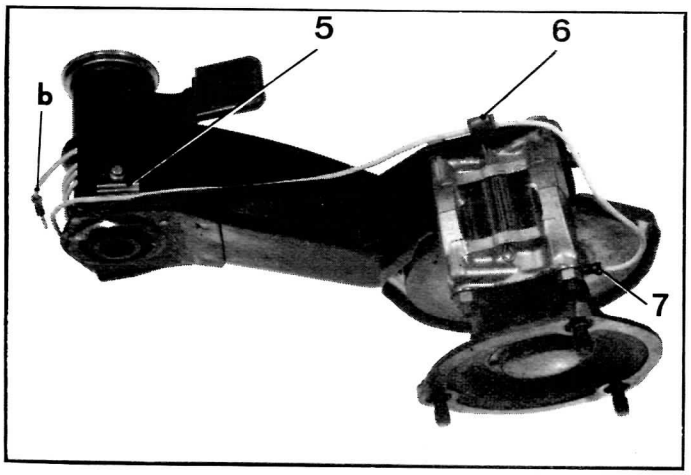
WARNING : Handle the pipe carefully so as not to damage or deform it.

b) Connect union (7) (new seal), and tighten it from 8 to 9 m.N (0.8 to 0.9 m.kg) (6 to 6 1/2 ft.Ib).

Fit bracket (5). Tighten the fixing screw.

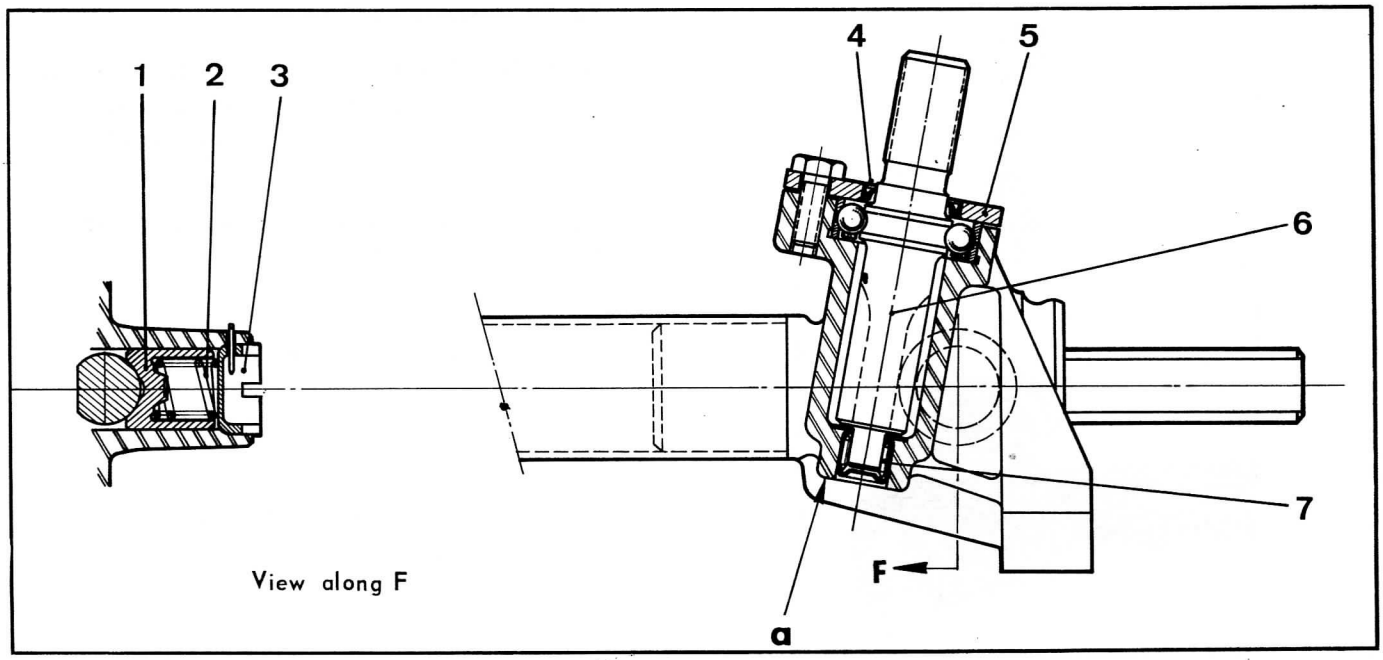
Position the rubber sleeve (4) and secure it with clip (6).

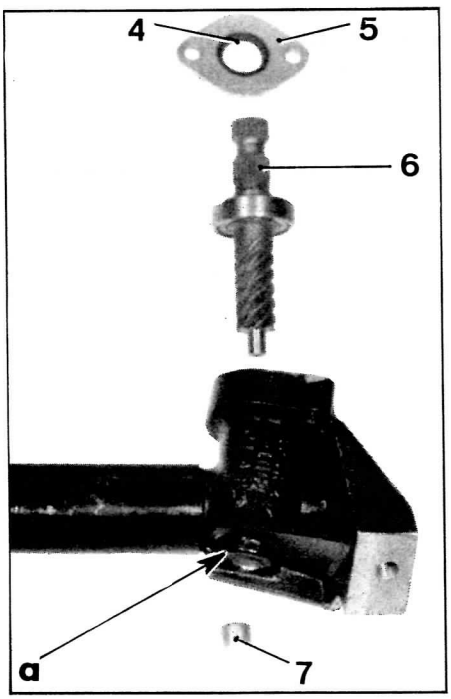
Straighten end « b » of the pipe.

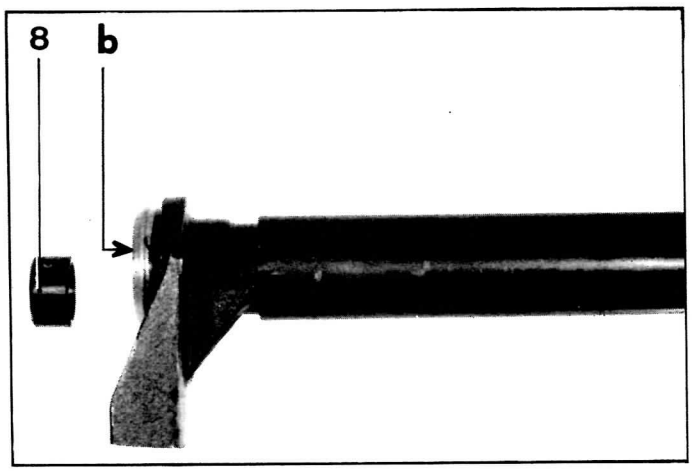


26. Remove the wheelarm from the vice.

RECONDITIONING A STEERING SYSTEM







DISMANTLING

1. Grip the steering rack housing in a soft-jawed vice.

2. Remove the following :
   - the pin and the bolt (3),
   - the spring (2),
   - the plunger (1),
   - the flange (5),
   - the pinion (6) and its bearing,
   - the steering rack,
   - the rubber bush (8),
   - the needle bearing (7) (Remove it from the inside of the steering box using a 13 mm diameter tube).

3. If necessary, remove the support sleeve of the bush (8) at « b », and the seal (4).

4. Clean the parts.

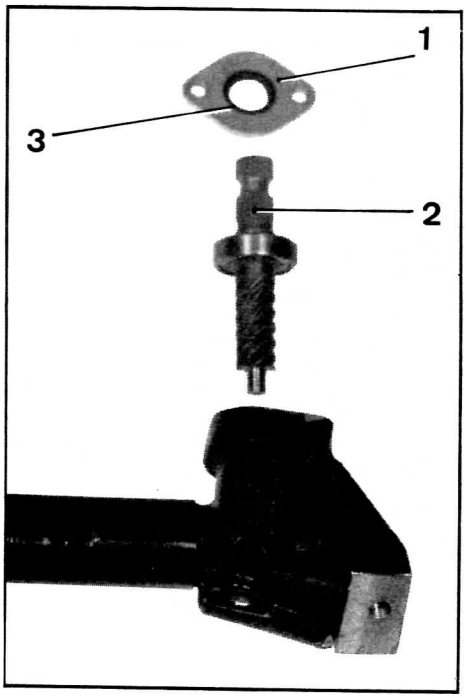
ASSEMBLING

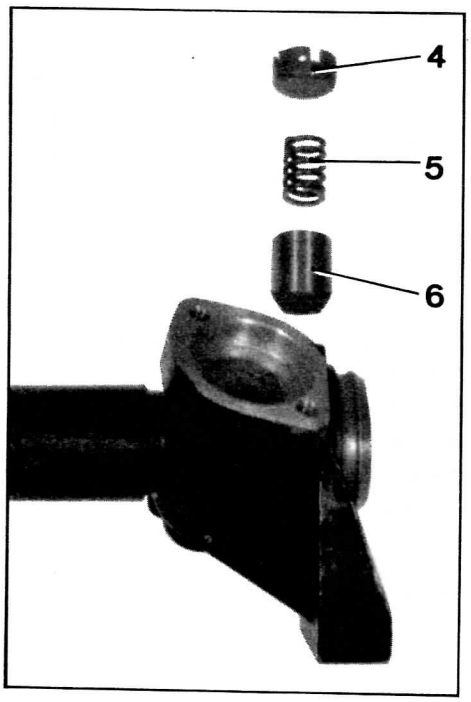
5. Fit the needle bearing (7) into its housing *it must be set back by 1 mm in relation to face « a » of the pinion housing.*
   Lock the needle bearing in position by pin-punching the pinion housing at 3 equidistant points at « a » (3 mm pin punch).

6. Fit the rubber bush (8) into its support sleeve at « b ».

7. Smear some bearing grease on the needle bearing (7), the rack and the control pinion (6).
   Slide the rack into its housing, and fit pinion (6).

Supplement N° 1 to Manual 810-2 (ADD)





8. Fit seal (3) onto flange (1).
Fit the flange on the housing.

WARNING : The face of seal (3) which bears the manufacturer's name must face the bearing of pinion (2) (the lip towards the outside of the housing).

Tighten the fixing screws from 13 to 14 m.N (1.3 to 1.4 m.kg) (9 1/2 to 10 ft.lb).

9. Fit and adjust the steering rack plunger :

a) Fit the plunger (6) and the spring (5) (bearing grease).

Fully tighten nut (4) and slacken it 1/8 to 1/6 of a turn.

b) Operate the steering so that the rack is moved along its whole length, and check whether it is stiff at any point. If it is, adjust the pressure of the plunger at that point : the rack must move without the movement of the teeth being felt.

c) Fit the locking pin of the nut (4).

LIST OF THE SPECIAL TOOLS MENTIONED IN THE SECOND SECTION OF MANUAL 810-2

DESCRIPTION	NUMBER Repair-Methods	REFERENCE of the tool sold
(2) ENGINE		
Spanner for cylinder head tightening (for 12 mm A/F nuts)		4006-T.D.
Spanner for cylinder head tightening (for 13 mm A/F nuts)		4006-T.E.
Valve grinder		1615-T
Valve spring compressor		1652-T or 1652-T bis
Extractor for crankshaft needle bearing (gearbox input shaft centering) (equipped with a 12 mm diameter end piece		1671-T
Spanner for removing filter cartridge		1683-T
Tool for fitting front crankshaft seal		1694-T (Sold in a kit)
Tool for fitting distributor seal		1695-T (Sold in a kit)
Tool for fitting rear crankshaft seal		1696-T (Sold in a kit)
Tool for fitting camshaft seal		1697-T (Sold in a kit)
Cylinder head stud extractor		2410-T
Stand for engine on work-bench		2508-T
Piston ring compressor *(1015 cc Engine)*		3010-T
Piston ring compressor *(1220 cc Engine)*		4007-T
Mandrel for fitting the crankshaft needle bearing		3052-T bis
Special spanner for slackening and tightening camshaft pulleys	MR. 630-11/26	
Extractor for small end bush	MR. 630-23/9	
Extractor for rocker arm shaft	MR. 630-25/8	
Mandrel for centering the clutch disc	MR. 630-31/85	
Mandrel for removing and fitting the gudgeon pins		1699-T
Support bracket for holding the cylinder head in a vice	MR. 630-43/31	
Shim for fitting the oil pump		4001-T
Tool for crimping the by-pass valve	MR. 630-62/14	
Tool for holding the flywheel		3064-T.E.
(3) (4) CLUTCH - GEARBOX		
Stand for gearbox on work-bench	MR. 630-43/29 a	
Mandrel for centering the converter oil pump		1689-T
Special tool kit for gearbox adjustment		3184-T or 3184-T. bis
* Mandrel for fitting the gearbox input shaft seal		3184-T.G
* Pad for removing the differential bearings		3184-T.H
Extractor for removing differential taper bearings (used with pad 3184-T.H)		2400-T
Dial gauge		2437-T
Tool for holding in position torque converter on gearbox		3186-T
Circlip pliers		3253-T
Assembly for adjusting and checking torque converter		3112-T
This assembly consists of : - two shims for setting solenoid valve mechanism (max. diameter = 1.5 mm min. min. diameter = 1.4 mm) - two unions for checking oil pressure		
Pliers for the retarding dowels	MR. 630-27/18	
* Supplementary tools for updating kit 3184-T into 3184-T bis		

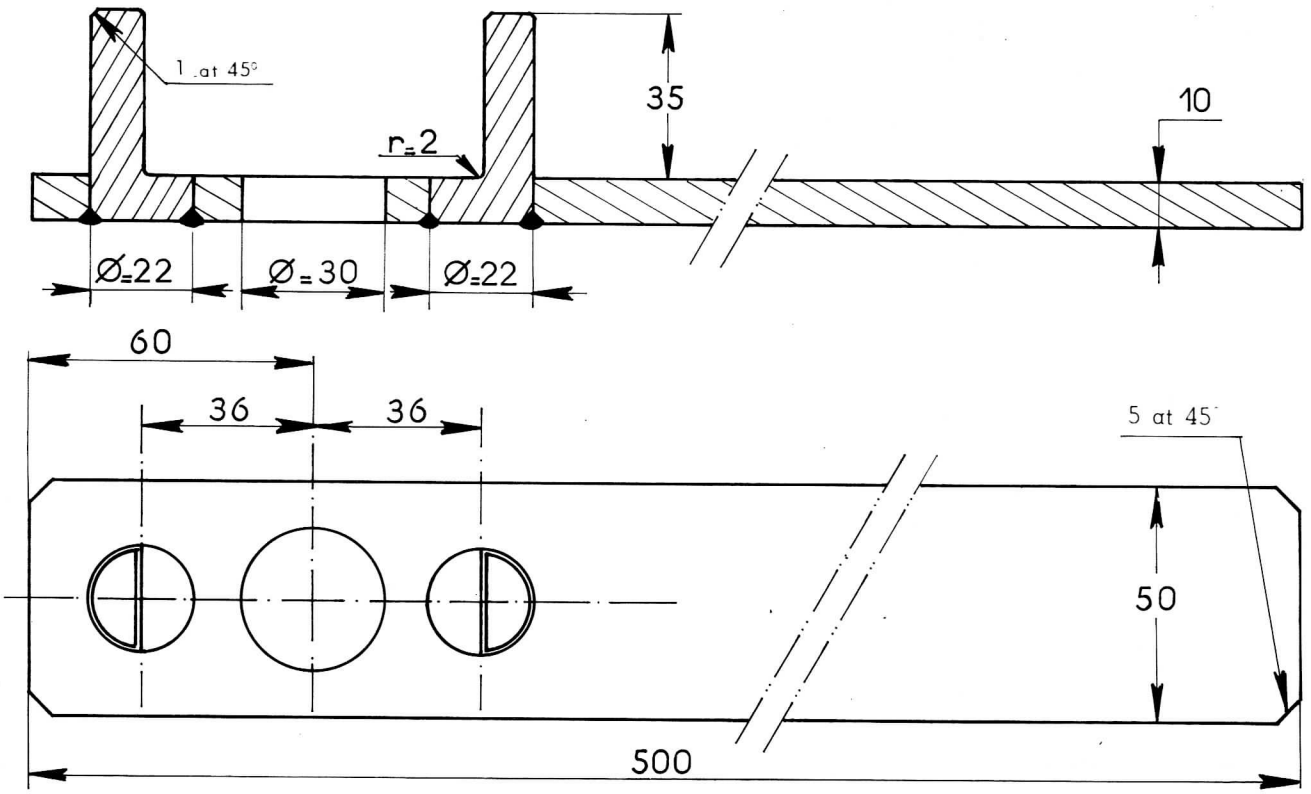
Supplement N° 1 to Manual 810-2 (CORR)

LIST OF THE SPECIAL TOOLS MENTIONED IN THE SECOND SECTION OF MANUAL 810-2

DESCRIPTION	NUMBER Repair - Methods	REFERENCE of the tool sold
(7)(8) FRONT AND REAR AXLES		
Front hub extractor		1893-T
End-piece for extracting rear wheelarm bearings (to be used with 1671-T)		2070-T
Mandrel and two bushes for fitting rear wheelarm bearings		2071-T
Socket (diameter = 75 mm) for two-slot nuts of front or rear hub bearings (used with 3321-T)		3304-T
Socket for front hub bearing nut		3320-T
Assembly for fitting and removing front or rear hub nut		3321-T
Mandrel for fitting front and rear hub bearings	MR. 630-31/96	
Level for holding front or rear hub	MR. 630-64/40 or	6310-T
(9) SUSPENSION		
Union for bleeding the height corrector		2218-T
Support for suspension cylinder		2293-T
Spanner for the height corrector jet locknuts	MR. 630-12/26	
Height corrector support	MR. 630-43/16	
Hydraulic test bench (painted green for LHM fluid)		3654-T
Panel with pipes and unions		3655-T
Cone for the O-ring on the pressure regulator bleed-screw		2225-T
Set of unions and plugs (dia. 3,5 and 4.5 mm)		3657-T

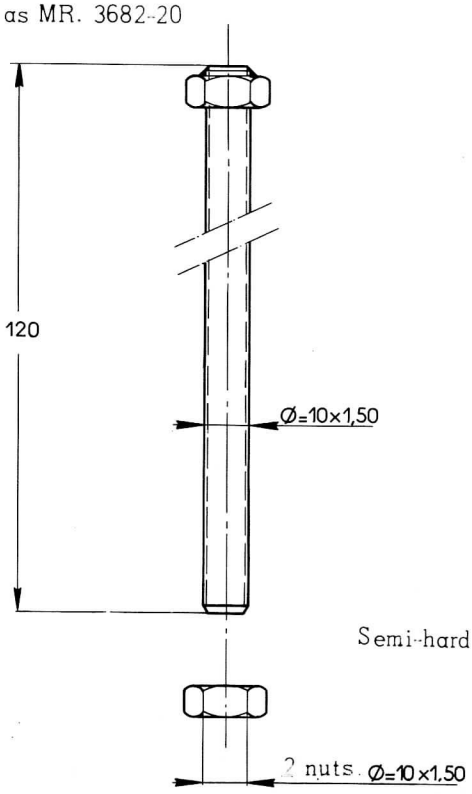
MR 630_11/26

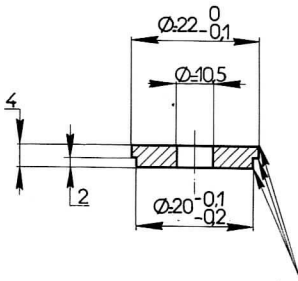
MATERIAL : Steel strip 50 · 10
Steel wire diameter 22



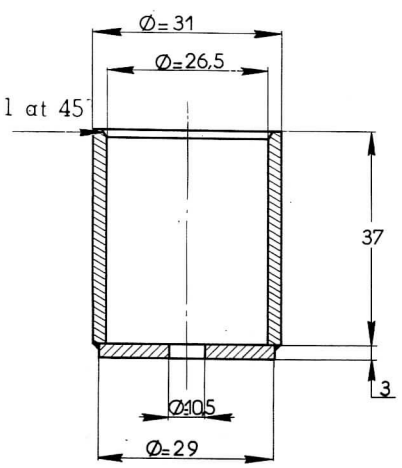
MR - 630 - 23/9

Was known as MR. 3682-20



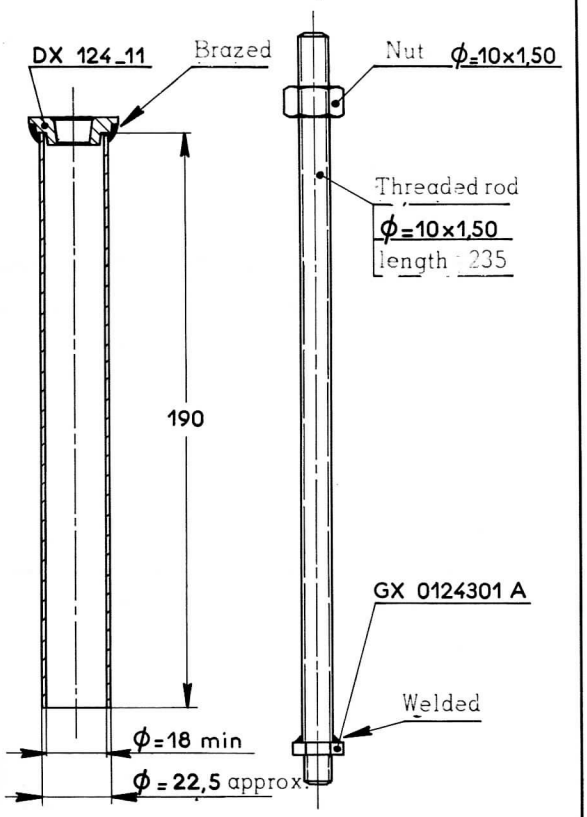


ENGINES			
♂	3 CV	1015	1220
A	22 0 -0.1	22 0 -0.1	24 0 -0.1
B	20 -0.1 -0.2	20 -0.1 -0.2	22 -0.1 -0.2

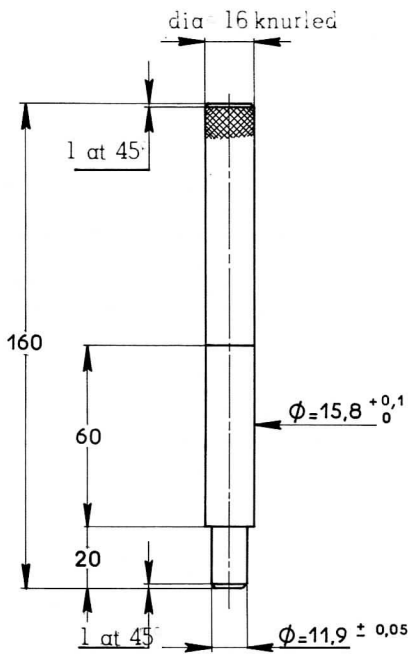


Supplement N° 1 to Manual 810-2 (CORR)

MR 630_25/8

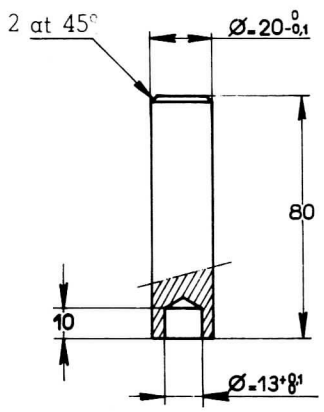


MR 630_31/85



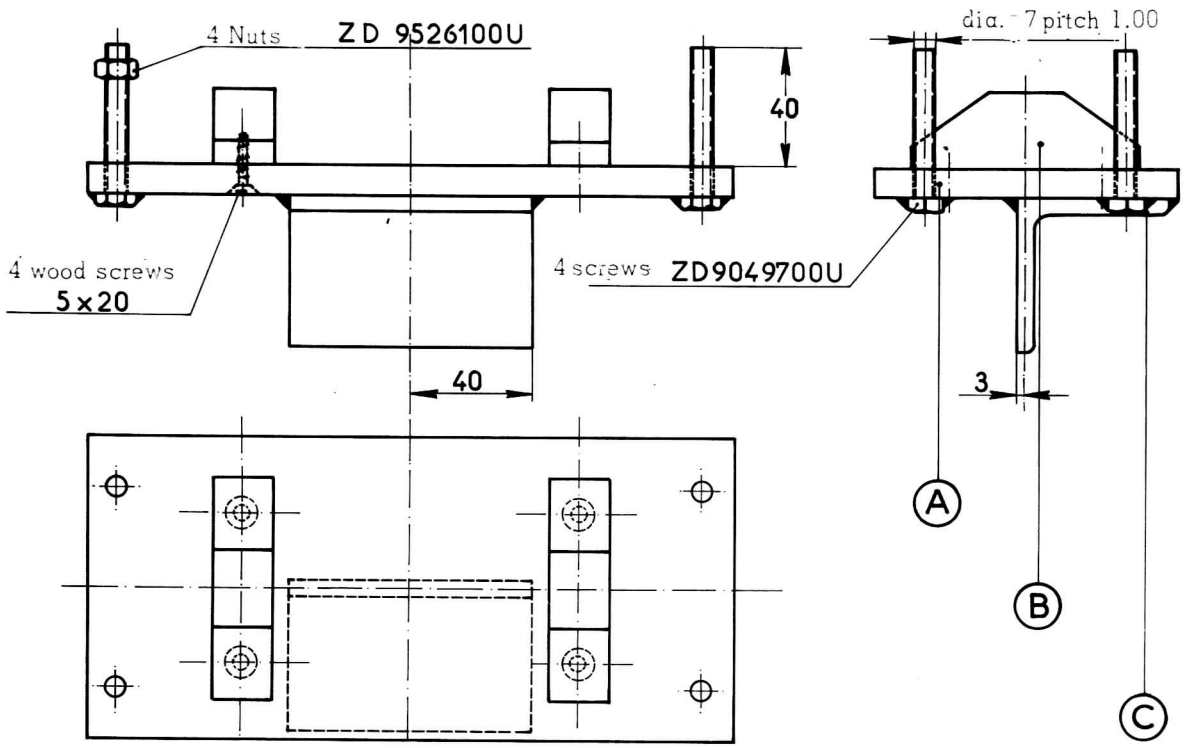
Semi-hard steel

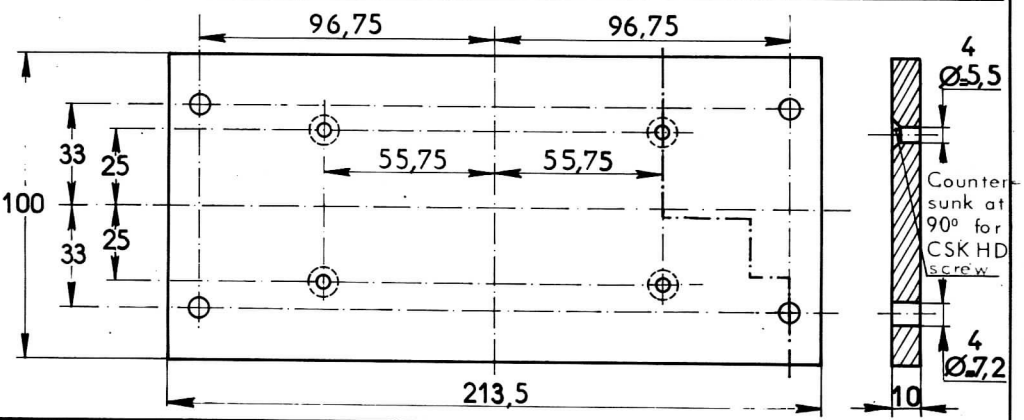
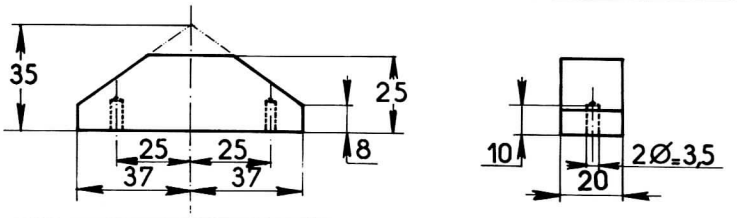
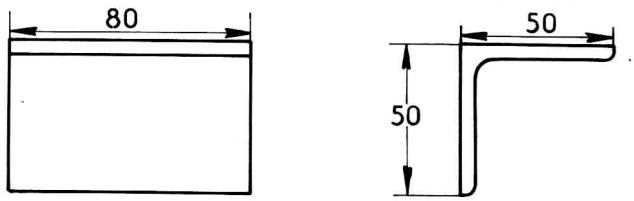
MR 630.62/14



MATERIAL : Hard steel

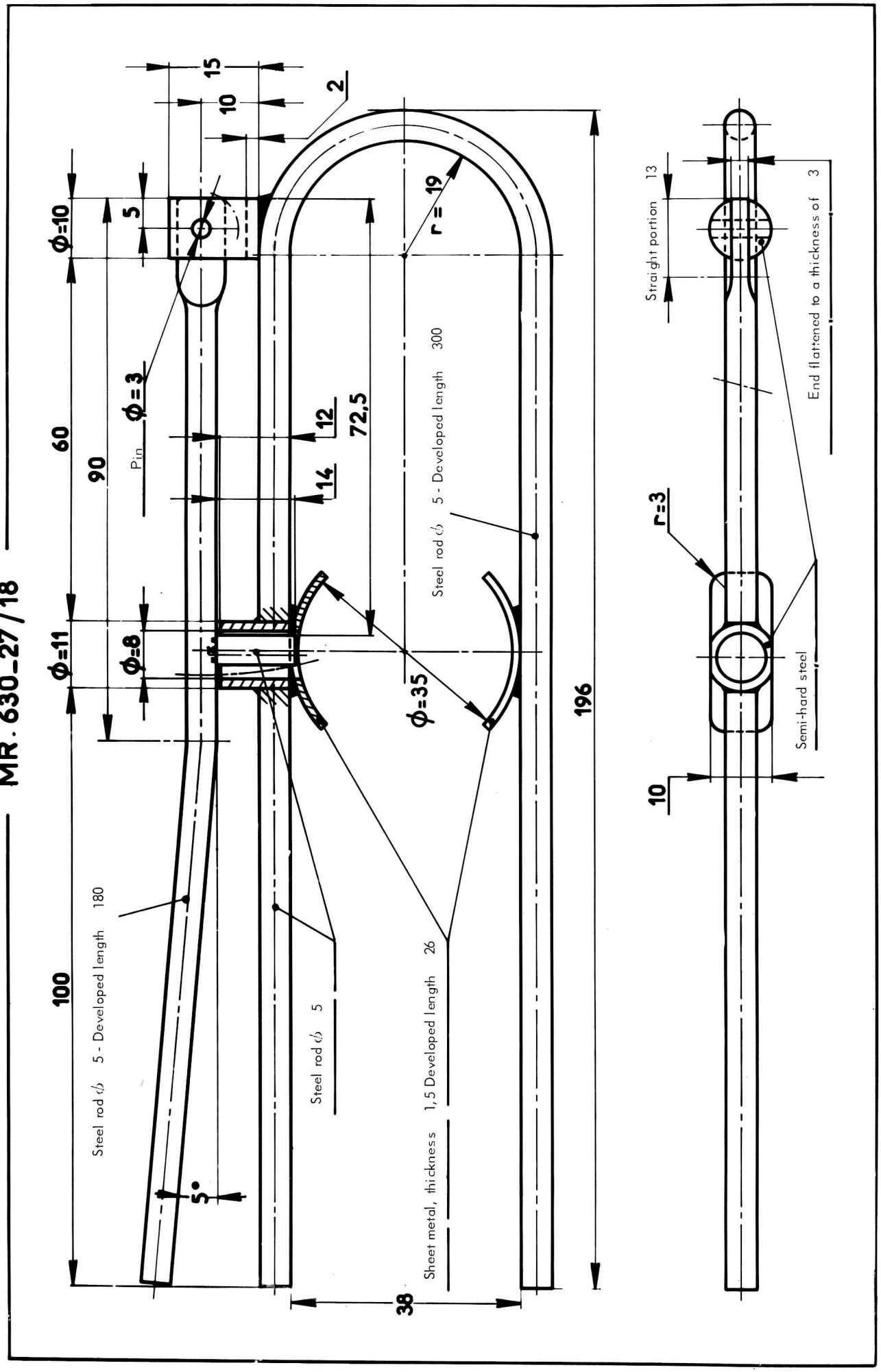
MR630_43/31



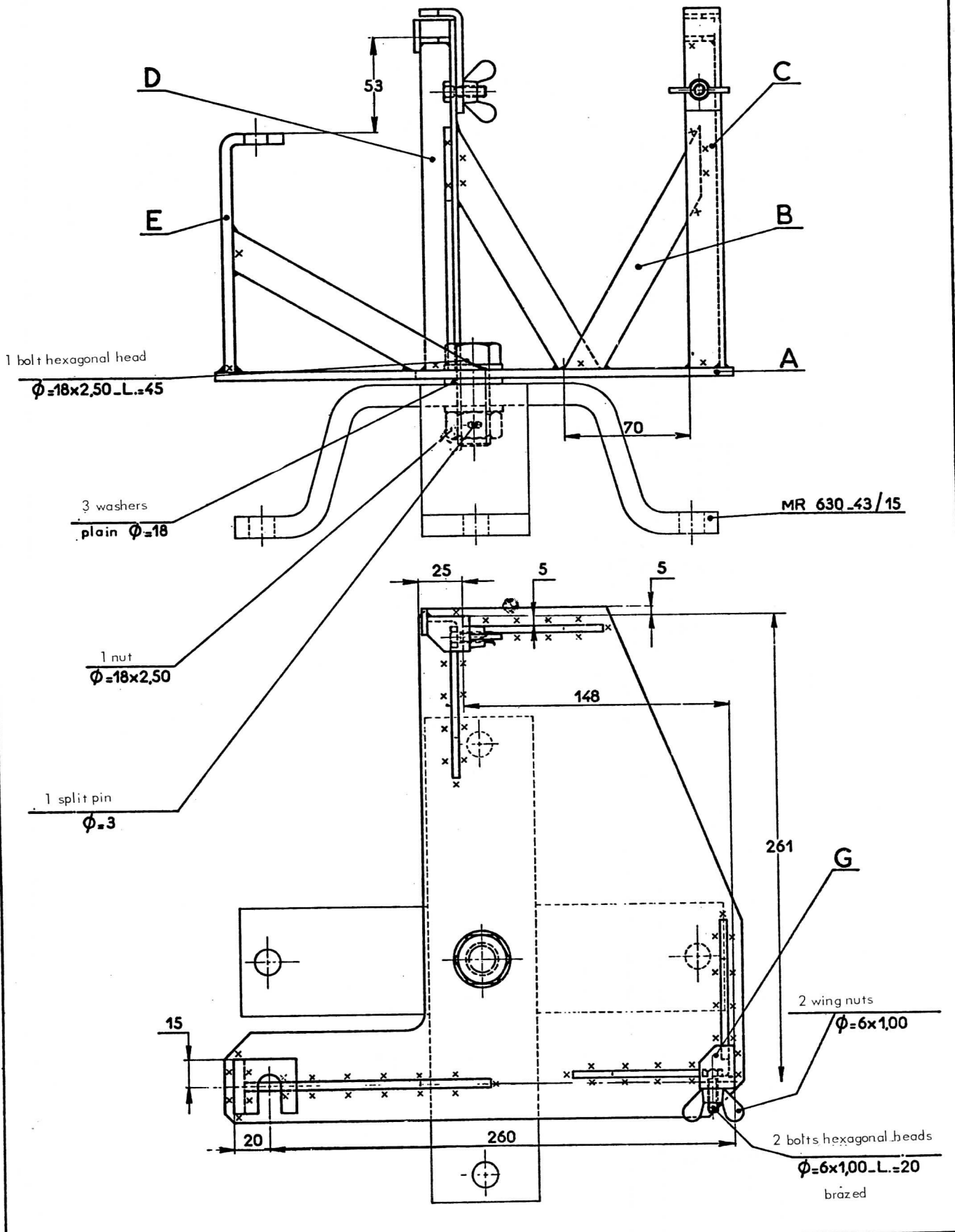
Item	N° off	Material	Quantity	Diagram
A	1	Sheet metal thick. 10	100x213,5	
B	2	Hard wood	74x35x20	
C	1	R.S. Angle 50 × 50	L = 80	

Supplement N° 1 to Manual 810-2 (CORR)

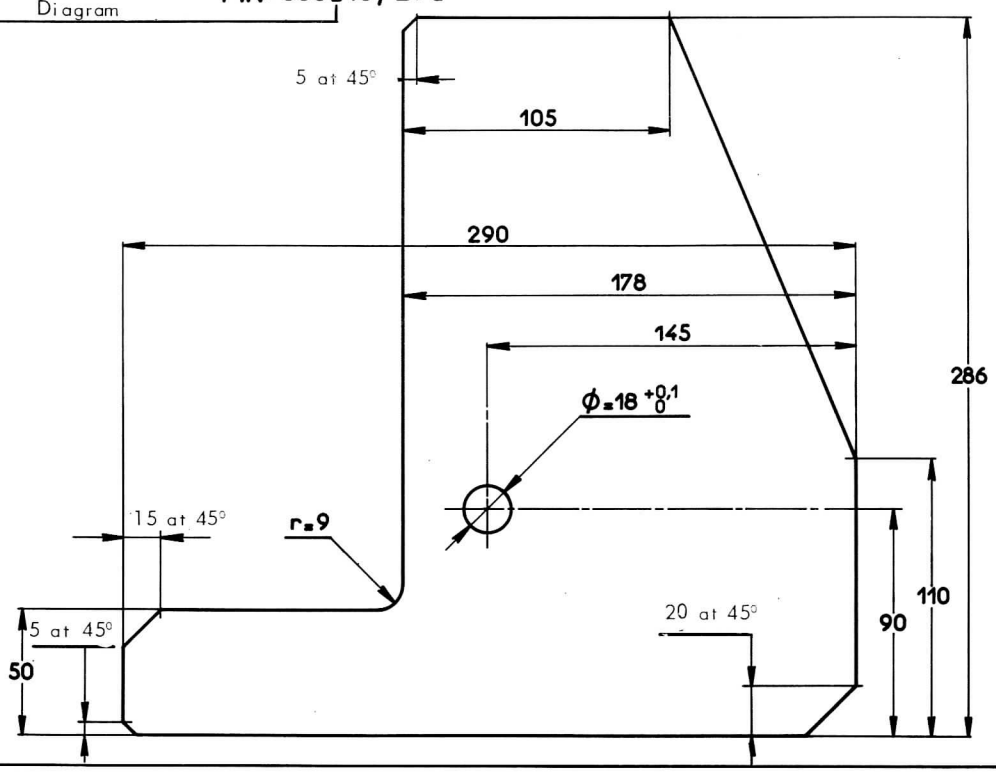
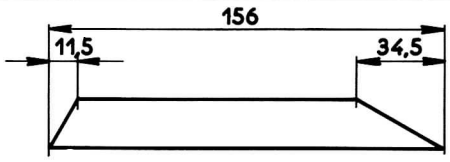
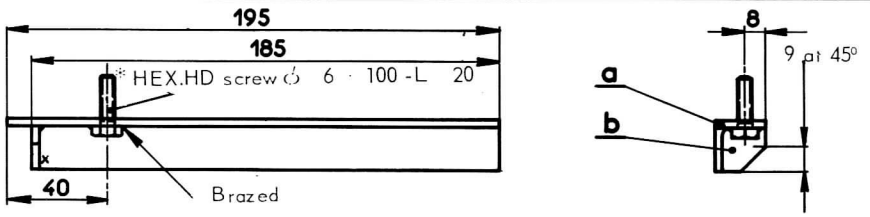
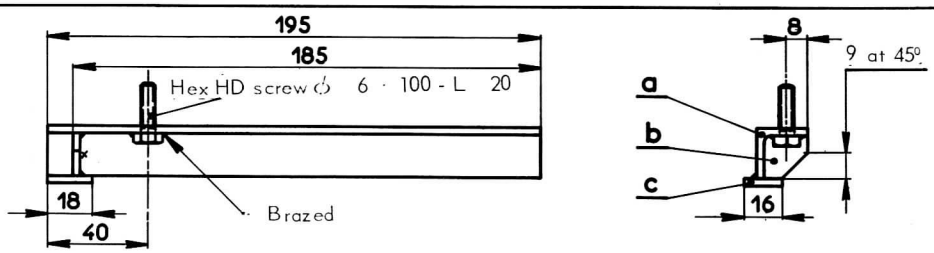
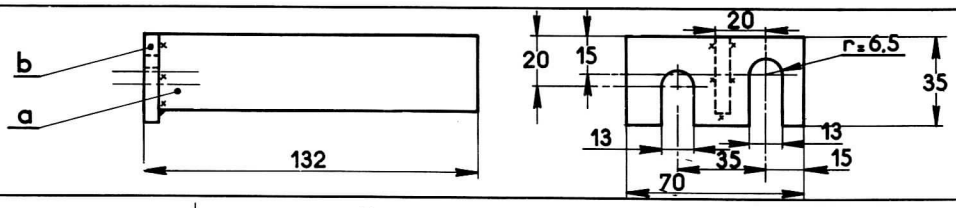
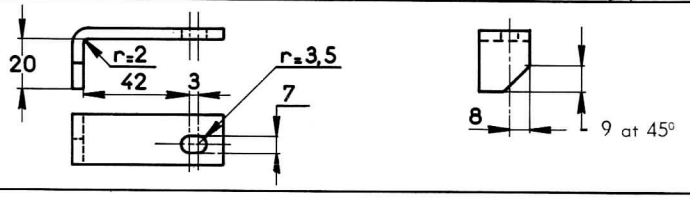
MR. 630_27/18



MR 630_43/29


D
53
C
E
B
A
1 bolt hexagonal head
ϕ=18x2,50_L.=45
70
3 washers
plain ϕ=18
MR 630_43/15
25
5
5
1 nut
ϕ=18x2,50
148
1 split pin
ϕ=3
261
G
2 wing nuts
ϕ=6x1,00
15
20
260
2 bolts hexagonal heads
ϕ=6x1,00_L.=20
brazed

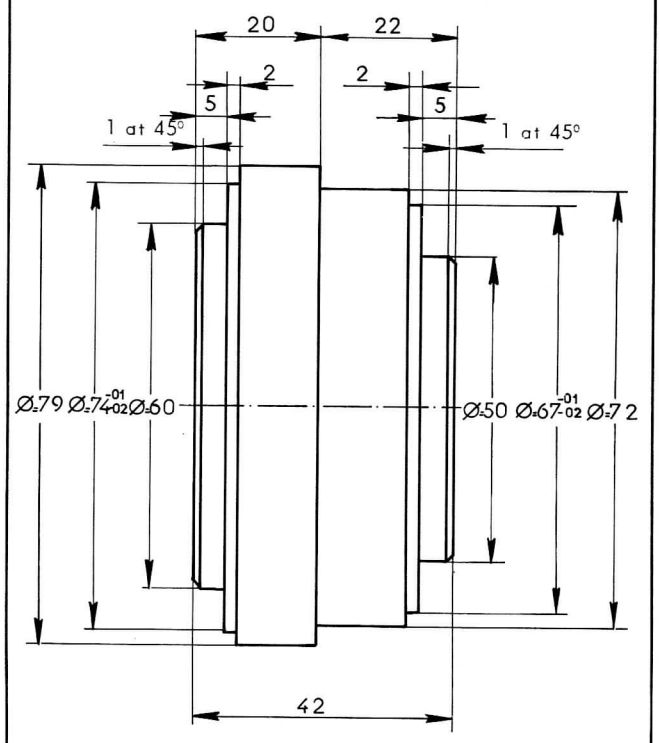
MR. 630_43/29a

Item	N° off	Material	Quantity	Diagram
A	1	Sheet metal thickness=5	290x286	
B	5	Steel strip 20x4	156	
C	1	a) R.S. angle 20x20	195	
	1	b) sheet-metal thickness 3	17x17	
D	1	a) R.S angle 20x20	195	
	1	b) sheet-metal	17x17	
	1	c) thickness 3	18x16	
E	1	a) steel strip 30x6	126	
		b) steel strip 40x6	70	
G	2	Steel strip 20x4	Developed length 78	

Supplement N° 1 to Manual 810-2 (CORR)

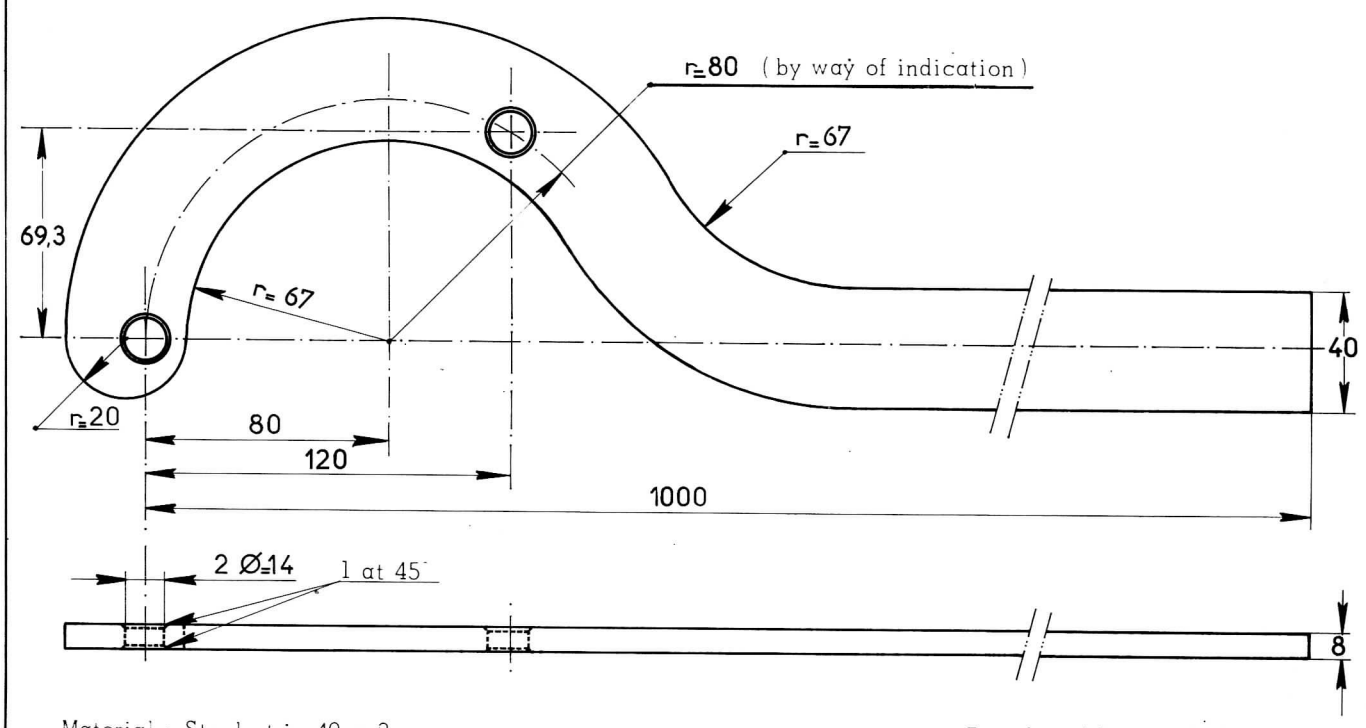
Supplement N° 1 to Manual 810-2 (CORR)

MR 630_31/96



MATERIAL : Semi-hard steel

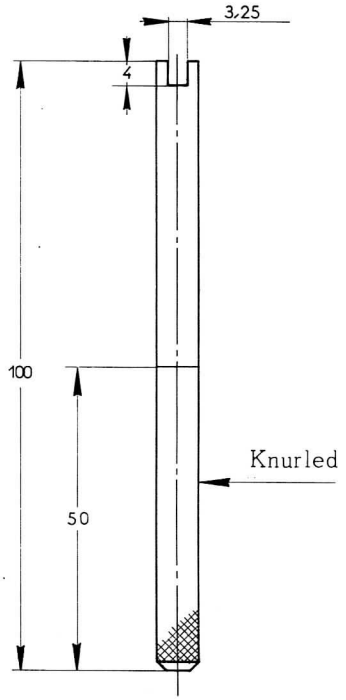
MR.630_64/40



Material : Steel strip 40 · 8

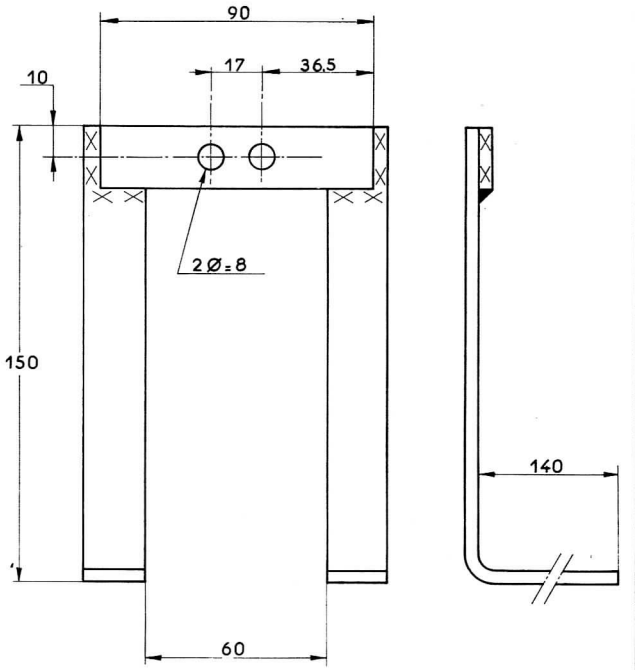
Developed length 1200

MR 630_12/36
ex. MR 1376_50



Steel wire, diameter 7

MR 630-43/16
ex:MR 3053-260



Material : Steel strip of 20 · 4

THIRD SECTION

Manual 810-2

ELECTRICAL SYSTEM

LIST OF OPERATIONS

IN THE THIRD SECTION OF MANUAL 810-2

Operations where the number is preceded by the letter « G » are common to all vehicles of the « GS » range.
Operations where the number is preceded by the letters « GE » or « GF » are specific to the five-or three-door versions of the « GS » Estate respectively.
Operations where the number is preceded by the letter « Gea » are specific to vehicles fitted with a Torque Converter.

Operation Number	DESCRIPTION
	ELECTRICAL SYSTEM
G. 530-0	Characteristics and checking of the electrical units (Alternator, voltage regulator, starter motor)
G. 532-3	Working on the alternator - PARIS-RHONE alternators - DUCELLIER alternators - SEV-MARCHAL alternators
G. 533-3	Working on the starter motor - DUCELLIER starter motor - PARIS-RHONE starter motor

ALTERNATORS

I. DISTRIBUTION ON THE VEHICLES

A. *On all vehicles without optional equipment (up to 6/1973)*
Single phase alternator (28 amps).
DUCELLIER 7540 A or 7540 B
or PARIS-RHONE A 11 M 7

B. *On all vehicles with optional equipment (up to 6/1973)*
a) **Three-phase alternator (35 amps)**
DUCELLIER 7541 A or 7541 B *(up to 5/1972)*
or PARIS-RHONE A 11 R 1 *(up to 2/1973)*

b) **Single-phase alternator (35 amps)**
DUCELLIER 7562 A or B *(from 5/1972)*
or PARIS-RHONE A 11 M 5 *(from 2/1973)*

C. *On all vehicles WITH or WITHOUT optional equipment (from 6/1973)*
a) **Single-phase alternator (35 amps)**
DUCELLIER 7562 B, C or D
or PARIS-RHONE A 12 M 5
b) **Three-phase alternator (35 amps)**
SEV-MARCHAL, type « FRED » 70 220 302 *(from 12/1973)*

Supplement N° 1 to Manual 810-2 (ADD)

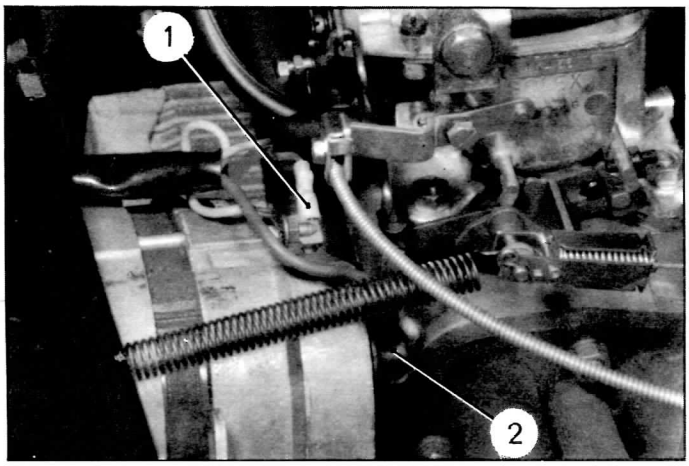
II. CHARACTERISTICS

ALTERNATOR REFERENCES		7540 A 11 M 7	7562 A 12 M 5	7541 A 11 R 1	« FRED » 70 220 302
Voltage		14 volts	14 volts	14 volts	14 volts
Maximum current		30 amps	35 amps	37 amps	35 amps
Maximum output power		420 watts	500 watts	510 watts	500 watts
Begins to charge (when hot)	Engine rpm	790 rpm	560 rpm	850 rpm	590 rpm
	Alternator rpm	1400 rpm	1000 rpm	1500 rpm	1050 rpm
Alternator/engine drive ratio		1.77	1.77	1.77	1.77
Stator winding resistance		7 ± 0.2 Ω	7 ± 0.2 Ω	7 ± 0.2 Ω	4.8 Ω
Minimum length of brushes (after wear)		10 mm	10 mm	10 mm	No brushes
Tightening torques of pulley nut		40 m.N (4 m.kg) (29 ft.lb)	* 40 m.N (4 m.kg) (29 ft.lb)	40 m.N (4 m.kg) (29 ft.lb)	40 m.N (4 m.kg) (29 ft.lb)
Direction of rotation from driving end		Clockwise	Clockwise	Clockwise	Clockwise

NOTE : *On the PARIS-RHONE A 12 M 5 alternator, there is a white paint mark on the drive pulley, on the drive end side : the direction of fitting of the pulley must be correct.*

* *From DUCELLIER alternator, model 7562 C, the key for the pulley has been eliminated: the tightening torque for the pulley nut is then 60 m.N (6 m.kg) (43.4 ft.lb)*

III. CHECKING THE OUTPUT ON THE VEHICLE



NOTE : The alternator output must be measured at normal operating temperature and when fully energized.
The output check of the alternator must be carried out with a well-charged battery.

1. Connect the measuring instruments :

a) Disconnect the earth from the negative battery terminal. Disconnect the energizing lead (yellow end) from the terminal « EXC » (1) of the alternator and the output lead from the terminal « + » (2) of the alternator.
Connect terminal « + » (2) to terminal « EXC » (1) of the alternator by means of a lead 12/10 mm in diameter.

b) *Connect an ammeter in series and a rheostat in parallel with the charging circuit :*
For this purpose connect :
- the alternator terminal « + » (2) to the positive terminal « + » of the ammeter.
- the negative terminal « - » of the ammeter to the ring terminal of the disconnected output lead.
- the rheostat between the negative terminal « - » of the ammeter and earth.

c) *Connect a voltmeter in parallel with the charging circuit :*
For this purpose connect :
- the positive terminal « + » of the voltmeter to positive terminal « + » of the battery.
- the negative terminal « - » of the voltmeter to earth.

Connect the earth lead to the negative terminal « - » of the battery.

Connect up a workshop tachometer.

2. Measuring the output of the alternator :
Start the engine and allow it to idle.

a) *DUCELLIER 7540 A or B or PARIS-RHONE A 11 M 7 - Alternator :*
- Accelerate the engine to about 1100 rpm and adjust rheostat to obtain a voltage of 14 V, at which level the current should be 6 A.
- Increase the engine speed to about 2400 rpm and adjust rheostat to maintain 14 V.
- The current produced should be 22 A.
- Raise engine speed to about 4600 rpm. The current output should be 28 A for a voltage lever of 14 V.

b) *DUCELLIER 7541 A or B or PARIS-RHONE A 11 R 1 Alternator :*
- Accelerate the engine to about 1150 rpm and adjust rheostat to obtain voltage of 14 A, at which level the current should be 13 A.
- Increase the engine speed to about 2550 rpm. For a voltage of 14 V (adjust rheostat) the current should be 31 A.
- Raise engine speed to about 4500 rpm. The current output should be 35 A for a voltage of 14 V.

c) *DUCELLIER 7562 A : or PARIS-RHONE A 12 M 5 or SEV-MARCHAL « FRED » 70 220 302 Alternator :*
- Accelerate the engine to about 900 rpm and adjust rheostat to obtain a voltage of 14 V, at which level the current should be 11 A.
- Increase the engine speed to about 1700 rpm. For a voltage of 14 V (adjust rheostat) the current output level should be 26 A.
- Raise the engine speed to about 4500 rpm. The current output level should be 33 A for a voltage of 14 V.
- If these outputs are not obtained, check the drive belt and its tension.
If this appears satisfactory the alternator must be overhauled.

- Stop the engine.

- Disconnect the lead from the negative terminal of the battery. Remove the measuring instruments and connect the charging and energizing leads to the alternator.

- Connect the negative lead (from the chassis) to the negative terminal of the battery.

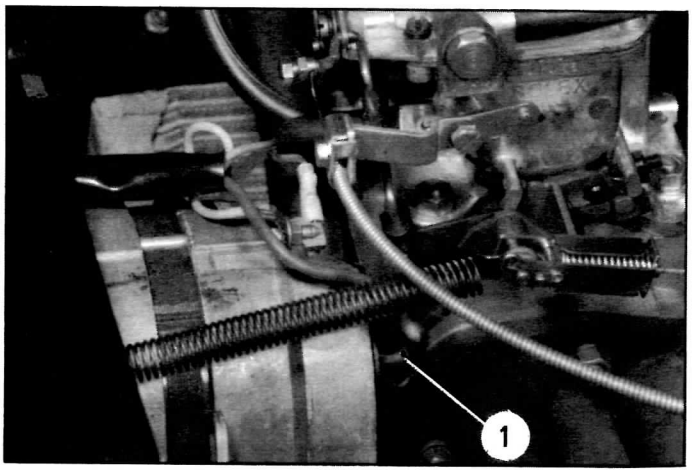
REGULATOR

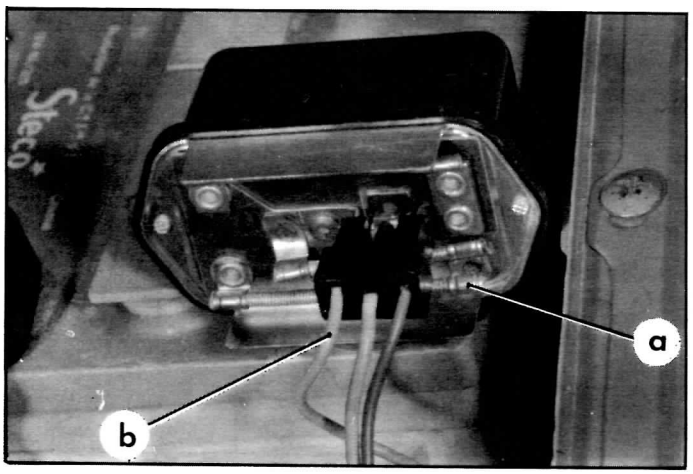
CHARACTERISTICS

On vehicles of all types :

Single stage vibrating blade-type regulator

DUCELLIER : 8366 A
or PARIS-RHONE : AYC 213
or SEV-MARCHAL : F 14 V





CHECKING THE VOLTAGE REGULATION

IMPORTANT NOTE : The leads to the regulator must be correctly connected.

a) The centre earth terminal on the regulator must not be deformed (Risk of faulty connection, and malfunction).

b) Check that the colour of lead « b » matches that of the energizing lead on the alternator.

NOTE : Checking the regulator must be carried out with a correctly charged battery.

1. Disconnect the battery earth lead.
2. Disconnect the output lead from the positive terminal « + » (1) of the alternator.
3. Connect an ammeter in series and a rheostat in parallel in the charging circuit as follows :
   - positive terminal « + » of ammeter to the positive terminal « + » of the alternator.
   - negative terminal « - » of ammeter to the disconnected output lead (black sleeve).
   - the rheostat terminals between the negative terminal « - » of the ammeter and earth.
4. Connect a voltmeter in parallel with the energizing circuit (fit the regulator on to the battery).
   - positive terminal « + » of the voltmeter to positive terminal « + » of regulator at « a » *(take care not to cause a short-circuit with regulator earth)*.
   - negative terminal « - » of voltmeter to earth.
5. Connect the earth lead to the battery.
6. Connect a workshop tachometer.
7. Start the engine and allow it to idle.
8. Very quickly switch the ignition off and on again once. (Demagnetization of the regulator).
9. Accelerate the engine to about 2800 rpm and maintain this speed during the check. Using the rheostat slowly increase the alternator output *without ever reducing it.*

   Note several values of the voltage, these should be within the range : 13.8 to 14.4 V at a temperature of 20° ± 5° C *(up to 11/1975)* and 13.6 to 14.2 V at a temperature of 22° ± 5° C *(from 11/1975)*.

   NOTE : The voltage varies inversely with the temperature by an average of 0.2 V per 10° C. If the above conditions are not satisfied fit a new regulator.
10. Stop the engine.
11. Disconnect the earth lead from the battery and disconnect the measuring instruments.
12. Connect the output lead to the alternator.
13. Fit the regulator to its support and re-connect the earth lead to the negative battery terminal.

