AFTER-SALE
TECHNICAL DEPARTMENT

REPAIR MANUAL N° 814

VOLUME 2

DECEMBER 1974

D VEHICLE

(D vehicles all types produced since September 1965)

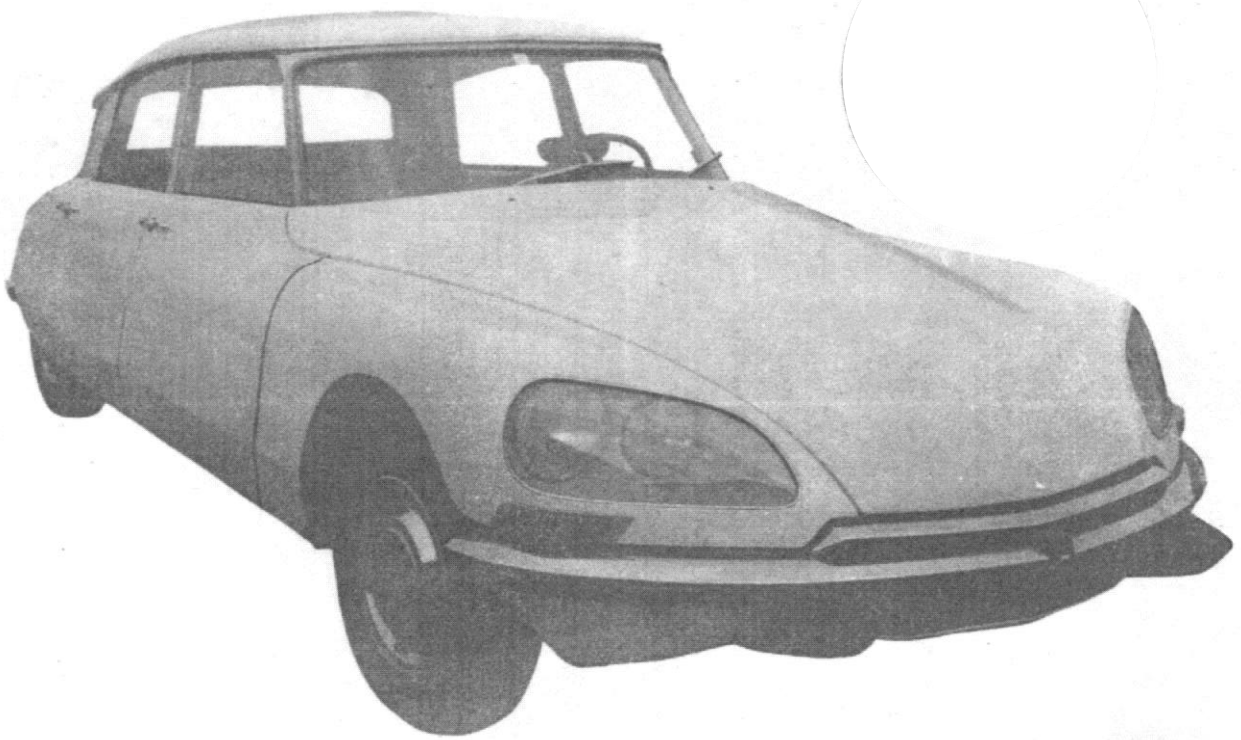
FIRST SECTION : **REMOVAL and FITTING**

SECOND SECTION : **RECONDITIONING**

THIRD SECTION : **ELECTRICAL SYSTEM**

FOURTH SECTION : **BODYWORK**

Manual 814-2



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USING THE MANUAL

PRESENTATION

To facilitate the use of the Manual we have arranged the repair operations into two volumes :

- Volume 1 contains :
  - the CHARACTERISTICS - ADJUSTMENTS - CHECKS necessary at all repair workshops for adjustment or simple repairs.
- Volume 2 contains the operations of :
  - DISMANTLING and ASSEMBLING.
  - RECONDITIONING.
  - ELECTRICAL SYSTEM - HEATING - AIR CONDITIONING.
  - BODYWORK.

Each volume is sold separately and it is presented in a red Fibrex with a " MULTO " type clasp to facilitate adding amendments or taking out an operation needed by the repair workshop.

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COMPOSITION

Each volume contains :

- a list of the operations appearing in the volume.
- the operations arranged in numerical order
- a list of all the tools mentioned in the operations and drawings for making the special tools that are not sold but that can be made by the repairer himself.

OPERATIONS

The operation sequence has been compiled to ensure the best quality of work in the shortest possible time.

The numbers of the operations are composed of :

a) letters indicating the vehicle :

- "D" concerns operations on D of all types (DTT)
- "D h" concerns operations on vehicles equipped with hylaudric gear-change
- "D m" concerns operations on vehicles equipped with a manual gear-change
- "DbW" concerns operations on vehicles equipped with automatic gear-change (DBW)
- "D.I.E." concerns operations on vehicles equipped with Electronic Fuel Injection (D.I.E. operations are printed on pink paper).
- "DX" "DY" "DV" "DT", etc... concern operations on these types of vehicles only.

b) a number with three figures indicating the unit or unit component.

c) a figure indicating the nature of the section.
- figures 0 0 0 indicate the characteristics of the vehicle
- figures 0 0 indicate the characteristics of the unit
- figure 0 indicate checks and adjustment
- figures 1 4 7 indicate the removal and fitting
- figures 2 5 8 indicate stripping down and reassembly
- figures 3 6 9 indicate reconditioning

The arrows corresponding to the operation list marks allow the required operation to be found quickly.

TOOLS

Special tools are indicated 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 are indicated in the text by a number preceded by the letters MR.
The drawings for making these tools, arranged in numerical order, occur at the end of each volume.

TIGHTENING TORQUES

These torques are expressed in :
- Metre-Newtons (m Λ N), the legal in France
- Metre-Kilogramme (mkg), since most torsion-spanners in current use are so graduated

1 mkg = 9.81 m Λ N exactly

The figures quoted are "rounded off", taking 1 mkg at 10 m Λ N, thus :

2 m Λ N is taken to equal 0.2 mkg (1.4 ft. lbs)
60 m Λ N is taken to equal 6 mkg (43 ft. lbs)

- Foot pounds (ft. lbs) converted at 7.22 ft. lbs = 1 mkg, and rounded off to practical figures.

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,
  Citroën Cars Limited,
  SLOUGH - BUCKS - GREAT - BRITAIN

or :

- Département Technique Après-Vente
  Assistance technique
  163, Avenue G. Clémenceau
  92000 NANTERRE - FRANCE

MANUAL N° 814-2

FIRST SECTION

FIRST SECTION

REMOVAL and FITTING

PART TO BE CUT OFF

LIST OF OPERATIONS
IN THE FIRST SECTION OF THE MANUAL N° 814-2

« D » Vehicles All Types - except D.IE

Operation Number	DESCRIPTION
	ENGINE - CARBURETTOR - IGNITION
Dh. 100-1	Removing and fitting an engine/gearbox assembly *(vehicles type bvh - Hydraulic gearchange)*
Dm. 100-1	Removing and fitting an engine/gearbox assembly *(vehicles type bvm - Manual gearchange)*
Dbw. 100-1	Removing and fitting an engine/gearbox assembly *(vehicles type Dbw - BORG WARNER)*
D. 112-1	Removing and fitting a cylinder head or a cylinder gasket
D. 112-4	Work on the cylinder head - Removing and fitting an inlet valve rocker shaft - Removing and fitting an exhaust valve rocker shaft - Replacing a core plug
D. 223-1	Removing and fitting an oil pump filter cartridge
	GEARBOX
D. 330-1	Removing and fitting a gearbox
Dh. 334-1	Work on hydraulic gear change control : - Removing and fitting a selector - Removing and fitting a hydraulic unit - Removing and fitting a gear change regulator - Removing and fitting a gearbox cover
D. 343-4	Work on gearbox output and brake discs - Removing and fitting a differential shaft or bearing - Removing and fitting a brake disc
Dbw. 350-1	Replacing an automatic gearbox
Dbw. 350-2	Stripping and assembling an automatic gearbox
	DRIVE SHAFTS
D. 372-4	Work on transmission and wheel swivel : - Removing and fitting a drive shaft or wheel swivel (aluminium drive unit housing) - Removing and fitting a drive shaft or wheel swivel (steel drive unit housing) - Removing and fitting a vibration damper
	REAR AXLE
D. 423-1	Work on rear suspension arm hub - Removing and fitting a rear wheel stub axle, stub axle bearings or wheel stud
	SUSPENSION
D. 434-1	Work on mechanical components of the suspension : - Removing and fitting a front anti-roll bar - Replacing front anti-roll bar bearing shells - Removing and fitting a rear anti-roll bar

LIST OF OPERATIONS
IN THE FIRST SECTION OF THE MANUAL N° 814-2
« D » Vehicles All Types - except D.1E

Operation Number	DESCRIPTION
	STEERING
D. 441-1	Work on steering wheel and steering column (power steering) - Removing and fitting a steering wheel - Removing and fitting a steering centralising cam - Removing and fitting a steering wheel bracket ⟶| *9/1969* - Removing and fitting a steering wheel bracket |⟶ *9/1969* - Replacing an anti-theft device *(Vehicles All Types* ⟶| *9/1969* - Replacing an anti-theft device *(Vehicles All Types* |⟶ *9/1969*
D. 444-1	Work on the power steering : - Removing and fitting a power steering unit - Replacing a rack hydraulic control - Replacing an assembly of steering pinion/rotating union
	TOOLS
	List of special tools mentioned in the manual. Manufacturing drawings for tools not sold.

LIST OF OPERATIONS

IN THE FIRST SECTION OF THE MANUAL N° 814-2

Véhicles type « DS 21 with electronic fuel injection system (DX.IE and DJ.IE)

Only the operations specific to this type of vehicle are covered.
For operations not given in the list below, consult the list of operations concerning vehicles « D », all types.

Operation Number	DESCRIPTION
	ENGINE - CARBURETTOR - IGNITION
D.IE 100-1	Removing and fitting an engine/gearbox assembly
D.IE 112-1	Removing and fitting a cylinder head or cylinder head gasket
D.IE 141-4	Work on air inlet manifolds : - Removing and fitting manifold and throttle housing assembly - Removing and fitting inlet pipes or gaskets.

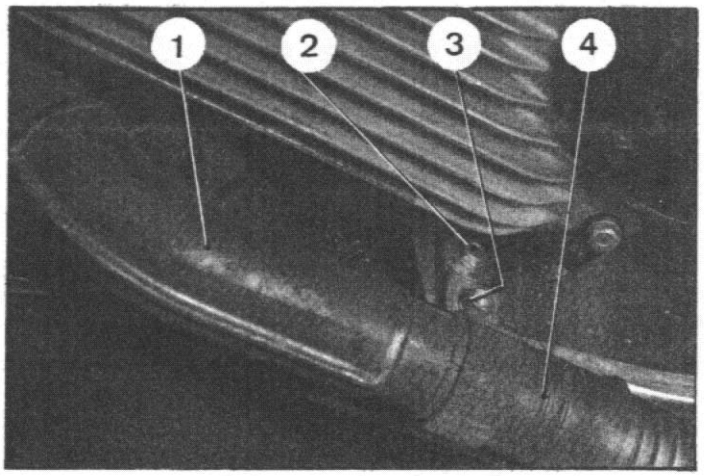
LIST OF OPERATIONS

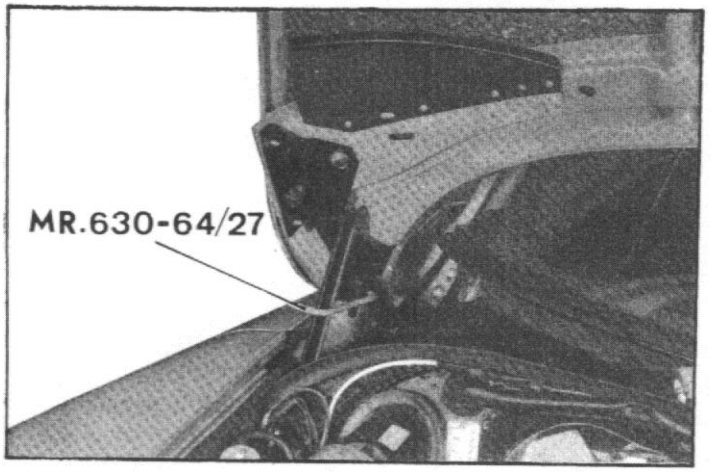
IN THE THIRD SECTION OF THE MANUAL N° 814-2

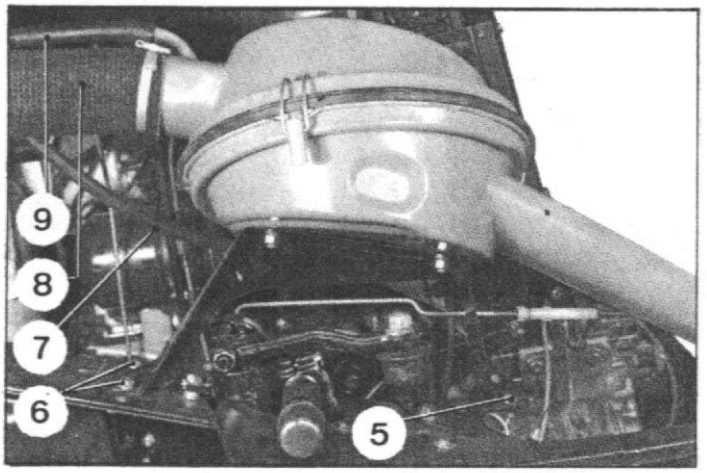
Vehicles type « DS 21 with electronic fuel injection system » (DX.IE and DJ.IE)

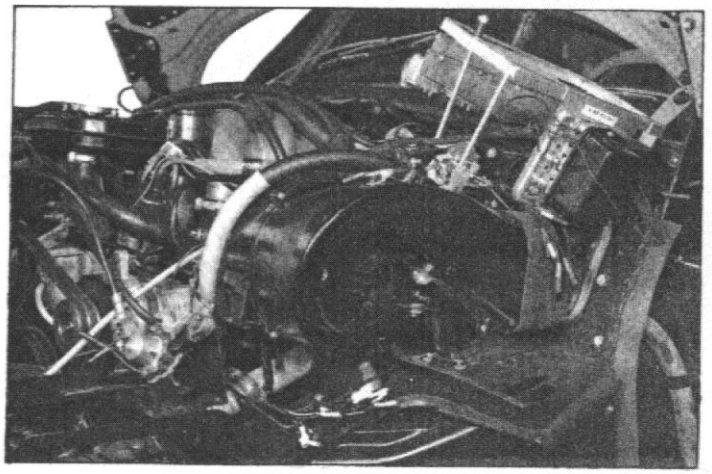
Only those operations relating to this type of vehicle are described.
For operations which are not included in the following list, refer to « Operations relating to « D » vehicles, All Types.

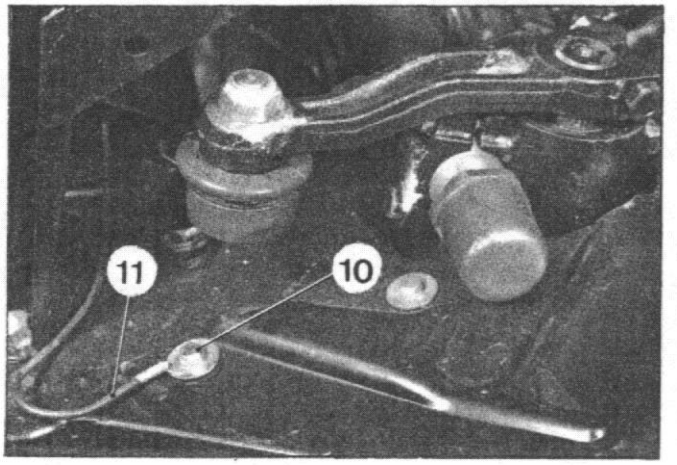
Operation Number	DESCRIPTION
	FUEL INJECTION SYSTEM
D.IE 144-1	Work on fuel injection system : - Removal and installation of electronic control unit - Removal and installation of a throttle spindle switch - Removal and installation of cold start injector - Removal and installation of full-load switch - Removal and installation of pressure sensor - Removal and installation of thermal sensor - Removal and installation of pressure regulator (petrol) - Removal and installation of injector - Removal and installation of cold start time delayed thermal switch (on cylinder head) - Removal and installation of slow running air intake control (complete unit) - Removal and installation of injector feed line assembly (front part) - Removal and installation of injector feed line assembly (rear part) - Removal and installation of injection feed line assembly complete unit (front and rear parts)
D.IE 173-1	Petrol feed system : - Removal and installation of petrol pump - Replacement of petrol filter











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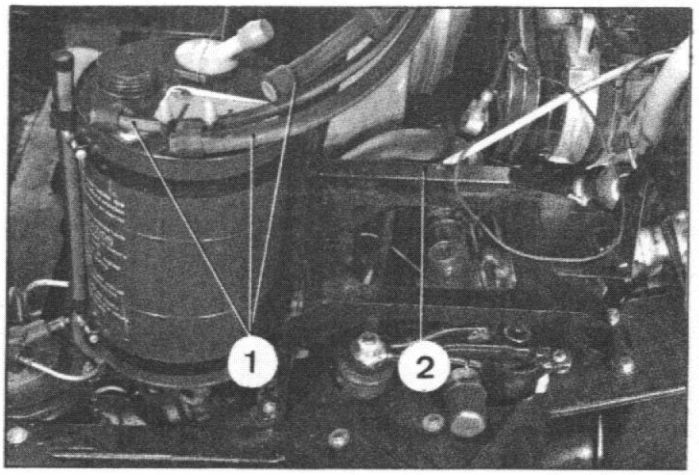
D.IE VEHICLES ALL TYPES

REMOVING AND FITTING AN ENGINE/GEARBOX ASSEMBLY

REMOVAL

1. With the vehicle on a lift or over a pit, disconnect the exhaust down pipe (1) from the coiled pipe (4) slacken the screw (2) of the front collar and the nuts (3) on the front and rear collars of pipe (4).
2. Hold the bonnet up (catch MR. 630-64/27). Chock up the front of the vehicle (supports 2505-T).
3. Remove the spare wheel, the radiator inlet duct assembly and the crossmember supporting the spare wheel.
4. Remove the front wheels and the front wings.
5. **Removing the battery :**
   Disconnect the cables from the battery terminals and the relays (electronic and for the starter). Disconnect the earth leads from the voltage regulator.
   Remove the nuts and springs holding the battery frame.
   Lift the frame and regulator assembly, free the speedometer cable from its bracket on the battery frame and release it (without disconnecting the wiring harness from the regulator.).
   Remove the battery and its tray.
   Remove the bolt (10) and the earth wire (11) from the body sidemember.
6. **Removing the air filter :**
   Disconnect the hoses (7), (8) and (9).
   Remove the bolts (5) and (6) holding the bracket on the sidemember and remove the air filter and bracket assembly.
7. Drain the radiator and the cylinder block (collect the water which contains anti-freeze).
   Remove the water header tank, the radiator and the fan.
8. Release the pressure in all the hydraulic circuits.



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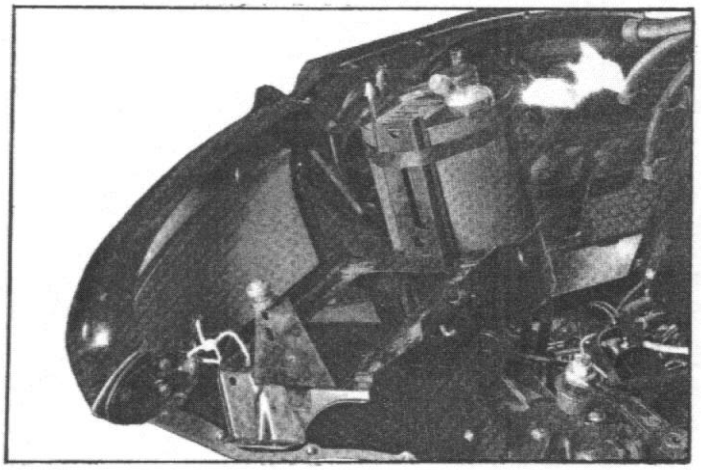
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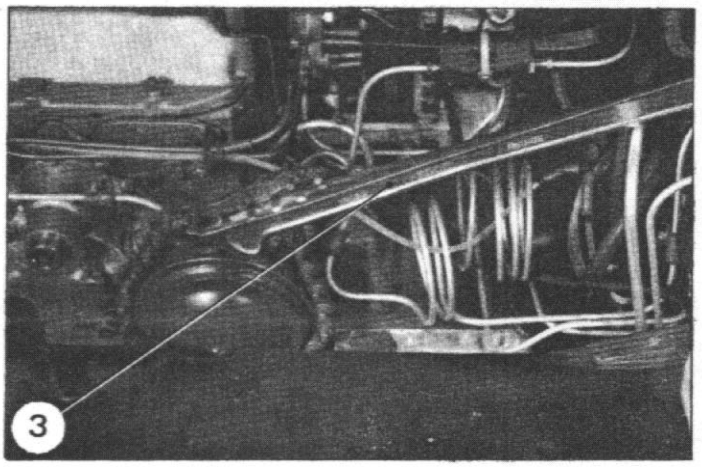

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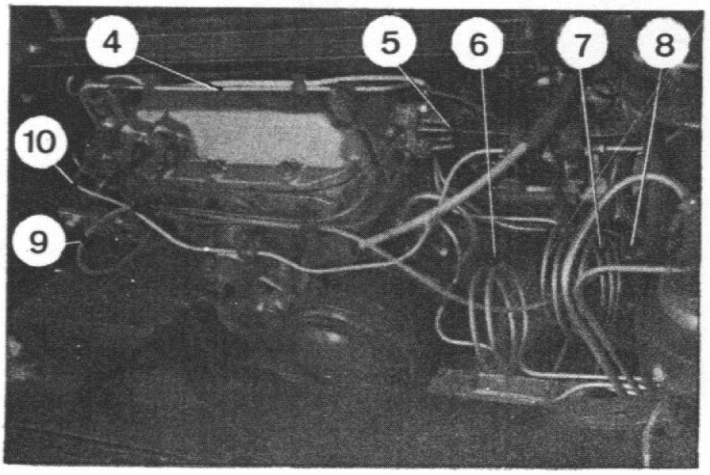

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9. Disconnect the tubes from the LHM fluid reservoir (1) (blank off the ends of the tubes and the openings in the reservoir).
Remove the bolts and nuts holding the bracket (2) on the sidemember, the engine crossmember and the heater unit.
Disconnect the two parts of the speedometer cable.
Tie up the bracket as a precautionary measure (see figure).

10. Mark the position of the steering in its bearings (with a touch of paint) and remove it.

11. Remove the front suspension sphere and the main accumulator (if necessary, use a chain wrench (3)).

12. Disconnect the pressure regulator return pipe from the three-way union on the left-hand sidemember.

Remove the left-hand brake feed pipe (7).

Remove the assembly (4) or right-hand brake feed pipe and the leads for the brake pad wear indicator and the tube (6) between pressure regulator and brake accumulator.