BATTERY

CHARACTERISTICS

All vehicles (⟵ *Feb 1972*) 12 volts 150/30 Ah	*All vehicles (2/72 ⟶)* 12 volts (except GSX and GSX 2) 175/35 Ah	*GSX or GSX 2* 12 volts 225/45 Ah	*Optional FR = 20 heater* (⟶ *Feb 1972*) 12 volts 175/35 Ah
STECO : 71 500 TUDOR : 6 DK 54 FULMEN : AS 309 L	STECO : 71 754 TUDOR : 6 DH 54 FULMEN : AS 309 M TEM : L 109	STECO 72 256 FULMEN : AS 309 X	*Optional FR = 20 heater* (*Feb 1972* ⟶) 12 volts 200/40 Ah STECO : 72 040 TUDOR : 6 DH 54 F FULMEN : AS 309 S DUCELLIER : 9450 A

Supplement N° 1 to Manual 810-2 (ADD)

STARTER MOTOR

CHARACTERISTICS

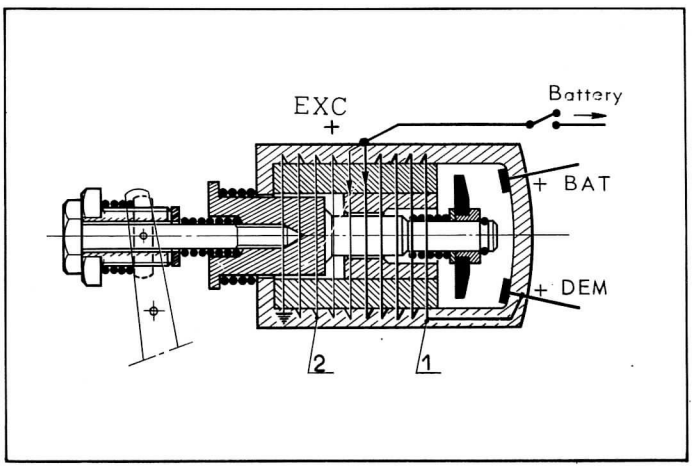
12 V Solenoid starter with positive control, pre-engaged pinion type

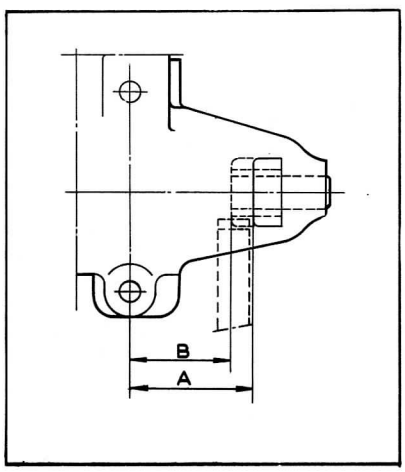
DESCRIPTION OF STARTER MOTOR	PARIS-RHONE D 8 E 103	DUCELLIER 6208 A - 6208 B	DUCELLIER 6217 A, B, C, D or E
Solenoid : Resistance of pull-in coil (1) (Heavy-gauge wire winding connected in series with field coils) Resistance of hold-in coil (2) (Light-gauge wire winding connected in parallel)	0.3 Ω 1 Ω	0.24 Ω 1.08 Ω	
Field coils : Resistance **Armature :** Min. dia. of commutator after machining	0.011 Ω 35 mm (1.378 in)	0.0087 Ω 30 mm (1.181 in)	0.01 Ω
Brushes Min. length after wear	7 mm	7 mm	
Starter pinion : Adjustment : The starter pinion must assume the positions indicated on the figure Solenoid not energized Solenoid energized	 A = 47.7 ± 0.3 mm B = 38.3 mm max.	 A = $48.5 \, ^{0}_{-1.2}$ mm B = 37.5 mm max.	

NOTE : The pull-in coil circuit (1) is earthed through the field coils, the rotor and the brushes.

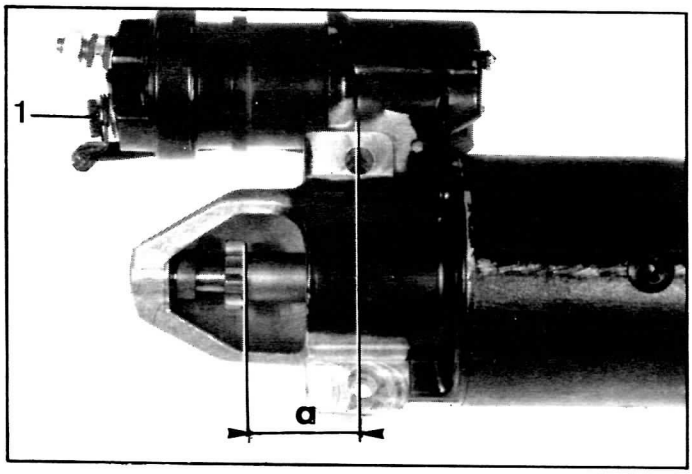
CHECKING THE STARTER MOTOR

DESCRIPTION OF STARTER MOTOR	D 8 E 103	6208 A - 6208 B	6217 A, B, C, D, or E
1. Check on car (*battery correctly charged*) a) Current taken with pinion locked (stall current) b) Current taken during starting (*starter in use*) **2. Check on test bench :** a) No lead current b) Mean torque at 1000 rpm Current taken at this torque c) Maximum power Corresponding torque Current taken at this torque	 350 A 90 to 110 A 50 A 5 m.N (3 1/2 ft.lb) 220 A 625 W 3.5 m.N (2 ft.lb) 170 A	 260 A 90 to 110 A 42 A 4 m.N (3 ft.lb) 200 A 460 W 2.35 m.N (1 1/2 ft.lb) 150 A	 320 A 90 to 110 A 50 A 5 m.N (3 1/2 ft.lb) 240 A 610 W 3.5 m.N (2 ft.lb) 180 A



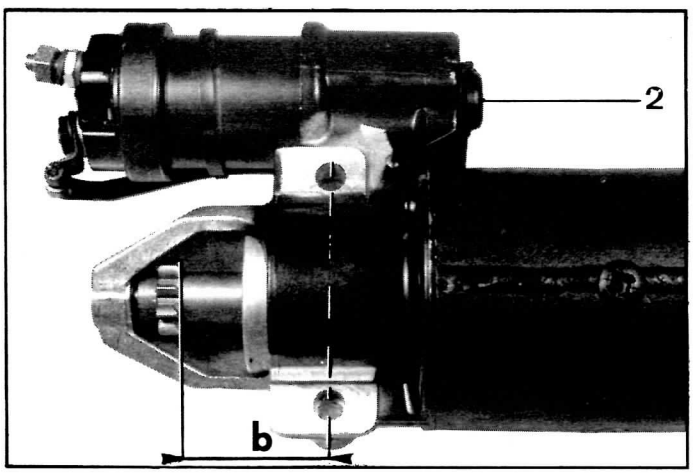


ADJUSTMENT OF DRIVE PINION ON A DUCELLIER STARTER MOTOR 6208 A, 6208 B, 6217 A or 6217 B, 6217 C, 6217 D or 6217 E



NOTE : This operation can only be carried out with the starter motor removed from the engine.

1. Remove the plastic plug (2).



2. Energize the solenoid. For this connect :

a) The positive terminal of a 12 V battery to the supply terminal at the solenoid (flat blade connector).

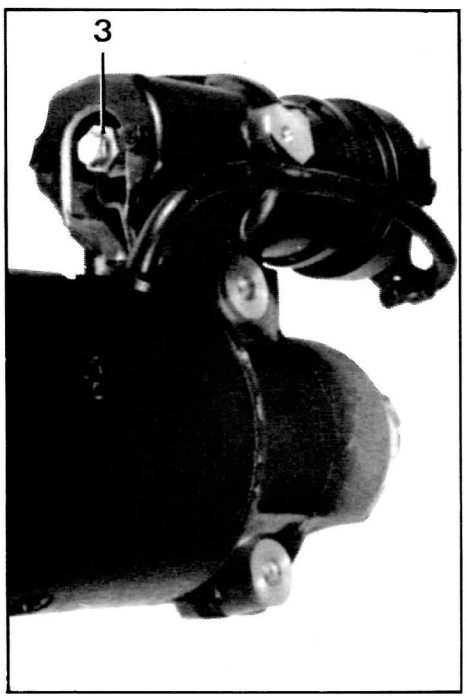
b) The negative terminal of the battery to the terminal marked « DEM » (1).

With the pinion then in the « engaged » position, measure *dimension « a » which should be 37.5 mm max. (1.47 inches).*

3. Disconnect the battery from the supply terminal of the solenoid and field coils.

The pinion will return to its free position.

Measure *the dimension « b » which must be between 47.3 and 48.5 mm* (1.86 and 1.91 inches).



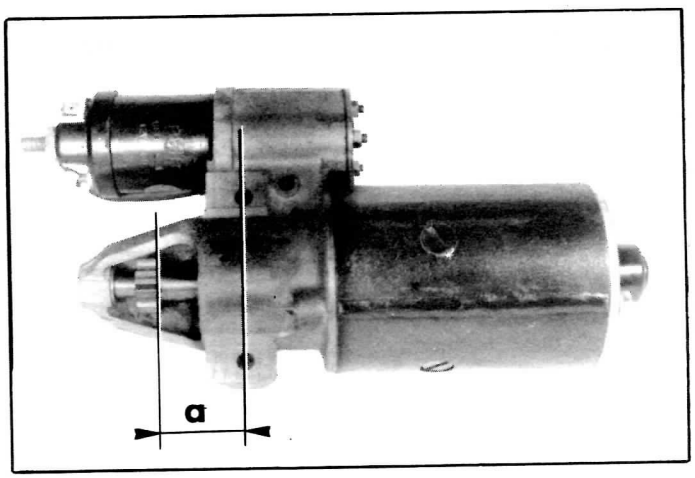
4. Obtain this measurement by operating the adjusting sleeve (3) on the solenoid.

If these dimensions are not obtained the starter motor must be reconditioned.

5. Fit the plastic plug (2).

Supplement N° 1 to Manual 810-2 (ADD)

ADJUSTMENT OF THE DRIVE PINION ON A PARIS-RHONE D 8 E 103 STARTER MOTOR

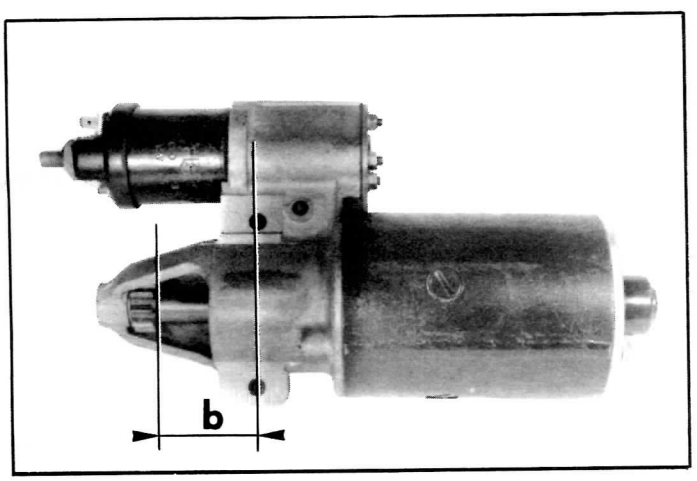


1. Remove the starter motor from the engine.

2. Energize the solenoid. For this connect :

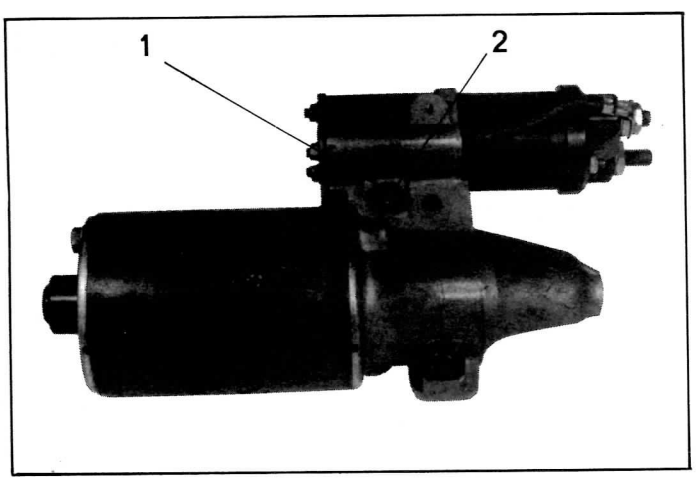
   a) The positive terminal of a 12 V battery to the blade terminal of the solenoid.

   b) The negative terminal of the battery to the field coil supply terminal.
   With the pinion in the « engaged » position measure *the dimension « a » which should be 38.3 mm max. (1.51 inches).*



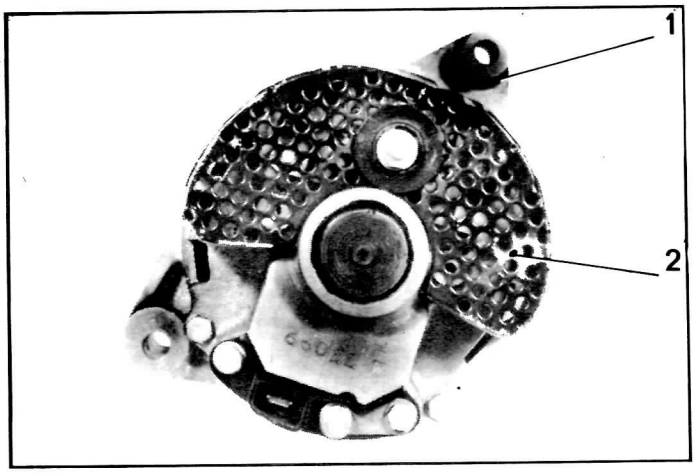
3. Disconnect the battery from the supply terminals of the solenoid and field coils.
   The pinion will return to its free position.
   Measure *dimension « b » which must be between 47.4 mm and 48 mm (1.86 and 1.89 inches).*

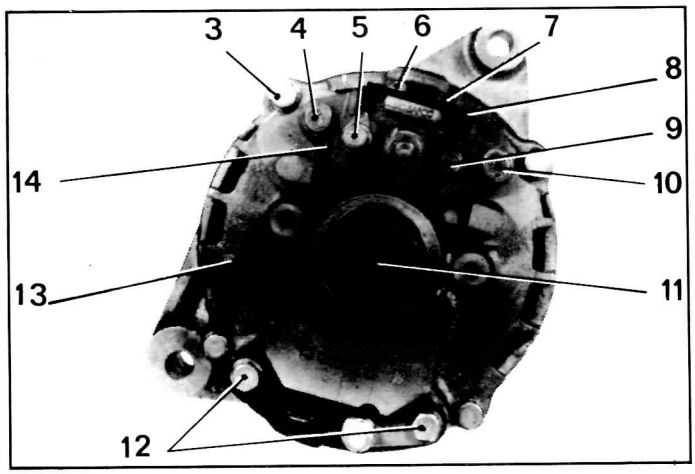
5. Fit the solenoid securing flange together with its gasket.

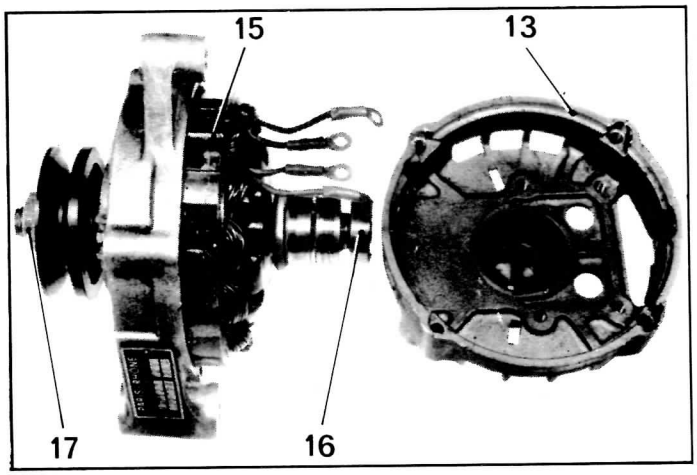


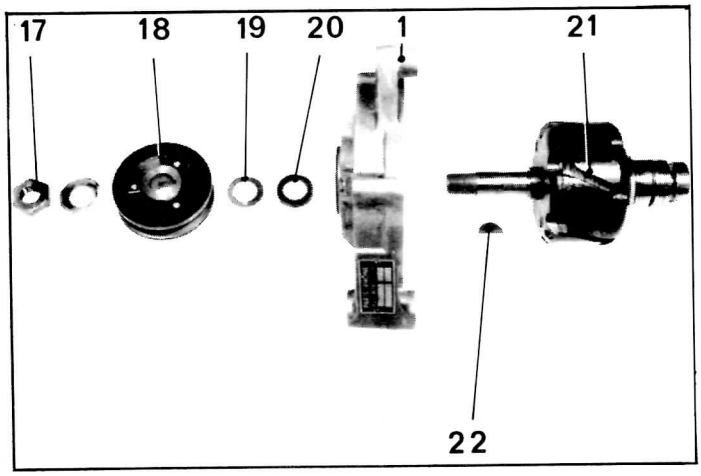
6. Fit the starter motor on the engine.

I. PARIS-RHONE A 11 M 7 ALTERNATOR



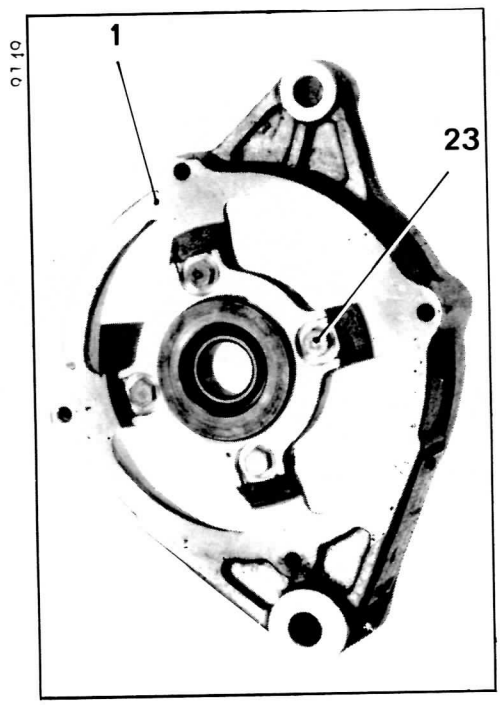




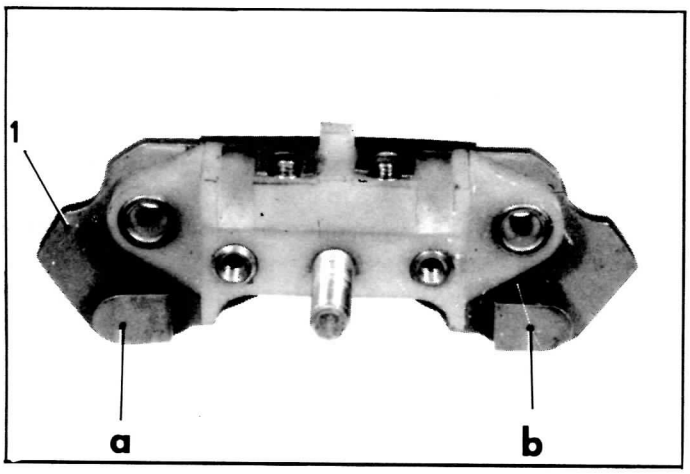


DISMANTLING.

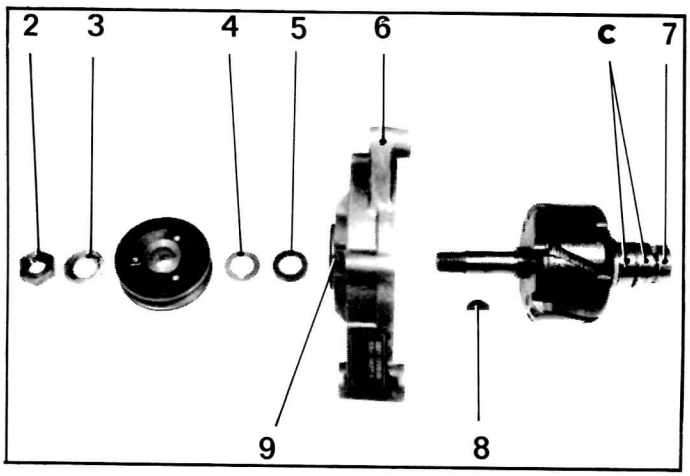
1. Remove the protective cover (2).
2. **Remove the diode support (14) :**
   Disconnect the stator output leads.
   - Remove the bolts (5) and (9).
   - Remove the bolts (6) and (7) and release the capacitor support plate.
   - Remove the two bolts (4) and (10) and release the diode support.
3. Remove the brush-holder by removing the two bolts (12).
4. Remove the plastic cap (11).
5. Remove the four end bracket assembly bolts (3).
   (Mark the position of the front and rear brackets in relation to each other).
   Separate the rear bracket (13) (commutator end) from the front bracket (drive end) - rotor and pulley assembly.
   Release the stator (15).
6. Remove the pulley nut (17). To do this, hold the pulley (18) by means of an old belt placed in its groove. Clamp in a vice the part of the belt not around the pulley.
   Release the pulley (18), the washer (19), the key (22), the spacer (20) and the rotor (21).
   Remove the rotor bearing (16).
7. Remove the bearing from the drive end bracket (1).
   - Remove the four bolts (23) holding the bearing retaining plate.
   - Release the bearing
8. Release the O-ring located on the inside of the commutator end bracket (13).
9. Clean the parts.



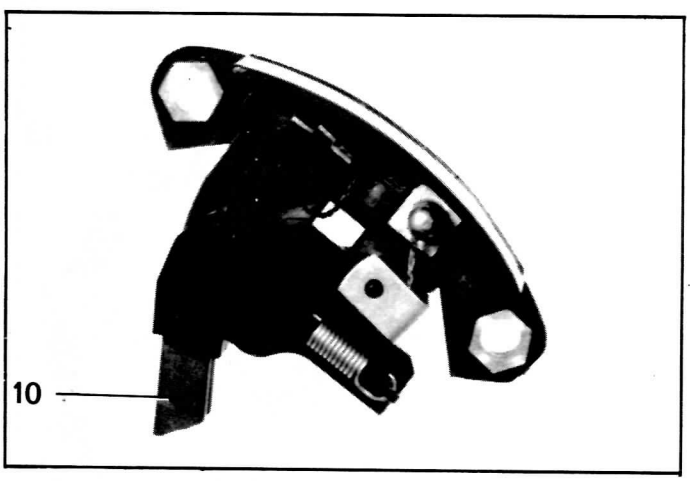
Supplement N° 1 to Manual 810-2 (CORR)



9144



9148



9145

CHECKING THE COMPONENTS.

10. Check the rectifying diodes :

a) Using a diode tester (follow instructions on the notice accompanying the apparatus).

b) Using a 12 V battery and a test lamp :
Connect the « + » terminal of the battery to the diode support (1) with the test lamp in series.
Connect the « - » terminal of the battery to the diode support at « a » and then at « b », the test lamp should come on.
Reverse the connections to the battery and repeat the same test : the lamp should not come on.
If these conditions are not fulfilled, replace the support with the diodes.

11. Check the rotor :

a) *Check the insulation of the windings*. To do so : Apply 110 volts between bush « c » of the commutator and the earth with a 110 volts test lamp in the circuit. *The lamp should not light up*. If it does, the windings are earthed and the rotor must be replaced.

b) *Check the resistance of the windings* between the two bushes « c » of the commutator. This resistance should be 7 ± 0.2 Ω.

c) Clean the two bushes with a cloth soaked in trichlorethylene. Polish them if need be with very fine sand paper

12. Check the stator :

a) *Check the insulation of the windings :*
With a test lamp (110 volts) in series, apply 110 volts successively between the terminal of one of the two large output leads of the stator and the stator earth and then between the other large lead and earth. *The lamp should not light up*. If it does, the windings are earthed, and the stator must be changed.

b) *Check the resistance of the windings*, using an ohm-meter connected between any two phase output leads. The resistance values must be equal to within ± 5 % and should be of about 0.38 Ω.

13. Check the brushes (10) :
Check the operation of the springs.
The length of the brushes, when worn, must not be less than *10 mm*.
Otherwise, replace them.

14. Check the fuse.

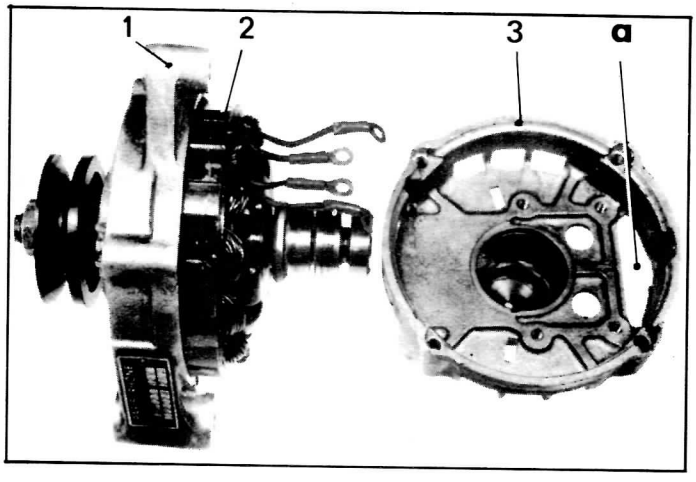
FITTING.

15. Fit the bearing into the drive end bracket (6). Fit and fix the ball bearing retaining plate with the aid of the four screws (9).

16. Fit the bearing (7) into the commutator and bracket.

17. Connect up the rotor to drive end bracket. Fit the spacer (5), the key (8), the washer (3) and the nut (2). Tighten the nut to 40 m.N (4 m.kg), (29 ft.lb) holding the pulley as described in paragraph 6 .

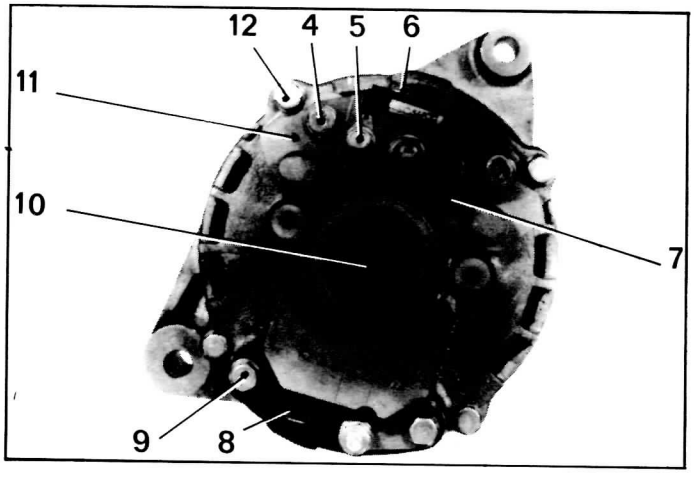
9147



18. Smear the O-ring with bearing grease and fit it into the commutator end bracket (3).

19. Connect the stator (2) to the drive end bracket (1) making sure that it is correctly positioned. To do this, position the commutator end bracket (3), matching the marks made during dismantling ; the output leads must pass through opening « a ».

20. Completely link up the commutator end bracket.
Fit the four assembly bolts (12) (Wavy washer).
Smear the threads with LOCTITE GX. 01 459 01 A.
Tighten them to 6 m.N (0.6 m.kg).
(4 1/ 2 ft.Ib).

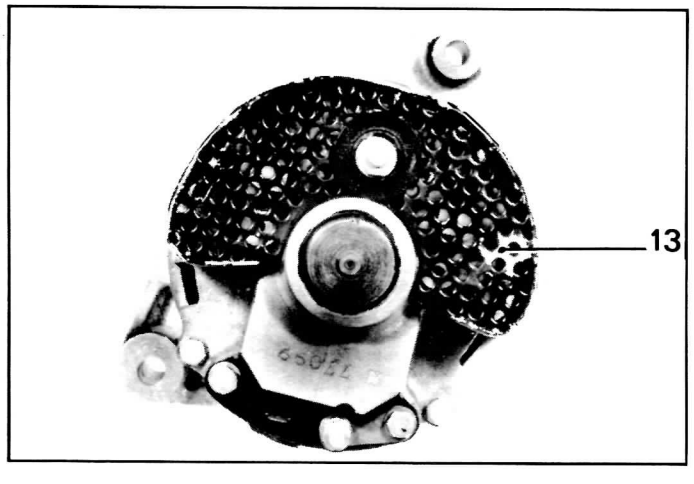


21. Fit the diode support (11). Tighten the two bolts (4) (Wavy washer) .

22. Fit the fuse plate (7) and tighten down.

23. Connect up the stator output leads.
Tighten the bolts (5) (Wavy washer)
Place the capacitor support plate under the upper bolts (6).

9141



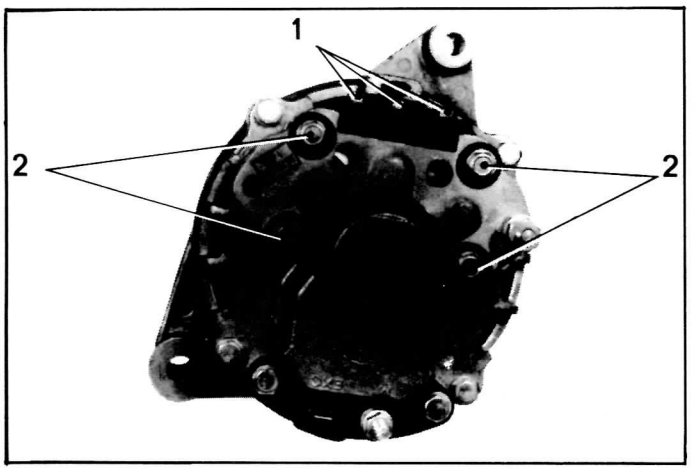
24. Fit the plastic cap (10).

25. Fit the brush holder (8) and fix it in position with the two bolts (9).

26. Fit the protective cover (13).

II. PARIS-RHONE A 11 R. 1 ALTERNATOR

9171



NOTES :
This alternator is dismantled and fitted in the same way as alternator A 11 . M 7.
The diode support (six rectifying diodes) is held by the four bolts (2).
The three-phase stator has three output leads connected to the diode support by the three bolts (1).

CHECKING THE COMPONENTS.

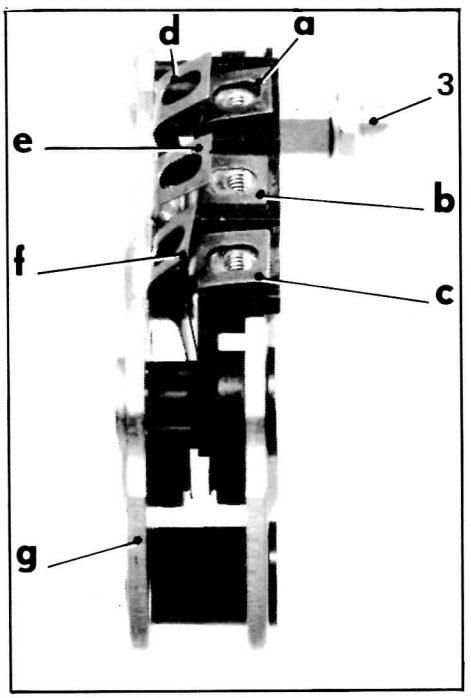
This check is the same as for the components of the PARIS - RHONE alternator (see chapter I with the exception of the followings points) :

27. Check the rectifying diodes with the aid of a 12 volts battery and test lamp.
NOTE : The diodes cannot be dismantled; if one of them is defective, replace the whole support.

a) *Checking the positive diodes :*
Connect the « - » terminal of the battery *through the test lamp* to the output terminal (3) on the support.
Connect the « + » battery terminal in turn to the three strips of the positive diodes at « a », « b » and « c ».
The test lamp should light up.
Reverse the battery connections, the lamp should not light up.
Otherwise, the support must be replaced along with the diodes.

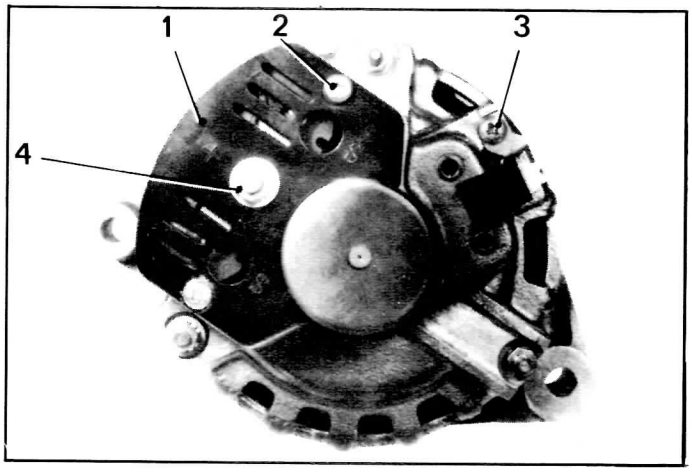
b) *Checking the negative diodes :*
Connect the « + » battery terminal with the test lamp in series to the diode support « d ».
Connect the « - » battery terminal in turn to the negative diode strips at « e », « f » and « g ».
The test lamp should light up.
Reverse the battery connection, the lamp should not light up.
If these results are not obtained, the support and the diodes must be replaced.

9172

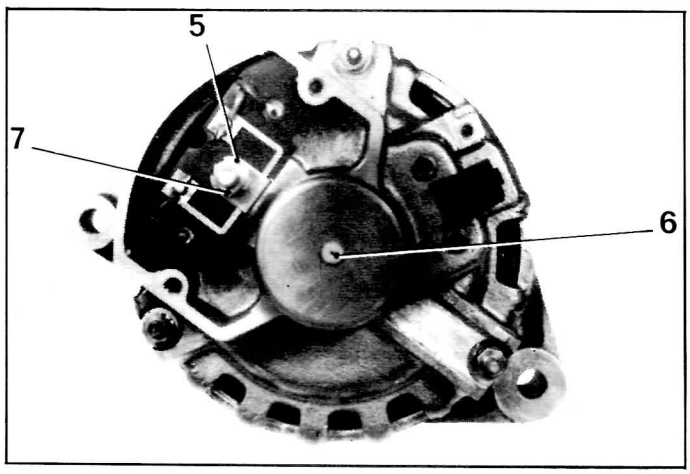


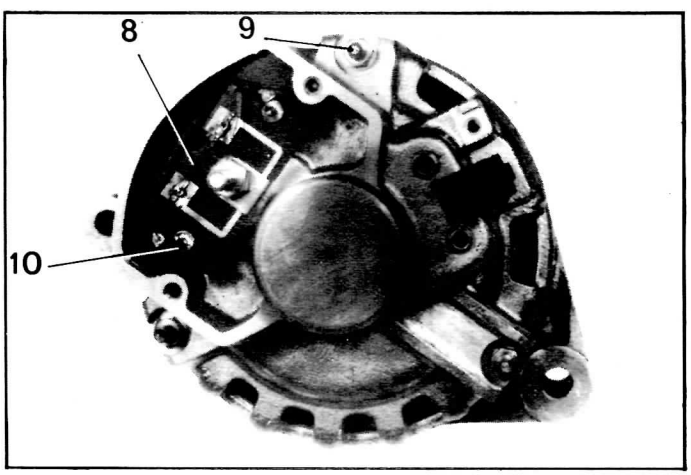
28. Check the stator :
The insulation is checked between any one of the output leads and the stator body. The phase balance is checked using an ohmmeter capable of measuring resistance values on the order of 1 10 Ω.
The resistance measured between the three output leads must not differ from another by more than ± 5 % and should be of about 0,22 Ω.

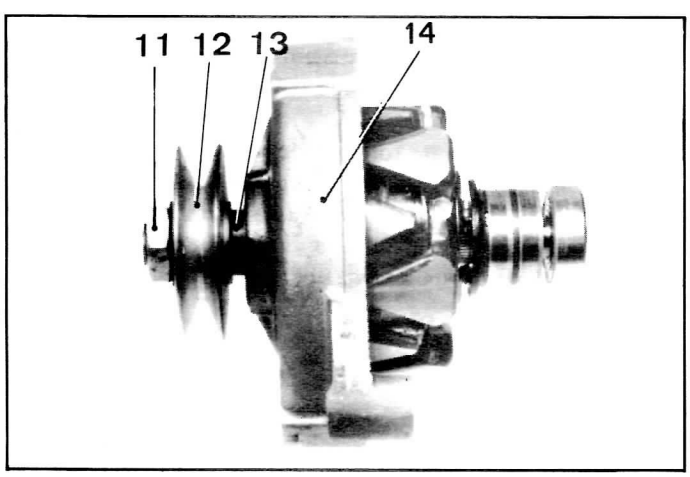
III. DUCELLIER 7540 B or 7562 A ALTERNATOR



9193







9199

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DISMANTLING.

1. Remove the protective plate (1).
   Remove the two screws (2), the nut (4) and its washers.

2. Remove the brushes (3).
   Remove the screw (3) holding the negative brush and the bolt of the positive brush located behind the plug.

3. With the aid of a soldering iron, unsolder the four output leads of the stator.

4. Remove the fuse plate (8).
   After unlocking it from the plate (5), remove the nut (7).
   Remove the fuse plate, after cleaning the output connections (10) of the two diodes with a soldering iron, if necessary.

5. Remove the plastic cap (6).

6. Mark the two end brackets in relation to each other.

7. Remove the three bracket assembly bolts (9).

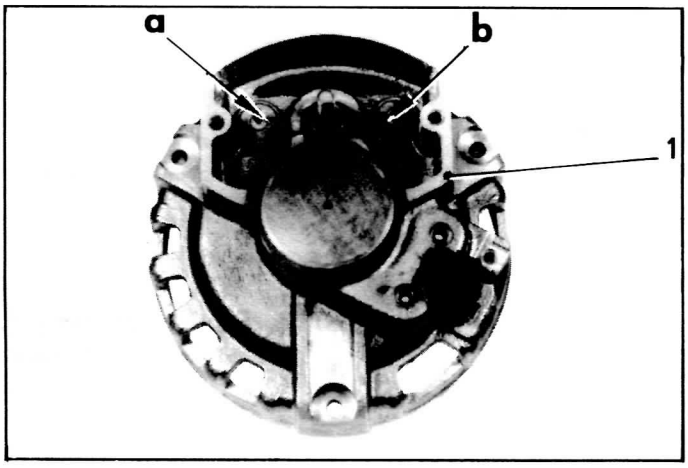
8. Separate the drive end bracket-rotor-pulley assembly from the commutator end bracket.
   Remove the stator.

9. Strip down the drive end bracket (14) :
   Remove the pulley (12).
   To do so :
   Remove the nut (11). Hold the pulley using an old belt fitted into its groove. Clamp in a vice the part of the belt not around the pulley.
   Remove the pulley, the spacer (13), the key and the rotor.

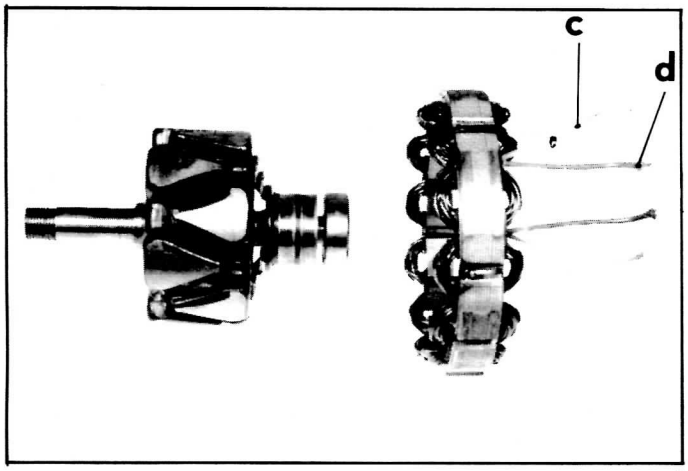
10. Remove the O-ring from the commutator end bracket.

11. Remove the ball bearings.
    Remove the rivets holding the front ball bearing retaining plate.

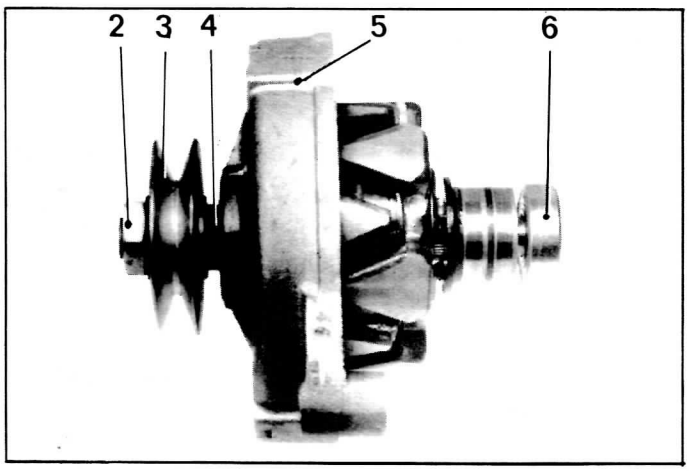
12. Clean the components.



9197



9198



9199

CHECKING THE COMPONENTS.

13. Check the rectifying diodes :

a) Using diode tester (follow instructions on notice accompanying apparatus).

b) Using a battery and a 12 volts test lamp in series :

- Connect the battery « + » terminal to the bearing (1) with the test lamp in series.
- Connect the battery « - » terminal in turn to each diode output plug at « a » and « b ». *The lamp should light up.*
- Reverse the battery connection : *the lamp should not light up.*

If these results are not obtained, change diode-holder.

14. Check the rotor :

a) Check the insulation of the winding with a 110 volts test lamp in series, apply 110 volts between one bush of the commutator and the rotor earth.
The lamp should not light up. If it does, the windings are earthed and the rotor must be replaced.

b) Check the resistance of the winding between the two commutator bushes. This resistance should be 7 ± 0.2 Ω.

c) Clean the two bushes with a cloth soaked in trichlorethylene. Polish them if need be with very fine sand paper

15. Check the stator :

- Check the insulation of the winding with a 110 volts test lamp in series, apply 110 volts in turn between the yellow lead « c » and the earth (frame) and then between the read lead « d » and the earth : *the lamp should not light up.* If it does, the winding is earthed and the stator must be replaced.

16. Check the brushes :

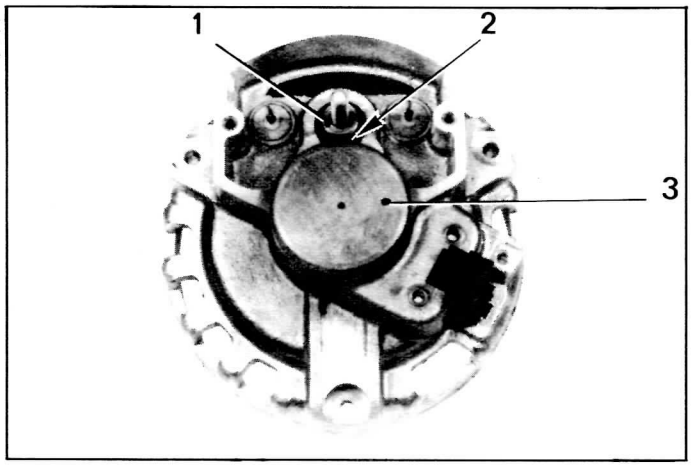
The minimum length after wear should be 10 mm. Otherwise, replace them.

17. Check the fuse plate.

FITTING.

18. Fit the bearing (6) onto the rotor shaft.
Fit the other bearing in the front bracket (5).
Fit the retaining plate using new rivets.
Smear the two bearings with grease beforehand.

19. Connect up the rotor to the drive end bracket.
On the shaft, fit the spacer (4), the key, the pulley (3), the « Wavy washer » and the nut (2).
Tighten the nut to 40 m.N (4 m.kg) (29 ft.lb) holding the pulley as indicated in paragraph 9.

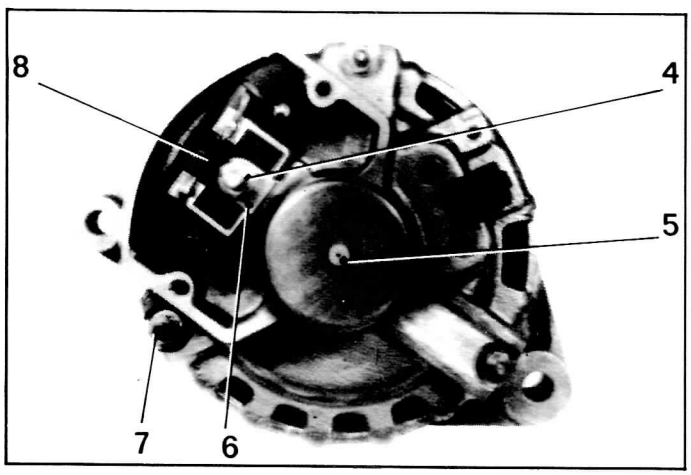


9197

20. Fit the O-ring into the bore of the diode-holder bracket.

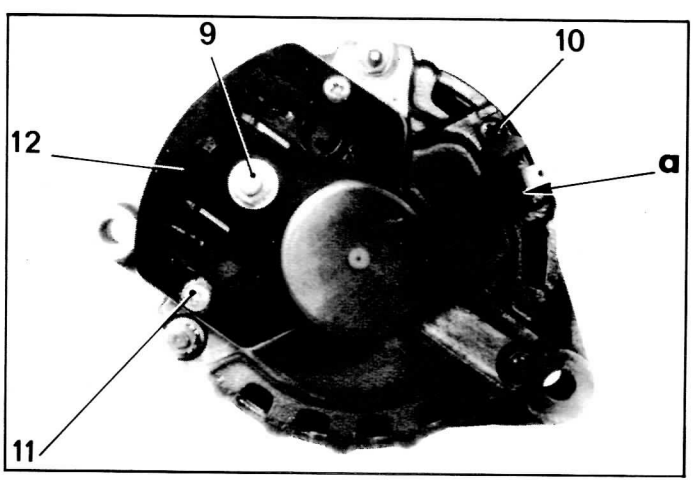
21. Link up the stator to the front drive end bracket after correctly positioning it. To do this, position the commutator end bracket so that the two marks made during dismantling are face to face.
Assemble the two end brackets with the three bolts (7).

22. Fitting the fuse plate (8) :
Make sure that the spacer (1) and insulating washer (2) are in position on the positive terminal of the alternator.
Fit the fuse plate, the locking tab (6) and the nut (4). Bend back the tab (6) to lock the nut (4).



23. Insert the leads as shown in the illustration and solder them with a soldering iron.

24. Fit the plastic cap (5).



9193

25. Fit the brushes.
Secure them with a screw (10) for the negative brush and the bolt at « a » for the positive brush.

26. Fit the protective plate (12).
Tighten the two screws (11) and fit the nut (9) (plain and lock washers)

27. Make sure the rotor turns freely.

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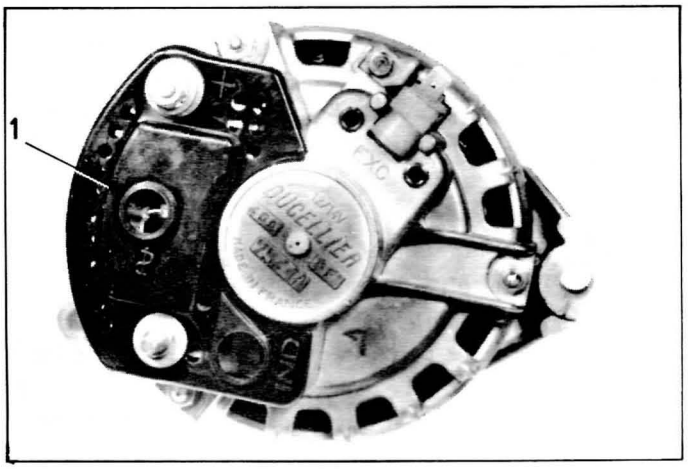
IV. DUCELLIER 7541 A ALTERNATOR

9200



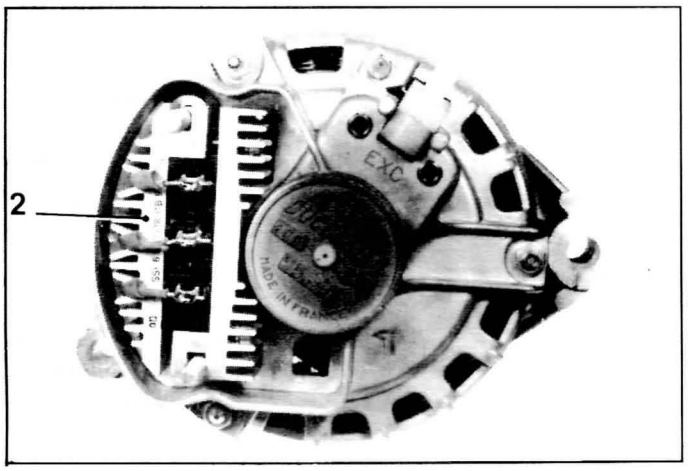
NOTES :
The dismantling operations on this alternator are the same as for alternator 7 540 A.
The alternator is fitted with a six-diode rectifier bridge.
To remove the latter :
- Remove the protective cover (1).
- Remove the three output leads of the three-phase stator.

When fitting, make sure that a grommet (4) and an insulating washer (3) are in position.

CHECKING THE COMPONENTS.

This check is the same as that done on the alternator 7 540 A except for the following points :

9201

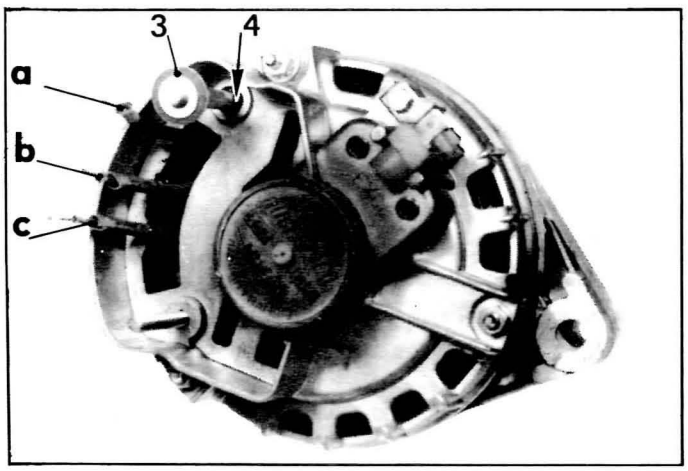


28. Check the rectifying diodes using a 12-volt battery and test lamp.
NOTE : The diodes are not for sale separately If one of them is defective, the complete support (2) must be replaced.

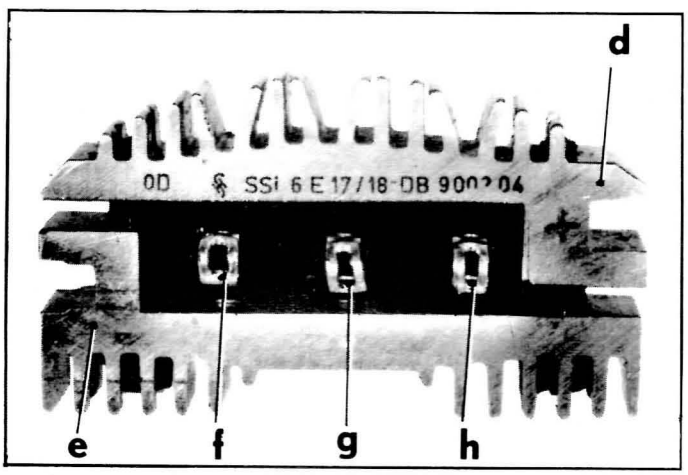
a) *Checking the positive diodes :*
With the test lamp in series, connect the « - » terminal of the battery to part « a » of the diode support.
Connect the « + » terminal of the battery in turn to « f », « g » and « h ». *The lamp should light up each time.*
Reverse the battery connection ; *the lamp should not light up*
If these conditions are not met, the complete diode support must be replaced.

b) *Checking the negative diodes :*
With the test lamp in series. connect the « + » terminal of the battery to the part « e » of the support.
Connect the « - » terminal of the battery in turn to the « f », « g » and « h ». *In each case the lamp should light up.*
Reverse the battery connection, *the lamp should not light up.*
If these conditions are not met, the complete diode support must be replaced.

9202

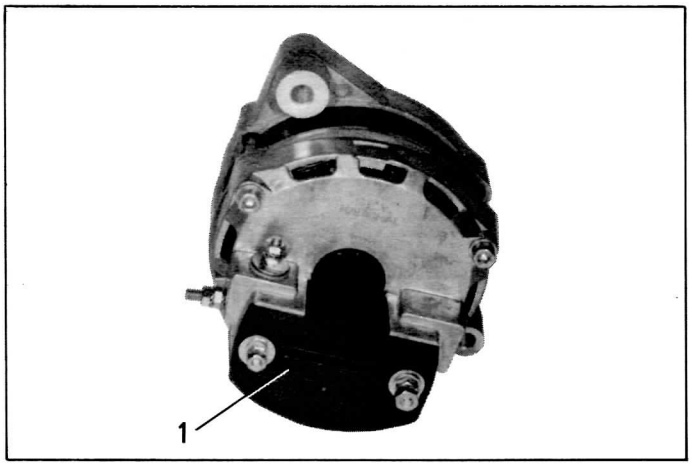


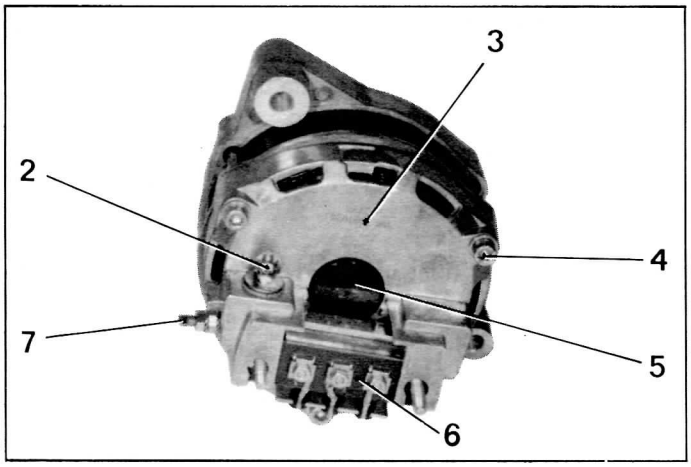
9203

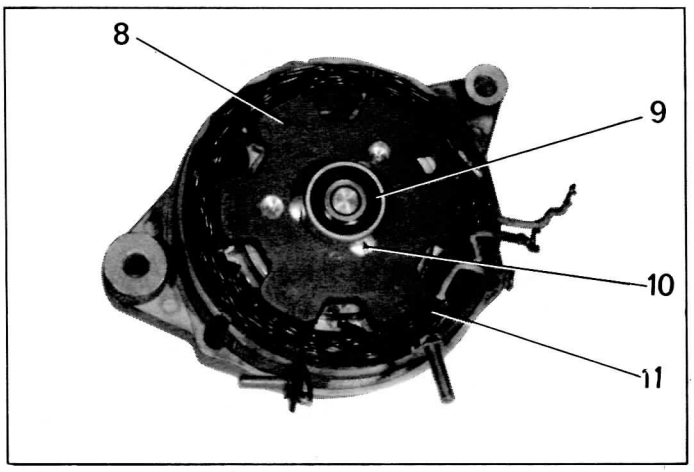


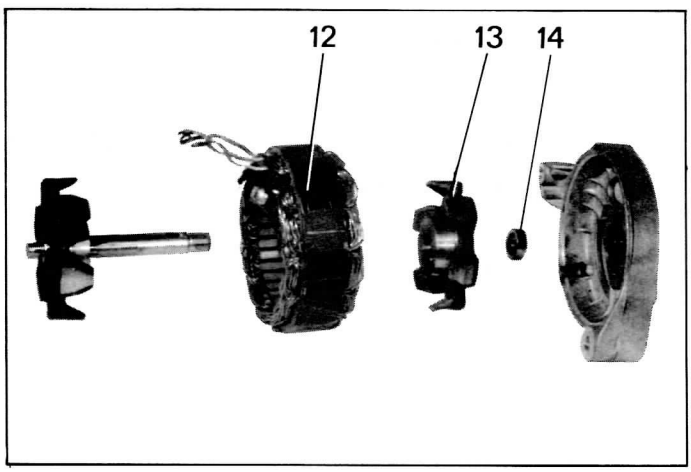
29. Check the stator :
The insulation check is done between any one of the « a, b or c » leads and the alternator earth *(diode bridge disconnected)*
The phase balance check is done with the aid of an ohmmeter capable of measuring resistances of 1 10 Ω.
The resistances measured between « a » and « b » and « c » or « b » and « c » *must be the same to within* ± 5 %.

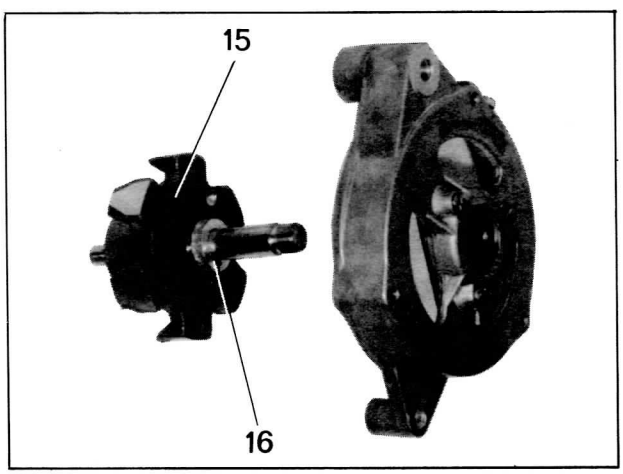
V. SEV-MARCHAL ALTERNATOR (FRED-type)











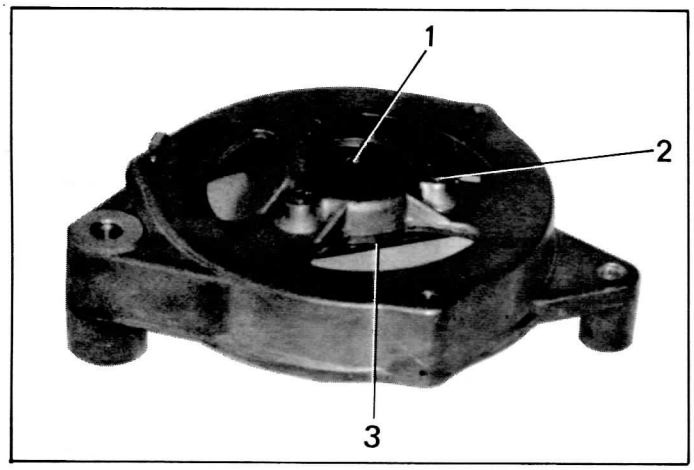
DISMANTLING

1. **Remove the diode bridge (6) :**
   - Remove the cover (1) by unscrewing the nuts on the positive and negative terminals.
   - Disconnect the three phases of the stator.
2. Disconnect from the end-plate (3) the energizing terminal (2) and the earth terminal (7).
3. *Mark the position of the front plate in relation to the stator and the end-plate* and remove the three assembly studs (4).
4. Withdraw the rear cover with its cap (5) (rear bearing).
5. Remove the rear bearing (9) (use an extractor).
6. **Remove the pulley :**
   Hold it using an old belt; hold in a vice the free part of the belt, as close to the pulley as possible. Slacken the pulley nut, and withdraw the washer, the pulley the key and the spacer.
7. **First fitting :**
   (front swaging of the rotor in one piece with the arm).
   a) Remove the rear swaging (8) by removing the three screws (10).
   b) Withdraw the stator and winding assembly (11).
   c) Using a press, remove the rotor arm with the front swaging (15) and the spacer (16).

Second fitting :
(rear swaging of the rotor in one piece with the arm).
a) Remove the arm from the rotor, using a press.
b) Withdraw the front swaging (13) the stator and winding assembly (12) the spacer (14).

Supplement N° 1 to Manual 810-2 (ADD)

8. Remove the front bearing (1).
Remove the three screws (2) and the bearing support plate (3).
Remove the bearing, using a press.



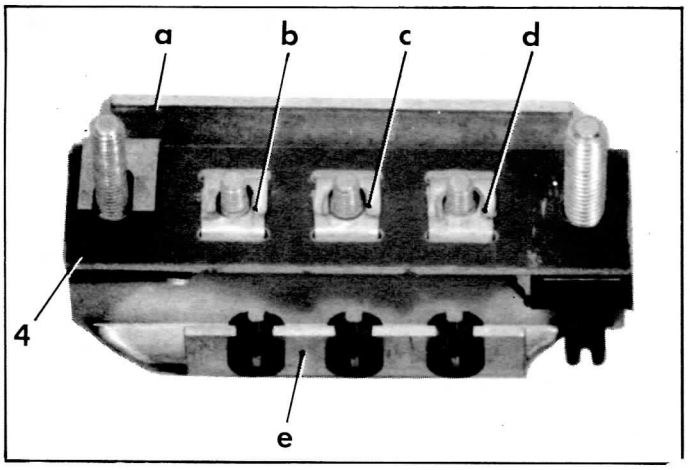
CHECKING THE COMPONENTS

9. Check the condition of the mechanical components, and replace them if necessary.

10. Check the diode bridge (4) :

a) Using a diode checking apparatus (follow the manufacturer's instructions)
Direction of flow of the diodes :
- from « a » to « b », « c » or « d » (negative diodes)
- from « b » to « c », « d » or « e » (positive diodes).

b) Failing this, using a battery and a 12 V - 2 W test-bulb.



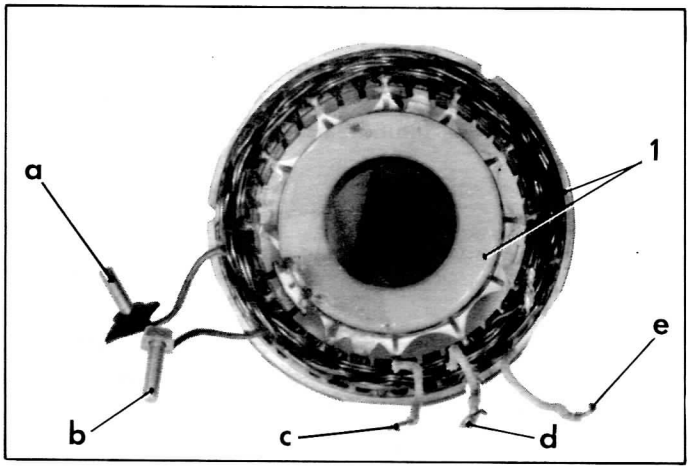
- Checking the negative diodes :

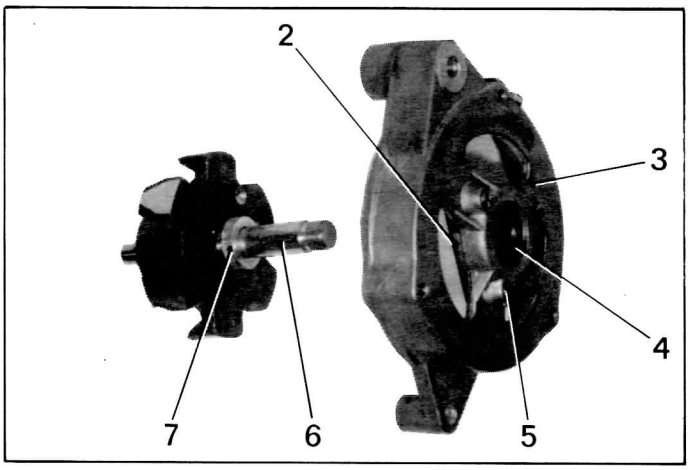
Connect the « + » terminal of the battery *(in series with the test-bulb)* to section « a » of the diode bridge.
Connect the « **-** » terminal of the battery to « b », « c » and « d » successively.
The test bulb must light up.
Reverse the battery connections, *the bulb must not light up.*

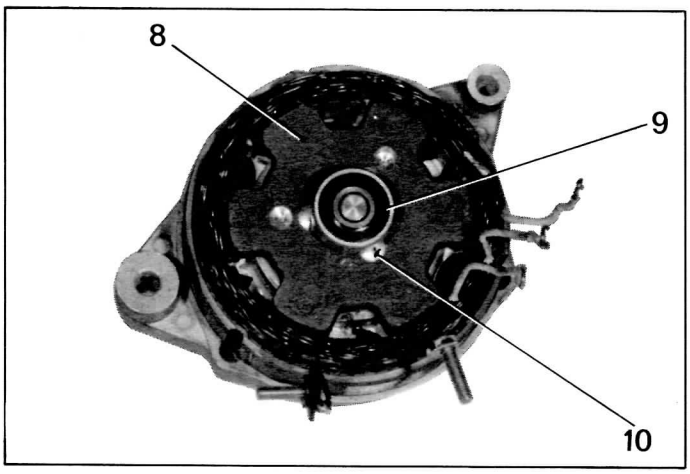
- Checking the positives diodes :

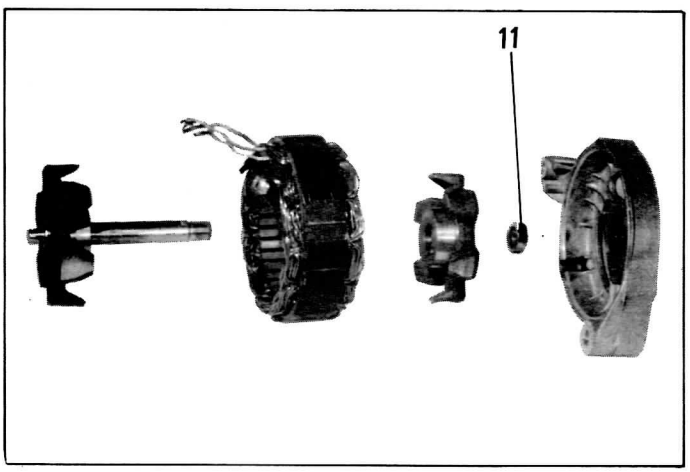
Connect the « **-** » terminal of the battery *(with the test bulb in series)* to section « e » of the diode bridge.
Connect the « + » terminal of the battery to « b » « c » and « d » successively.
The test bulb must light up.
Reverse the battery connections. The test bulb must not not light up.

If these conditions are not met, the complete diode bridge must be replaced.









11. Checking the stator and energizing winding assembly (1) :

a) Checking the insulation of the winding : Apply a current of 110 or 220 V *(with a test bulb in series)* in between the stator body and each of its output leads, i.e. at « c », « d » and « e » and then at « a » and « b » for the induction winding.
The test-bulb must not light up. If it does then one of the windings is earthed, and the stator must be replaced.

b) Check the resistance of the energizing winding in between terminals « a » and « b » : the resistance should be approximately 5 Ω.

FITTING

12. Assemble the front plate (3) :

Locate the front bearing in its housing, and press-fit it. Position plate (2) and secure it using the three screws (5) fitted with Loctite (tightening torque 2 m.N (0.2 m.kg) (1.4 ft.lb).

First fitting :

a) Fit the arm (6) in the bearing : to fit, use a device which applies the thrust on to the inner cage of the bearing. Position the spacer (7) and fit the arm perpendicularly, using a press.

b) Fit the stator in the front plate making sure it is positioned in the same way as when dismantled.

c) Position the rear swaging (8).
Warning : there is only one correct position indicated by a locating pin.
Tighten the three screws (10) to 4 m.N (0.4 m.kg) (2.9 ft.lb). Lock them with Loctite or by centre-punching in line with the groove on each screw.

d) Press-fit the rear bearing (9).

Second fitting :

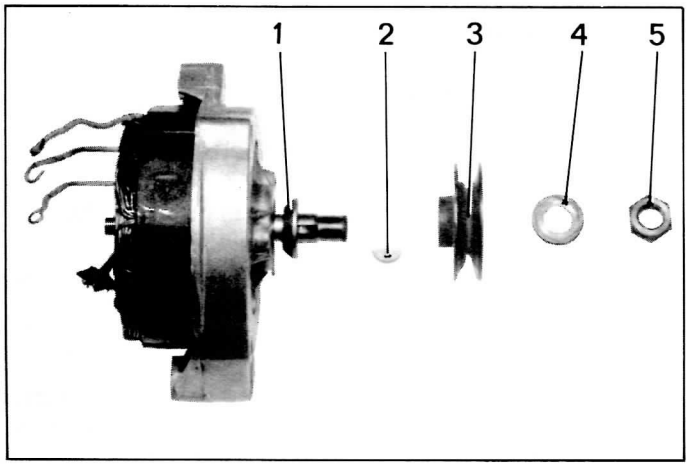
a) Assemble in the stator, the two sections of the rotor (only one position indicated by a locating pin).

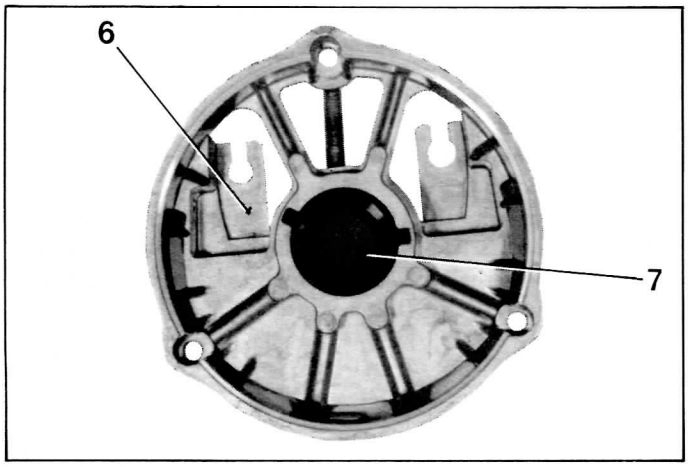
b) Place spacer (11) on the arm.

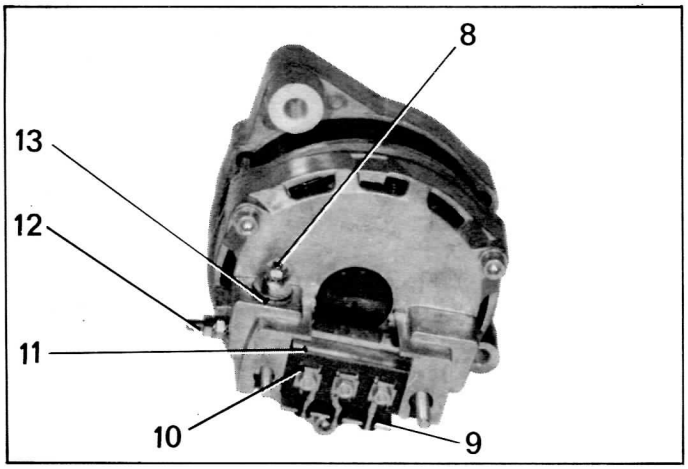
c) Place the assembly in a press, and fit the front bearing.

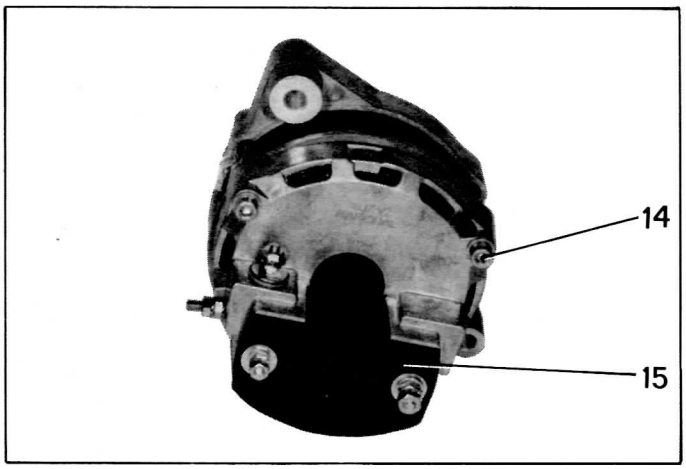
d) Press fit the rear bearing.

Supplement N° 1 to Manual 810-2 (ADD)









13. Fit the pulley (3) onto the arm.
Locate the spacer (1) the key (2), the pulley (3), the washer (4) and the nut (5).
Tighten the nut to 40 m.N (4 m.kg) (29 ft.Ib) holding it as indicated in the dismantling instructions.

14. Place cap (7) in the end-plate (6).

15. Fit the end-plate, making sure it is in the same position as when dismantled. Fit and tighten the three studs (14) to 5 m.N (0.5 m.kg) (3.6 ft.Ib); secure them with Loctite (wavy washers).

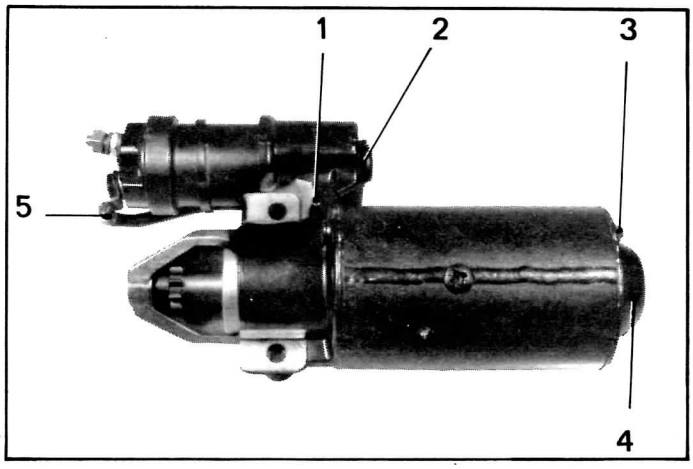
16. Engage terminals (8) and (12) with their leads into their respective openings.
Ensure that there is an insulating sleeve on the energizing terminal (8). Secure the energizing washer (8) (Do not forget the insulating washer (13)). Secure the earth terminal (12).

17. Fit the diode bridge (11)
Place the stator leads in the lead holders and onto the terminals of the bridge.
Fit a bridge-plate (10) on each terminal, and tighten the nuts.

18. Fit the rear cover (15) by correctly locating it (wavy washers and nuts).

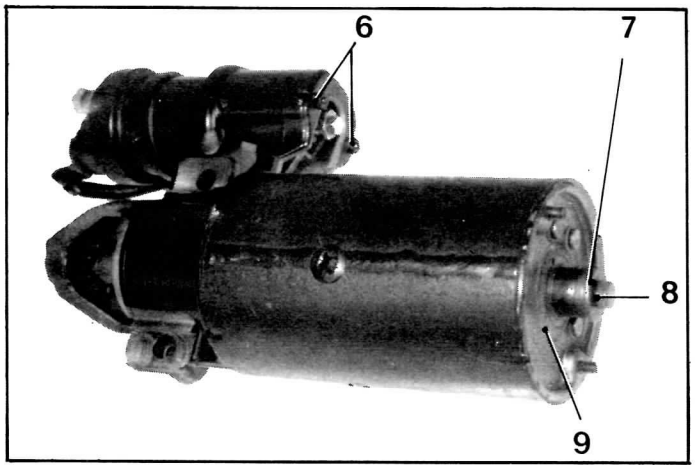
19. Ensure that the rotor rotates freely.

I. DUCELLIER 6208 A or 6208 B STARTER MOTOR



DISMANTLING.

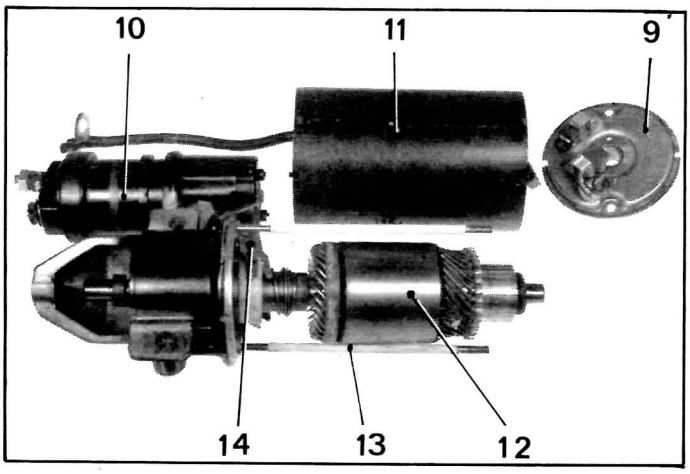
1. Disconnect the field coil supply lead (5).



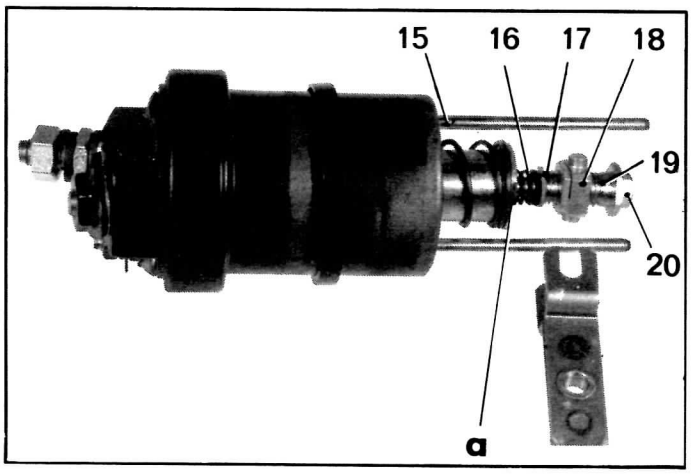
2. Remove :
   - the nuts (3) holding the bearing end plate,
   - the rear cover (4),
   - the plastic plug (2).

3. Drive out the fork hinge pin (1).

4. Hold the drive gear and remove the bolt (8) and its steel washer (7).



5. Remove :
   - the bearing end plate (9) and release the positive brush and its guide.
   - the casing (11) from the two assembly studs (13),
   - the solenoid (10) after removing the two nuts (6),
   - the fork (14),
   - the armature (12) from the front of the starter motor.

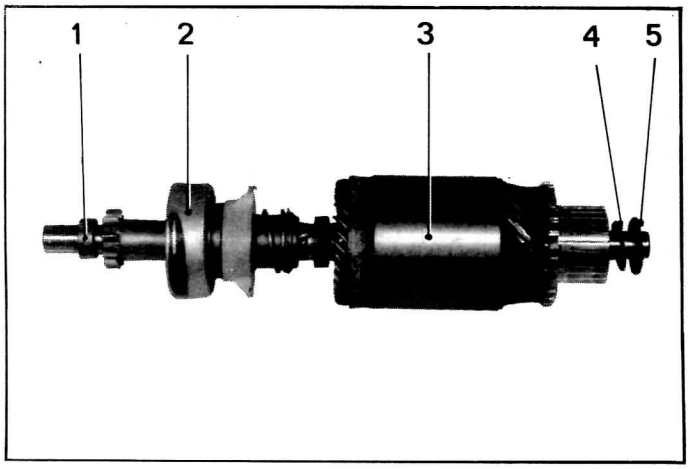


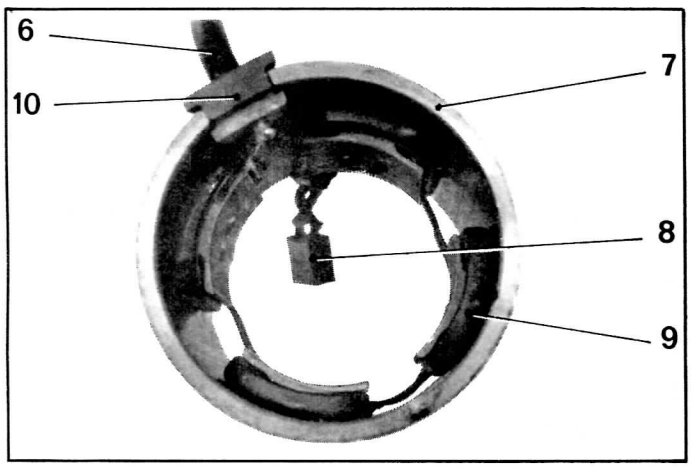
6. **Strip down the solenoid :**

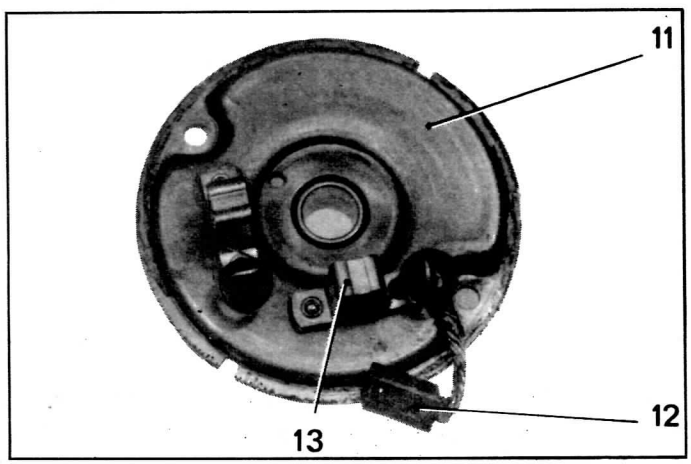
Remove the two studs (15), the bolt (20) while holding the solenoid core by the two flats « a ».

Withdraw :
- the spring (16) and its washer (17),
- the adjustment sleeve (19) and its nut (18).

Supplement N° 1 to Manual 810-2 (CORR)







7. Strip down the armature (3) :

Remove :

- the celoron washer (5),
- the steel washer (4),
- the thrust bearing snap-ring (1),
- the thrust bearing (1),
- the driving gear (2).

8. Strip down the casing (7) :

Unsolder (with a soldering iron) :

- the positive brush (8),
- the feed cable (6) to the field coils.

Remove the grommet (10).

Loosen the four bolts holding the pole pieces. Use a short screwdriver held in place by means of a bench press.

Remove :

- the field coils (9)
- the « Press-pahn » insulating material.

9. Strip down the bearing end plate (11) :

Check the insulation of the positive brush-holder in relation to the end plate using a 110 or 120 volts test lamp. If the lamp lights up, the brush-holder is badly insulated and the bearing end plate must be replaced.

Unsolder the negative brush (12) with a soldering iron.

10. Clean the components.

FITTING.

11. Inspect the armature shaft in two « V » blocks or between points. *The maximum tolerated out of round is 0.15 mm.*

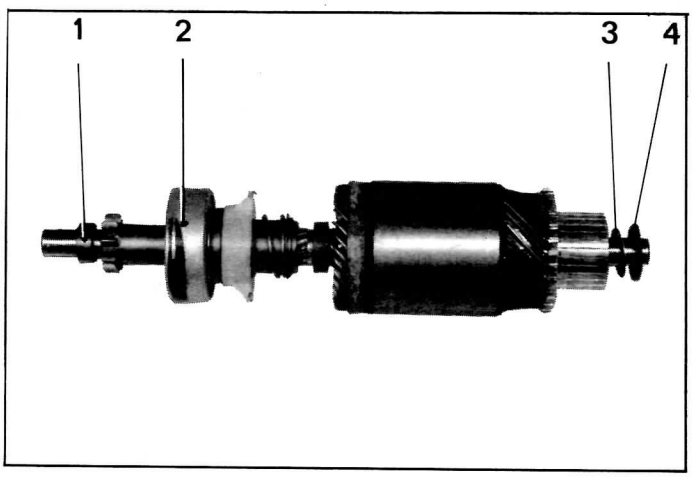
12. Check the armature on growl tester.

13. Skim the commutator. *The original diameter (32 mm) should not be reduced by more than 2 mm.*

After skimming, undercut the insulators between the segments of the commutator using a saw-blade thinned down to the same size as that of the insulation slots (0.70 mm), or a scraper.

14. Check the brushes for wear and ensure that they slide freely.

If they are less than 7 mm long, replace them.

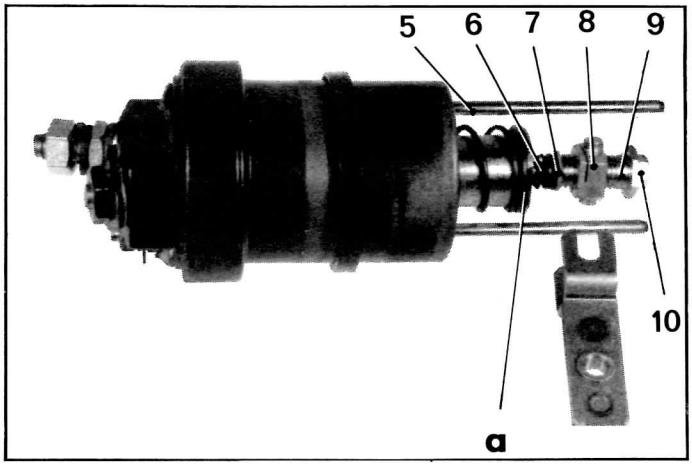


15. Checking the solenoid :

a) Check the resistance of the primary winding using an ohmmeter connected between the solenoid supply terminal (flat strip) and the terminal marked « DEM ». *This resistance should be on the order of 0.24 Ω.*

b) Check the resistance of the secondary winding using an ohmmeter connected between the solenoid supply terminal (flat strip) and the solenoid body. *This resistance sould be 1.08 Ω.*

If these conditions are not satisfied, replace the solenoid.



16. Preparing the armature :

Fit the steel washer (3) and then the celoron washer (4) after oiling them.

Oil the splines (use very thin oil) and fit :

- the drive gear (2),
- the thrust bearing (1) and its stop-ring.

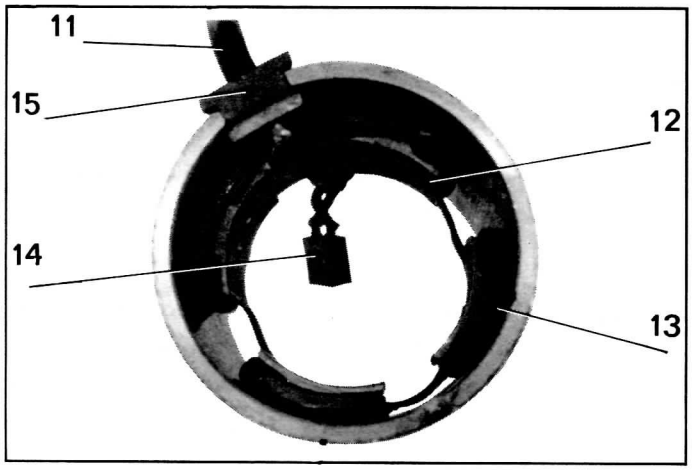
17. Preparing the solenoid :

NOTE : The bolt(10) should be replaced at each dismantling.

a) Fit on the bolt (10) :
   - the adjusting sleeve (9) and preset it halfway along its travel in the nut (8),
   - the celoron washer (7),
   - the spring (6).

b) Now screw the bolt (10) completely into the solenoid core holding the latter with the two flats « a ».

c) Fit the two rods (5).



18. Preparing the casing :

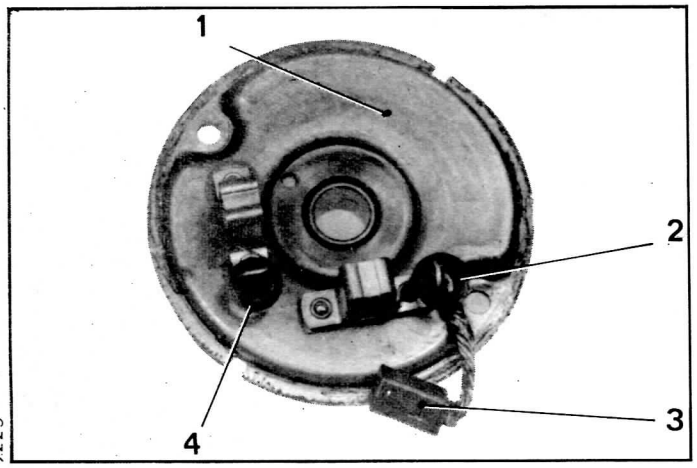
Fit the winding (13) into the casing and position the pole pieces (12). Hold these in place with the aid of the four fixing screws.

Fit the « Press-pahn » insulation under two windings and at the level of the feed lead. connections (11) to the windings and the positive brush (14) to prevent a short circuit.

Position the pole faces horizontally and tighten the securing screws with a short screw driver held in place by a bench press.

Fit the grommet (15) and the feed lead (11) supplying the field coils.

Solder the lead (11) and the positive brush (14).



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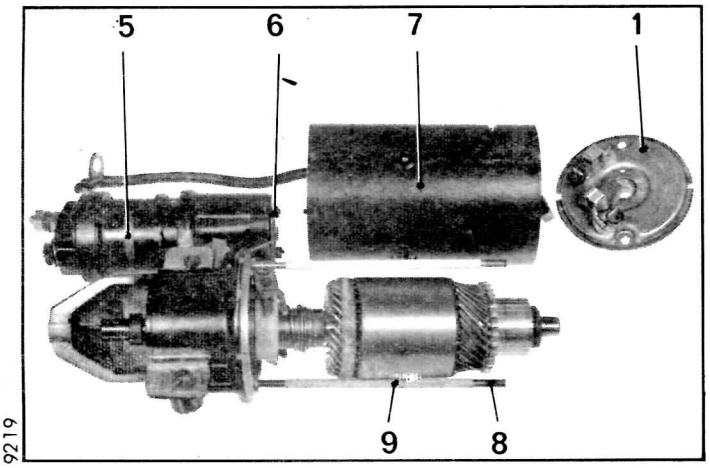
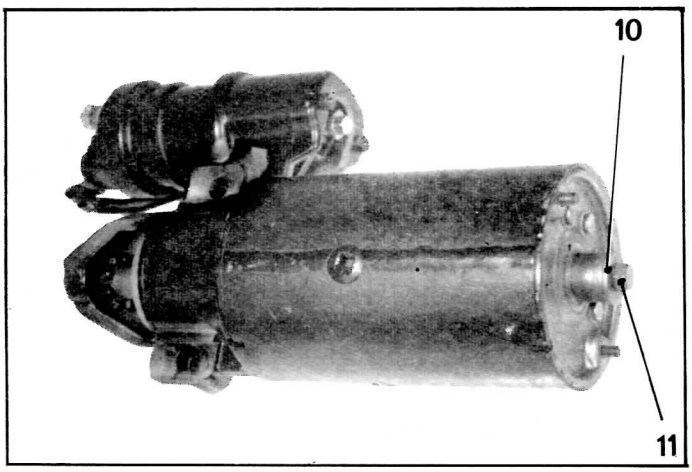


9219



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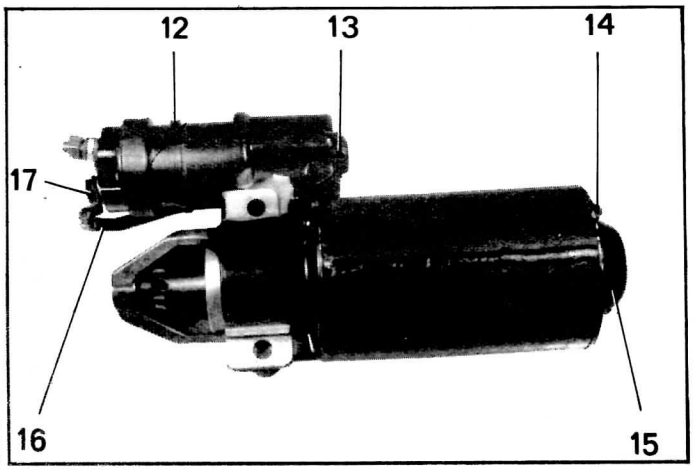


9213

19. **Preparing the bearing end plate :**
Solder the negative brush (3) using tin.
Fit the springs (4) and (2).
Fit the negative brush (3) in its guide and hold (without fully driving it home) in the guide with the aid of the end of the spring (2) flat against the brush.

20. Fit the solenoid (5) on the starter driving end.
Tighten the two nuts (6) (Spring washer).

21. Fit the armature in the starter end and position the fork on the sliding gear and in the solenoid.
Engage the armature shaft in starter front bearing.
Fit the split pin into the fork hinge hole.

22. Ensure that the insulating sleeves (9) are in good condition and fitted over the two assembly rods (8).

23. Fit the casing (7) over the two studs and orientate it correctly.

24. Position the bearing end plate (1) on the armature shaft.
Fit the positive brush in its guide and holding it (without driving it home) with the aid of an end of the spring (4) flat against the brush to facilitate the passage of the brushes on the commutator.
Bring the end plate into contact with the casing after releasing the brushes.
Fit the springs on the centre of the brushes in their guides.
Fit the steel washer (10) and tighten the bolt (11). bolt (11).

25. Fit the cap (15) and tighten the two nuts (14) (Spring washer).

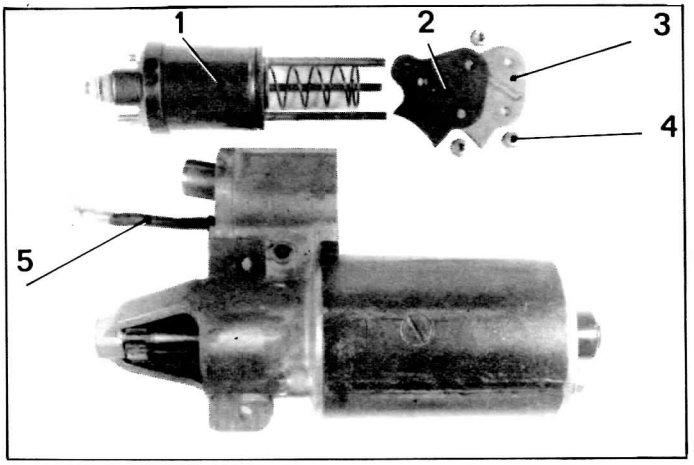
26. Connect the field coil lead to the terminal marked « DEM » (17). Place it in the groove of the retaining bush (12) on the solenoid.

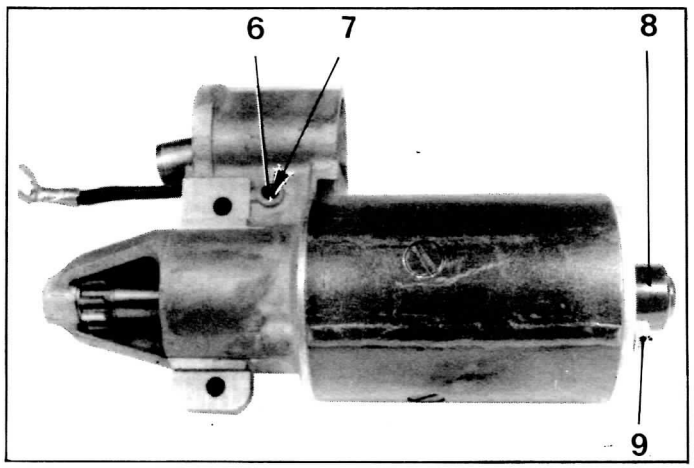
27. **Adjust the travel of the starter pinion :**

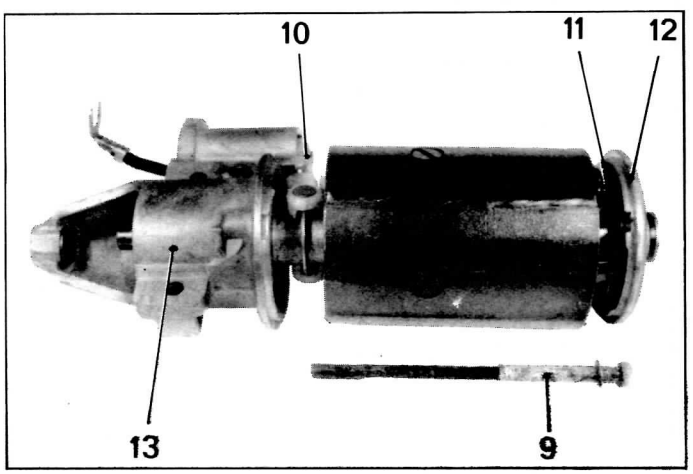
28. Fit the plastic plug (13).

II. PARIS-RHONE D 8 - E 103 STARTER MOTOR

10172







Supplement N° 1 to Manual 810-2 (CORR)

DISMANTLING.

1. Remove the solenoid :
   Disconnect the field coil lead (5).
   Remove the three nuts (4) and release :
   - the clamp plate (3),
   - the fibre seal (2),
   - the solenoid (1).

2. Pull off the plastic cap (8).

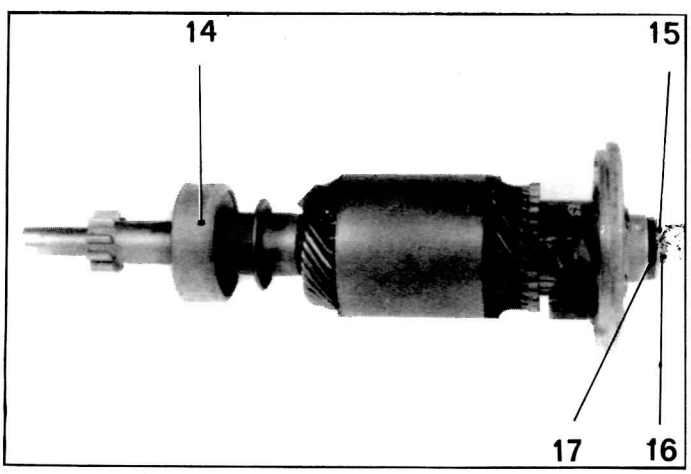
3. Drive out the hinge pin (6) of the operating lever and its support (7).

4. Remove the two assembly bolts (9).
   Partly separate the end plate, commutator end (12), from the casing and lift the positive brush (11) from its guide.
   Remove :
   - the starter bearing driving end (13),
   - the operating lever (10),
   - the end plate (12) commutator end, armature and starter drive assembly,
   - the starter drive (14).

5. Remove the end plate, commutator end, (12) from the armature (18).
   To do this, remove the bolt (16), the thrust washer (15), the friction washer (17).
   Release the end plate (12), the bakelite coated washer (20), the steel washer (19), the flexible washer (23) and the steel washer (24).

6. Strip the end plate, commutator end (12) :
   Unsolder the negative brush (21) :
   Clean the end plate and check the positive brush-holder insulation (22) using an ohmmeter or a 110 or 220 volts test lamp. If the lamp lights up, the positive brush-holder is poorly insulated, and the end plate (12) must be replaced.

10178



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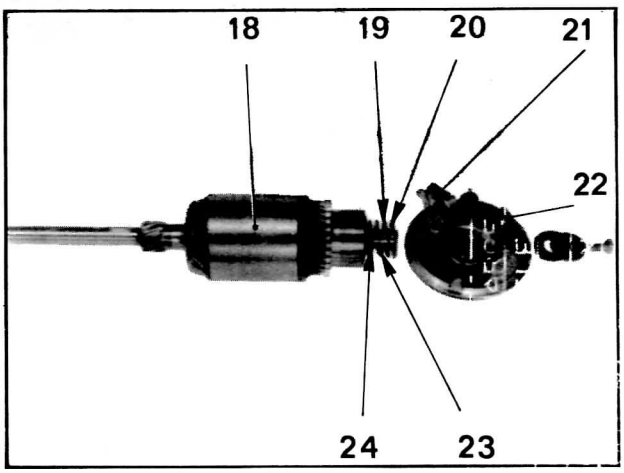
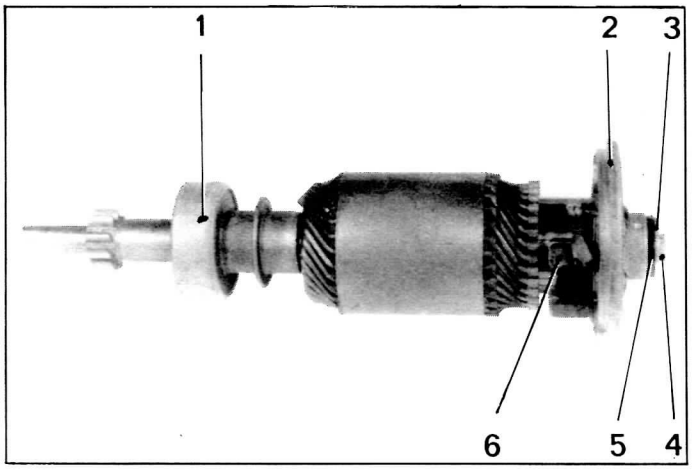
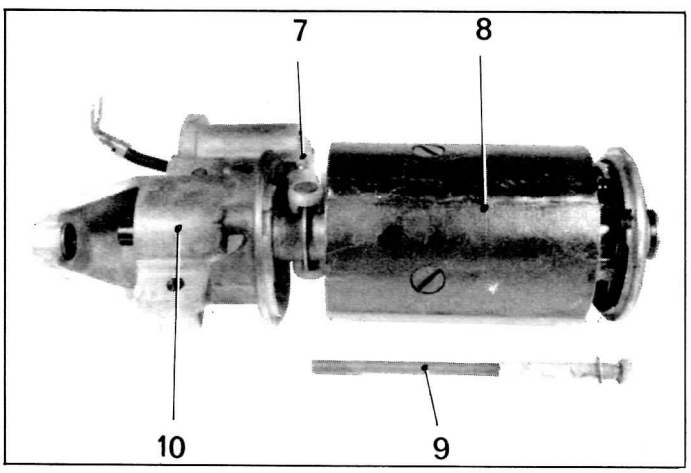




17. Secure the end plate (2) on the end of the armature shaft.
Fit the friction washer (5) and the thrust washer (3). Tighten the bolt (4).
Fit the negative brush in its guide and bring the spring into contact with the brush.
Fit the plastic cap (17).

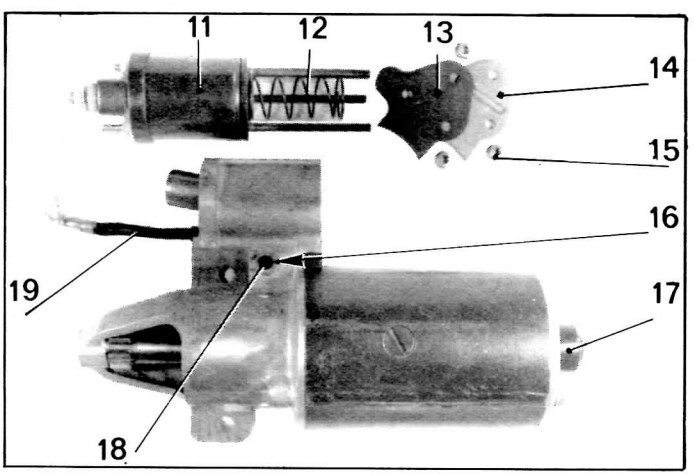
18. Oil the armature splines with « ANTAR RT 96 » grease and fit the starter drive (1).

19. Fit the armature into the casing.
Fit the end plate (2).
Insert the positive brush into its guide and fit the spring.



20. Position the starter drive bearing (10) with the operating lever (7).
Position the latter on the starter drive (1).

21. Press the starter drive bearing (10) and the end plate (2) against the casing (8).
Fit the assembly studs (9). (The stud with insulating tape (see illustration), placed between the two brush supports).
Tighten them to 8 to 11 m.N (0.8 to 1.1 m.kg). (5.8 to 8 ft.lb).



22. Fit the support (16) for the operating lever hinge pin and the pin (18).

23. Fit the solenoid (11) equipped with its spring (12) and orientate it correctly.
Fit the fibre seal (13) and the clamp plate (14).
Tighten the nuts (15).
Connect the field coil supply lead (19).

24. Check and adjust the starter drive :

Supplement N° 1 to Manual 810-2 (COPR)

FOURTH SECTION

BODYWORK

Manual 810-2

LIST OF OPERATIONS
IN THE FOURTH SECTION OF MANUAL 810-2

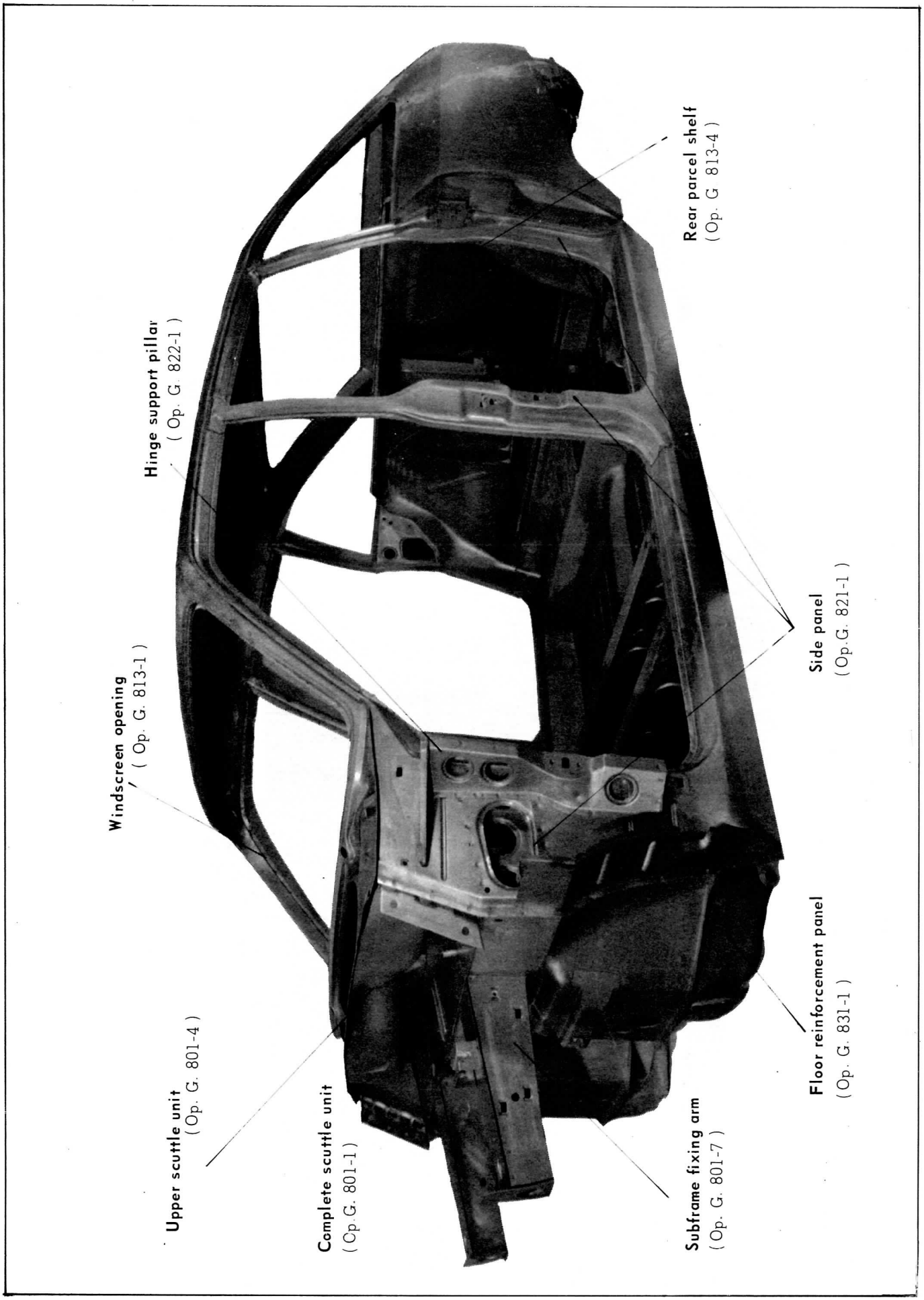
Operations where the number is preceded by the letter « G » are common to all vehicles of the « GS » range.
Operations where the number is preceded by the letters « GE » are common to all « GS » 5-door Estates.
Operations where the number is preceded by the letters « GFt. » are common to all « GS » 3-door Service Estates without side windows.
Operations where the number is preceded by the letters « GFv. » are common to all « GS » 3-door Service Estates with side windows
Operations where the number is preceded by the letters « Gea » are specific to vehicles fitted with a Torque Converter.

Number of the Operation	DESCRIPTION
	PANEL WORK
G. 800-000	Components of the body shell
GE.800-000	Components of the body shell
GFt.800-000	Components of the body shell
GFv.800-000	Components of the body shell
G. 800-0	Checking a body shell
G. 801-1	Replacing a scuttle unit with windscreen opening
G. 801-7	Working on the lower scuttle unit
	- Replacing the front subframe fixing arms alone
G. 812-1	Replacing a centre pillar, with its upper reinforcement panel
G. 821-1	Working on the side panels :
	- Replacing a bare side panel
	- Replacing a pre-assembled side panel
	- Replacing the lower section of a side panel
	- Replacing a side panel front section *(up to 15.1.1975)*
	- Replacing a side panel front section *(from 15-1-1975)*
	- Replacing the middle section of a side panel
	- Replacing a centre pillar and a side panel (Bottom section)
G. 824-1	Working on the rear wing
G.	- Replacing a rear wing
G. 824-4	Working on the welded wheelarches
	- Replacing a left-hand wheelarch
G. 824-7	Working on the welded wheelarches :
	- Replacing a right-hand wheelarch
G. 825-4	Working on the sun-roof
	METALWORK
G. 841-4	Replacing a side door outer panel
GFv. 961-4	Replacing a side window
GE. 961-7	Working on the tailgate
	- Replacing a rear window (bonded type)
	- Replacing a rear window (with rubber sealing section)
	TOOLS
	List of the special tools mentioned in this section
	Manufacturing diagrams of the special tools not sold

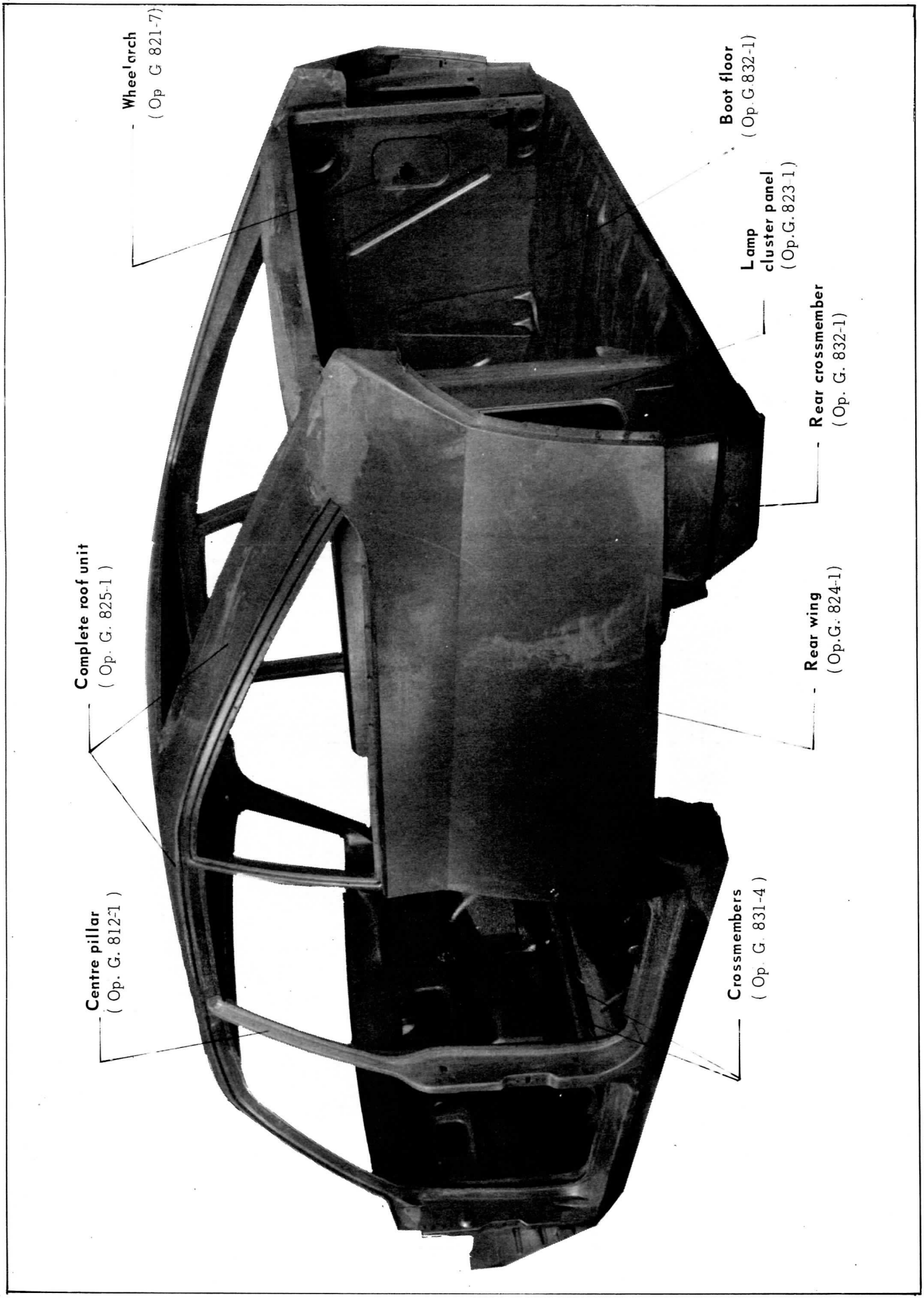
Supplement N° 1 to Manual 810-2 (CORR)

Supplement N° 1 to Manual 810-2 (ADD)

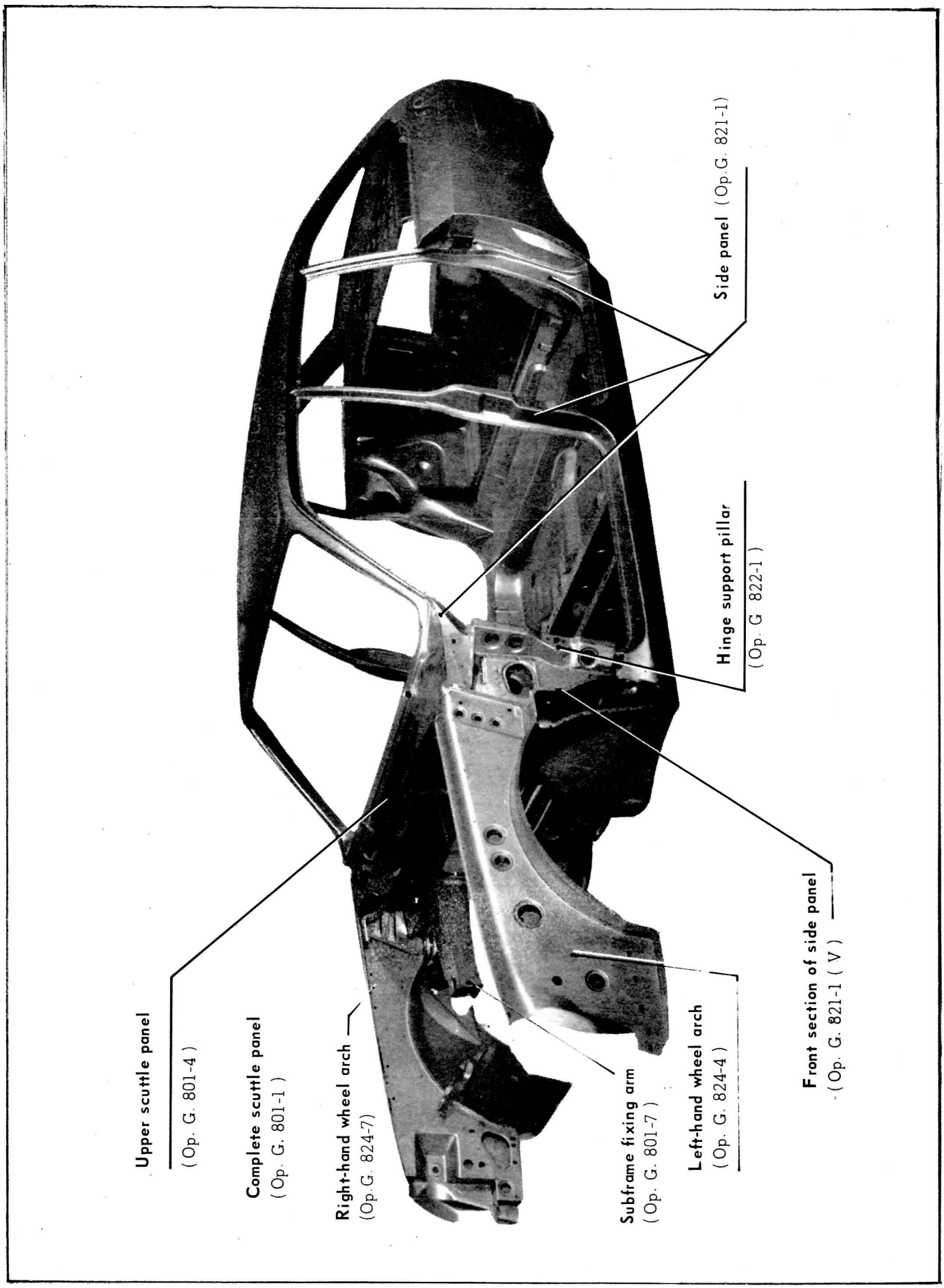
COMPONENTS OF THE BODY SHELL



COMPONENTS OF THE BODY SHELL

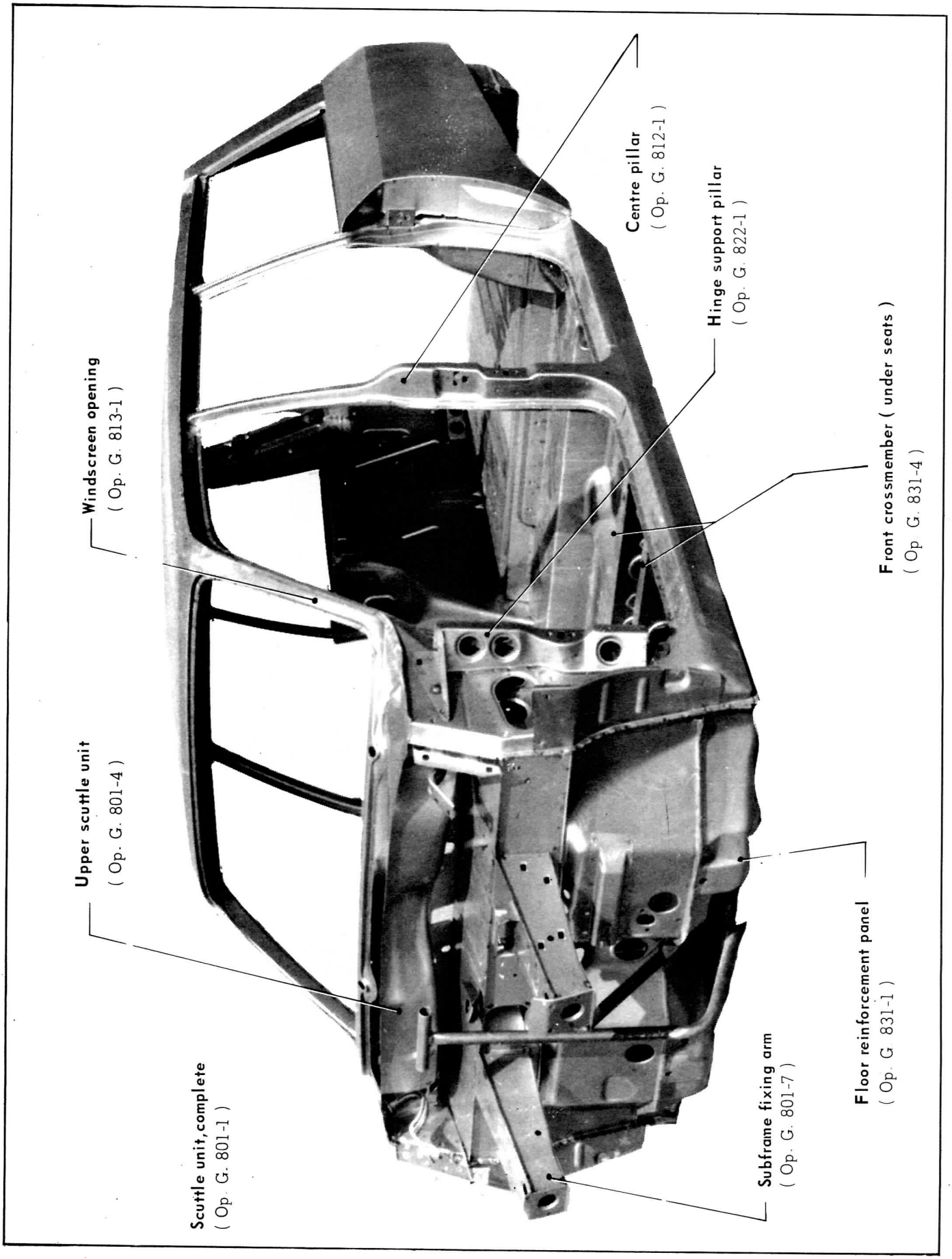


COMPONENTS OF THE BODY SHELL



Supplement N° 1 to Manual 810-2 (ADD)

COMPONENTS OF THE BODY SHELL



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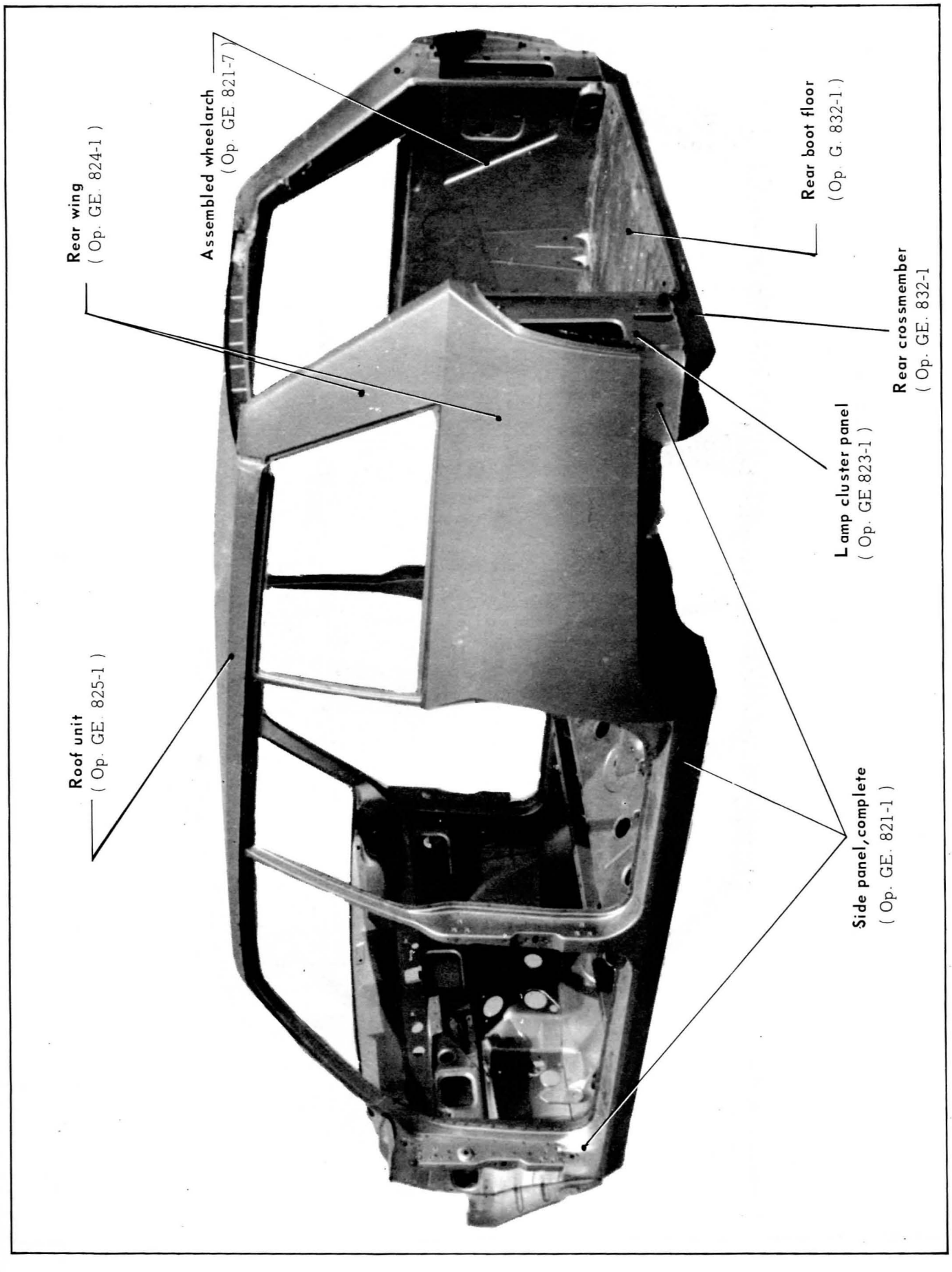