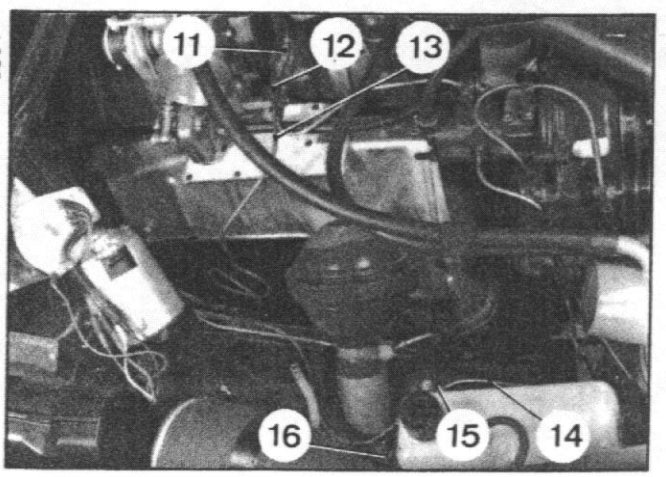
Disconnect the clutch lock overflow return pipe (9) from the three-way union (8).

Disconnect the 5-pipe assembly (5) from the gearbox.

Remove the clutch lock feed pipe (10).

Disconnect the return pipe from the clutch re-engagement control.

13. Disconnect the clutch connecting pipes (13) and (14) from the unions (11) and (16).
Remove the pipe securing clips (12) and (15).



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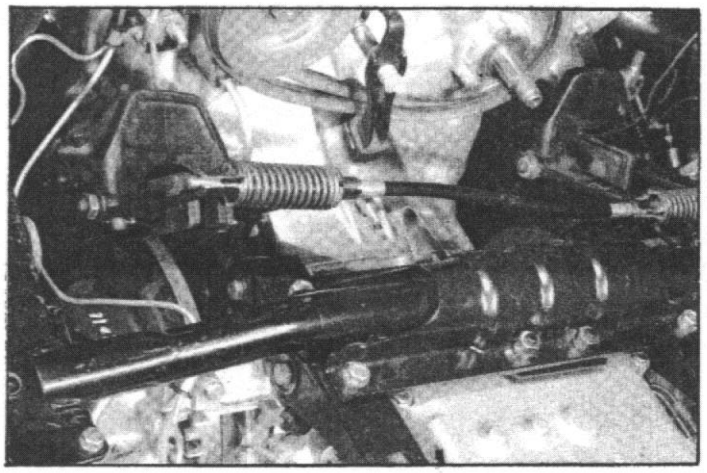

14. Remove the screws holding the engine bearing crossmember on the body sidemember (do not lose the shims which may be located between crossmember and sidemembers.

15. **Removing the transmission shafts :**
Remove the nuts holding the transmission shafts, gearbox end and free the transmissions shafts from the wheel swivels (towards the outside). To do this, remove the two countersunk head screws and free the tripods from the studs on the flanges of the gearbox outlet shafts.

16. Slacken the screws holding the tie-rods of the HP pump and the alternator. Remove the drive pulley securing nut.

17. **Removing the hand brake cable and calipers assembly :**

Remove the cowl from the oil cooler.
Remove the bolts holding the calipers.
Release the right-hand brake caliper, free the cable from its bracket on the gearbox and release the left-hand brake caliper after removing the drive pulley (do not mislay the shims used for adjusting the pulley).

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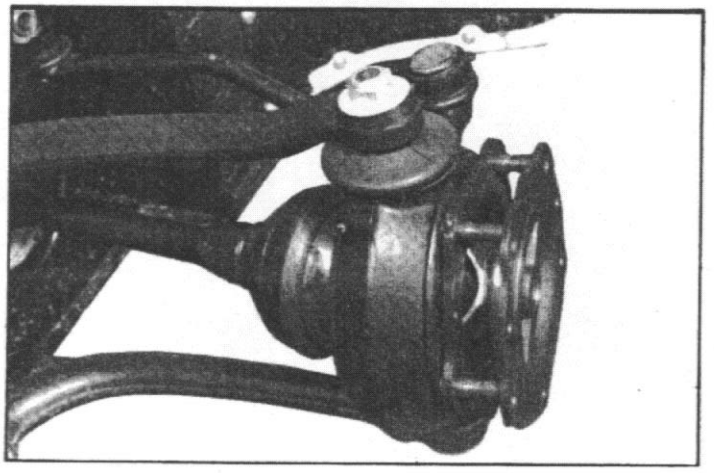
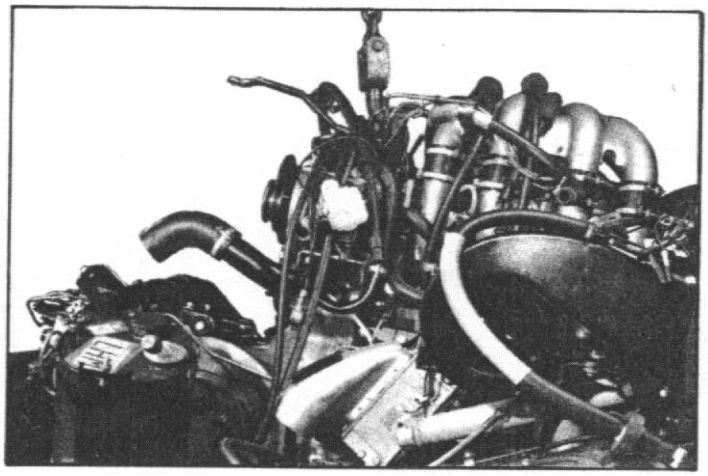


18. **Disconnecting the cable harness from the injection control system.** i.e. :

- Trigger mechanism on distributor.
- Thermal sensor and cold start time delay thermal switch on cylinder head.
- Injectors (on the 4th injector, the connector can be pulled off more easily from the right-hand side of the vehicle).
- Cold start injector.
- Throttle spindle switch.
- Full load switch (as a precaution).

19. **Disconnect the electrical harness from the following components :**

- Alternator.
- Water temperature thermal switch on supplementary air control.
- Thermal switch on water pump (heater - 20° C).
- Pressure switch on oil cooler (disconnect the harness from the pressure switch lead).
- Coil (primary and secondary leads).



20. Disconnect :

- the heater feed pipe from the valve,
- the heater return from the steel return pipe on the water pump,
- the petrol feed and return pipes from the main fuel injection feed line,
- the air supply pipe from the pressure sensor and the full load switch,
- the cowl from the oil cooler (if fitted).

21. Disconnect the accelerator cable from the control on the throttle casing and the threaded sleeve holding the sheath from the inlet manifold.

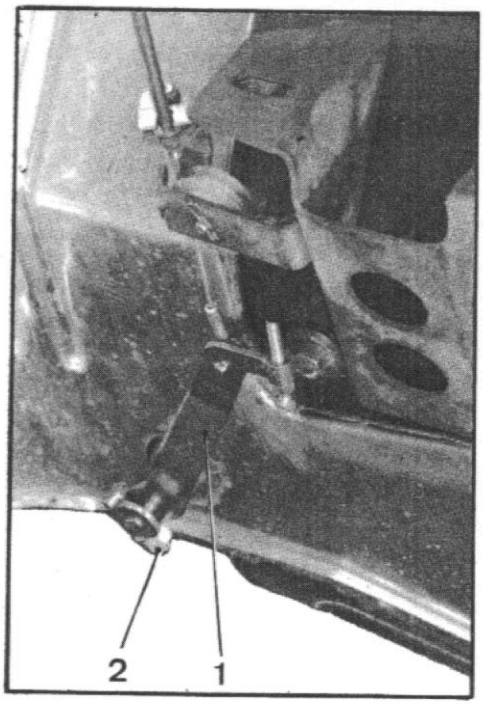
22. Remove the screws holding the rear flexible mountings of the engine supports on the chassis.

23. Suspend the engine/ gearbox assembly on the sling bracket and withdraw it.

FITTING.

24. Lift the engine/ gearbox assembly by the sling bracket and position it on the vehicle.

As a precaution, slacken the nut (2), disconnect the accelerator control (1) from the pedal spindle and push it towards the inside of the vehicle.



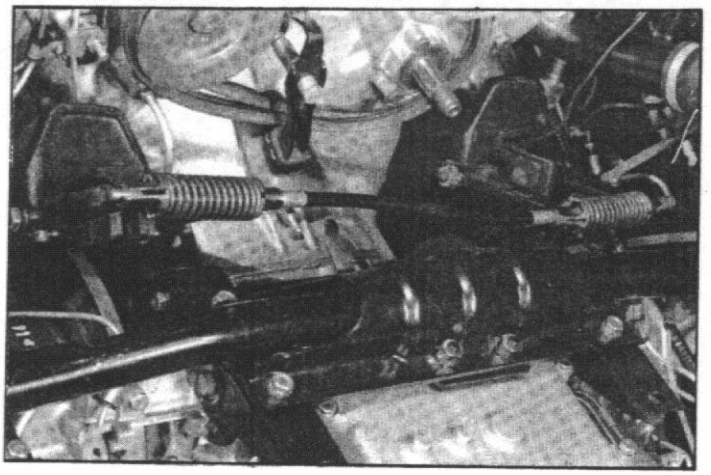
25. Allow the engine to rest on the rear supports.
Place the packing pieces removed during dismantling between the front engine crossmember and the body sidemembers and tighten the securing screws (flat and serrated washers).

NOTE :

The difference in the distances between the brake disc and the sidemember on one side compared with the other should be 80 ± 2 mm.

Alter the thickness of the packing pieces if necessary.

Fix the flexible mountings on the rear supports (serrated washer and thrust plate under screw head).



26. Connect up :

- the heater feed pipe to the valve,
- the heater return pipe to the steel return tube on the water pump,
- the petrol feed and return on the main fuel injection feed line,
- the air supply pipe to the pressure sensor and to the full load switch,
- the cowl (if fitted) on the oil cooler.

27. Connect the electrical harness to the following components, i.e. :

- thermal switch on the supplementary air control,
- pressure switch on the oil cooler (connect the pressure switch lead to the harness),
- the coil (primary and secondary leads),
- the alternator.

28. Connect up the harness to the injection control system, i.e. :

- the triggering mechanism on the distributor,
- thermal sensor and cold start time delay thermal switch on the cylinder head,
- the injectors (on the 4th injector, the connector is fitted more easily from the right-hand side of the vehicle),
- the cold start injector,
- throttle spindle switch,
- full load switch.

FOR THE DIFFERENT CONNECTIONS, CORRECTLY ORIENTATE THE CHAMFERED EDGES PROVIDED FOR GUIDANCE.

29. Fitting the hand brake cable and caliper assembly and the drive pulley :

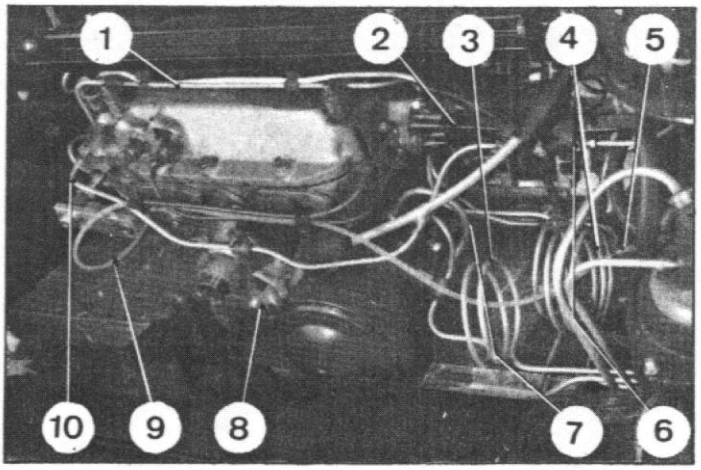
- Fit the left-hand caliper, then the right-hand one.
- Engage the connecting cable in its bracket on the gearbox.
- Fit the drive pulley. Position the adjusting washers removed during dismantling.
- Tighten the nut to 70 - 80 mΛN (7 to 8 m.kg)
- Tighten the drive belts.
- Check the alignment of the pulleys.
- Fit and tighten the screws holding the calipers.
- Check that there is a clearance of 4 mm between caliper and disc.

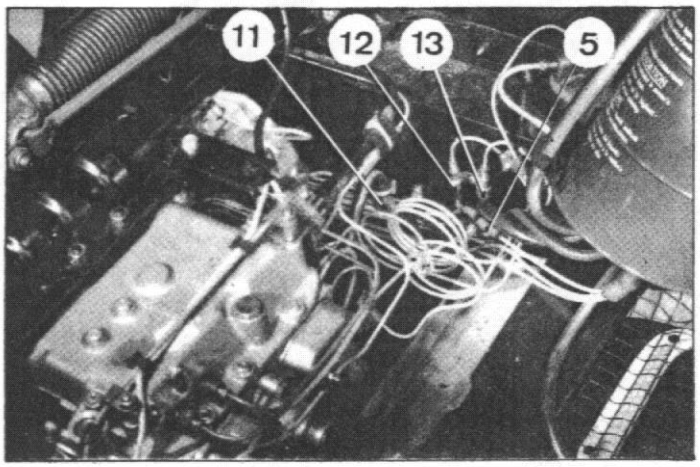
30. Connecting the transmission shafts :

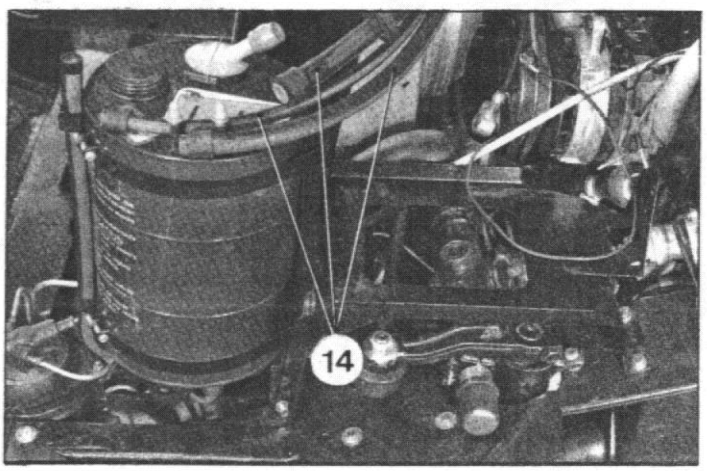
- to the wheel swivels. Tighten the two screws.
- to the gearbox output shafts. Tighten the nuts to 85 - 110 mΛN (8.5 to 11 m.kg).

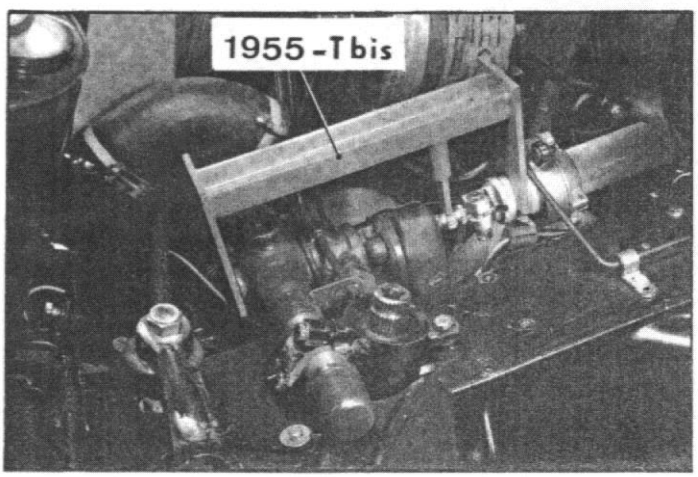
31. Adjust the clearance between pads and disc to 0.1 mm, using the adjusting screws (interpose a sheet of 0.1 mm foil between pad and disc) and tighten the locknuts (extra flat 16 mm key).

CAUTION : *Allowance must be made for any possible run-out on the discs.*









32. Connect up the hydraulic pipes :

- (7), the return from the pressure regulator to the three-way union (11),
- (4), the left-hand brake feed, to the caliper and the union (12),
- (1), the right-hand brake feed, to the caliper and the union (13). Connect the brake pad wear indicator leads to the pads and to the main harness,
- (3), the HP outlet, to the pressure regulator and to the brake accumulator.
- (9), the clutch lock overflow return to the three-way union (5).
- (2) (5-pipe assembly) to the gearbox. Interpose a seal holder plate fitted with new seals.
- (10), the clutch lock feed to the union (6).
- the return to the clutch re-engagement control.

Tighten the unions to 8 - 9 mΛN (0.8 to 0.9 m.kg). Tighten the nuts on the clips securing the pipes (serrated washer).

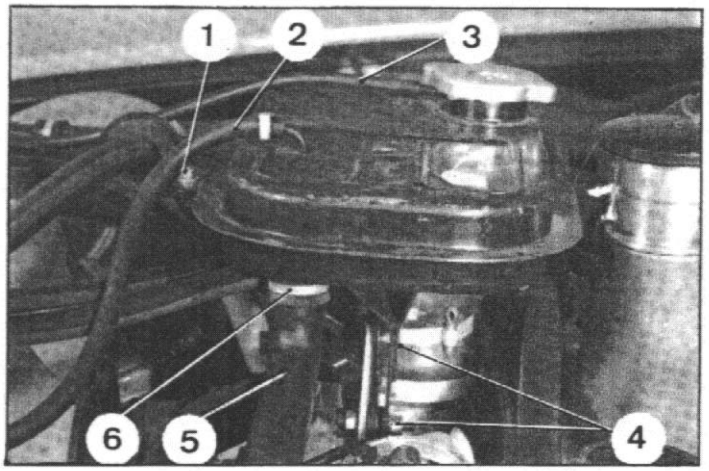
33. Fit the steering :

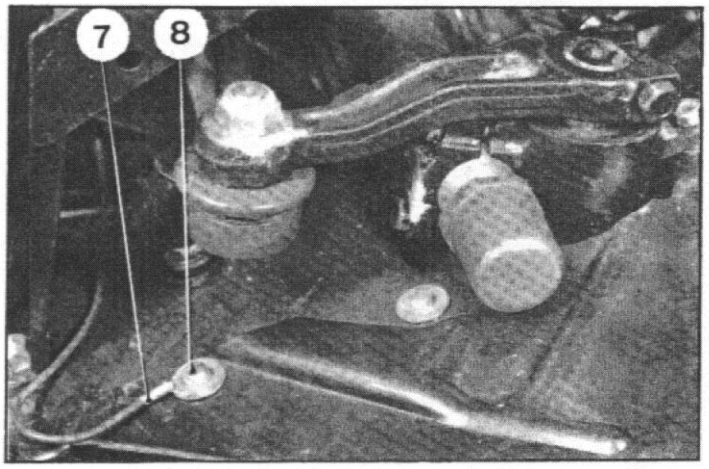
- Place the steering rack assembly in its bearings while observing the markings made during dismantling.
- Adjust the angular position of the steering (fixture 1955-T bis) and tighten the bolts on the bearing caps (flat washer).
- Connect the track rod levers to the relay spindles.
- Position the nuts towards the outside, tighten them to 25 mΛN (2.5 m.kg) (connect the bracket of the headlight directional control to the right-hand track rod).
- Connect the feed pipe assembly to the distributor interpose the seal plate fitted with new seals.
- Check the longitudinal play at the steering wheel.

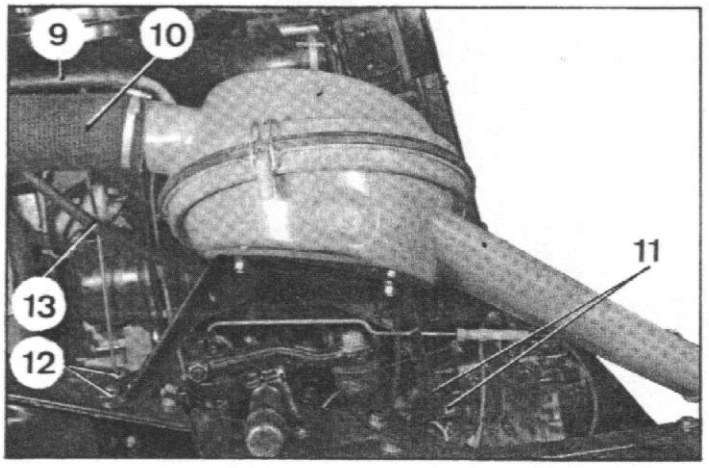
34. Fit the assembly of battery support and LHM fluid reservoir. Tighten the securing screws (flat and serrated washers).

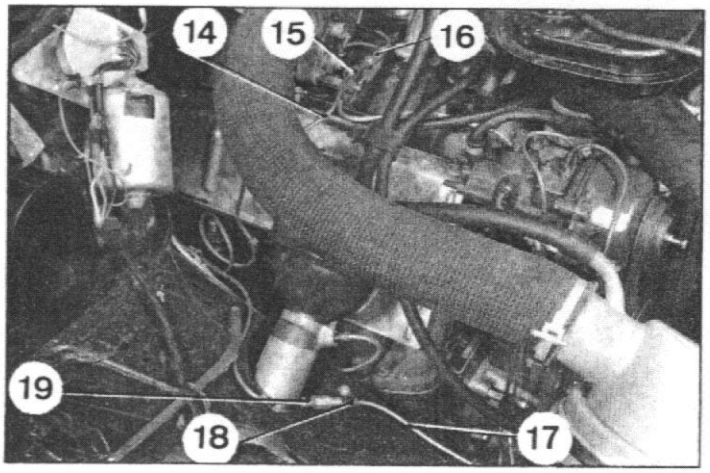
Fit the speedometer cable into its bracket. Connect the tubes (14) to the LHM fluid reservoir and tighten the collars.

35. Connect up the two parts of the speedometer cable and fit the front section to the gearbox, if the cable has been removed. Tighten the screw (8).









36. Fit the front suspension spheres and the main accumulator (fit new O-rings smeared with LHM fluid on the suspension cylinders and the pressure regulator). Screw up the spheres and the accumulator by hand.

37. Fit the fan, tighten the screws to a maximum 10 mAN (1 m.kg).
Fit the radiator (flat washer under the mounting bolts). Tighten the collars on the hoses.

38. **Fit the water header tank :**
Offer up the header tank and connect the pipe (5).
Tighten the collar (6).
Tighten the nuts (4) (serrated washer).
Tighten the screw (1) on the radiator tie-rod (flat washer).
Connect up the pipes (2) and (3). Fit a collar on the pipe (2) connecting the header tank to the radiator.

39. **Fit the battery :**
- Fit the battery tray and the battery.
- Connect the earth lead (7) to the body side-member.
  Tighten the screw (8) (flat washer and serrated washer).
- Fit the battery frame and voltage regulator assembly. Fit the springs and nuts on the tie-rods.
- Connect the cables and harnesses to the terminals and relays (electronic and starter).
- Connect the earthing leads of the electrical and electronic harnesses to the voltage regulator.

40. **Fitting the air filter :**
- Position the assembly of air filter and its bracket.
  Tighten the securing screws (11) and (12) (flat and serrated washers).
- Connect up the pipes :
  - (9) to the accelerated idle device,
  - (10) to the throttle casing (tighten the collar),
  - (13) to the rocker cover.

41. Connect the clutch control pipes (14) and (17) to the connectors (16) and (19). Fit the clips (15) and (18).

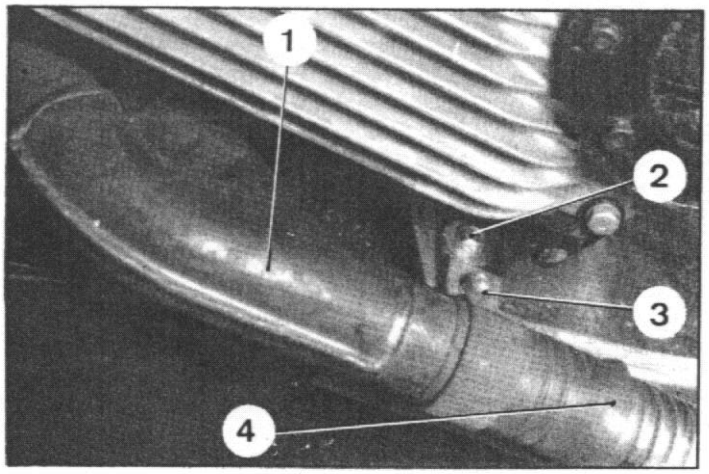
42. Connect the accelerator control :
- to the pedal,
- to the inlet manifold,
- to the throttle casing.

43. **Adjust the accelerator control.**

44. Fit the wheels and lower the vehicle to the ground.
Fill up the cooling circuit.
Check the oil levels in the engine and gearbox.
Start the engine, prime the HP pump and connect the pump suction pipe to the reservoir.

45. Bleed the front brakes and the centrifugal regulator.

46. Fit the front wings, the radiator inlet duct assembly, the crossmember supporting the spare wheel.
Fit the spare wheel.



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47. With the vehicle on a lift or over a pit, connect the exhaust down pipe (1) to the coiled pipe (4). Tighten the nuts (3) on the front and rear collars of the coiled pipe (4). Tighten the screw (2) on the front collar.

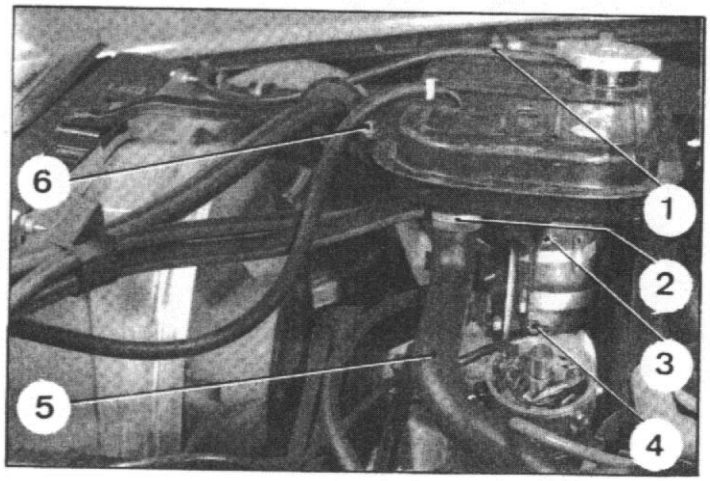
48. Check the ignition advance.

49. Check the setting of the headlamps (main and secondary), and adjust if necessary.

50. Check the basic settings.

REMOVING AND FITTING A CYLINDER HEAD OR A CYLINDER HEAD GASKET

D.IE VEHICLES ALL TYPES



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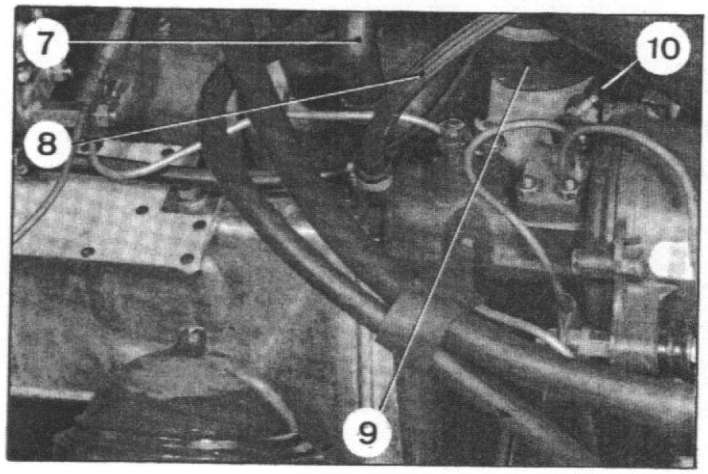

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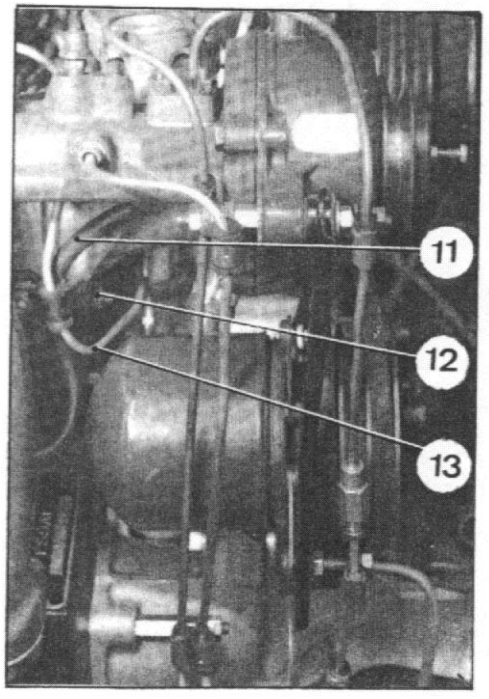


REMOVAL

1. Drain the radiator and the cylinder block. Collect the water which contains anti-freeze.

2. Disconnect the earthing cable from the battery.

3. Slacken the pressure regulator bleed screw and put the vehicle in the *low position.*

4. **Remove the inlet manifold.**

5. Disconnect the sparking plug leads from the plugs and remove the assembly of leads and distributor head. As a precaution, remove the distributor rotor.

6. **Remove the water header tank :**

   Slacken the collar (2) and disconnect pipes (1) and (5) from the tank.
   Remove the nuts (3), (4) and (6). Remove the the header tank without disconnecting the pipe between header tank and radiator.

7. Remove the upper water outlet pipe (9) and disconnect the heater pipe (7) from the steel tube on the cylinder head.
   Disconnect the return pipes (8) and (10) from the centrifugal regulator *(brb vehicles)*
   Disconnect the battery earth lead from the water pump and the tie-rod from the radiator.
   Remove the engine hoisting bracket and the fan.

8. Slacken the bolts holding the alternator and its tie-rod. Remove the nut holding the tie-rod on the water pump and remove the driving belts from the water pump.

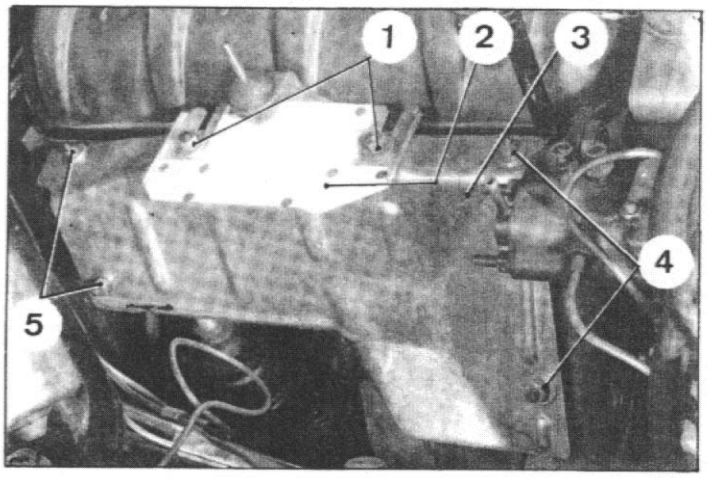
9. Remove the nut holding the starter motor cable bracket on the water pump. Disconnect the positive terminal of the battery and release the starter motor cable under the water pump pulley.

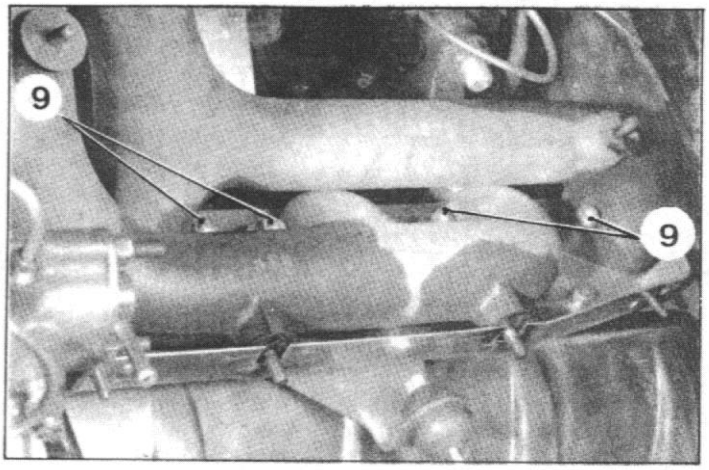
10. Remove the nut holding the HP pump tie-rod on the water pump. Slacken the nut at the HP pump end and remove the tie-rod from the water pump.

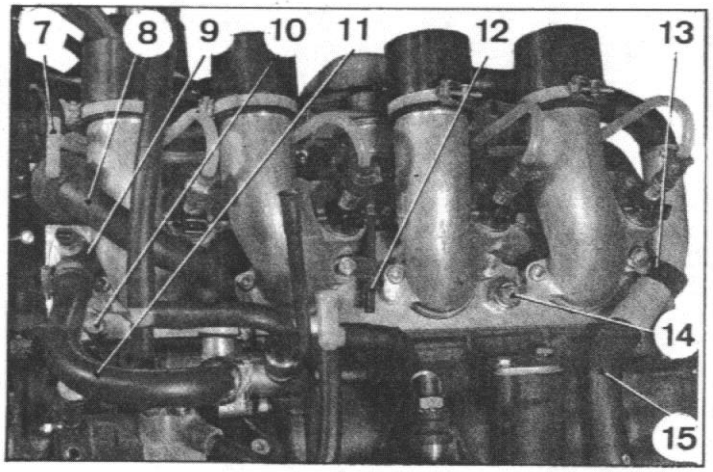
11. Slacken the nuts holding the tie-rod of the centrifugal regulator and remove the regulator fulcrum pin (do not lose the shims).
    Remove the regulator towards the right-hand side *(brb vehicles).*

12. Remove the nut (12) holding the feed pipe (13) to the clutch cylinder and the starter motor cable (11) on the cylinder head.
    Remove the starter motor cable.
    As a precaution, remove the tube (13).

Manual 814-2







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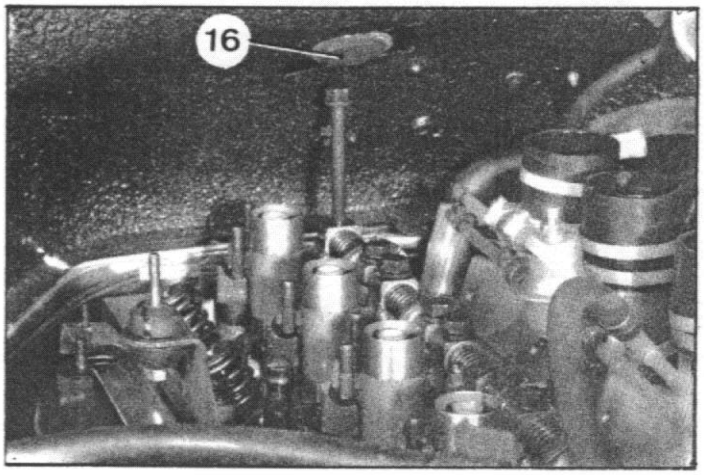


13. Remove the front suspension spheres.

14. Remove the nuts (1), the shield (2), the nut (4) and (5) and the exhaust shield (3).

15. Remove the nuts (6) from the exhaust manifolds and separate the manifolds from the cylinder head.

16. Disconnect the supplementary air control pipes (11) and (8) from the water pump cover and from the thermal sensor connection (9) on the cylinder head.
Release the pipe (15) from its clamp (13).
Disconnect the water inlet pipe from the water pump.

17. Disconnect the electronic harness from the sensor (9) and the injectors. *Mark the orientation of the guide chamfers with paint.*
Disconnect the leads from the cold start time delay thermal switch (14).

18. Slacken the collars and disconnect the petrol feed and return pipes from the front fuel injection feed line (7) and the steel tube (11).

19. Remove the union-screw (10) from the rocker lubrication pipe.

20. Remove :
- the rocker cover and its gasket,
- the insulating tubes and the plug,
- the seals and the steel inserts from the plug tubes.

21. Fully slacken the cylinder head screws, remove the exhaust rocker shafts and the inlet rocker shaft, Remove the push rods.

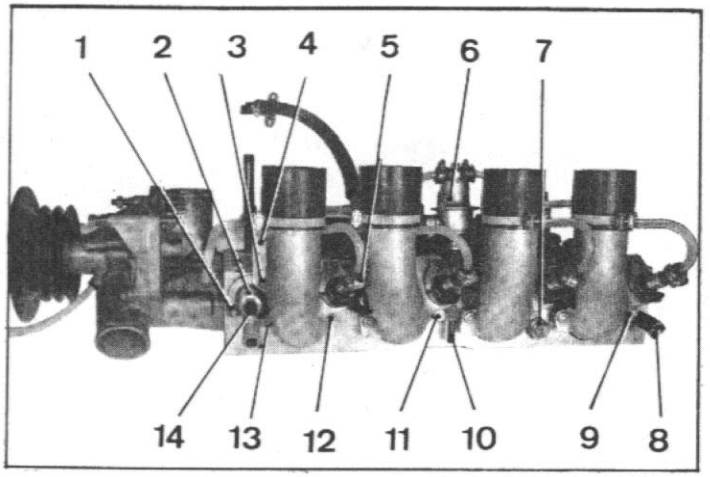
NOTES :

I - In order to remove the rear screw holding the inlet rocker shaft, it may be necessary to remove the rubber plug (16) and to cut away the felt trim.

II- In order to remove the exhaust push rod for the 4th cylinder, slightly raise the cylinder head.

22. Release the cylinder head from the exhaust manifold and remove it (take care of the dowel pins).

Remove the cylinder head gasket and retain the liners with the securing screws 3074-T.



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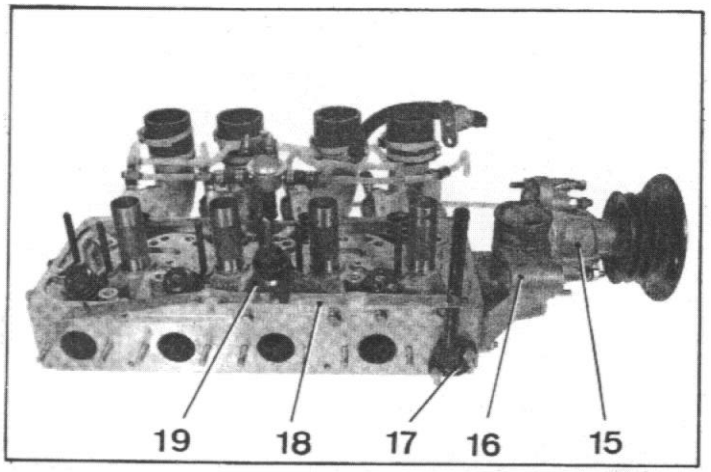

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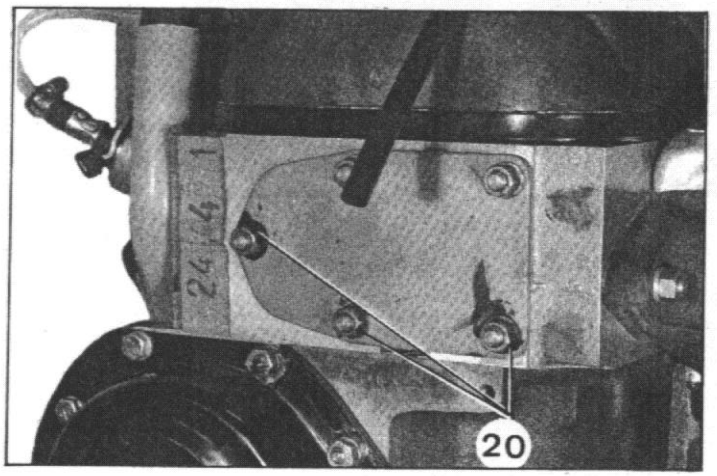

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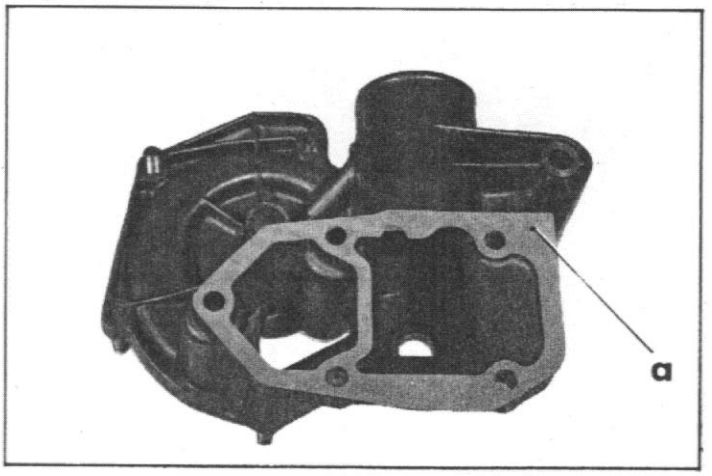


23. Strip down the cylinder head :

a) Remove the injection headers :
- Remove the nut (11) holding the return pipe (10) of the pressure regulator (6).
- Remove the nut (3) holding the bracket (4) of the front injection header.
- Slacken the collars (5) holding the headers on the injectors. Free the headers from the injectors.
- Remove the assembly of injection headers and pressure regulator.

b) Remove :
- the nuts (1) and the hot water tapping (2) together with the thermal sensor (14),
- the cold start time delay thermal switch (7).

c) Remove the intake pipes :
- Remove the nut (9) and the breather bracket (8) on the engine casing.
- Remove the nuts (12) and the screws (13) holding the intake pipes,
- Free the pipes and their seals.

d) Remove the water pump (15) and the water pump cover (16).

e) Remove the exhaust shield (18), the inlet manifold support (19) and the heater pipe (17).

f) Remove the rear sand-blasting plate and the studs on the cylinder head if necessary.

g) Clean the parts.

FITTING

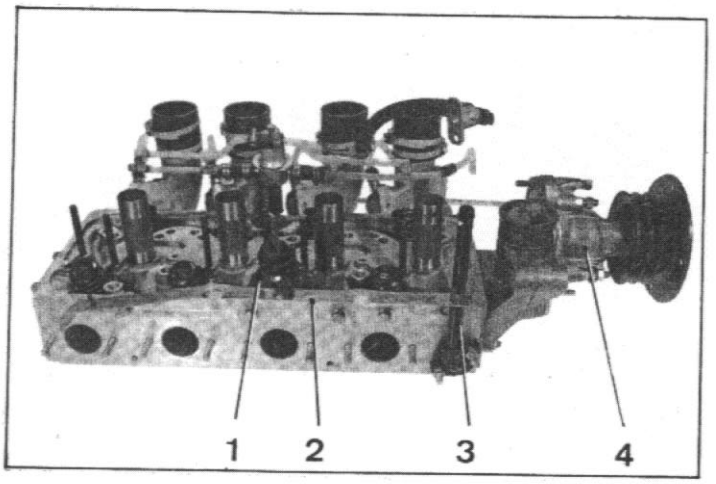
24. Assemble the cylinder head :

a) Fit the rear sand-blasting plate, with a new seal (fitted dry). Tighten the nuts (flat washer). The three nuts (20) should be fitted using Masti-joint HD 37.

b) Fit the nuts. The studs for mounting the exhaust manifolds should be fitted with Loctite N° GX 01 460 01 A.

c) Fit the water pump cover (16) with its seal (fitted dry). Fit the corner « a » of the seal the right way round.
Tighten the nuts.

5940



Fit the water pump (4) and its seal (fitted dry). Tighten the nuts (special nuts : diameter 8 mm, 12 mm across flats)

d) Fit the heater tube (3) with its seal (fitted dry). Fit the exhaust shield (2) over the inlet manifold support (1).

e) Fit the inlet pipes with their seals (fitted dry). Tighten the nuts (16) and the screws (17) (flat washer under the nuts).

f) Fit the hot water tapping (6) together with the thermal sensor (18).
Tighten the nuts (5) (flat washer).

g) Fit the cold start time delay thermal switch (11): interpose the copper seal.
Fit the bracket (12) holding the breather on the engine casing. Tighten the nut (13) (serrated washer).

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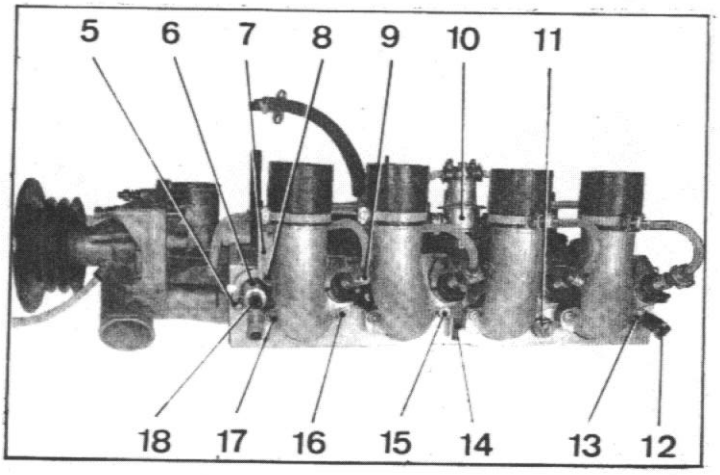
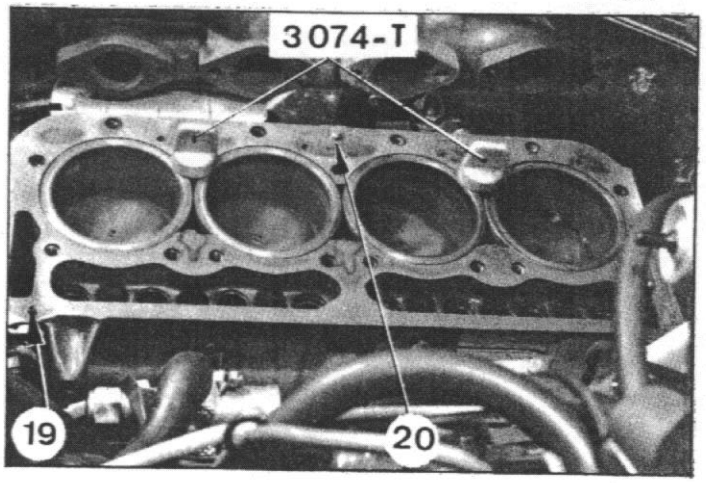


h) Fit the injector headers :
- Offer up the assembly of injector headers and pressure regulator (10).Push the tubes right home into the injectors. Tighten the collars (9) (bolts pointing forward).
- Tighten the nut (8) holding the bracket (7) of the front injector header (serrated washer).
- Tighten the nut (15) holding the return pipe (14) from the pressure regulator (10) (serrated washer).