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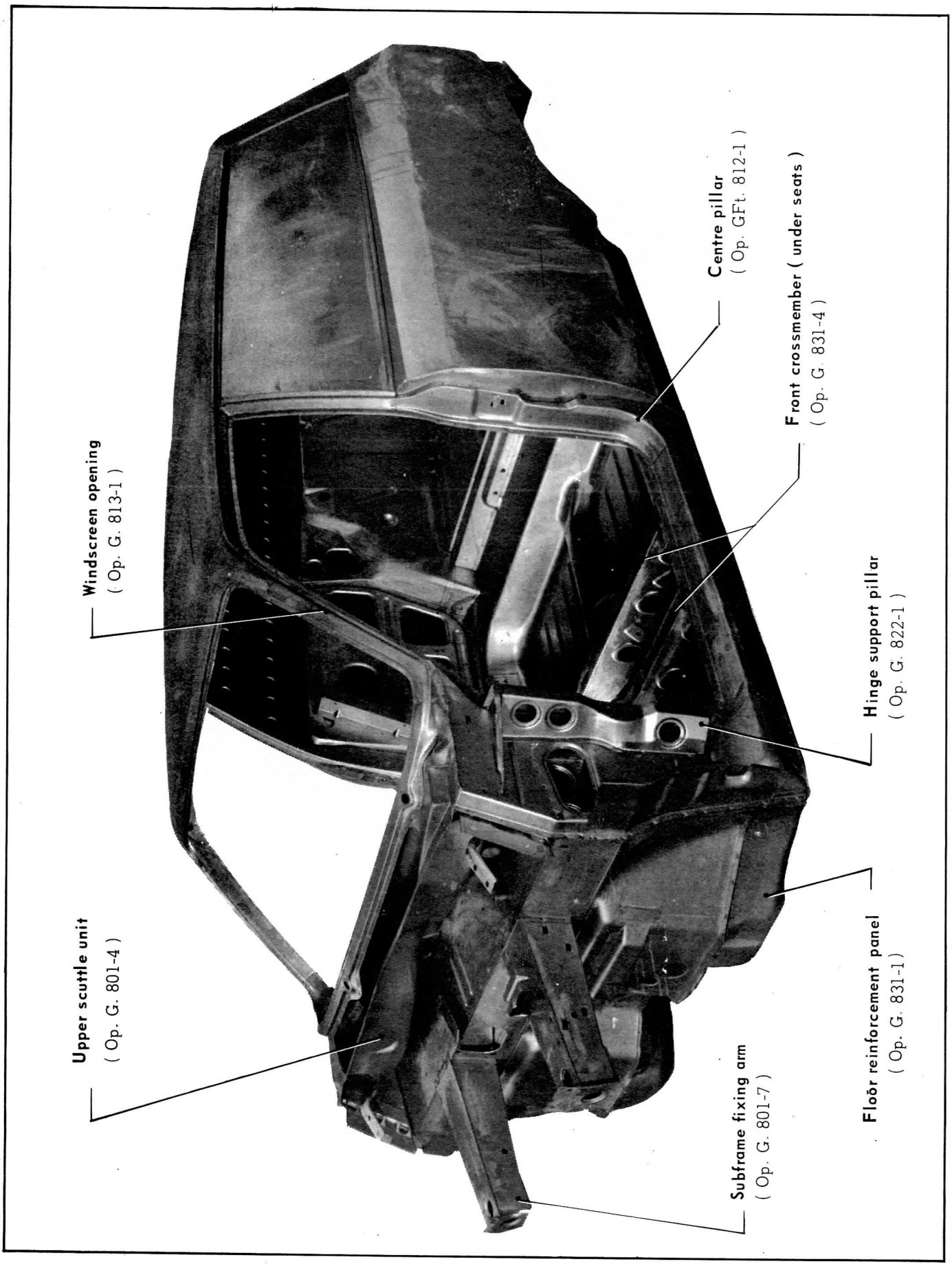

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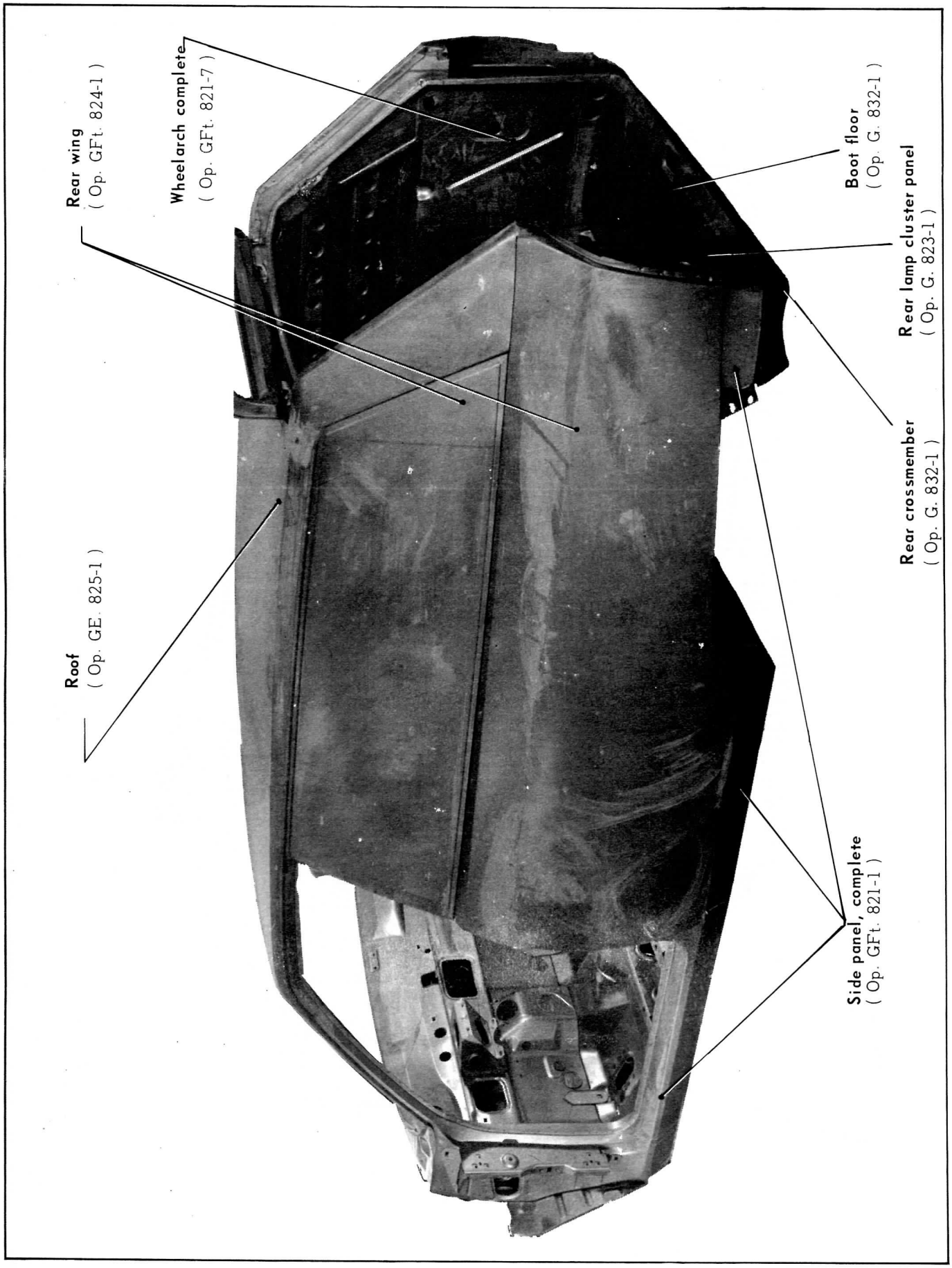
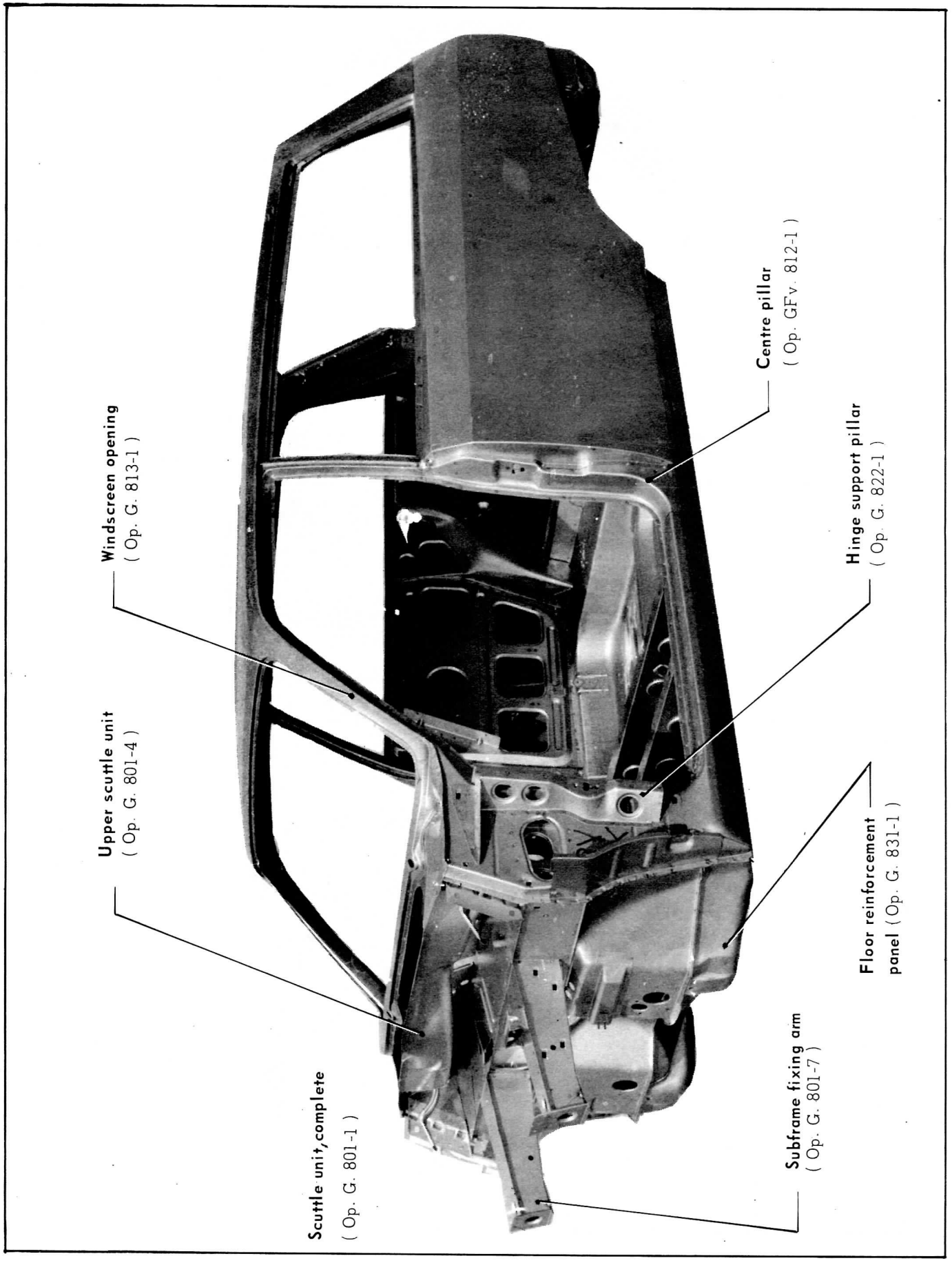
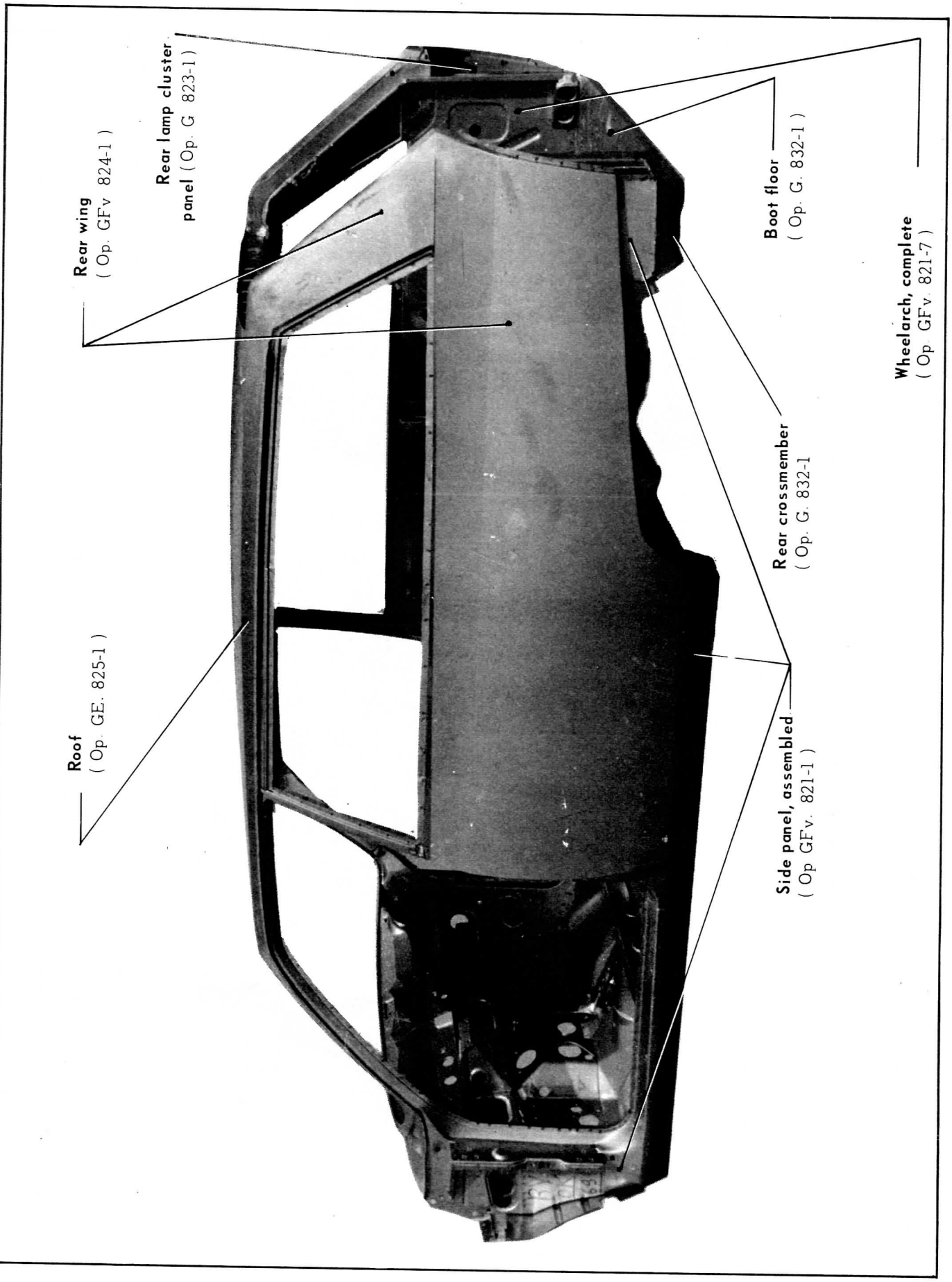


Supplement N° 1 to Manual 810-2 (ADD)

COMPONENTS OF THE BODY SHELL



COMPONENTS OF THE BODY SHELL

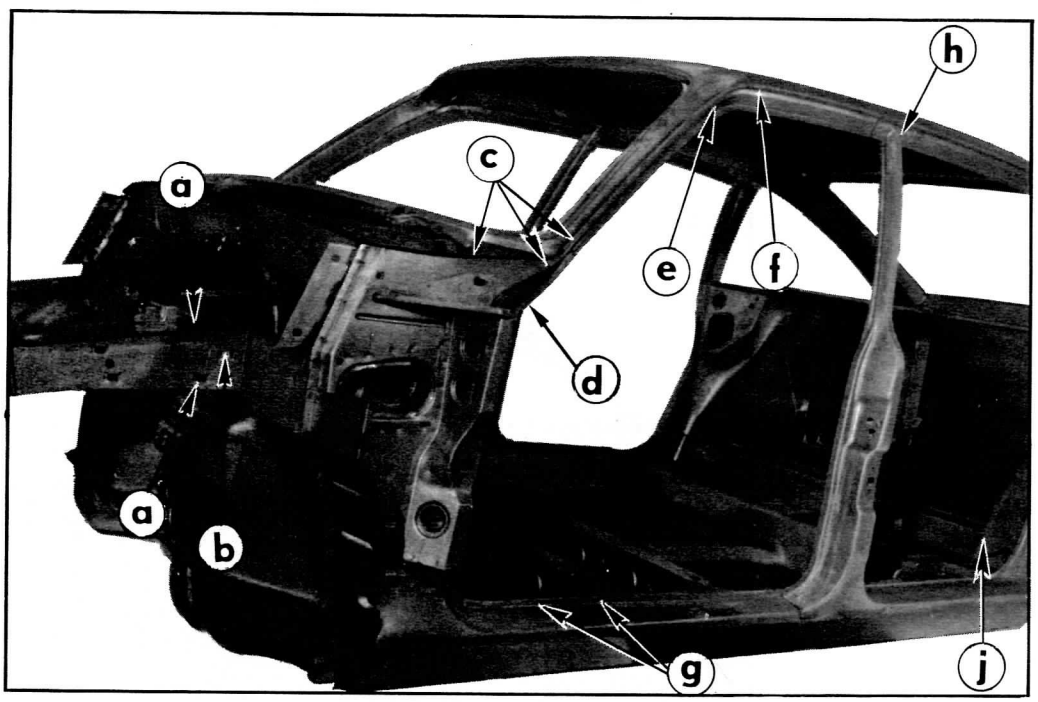


CHECKING A VEHICLE WITH ACCIDENT DAMAGE

When checking a vehicle with accident damage, the checks must be carried out in the following order :
- Visual check : finding the possible creases, distortions, splits or buckling on the body shell.
- Checking the geometry of the axles using an optical alignment device (without removing the mechanical units).
- Checking the front and rear axle units and the geometry of the body shell with the mechanical units removed).
- Checking the bare body shell on a jig and possible straightening.

I. VISUAL CHECK

To facilitate finding the distortions, these have been divided into categories according to the location of the impact on the vehicle, and according to the strength of the impact.



Supplement N° 1 to Manual 810-2 (CORR)

A - FRONTAL IMPACT

The distortions below are generally found on both sides of the body shell.

1. **Front subframe fixing arms :** Distortions at « a » on the upper and lower faces, always accompanied by side distortions at « b » near the scuttle.

2. **Lower windscreen crossmember :** indentation at joint « c » with windscreen frame.

3. **Attachment of windscreen pillar and front door pillar :** Longitudinal indentations in the form of small creases at « d » on the side panel, level with the upper corner of the door.

4. **Roof cantrail :**

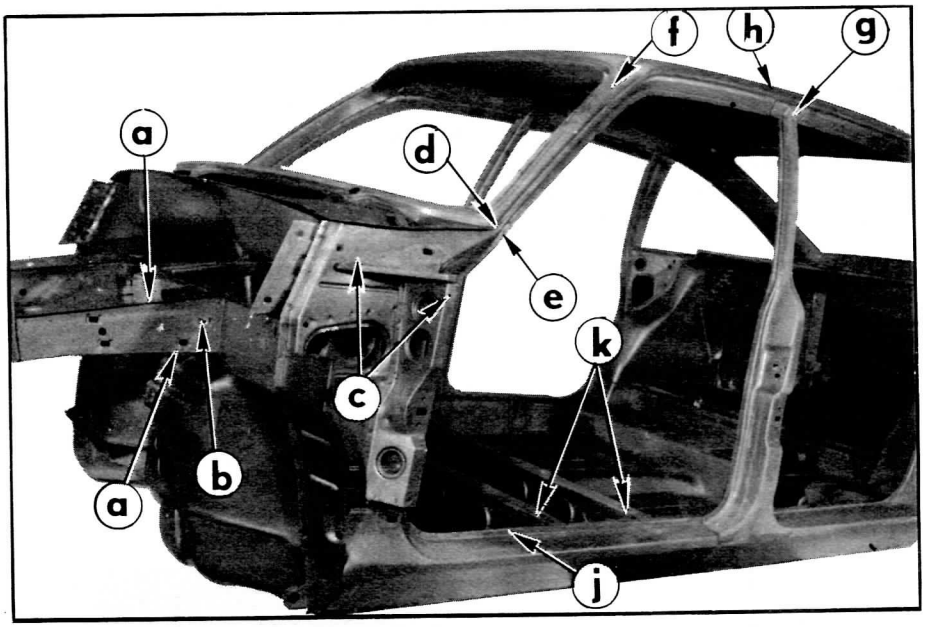
   Abnormal gap between the upper part of the door, the windscreen pillar and the cantrail. Creases at « e » and « f ».

5. **Lower body sidemember :** Distortions at « g » between the joint with front door pillar and first crossmember under seats.

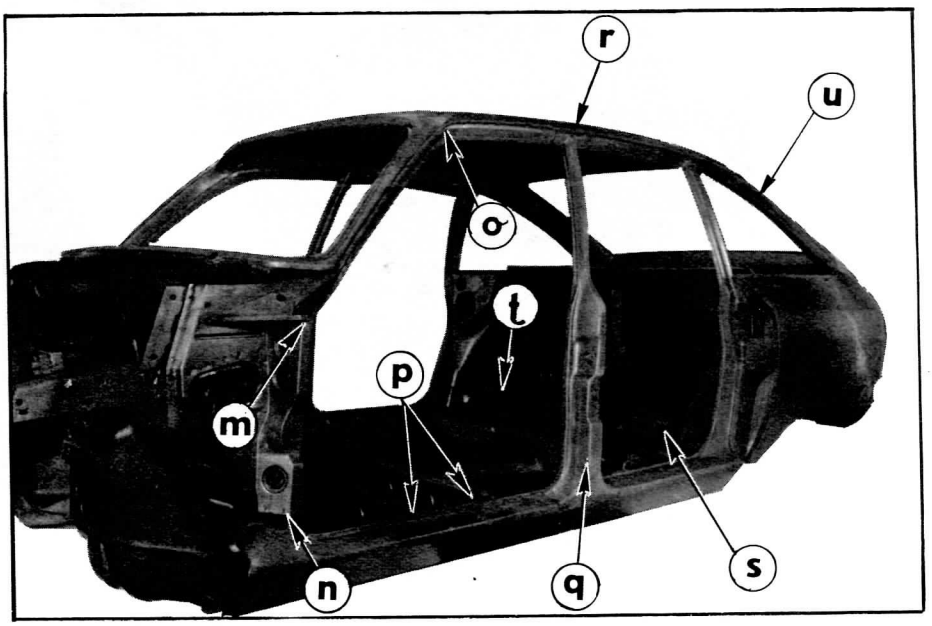
6. **Centre pillar :** in the event of a strong impact, it may be separated from the roof crossmember at « h ».

7. **Heel board :** following a very severe impact, creases may appear at « j » on the heel board, situated under the rear seat.

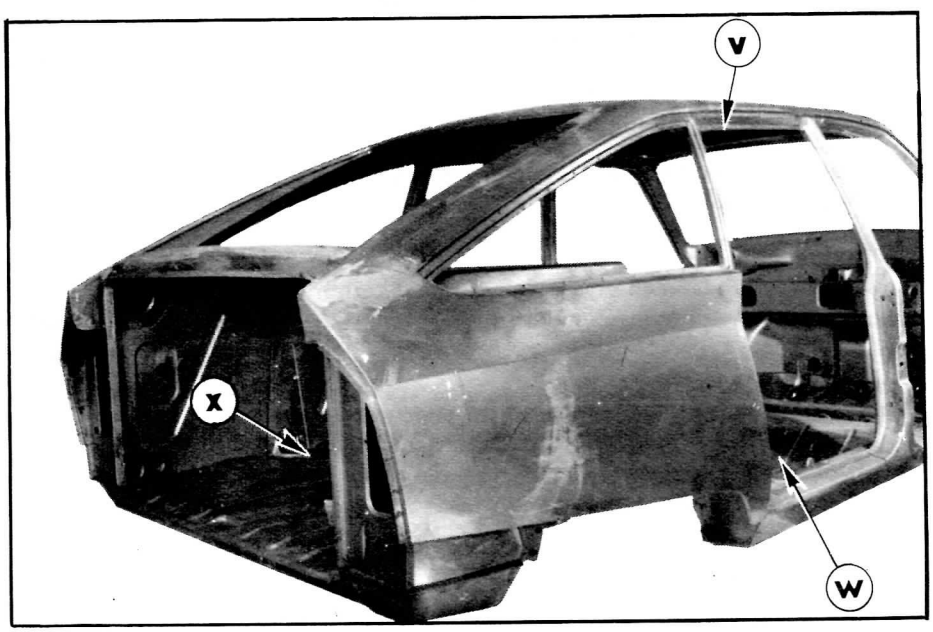
IMPACT FRONT 3/4



SIDE IMPACT



IMPACT REAR 3/4
AND REAR



B - IMPACT, FRONT 3/4

1. **Front extensions** : Distortions at « a » on the upper and lower faces, always accompanied by side distorsions at « b » near the scuttle.
2. **Hinge support pillar and front pillar** : Indentation and pushing back of front pillar at « c » : the door is no longer in line with the side panel.
3. **Lower windscreen crossmember** : Indentation at « d » on front pillar, upper part. This produces a distortion of the lower crossmember and the windscreen frame itself. Splitting on the outer face of the frame, at the bottom, at « e ».
4. **Side cantrail and windscreen frame pillar** : Presence of indentations at « f » of the solder filling linking the windscreen frame to the roof. Abnormal gap between the upper part of the front door and the roof cantrail.
5. **Joint between roof and centre pillar** : Distortion of roof at « g » with dent and fracture of roof edge at « h ». This can sometimes loosen the central pillar.
6. **Body sidemember** : Large creases at « j » on the sidemember and at « k » on the crossmember beneath the seats

C - SIDE IMPACT

1. **Front door pillar and body sidemember** : Indentation at « m » on front pillar and at « n » on sidemember, with creases on the roof at « o » and the crossmembers beneath the seats at « p ».
2. **Centre pillar and body sidemember** : Indentation at « g » on the pillar and the sidemember with creases on the crossmembers beneath the seats at « p », loosening the central door pillar from the roof cantrail and with creases at « r » on the roof in the region of the joint with the centre pillar.
3. **Rear door pillar and rear wing** : Indentation on rear pillar, wings and wheel arch, with creases on the heel board at « s », on the rear floor at « t » and inner wheel arch. Splitting of the side panel and the roof at « u » above the rear quarter light opening.

D - IMPACT 3/4 REAR OR REAR

1. **Joint between roof cantrail and rear pillar** : Creases at « v » about 10 cm (4") in front of rear pillar.
2. **Joint between body sidemember and heel board** : Creases at « w ».
3. **Rear floor** : Creases at « x » between securing points of rear axle unit.
4. **Various components** : Local distortions on side panel, rear crossmember, wheel arch, rear lamp cluster panel, lower crossmember for rear window frame etc ...

E - CONCLUSION

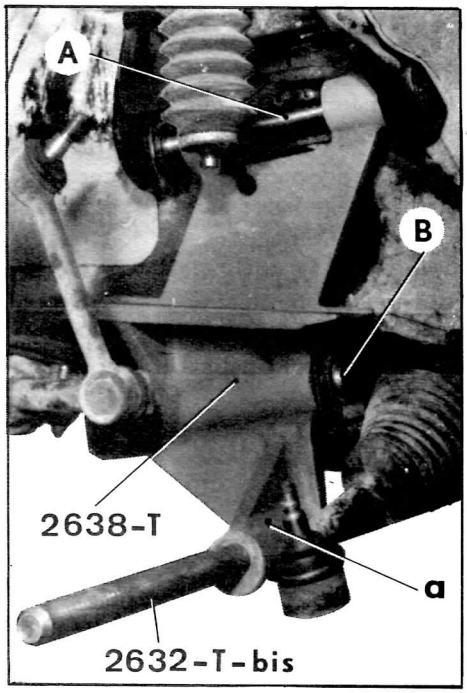
If a visual inspection reveals obvious indentations or creases at the places indicated above, **a body jig must be used without fail.**
On the other hand, if there is some doubt as to the extent of the indentations or creases, it is then essential to check the geometry of the axles, then the front and rear axle units.

II. CHECKING THE GEOMETRY OF THE AXLES

Refer to : Operation G. 410-0 and G. 410-0 a for the front axle
Operation G. 420-0 for the rear axle
} in Manual 810-1

Supplement N° 1 to Manual 810-2 (CORR)

III. CHECKING FRONT AND REAR AXLE UNITS

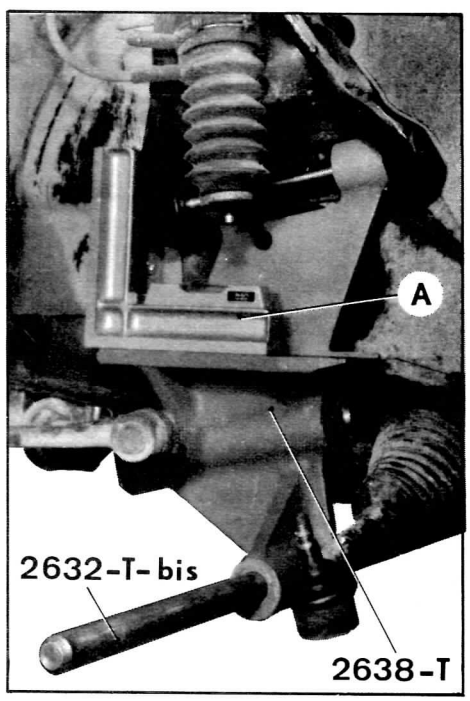


1. Checking the front axle unit :

a) Put vehicle on stands and on a flat horizontal surface. Remove from each side :
- the upper and lower wheelarms,
- the drive shaft.

b) On each side, position tool 2638-T at the securing points of the wheelarms.
Fix it, using :
- an upper threaded spindle A : the knurled nut must be positioned towards the rear of the vehicle,
- a lower spindle B : **it must be free in its bore** and the head must be positioned towards the rear of the vehicle.

c) Introduce rod 2632-T bis into the lower bores « a » of the tools : **it must be able to turn and slide smoothly.**
If this is not so, the axle unit is buckled and must be replaced. However, as it is possible that the body itself is buckled, the body must be checked on a jig before fitting a new axle unit, this necessitates removing all the mechanical units (in this case, the checks in § 2 to 4 are not required).
IMPORTANT : *Under no circumstances must the axle unit be straightened.*



2. Checking the rear axle unit :

a) Put vehicle on stands and on a flat horizontal surface. Remove from each side :
- the wheelarm,
- the forward bump stop.

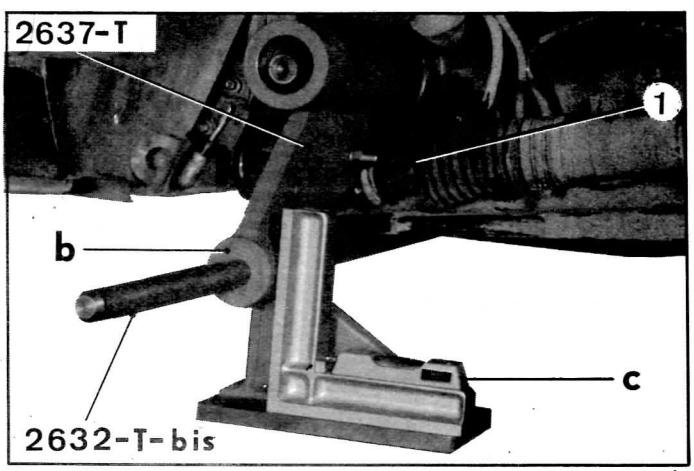
b) On each side, position tool 2637-T on the wheelarm shaft.

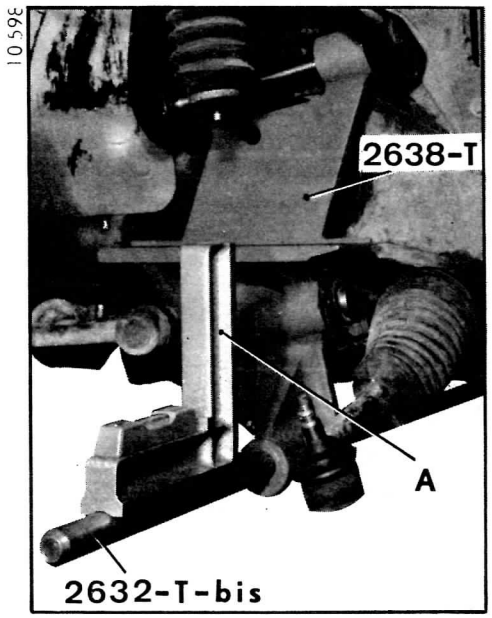
c) Position spirit level C on the foot of one of the tools 2638-T positioned at the front : adjust the bubble to « zero »

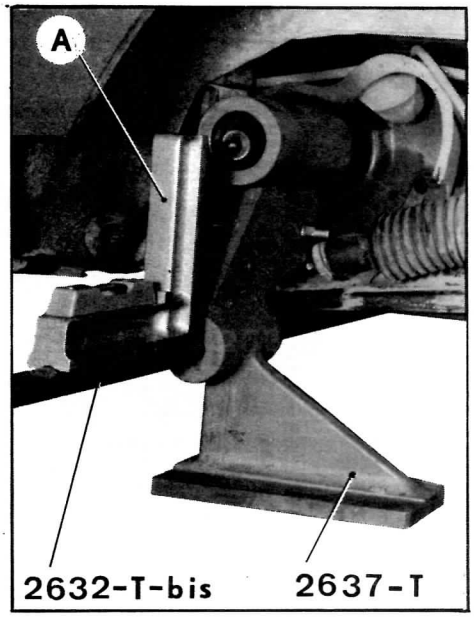
d) Position the spirit level C on the foot of each of the tools 2637-T positioned at the rear : using screw (1), adjust the position of each of them so that the spirit level bubble is at « zero ».

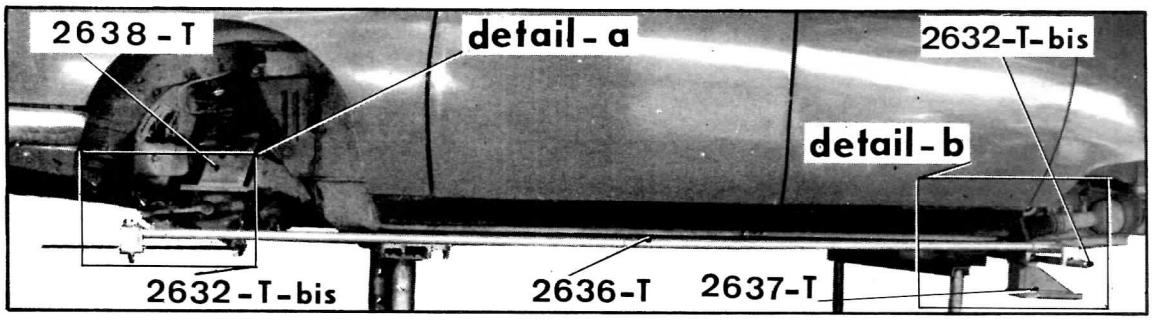
e) Introduce rod 2632-T bis in the lower bores « b » of tool 2637-T bis : **it must be able to turn and slide smoothly.**
If this is not so, the axle unit is buckled and must be replaced : in addition this will allow checks to be made to determine whether or not the body itself is buckled.

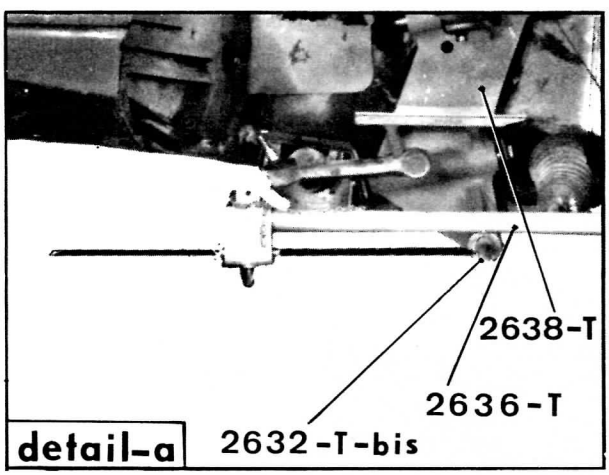
IMPORTANT : *Under no circumstances must the axle unit be straightened.*

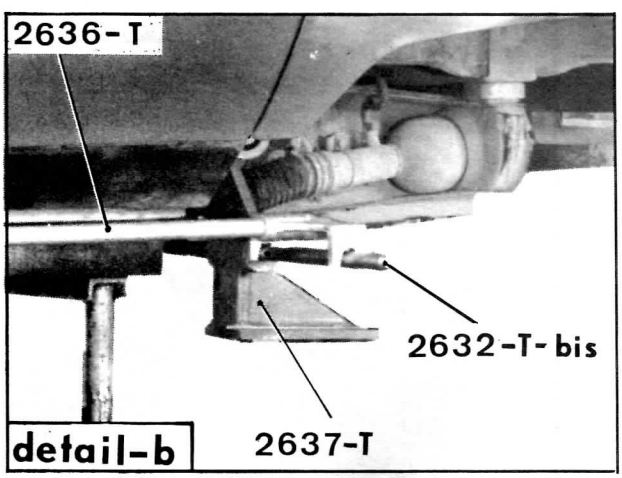












3. Checking for « twists » on the body :

NOTE : This check is to be carried out when checks on the axle unit have not revealed anything unusual

a) Position the adjustable spirit level A on each of the rods 2632-T bis at the front and rear in succession.

b) Check that the two rods are horizontal to within 0.25 % (e.g. with a 300 mm long spirit level the difference measured with feeler gauges must not exceed 0.75 mm).

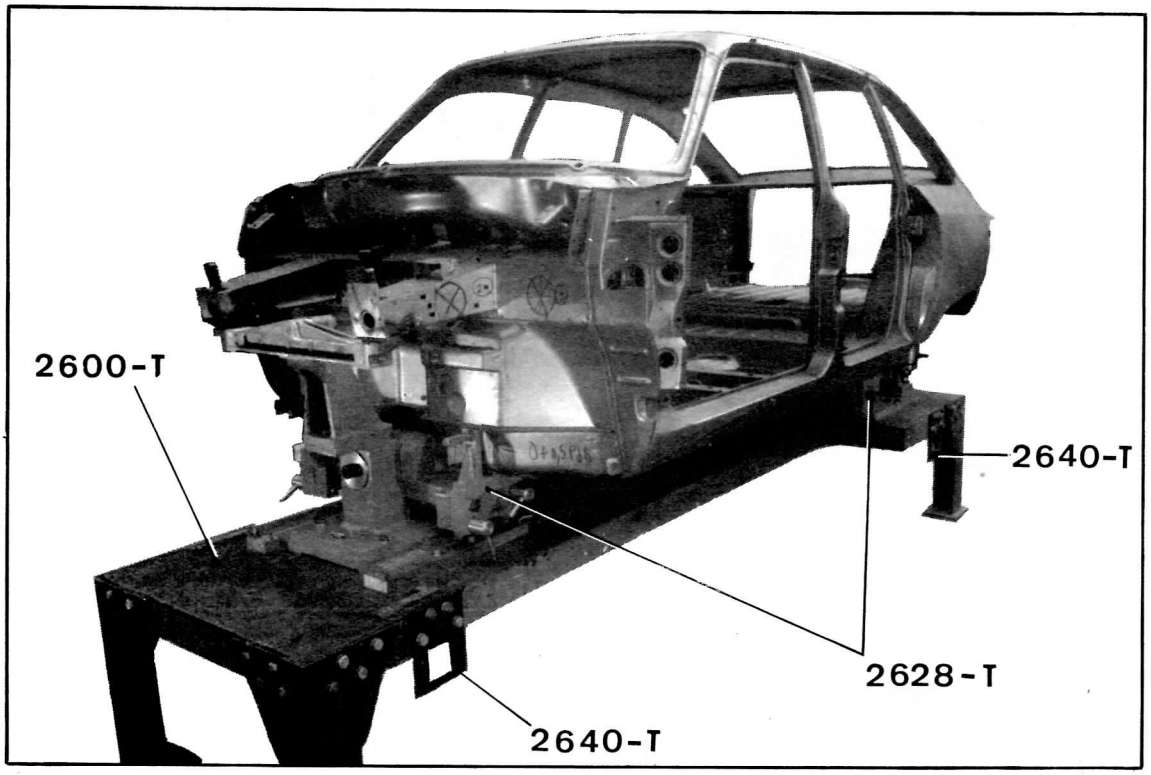
4. Check that the axles are parallel :

Position gauge rod 2636-T successively on each side of the vehicle.

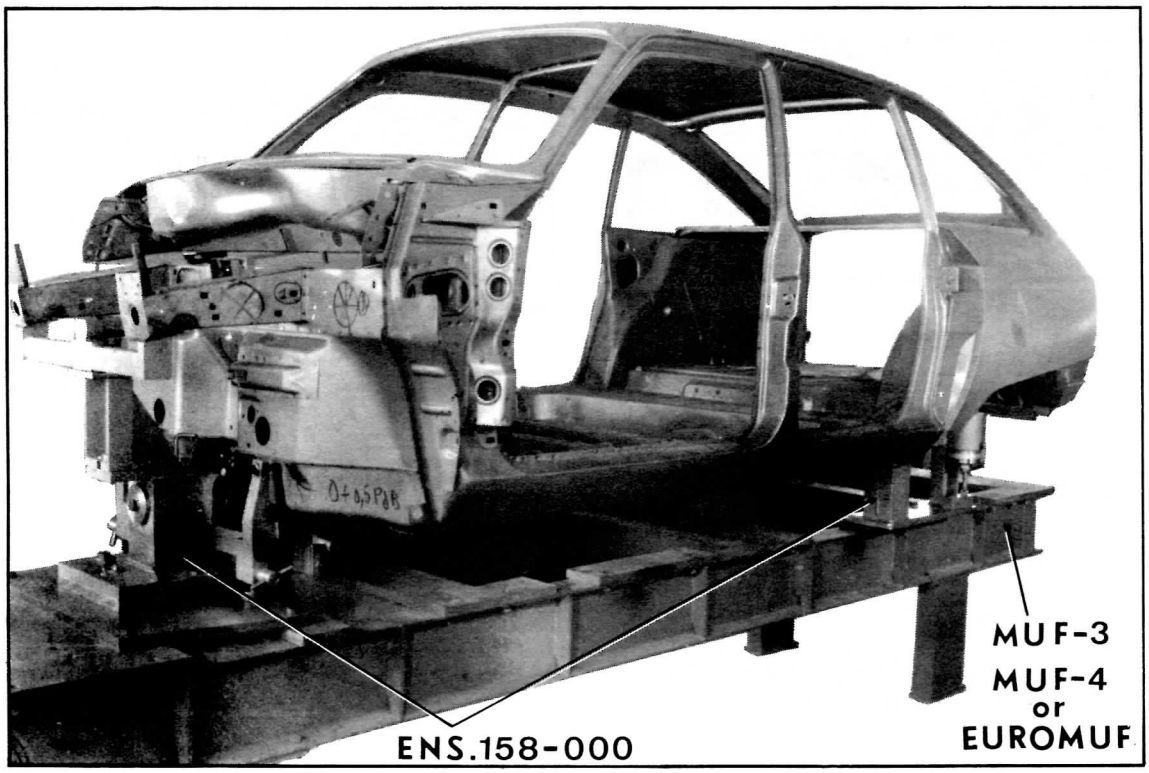
Position the foot of this gauge on one of the bars 2632-T bis and bring the adjustable end into contact with the bar at the other end of the car. Choose the side where the distance between the two bars is greater, and adjust the end-piece. Compare it with the other side : with the help of feeler gauges, take note of *the difference, which must not exceed 4 mm.*

NOTE : If the results of the last two checks are not correct, you must remove the front and rear axle units in order to be able to carry out the checks on the body jig.

IV - CHECKING A BODY ON A JIG

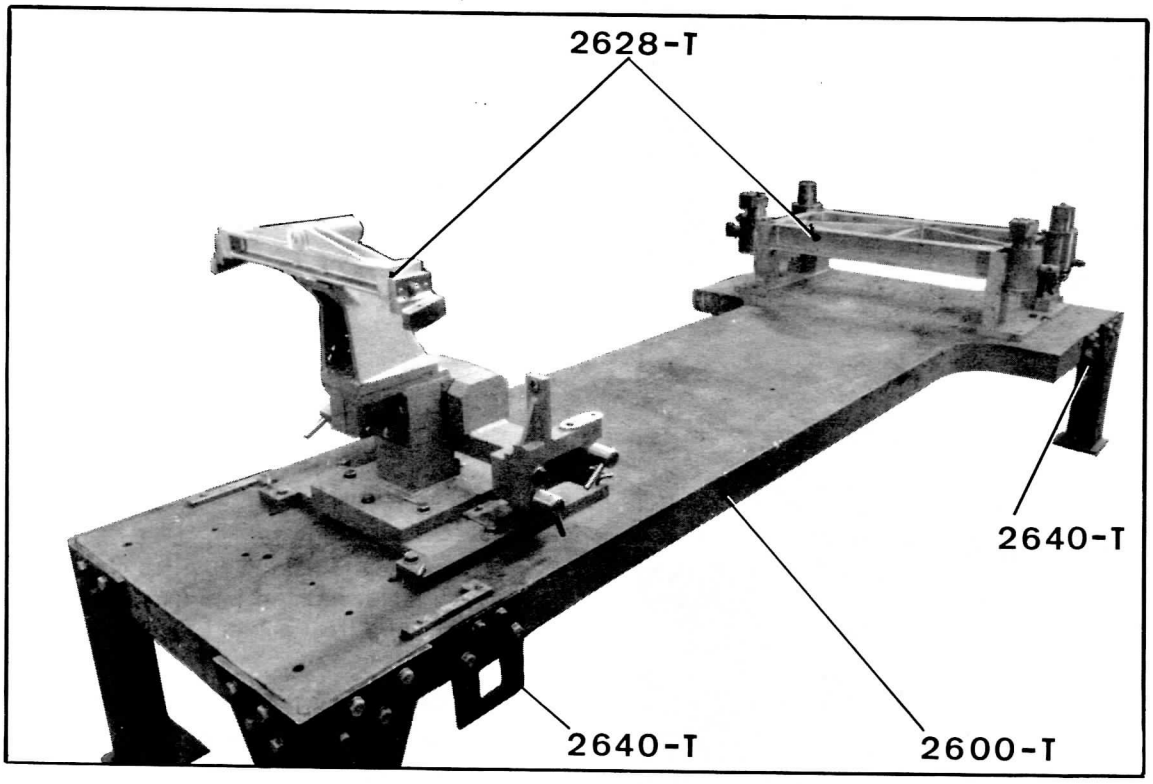


FENWICK : « GS » EQUIPMENT : 2828-T
ON JIG : 2600-T



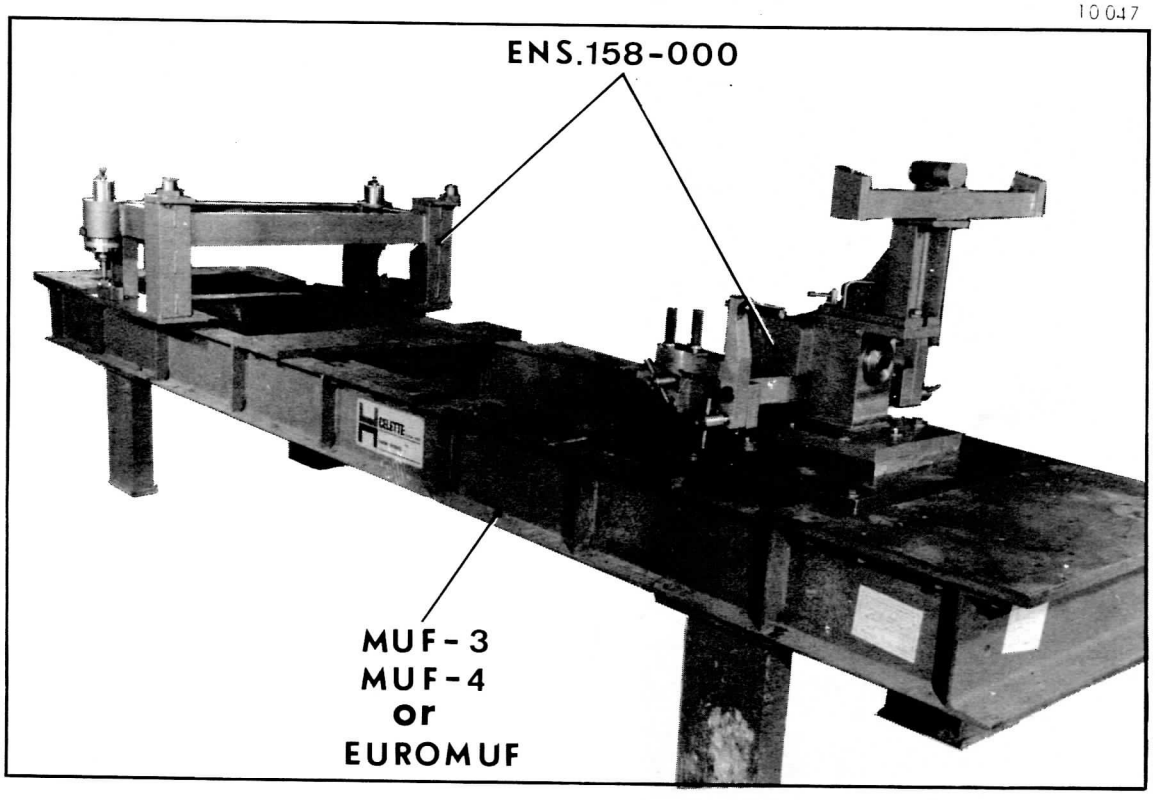
CELETTE : « GS » EQUIPMENT : ENS. 158-000
ON JIG : MUF, 3 MUF 4 or
EUROMUF

FENWICK EQUIPMENT



CELETTE EQUIPMENT

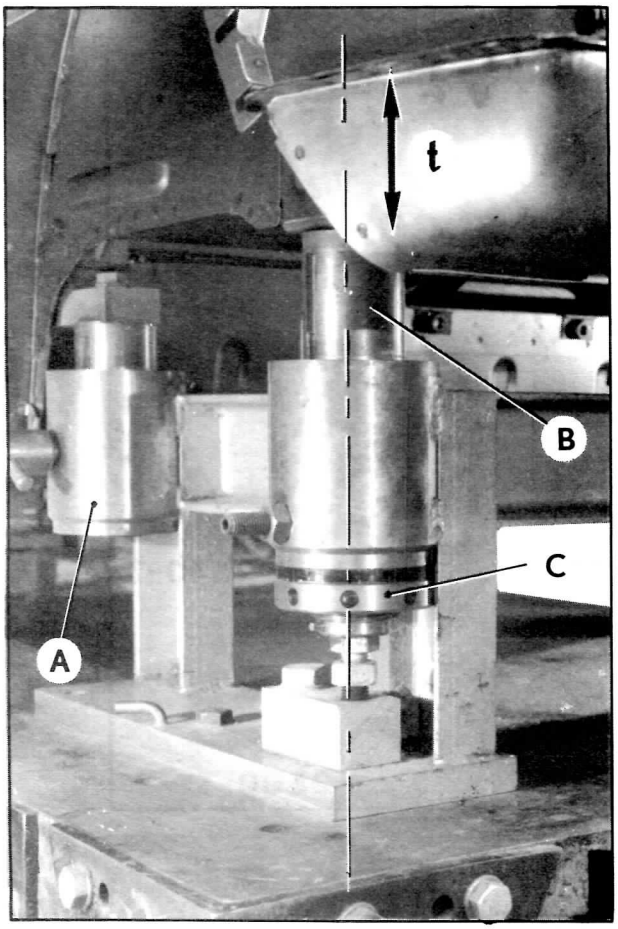
10047

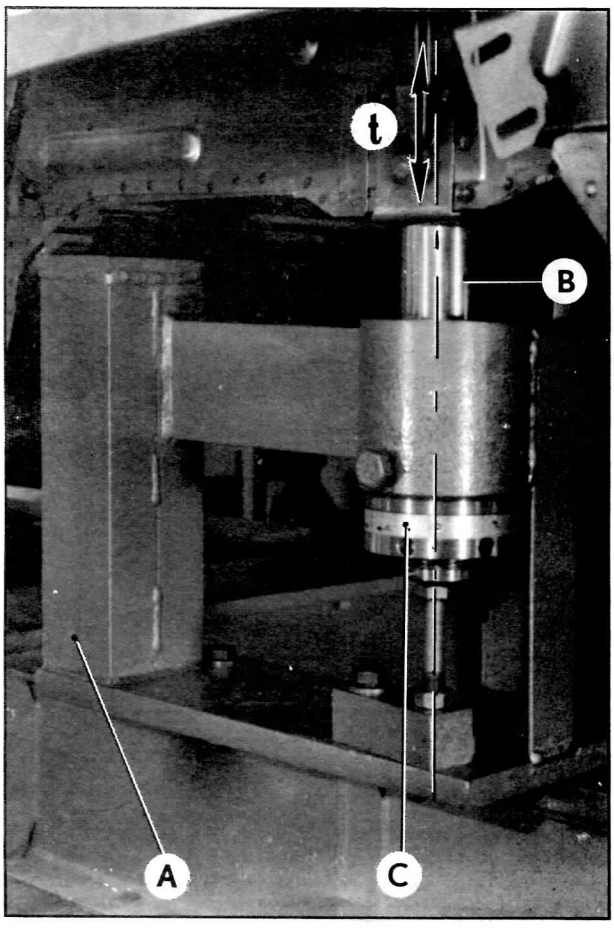


DESCRIPTION

Both sets of equipment are made up of two assemblies (front and rear).
Their construction is such that body jacks may be used to straighten the body while it is on the jig.

Supplement N° 1 to Manual 810-2 (CORR)



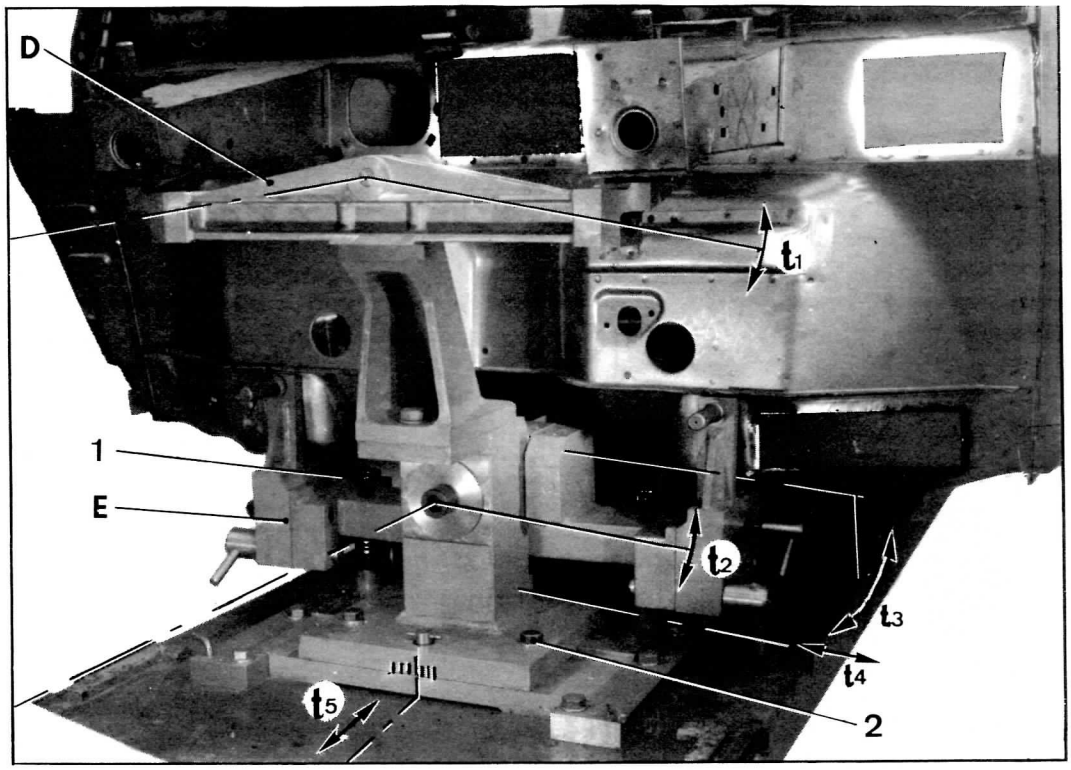


1. Rear assembly :

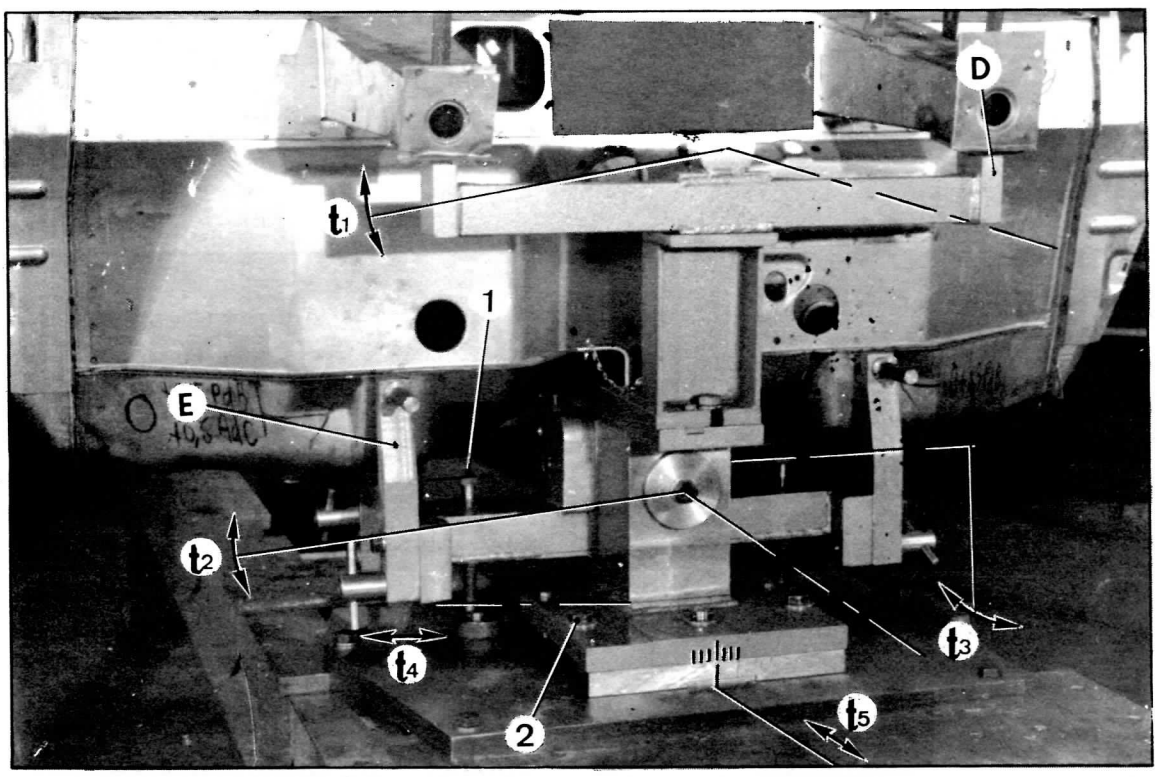
The body is held in position at four points which are the securing points for the rear axle unit :
- the two front points (supports A) are fixed.

- the two rear points (pistons B) can move vertically : a sliding gauge C, an integral part of each piston B, allows the position of the rear securing points to be checked within the limits of a permissible tolerance « t ». When the sliding gauge C is at « zero », piston B is at the « nominal dimension » : the piston may be lowered by 4.64 mm (sliding gauge at « - 4.64 ») or raised by 8.64 mm (sliding gauge at « + 8.64 »).