25. Fit the cylinder head :

a) Remove the liner securing screws (bolts 3074-T).

5939

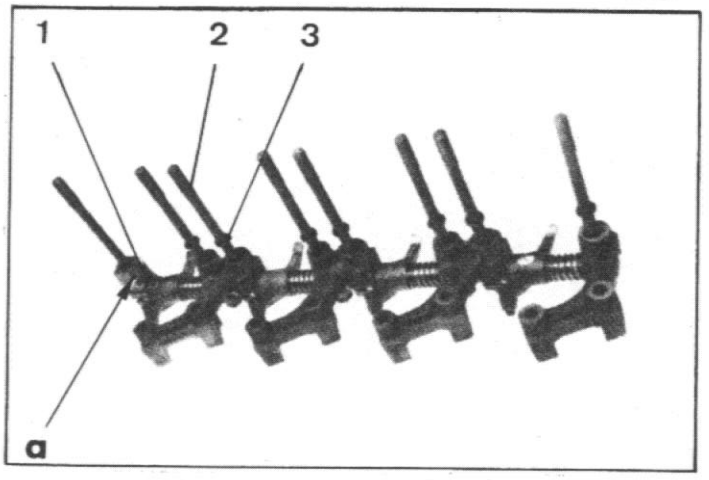


b) Fit the cylinder head gasket and centre it on the two centring pins (19) and (20).

c) Position the cylinder head, fitted with the exhaust manifold gaskets.

Engage the exhaust manifold studs into the manifolds and the water pump inlet pipe into the flexible connection.

5965



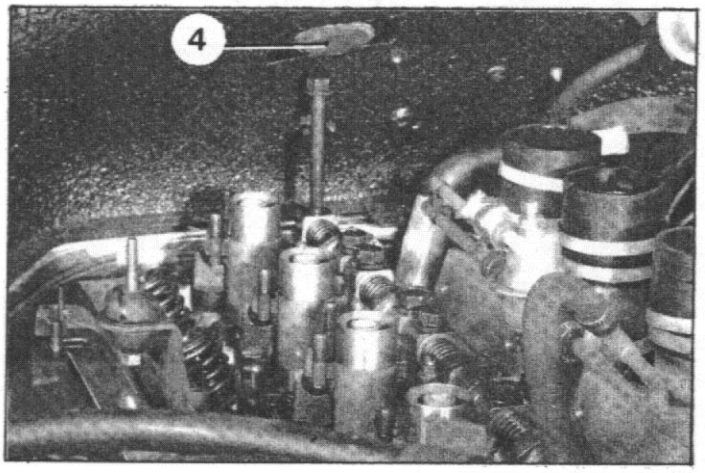
d) Fit the exhaust push rod for the 4th cylinder. If necessary, slightly raise the rear end of the cylinder head.

e) Centre the cylinder head on the two centring pins. Fit all the cylinder head screws at the exhaust side and tighten them by hand.

f) Fit the push rods (the exhaust push rods are the longest ones).

g) Fit the O-rings (3) between the rocker shaft supports and the cylinder head on the screws (2). except on the front one.
Fit the assembly of inlet rocker shaft and supports.
The front support (1) must be orientated correctly with the chamfer « a » facing the inlet push rod of the first cylinder.

5933

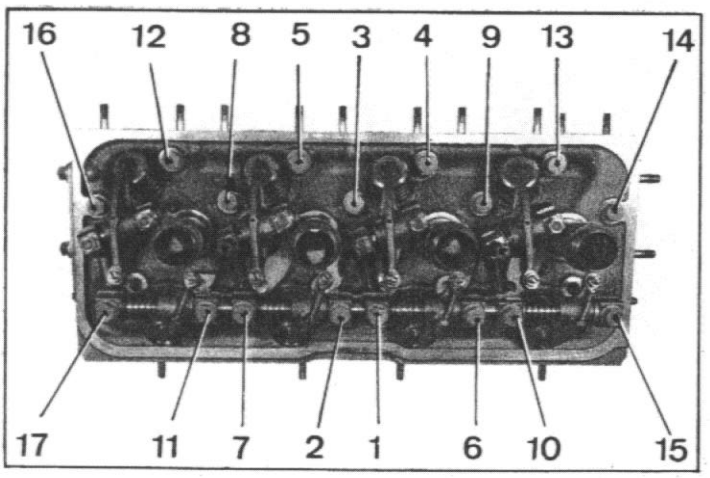


NOTE : In order to fit the rear screw of the inlet rocker shaft, remove, if this is necessary the rubber plug (4) and pass the screw head through the opening.

Fit the screws holding the inlet rocker shaft. Take care not to trap the thrust washers of the springs and rockers, which would damage the rocker shaft. Make sure that the spherical heads of the rocker arm adjusting screws fit properly into the push rods.

26. Tighten the cylinder head screws :

1183



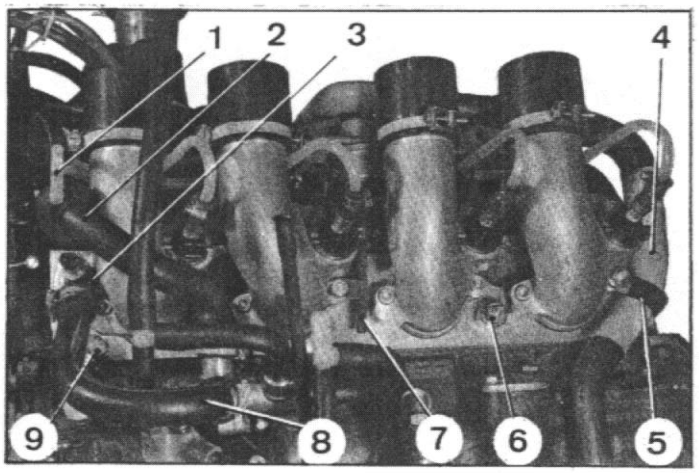
- 1st tightening to 30 mΛN (3 m.kg)
- 2nd tightening tp 60 - 65 mΛN (6 to 6.5 m.kg)

Tighten in the correct order. Use a torque wrench (wrench 2471-T).

NOTE : The cylinder head screws must be retightened when the vehicle has covered 1 000 km.
Proceed as follows :

- Tighten the screws with the engine cold.
- Tighten the screws one by one.
- Fully slacken each screw.
- Then retighten to 60 mΛN (6 m.kg) (torque wrench 2471-T).

5798



27. Fit the exhaust rocker shaft with the lubrication hole downwards and facing the valve.

Fit the securing caps. Tighten the nuts and fixing studs. The rear studs holding the rocker shafts for the 1st and 3rd cylinders also serve to hold the rocker cover.

While tightening, make sure that the spherical headed adjusting screws on the rocker arms fit properly into the push rods.

28. Set the valve clearances.

29. Fit the inserts and seals in the plug recesses.

Fit the rocker cover with its gasket.
Tighten the two screws (copper washer).
Fit the sparking plugs and their insulating tubes.

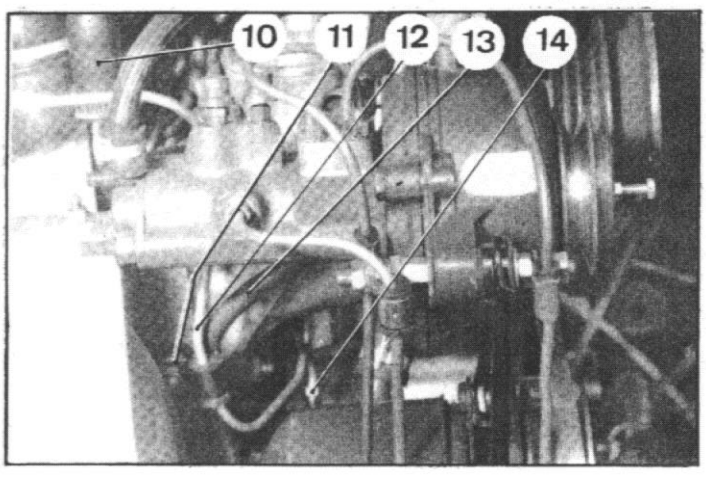
30. Fit the union screw (9) for the rocker lubrication tube (double copper gasket).

31. Connect the petrol feed and return pipes to the front injection header (1) and to the steel tube (7). Tighten the collars .

Connect the pipe (8) to the water tapping of the thermal sensor (3). Tighten the collar.

Fit the bracket (5) holding the pipe (4).

5837



32. Connect the electronic harness to the cold start time delay thermal switch (6).

Connect the electronic harness to the injectors and to the thermal sensor (3) on the cylinder head.
(Orientate the guide chamfers correctly according to the marks made during dismantling (paragraph 17).

33. Connect :
- the pipe (2) to the water pump cover,
- the water pump inlet pipe,
- the heater feed pipe (10) to the steel tube on the cylinder head.

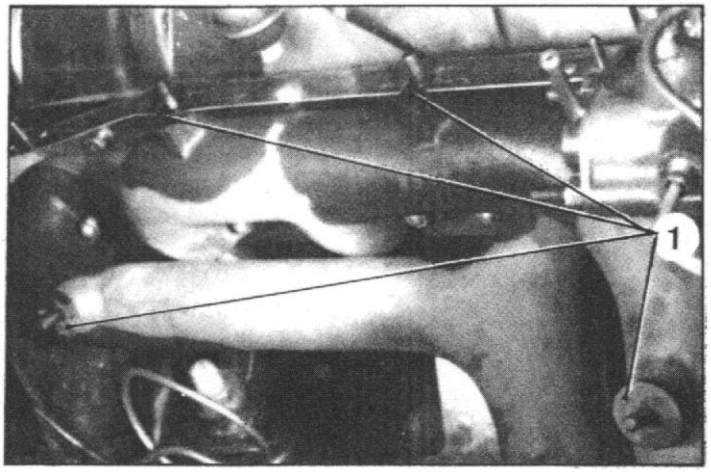
Tighten the collars. Fit the water pump discharge pipe.

34. Fit the starter motor cable (13).
Fit the clutch cylinder feed pipe (12).
Position the connector (14) (fit a new seal, smeared with LHM fluid) *(brh vehicles)*

Tighten the nuts (11) of the clips on the cylinder head and on the water pump.

Tighten the connector (14) to 8 - 9 mAN (0.8 to 0.9 m.kg).

5932



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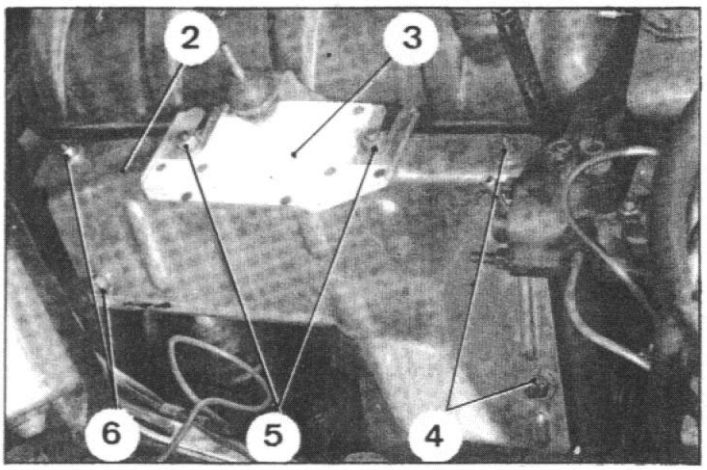

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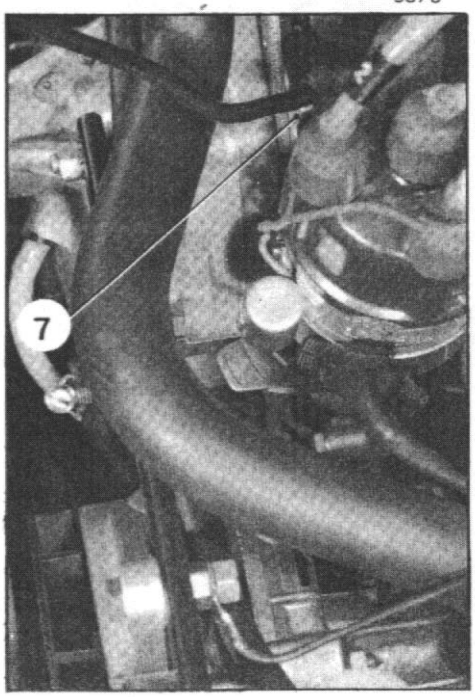


35. Tighten the nuts (special nuts : diameter 8 mm-12 mm across flats) holding the exhaust manifolds (flat washer).

36. Fit the exhaust shield (2). Make sure that the thrust washers (1) are in position.
Tighten the nuts (4), (5) and (6) (flat and serrated washers). Interpose the shield (3) under the nuts (5).

37. Fit :
- the drive belt and the fulcrum pin of the centrifugal regulator *(bvh vehicles)*.
- the alternator drive belts.

NOTE : If the cylinder head, the water pump or the water pump cover have been replaced, check the alignment of the pulleys.

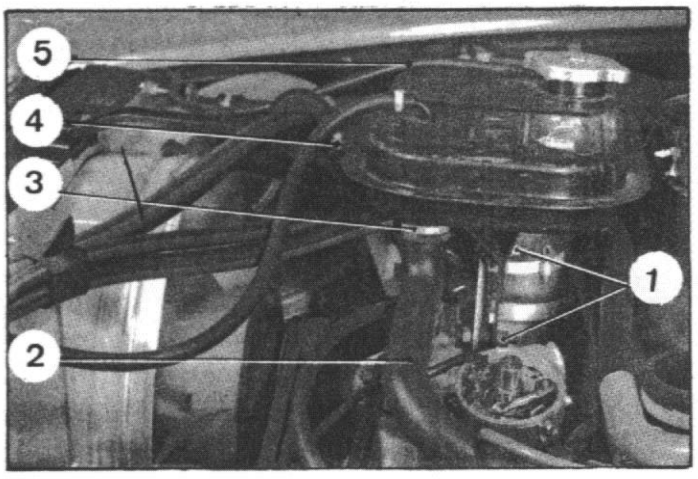
38. Connect to the water pump :
- the HP pump tie-rod (plate and serrated washers under the nut),
- the alternator tie-rod (serrated washer under the nut).

39. Tighten the drive belts, tighten the screws and nuts on :
- alternator tie-rod,
- alternator mounting brackets,
- tie-rod and brackets for the hydraulic tubes on the centrifugal regulator tie-rod *(bvh vehicles)*
- pivot of the centrifugal regulator *(bvh vehicles)*.

40. Connect the return pipes to the centrifugal regulator *(bvh vehicles)*.

41. Fit :
- the fan. Tighten the screws to 10 mAN (1 m.kg).
- the radiator tie-rod (contact washer),
- the engine lifting bracket. Interpose the battery earth connector (7) (serrated washer),
- the upper water outlet hose.

5917



42. Fit the water header tank :
- Connect pipe (2) to the header tank. Tighten the collar (3).
- Position the header tank. Tighten the nuts (1) (serrated washer) and (4) (contact washer).
- Connect up the overflow pipe (5).

43. Fit the distributor rotor and head.
Fit the plug leads.

44. Fit the front suspension spheres.
Tighten them by hand (interpose a new O-ring, smeared with LHM fluid, placed in the suspension cylinder).

45. Fit the inlet manifold.

46. Fill the cooling circuit with water.

47. Tighten the pressure regulator release screw.

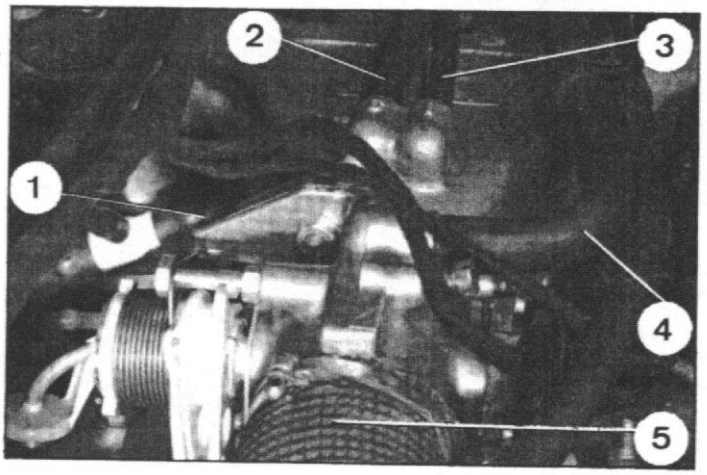
48. Connect the cables to the battery.
Start the engine and put the manual height control in *road position*.
Check the unions for leaks (water, petrol and LHM fluid).

49. Bleed the centrifugal regulator and the brakes.

D.IE VEHICLES ALL TYPES

I. REMOVING AND FITTING AN ASSEMBLY OF MANIFOLD AND THROTTLE HOUSING

7125



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Manual 814-2

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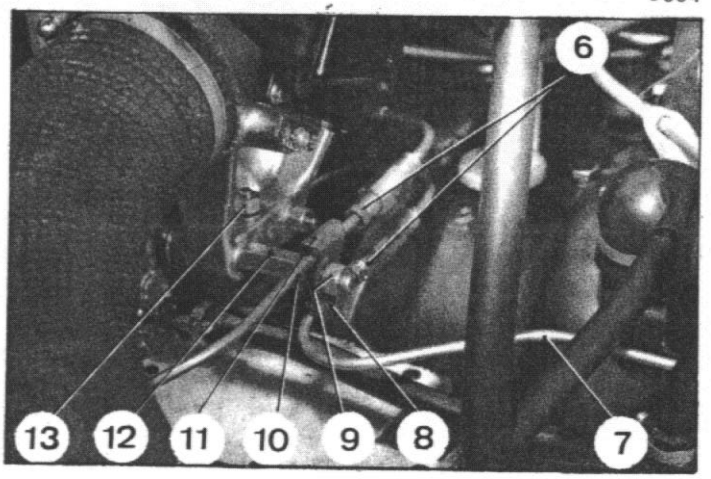

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REMOVAL

1. Place the auxiliary clutch control lever in the «clutch engaged» position *(brb vehicles)*.

2. Disconnect the earth cable from the battery.

3. Disconnect the electronic harness from the throttle spindle switch and from the cold start injector. Disconnect the injector from the manifold.

4. Disconnect the following from the manifold :
   - the supplementary air control pipe (4),
   - the pressure sensor (2),
   - the full load switch pipe (3),
   - the air filter hose (5).

5. Disconnect the breather connecting pipe (1) under the manifold from its three-way union and disconnect the heater pipe from its bracket on the manifold.

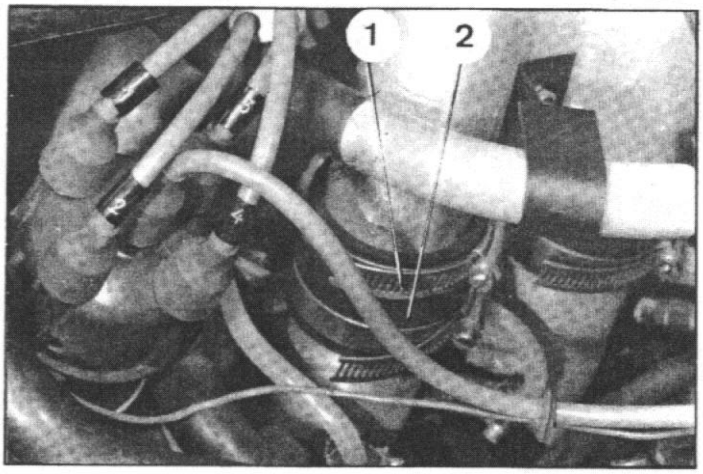
6. Remove the nut (9) and the brackets (8) and (11) from the extended head stud (12).

   Slacken the unions (6) and disconnect the clutch re-engagement control feed tube (7) and outlet tube (10) *(brb vehicles)*

   Disconnect the return pipe from the clutch re-engagement control *(brb vehicles)*.

7. Remove the nut (13) holding the manifold.

7129



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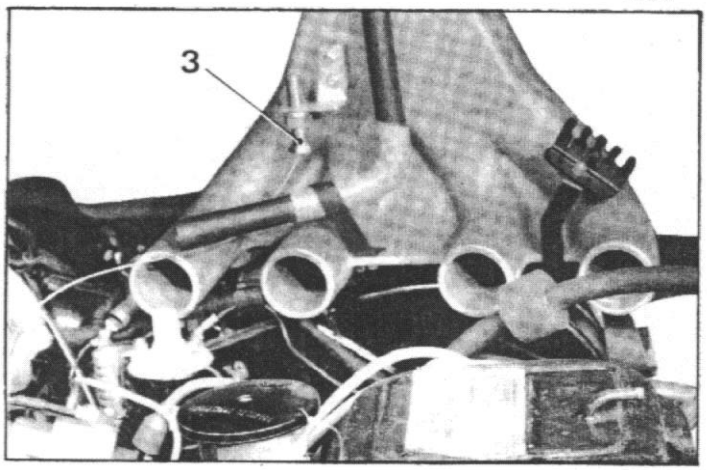

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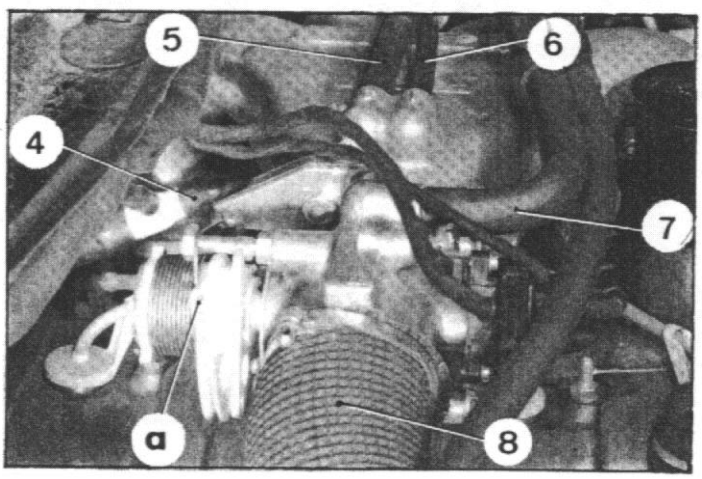


8. Slacken the upper collars (1) on the hoses (2) connecting the manifold to the intake pipes.

9. Disconnect the sparking plug leads from the retaining clamp on the manifold.

10. Free the inlet manifold and rest it :
- on the heater unit if work is to be done on the cylinder head or rockers,
- on the cylinder head, where work is to be done on the injectors, inlet pipes, petrol pipes or pressure regulator.

11. Block up the openings in the manifold and inlet pipes using protective plugs as used for the pressure regulator, DS model.

12. If the manifold is to be replaced :
- open the butterfly valve and disconnect the control cable at « a »,
- slacken the locknut and completely unscrew the adjusting screw (3),
- remove the assembly of manifold and intake housing.

FITTING

13. Temporaryly fit the adjusting screw (3) on the manifold. Fit the manifold onto the hoses (2) until the pipes come up against the shoulders of the hoses.Orientate the collars (1) and tighten them. Tighten the nut holding the manifold (flat washer).