FENWICK



CELETTE



2. Front assembly : The body is located at eight points, which are the securing points of the front axle unit.

This assembly can be moved with regards to the body jig and provides for :

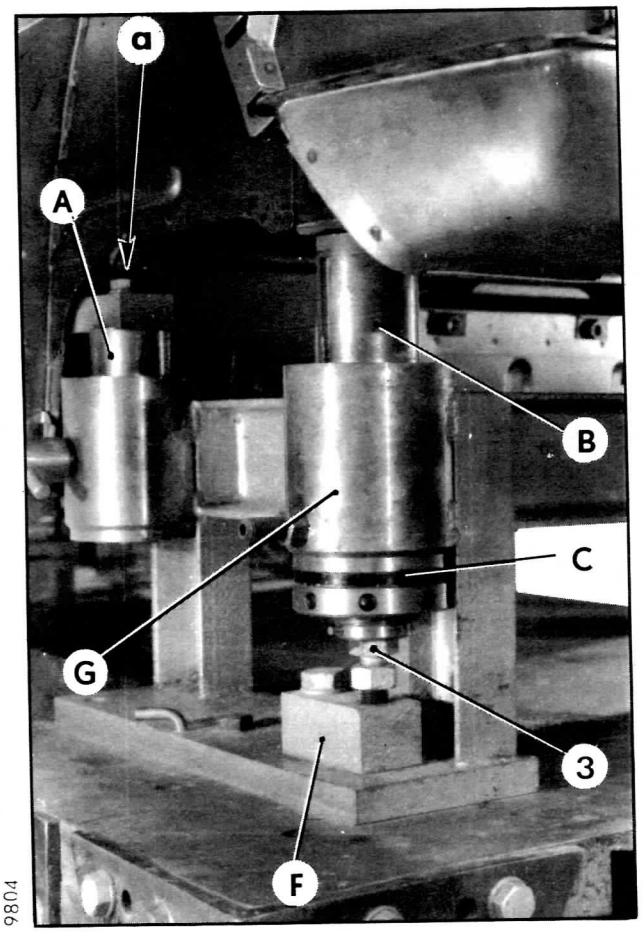
- a fore-and-aft tolerance « t5 »,
- a sideways tolerance « t4 »,

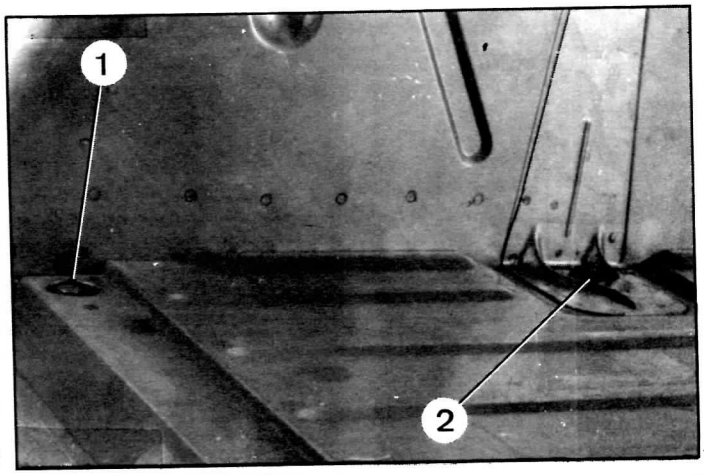
when the two screws (2) have been slackened.

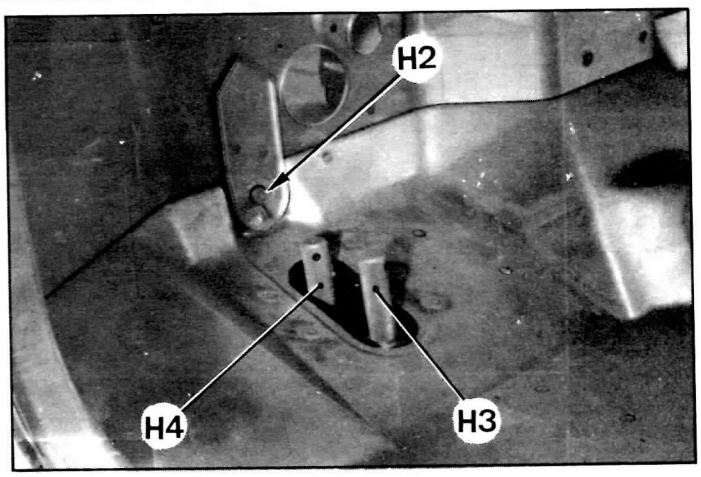
Two supports on this assembly are movable, which allows in addition :

- for the upper securing points : - tolerance « t1 » (transverse rocking of extension support D),
- for the lower securing points : - tolerance « t2 » (transverse rocking of lower support E) when the two screws (2) have been entirely slackened)
  - tolerance « t3 » (longitudinal rotation of lower support E).

Supplement N° 1 to Manual 810-2 (CORR)







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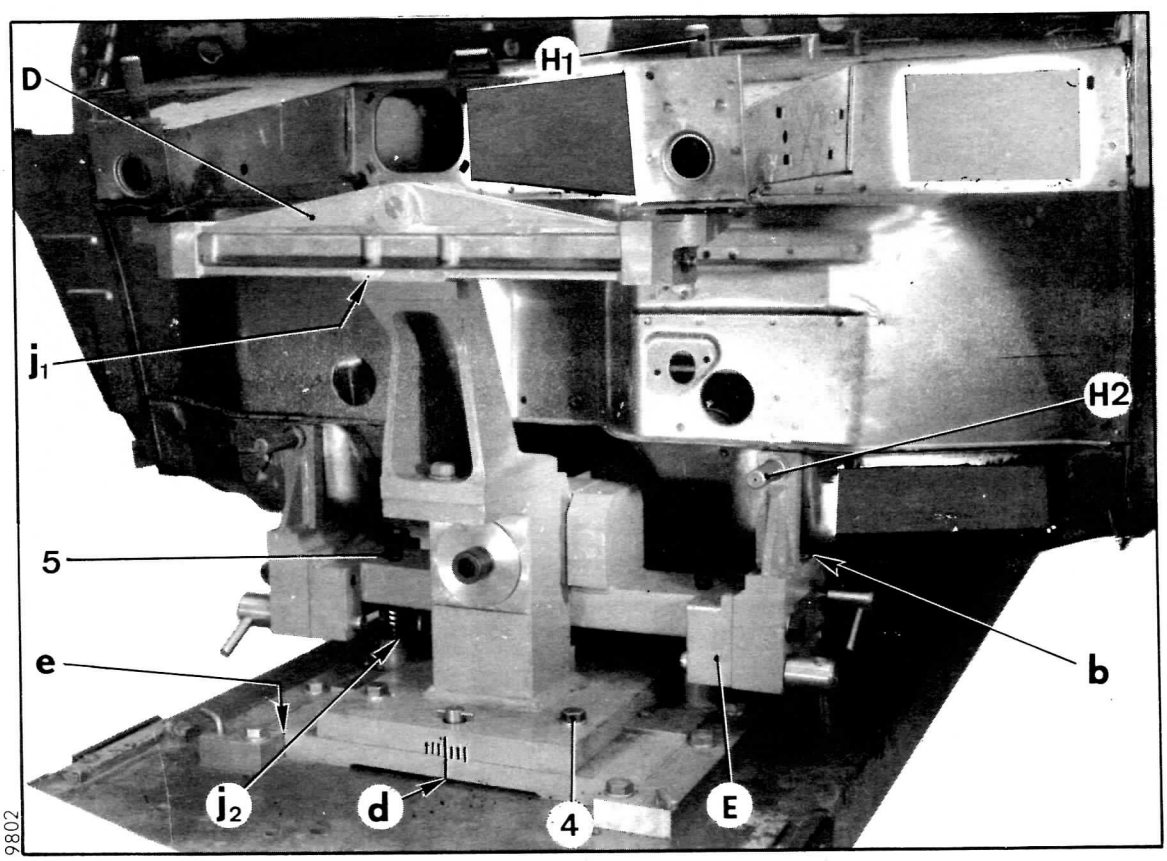
FENWICK



9802

FIRST CASE : Slightly damaged body

1. Check rear securing points :

a) Lower pistons B of rear assembly as far as possible by operating the screws (3).

b) Position the body horizontally above the jig :
- Let it rest on the two front supports A of the rear assembly.
- Engage the body at « a » on the locating pins of the supports **Do not fit the securing screws.**

c) Rest the body on the front assembly of the jig.

d) On each side of the rear assembly completely slacken sliding gauge C.

e) *Check :*
- *that the body is in contact with each of the supports of the front assembly at « b ».*
- *that when operating the screw (3), each piston B can be brought INTO CONTACT with the intermediate crossmember : take care not to raise the body at « a ».*
- *that the sliding-gauges C can be tightened until they make contact with cylinders G.*
- *that the difference between the two distances shown by the sliding-gauges C is not greater than 4 mm.*

IF ONE OF THESE CONDITIONS IS NOT FULFILLED, THE BODY IS BUCKLED.

NOTE : Examples of possible readings on the sliding-gauges.
- If one of the gauges shows « - 2 », the other must not have a reading greater than « + 2 ».
- If one of the gauges shows « + 4 » the other must not have a reading less than « 0 », nor greater than « + 8 ».

2. Check the front securing points :

a) Slacken the two stop screws (4).
Slacken the two screws (5) to bring them to the stop in the high position (maximal tolerance «t2»).

b) On each side, position in order, rods H4, H3, H2 and H1.
NOTE : These rods must be able to be engaged or screwed in *by hand.*

c) Tighten again the two stop screws (4).

d) *Check :*
- *that ALL the H rods can be removed BY HAND*
- *that the clearance read at « j2» (on the right or on the left) is not more than FIVE TIMES the value read at « j1» on the same side.*

IF ONE OF THESE CONDITIONS IS NOT FULFILLED, THE BODY IS BUCKLED.

NOTE : Never straighten a body shell using body jacks while it is held in position on support D of the extensions.

SECOND CASE : Body damaged at the front

1. Fix the body on the rear assembly

a) Lower pistons B of rear assembly as far as possible by operating the screws (3).

b) Position the body horizontally above the jig :
- Let it rest on the two front supports A of the rear assembly.
- Engage the body at « a » on the locating pins of the supports.

c) Rest the body on the front assembly of the body jig.

d) Raise pistons B (screws (3)) to the «nominal distance »(sliding gauge at «zero»).

e) Fit the two screws at (1) and the two supports at (2).

2. Place the front assembly at the «nominal distance» :

a) Remove the support D from the extensions. If necessary, remove one of the «brackets» of support E from the side on which the force is to be exerted.
Slacken the two stop screws (4).
NOTE : Never straighten a body shell using body jacks while it is held in position on support D of the extensions.

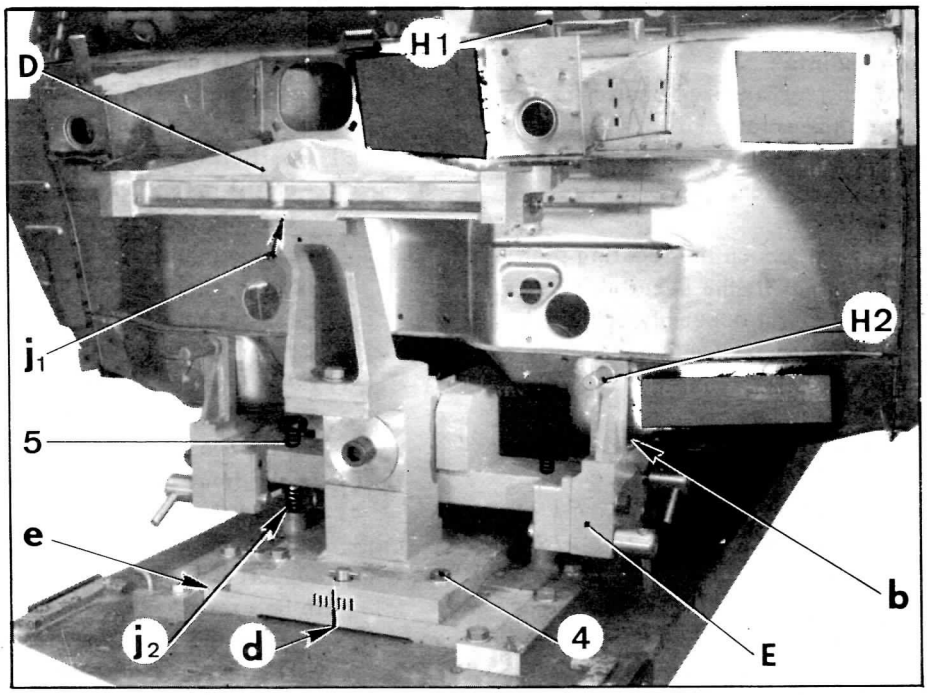
b) Locate the front assembly in the « middle » position of all the permissible clearances :
- *Side clearance « t4»:* the «zero» of the sliding-gauge at « d » must be in line with the fixed mark.
- *Longitudinal clearance « t5» :* on FENWICK body jig : position a 2 mm thick shim at each side at « e » on CELETTE body jig : the corresponding sliding-gauge must be in the «zero» position.
- *Rocking tolerance « t2» of lower support E :*
Slacken fully the two screws at (5).
Position a 2.7 mm thick shim at «j2» under one of the screws (5) and tighten the other in such a way to take up the remaining rocking clearance.
Withdraw the 2 mm thick shim and tighten this screw to take up the remaining rocking clearance of support E.
Tighten the two screws (4).

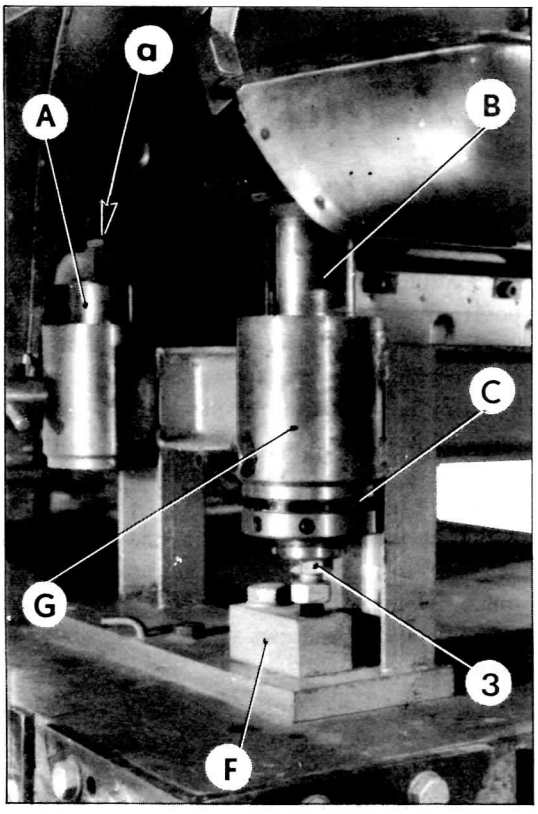
3. Straighten the body :

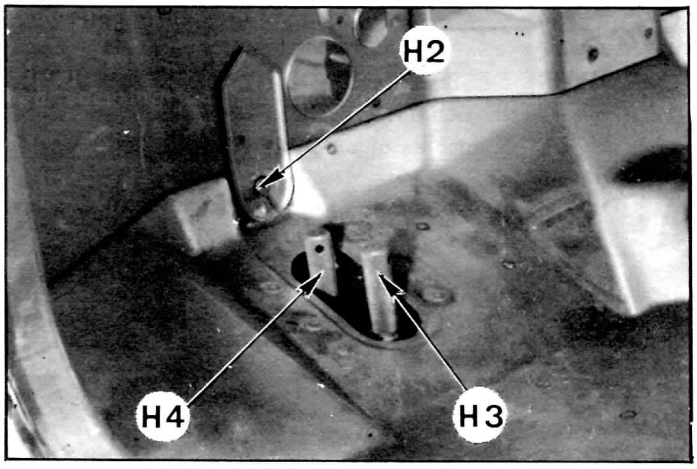
Straighten it using jacks until you can insert *in order* rods H4, H3 and H2, corresponding to the bracket which is still in position
NOTE : The rods must be able to be inserted *by hand.*

4. Fix the bracket which has been removed.
Follow the instructions in paragraph 3 above.

5. Fit the support D for the extensions.
Check the extensions using rods H1.
Proceed as indicated in § 2d for the first case.







THIRD CASE : Body damaged at the rear :

1. **Position the front assembly at the « nominal distance » :**
   Proceed as indicated in § 2 b of the second case.

2. **Hold the body on the lower support of the front assembly with rods.**

On each side position rods H4 H3 and H2 in that order.
NOTE : These rods must be able to be inserted *by hand.*
Check the extensions using rods H1, proceeding as indicated in § 2 d for the first case.
Withdraw the rods after the check.

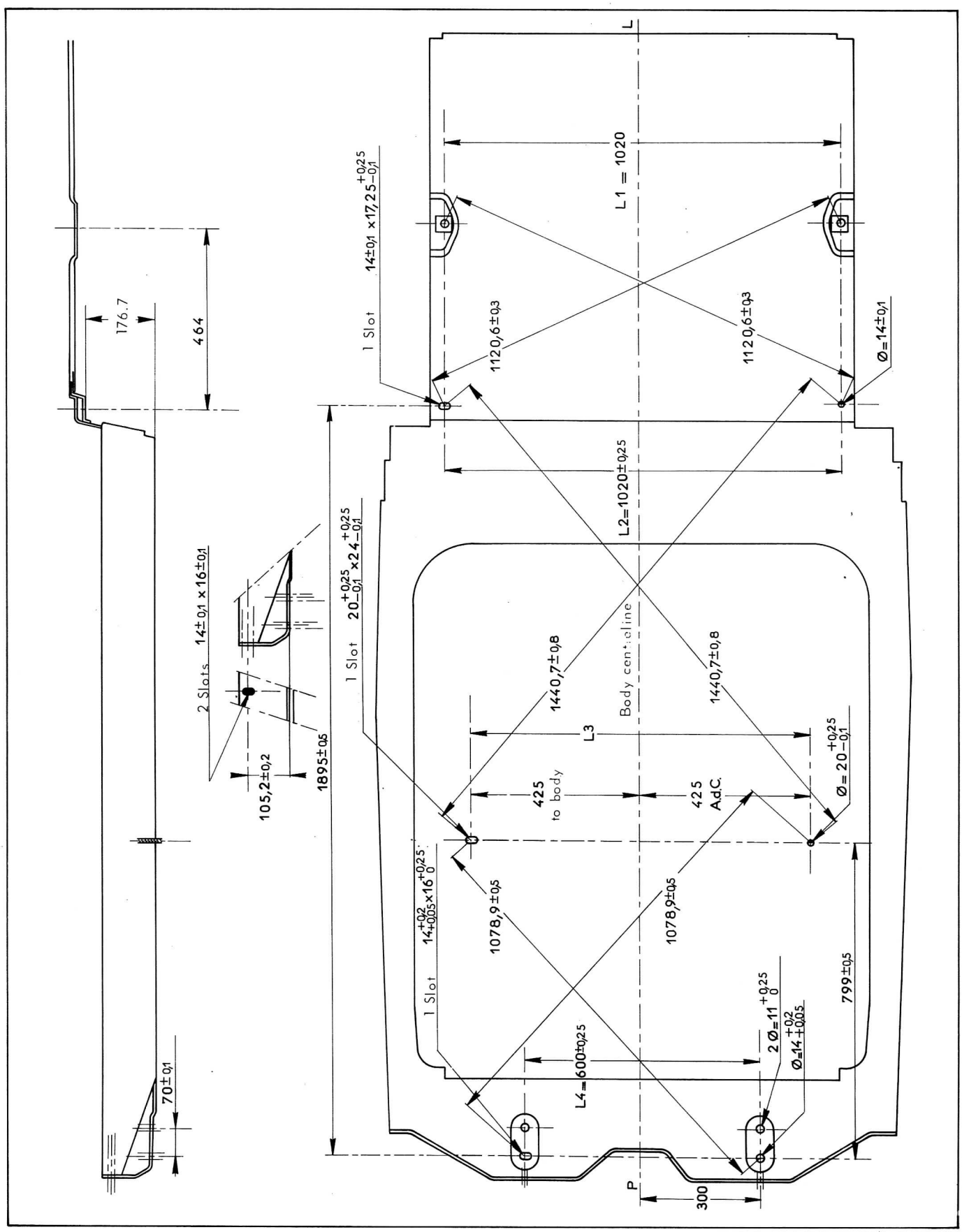
3. **Free the rear securing points :**
   Pivot shims F, and lower pistons B as far as possible.

4. **Straighten the body :**
   Straighten it using body jacks until you can check the rear securing points as indicated in § 1 on the first case.

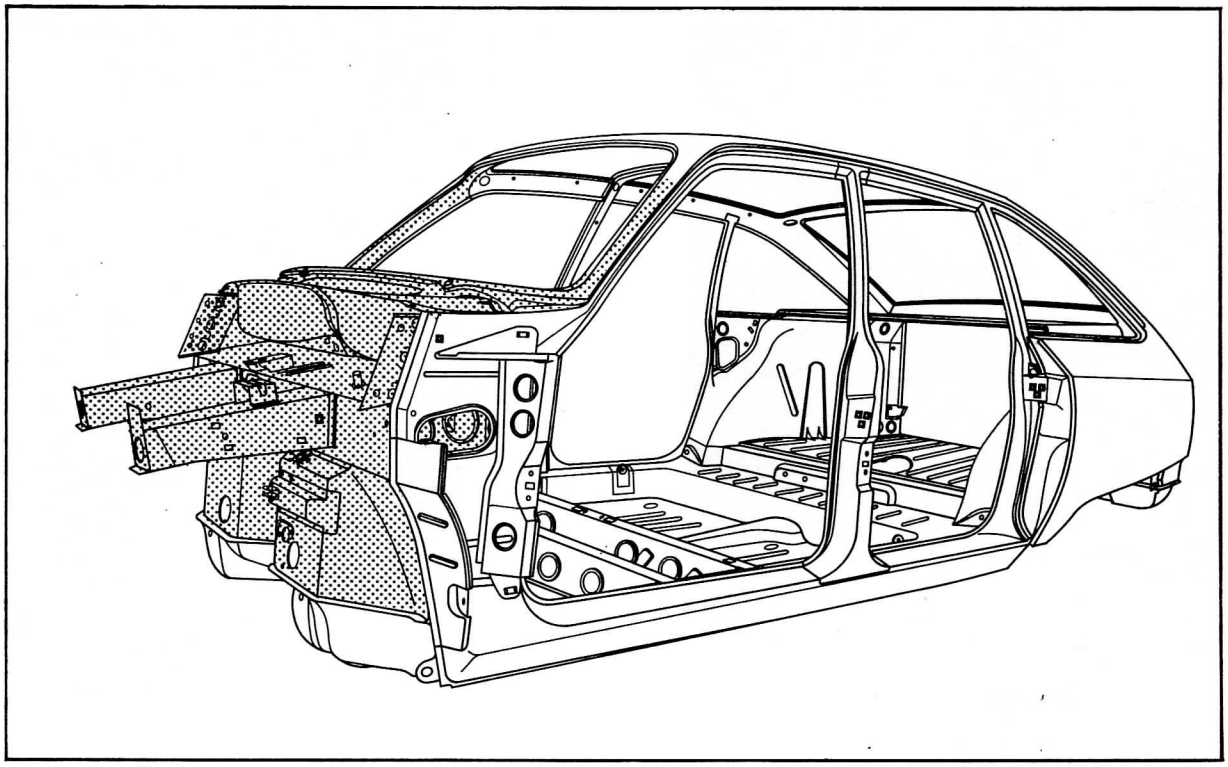
V - CHECKING THE DIMENSIONS OF A BODY

The basic diagram below is only a guide.

In no circumstances can it be used as a reference when re-assembling a body.



REPLACING A SCUTTLE UNIT WITH WINDSCREEN OPENING



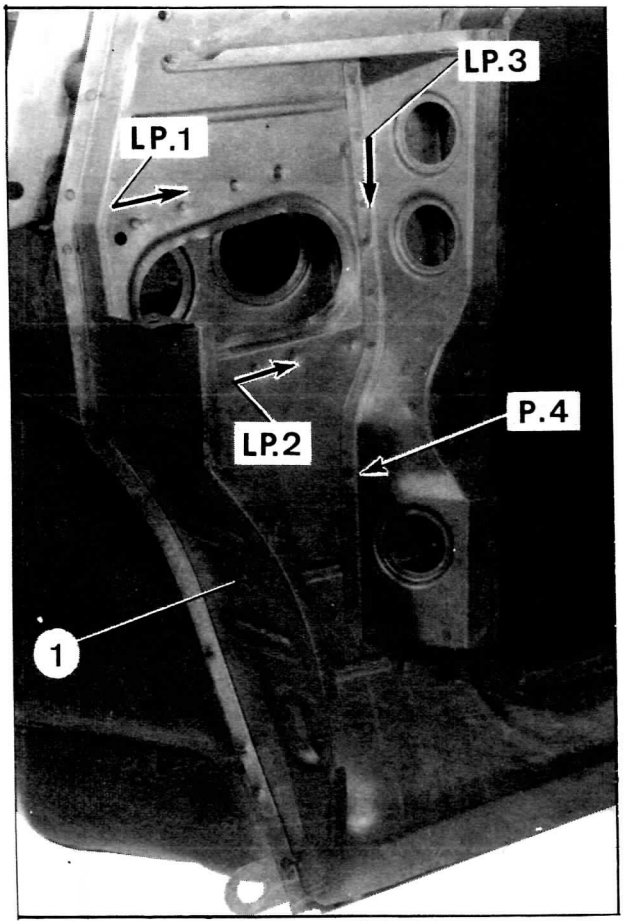
This operation requires the body shell to be checked on a jig :

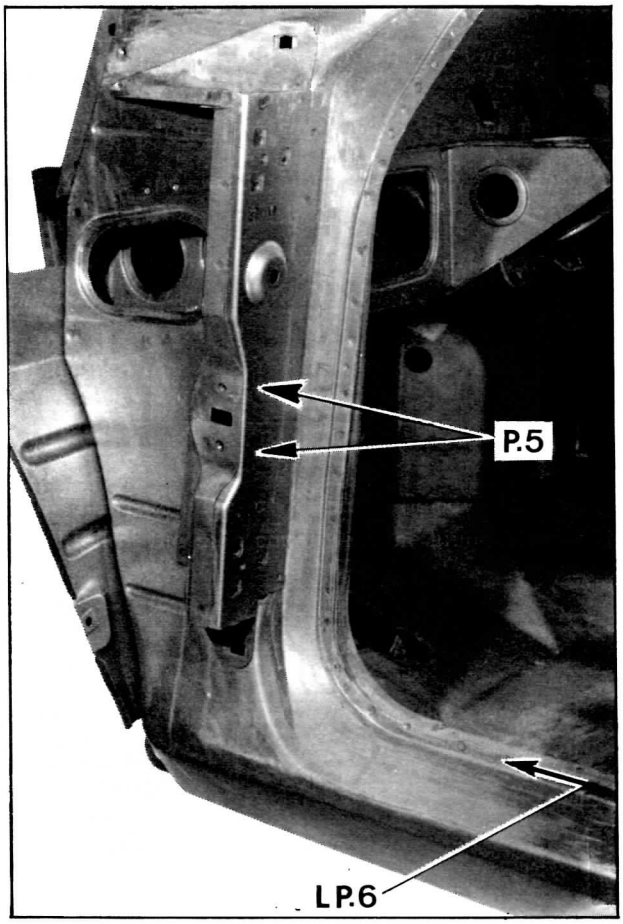
Special tools necessary : - 2600-T universal jig
- 2628-T « G » equipment for tool 2600-T

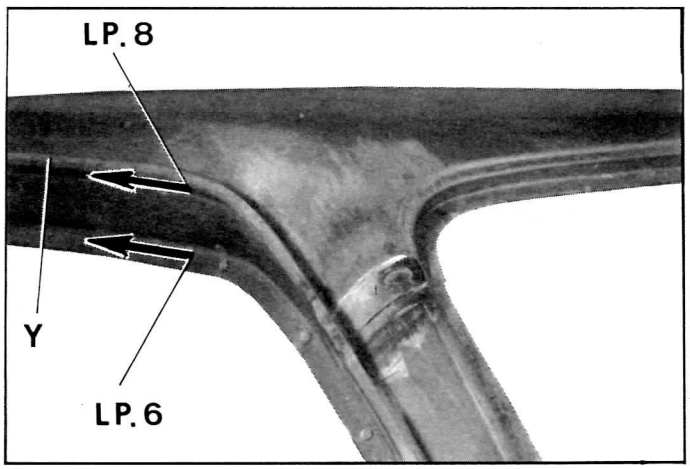
To carry out this operation, the following items must first be removed :

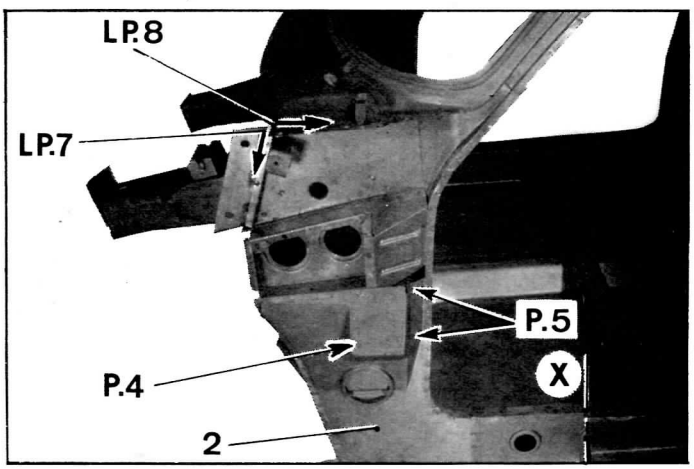
- the front trim, the grille, the front wings, the wheelarches (⟶ *Jan. 1975*) the trim support panel,
- the lower valance,
- the front axle unit, with the engine and gearbox,
- the rear axle unit, with the fuel tank,
- the windscreen,
- the dashboard,
- the centre console,
- the front seats and the rear bench seat,
- the windscreen-wiper motor and control system,
- the front and rear doors,
- the roof trim (remove it only as far as the centre pillar),
- the water-proofing and sound-proofing trim of the scuttle unit, the front door apertures, and the front floor,
- the front wiring harness,
- the scuttle unit hydraulic fluid pipes.

Supplement N° 1 to Manual 810-2 (ADD)









REMOVAL

1. Remove the solder at the point between the roof and the windscreen opening panel.

2. **Remove the protective panel (1)** *(on each side).*

3. **Remove the two front sections of the side panels :**

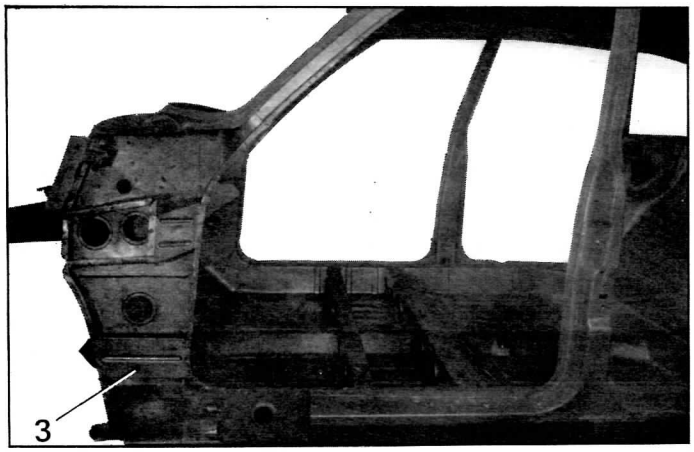
   Break the spot-welds along the following lines :
   - LP. 1, LP. 2, and LP.3

   Do not omit spot P.4 and the two spots P.5 (see under panel (2) for their location).

   - LP. 6 (from X to Y)
   - LP. 7 (up to X)
   - LP. 8 (up to Y)

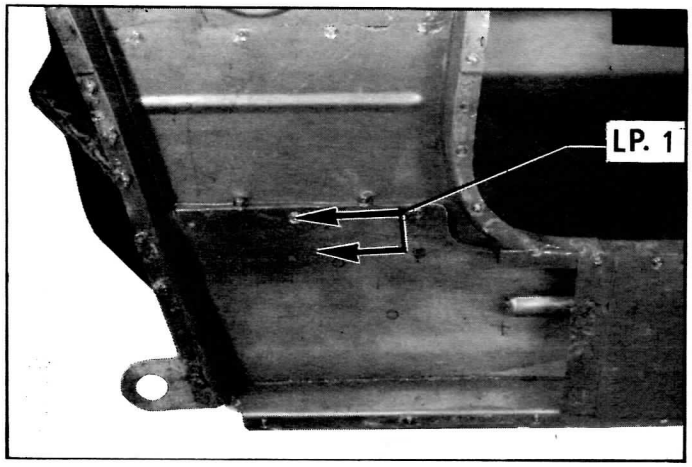
   Saw the side panel at X and Y. Remove the front section of the side panel with the hinge support pillar.

4. **Remove the inner panel (2) from the side panel** *(on each side).*



5. **Remove the gusset plate (3)** *(on each side).*

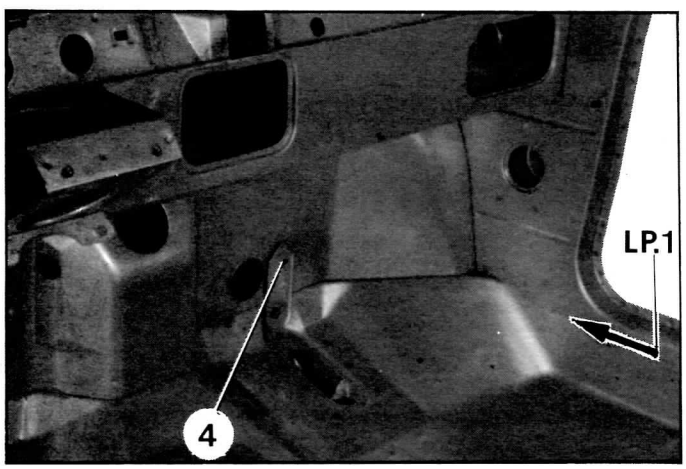
6. **Remove the two fixing brackets (4).**

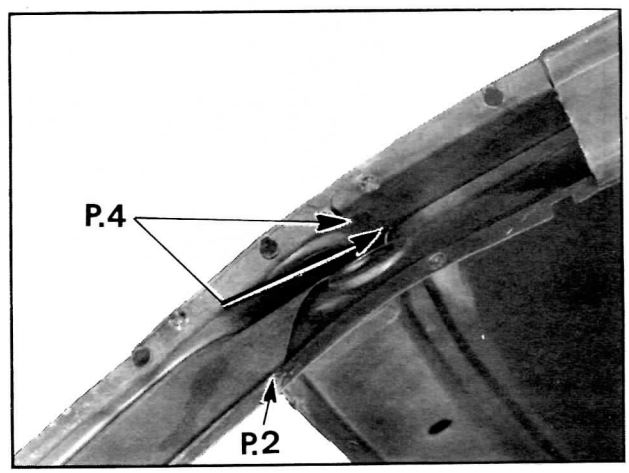


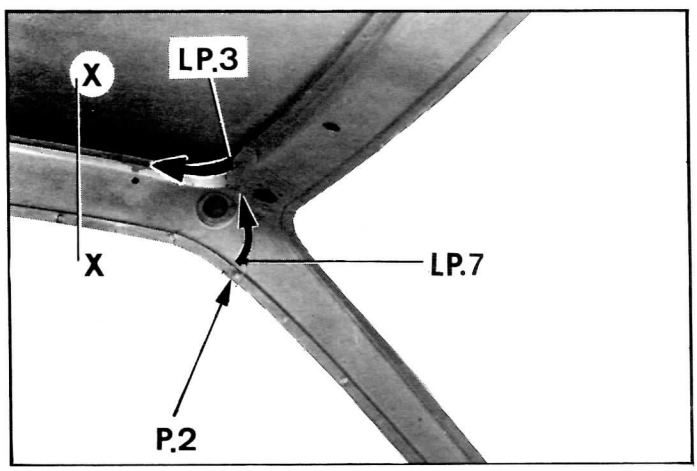
7. **Remove the scuttle unit :**

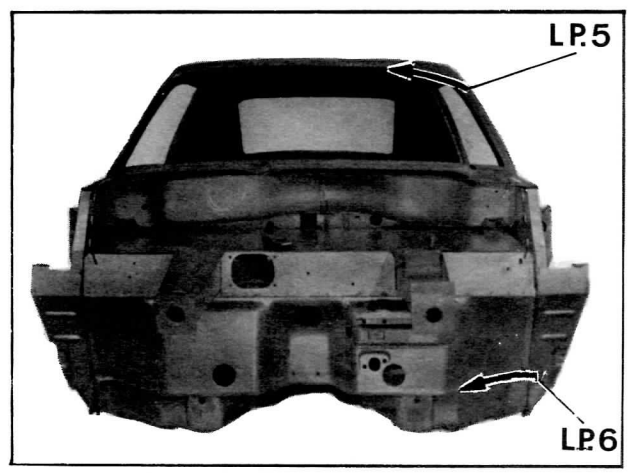
Break the spot-welds along the following lines :

- LP. 1 (2 lines),
- P.2 (one spot)
- LP.3 (up to XX)
- P.4 (2 spots)
- LP. 5
- LP. 6
- LP. 7

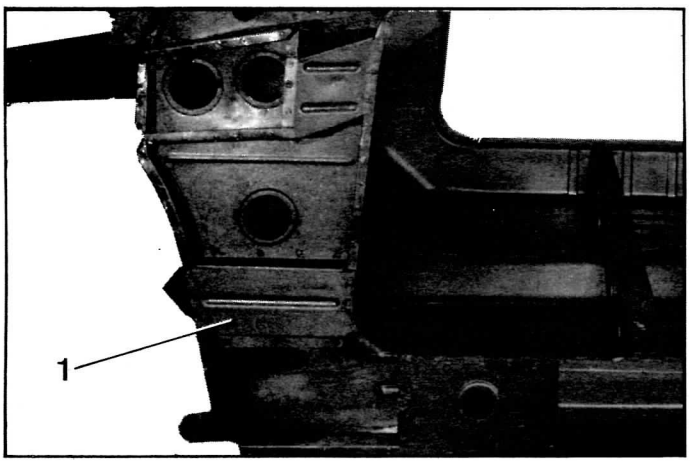


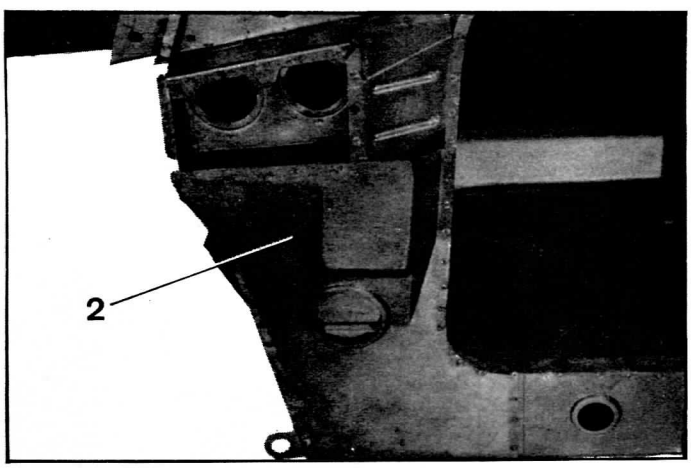






Supplement N° 1 to Manual 810-2 (ADD)





FITTING

8. Prepare the previously separated welding seams.
Reshape the panels if necessary.
Clean the areas to be welded on the new components.

9. Position the scuttle unit on the body shell, and hold it in position using panel clamps.

10. Fit by spot-welding and oxy-acetylene plug welding.

11. Fit the gusset plate (1) and the inner panel (2) of the side panel by spot-welding and oxy-acetylene welding.

12. Position the side panel and hold it in position using panel clamps.

Fit by oxy-acetylene plug welding.

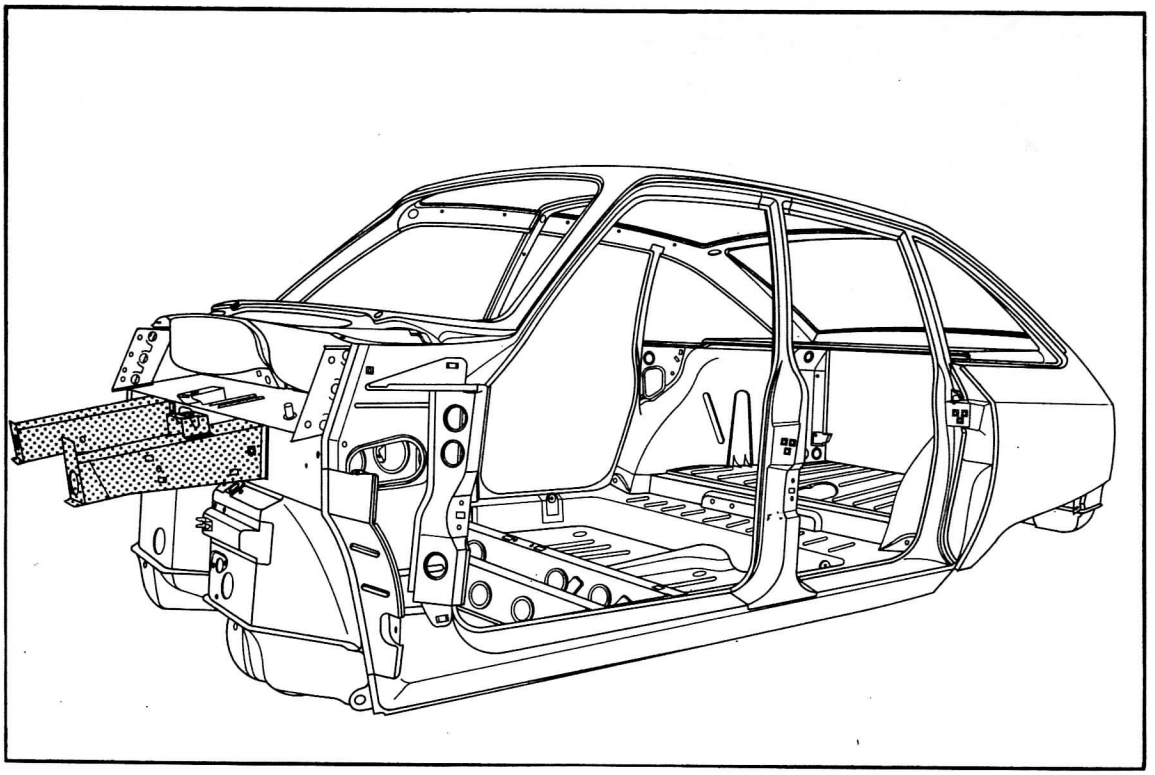
Butt-weld the edges of the side panel.

13. Solder the joints between the roof and the windscreen opening panel.

14. Solder-fill, or stop up all panel joints.

15. **Apply water sealant to panel joints.**

REPLACING THE FRONT SUBFRAME FIXING ARMS ALONE



This operation requires the body shell to be checked on a jig

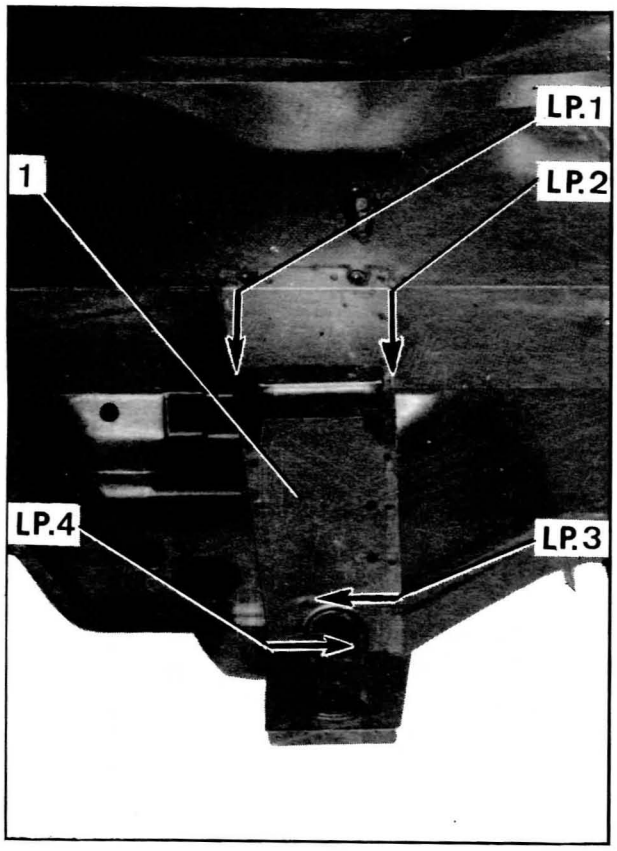
Special tools used : - 2600-T Universal jig
- 2628-T « G » equipment for 2600-T

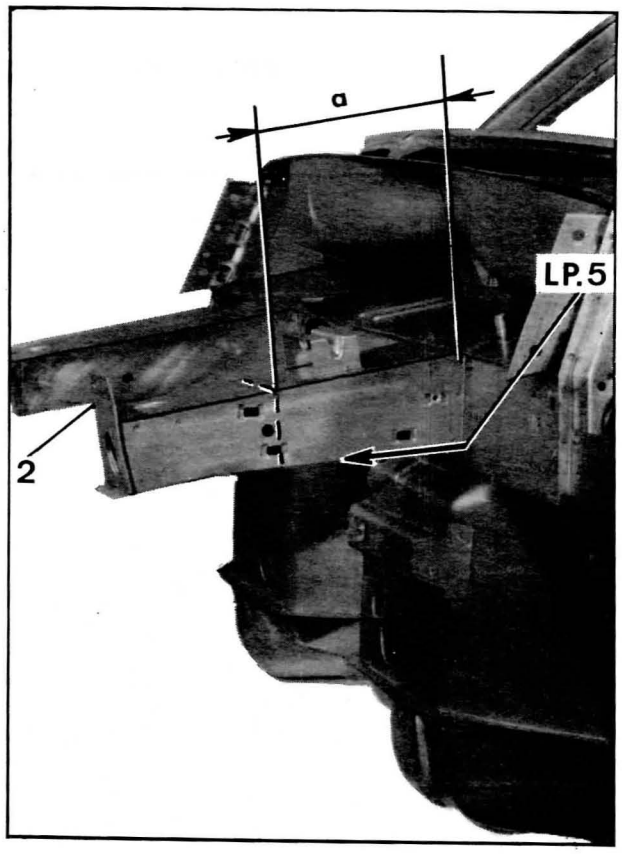
Necessary tools :
- a drill,
- a spot-weld cutter 2662-T or « PICKAVANT »
- a chisel for breaking spot-welds
- a sanding machine, and abrasive discs
- « SAFERPOINT » welding equipment
- a spot-welding head.

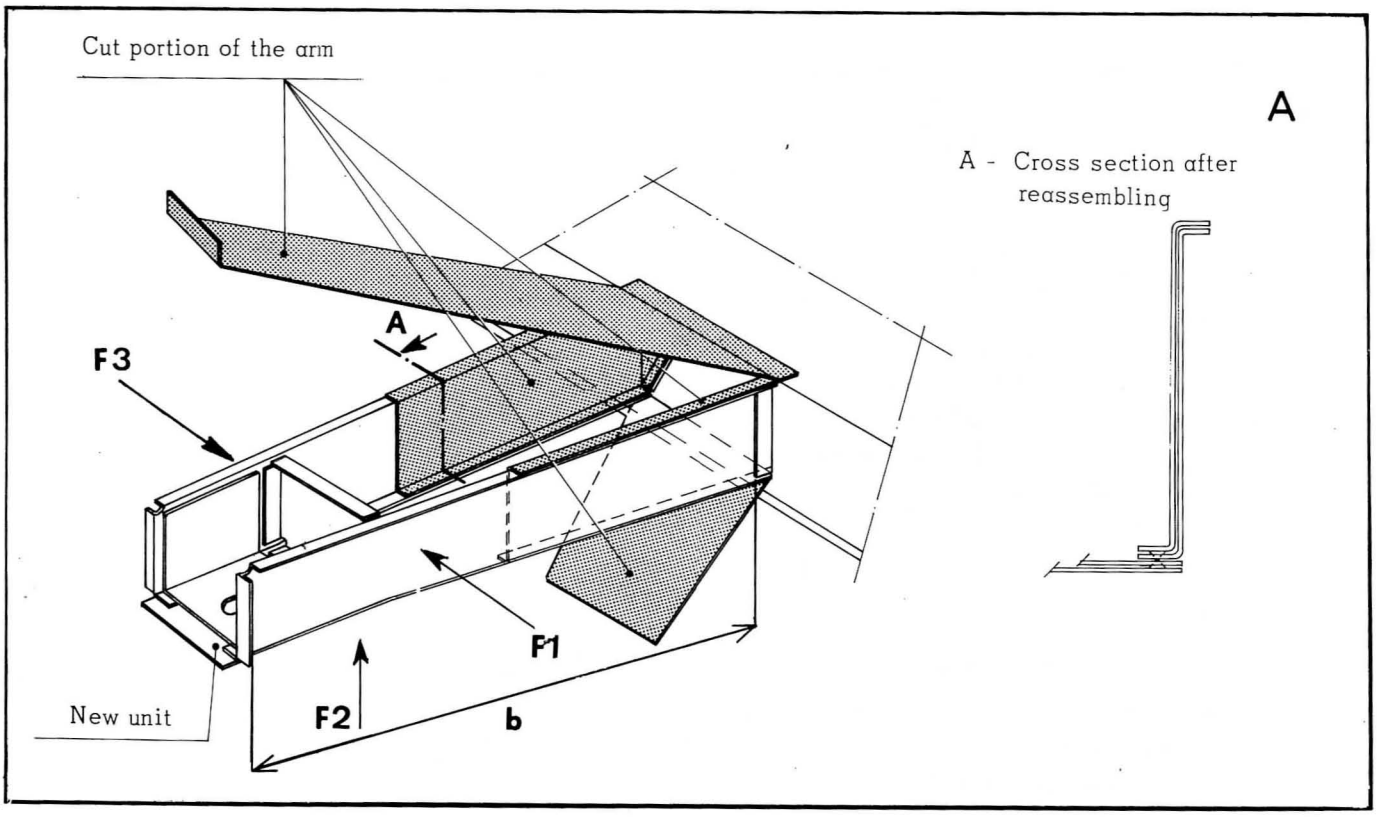
To carry out this operation, the following items must first be removed :

- the front trim, the bonnet, the grille, the trim support panel,
- the lower valance, the wings and the wheelarches ⟶ *Jan. 1975*
- the front axle unit, with engine and gearbox,
- the rear axle unit with fuel tank,
- the front doors and their trim,
- the front seats and the rear bench seat.

Supplement N° 1 to Manual 810-2 (ADD)


LP.1
LP.2
1
LP.4
LP.3


a
LP.5
2


Cut portion of the arm
A
A - Cross section after reassembling
A
F3
F1
F2
b
New unit

REMOVAL

1. Break the spot-welds along the following lines :
   - LP.1
   - LP.2
   - LP.3
   - LP.4

   Slightly bend back the upper closing panel (1) of the front subframe fixing arm.

2. Cutting the arm.
   Cut the arm, using a hacksaw, at a distance
   $a = 160$ *mm*
   from the front panel of the scuttle crossmember.

3. On each side of the arm, break the spot-welds along line LP. 5.
   Slightly bend back the lower closing panel of the arm.

PREPARATION

4. Prepare the previously separated welding seams.

   Reshape the panels if necessary.

   Clean the areas to be welded on the new components.

5. Cut the new arm at a distance
   $b = 330$ *mm*
   from its flanged front end.

NOTE : *Make sure that the new front subframe fixing arm is provided with all its cage nuts.*

FITTING

6. Position the new arm.
   Engage inside it the side panels of the old arm which were left in position.
   Position the arm by inserting the pins on the jig.

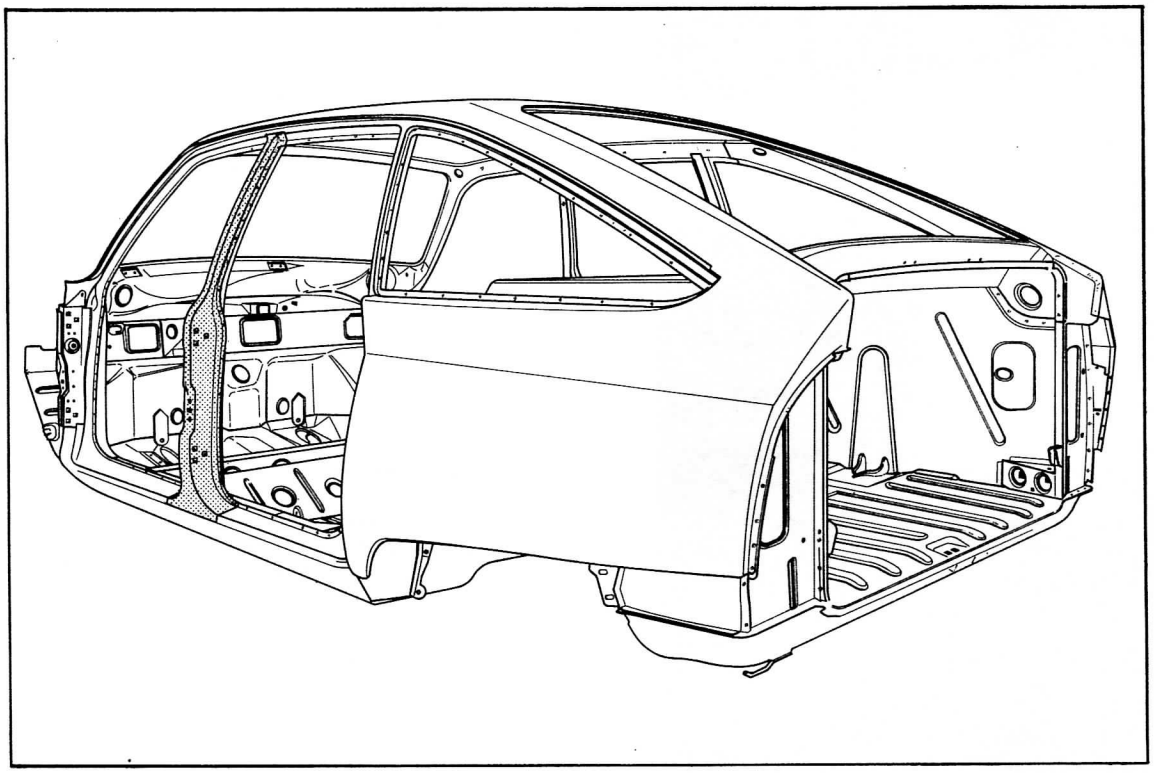
7. Assemble faces F1, F2 and F3 by spot-welding.
   Weld each of the faces with two lines of spot welds.

8. Reposition the upper and lower closing panels, and assemble them by spot-welding along the following lines :
   - LP. 5 (each side of the arm)
   - LP. 1
   - LP. 2
   - LP. 3

9. Position the front closing panel (2) and fit it by spot-welding at the extremity of the arm.

Supplement N° 1 to Manual 810-2 (ADD)

REPLACING A CENTRE PILLAR WITH ITS UPPER REINFORCEMENT PANEL



This operation does require the body shell to be checked on a jig :

Necessary tools :

- Drill
- Spot-weld cutter 2662-T or « PICKAVANT »
- Chisel for breaking spot-welds
- « SAFERPOINT » welding equipment
- Spot-welding head

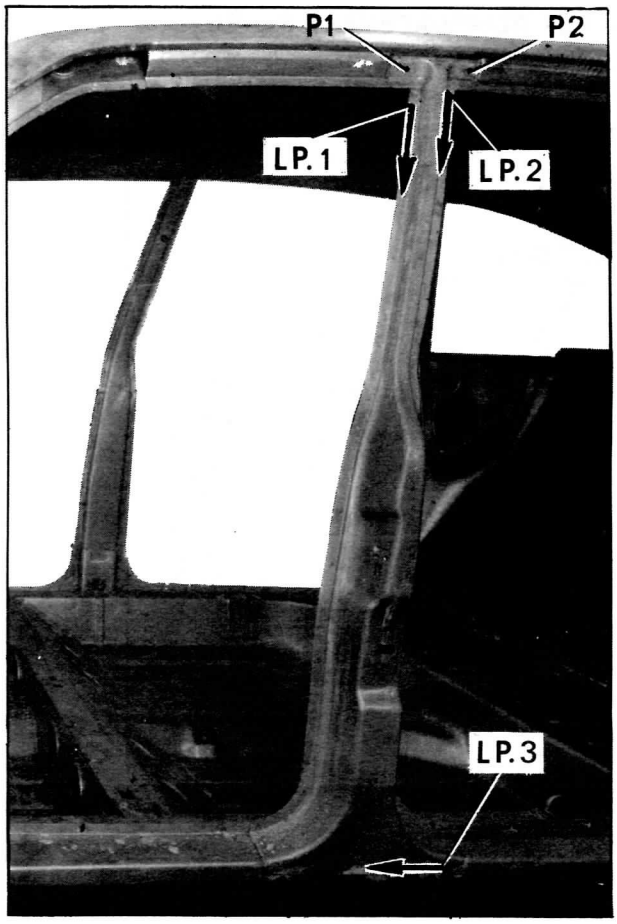
To carry out this operation the following items must first be removed :

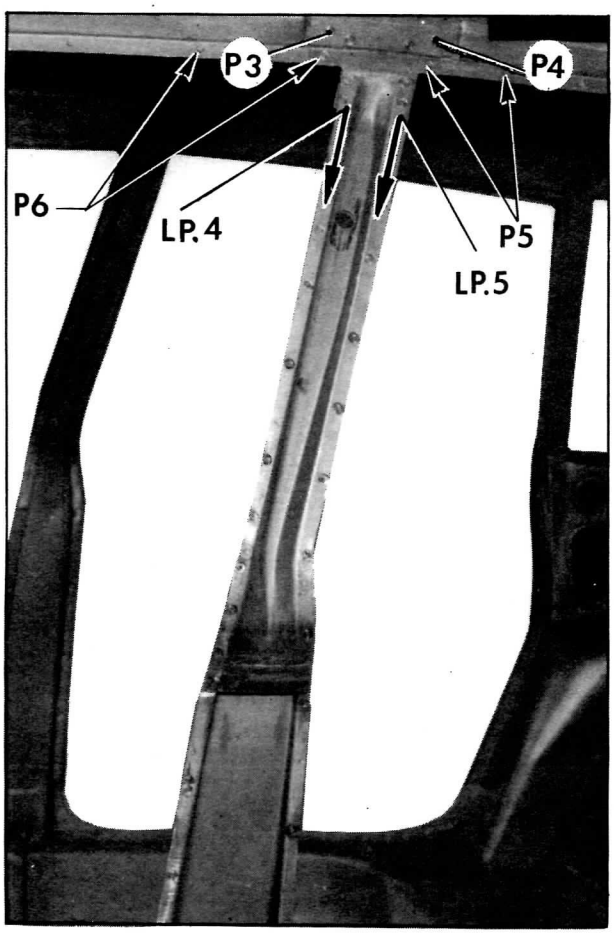
- the front door,
- the seat belt mounting point on the centre pillar
- the interior trim of the centre pillar
- the waterproofing trim of the front and rear door
- the rear door,
- the front door striking plate

(on the relevant side of the vehicle)

- the floor trim and the roof trim
- the front seat and the rear bench-seat.

Supplement N° 1 to Manual 810-2 (ADD)





REMOVAL

1. Break the spot-welds along the following lines :
   - LP. 1
   - LP. 2
   - LP. 3

   and the spot-welds at
   - P. 1 and P. 2 (two panels)

   Remove the centre pillar.

2. Remove the upper reinforcement panel for the centre pillar : Break the spot-welds along the following lines :
   - LP. 4
   - LP. 5

   and the spot-welds at
   - P. 3 and P. 4

   Remove the upper reinforcement panel for the centre pillar.

PREPARATION

3. Break spot-welds P. 5 and P. 6 *(2 • 3 spots)*
   Insert in between the side panel and the inner panel, a panel to protect the wiring harness.
   Straighten, if necessary, the side panel acting as an inner panel for the centre pillar.

4. Prepare the previously separated welding seams.
   Clean the areas to be welded on the new component

FITTING

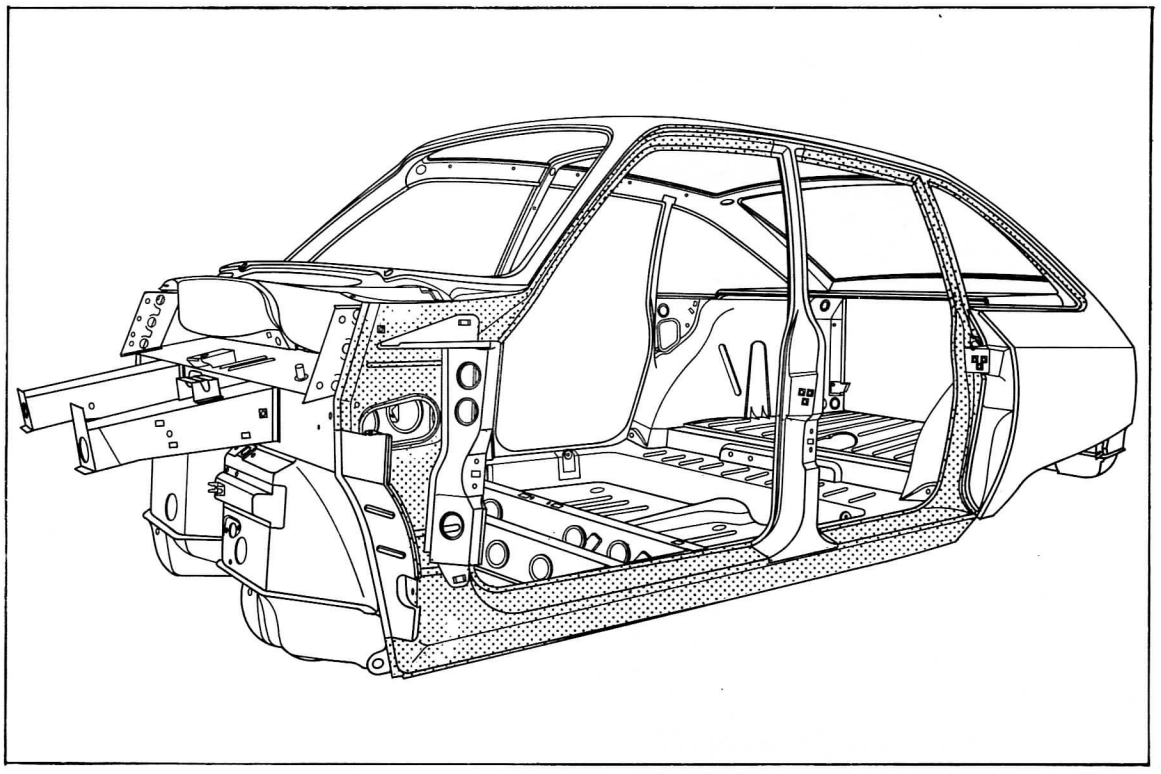
5. Position the centre panel and its reinforcement panel, and hold them in position using panel clamps.