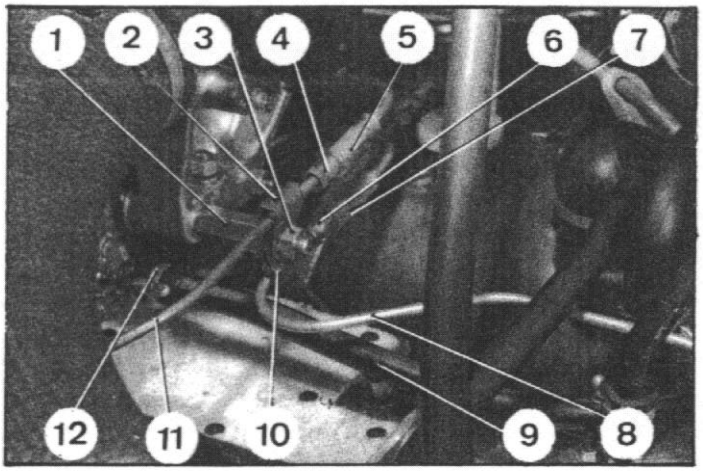
14. Open the throttle valve slightly and link up the accelerator cable to the control. Check the adjustment of the cable and readjust if necessary.

Make sure that the cable has not come out of its guide wheel (pedal end).

15. On the manifold, connect up the following :
- the full load switch pipe (6),
- the pressure sensor pipe (5),
- the supplementary air control pipe (7),
- the air filter hose (8) (tighten the collar).

Connect the heater pipe to its bracket on the manifold and the sparking plug leads into the retaining clamp.

Connect the breather pipe (4) under the manifold to the three-way union.



16. Connect the clutch corrector pipes (8) and (11) to their unions (5) and (7) *(hvh vehicles)*.

    Tighten the unions (4) and (6) to 8 - 9 mAN (0.8 to 0.9 m.kg). Fit the brackets (2) and (10) to the extended head stud (1). Tighten the nut (3) (serrated washer).

    Connect the return pipe (9) to the clutch corrector Tighten the collar (12) over a flexible bush.

17. Fit the cold start injector on the manifold and connect the electronic harness to the throttle spindle switch and to the cold start injector.

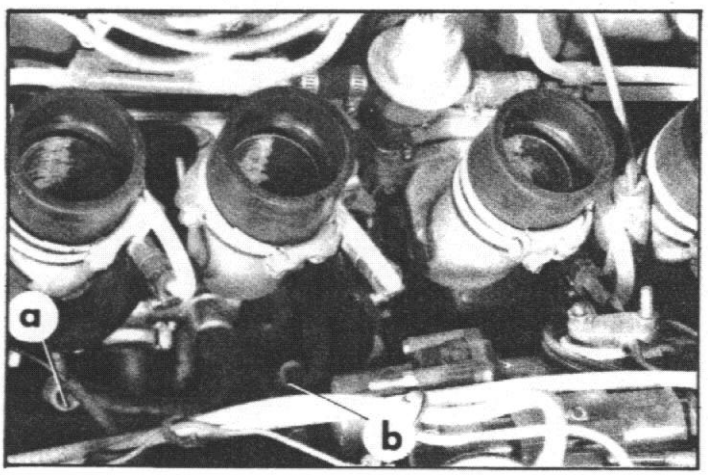
18. Connect the earth cable to the battery.

19. Pressurise the hydraulic clutch circuit by operating the auxiliary control.

20. Start the engine and bleed the centrifugal regulator.
    Check the unions for leaks (petrol and LHM fluid)

II. REMOVING AND FITTING INTAKE PIPES OR THEIR GASKETS

Manual 814-2



NOTE : Replacement of the intake pipe of the 1st cylinder, entails removing the second cylinder intake pipe.
To replace the intake pipe of the 4th cylinder, that of the 3rd cylinder must be removed and the leads disconnected from the cold start time delay thermal switch.

FITTING

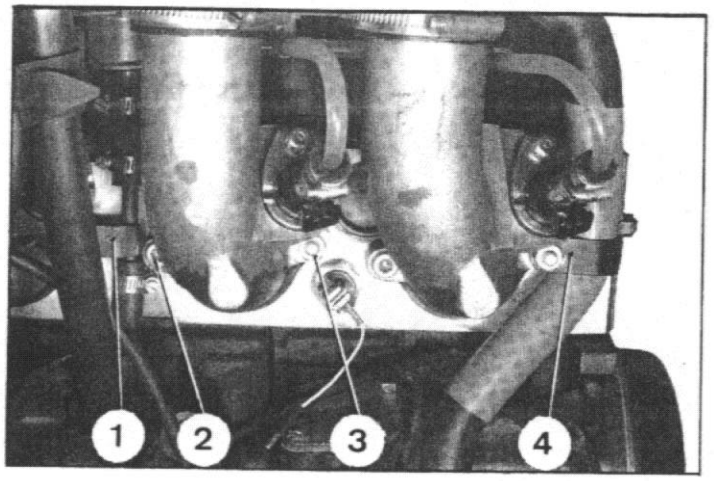
1. **Remove the inlet manifold**

2. Remove the pipe which connects the manifold to the accelerated idling device from the accelerated idling control at « b » on the three-way union *(hvh vehicles)*.

3. Disconnect the pipe which connects the air filter and the accelerated idling device from the accelerated idling control at « a » on the three-way union *(hvh vehicles)*.

4. Put the manual height control into the *low position* and remove the front left-hand suspension sphere

5. Disconnect the harness from the electronic injection system and the petrol feed header from the inlet pipes to be removed.



6. *For the 2nd and 4th cylinders :*
Remove the nut and release the bracket (1) holding the petrol return pipe (2nd cylinder) and the bracket (4) holding the breather pipe (4th cylinder).

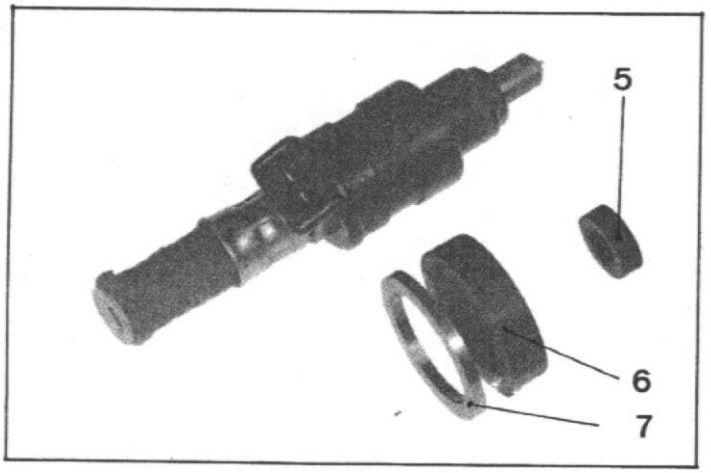
7. Remove the screws (2) (6 mm Allen key) and the nuts (3) holding the inlet pipes.
Remove the pipes one by one together with their gasket.

8. Strip the pipes : remove the injectors and hoses.

FITTING.

9. Carefully clean the bearing faces of the seals on the cylinder head and on the pipes.

10. **Assemble the pipes :**
Fit a new seal (5) on each pipe. Fit the injectors together with the washer (7) and the seal (6).
Fit the calipers which hold the injectors.



11. **Fit the intake pipes :**
NOTE : Fit the pipe of the 1st cylinder before that of the 2nd, and that of the 4th cylinder before that of the 3rd.
Fit the pipe with the gasket (fitted dry).
Fit, but do not tighten, the Allen screws (2) and the nuts (3) (flat washer under the nut).

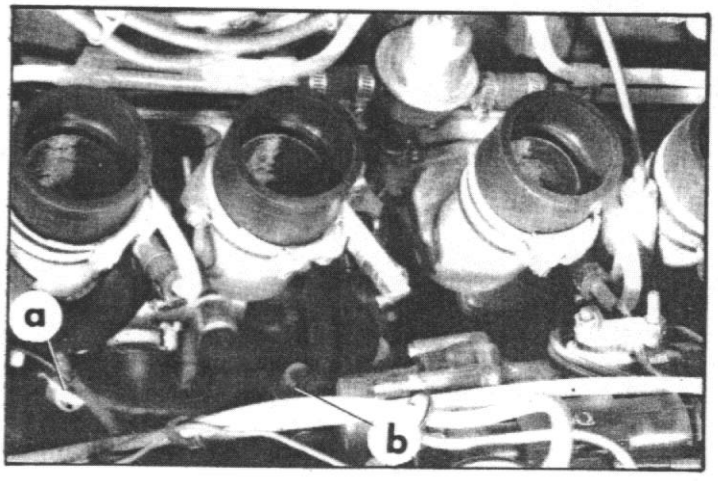
12. Connect the feed header to the injectors.

13. Fit the hoses to the inlet pipes.
Fit the inlet manifold.

14. Tighten the screws and nuts holding the inlet pipes.

15. Fit the bracket (1) holding the petrol return pipe on the rear stud of the 2nd cylinder pipe. Tighten the nut (flat washer).

16. Fit the bracket (4) holding the breather pipe on the rear stud of the 4th cylinder pipe. Tighten the nut (flat washer).



17. Connect the electronic harness to the injectors and to the cold start time delay thermal switch.

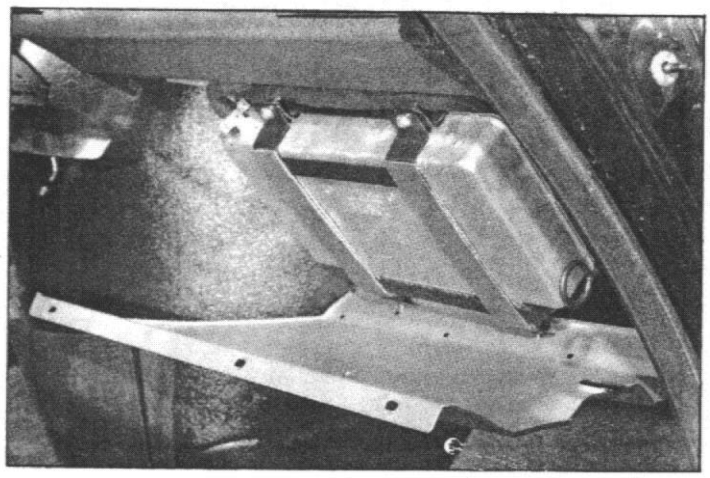
18. Connect up the following :
- pipe between air filter and accelerated idling device to accelerated idling control at « a » on the three-way union,
- pipe between manifold and accelerated idling device to manifold and accelerated idling control at « b » on the three-way union.

19. Fit the front left-hand suspension sphere. Fit a new O-ring smeared with LHM fluid in the suspension cylinder and tighten the sphere by hand.

20. Place the manual height control in the *normal position*.
Start the engine and check the unions for leaks (petrol and LHM fluid).

D.IE VEHICLES ALL TYPES

I - REMOVAL AND INSTALLATION OF THE ELECTRONIC CONTROL UNIT

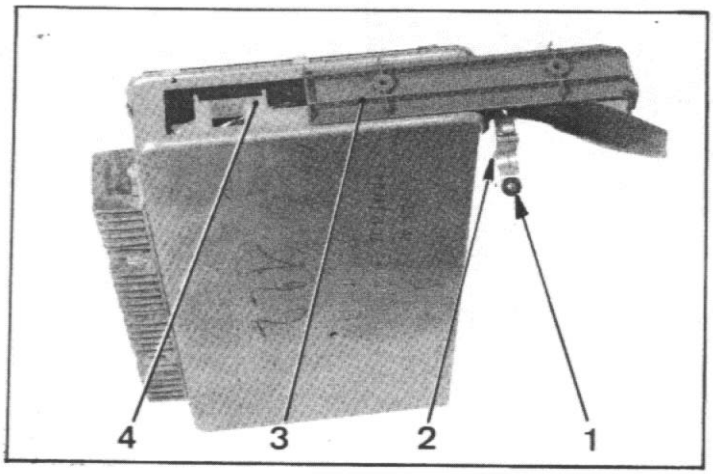


REMOVAL

1. Disconnect earth lead from battery.
2. Remove metal cover under dashboard.
3. Remove upper fixing screws of electronic control unit support and free it.
4. Unscrew screw (1) of electronic harness retaining clamp (2).

   Slide cover (3) towards harness and remove it.

   Raise connector (4) and free it from control unit (hook MR. 630-64/38).



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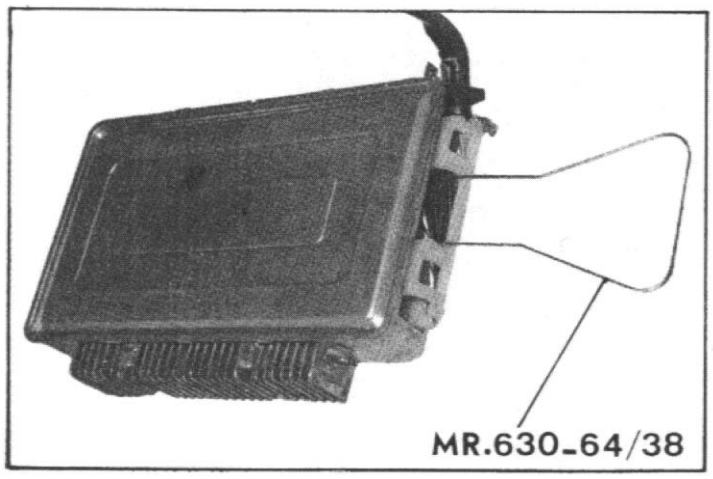
INSTALLATION

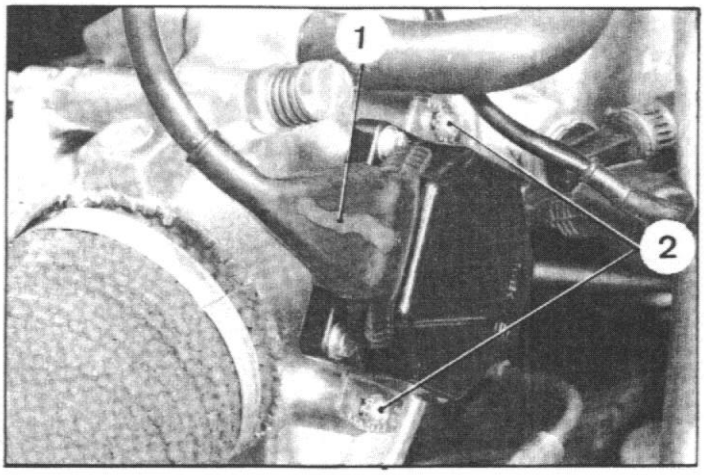
5. Connect the electronic wiring harness to control unit, pressing connector (4) into control unit.

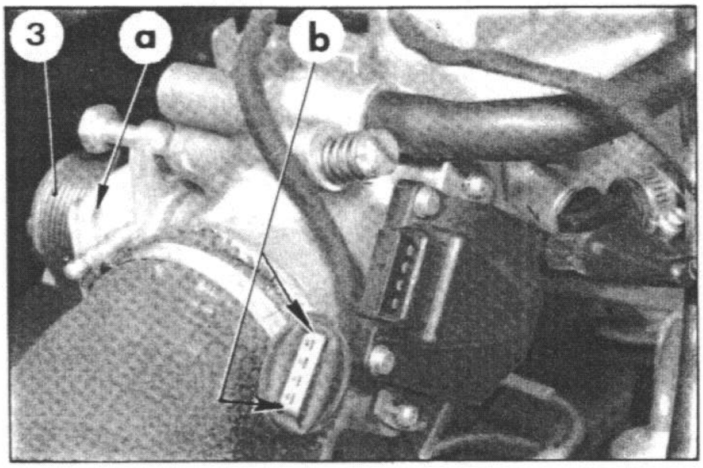
   Position cover (3). (Make sure that cable grommet is correctly placed).

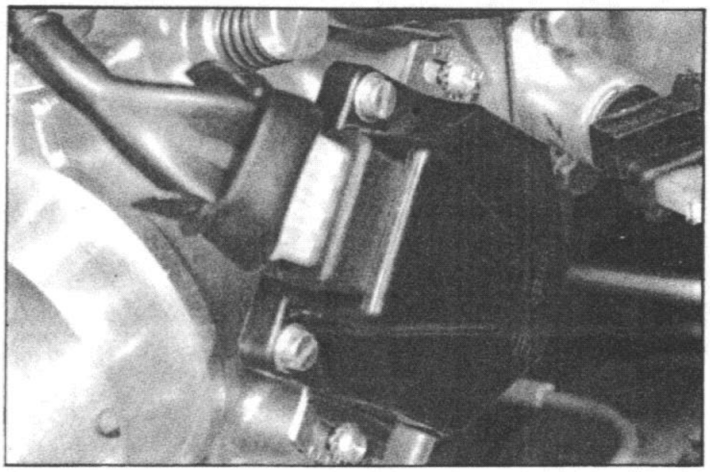
   Tighten screw (1) of clamp (2).

6. Insert electronic control unit into its holder. Tighten support fixing screws.
7. Fit metal cover under the dashboard.
8. Connect earth lead to battery.









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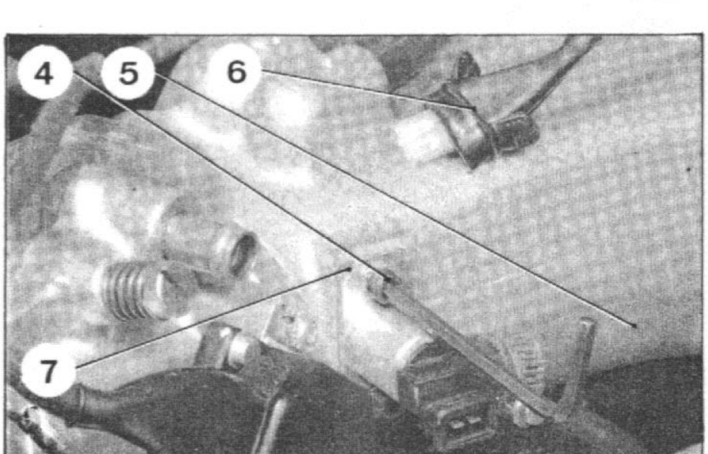


II. REMOVAL AND INSTALLATION OF THROTTLE SPINDLE SWITCH

REMOVAL.

1. Withdraw the connector (1) pulling it by the lugs of its protective rubber covering. Remove fixing screws (2) and free the switch.

INSTALLATION

2. Check throttle adjustment :
Disconnect accelerator cable from its control at « a ». Keep it under tension.
Unhook spring (3) from its fixing point on body of throttle housing.
Ensure that butterly does not stick in the « slow running » position.
Hook up spring (3) and connect accelerator cable to its control (at « a »).
Ensure that cable is properly adjusted.

3. Fit switch onto throttle spindle.
Tighten fixing screws (2), replace connector (1) with its inhibiting chamfers « b » facing forwards and rubber protection pulled back towards wiring, then pull protector forward over socket.

4. *Adjust switch.*

III. REMOVAL AND INSTALLATION OF COLD START INJECTOR

REMOVAL

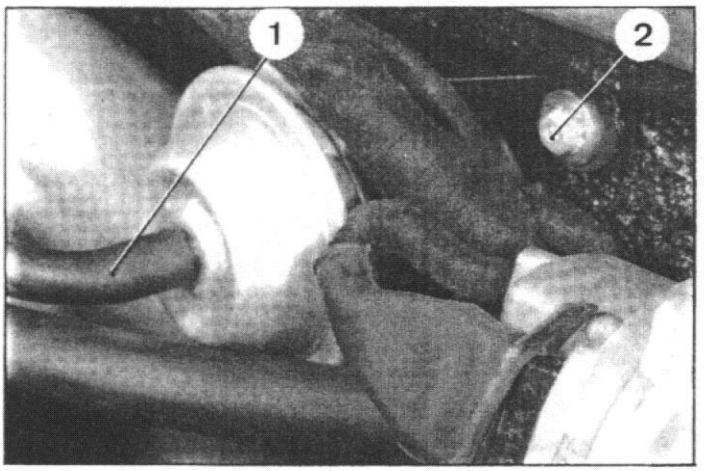
1. Disconnect connector (6) from injector.
To avoid damage to injector head remove fixing screws (4) and ease out injector and its gasket (7) before disconnecting the petrol feed pipe (5).

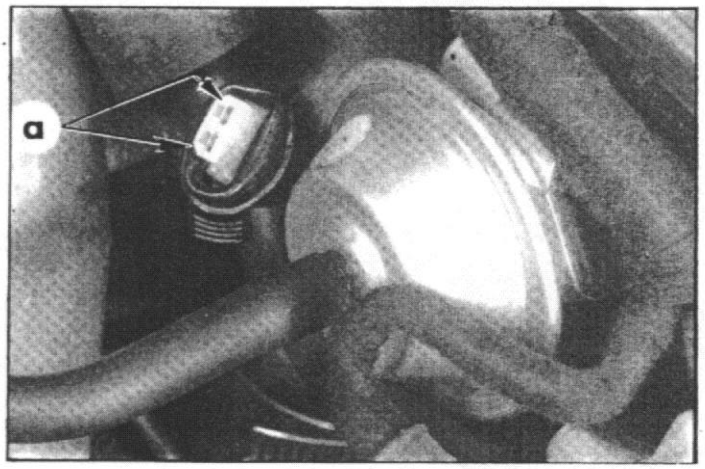
INSTALLATION

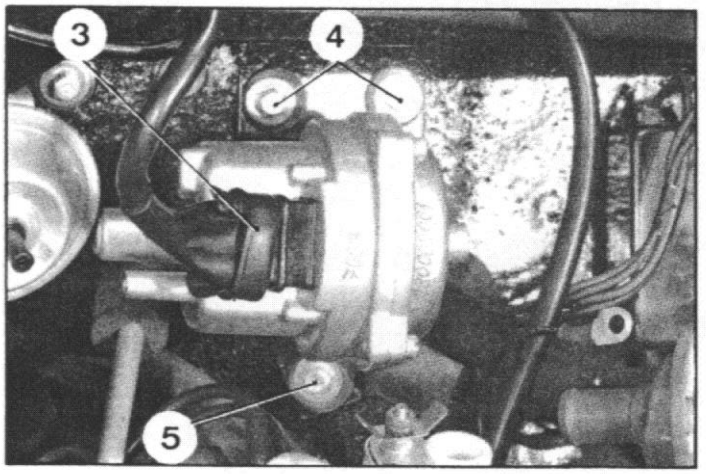
2. Connect petrol feed pipe (5) to injector before fixing it to manifold.
Tighten hose clip.
Fit injector into manifold with its gasket (7) and tighten fixing screws (use lockwashers).