6. Assemble the centre pillar and its reinforcement panel by spot-welding along the following lines :
   - LP. 1
   - LP. 2

7. Assemble the centre pillar, the roof cantrail and the lower section of the side panel by plug welding :
   along LP. 3
   and at P.1 and P.2

8. Apply water-sealant to the upper and lower edges to ensure they are waterproof.

I. REPLACING A BARE SIDE PANEL



This operation requires the body shell to be checked on a jig :

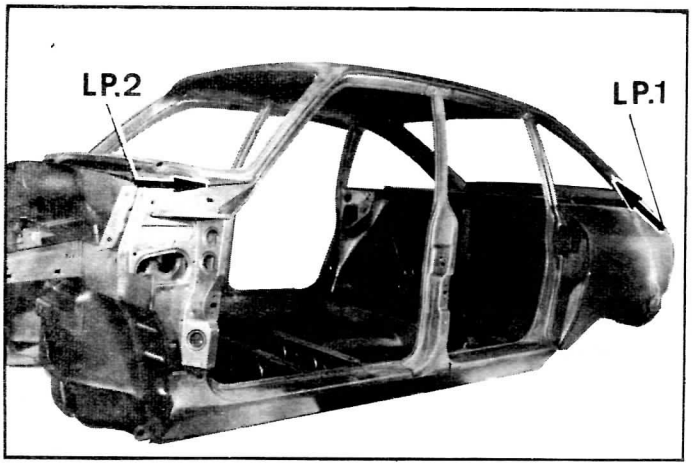
Special tools used : - 2600-T : » FENWICK » Universal jig
- 2628-T : « G » equipment for 2600-T

Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Sanding machine and abrasive discs
- « SAFERPOINT » welder
- Spot-welding head

To carry out this operation, the following items must first be removed :
- the front and rear subframes with engine and fuel tank,
- the bonnet, the scuttle panel,
- the doors *(on the relevant side)*.
- the front seats,
- the rear bench-seat,
- the boot lid,
- the windscreen, rear window, quarter glass and their sealing section,
- the centre pillar trim and the windscreen pillar trim,
- the rear lamp cluster *(on the relevant side)*.
- the front wing *(on the relevant side)*,
- the wheelarch *(on the relevant side)*
- the wiring harness *(if the left hand side panel is being replaced)*.

Partially withdraw the following :
- the dashboard,
- the carpeting on the floor, the boot, and the parcel shelf, and the roof trim.

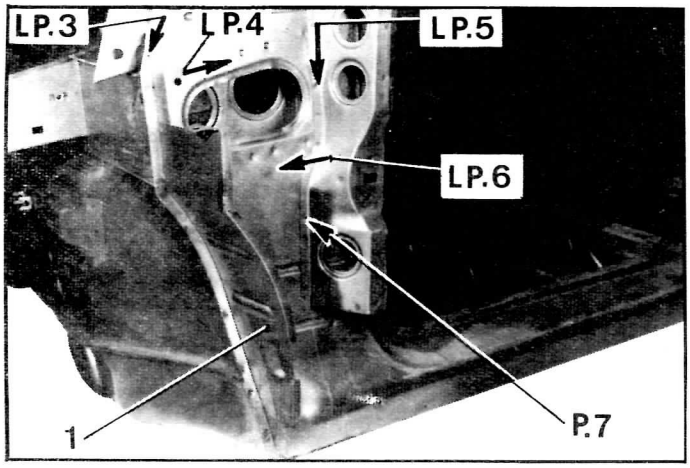
Supplement N° 1 to Manual 810-2 (ADD)

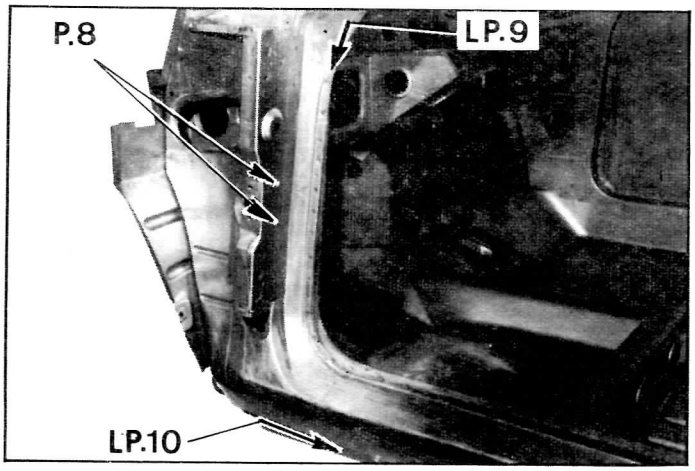


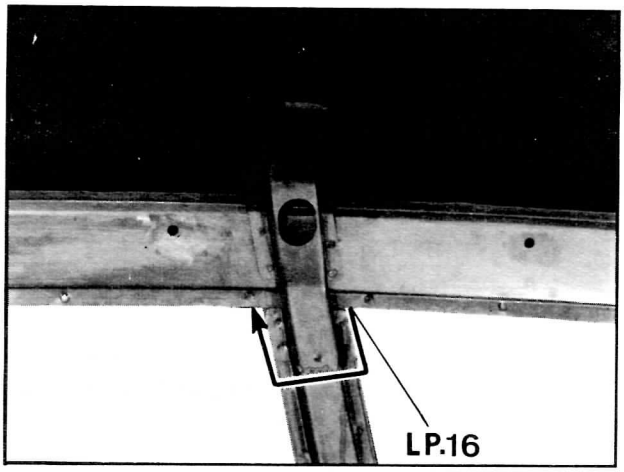
REMOVAL

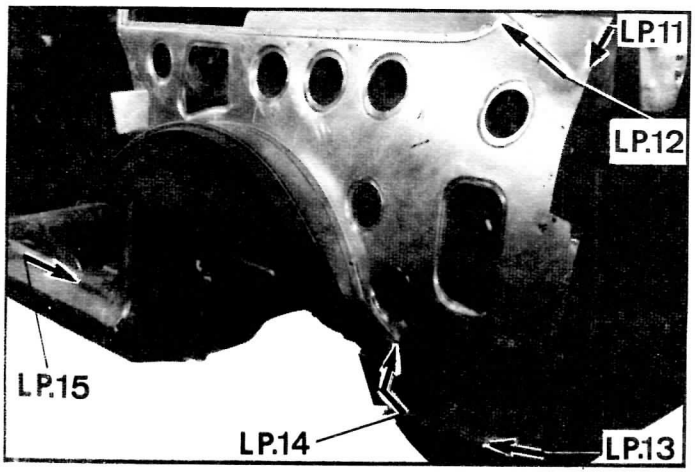
1. **Remove the rear wing.**

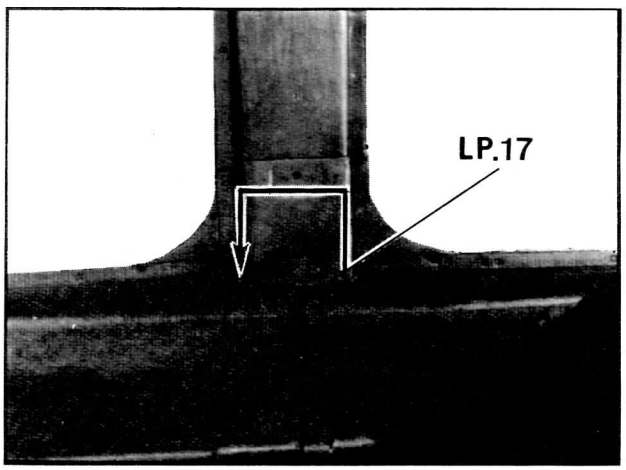
2. Break the spot-welds along the following lines :
   - LP. 1 (Roof and side panel joint)
   - LP. 2 (Scuttle unit and side panel joint)
   - LP. 3 (having first removed the protective panel (1))
   - LP. 4
   - LP. 5
   - LP. 6
   - P. 7 (one spot only)
   - P. 8 (two spots)
   - LP. 9 (the entire front door opening except the centre pillar)
   - LP. 10 (sidemember and side panel joint)
   - LP. 11
   - LP. 12 (the entire quarter glass opening)
   - LP. 13
   - LP. 14
   - LP. 15 (the entire opening, except the centre pillar)
   - LP. 16
   - LP. 17

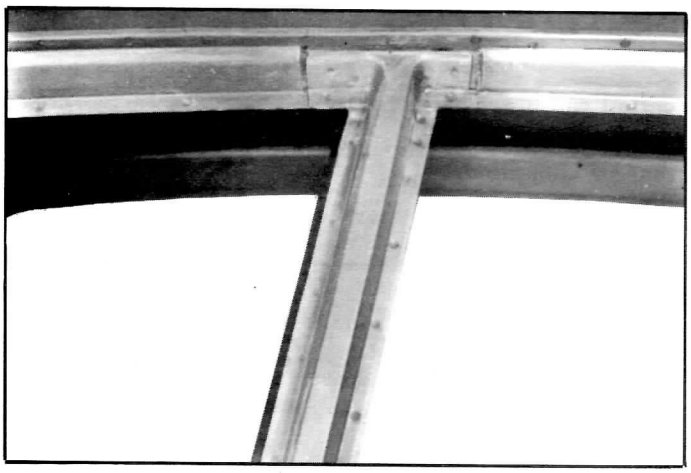












FITTING

3. Prepare the previously separated welding seams.
Reshape the panels if necessary.
Clean the areas to be welded on the new components.

4. **Fit the centre pillar :**
Position the centre pillar and its upper seat-belt anchorage reinforcement panel, on the new side panel

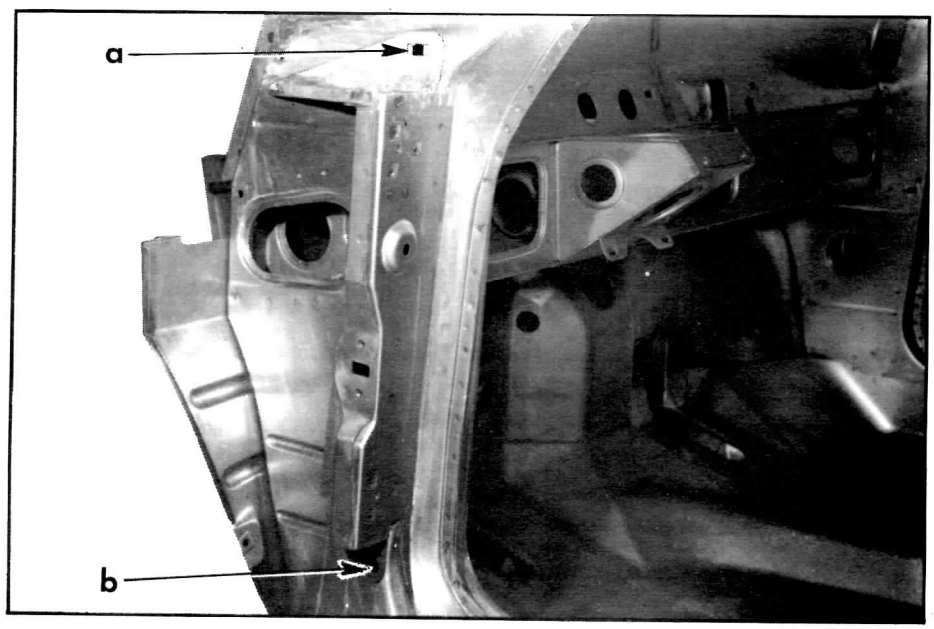
5. **Fit the front door hinge support pillar :**
Place it against the door opening (see photograph) and locate it in relation to slots « a » and « b ».
Spot-weld in position.

6. **Fit the side panel :**
Position the side panel on the body shell
Hold it in position using panel clamps.
Spot-weld, along the previously welded lines.

7. Using oxy-acetylene plug welding, assemble the upper and lower gusset plates of the centre pillar.

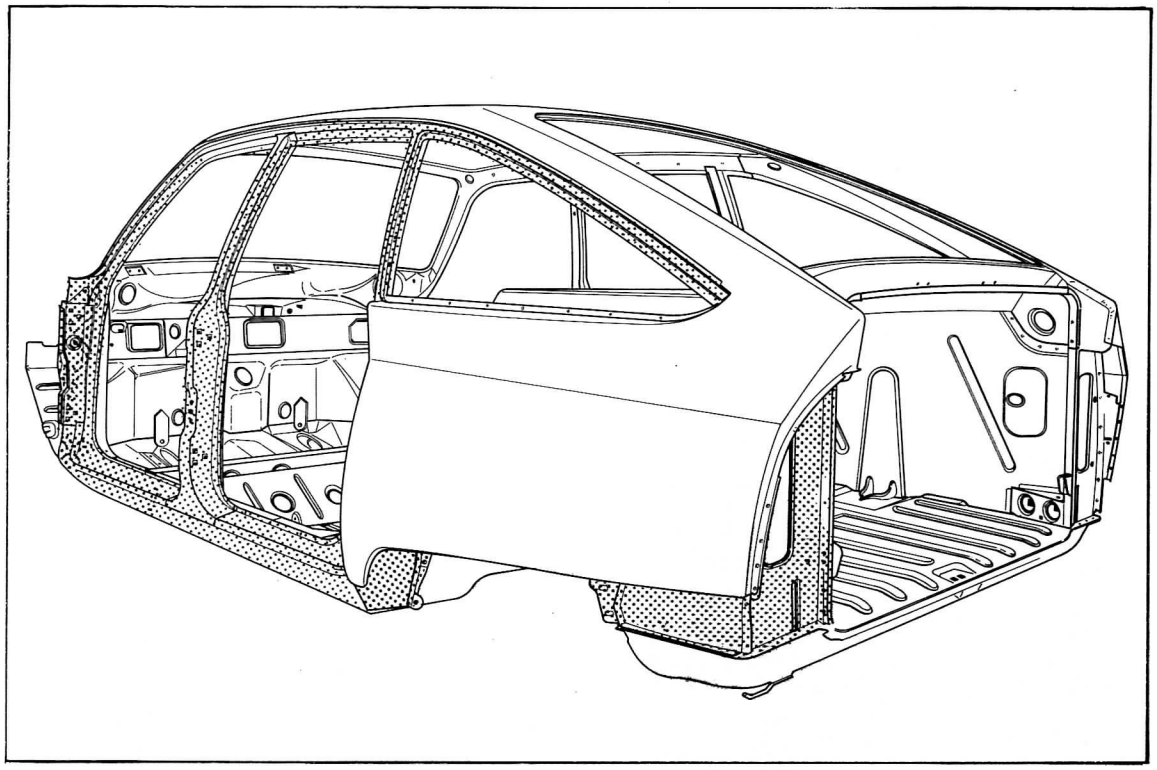
8. **Fit the rear wing**

9. Braze to ensure water-tightness.



II. REPLACING A PRE-ASSEMBLED SIDE PANEL

(Side panel with roof cantrail and lower body shell inner panel, rear wheelarch centre pillar, front hinge support and rear striking plate support panel).



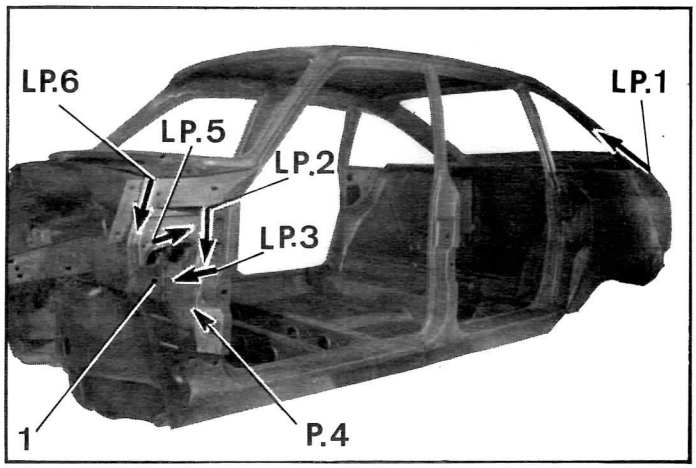
This operation requires the body shell to be checked on a jig :

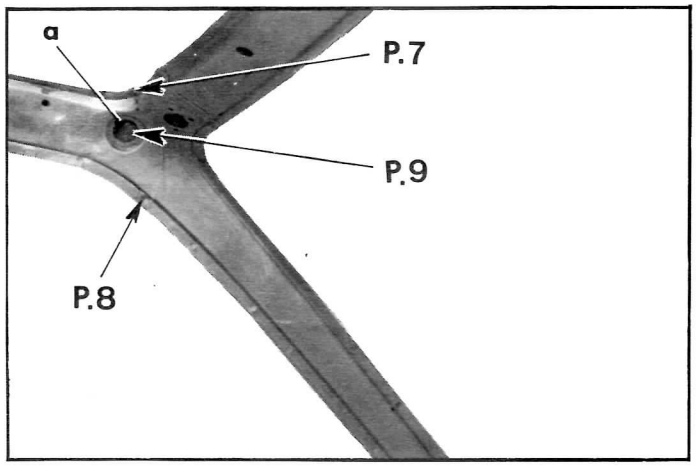
Special tools used : - 2600-T : Universal jig
- 2628-T : « G » equipment for 2600-T

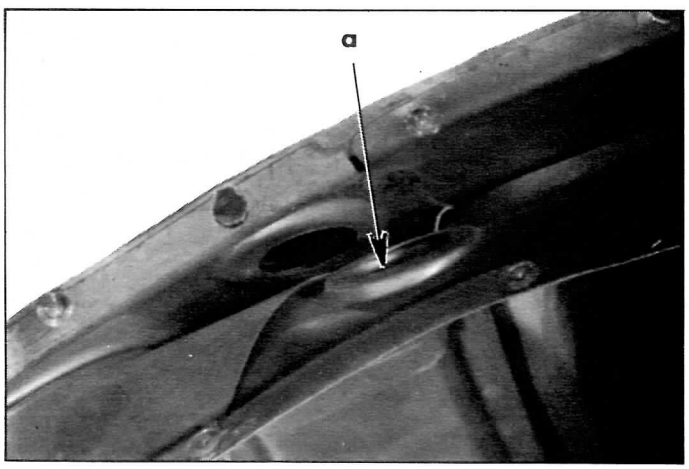
Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- « SAFERPOINT » welder
- Spot-welding head

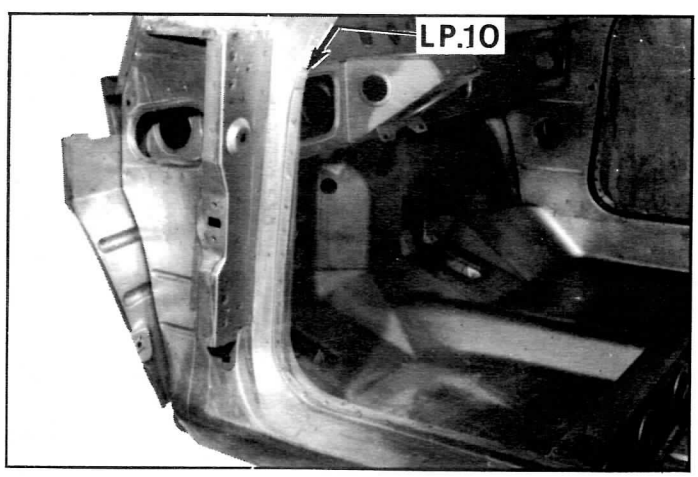
To carry out this operation, the following items must first be removed :
- the wiring harness *(if the left hand side panel is being replaced)*
- the doors *(on the relevant side)*
- the front seats
- the rear bench seat
- the boot lid
- the rear window, the windscreen, the quarter glass and their sealing section
- the rear lamp cluster *(on the relevant side)*
- the front wing and wheelarch *(on the relevant side)*
- the front trim, the bonnet and the scuttle panel
- the front subframe with engine and gearbox
- the rear subframe with fuel tank
- the dashboard

Partially withdraw :
- the carpeting on the floor, the boot and the parcel shelf, and the boot trim.









REMOVAL

1. Break the weld securing the protective plate.

2. Remove the solder at the roof and rear wing joint, and at the roof and windscreen surround joint.

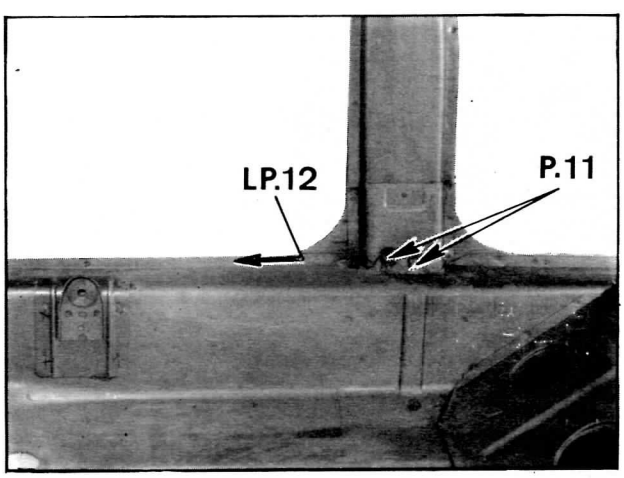
3. Break the spot-welds along the following lines :

On the outside :

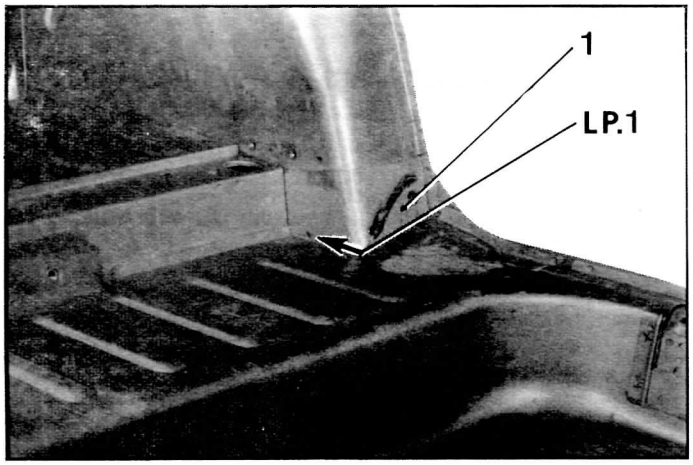
- LP. 1 (up to the scuttle)
- LP. 2
- LP. 3
- P. 4 (one spot only)
- LP. 5
LP. 6

On the inside :

- P. 7 (one spot) and P. 8 (one spot)
- P. 9 (one spot, level with slot « a »)
- LP. 10 (from P. 8 to the centre pillar)
- P. 11 (two spots)
- LP. 12 (up to the wheelarch)

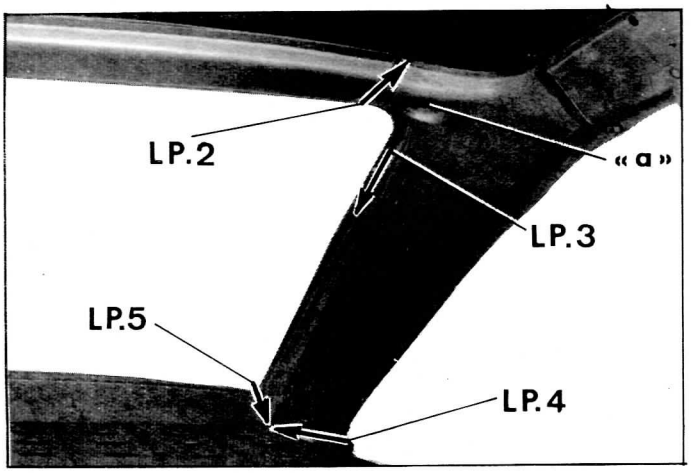


Supplement N° 1 to Manual 810-2 (ADD)

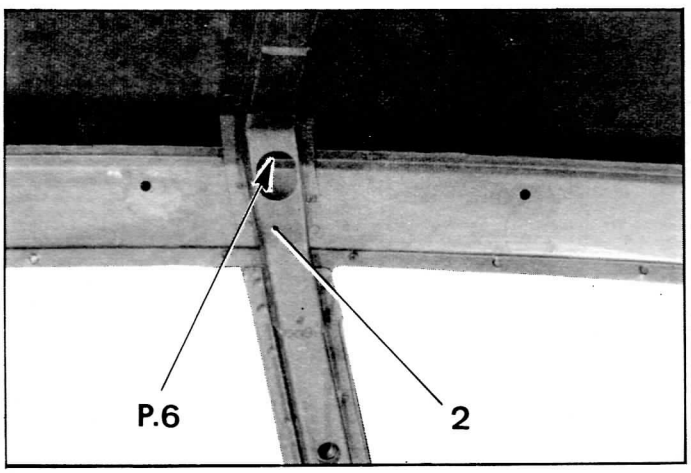


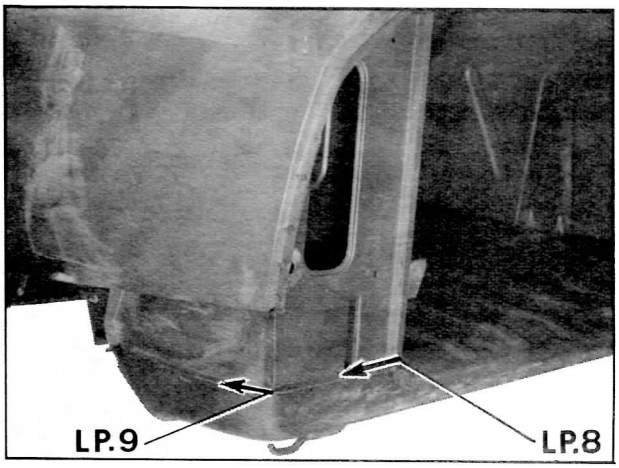
4. Cut out the gusset plate corner (1)

   Remove the upper gusset plate (2) from the centre pillar.



5. Break the spot-welds along the following lines :
   - LP. 1
   - LP. 2
   - LP. 3
   - LP. 4
   - LP. 5 (as well as the spot located in slot « a »)
   - P. 6 (one spot situated in the slot of gusset plate (2))
   - LP. 7
   - LP. 8 and LP. 9
   - LP. 10
   - LP. 11 (gusset plate and parcel shelf joint).





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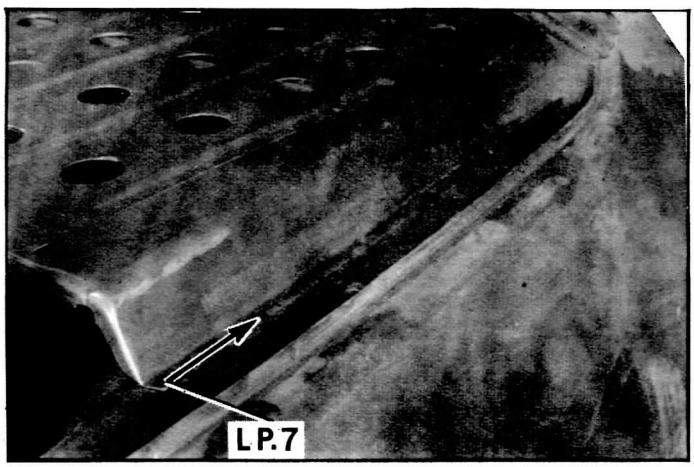
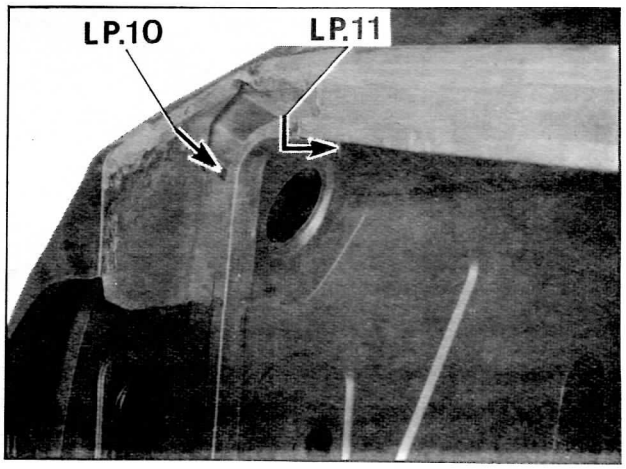
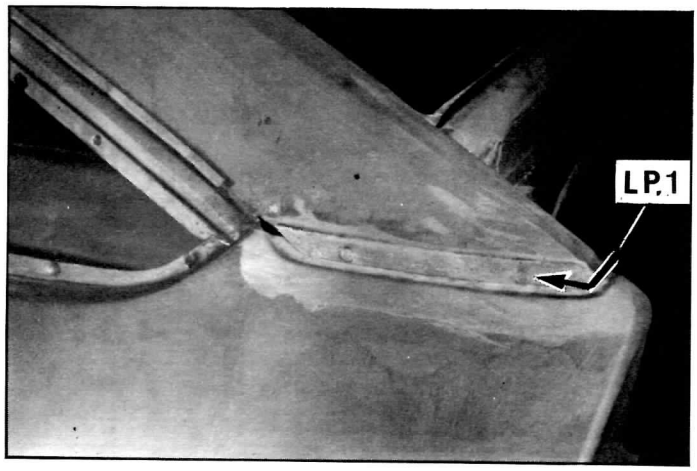
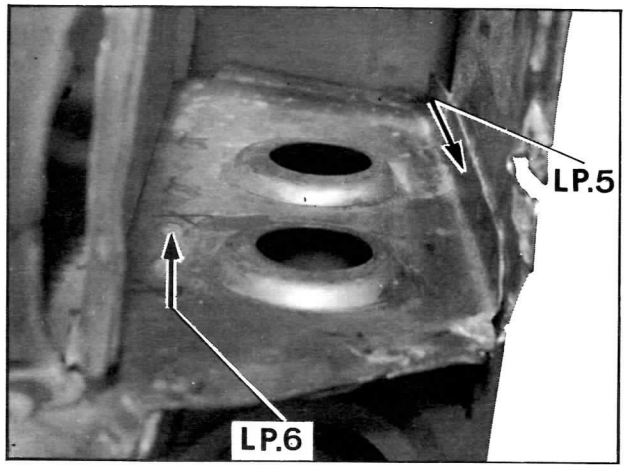
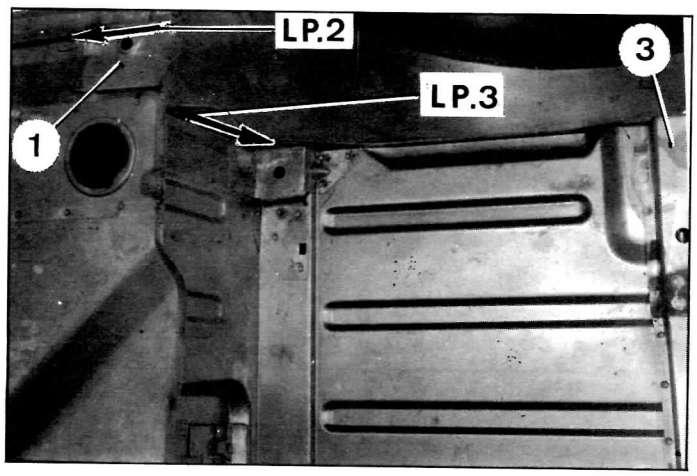


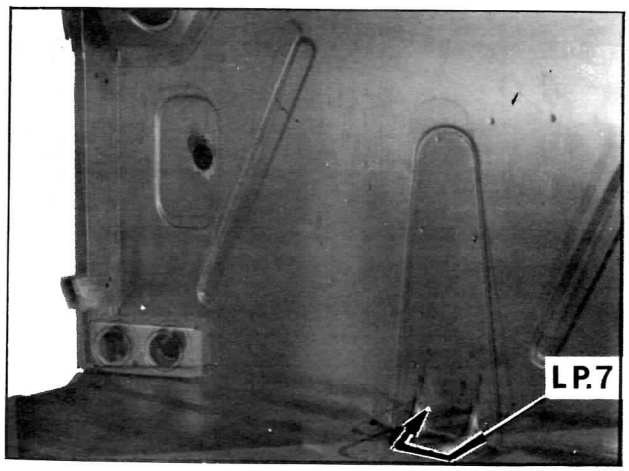


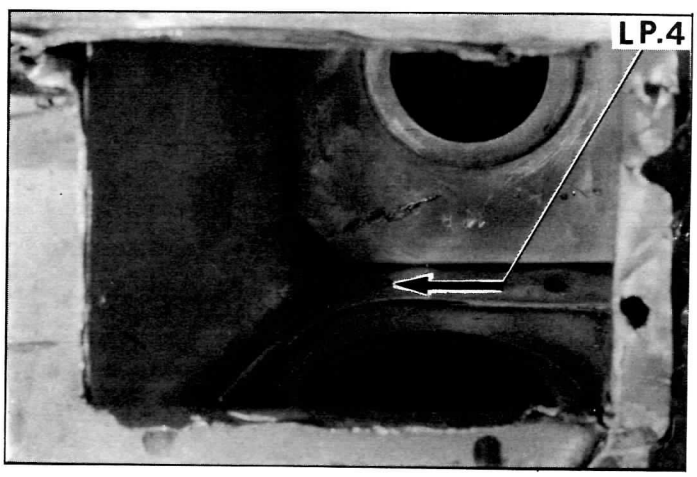
8212





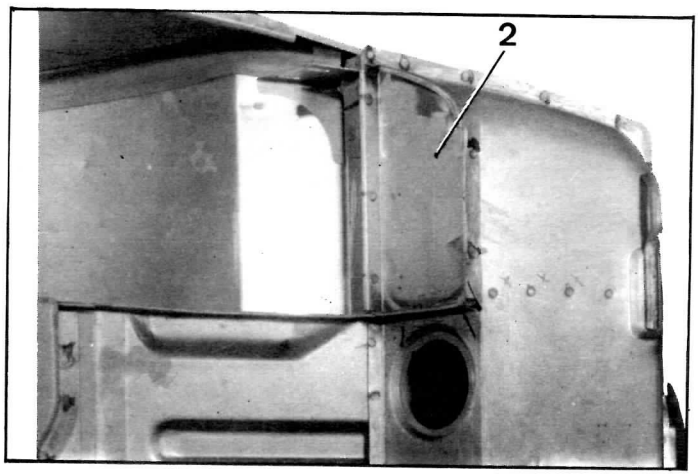






6. Remove the closing panels (1) and (2) and the crossmember end-piece (3).

7. Break the spot-welds along the following lines :
   - LP. 1
   - LP. 2 (side panel and sidemember joint)
   - LP. 3 (wheelarch and floor joint)
   - LP. 4 (behind panel (1))
   - LP. 5 and LP. 6 (behind panel (2))
   - LP. 7 (reinforcement plate and floor joint).



FITTING

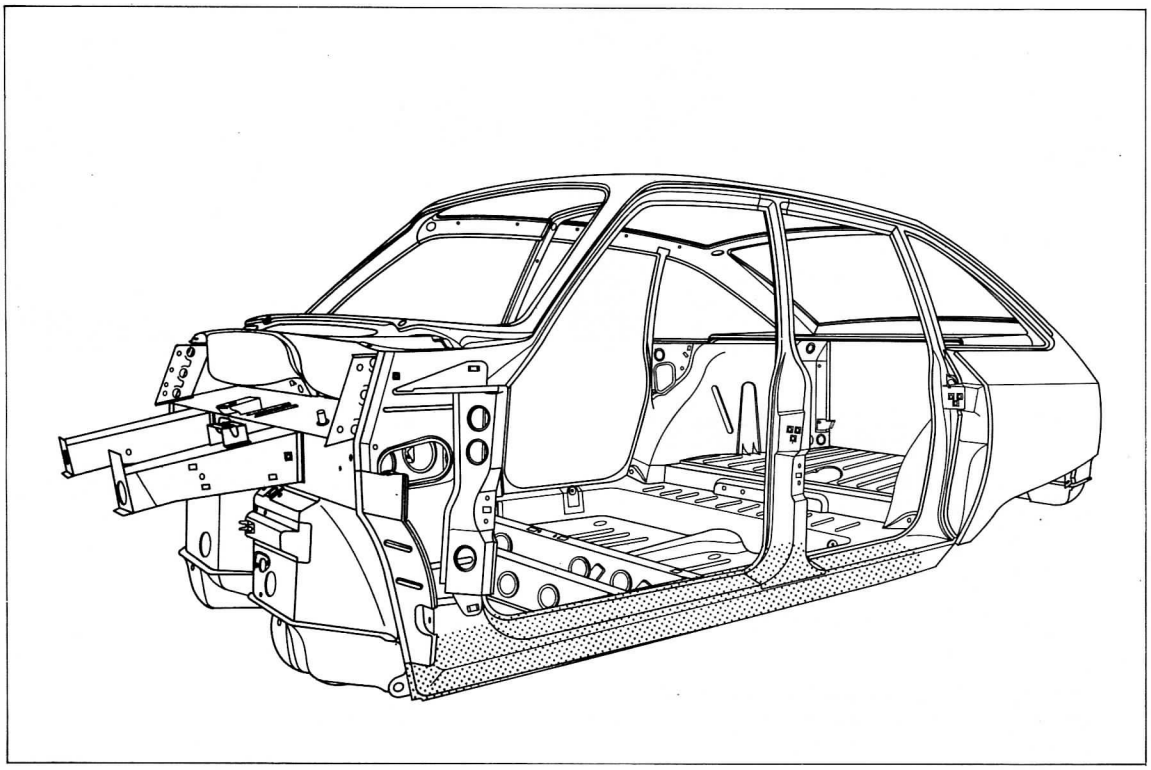
8. Prepare the previously separated welding seams. Reshape the panels if necessary. Clean the areas to be welded on the new components.

9. Position the pre-assembled side panel, and fit it by spot-welding and oxy-acetylene plug welding. Assemble closing panels (1) and (2).

10. **Fit the rear wing.**

Supplement N° 1 to Manual 810-2 (ADD)

III. REPLACING THE LOWER SECTION OF A SIDE PANEL



This operation only requires the body shell to be checked on a jig if the interior section of the body shell sidemember is distorted

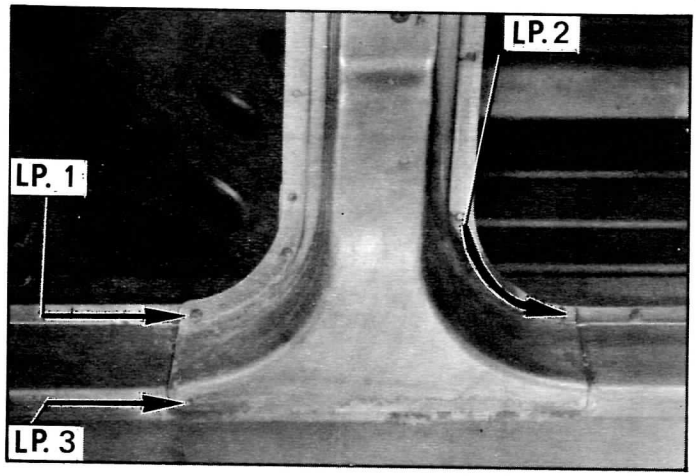
Special tools used : - 2600-T « FENWICK » Universal jig
- 2628-T « G » equipment for 2600-T

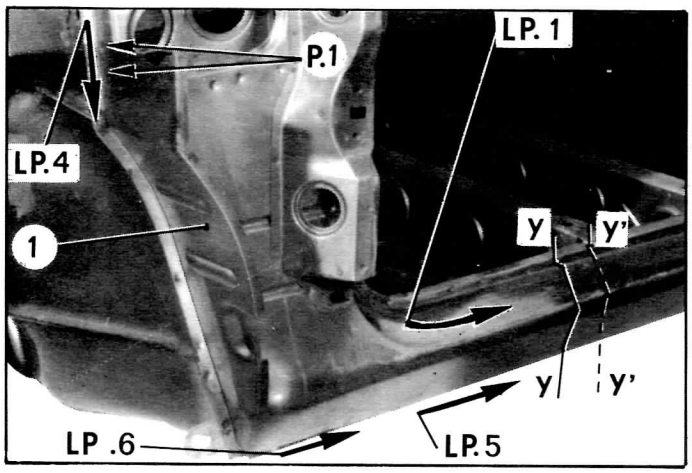
Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- « SAFERPOINT » welder
- Sanding machine and abrasive discs
- Spot-welding head
- Oxy-acetylene welding equipment

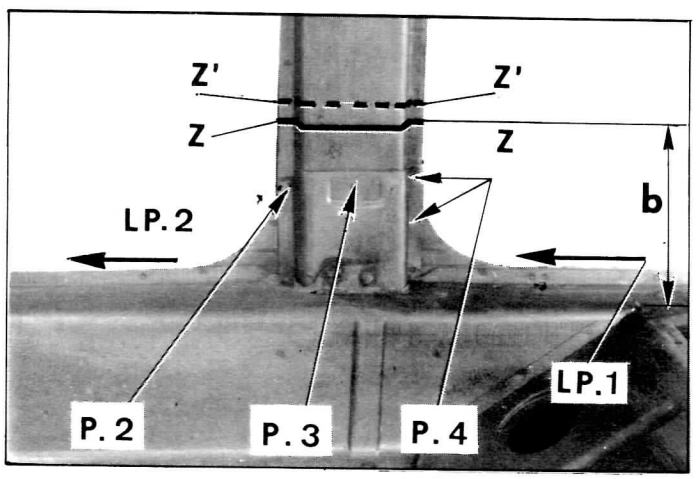
To carry out this operation, the following items must first be removed :

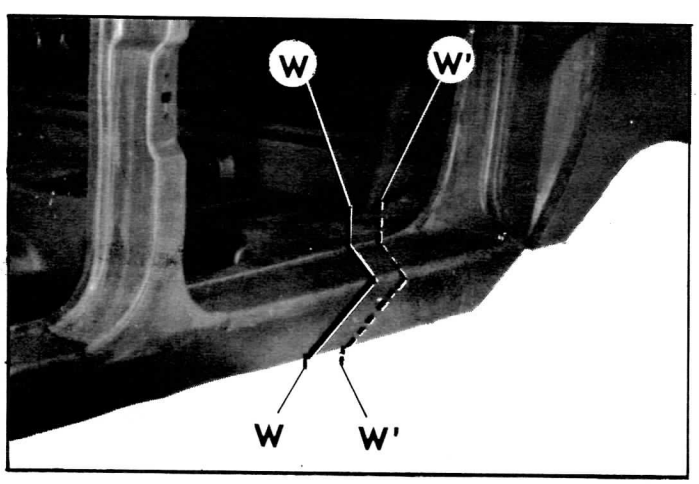
(on the relevant side) :

- both side doors,
- the front wing and the wheelarch,
- the door sealing rubbers,
- the front seat *(relevant side)* and the rear bench seat,
- the carpeting on the floor.









REMOVAL

1. **Remove the front protective plate (1) :**
   Break the spot-welds along line LP. 4, and both spots at P. 1.

2. **Break the spot-weld on the lower section of the centre pillar.**
   Break the spot-welds along the following lines : LP. 1, LP. 2 and LP. 3.

3. **Remove the lower section of side panel :**
   a) Saw through the panel along the following lines :
   - YY at the front (outer panel only)
   - ZZ at the centre pillar (only one panel) at a distance of b = 150 mm.
   - WW at the rear (outer panel only)

   b) Break the spot-welds along the following lines :
   - LP. 1, LP. 2, LP. 5 and LP. 6

   as well as the spots at P. 2, P. 3 and P. 4
   Remove the lower section of the side panel.

PREPARATION

4. Prepare the previously separated weld seams.
   Clean the areas to be welded on the new component.
   Reshape the panels if necessary.

5. Prepare a 150 mm-long backing plate for each cross-section YY, ZZ and WW.
   Position them, and spot-weld them.
   Position the new component, adjust the cross-sections edge to edge and hold it with panel clamps.

FITTING

6. **Fit the lower section of the side panel :**
   Plug-weld, using a « SAFERPOINT » apparatus the overlapping sections on the backing plates (at Y'Y', Z'Z' and W'W'), as well as along line LP. 5.
   Spot-weld along the following lines :
   - LP. 1, LP. 2 and LP. 6 and at the following spots :
   - P. 2, P. 3 and P.4.

7. **Fit the lower section of the centre pillar :**
   Plug-weld, using a « SAFERPOINT » apparatus, along line LP. 3,
   Spot-weld along the following lines :
   - LP. 1 and LP. 2.

8. Using an oxy-acetylene welding device, weld the overlapping portions on the cross-sections along the following lines :
   - YY, ZZ, and WW.

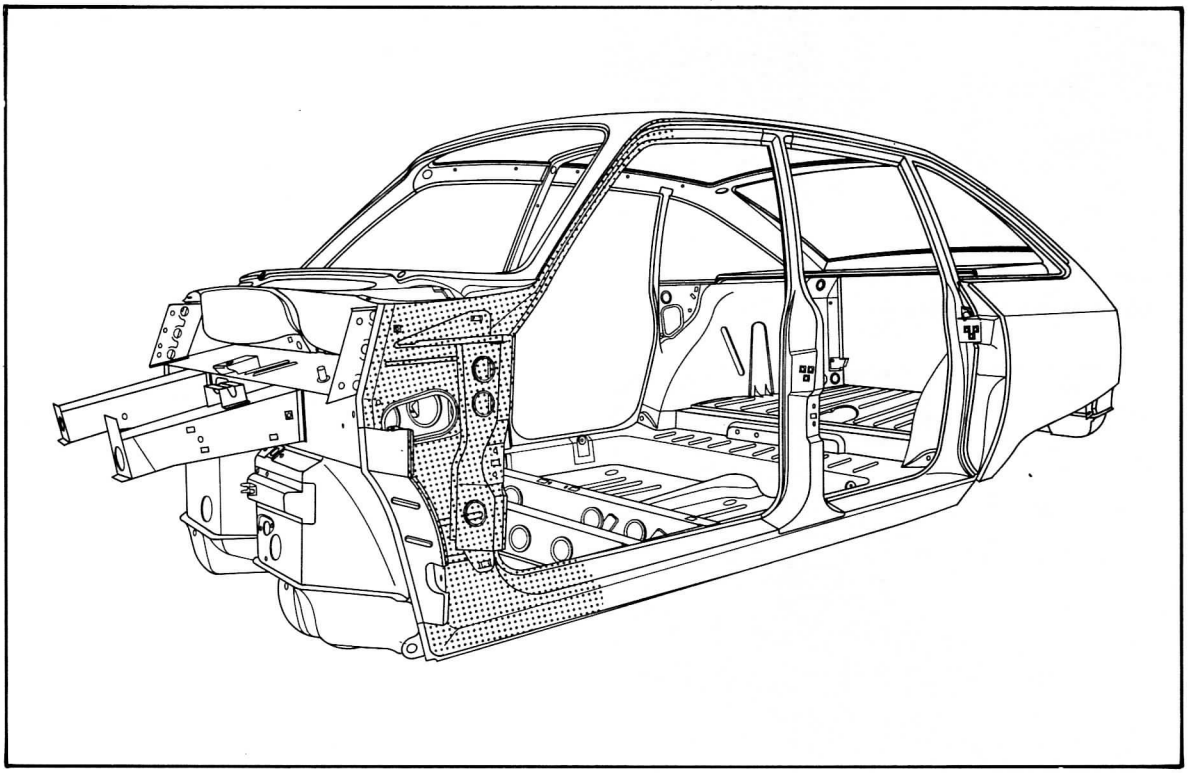
9. Re-form the contours with solder.

10. Position the protective panel. Spot-weld it along line LP. 4 and at P. 1 (two spots).

Supplement N° 1 to Manual 810-2 (ADD)

IV. REPLACING A SIDE PANEL FRONT SECTION

(⟶ 15-1-1975)

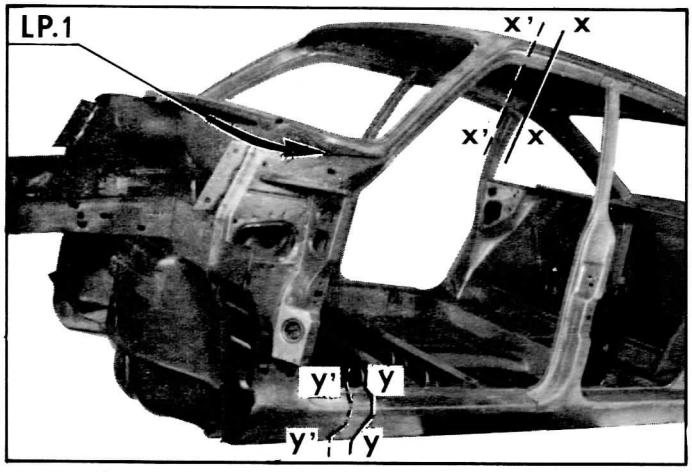


This operation requires the body shell to be checked on a jig :

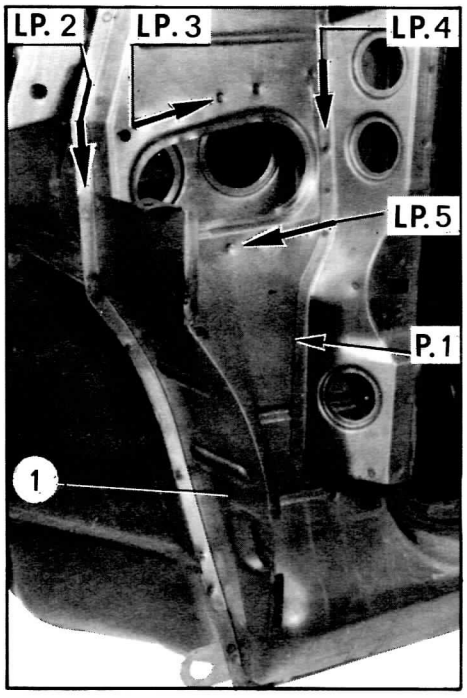
Special tools used : - 2600-T : Universal jig
- 2628-T : « G » equipment for 2600-T

Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- « SAFERPOINT » welder
- Spot-welding head
- Oxy-acetylene welding equipment

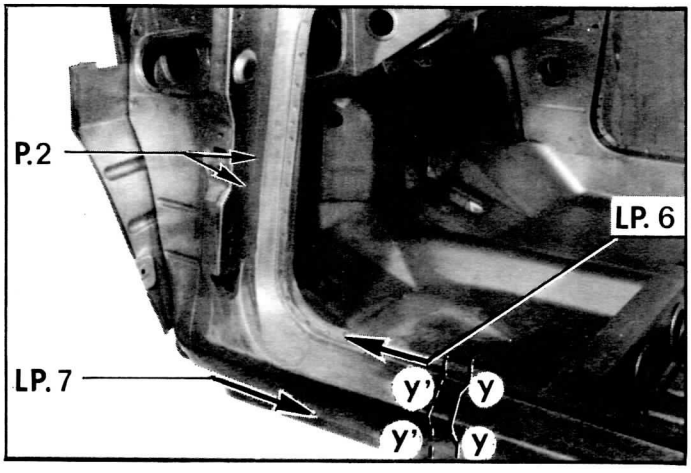
To carry out this operation, the following items must first be removed :
- the front trim, grille, wings, wheelarch (⟶ *Jan. 1975*), the trim support panel,
- the lower valance and the bonnet,
- the front axle unit, with engine and gearbox,
- the rear axle unit with the fuel tank,
- the windscreen,
- the dashboard,
- the centre console,
- the front seats and the rear bench seat,
- the windscreen wiper control and motor assembly,
- the front and rear doors,
- the roof trim, (free it only as far as the centre pillar)
- the waterproofing and soundproofing trim of the scuttle unit, the front door openings, and the front floor,
- the front wiring harness,
- the scuttle unit hydraulic pipes.



8208



8221



8220

Supplement N° 1 to Manual 810-2 (ADD)

REMOVAL

1. Mark the cross-sections XX and YY 100 mm from the end of the curved sections of the door openings.

2. **Remove the front section of the side panel :**
Break the spot-welds along the following lines :
- LP. 1 *(up to XX)*
- LP. 2 *(up to LP. 7)* (Remove panel (1))
- LP. 3 *(up to LP. 4)*
- LP. 4 *(up to LP. 5)*
- LP. 5 *(3 to 4 spots)*
- LP. 6 *(from YY to XX)*
- LP. 7 *(up to YY. 2 lines)*

and the spots :
- P. 1 and P. 2.

3. Cut the panel along cross-sections XX and YY.

4. Break the remaining spot-welds using a chisel and remove the panel.

PREPARATION

5. Re-shape the panels if necessary.
Prepare the previously separated welding seams.
Clean the areas to be welded on the new component.

6. Prepare two reinforcing plates, length 120 mm fit at cross-section XX and YY, and spot-weld them on the remaining side panel.

FITTING

7. **Position the side panel :**
Line up the two cross-sections, and hold them in position with panel clamps.

8. **Fit the side panel :**
Spot-weld along the following lines :
- LP. 1 - LP. 2 - LP. 3 - LP. 4 - LP. 5 - LP. 6
- LP. 7 *(one line)*.

using « SAFERPOINT » equipment, weld at points P.1 - P. 2 and along line LP. 7.

9. Using oxy-acetylene equipment, weld edge to edge along XX and YY.

10. Using « SAFERPOINT » equipment, plug-weld along X'X' and Y'Y'.

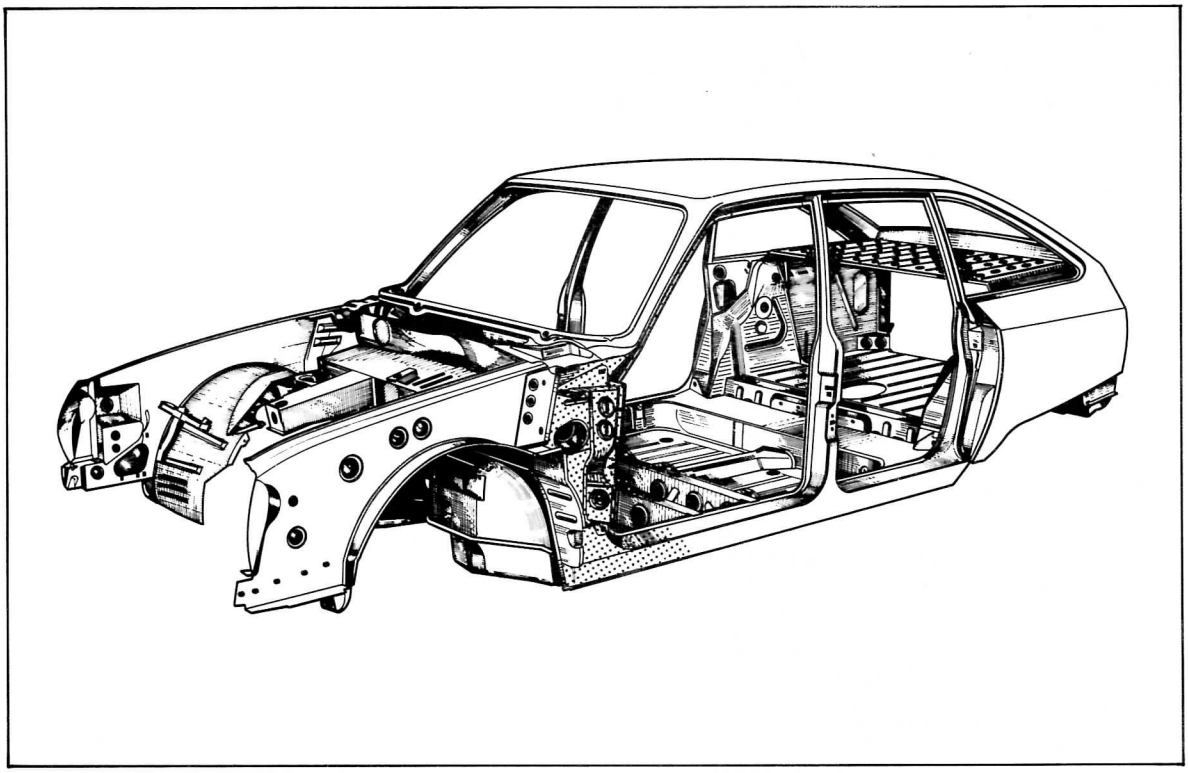
11. Sand the welds, and re-form the lines with solder.

V. REPLACING A SIDE PANEL FRONT SECTION

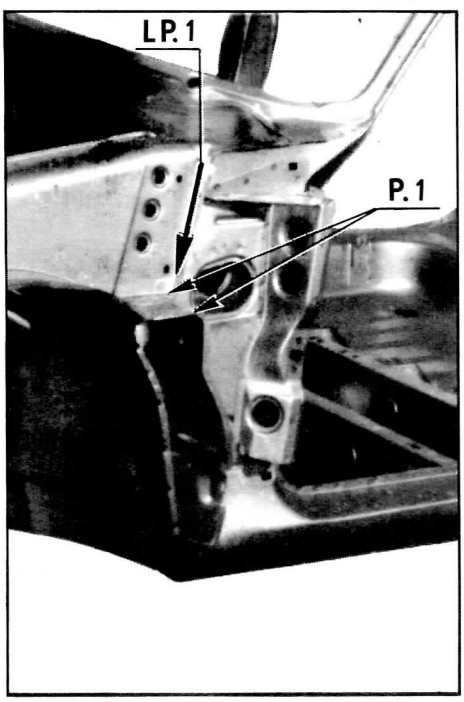
(15-1-1975 ⟶)

This operation differs from the preceding one only in the following details :

G.80-41



14672



REMOVAL

1. Break the spot-welds along line :
   - LP. 1
   and the spots at :
   - P. 1 (two to three spots)

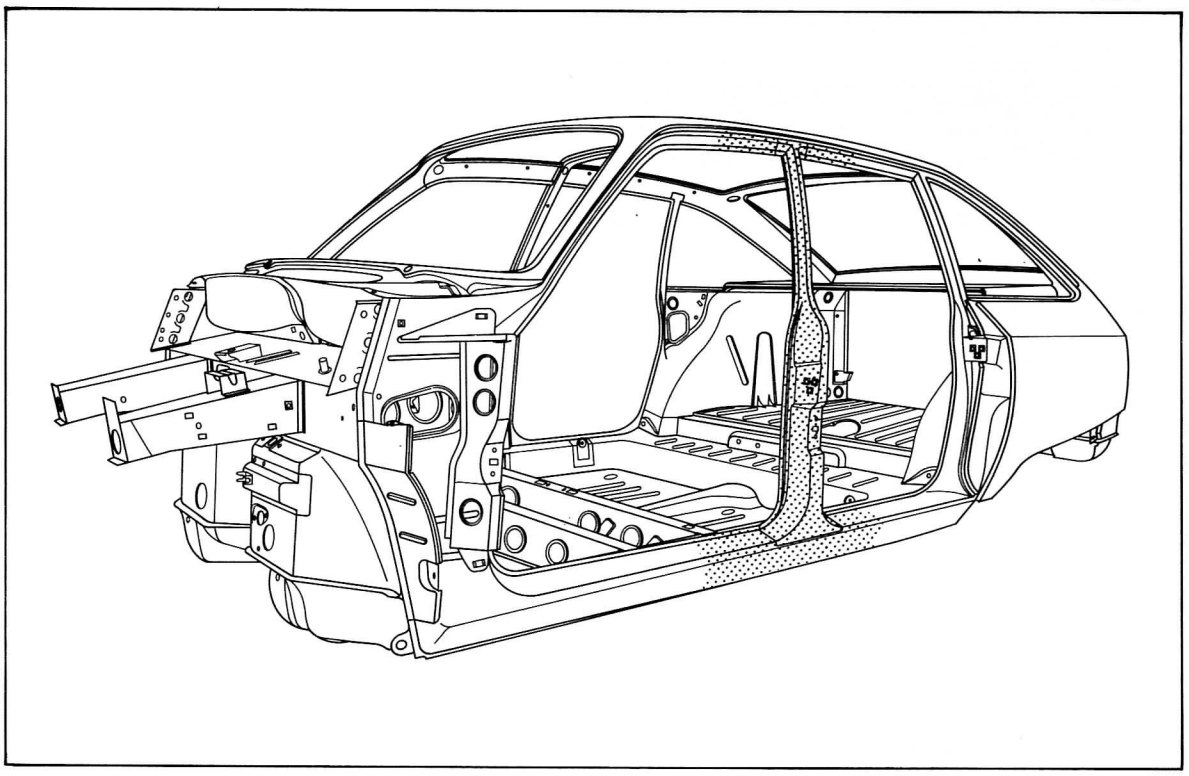
FITTING

2. Assemble the front wheelarch and the side panel.

   Spot-weld along line :
   - LP. 1
   and at :
   - P. 1 (two to three spots).