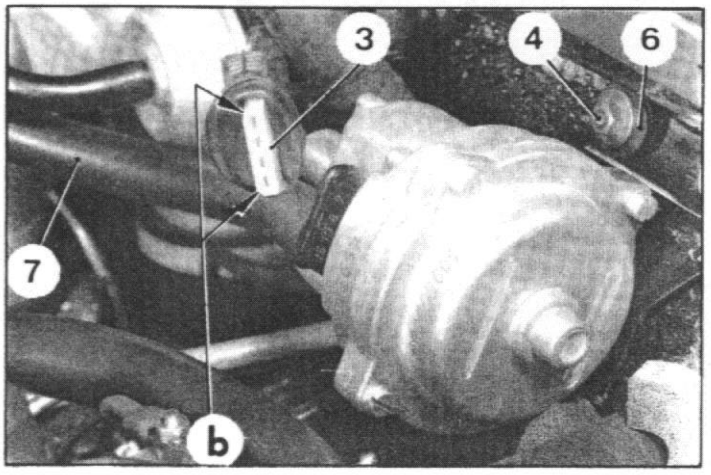
Connect plug (6) to injector (4).

3. *Check operation of injector.*









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IV. REMOVAL AND INSTALLATION OF FULL LOAD SWITCH.

REMOVAL

1. Disconnect air pipe (1) and switch connection. Unscrew fixing screws (2) and remove switch and mounting assembly.
   Detach switch from its bracket.

INSTALLATION

2. Fit switch to its bracket (use lock washer). Fit switch and bracket assembly and tighten fixing screws (use spring washer).

3. Connect air pipe (1) and connector to switch inhibiting chamfers « a » upwards and rubber cover folded back towards harness.
   Then pull rubber cover over the socket.

4. *Check operation of switch.*

V. REMOVAL AND INSTALLATION OF PRESSURE SENSOR

REMOVAL

1. Disconnect connector (3) and air pipe (7) from sensor.

2. Remove lower unit bracket fixing screw (5) and loosen the two upper screws (4).
   Remove sensor and bracket assembly.

3. Remove sensor from its bracket.

INSTALLATION.

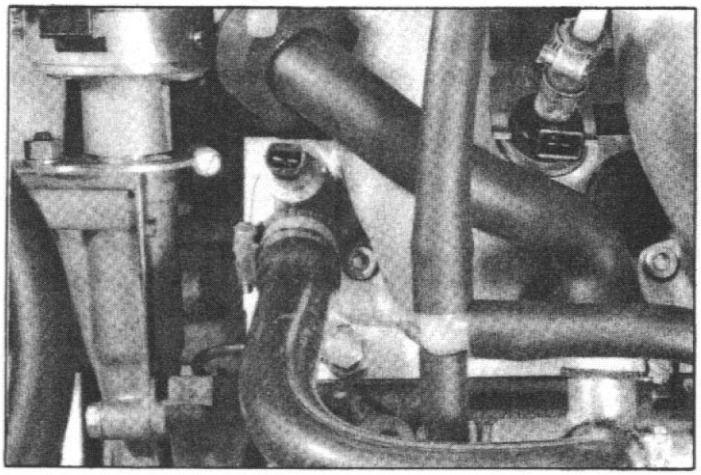
4. Fit sensor to its bracket (use lockwashers under screw heads).

5. Fit sensor and bracket assembly. Tighten fixing screws (4) and (5) (use flat washers). Check that rubber rings (6) are correctly positioned.

6. Connect air pipe (7) and connector (3) to detector with inhibiting chamfers « b » towards the front and rubber protector drawn back towards harness. Then bring rubber protector forward over connector.

7. *Check operation of sensor.*

VI. REMOVAL AND INSTALLATION OF THERMAL SENSOR (fitted to cylinder head)

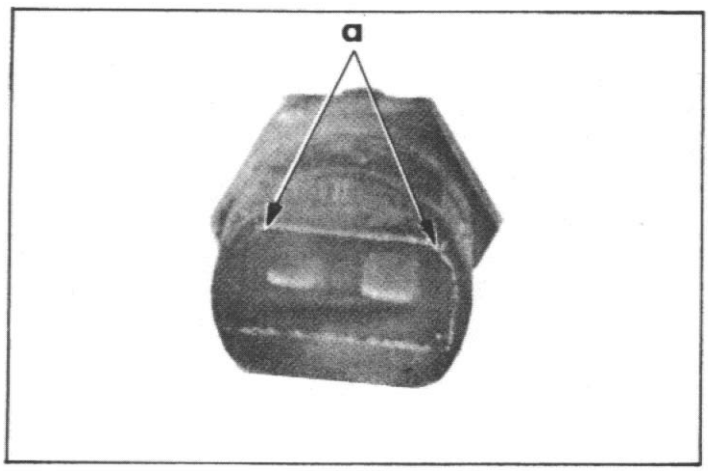


REMOVAL

1. Drain cooling system, Conserve water which contains anti-freeze.
2. Withdraw connector from sensor unit.
   Remove sensor unit.

INSTALLATION

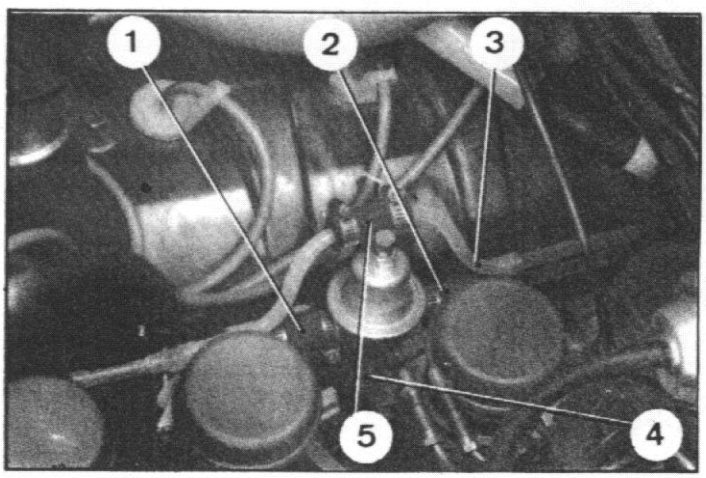
3. Mark with paint the position of inhibiting chamfers « a ».
   Fit detector, inserting copper joint.
   Refit connector to unit so that chamfers are correctly positioned.
4. Refill cooling system with heater control valve open.
5. *Check operation of unit.*



VII. REMOVAL AND INSTALLATION OF PRESSURE REGULATOR (PETROL).

REMOVAL

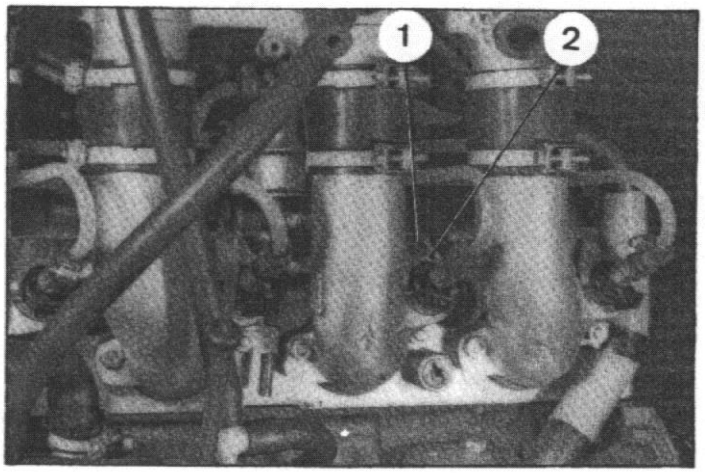
1. Remove air intake manifold. Let it rest on cylinder head. Block manifold apertures and inlet pipes.
2. Disconnect rear fuel injection supply line (3) from hose (5) joining the two lines (front and rear).
3. Disconnect from the regulator .
   - the rear hose (2),
   - the lower hose (4),
   - the front hose (1).
   Remove regulator.



INSTALLATION

4. Position regulator. Connect to it :
   - front hose (1),
   - lower hose (4),
   - rear hose (2).
5. Connect rear fuel supply line (3) to the hose (5) which connects the two lines. Tighten hose clips.
6. *Check adjustment of regulator*
   Fit intake manifold.
7. *Check petrol circuit for leaks.*

VIII - REMOVAL AND INSTALLATION OF INJECTOR



REMOVAL

1. Disconnect injector supply pipe and connector.

2. Loosen screw (1) and free retaining lug (2).

3. Remove injector and remove rubber seals (3) and (4) and washer (5).

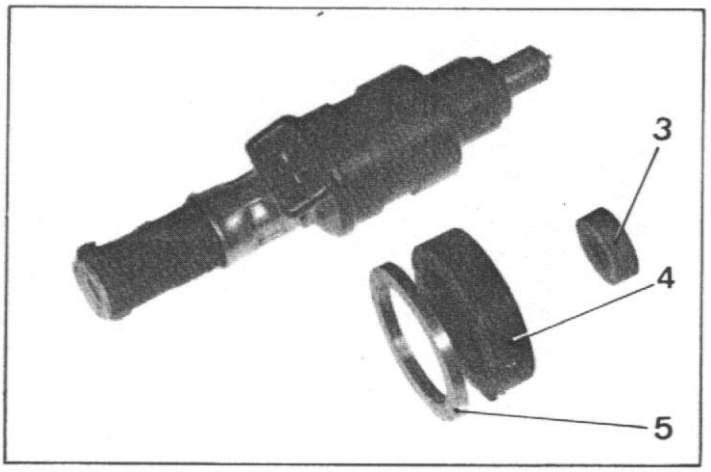
In the case of third and fourth injectors :

The securing screw can be loosened from the right-hand side of the vehicle by passing the arm behind inlet manifold.

NOTE : The intake manifold and injection tubes must be removed in order to replace the four injectors.

INSTALLATION.

4. Position :
   - washer (5) and seal (4) on injector,
   - seal (3) on inlet pipe (this seal should be renewed whenever the injector is dismantled).



5. Position injector on inlet pipe, connector downwards.
   Fit lug (2) and tighten screw (1) (shakeproof washer).
   Connect wiring harness to injector, with rubber protector drawn back towards wiring, then slip rubber over connector.

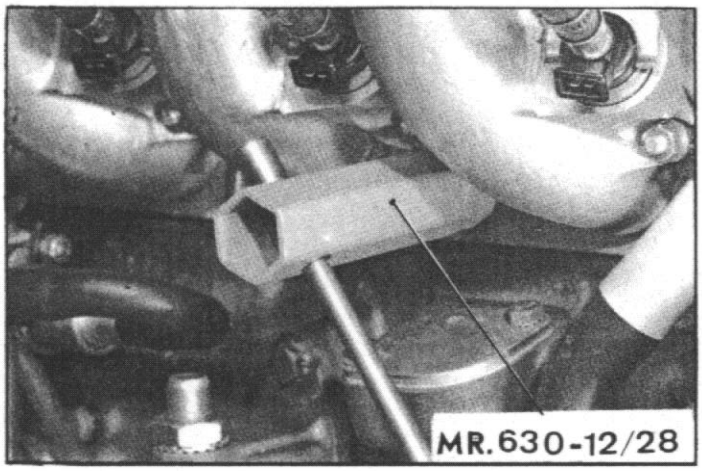
6. If injection tubes and intake manifold have been removed, refit.

7. Join feed pipe to injector, pushing it fully home into the hose. Tighten hose clip.

8. Bleed petrol circuit by operating ignition switch several times, *and check operation of injector.*

9. *Check petrol circuit for leaks.*

IX. REMOVAL AND INSTALLATION OF COLD START TIME DELAYED THERMAL SWITCH (ON CYLINDER HEAD)



REMOVAL

1. Drain cooling system. Conserve water which contains anti-freeze.

2. Place the vehicle *in low position* and remove front left-hand suspension sphere.

3. Disconnect thermal switch connections. Remove thermal switch and its gasket (use spanner MR. 630-12/28).

INSTALLATION

4. Fit thermal switch, using a copper gasket. Make switch connections.

5. Fit front left-hand suspension sphere using a new gasket coated with LHM fluid, and hand tighten.

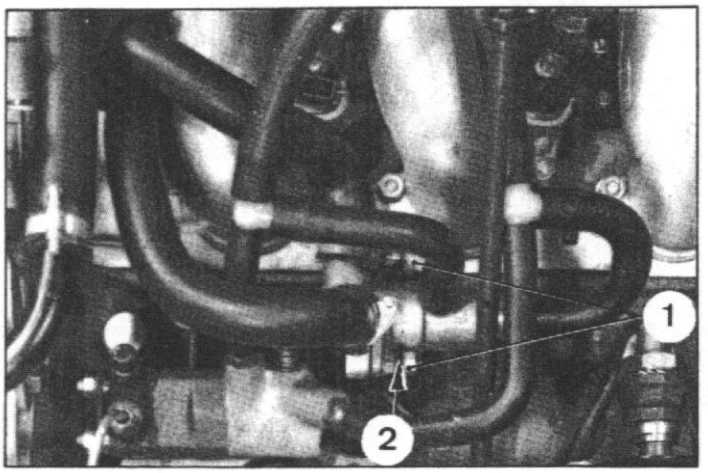
6. Fill cooling system with heating unit control valve open.

7. Start engine and place manual height control *to « road » position.*

   Check that suspension sphere and suspension cylinder connection is leakproof.

8. *Check operation of thermal switch.*

X - REMOVAL AND INSTALLATION OF SUPPLEMENTARY SLOW RUNNING AIR INTAKE CONTROL (COMPLETE UNIT)



REMOVAL

1. Drain cooling system. Conserve water which contains anti-freeze.

2. Place vehicle *in « low » position* and remove front LH suspension sphere.

3. Disconnect thermal switch lead and air and water hoses from supplementary air control system.

4. Remove nuts (1) and free supplementary air air control from its support (2).

INSTALLATION

5. Position supplementary air control.
   Tighten nuts (1) (use flat washers on each side of support).

6. Connect water hoses to front part of control and air hoses to rear part.
   Tighten water hose clips.

7. Connect harness wire to thermal switch.

8. Fit front left-hand suspension sphere, using new gasket moistened with LHM fluid, and hand tighten.

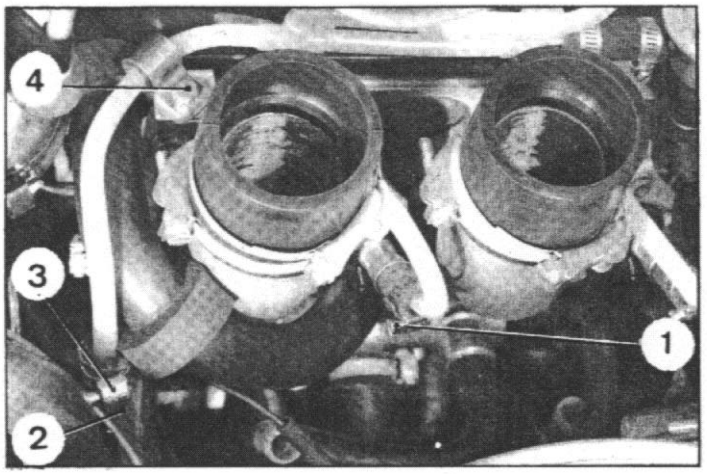
9. With engine running and heating valve open, fill cooling system.

   Place manual height control *to « road » position* and check that connection from suspension sphere to suspension cylinder is leakproof.

10. Check operation of supplementary air supply control.

    Check all water hoses for leaks.

XI - REMOVAL AND INSTALLATION OF FUEL FEED LINE ASSEMBLY (FRONT PART)



NOTE : To avoid risk of fracture, the fuel feed line should be removed when the engine is warm.

REMOVAL

1. Disconnect earth lead from negative terminal on battery.

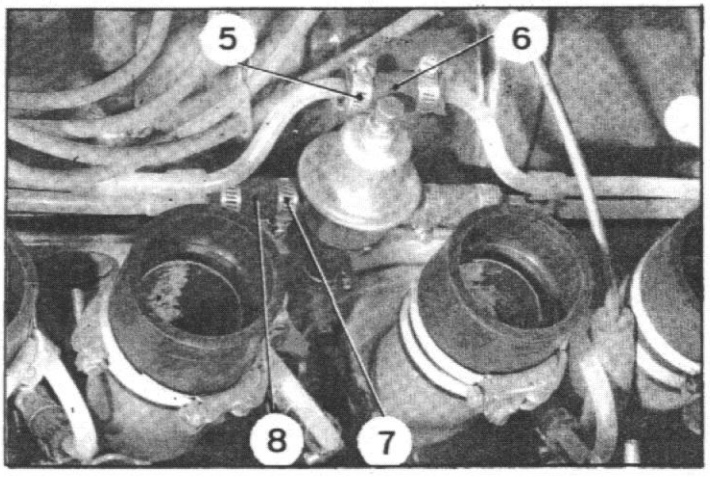
2. Place vehicle *in « low » position* and remove front left-hand suspension sphere.

3. **Remove inlet manifold.**

4. Remove petrol supply line clip screw (4).
   Loosen following hoseclips :
   - petrol supply line (3)
   - injectors n° 1 and 2 (1)
   - hose (5) connecting front and rear part of feed line assembly,
   - pressure regulator connecting tube (7).

5. Disconnect front part of feed line assembly, from petrol supply line (2) then from the hose (6).
   Disconnect hose (8) from pressure regulator
   Disconnect front part of feed line assembly from injector and remove it.

6. Strip front part of feed line assembly :
   - remove connecting tube and cold start injector assembly,
   - remove hose (8),
   - release front hose-clip.



INSTALLATION

7. Fit hose (8) and front hose clip to front part of feed line assembly.
   Position harness and connect :
   - front part of feed line assembly to injectors
   - hose (8) to pressure regulator,
   - front part of feed line assembly to connecting hose (6) then to petrol supply line (2),
   - connecting tube and cold start injector assembly to front part of feed line assembly.

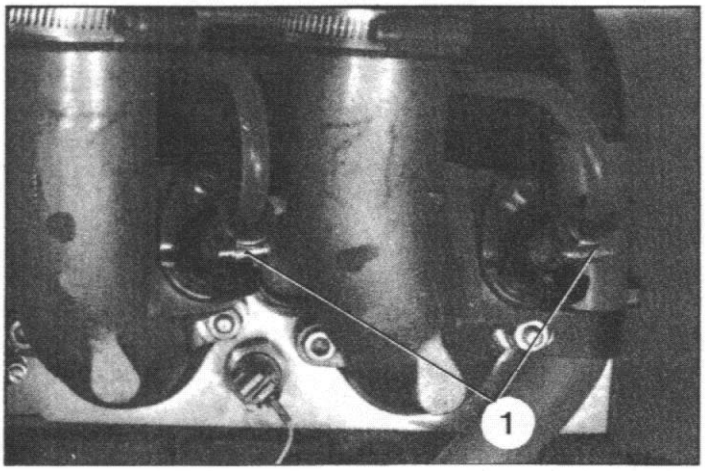
8. Tighten hose clips(3), (1), (5) and (7) and fit screw (4) holding petrol supply pipe clip.

9. **Fit inlet manifold.**

10. Fit front left-hand suspension sphere, using a new gasket coated with LHM fluid, and hand tighten.

11. Connect earth lead to battery. Start engine. Place manual height control lever *to « road » position* and check all pipeline circuits for leaks (petrol and LHM fluid).

XII. REMOVAL AND INSTALLATION OF FUEL FEED LINE ASSEMBLY (REAR PART)



NOTE : To avoid risk of fracture, the fuel feed line should be removed when the engine is warm.

REMOVAL

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

2. Place manual height control *to « low » position* and remove front left-hand suspension sphere.

3. **Remove inlet manifold.**

4. Loosen clips (1) securing hoses on injectors n° 3 and 4.
   Loosen clips on tube (3) connecting to parts of feed line and clips on pressure regulator connecting tube (4).

5. Disconnect :
   - rear part of feed line from tube (2),
   - tube (5) from the regulator,
   - rear part of feed line from injectors,
   - tube (5) from rear part of feed line.

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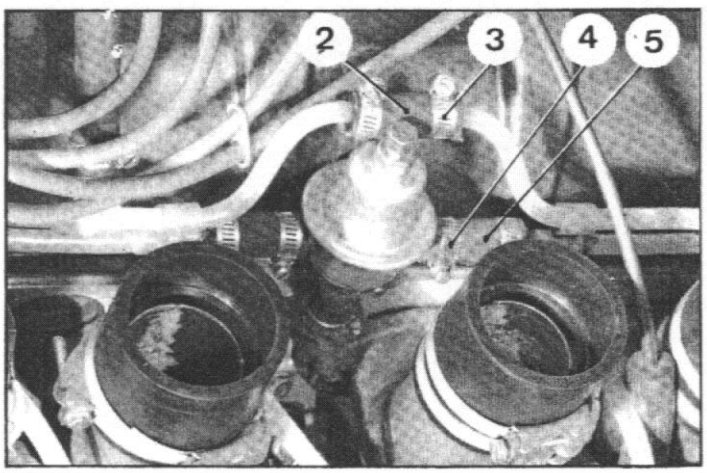


INSTALLATION

6. Position rear part of feed line with its tube (5) and connect to injectors.
   Connect tube (5) to regulator, and rear part of feed line to connecting tube (2).
   Tighten hose clips (1), (3) and (4).

7. **Fit inlet manifold.**

8. Fit front left-hand suspension sphere using new gasket coated with LHM fluid, and hand tighten.

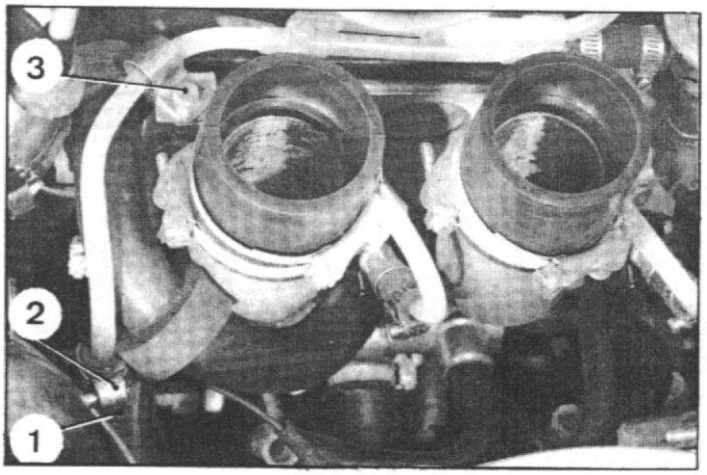
9. Connect earth lead to battery.