VI. REPLACING A SIDE PANEL CENTRE SECTION

G.80-1



This operation does not require the body shell to be checked on a jig

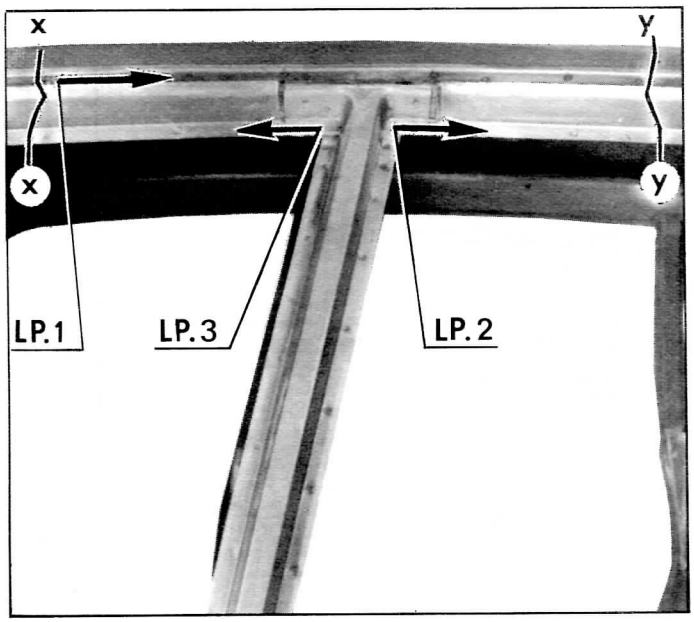
Necessary tools :

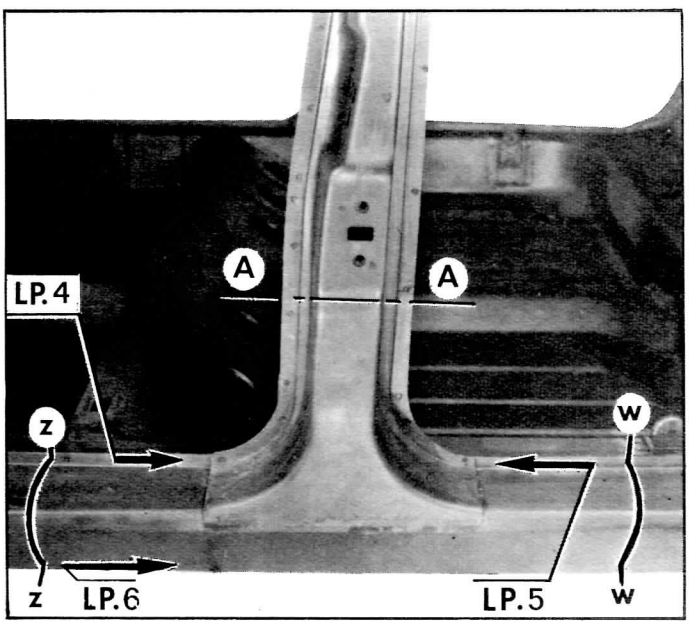
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- « SAFERPOINT » welding equipment
- Spot-welding head
- Oxy-acetylene welding equipment

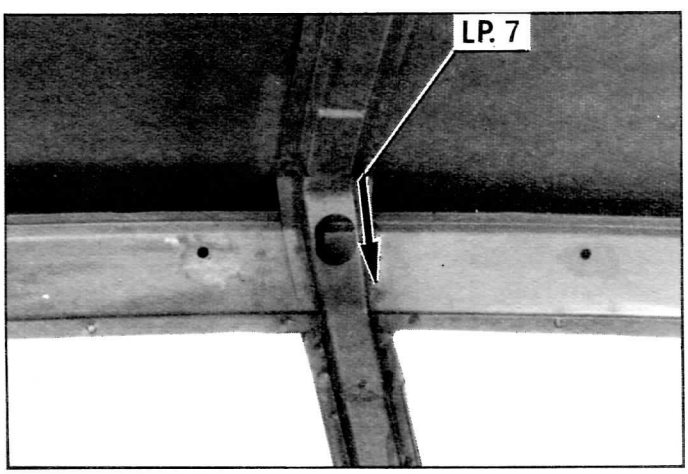
To carry out this operation the following items must first be removed :

- the centre pillar seat belt mounting
- the interior trim of the centre pillar
- the front and rear door sealing rubbers
- the front door and the rear door *(relevant side)*
- the front door striking plate
- the roof and floor trims
- the front seat and the rear bench seat
- Partially withdraw the wiring harness.

Supplement N° 1 to Manual 810-2 (ADD)







REMOVAL

1. **Remove the centre section of the side panel :**
   Break the spot-welds along the following lines :
   - LP. 1 (*from XX to YY*)
   - LP. 2 (*up to Y*)
   - LP. 3 (*up to X*)
   - LP. 4 (*up to AA*)
   - LP. 5 (*up to AA*)
   - LP. 6 (*two lines from ZZ to WW*)
   - LP. 7 (*four to five spots on each side of the centre pillar*).

   and the following points :
   - P. 1
   - P. 2
   - P. 3 (*one spot*)

   Cut 4 cross-sections at WW, XX, YY, ZZ.
   Break the remaining spot-welds using a chisel, and remove the centre section of the side panel, with the centre pillar.

PREPARATION

2. Prepare the previously separated welding seams. Re-shape the panels if necessary.
   Clean the areas to be welded on the new components.

3. Prepare four backing plates (*1 for each cross-section*), adjust them and spot-weld them on the vehicle.

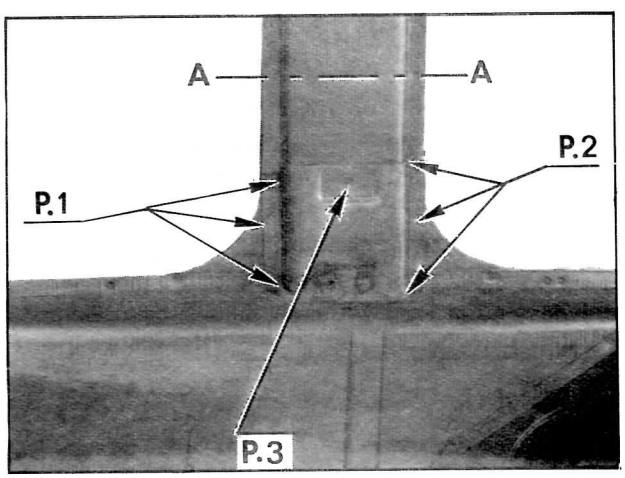
FITTING

4. Line up the new side panel, and secure it in position, using panel clamps.

5. Fit the panel. Spot-weld along the following lines :
   - LP. 1 - LP. 2 - LP. 3 - LP. 4 - LP. 5 - LP. 6
   - LP. 7 (*two spots on each side*).

   and at the following points :
   - P. 1 - P. 2 - P. 3
   - using « SAFERPOINT » equipment, plug weld along line LP. 7 (on the cantrail).

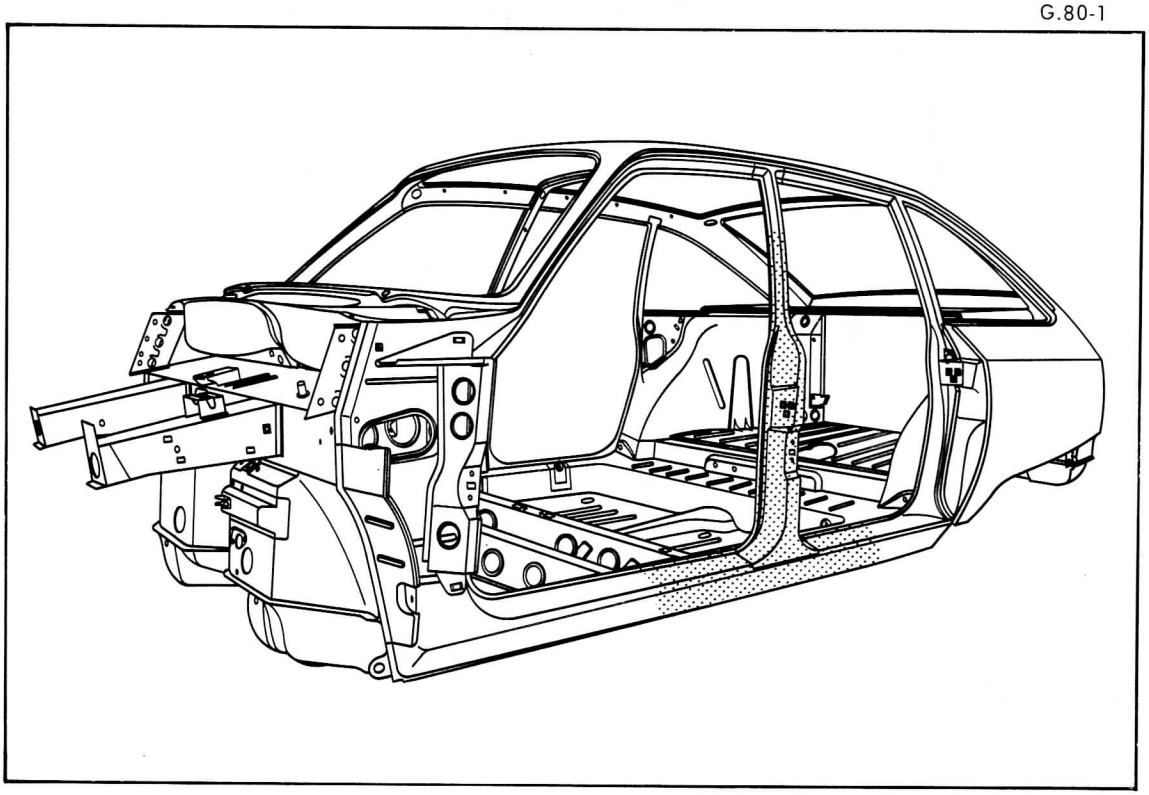
6. Fit the centre pillar, and its reinforcing panel (see corresponding operation).



VII. REPLACING A CENTRE PILLAR AND A SIDE PANEL

(LOWER SECTION)

G.80-1



This operation does not require the body shell to be checked on a jig :

Necessary tools :

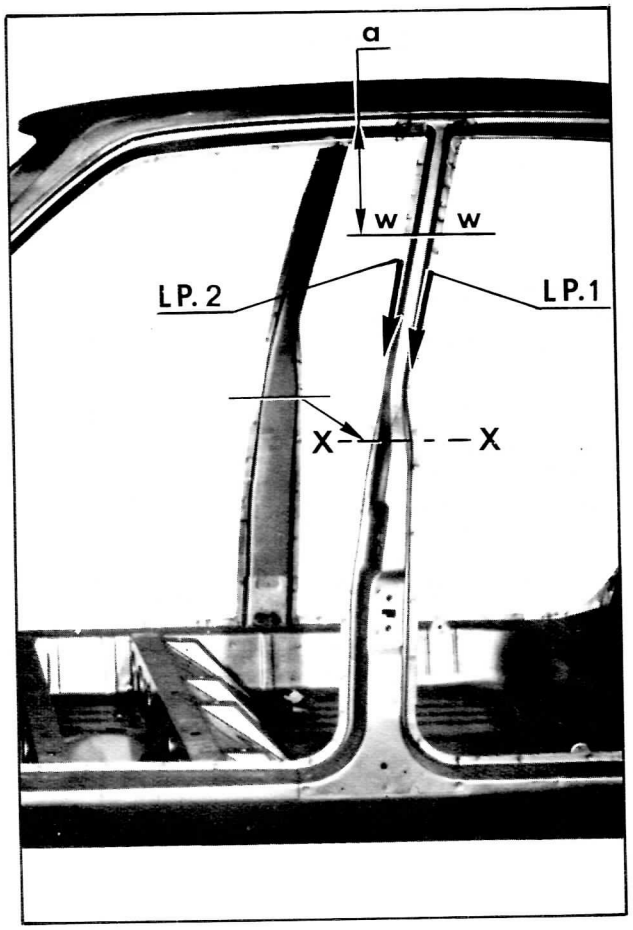
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- « SAFERPOINT » welding equuipment
- Spot-welding head
- Oxy-acetylene welding equipment

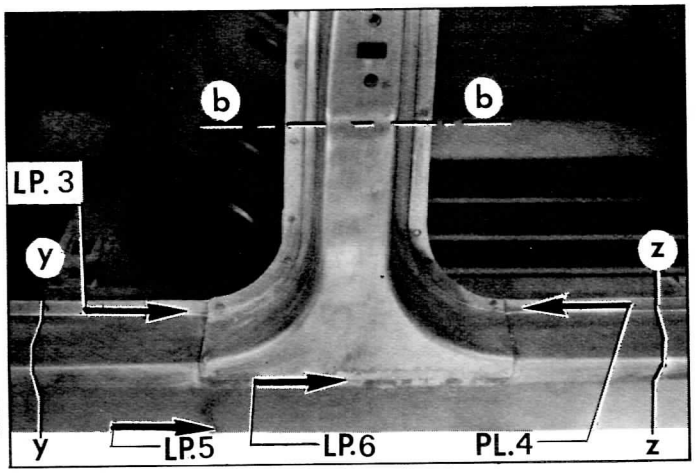
To carry out this operation, the following items must first be removed :

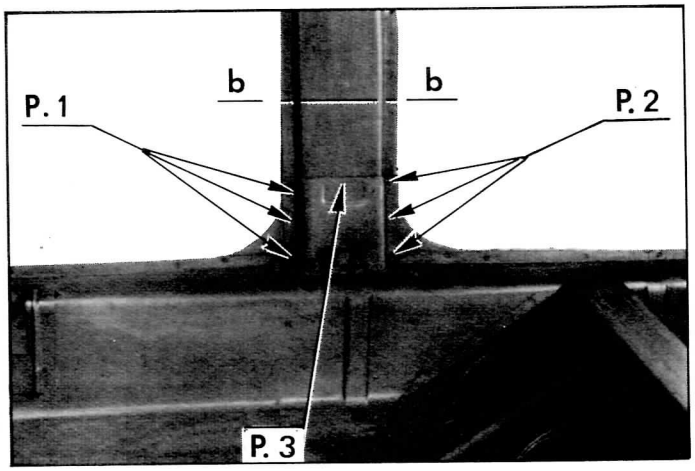
- the front seats and the rear bench seat
- the seat belt
- the centre pillar interior trim
- the front and rear door trim
- the rear door
- the front door striking plate
- the roof trim

(On the relevant side of the vehicle)

Supplement N° 1 to Manual 810-2 (ADD)







REMOVAL

1. **Remove the centre pillar and the side panel**
(Lower section)
Using a hacksaw, cut the following cross-sections :
- WW at a distance » a » = 200 mm from the cantrail
- XX (on the inside) underneath the seat belt mounting reinforcement plate.
- YY and ZZ on the lower section of the side panel
- Break the spot-welds along the following lines :
  - LP. 1 from WW to XX
  - LP. 2 from WW to XX
  - LP. 3 from YY to bb
  - LP. 4 from ZZ to bb
  - LP. 5 from YY to ZZ *(two lines)*

  and at the following points :
  - P. 1 and P. 2 (three points)
  - P. 3

  Break the remaining spot-welds with a chisel and remove the lower centre section of the side panel.

PREPARATION

2. Prepare the previously separated welding seams :
Re-shape the panels if necessary.
Clean the areas to be welded on the new components.

3. For each cross-section, prepare a 100 mm long backing plate, and spot-weld them onto the body shell.

FITTING

4. **Fit the lower section of the side panel :**
- Line up each cross-section edge to edge.
- Hold the lower section of the side panel in position with panel clamps.
- Spot-weld along the following lines :
  - LP. 3 - LP. 4 - LP. 5 *(one line)*.

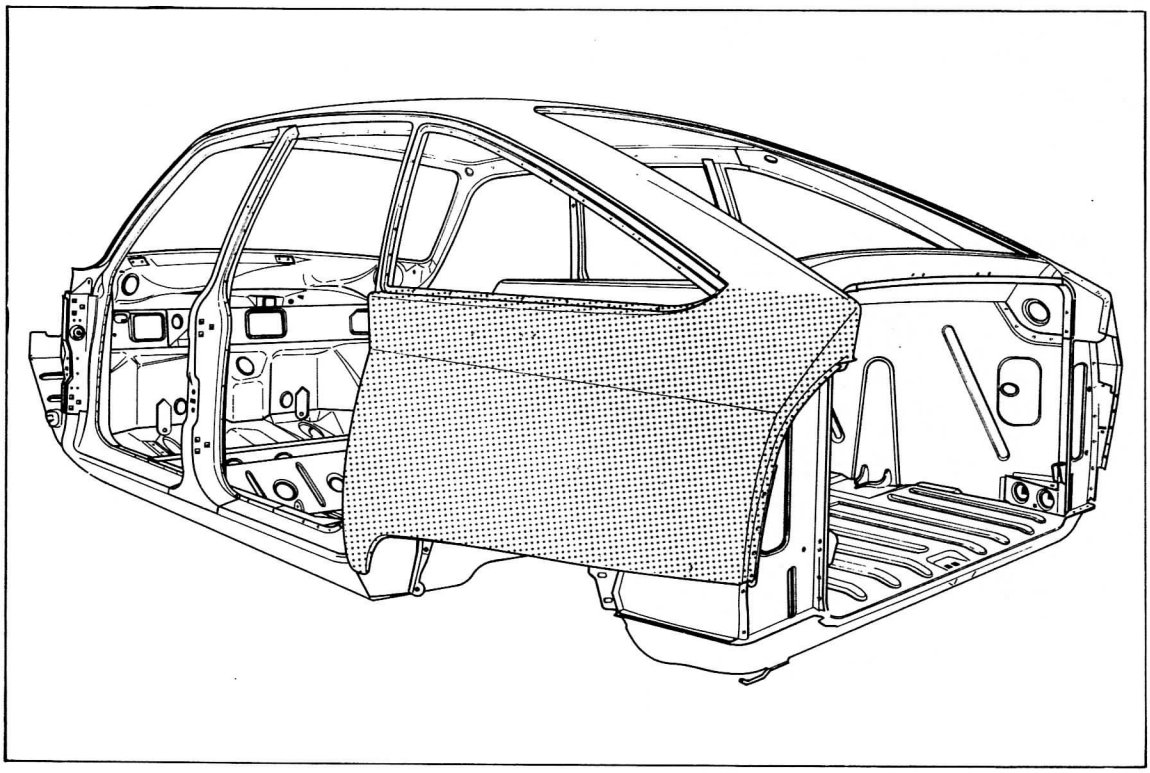
  and at the following points :
  - P. 1 - P. 2 and P. 3

  and onto the XX cross-section backing plate.

5. **Fit the lower section of the centre pillar :**
- Line up the cross-section WW, hold the pillar in position with panel clamps.
- Spot-weld along the following lines
  - LP. 1 and LP. 2

6. Finish the fitting operation by carrying out the following:
- Plug welding, using « SAFERPOINT » equipment, along the following lines :
  - LP. 5 *(one line)*
  - LP. 6 as well as on each of the backing plates, of cross-sections XX, YY and ZZ.
- Using oxy-acetylene equipment, weld a line edge to edge at each cross-section
- Re-form the contours with solder.
- Flatten and grind the welding smooth.

REPLACING A REAR WING



This operation does not require the body shell to be checked on a jig

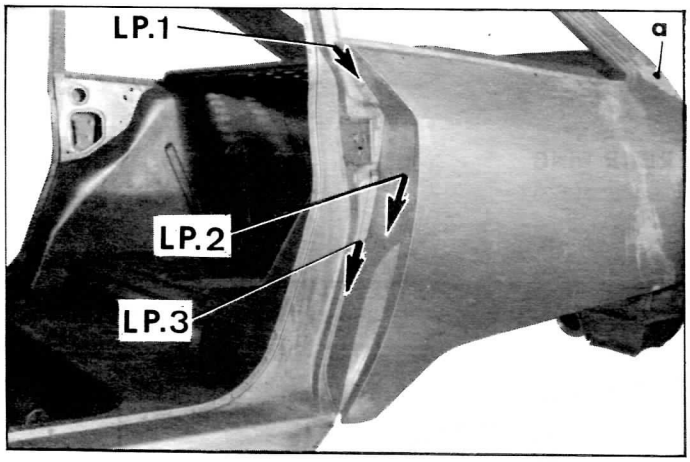
Necessary tools : -
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive dics
- « SAFERPOINT » welding equipment
- Spot-welding head

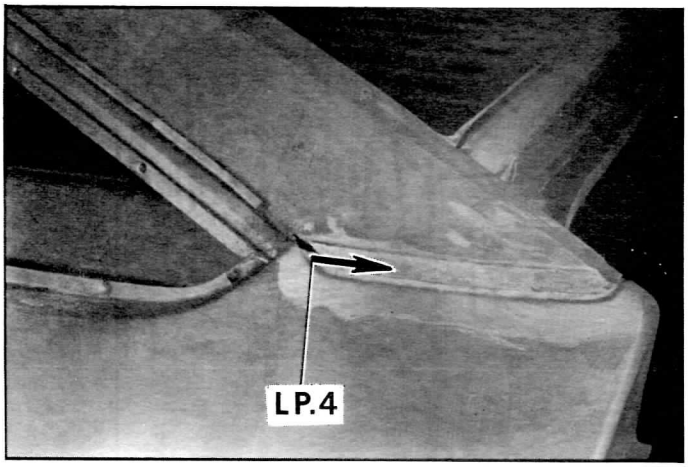
To carry out this operation, the following items must first be removed :

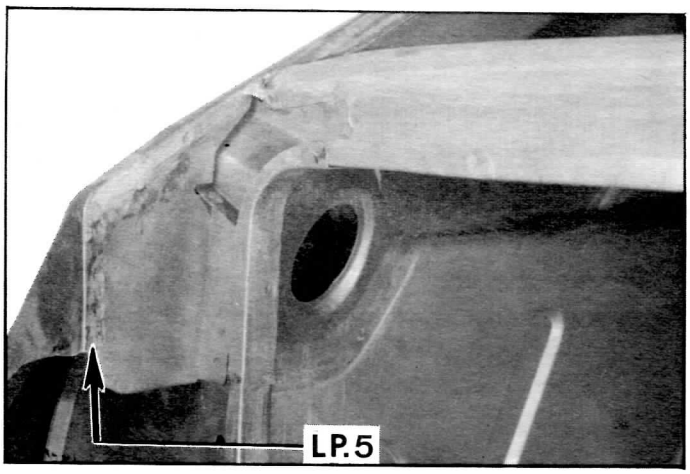
- the rear lamp cluster and its embellisher *(relevant side)*
- the rear door sealing rubber *(relevant side)*
- the rear bench seat
- the quarter glass *(relevant side)*
- the boot lid
- the boot trim, and the parcel shelf trim
- the rear bumper

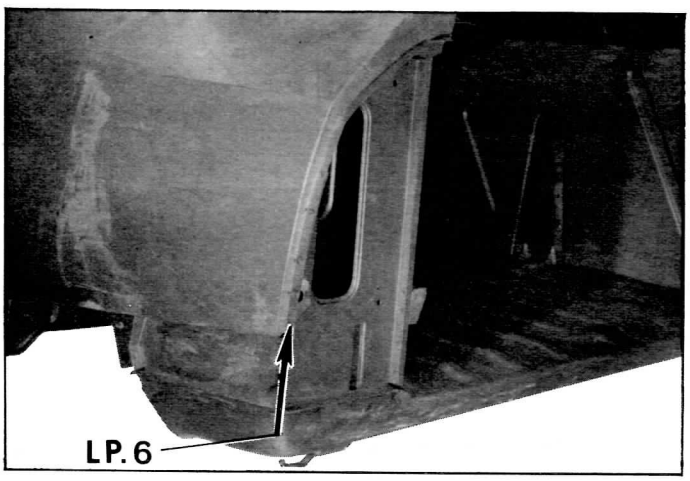
Furthermore, *if the right-hand rear wing is being replaced,* the filler neck and the fuel tank breather must be removed.

Supplement N° 1 to Manual 810-2 (ADD)









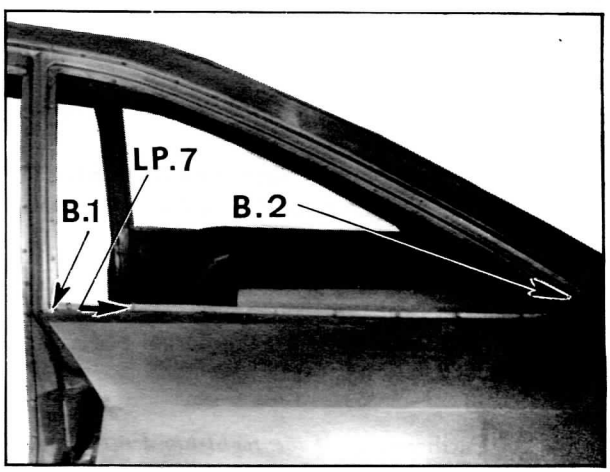
REMOVAL

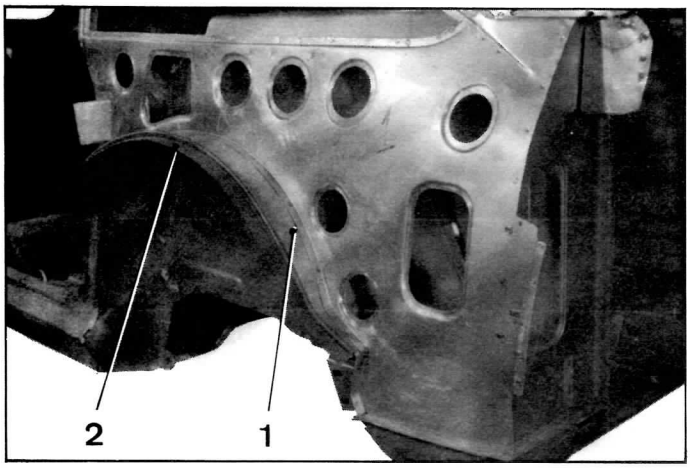
1. Break the solder at joint « a » (rear wing and quarter glass surround).

2. Break the spot-welds along the following lines :
   - LP. 1 (joint with the side panel),
   - LP. 2 (two joining spots with the wheelarch)
   - LP. 3 (joint with the side panel)
   - LP. 4 (roof and rear wing joint)
   - LP. 5 (joint with closing panel)
   - LP. 6 (joint with the end of the side panel)
   - LP. 7 (side panel and rear wing joint)

3. Grind smooth the brazing at B 1 and B 2.

4. Remove the wing by withdrawing it from the underneath.

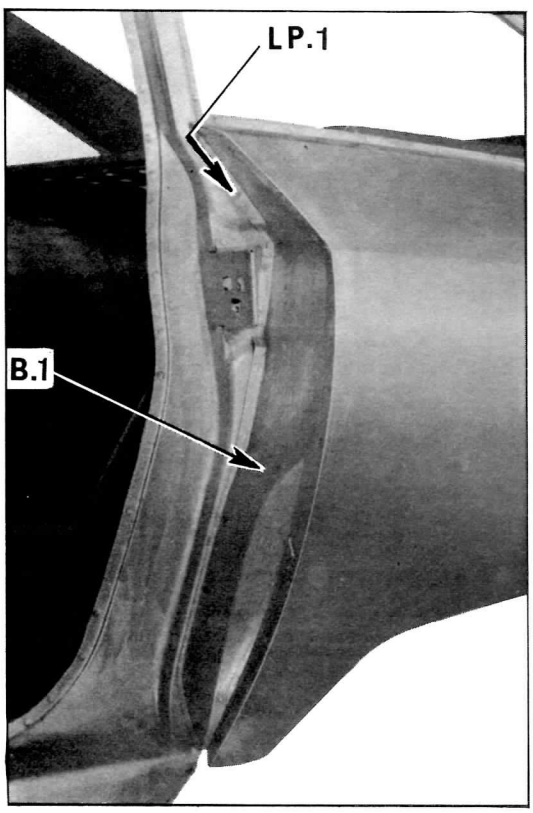




FITTING

5. Prepare the previously separated welding seams.
Clean the areas to be welded on the new component.

6. If necessary, re-shape the wheelarch panel (1) and check the proper positioning of the sealing rubber (2).



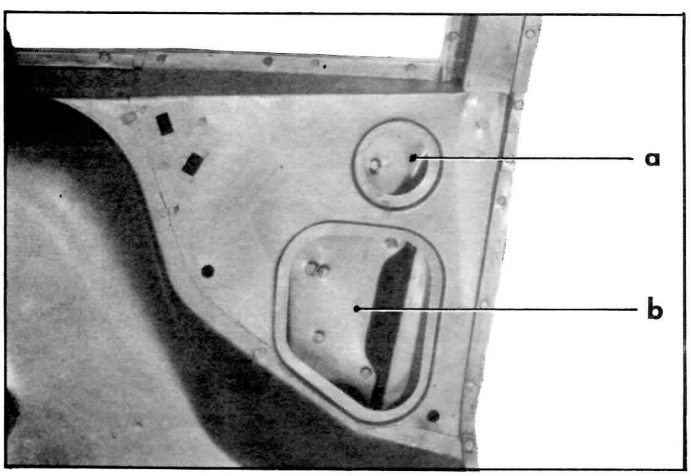
7. Position the new rear wing : hold it in position with panel clamps.

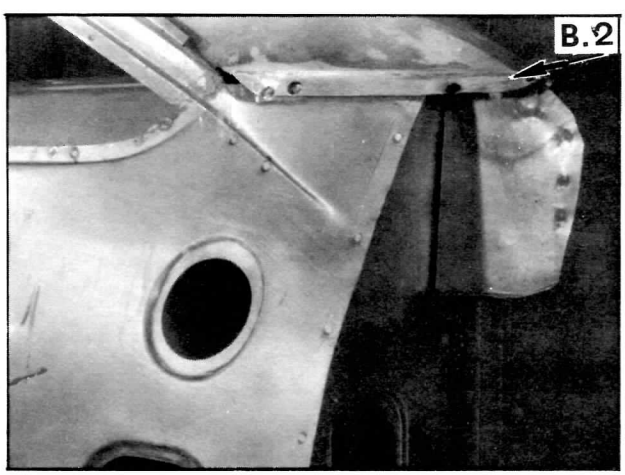
8. Fit it by spot-welding :

- For line LP. 1 slide the electrode through slots « a » and « b ».
- For spots B.1 drill in the rear wing front edge panel some holes 5 mm in diameter, and 50 mm spart. Then plug-weld using oxy-acetylene equipment.
- For the roof and rear wing joint, plug-weld along B.2.

9. Seal panel joints by brazing.

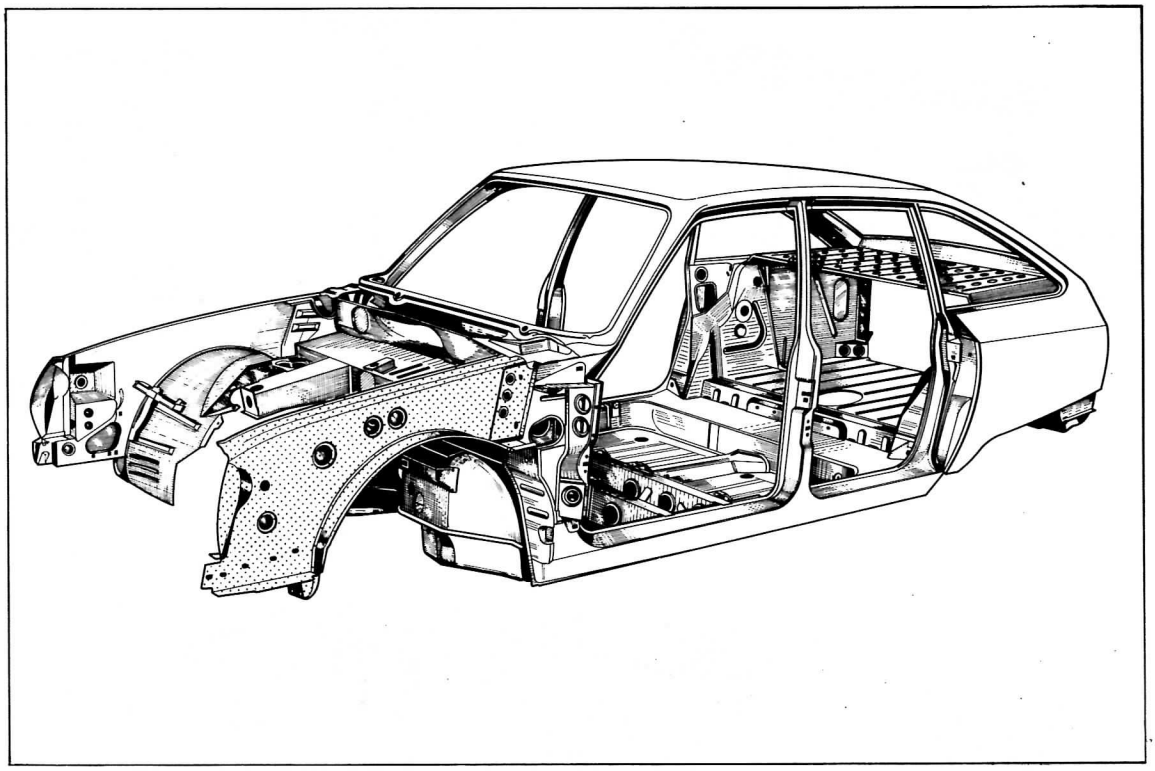
10. Solder the roof and rear wing joint.





Supplement N° 1 to Manual 810-2 (ADD)

REPLACING A LEFT-HAND FRONT WHEELARCH



Supplement N° 1 to Manual 810-2 (ADD)

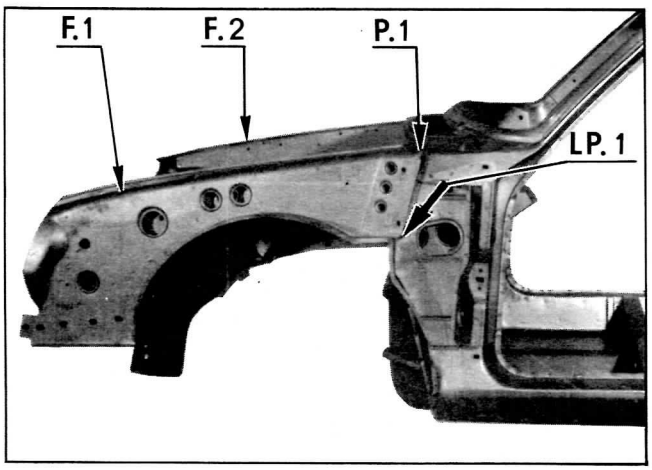
This operation does not require the body shell to be checked on a jig if the geometry of the vehicle has been found to be correct by optical checking

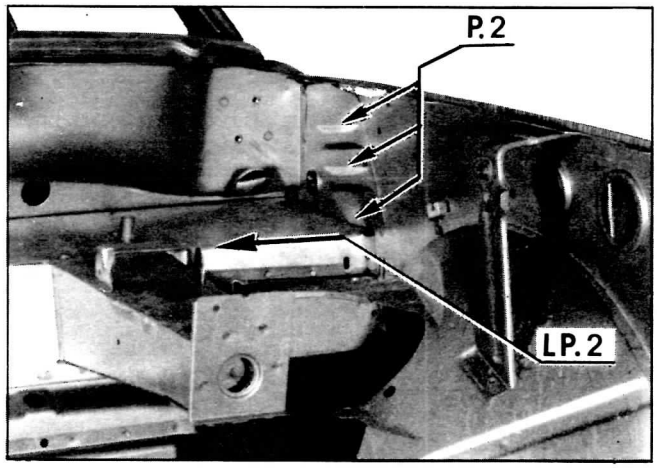
Special tools used :
- 2645-T : spacer for positioning the front wheelarches
- 2641-T : spirit level on base-plate

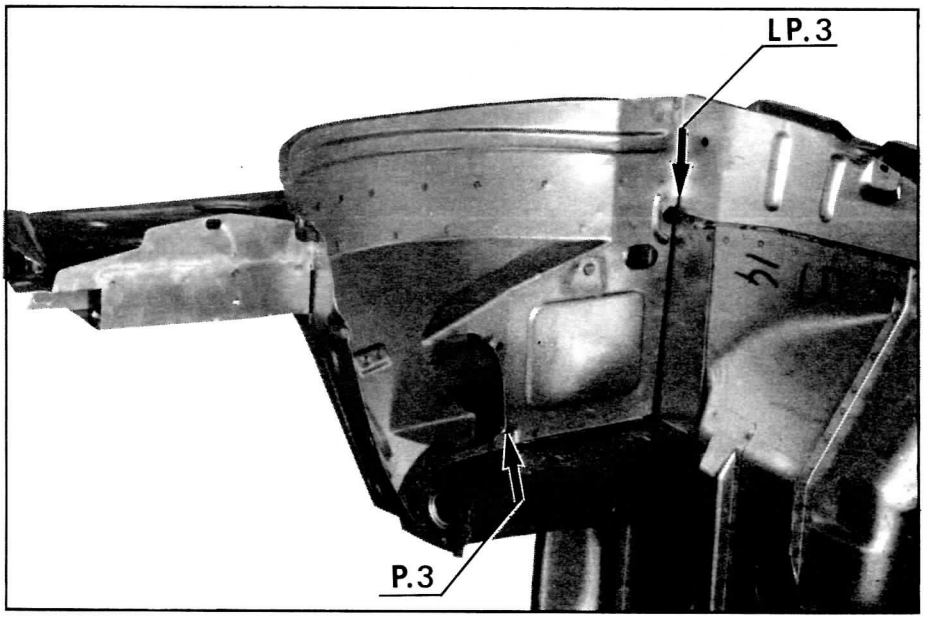
Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- Spot-welding head
- « SAFERPOINT » welding equipment
- Oxy-acetylene welding equipment

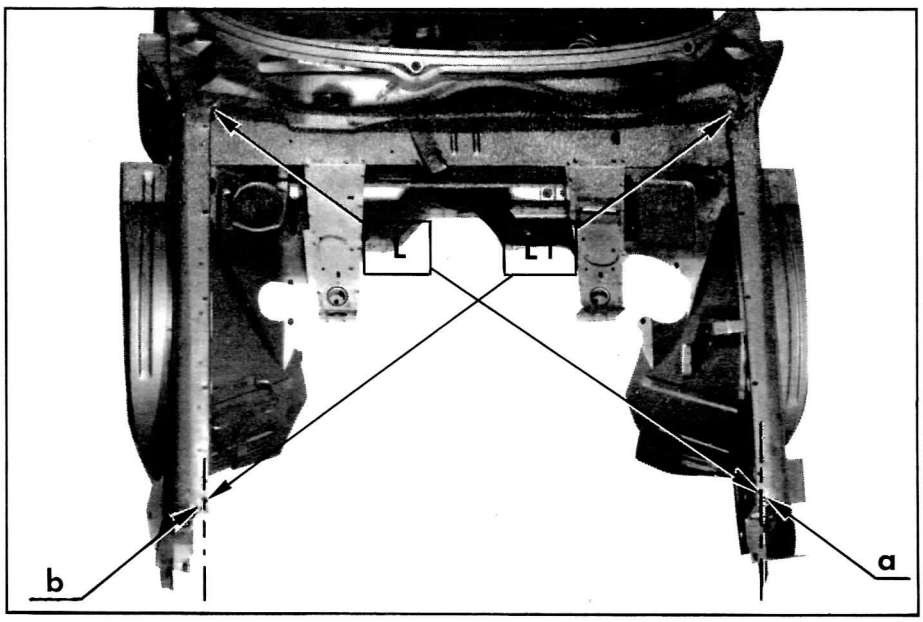
To carry out this operation, the following items must first be removed :
- the bonnet and the air-collector grille
- the left-hand bumper buffer
- the left-hand front wing
- the battery, the fuse box, the headlamps and the indicators
- the interior wheelarch sealing panels,
- the assembled anti-recirculation panel

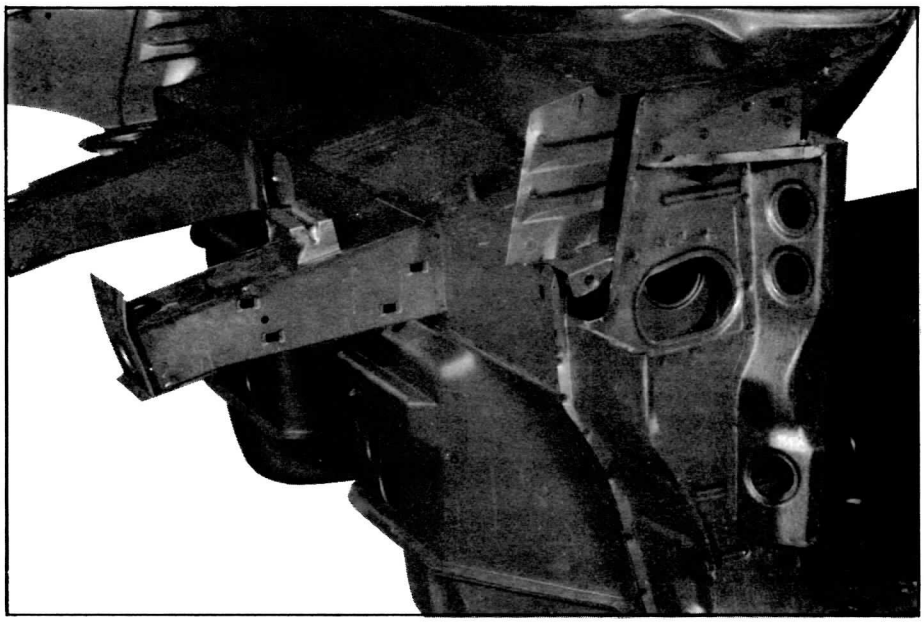
Put the wiring harness to one side, and protect it.
Put the bonnet opening control to one side.


F.1
F.2
P.1
LP. 1


P.2
LP. 2


LP. 3
P.3


L
L1
b
a



Body shell with the front left-hand wheelarch removed

REMOVAL

1. Remove the front wheelarch
Break the spot-welds along the following lines :
- LP. 1 - LP. 2 - LP. 3
and the following spots :
- P. 1 (2 spots)
- P. 2 (3 spots)
- P. 3 (1 spot)

2. Withdraw the front wheelarch.

PREPARATION

3. Prepare the previously separated welding seams.
Re-shape the panels if necessary.
Clean the areas to be welded on the new components.

FITTING

4. Position the front wheelarch, and hold it in position with panel clamps.

5. Position the following :
- spacer 2645-T between point « a » and « b »
Check the following :
- the alignment of the wheelarches, using spirit level 2641-T positioned on faces **F1** and **F2.**
- diagonals **L** and **L1**. These must be identical.

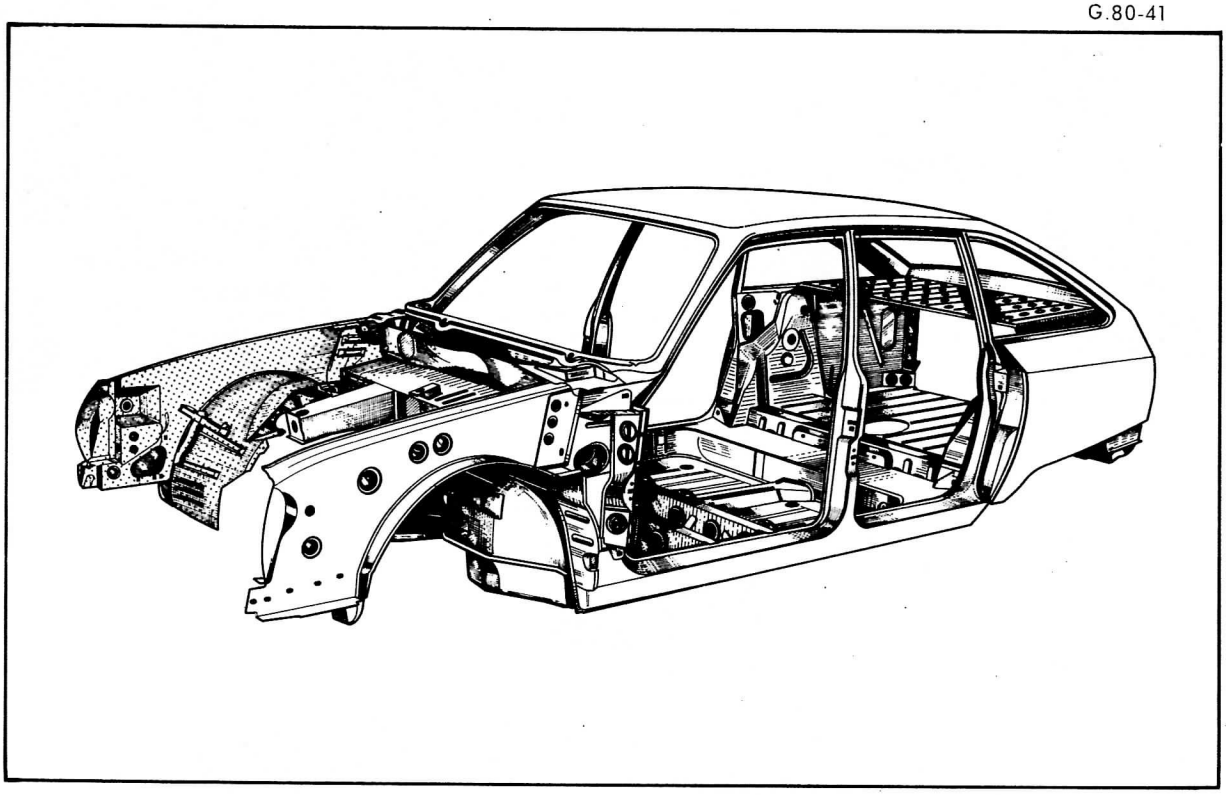
6. Fit the wheelarch by spot-welding along the following lines :
- LP. 1 - LP. 2 - LP. 3
and at the following spots :
- P. 1 (2 spots)
- P. 2 (3 spots)
- P. 3 (1 spot)

7. Make sure sealing is perfect.

8. Refit the removed components.

REPLACING A FRONT RIGHT-HAND WHEELARCH

G.80-41



This operation does require the body shell to be checked on a jig if the geometry of the vehicle has been found to be correct by optical checking

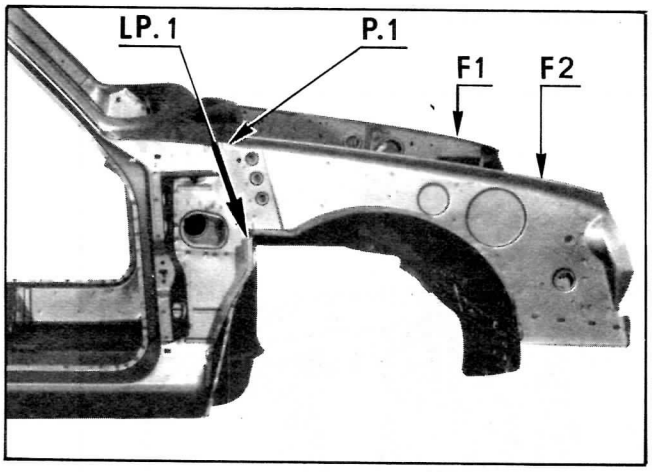
Special tools used : - 2645-T : spacer for positioning the front wheelarches
- 2641-T : spirit level on base-plate

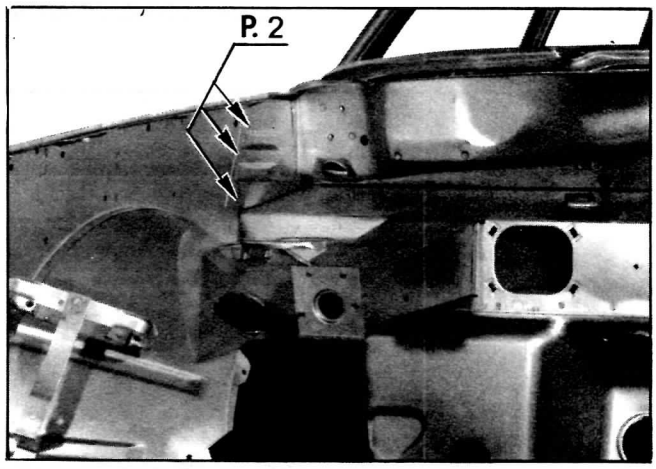
Necessary tools :
- Drill
- 2662-T or « PICKAVANT » spot-weld cutter
- Chisel for breaking spot-welds
- Sanding machine and abrasive discs
- Spot-welding head

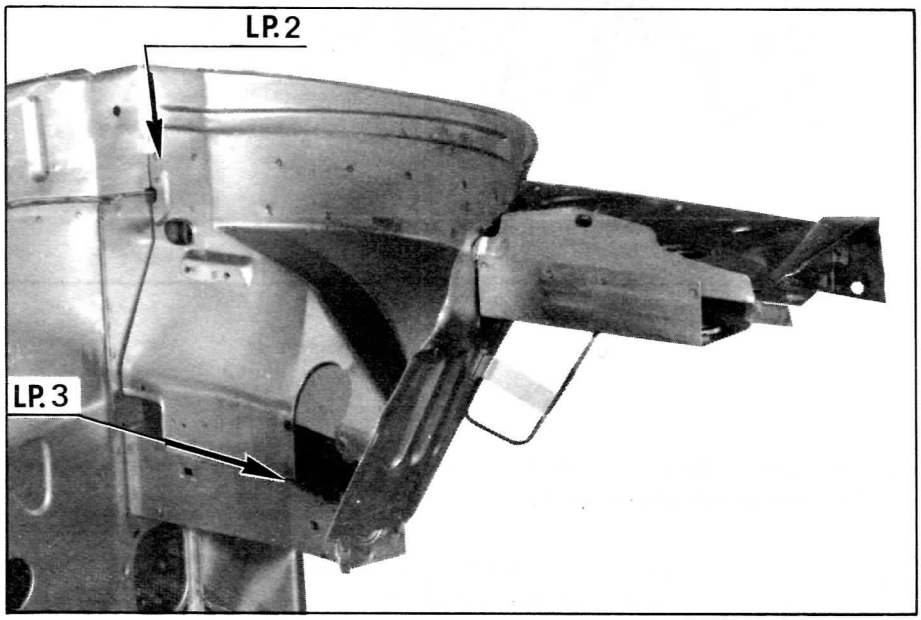
To carry out this operation, the following items must first be removed :
- the bonnet and the air-collector grille,
- the right-hand bumper buffer,
- the right- hand front wing
- the headlamps, the indicators and the anti-recirculation panel,
- the interior wheelarch sealing panels.

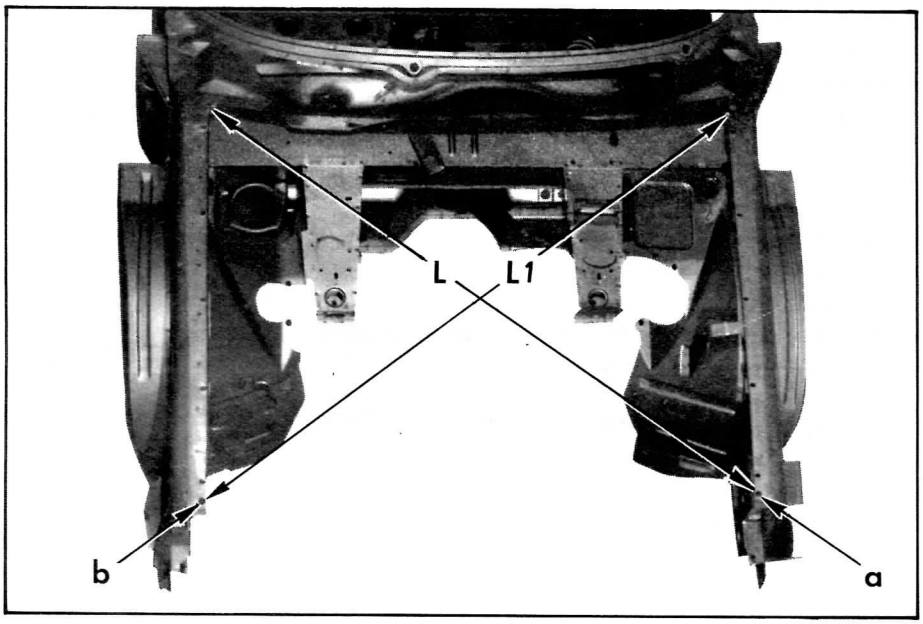
Put to one side the hydraulic fluid reservoir, and the windscreen washer reservoir.

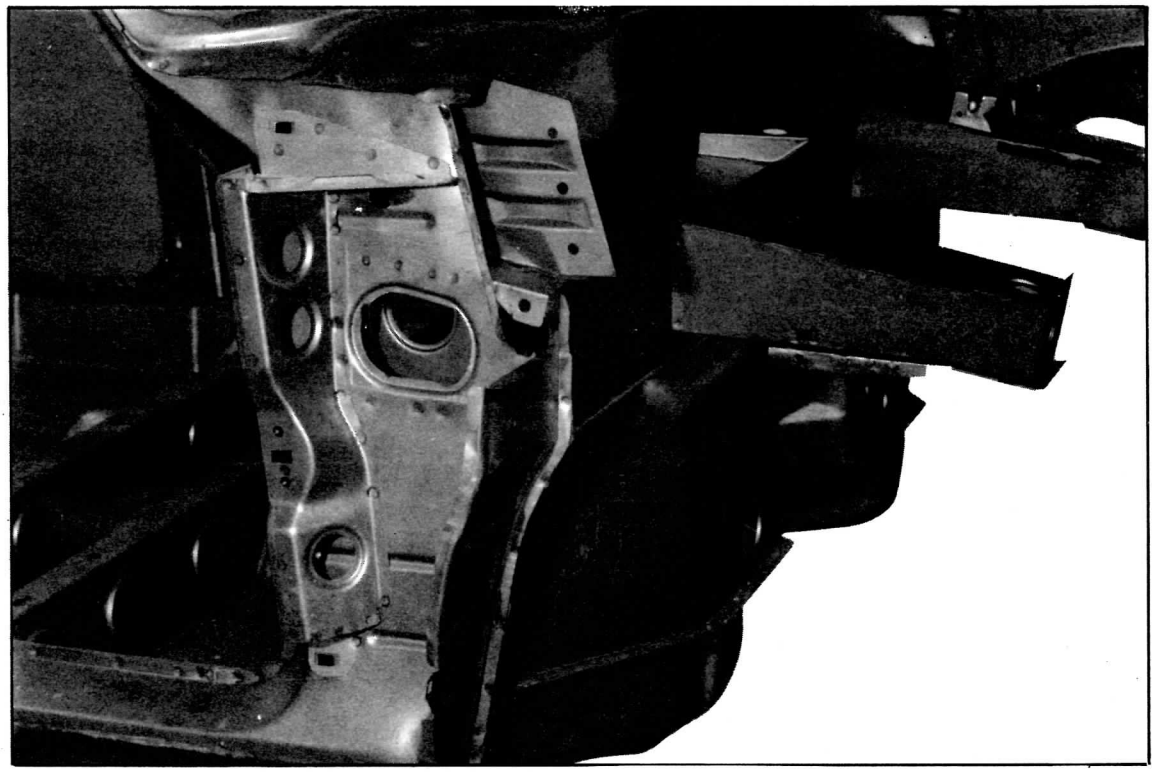
Supplement N° 1 to Manual 810-2 (ADD)


LP. 1
P.1
F1
F2


P. 2


LP. 2
LP. 3


L
L1
b
a



Body shell with the front right-hand wheelarch removed

REMOVAL

1. Remove the front wheelarch.
Break the spot-welds along the following lines :
- LP. 1 - LP. 2 - LP. 3
and the following spots :
- P. 1 (2 spots)
- P. 2 (3 spots)
- P. 3 (1 spot)

2. Withdraw the front wheelarch.

PREPARATION

3. Prepare the previously separated welding seams.
Re-shape the panels if necessary.
Clean the areas to be welded on the new components.

FITTING

4. Position the front wheelarch, and hold it in position with panel clamps.

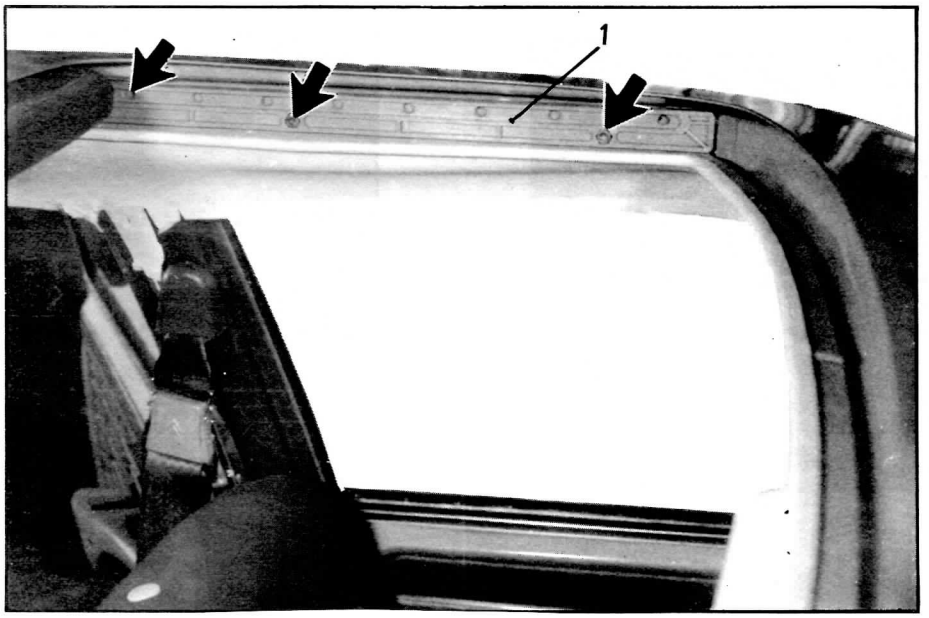
5. Position the following :
- Spacer 2645-T between points « a » and « b »
Check the following :
- the alignment of the wheelarches using spirit level 2641-T positioned on faces **F1** and **F2.**
- diagonals **L** and **L1.**
These must be identical.

6. Fit the wheelarch by spot-welding along the following lines :
- LP. 1 - LP. 2 - LP. 3
and at the following spots :
- P. 1 (2 spots)
- P. 2 (3 spots)
- P. 3 (1 spot)

7. Make sure the sealing is perfect.

8. Refit the removed components.

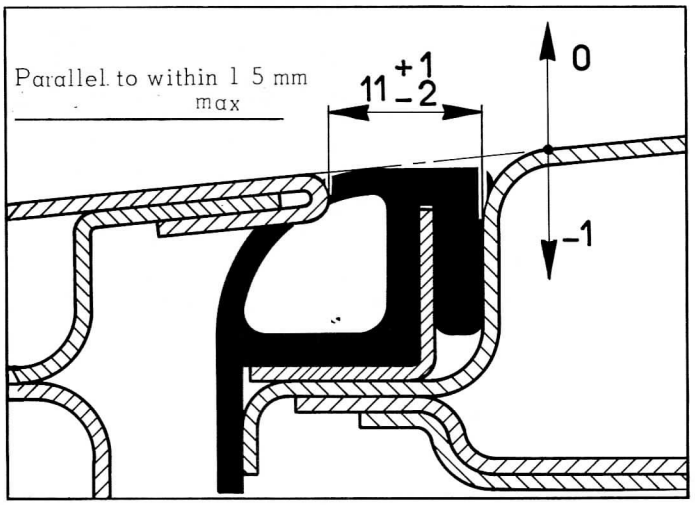
I. ADJUSTING A SUN-ROOF



This adjustment does not require any components to be removed :

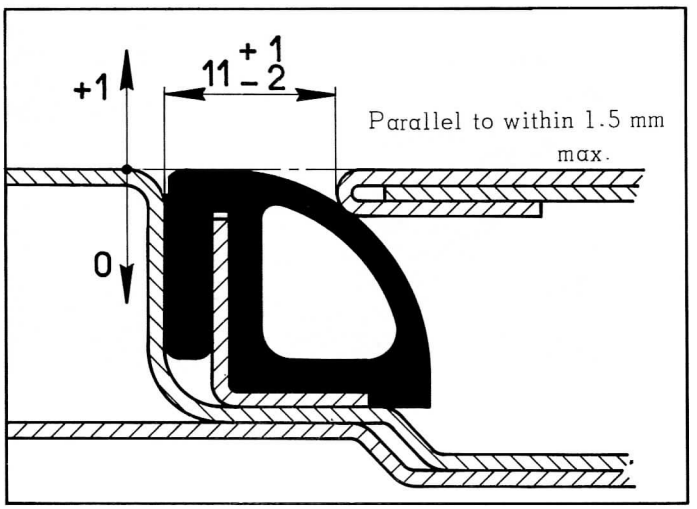
- Slacken on each side the three screws (➡) so as to allow the runners (1) to be moved length-wise and height-wise.

Supplement N° 1 to Manual 810-2 (ADD)



1. Adjusting the front edge :

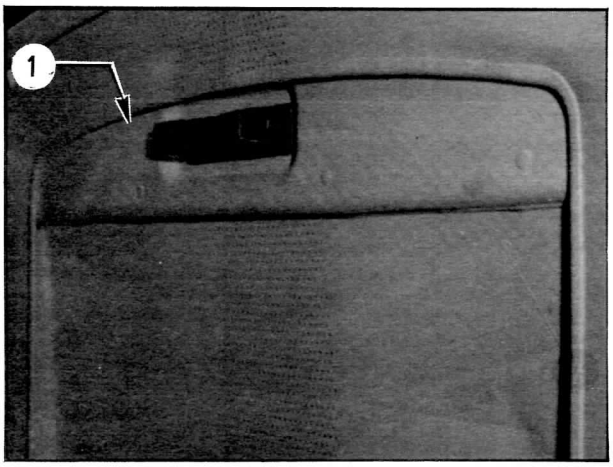
Adjust the runners so as to obtain a gap of 11^{+1}_{-0} mm between the front edge of the sun-roof and the edge of the roof, with a maximum out of alignment value of 1.5 mm and a protrusion of $^{+0}_{-1}$ mm in relation to the roof.