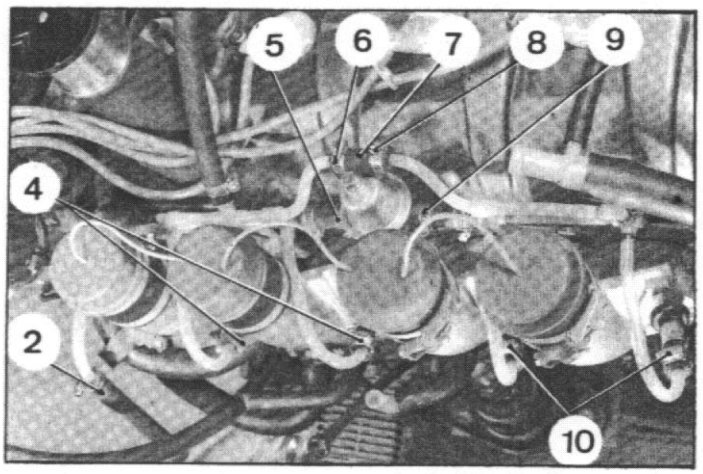
10. Start engine and place manual height control *to « road » position.*

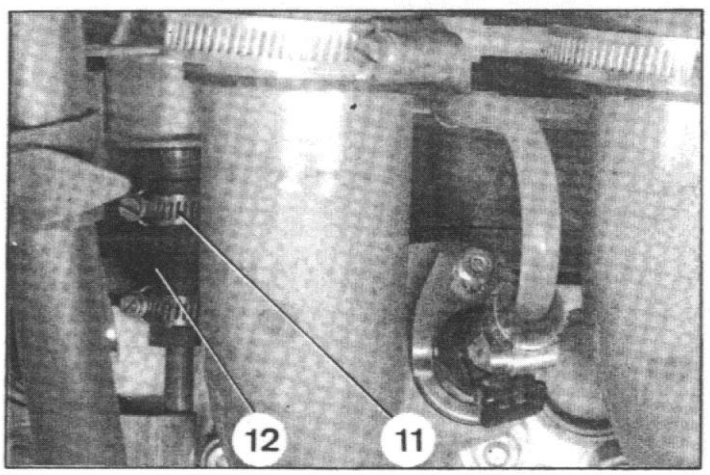
Check pipe circuits for leaks (petrol and LHM fluid).

XIII - REMOVAL AND INSTALLATION OF FUEL FEED LINE ASSEMBLY

(COMPLETE UNIT, FRONT AND REAR PARTS)







NOTE : To avoid risk of fracture, the fuel feed line should be removed while the engine is warm.

REMOVAL

1. **Remove intake manifold.**

2. Loosen hose clips,
   - on petrol delivery pipe (2),
   - on injectors (4) and (10),
   - on petrol return pipe (11).

   Remove screw (3) of petrol delivery pipe clip.

3. Disconnect fuel feed line assembly from injectors, from petrol return pipe (12) from petrol delivery pipe (1) and remove fuel feed line assembly and pressure regulator assembly.

4. Disconnect from fuel feed line assembly :
   - regulator and its hoses,
   - hose (7),
   - front hose clip,
   - cold start injector connecting tube.

INSTALLATION

5. Connect regulator to fuel feed line assembly, and fit hose (7), front hose clip and cold start injector connecting tube.

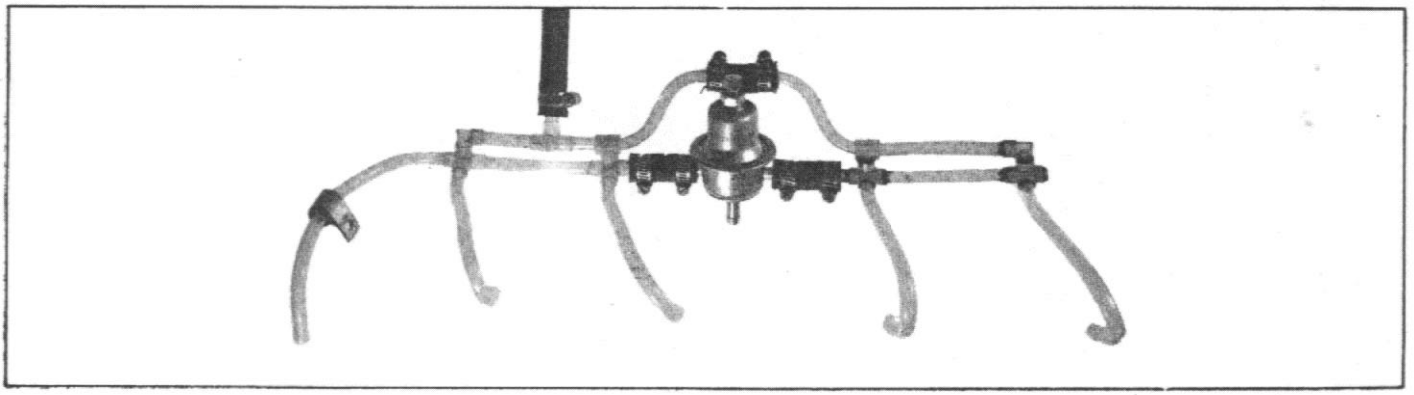
6. Position the assembly on engine and connect :
   - return tube (12) to regulator,
   - feed line assembly to injectors and to petrol delivery pipe (1).

   Tighten hose clips (2), (4), (6), (5), (10), (8) (9) and (11).

   Tighten petrol delivery pipe clip screw (3).

7. **Fit inlet manifold.**

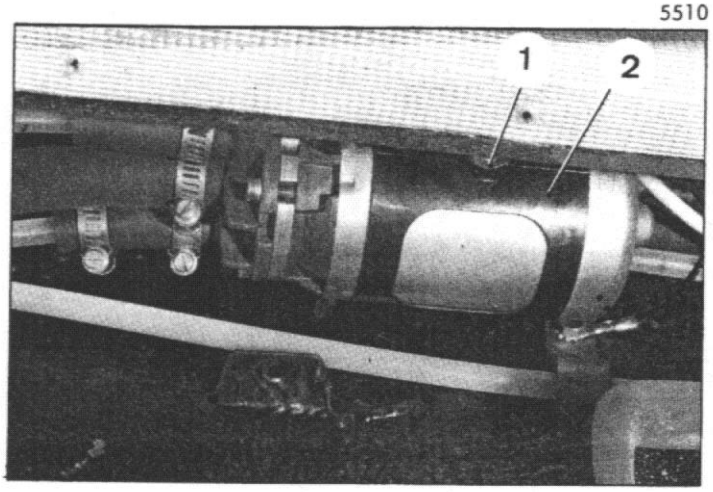
8. Fit front left-hand suspension sphere and check circuits for leaks (petrol and LHM fluid).



D.IE VEHICLES ALL TYPES

I - REMOVAL AND INSTALLATION OF PETROL PUMP

5510



REMOVAL

1. Remove double metal trim panel under right hand sidemember.

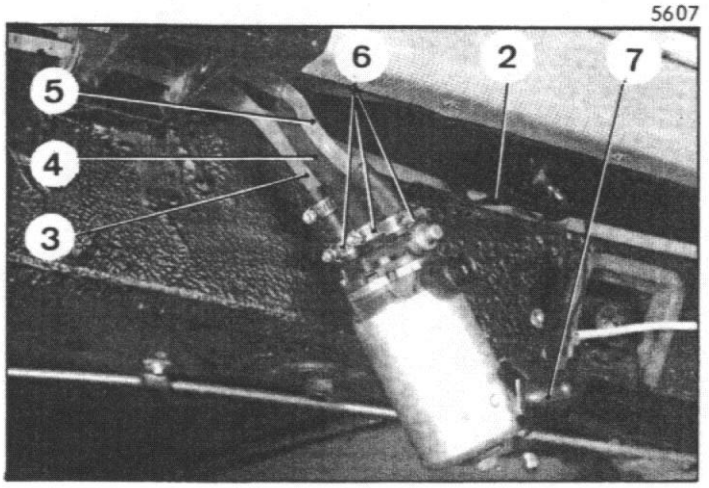
2. Remove holding screw (1) of sleeve (2). Remove sleeve support : raise it slightly then push towards sidemember.

3. Disconnect pump connector (7).

4. Loosen hose clips (6) and disconnect petrol pipes (3), (4) and (5) from pump.

INSTALLATION

5607



Manual 814-2

5. Position pump so that pipe connectors « a », « b » and « c » are horizontal and plug socket (8) faces outwards.

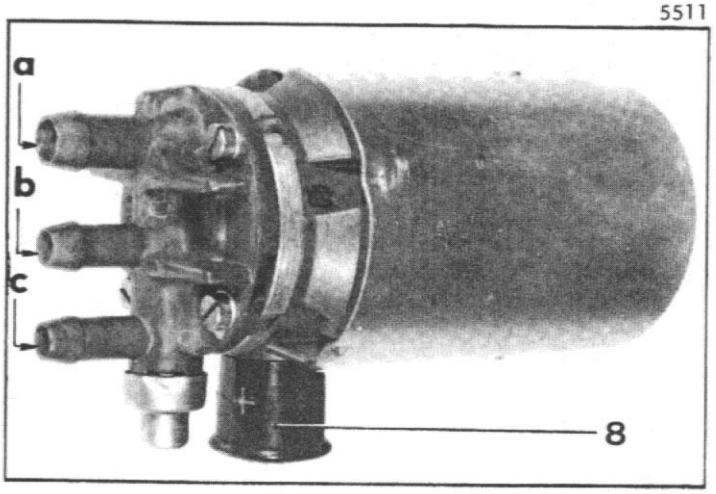
6. Connect petrol feed lines to pump :
   - Suction pipe (3) to connector « a » (marked «S» on the pump),
   - Delivery pipe (4) to connector « b » (marked «D» on the pump).
   - Return pipe (5) to tube connector « c » (marked « R » on the pump).

   Tighten hose clips (6).

7. Plug in connector (7) to socket (8) and position pump in sidemember.

8. Position sleeve bracket (2) and tighten fixing screw (1) (use flat washer).

5511

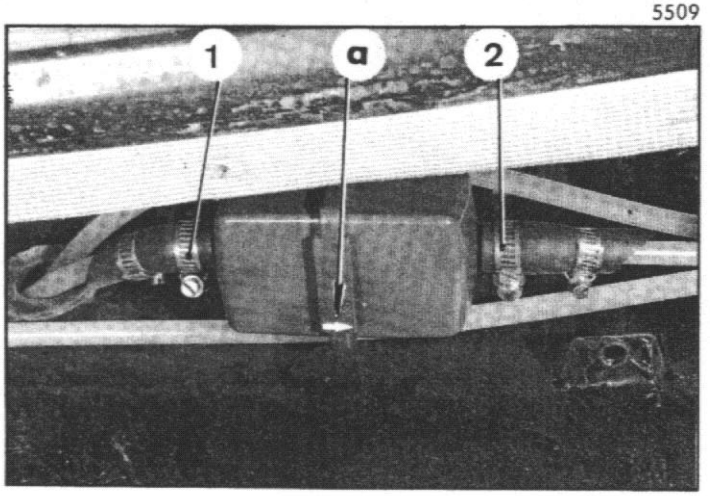


9. Fit double metal trim panel under right hand sidemember.

10. Bleed petrol circuit, by operating ignition switch several times.

II - REPLACEMENT OF PETROL FILTER

5509



REMOVAL

1. Remove double metal trim panel under right hand sidemember.

2. Loosen hoseclips (1) and (2) and disconnect hoses from filter.

INSTALLATION

3. Position filter with arrow « a » pointing towards front of vehicle.

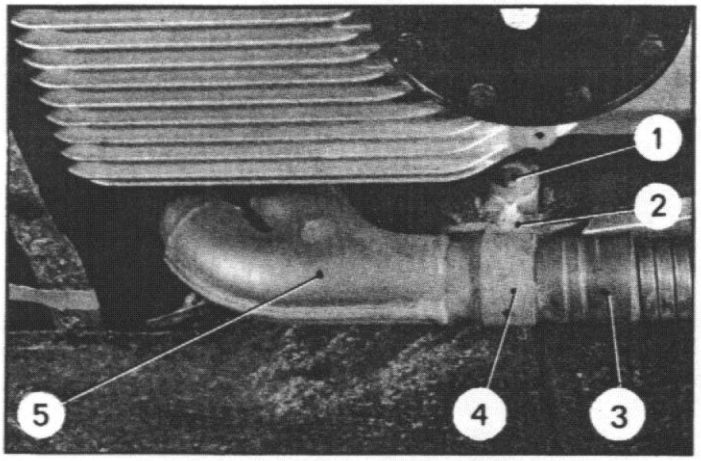
   Connect hoses and tighten hoseclips (1) and (2).

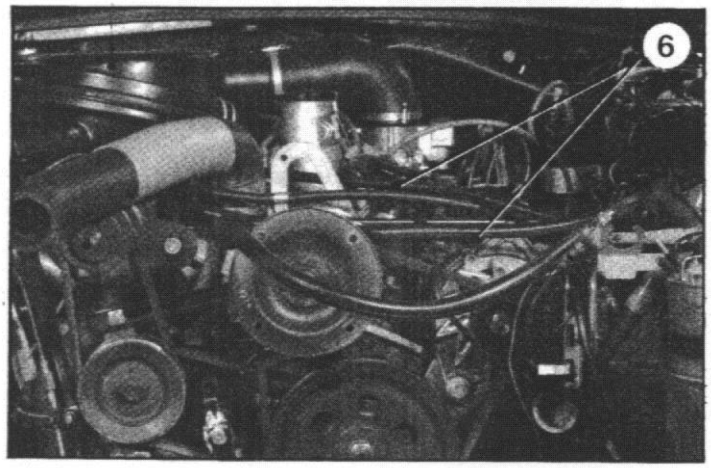
4. Fit double metal trim panel under right hand sidemember.

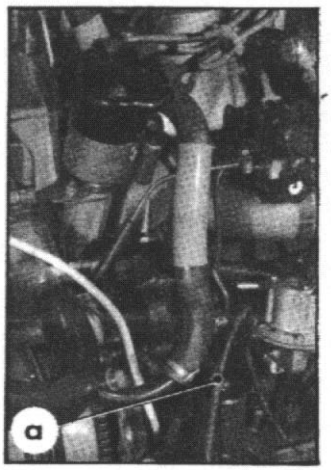
NOTE : Petrol filter should be replaced every 30.000 kms.

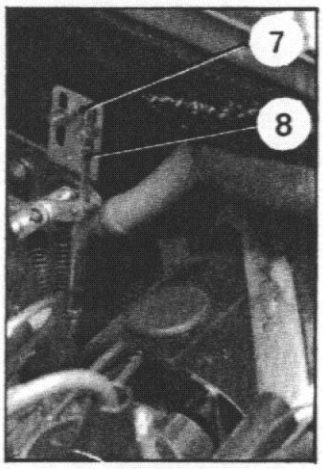
REMOVING AND FITTING AN ENGINE/GEARBOX ASSEMBLY

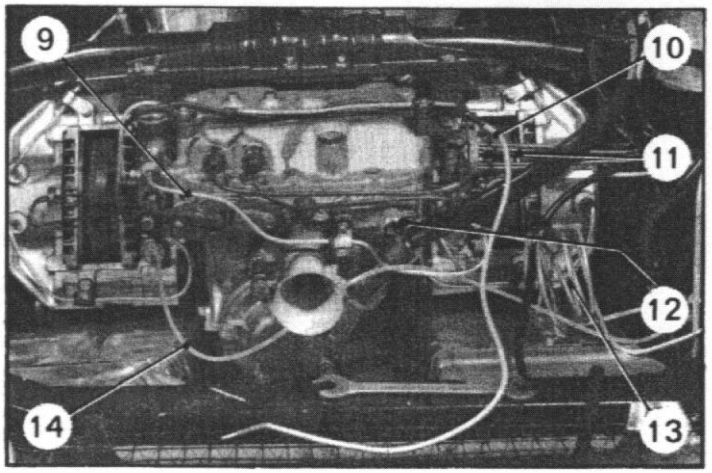
BVH VEHICLES
except BW









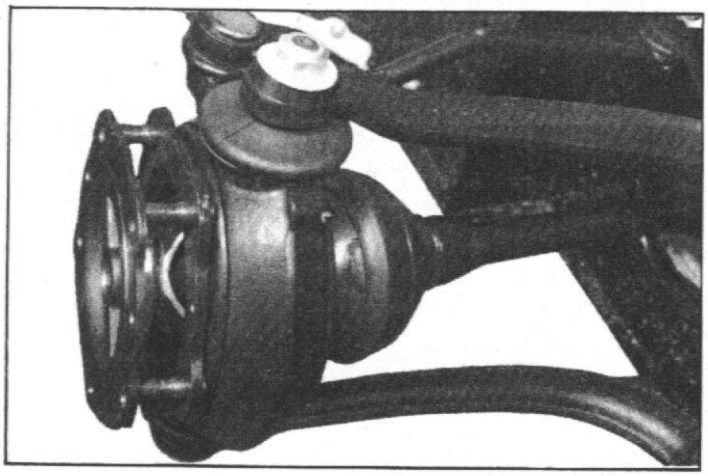


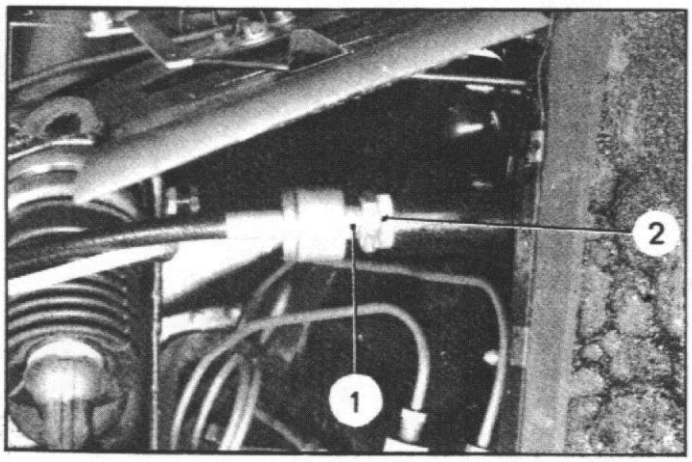
Manual 814-2

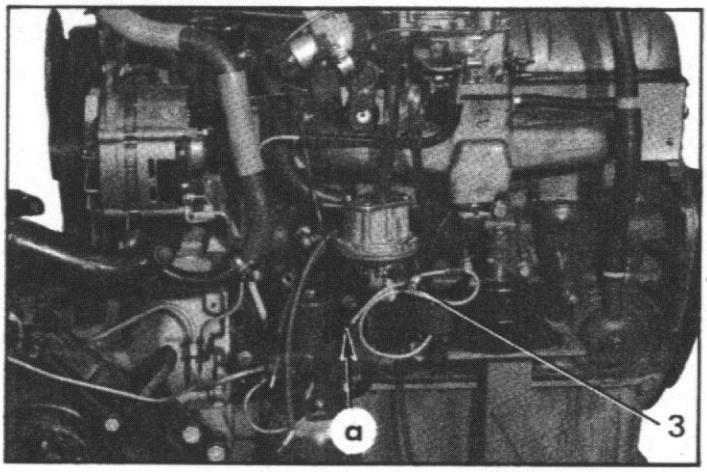
REMOVAL

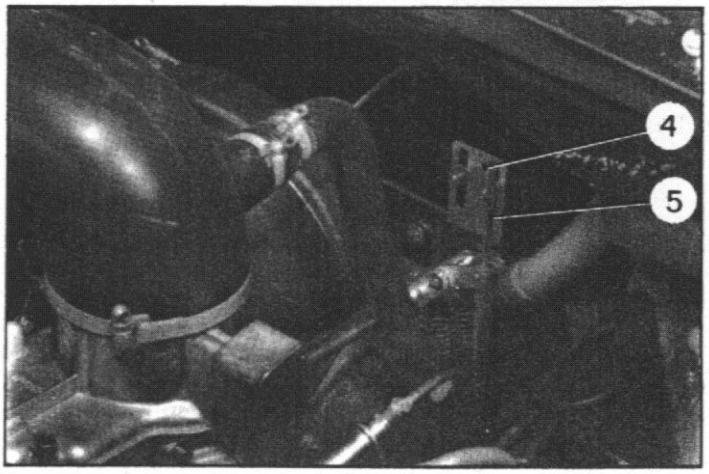
1. With the vehicle on a lift or over a pit, disconnect the exhaust down pipe (5) from the coiled pipe (3). Slacken the bolt (1) holding the front collar (4) and the nuts (2) on the front and rear collars of the pipe.
2. Hold the bonnet up (catch MR. 630-64/27). Chock up the front of the vehicle (supports 2505-T).
3. Remove the spare wheel, the radiator inlet duct assembly and the crossmember supporting the spare wheel.
4. Remove the front wheels and the front wings.
5. Remove the battery :
   Disconnect the cables from the battery terminals. Remove the frame from around the battery. Take this frame away but do not disconnect the wiring harness from the regulator.
   Remove the battery and its tray.
6. Drain the radiator and the engine cylinder block. Place the height control in *low position*. and slacken the pressure regulator release-screw.
7. Disconnect the upper tubes (6) from the reservoir (hydraulic equipment side).
8. Free the hydraulic reservoir and pivot it.
9. Remove the two front suspension spheres.
10. Disconnect the leads from the alternator, the coil the thermal sensor, the pressure switch, the electric fan and the thermal switch on the radiator.
11. Disconnect :
    - the choke control on the carburettor,
    - the two return springs and the rear support (7) for the accelerator control rod (8).
12. Disconnect :
    - the speedometer cable from the gearbox,
    - the gearchange pipe assembly (11),
    - the clutch lock supply tube (9),
    - the clutch lock overflow return tube (14) ;
    - the flexible heater pipe from the water pump intake pipe,
    - the right and left brake unit feed pipes (13) from the three-way union.

    Disconnect the brake pad wear indicator lead (10) and the leads from the reversing light contactor (12).
13. Disconnect :
    - the pressure regulator outlet pipe from the four-way union,
    - the pipe connecting the clutch re-engagement control to the hydraulic gear selector at « a »,
    - the petrol pump inlet pipe.
14. Disconnect :
    - the heater valve inlet hose from the water supply tube on the cylinder head.









- the overflow return pipe from the clutch re-engagement control,
- the pipe connecting the hydraulic gear selector and centrifugal regulator at « b » (see photo on page 3).

15. Remove the nuts securing the transmission shafts to the flanges of the gearbox outlet shafts.

16. Free the transmission shafts from the swivel bearings. To do this remove the two countersunk head screws and release the tri-axe housings from the studs on the flanges of the gearbox outlet shafts.

17. Mark the position of the steering rack and remove it.

18. Release the handbrake cable from the levers of the mechanical brake units after completely unscrewing the locknut and the adjusting nut (2) from the threaded sleeve (1).

19. Remove :
- the screws holding the front engine crossmember on the body sidemembers,
- the screws holding the rear flexible mountings.

20. Remove :
- the water header tank,
- the earth cable from the hoisting bracket.

From the various cables to the positive terminal, disconnect the starter motor supply cable.

21. Lift the engine/gearbox assembly by the hoisting bracket and withdraw it.

FITTING

22. Arrange the engine mountings and fit the engine/gearbox assembly in position.

23. Connect the return pipe from the pressure regulator to the reservoir at « a » and the pressure regulator outlet pipe (3) to the four-way union.

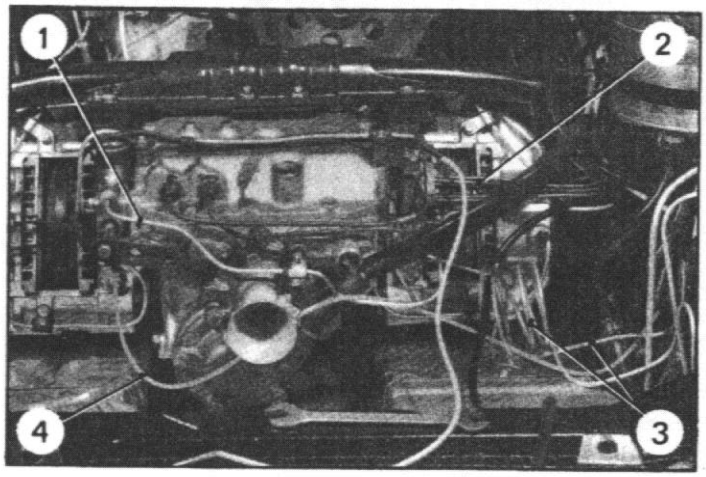
24. Fix the front crossmember, replacing the packing pieces removed during dismantling.
NOTE : The difference in the distance between the brake disc and the body sidemembers on each side must be 80 ± 2 mm.
Alter the thickness of packing pieces if necessary.
Fix the flexible mountings onto the rear supports.