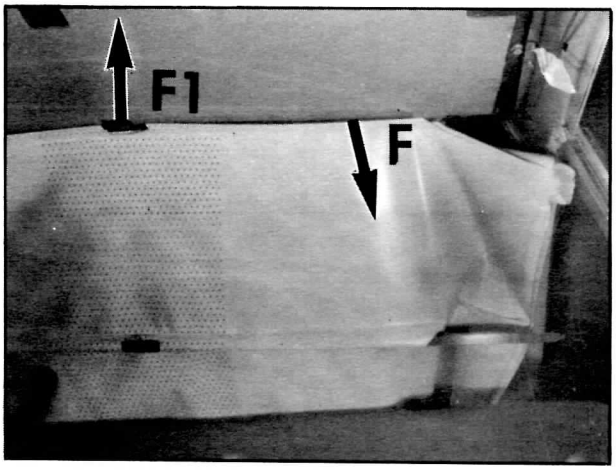


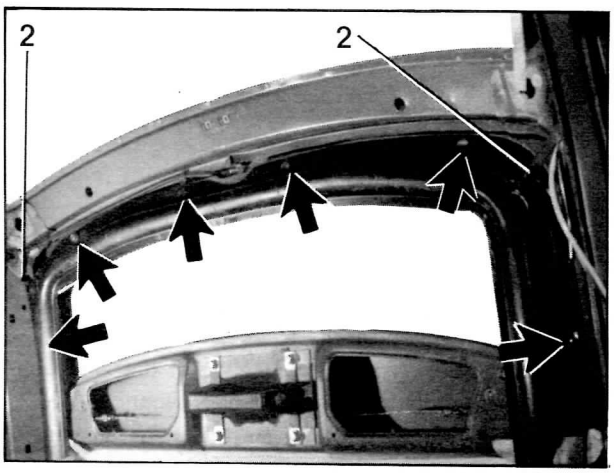
2. Adjusting the rear edge :

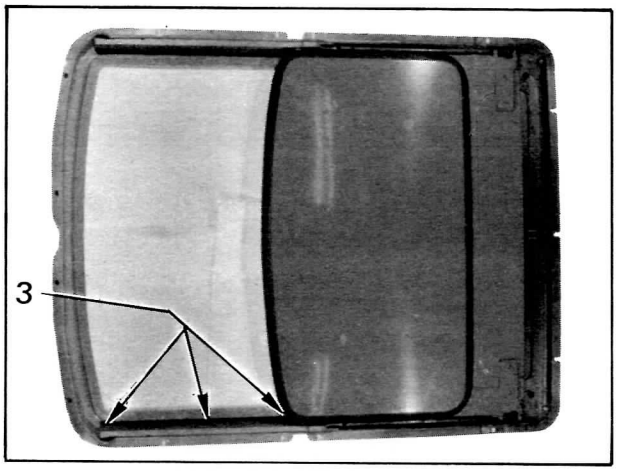
Adjust the runners so as to obtain a gap of 11^{+1}_{-0} mm between the rear edge of the sun-roof and the edge of the roof, with a maximum out of alignment value of 1.5 mm and a protrusion of $^{+1}_{-0}$ mm in relation to the roof.

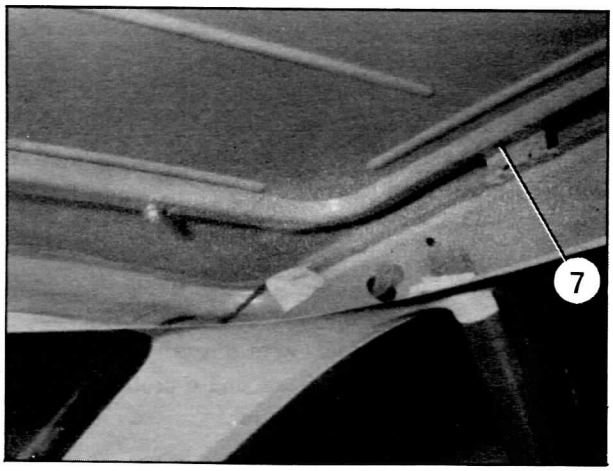
II. REMOVING AND REFITTING A SUN-ROOF











REMOVAL

1. Remove the following :

- the windscreen (*all GS vehicles except GS Birotor*).
- the rear window and the two quarter glasses (*GS Birotor*)
- the sun visors,
- the interior mirror,
- the upper centre pillar embellishers,
- the interior lamp (disconnect and insulate the positive lead),
- the finishing trim (1).

2. Partially withdraw the roof trim :

Withdraw the side door sealing rubbers level with the cantrails.

a) *All GS vehicles except GS Birotor :*

Unstick the roof trim from the front windscreen crossmember, the cantrails, and around the sun-roof frame.

Free the rear list wires by pulling at **F** on the sides, and at **F1** on the centre section.

Fold back the trim onto the rear section.

b) *GS Birotor*

Unstick the roof trim from the rear window crossmember, the cantrails and from around the sun-roof frame.

Free the rear list wires, by pulling at **F** on the sides and at **F1** on the centre section.

Fold back the trim onto the dashboard.

3. Remove the frame and sun-roof assembly :

Disconnect the drain pipes (2) located at the four corners of the frame.

Remove the screws, nuts and washers (➡) fixing the frame and the sun-roof assembly.

Withdraw it through the windscreen opening (*all GS vehicles except GS Birotor*) or through the rear window opening (*GS Birotor*).

4. Remove the sun-roof from its frame :

Remove the fixing screws (3) of one of the runners.

Remove the sun-roof and the runner.

FITTING

5. Fit the sun-roof onto its frame :

Position the sun-roof with its runner on the frame.

Fit screws (3) securing the runner with rubber washers (6) flat washers (5) and the support plate for the welded bolts (4).

6. Fit the sun-roof and frame assembly.

All GS vehicles except GS Birotor

Insert the assembly through the rear windscreen opening.

GS Birotor

Insert the assembly through the rear window opening.

Fit the fixing screws and nuts (➡) in the frame surround.

WARNING : Fit some screws 15 mm long at (7) to avoid the roof being distorted.

Stick the interior lamp leads with adhesive tape.

7. Fit the roof trim :

Fit the rear list wires.

a) *All GS vehicles except GS Birotor :*

1°) Smear with glue the edges of the windscreen crossmember and of the sun-roof frame.

2°) Stick the trim in the following order :

- front edge of sun-roof frame,
- rear edge of sun-roof frame,
- rear window crossmember.
- side edges of sun-roof frame
- side door surrounds.
- quarter glasses

b) *GS Birotor*

1°) Smear with glue the rear window opening edges and the sun-roof frame.

2°) Stick the trim in the following order :

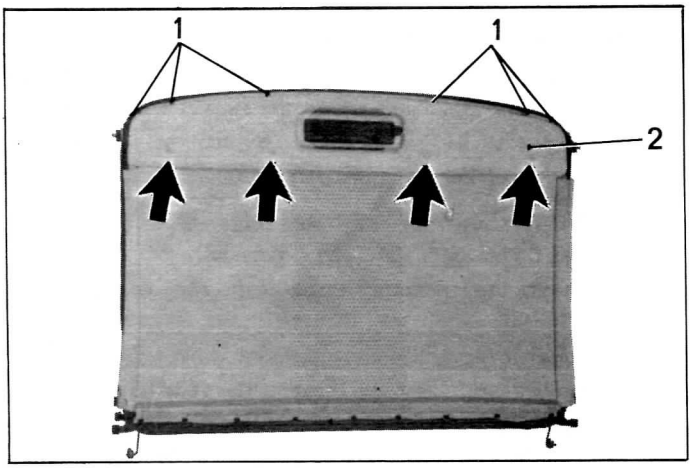
- front edge of sun-roof frame,
- rear edge of sun-roof frame,
- rear window crossmember,
- side edges of sun-roof frame,
- side door surrounds,
- Quarter glasses.

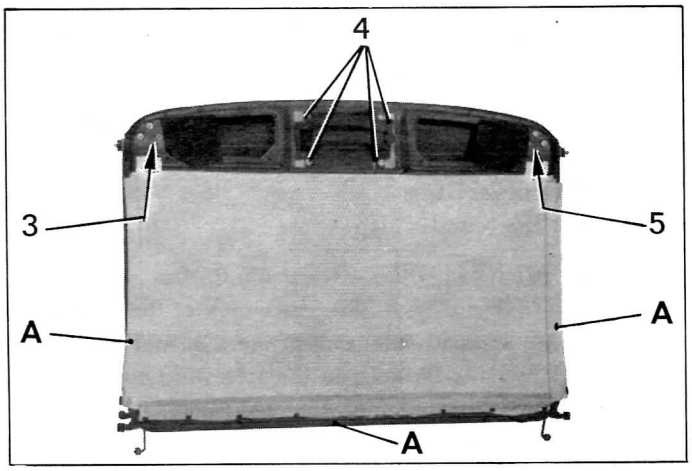
8. Fit the following :

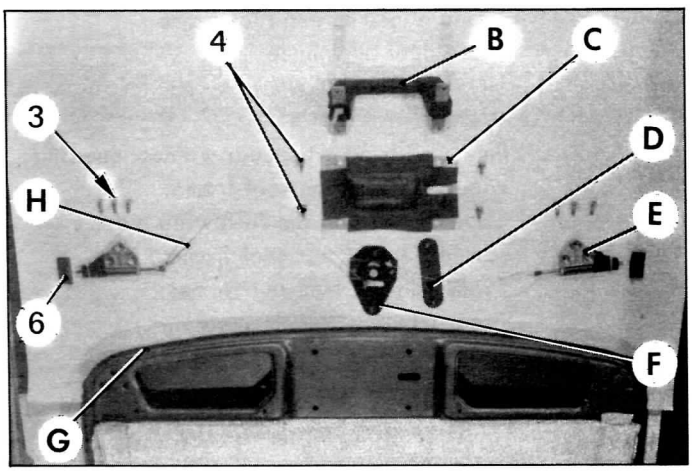
- the side door sealing rubbers,
- the finishing section,
- the interior lamp (connect all the leads,
- the centre pillar upper embellishers,
- the interior mirror,
- the sun visors
- the windscreen (*all GS vehicles except GS Birotor*)
- the rear window and the quarter glasses (*GS Birotor*).

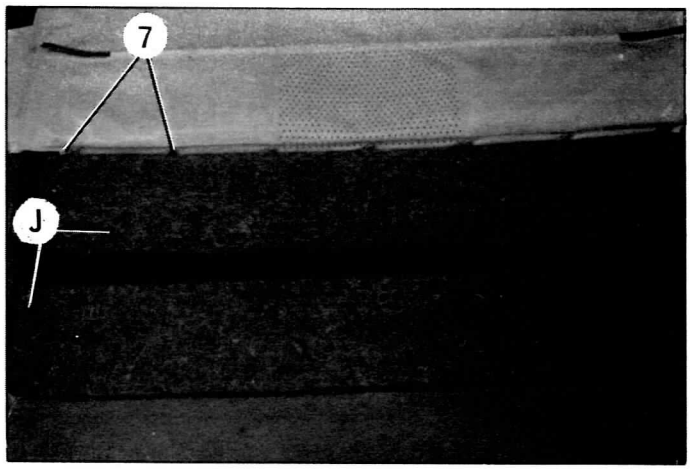
Supplement N° 1 to Manual 810-2 (ADD)

II. STRIPPING AND RE-ASSEMBLING A SUN-ROOF









STRIPPING

1. Remove the locking mechanism :

Remove the following :

- the fixing screws (1),
- the plugs (➡) for the finishing strip,
- the finishing strip,
- the protective felt pads for the locks,
- the fixing screws (3) and (5) for the locks,(E),
- the fixing screws (4) for handle (B)
- the handle (B),
- the reinforcement plate (C),
- the welded bolt support plate (D),
- the two rubber blocks (6),
- the assembly comprising the locks (E), the cables (H) and the mechanism (F).

2. Remove the trim :

a) Remove the fixing staples on the sides (A) of the trim, and free the trim from its support panel.

Unhook the list wire by pulling it forwards.

Remove the following :

- the line of self-tapping screws (7),
- the trim,
- the felt pads (J).

b) Unclinch the sealing rubber (G) and remove it.

REASSEMBLING

3. Fit the locking mechanism :

Position the lock, cable and mechanism assembly.

Position plate (C), plate (D) and handle (B).

Position mechanism (F) and fit the fixing screws (4).

Stick the two rubber blocks (6).

Adjust the tension of the cables (H) so that the locking pins of the locks can operate to the end of their travel.

Fit the protective felt pads for the locks.

4. Fit the trim :

a) Position sealing rubber (G) and reclinch it.

b) Stick the felt pads (J)

Position the trim.

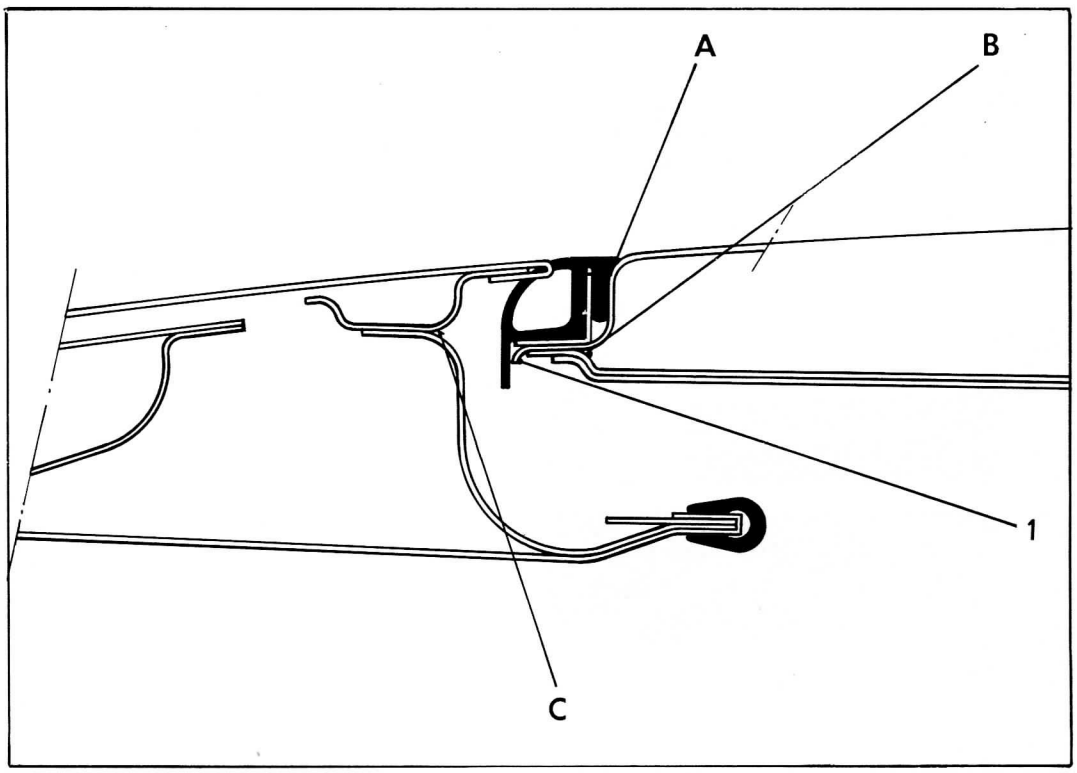
Fit the fixing screws (line 7)

Hook the list wire back in place.

Staple the trim on the three sides (A)

Fit the finishing strip (2) (screw « 1 ») and the plugs (➡).

IV. WATER-TIGHTNESS OF A SUN-ROOF



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LEAKS BETWEEN SEAL AND SUN-ROOF

1. Make sure the drain pipes are not blocked, and if they are, unblock them using a compressed air-jet.

2. Check the adjustment of the sun-roof. Check that the sealing rubber is correctly secured in its clinching strip. If necessary, remove the sun-roof re-clinch the sealing rubber and refit the sun-roof *(Adjust it, if necessary).*

3. Apply at (A) a strip of sealing compound between the sealing rubber and the outer panel of the sun-roof using a gun (with a nozzle no more than 2 mm in diameter).
Clean any surplus of compound with a cloth soaked in alcohol or white spirit.

(For this operation, use a black compound).

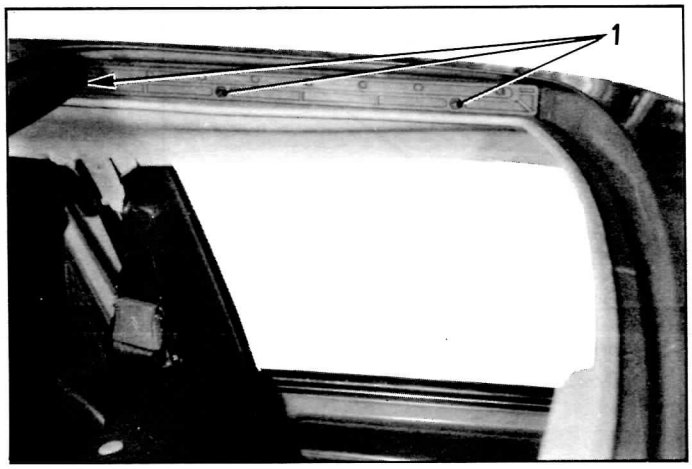
4. Remove the inner strip.
Apply a strip of sealing compound at (B), at the joint between the outer and inner, sun-roof panels (front section) using a gun.
Fit the strip.
Make sure that the strip fixing screws do not contact the lower lip of the sealing rubber.
If necessary, chase the edge of the panel (1) to counteract this fault.

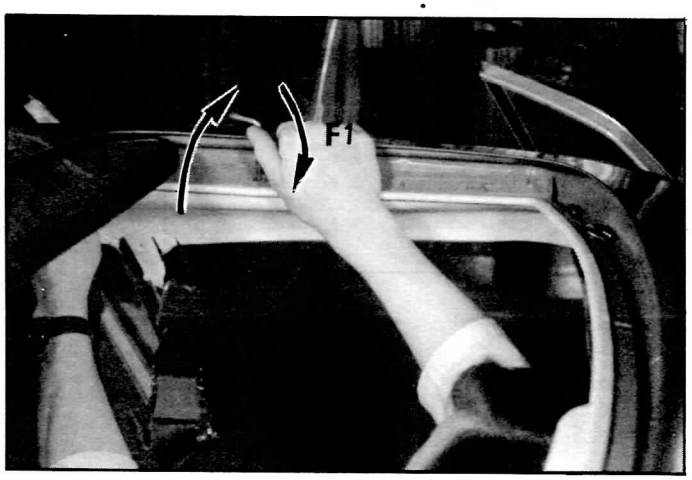
LEAKS BETWEEN ROOF AND SUN-ROOF SUPPORT

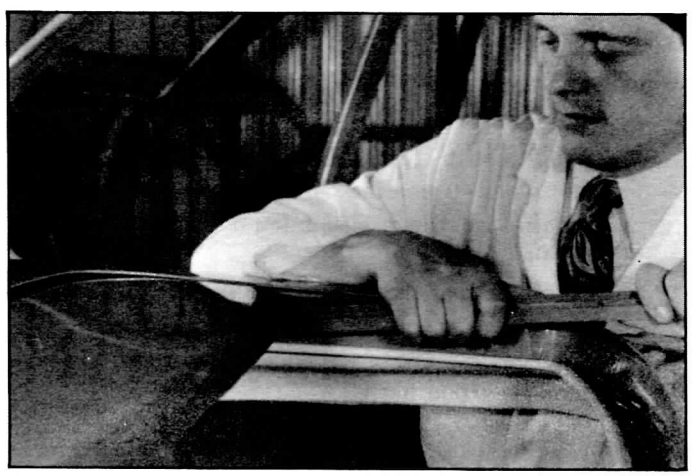
Using a gun apply a strip of sealing compound at (C) on the front and lateral sections, which are accessible when the sun-roof is open.

REPLACING A SUN-ROOF

This operation can be carried out without removing the sun-roof and frame assembly.







REMOVAL

1. Remove the following :
- the upper centre pillar embellisher fixing screw *(on the relevant side)*,
- the embellisher.

2. Withdraw the trim from the following :
- the front and rear doors, level with the cantrail,
- the roof, and the cantrail.

3. Remove the runner :

Remove the three screws (1) fixing the runner (nuts and washers).
Tilt the runner round (in the direction F) holding the sun-roof and the handle in the « open » position. Withdraw the runner, by sliding forward.

REFITTING

4. Fit the runner :

a) Engage the runner by sliding it in under the sun-roof (which must be held as high as it will go, with the handle in the « open » position).

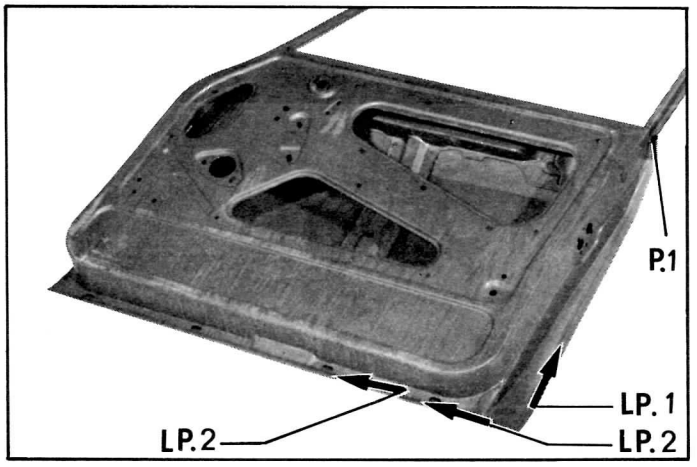
b) Tilt the runner, (in the direction F1) making sure the locking pin is properly inserted into its slot.

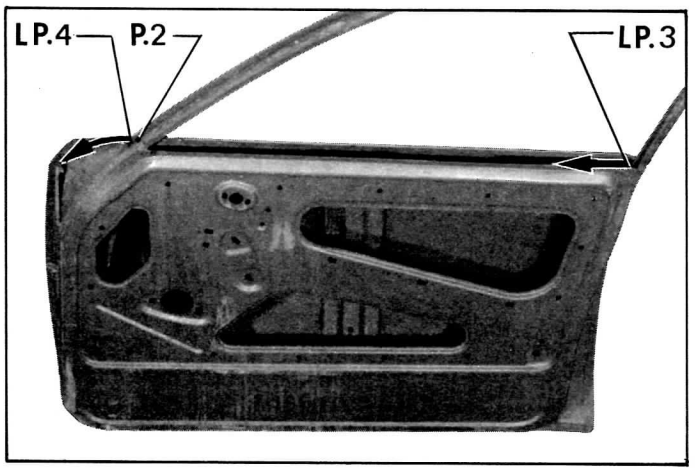
c) Fit the fixing screws, and in the following order :
- the rubber washer (2),
- the flat washer (4),
- the support plate for the cage nuts (3).

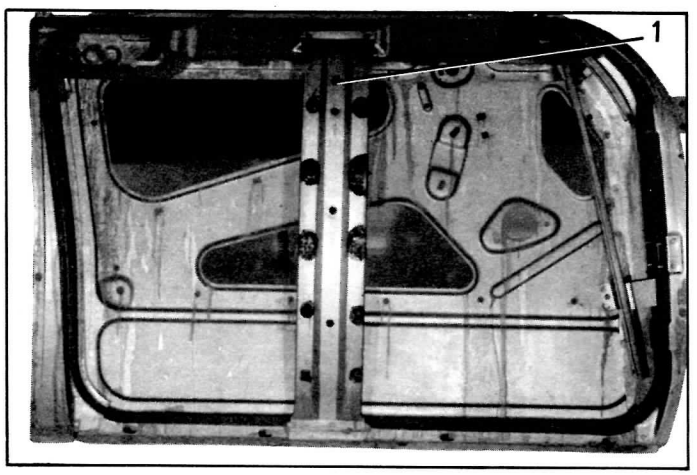
5. Adjust the sun-roof

6. Restick the roof trim.
Fit the door sealing rubbers.
Fit the centre pillar upper embellisher.

REPLACING A SIDE-DOOR OUTER PANEL







STRIPPING

1. To carry out this operation, the following items must first be removed:
   - the outer and inner glass seals,
   - the armrest and the inner panel and trim,
   - the exterior door handle and opening mechanism.
   - the glass and its felt runners,
   - the exterior mirror (*front left-hand door*).
   - the lower sealing rubber of the door,
   - the glass surround embellishers.

REMOVAL

2. Break the spot-welds in the following places :
   - P. 1 (one spot) and P. 2,

   and along the following lines :
   - LP. 1,
   - LP. 2,
   - LP. 3,
   - LP. 4

3. Cut the previously welded edges by grinding smooth the four edges of the outer panel.
   Remove the outer panel.
   Remove the inner edges.

FITTING

4. Re-shape the edges of the inner section of the door (if necessary).
   Fit soundproofing material in several places on the centre reinforcement panel of the door (1).

5. **Fit the outer panel of the door :**
   Position the panel, and hold it in position using panel clamps.
   Assemble in the following order :
   - upper edge,
   - lower edge,
   - vertical edges.

   Weld (using a spot-welding head) along the following lines :
   - LP. 3,
   - LP. 2 (ball-tipped electrode).

   Adjust the curve of the panel, and weld along the following lines :
   - LP. 1
   - LP. 4

   } (ball-tipped electrode)

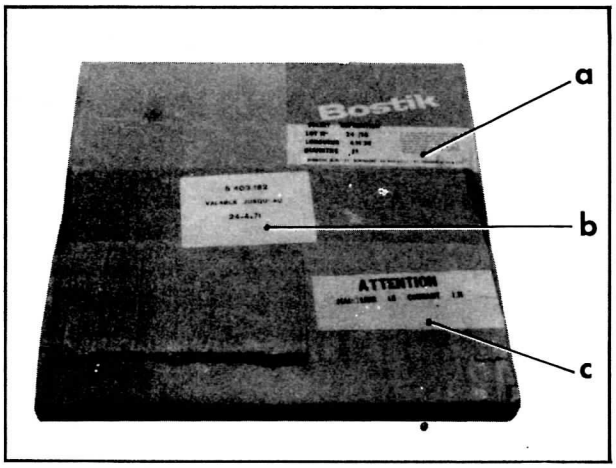
   and at :
   - P. 1 and P. 2

REASSEMBLING

6. Fit the following :
   - the felt runners and the glass,
   - the inner and outer glass seals,
   - the exterior door handle and opening mechanism,
   - the lower sealing rubber,
   - the glass surround embellishers,
   - the inner panel and the armrest
   - the exterior mirror (*front left-hand door*)

Supplement N° 1 to Manual 810-2 (ADD)

REPLACING A SIDE WINDOW



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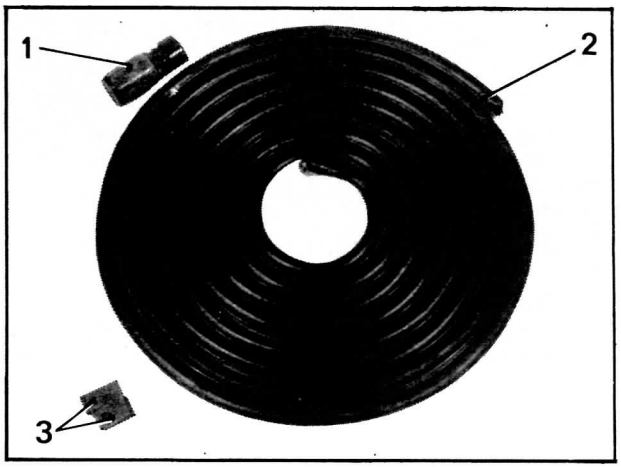


Supplement N° 1 to Manual 810-2 (CORR)

PRODUCT USED

The product used for bonding a side window is an extruded neoprene strip containing a vulcanizing agent and built-in electrical resistor.
Vulcanization is achieved by passing an electrical current (see chapter MATERIAL USED paragraph b).
This product, manufactured by BOSTIK Company, is called SOLBIT.
It is available in two grades :

a) One, for manufacturing purposes, has a shelf life of only five weeks at ambient temperature, or for an unlimited period below 0° C.

b) The other, for repair purposes, has a shelf life or six months at ambient temperature.
The repair strip is sold by the Replacement Parts Department in cardboard cartons.
The three labels on the boxes indicate respectively :
Label « a » : the physical properties of the product (length, diameter, production date, etc..).
Label « b » : the Replacement Parts number and the date after which it must not be used.
Label « c » : vulcanizing time to be observed during fitting (one hour).
Inside the box there is :
- A SOLBIT strip (2) - A bottle (1) of primary liquid - 2 rubber blocks (3) - A strand of piano wire about 0.60 meter long - An instruction sheet.

EQUIPMENT USED.

a) **Standard tools :**
- Posidrive screwdriver
- A hammer
- A dolly
- A roll of adhesive paper
- Three lengths of piano wire (diameter 0.6 mm-length = 500 mm).

b) **Special tools :**
- A set of three straps 3822-T
- Two handles 3905-T
- A transformer delivering 27 V ± 1.5 V from voltages of 220 or 380 V ± 20 V. (DERI P. 1044 type)
- Two electric leads (cross-section = 4 mm2 (0.006 in 2) length = 2.5 m (8 ft. 2 in) (connection between transformer output and the SOLBIT strip).

11 461

REMOVAL

1. Clean the outside face of the glass with alcohol and position the handling suction cups.

2. **Remove the side window :**

a) Using a cranked screwdriver, perforate the SOLBIT strip to allow insertion of a piano wire (dia. = 6 mm, length = 500 mm) between the window glass and the flange.

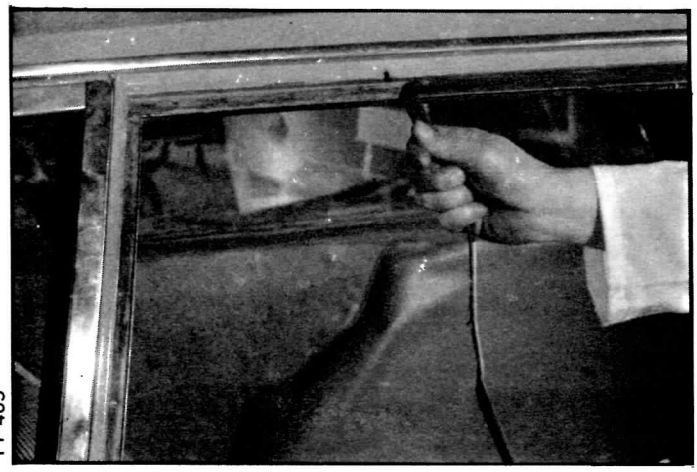
Fit the handles 3905-T on each end of this piano wire.

By alternately pulling and pushing, split the SOLBIT strip right round the periphery of the window.

NOTE :

The side window having been removed with its trim, use a spatula to raise the trim at each corner so that its base, embedded in the SOLBIT, will in no way interfere with the piano wire.

Carefully cut out the SOLBIT strip at the bottom of the glass to avoid damage to the side trim that covers the flange.



11 465

b) Remove the side glass with its trim.

PREPARATION

3. Remove the side window trimmings.

4. With a blade, remove the traces of SOLBIT adhering to :
- the glass,
- the flange,
- the trim.

NOTE : It is not necessary to completely strip the glass and the bottom of the flange, since the new SOLBIT adheres perfectly to the old. However, it is best to avoid too much excess thickness (rub them down if necessary).

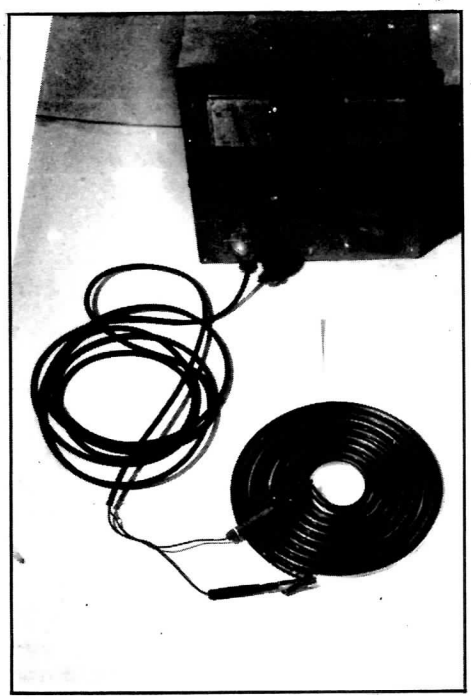
FITTING

5. Place the glass in its flange.
The clearance between the flange and the glass should not exceed 4 mm.
If necessary, once more drive out the bottom of the flange to obtain this condition.
Place the two rubber blocks at the bottom of the glass (stick them if necessary).

6. Carefully clean with alcohol :

- the flange,
- the periphery of the glass (inside face),
- the trim surround.

9510



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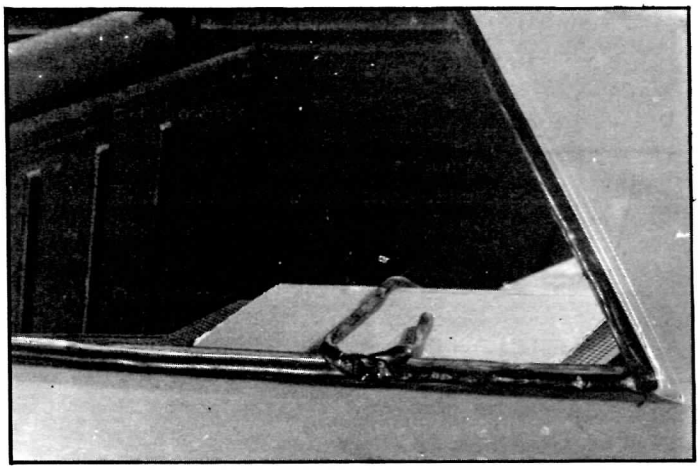

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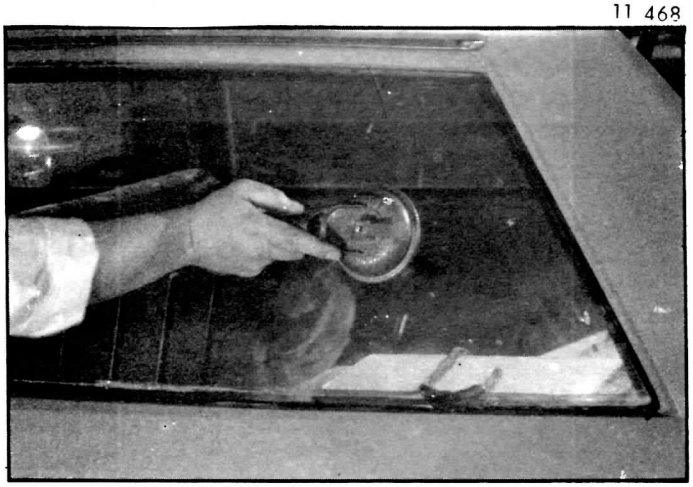

11 469

7. Using a thin paint brush, smear primary liquid on :
   - the flange,
   - the inner face of the glass along its entire periphery for a width of about 20 mm.

8. **Preheat the SOLBIT strip :**
   Connect up the ends of the resistor to the current source.
   Disconnect the resistor when the SOLBIT is soft and slightly sticky.
   (Check continuously - maximum time : three minutes).

9. **Fit the SOLBIT strip :**
   Fit the SOLBIT strip in the flange (Protect the inner boot trim from contact with the SOLBIT)
   Cross the ends of the SOLBIT strip at the rear bottom corner of the window opening.
   Turn the ends inside.
   Crush the joint, so as to avoid extra thickness of the SOLBIT strip.

10. **Fit the glass :**
    Position the glass in its flange
    It should rest on the two rubber blocks at the bottom.

11. **Heat the SOLBIT strip :**
    Connect the end of the SOLBIT strip to the current source.

12. Press all around the glass so that it takes up its final position and to allow the SOLBIT strip to flow in between the glass and the flange.
    Remove the rubber blocks fitted in paragraph 5.

IMPORTANT : **Let the SOLBIT strip heat for an hour. This time is essential for perfect vulcanization of the strip.**

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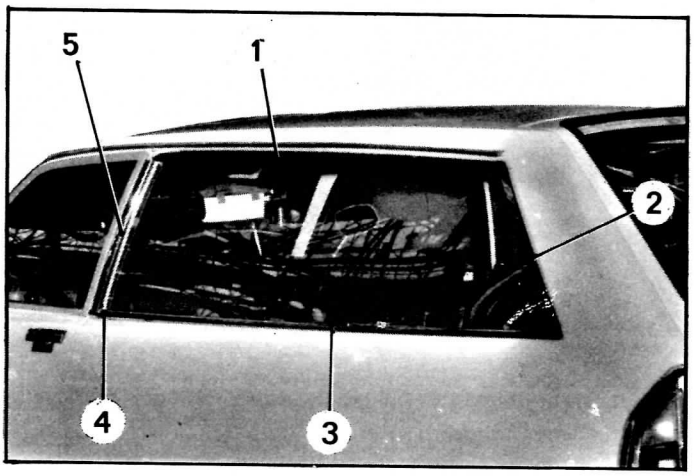

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13. Fit the trim :

Proceed with the fitting while the SOLBIT strip is vulcanizing.

Fit the trim in the following order :
- lower trim (3) with its end-piece (4),
- upper trim (1),
- front trim (5),
- rear trim (2).

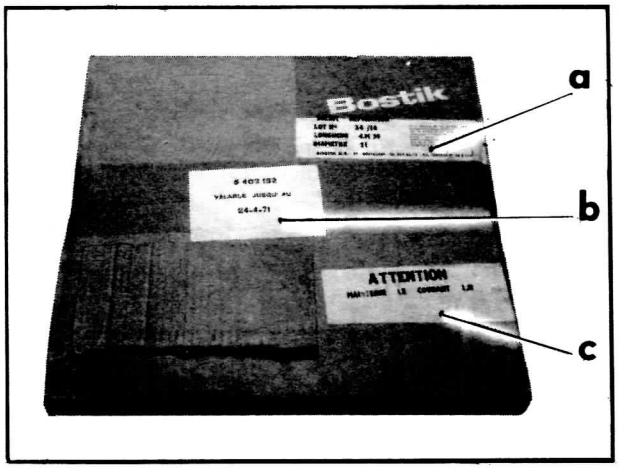
14. Disconnect the ends of the strip.
After cooling, press the ends of the strip against the flange.

15. Remove any traces of primary liquid from the glass using alcohol.
If the bodywork has been marked by the SOLBIT strip dab at the spots using the free ends of the strip.
Wipe afterwards with a soft petrol-impregnated cloth.

I. REPLACING A REAR WINDOW (BONDED TYPE)

PRODUCT USED

9417



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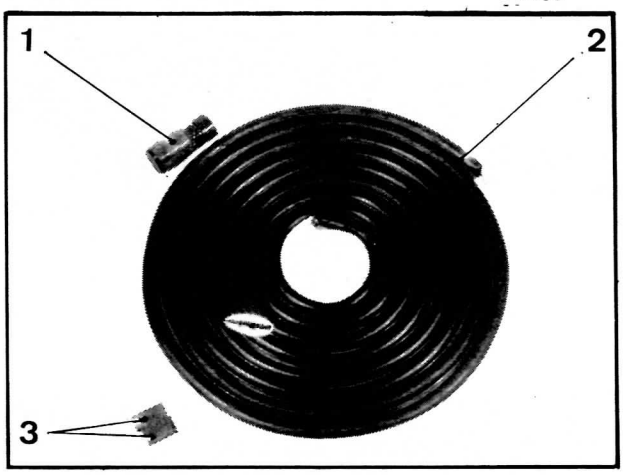


The product used for bonding tailgate windows is an extruded neoprene strip containing a vulcanizing agent and a built-in electrical resistor.
The vulcanization is achieved by passing an electrical current (see chapter MATERIAL USED paragraph b). This product, made by the BOSTIK Company, is called SOLBIT.

The product comes in two grades :

a) The first, for manufacturing purposes, has a shelf life of five weeks at ambient temperature or an unlimited life below 0° C.

b) The second, used for repair purposes, has a shelf life of six months at ambient temperature.
The repair strip is sold by the Replacement Parts Department in cardboard cartons.
The three labels on the carton indicate respectively :
Label « a » : the physical properties of the product (length, diameter, production date, etc..).
Label « b » : the Replacement Parts number and the final date of **use which must never under no circumstance be exceeded.**
Inside the carton there is :
- A strip of SOLBIT (2) - A bottle (flask) of primary liquid - Two rubber blocks (3) - A length of piano wire about 0.60 meter in length - An instruction sheet.

EQUIPMENT USED

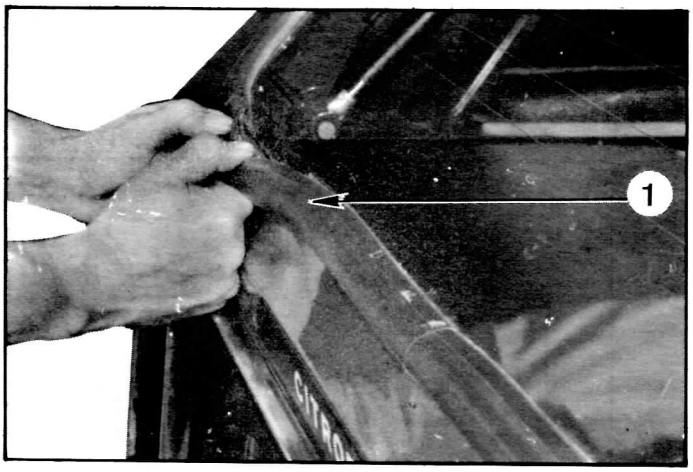
a) **Standard tools**

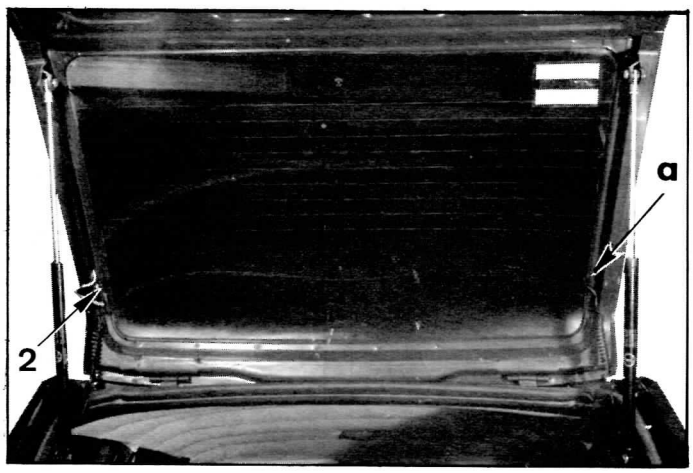
- Posidrive screwdriver
- A hammer.
- A dolly
- A roll of adhesive paper
- Three lengths of piano wire (dia. = 0.6 mm - length = 500 mm).

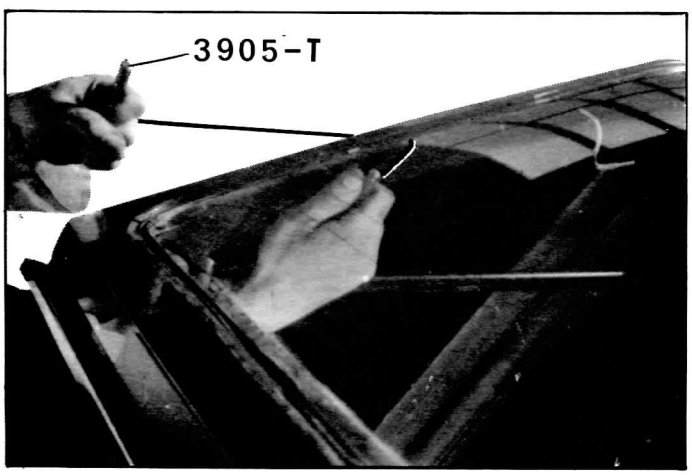
b) **Special tools**

- A set of three straps 3822-T
- Two handles 3905-T
- A transformer giving 27 V ± 1.5 V from voltages of 220 V or 380 V ± 20 V. (DERI P 1044 - type)
- Two electrical leads (cross-section = 4 mm^2 (0.006 in^2) length = 2.5 m (8 ft. 2 in)) (connection between the transformer output and the SOLBIT strip).

Supplement N° 1 to Manual 810-2 (CORR)







REMOVAL

1. Remove the finishing rubber strip.
   Pull hard to free it from the glass.
   Do not re-use this rubber.

2. Disconnect the heating resistor lead at « a » and remove the bolt (2) holding the earth wire.

3. **Remove the rear window :**
   a) Protect the paint on the outside of the tailgate with adhesive paper.
   b) Using cranked screwdriver, make a small opening in the SOLBIT strip to allow insertion of a piano wire (dia. = 0.6 mm - length = 500 mm) between the glass and the flange.
   At each end of this piano wire fit the 3905-T handles.
   By alternately pulling and pushing cut the SOLBIT strip right round the glass.

   c) Remove the tailgate window glass.
   The use of suction cups will facilitate this operation.

PREPARATION

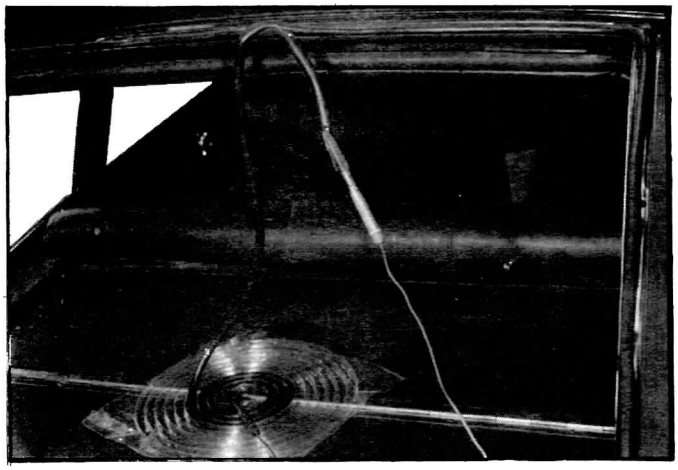
4. Using a knife, remove any traces of the SOLBIT strip adhering to the glass and flange.

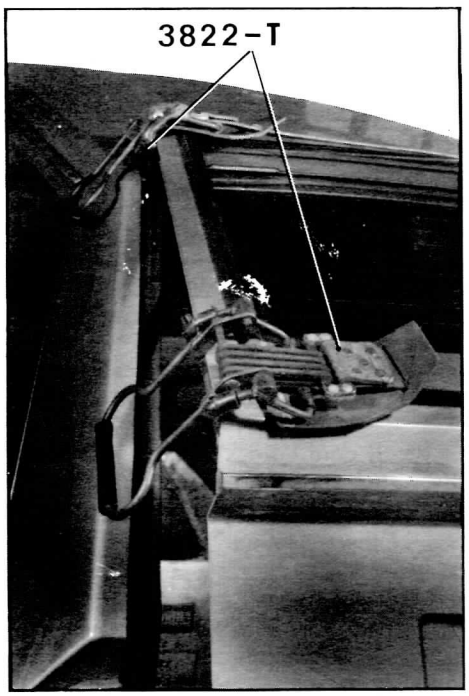
   If necessary, rub down the window flange

NOTE : It is necessary to strip the glass and the steel completely since the new SOLBIT adheres perfectly to the old. However, it is wise to avoid too much extra thickness (rub them down if necessary).

5. Fit the new finishing rubber strip on the tailgate glass, stick it if need be.

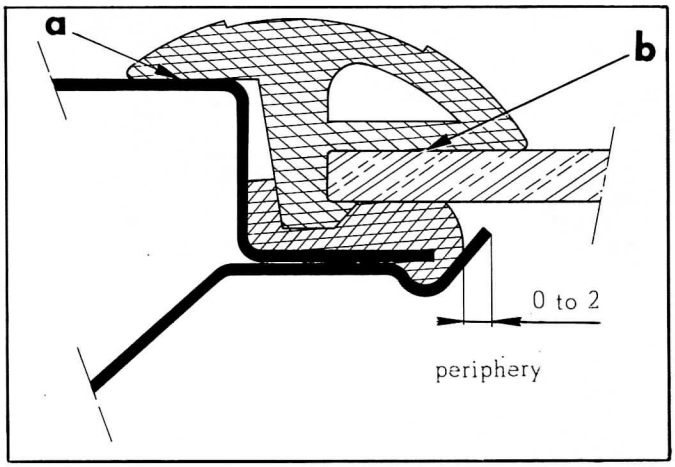
6. Carefully clean with alcohol :
   - the flange,
   - the periphery of the glass and the rubber (bonding area).

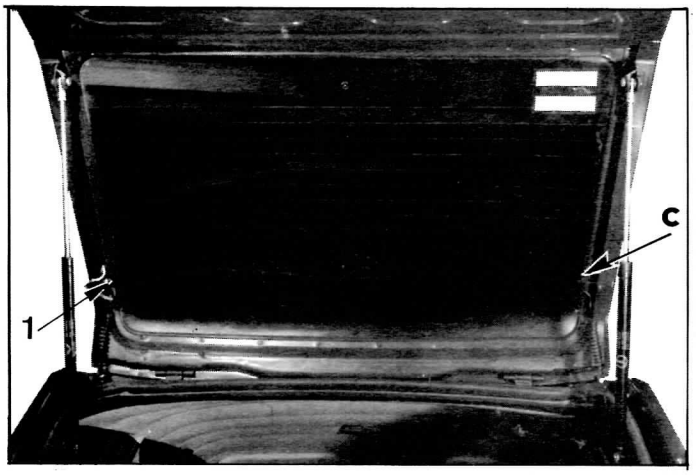




FITTING

7. Using a thin paint brush, apply primary liquid to :
   - the flange,
   - the inner face of the glass along its entire periphery over a width of about 20 mm.
   - the finishing rubber.
8. **Preheat the SOLBIT strip :**
   Connect the ends of the resistor to a 24 volt current source.
   Disconnect the resistor when the SOLBIT is soft and slightly sticky.
   (Check continuously maximum time = three minutes).
9. Fit the SOLBIT strip in the flange, crossing its ends at the top at the centreline of the body.
   Hang the ends inside.
   Press down the junction to avoid too great a thickness of SOLBIT.
   Do not cut the SOLBIT strip to length.





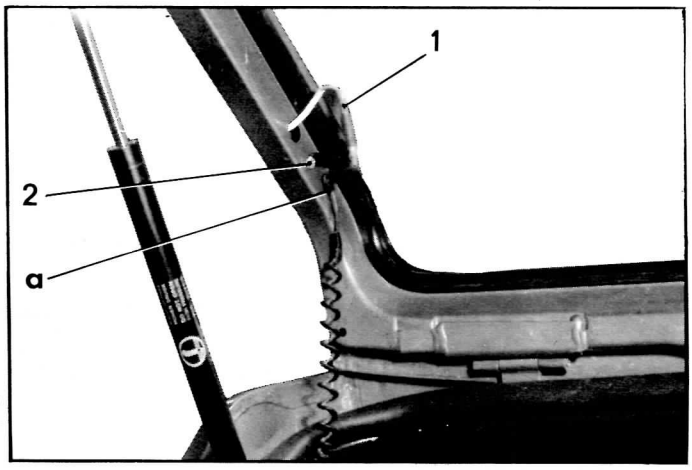
10. **Fit the glass :**
    Fit the glass with its finishing rubber on the SOLBIT strip.
11. **Heat the SOLBIT strip :**
    Connect the ends ot the SOLBIT strip to a 24 volt current source.
12. Press around the glass so that the glass assumes its definitive position and allow the strip to flow between the glass and the flange.
    Check that the finishing rubber lies flat along the centre periphery at « a » on the flange and « b » on the glass.

IMPORTANT : **Let the strip heat for an hour. This time is essential to obtain perfect vulcanization of the strip.**

13. Disconnect the ends of the strip.
    Remove the two 3822-T straps.
    After cooling, cut the ends of the strip level with the flange.
14. Use alcohol to remove all traces of primary liquid from the glass.
    If the bodywork has been marked by the SOLBIT strip, dab the spots with the free ends of the strip.
    Then, wipe with a soft petrol-impregnated cloth.
15. Connect the lead to the heated rear window at « c » and fit the bolt (1) holding the earth wire.

Supplément N° 1 to Manual 810-2 (CORR)

II. REPLACING A REAR WINDOW WITH RUBBER SEALING SECTION



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REMOVAL.

1. Disconnect the heated rear window lead and remove the earth wire bolt (2).
   Disconnect the lead (1) from the number plate lamp and unfasten the conductors at « a » on each side of the tailgate window.
2. Using a spreader release the upper corners of the sealing rubber.
   Press on the glass to facilitate the passage of the rubber seal lip.
   End the removal while releasing completely the glass from the tailgate.
3. Remove the rubber sealing strip.

PREPARATION.

4. Remove the sealing compound and carefully clean the tailgate flange.
   If necessary, file down any welding ridges.
   If necessary, rub down the flange.
5. At each corner, fit a pellet of new compound drawn out to a length of about 50 mm.

FITTING.

6. Fit the tailgate window glass into its rubber seal.
7. Fit a small cord (dia. = 4 mm), smeared with soapy water, into the groove of the rubber seal. The ends of the cord should cross at the centre of the bottom of the glass.
8. Place the glass thus fitted into its opening, with the cord ends towards the inside of the vehicle.
9. Press hard on the outside of the glass as close as possible to the rubber seal while an assistant inside draws on one of the cord ends (this serves to raise the inner lip of the rubber and allows the latter to be fitted on the flange.
   Continue to press all around the glass and remove the cord.
10. Complete fitting by tapping with a rubber mallet on the outside of the glass, all around it and as close as possible to the rubber seal.
11. Connect the lead of the heated rear window and fit the earth wire bolt (2).
    Connect the leads (1) of the number plate lamp and fasten on the tailgate at « a » (on each side).

LIST OF SPECIAL TOOLS MENTIONED IN SECTION 4 OF MANUAL 810-2

DESCRIPTION	NUMBER Methods - Repairs	REFERENCE NUMBER of the Tool sold
PANEL WORK		
« FENWICK » Universal Jig		2600-T
Legs, and anchoring plates for 2600-T		2640-T
« G » equipment for 2600-T		2628-T
« CELETTE » Universal Jig		MUF 4, or MUF 5 or EUROMUF
« G » Equipment		ENS. 158 000
Tools for checking the positioning of the front axles on the body shell		2638-T
Tools for checking the positioning of the rear axles, on the body shell		2637-T
Tools for checking the positioning of the axles on the body shell		2636-T
Rod (Dia. = 19.85 mm) for checking the positioning of the steering arms, and the front and rear axle fixing points		2632-T bis
Spirit level on base plate		2641-T
Combination spirit level		2642-T
Supporting beam for jig		2627-T
Spacer for checking the front wheelarches and the front crossmember		2645-T
« PICKAVANT » spot-weld cutter		JWP 318
Spot-weld cutter		or 2662-T
METALWORK		
Tool for fitting the windscreen key		3814-T
Set of three straps for bonding the glass		3822-T
Set of two handles for removing the glass		3905-T
DERI Transformer (ref. DERI)		P. 1044
Tool for removing the door panel and the window winter attachments		3817-T
Tool for unlocking the bonnet	MR. 630-84/21	
Tool for dismantling the door locks	MR. 630-12/40	

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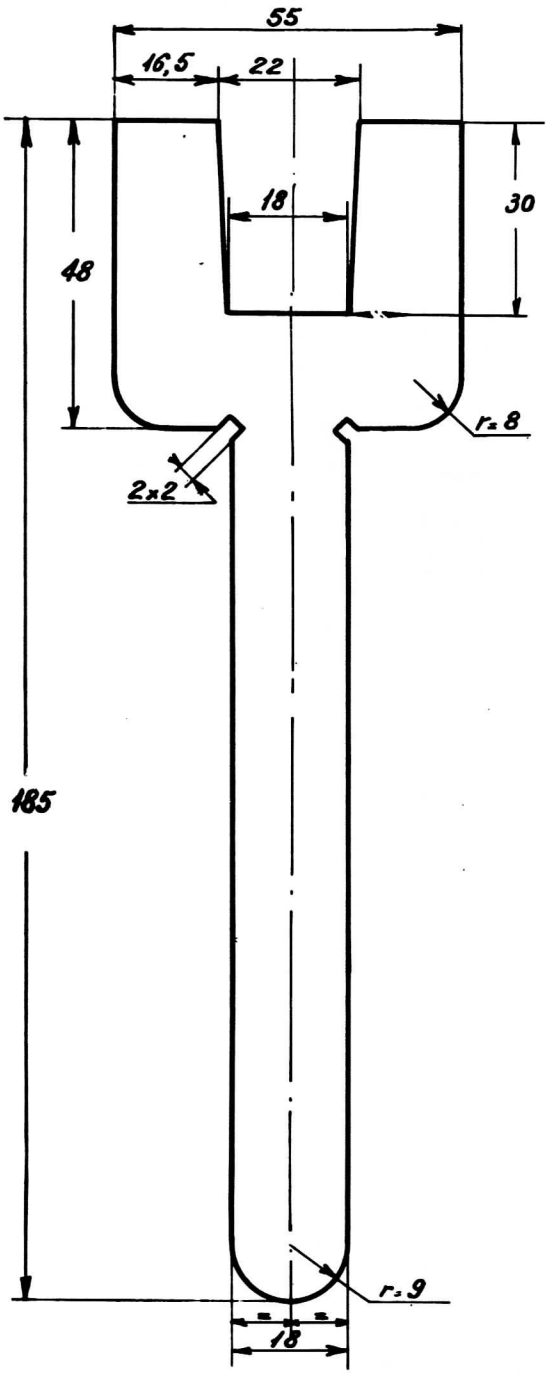
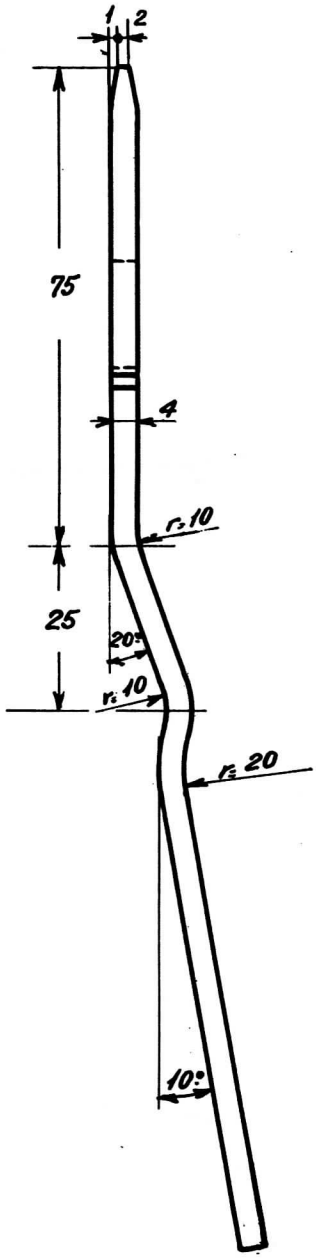
MR. 630_84/14





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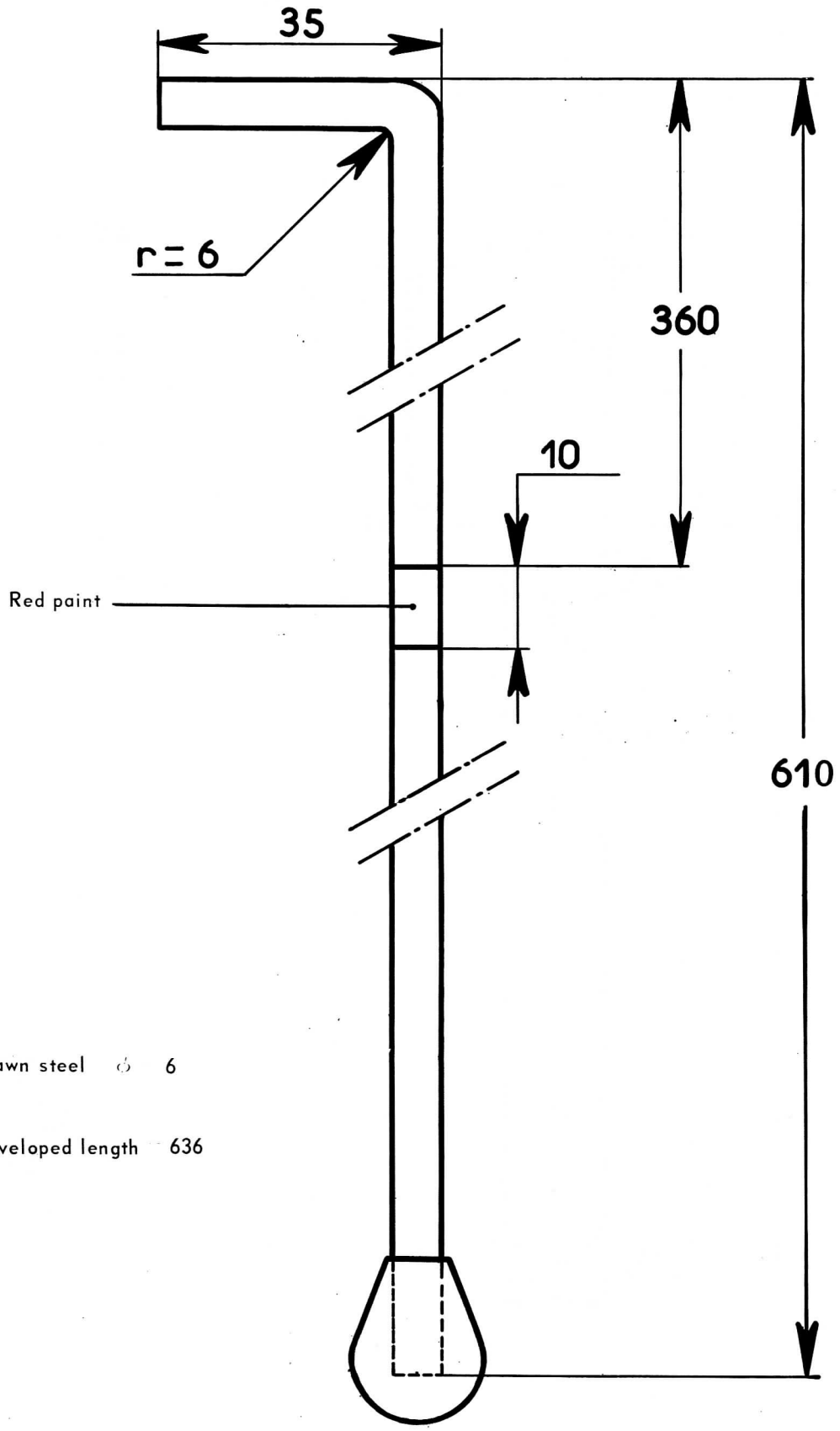
MR.630_84/21



Drawn steel ⌀ 6

Developed length 636