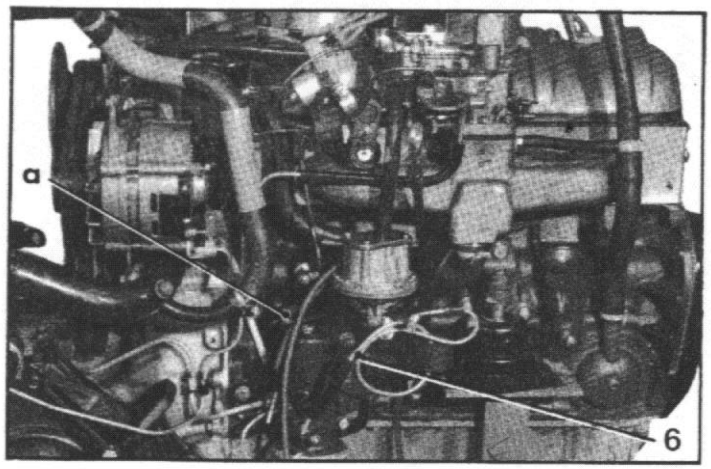
25. Connect the hand brake cable to the calipers and adjust these.

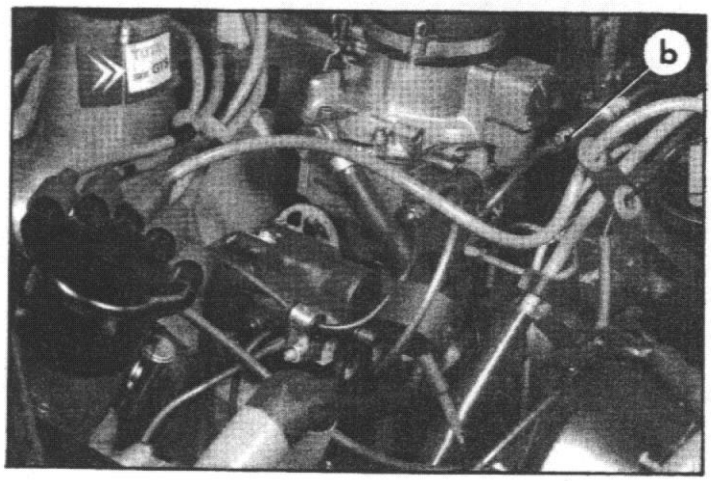
26. Fit the transmission shafts (engage the tri-axe housings on the studs in the flanges of the gearbox outlet shafts and tighten the nuts to 105 - 135 mΛN (10.5 to 13.5 m.kg).
Fix the drive shaft flanges onto the wheel hubs (two countersunk head screws on each side).

27. Fit the steering.

28. Connect up :
- the accelerator control (fit the two return springs and the rear support (4) for the accelerator control rod (5)),
- the choke control,
- the feed pipe to the petrol pump.







29. Connect up :
    - the speedometer cable to the gearbox,
    - the gearchange pipe assembly (2),
    - the clutch lock feed pipe (1),
    - the overflow return pipe (4),
    - the heater hose to the water pump inlet tube,
    - the right and left brake unit feed pipes (3) to the three-way union.

30. Connect :
    - the pressure regulator outlet pipe (6) to the four-way union,
    - the pipe connecting the clutch re-engagement control to the hydraulic gear selector at « a ».

31. Fit the heater valve inlet hose to the hot water supply pipe on the cylinder head.

32. Connect :
    - the overflow return pipe to the clutch re-engagement control,
    - the pipe connecting the hydraulic selector and the centrifugal regulator at « b ».

33. Connect the leads :
    - to the alternator,
    - to the coil,
    - to the thermal sensor,
    - to the pressure switch,
    - feeding the electric fan,
    - of the thermal switch on the radiator,
    - to the brake pad wear indicator,
    - to the reversing light switch.

34. Fit the front suspension units.

35. Fit the hydraulic reservoir.

36. Connect the hydraulic overflow return pipe to the centrifugal regulator (behind the regulator) and the return pipe to the reservoir at the front (the larger).

37. Fit the water header tank.
    Fill up the radiator and the cylinder block with water (open the heater valve).

38. Fit the battery and its retaining frame.

39. Connect the exhaust down pipe to the coiled pipe.

40. Connect the earth cable to the lifting bracket.

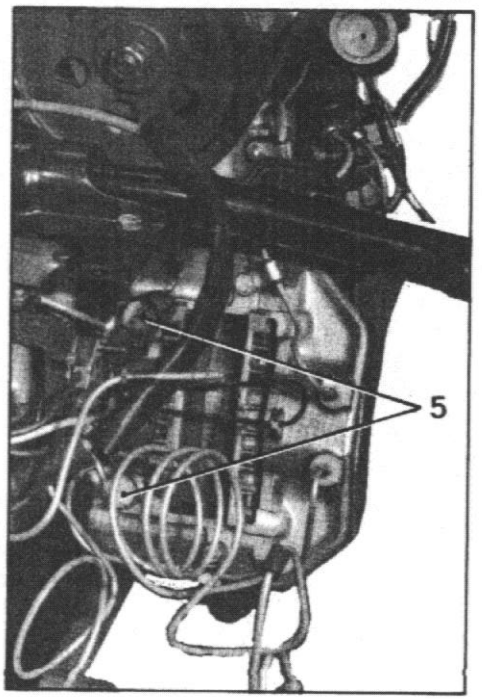
41. Connect the cables to the battery terminals.

42. Tighten the pressure regulator bleed screw.
    Start the engine and wait until pressure has built up in the circuits. Top up the radiator again when the engine has run for a few minutes.

    Close the heater valve.

    Stop the engine.

12 238



43. If the brake units have been removed :
Have the hydraulic brake pedal depressed by an assistant to centralise the brake units.

44. Tighten the bolts (5) securing the brake units to 130 - 140 mAN (13 to 14 m.kg).

45. Bleed the brakes and the centrifugal regulator.

46. Fit the front wings. Connect the wiring harnesses.
Fit the cowl to the radiator.
Connect up the headlamp controls.
Fit the spare wheel.

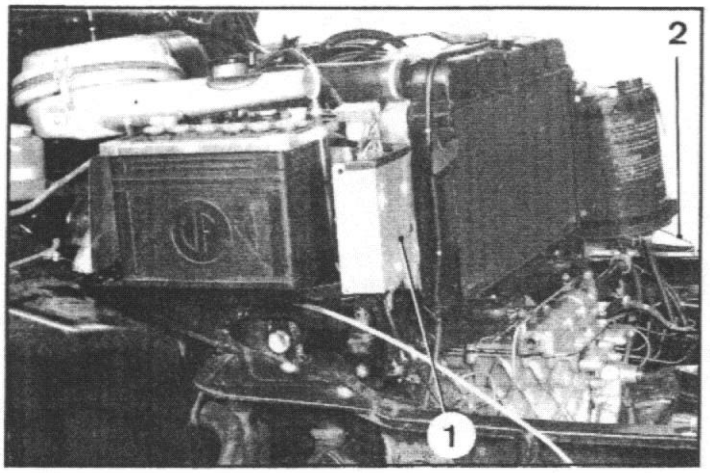
47. Adjust the static timing point.

48. Carry out the basic settings.

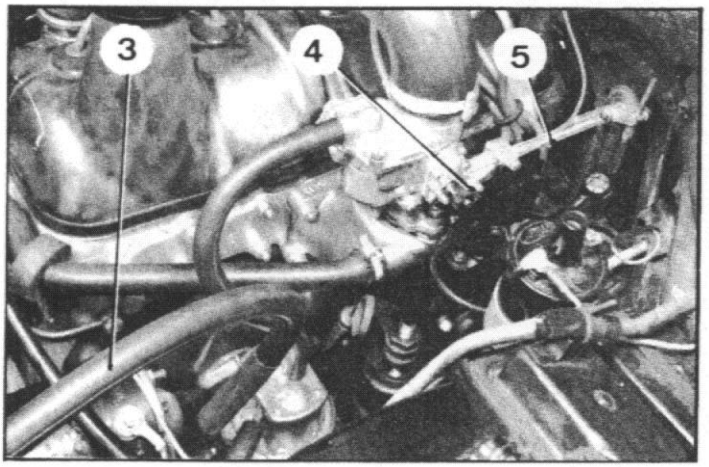
49. Check the headlamp adjustment.

VEHICLES TYPE BVM

REMOVING AND FITTING AN ENGINE/GEARBOX ASSEMBLY



2404



Manual 814-2

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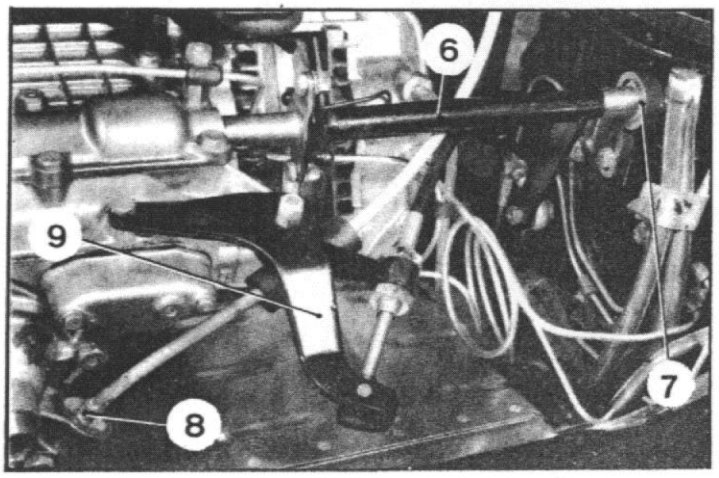


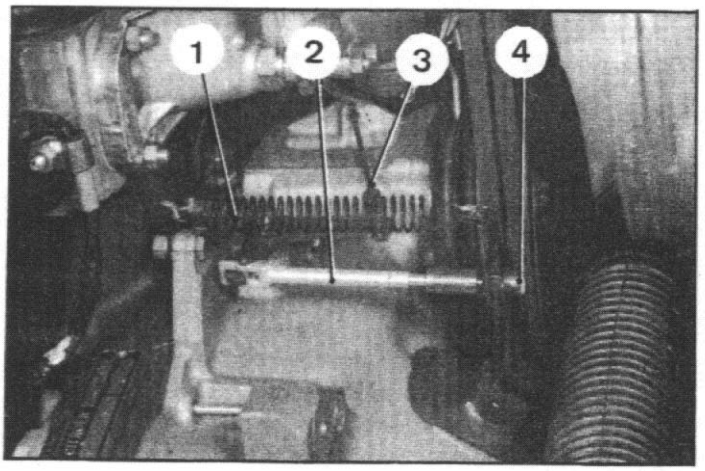
1807

REMOVAL

1. Chock up the front of the vehicle (support 2505-T). Hold the bonnet open (catch MR. 630-64/27).
2. Remove :
   - the spare wheel,
   - the front wings,
   - the radiator inlet duct assembly and the cross-member supporting the spare -wheel,
   - the two front wheels.
3. Drain the radiator and the cylinder block. (Collect the water which contains anti-freeze).
4. Release the pressure in the circuits.
5. Remove the battery and its support with the screen (1).
6. Remove the hydraulic fluid reservoir and pivot it on the rod (2).
7. Remove the air filter and its support.
8. Remove the steering rack assembly.
9. Disconnect :
   - the alternator leads,
   - the coil leads (primary and secondary),
   - the lead to thermal sensor,
   - the earthing wire on the water pump,
   - the oil pressure switch lead.
10. Remove the front suspension spheres.
11. Disconnect :
   - the heater pipe from the heater,
   - the pressure regulator outlet pipe from the union,
   - the choke control (4) from the carburettor,
   - the accelerator control linkage (5) from the carburettor and free it from the rear bearing,
   - the petrol feed pipe from the petrol pump,
   - the heater pipe from the connector fixed to the cylinder block,
   - the fluid reservoir suction pipe (3) from the HP pump.
12. Disconnect :
   - the feed pipe from the front left-hand brake unit,
   - the feed pipe from the front right-hand brake unit,
   - the speedometer cable (8) from the drive outlet on the gearbox,
   - the gearchange control,

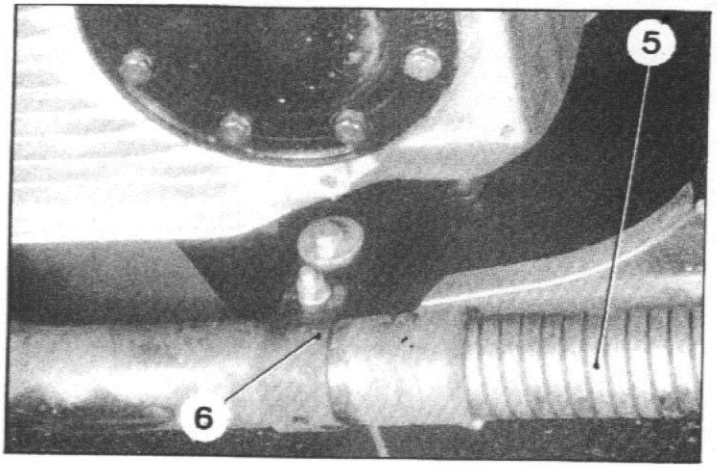
   Remove the bracket (9) from the gearbox cover.

   Disconnect the tube (6) from the gearbox cover and free it from the ball joint (7).



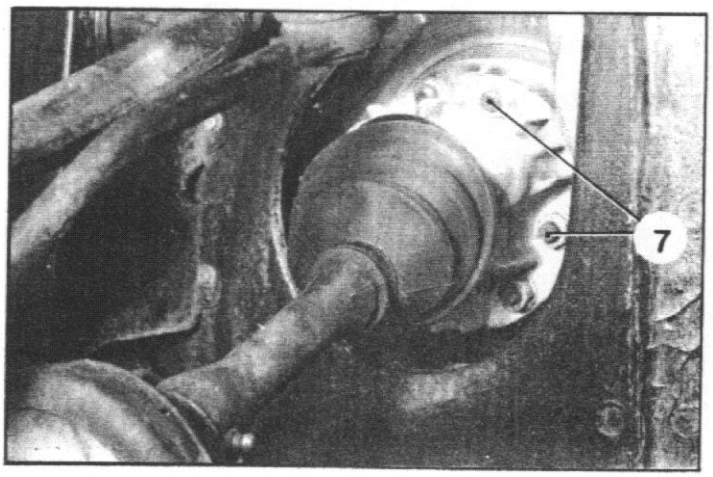
4033

13. Disconnect the clutch cable :
Slacken the adjusting screw (4).
Remove the spring (1).
Remove the push-rod (2).
Release the cable (3) from the lever.



1500

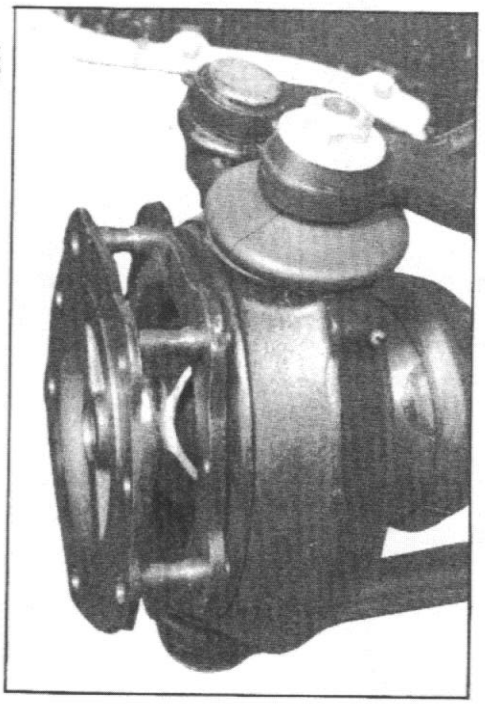
14. Slacken the collars (6) at the ends of the flexible pipe (5). Pull the flexible pipe towards the rear of the vehicle.



2382

15. Remove :
- the nuts (7) securing the transmission shafts on the flanges of the gearbox outlet shafts (17 mm socket spanner and extension),
- the screws securing the front crossmember to the body sidemember.

CAUTION : Mark and recover the packing pieces which may be present between the engine crossmember and the body sidemembers.

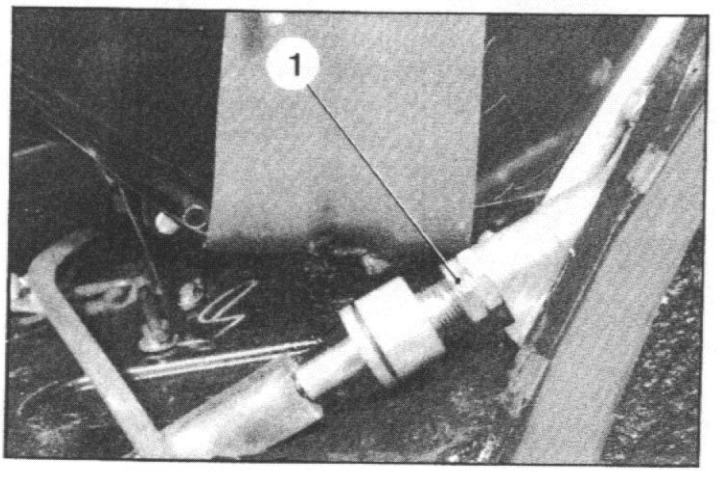

1537

16. Disconnecting the left-hand and right-hand transmission shafts from the wheel swivels :

Remove the two countersunk head screws and release the transmission shafts as far as possible from the swivels and from the studs on the flanges of the gearbox outlet shafts.

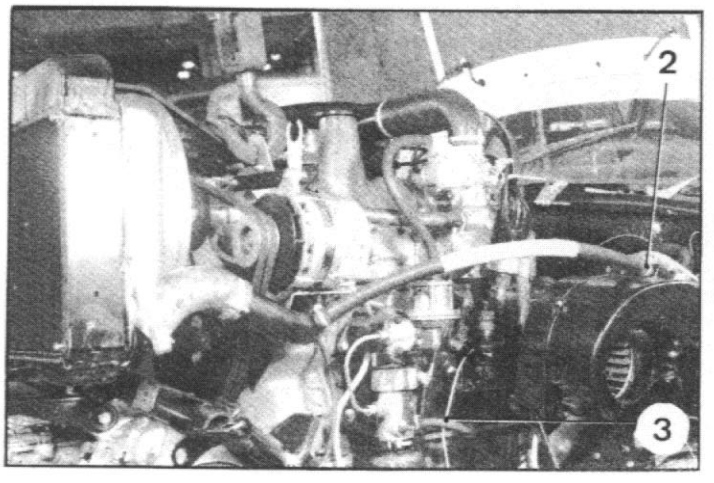
17. Removing the handbrake cable :

Fully unscrew the nut and the locknut (1) from the threaded sleeve.
Release the cable from the handbrake unit levers by compressing the springs. (MR. 630-64/32).



Manual 814-2
1812

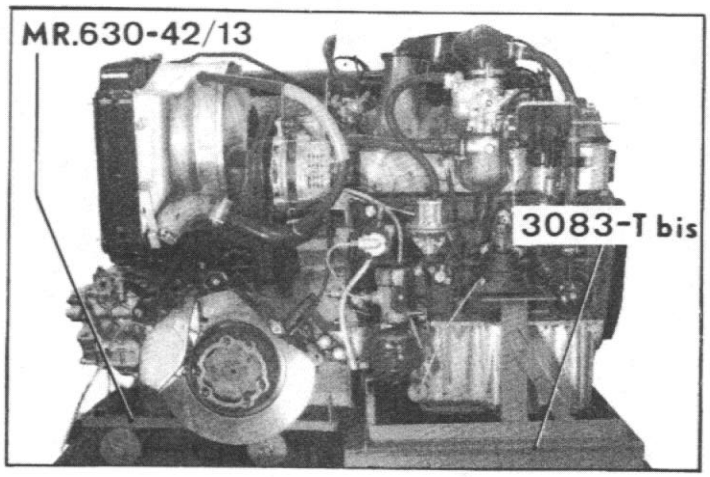
18. Remove the screws securing the rear flexible mountings under the body supports (swivel-socket spanner 2418-T).



4047

19. Lift the engine/gearbox assembly by the hoisting bracket and withdraw it.

20. Disconnect :
- the return pipe (3) from the pressure regulator to the reservoir,.
- the heater hose (2) from the heater unit.



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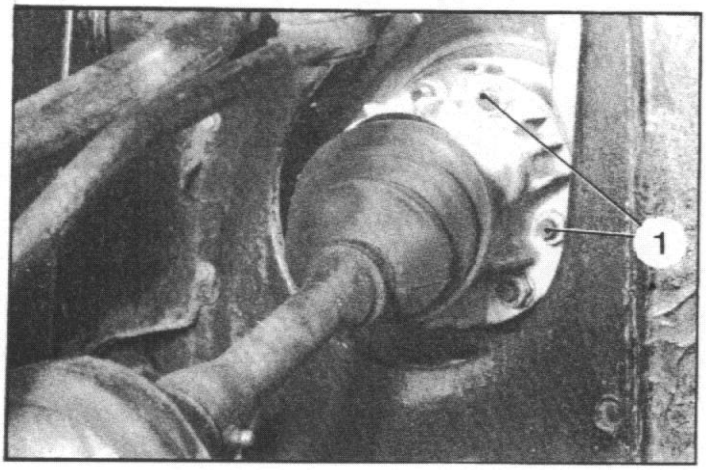

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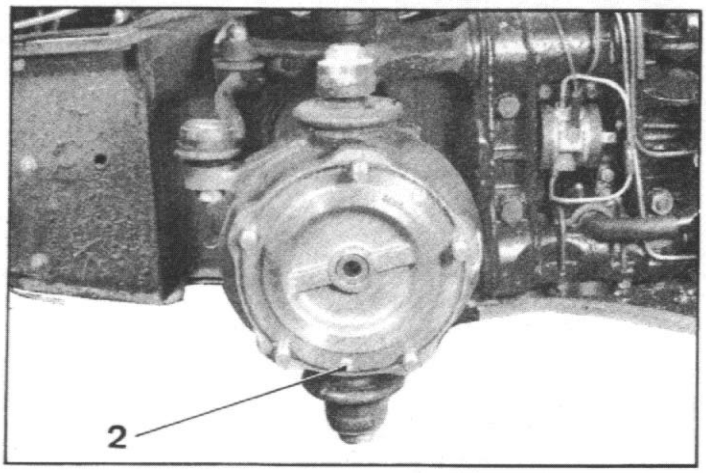
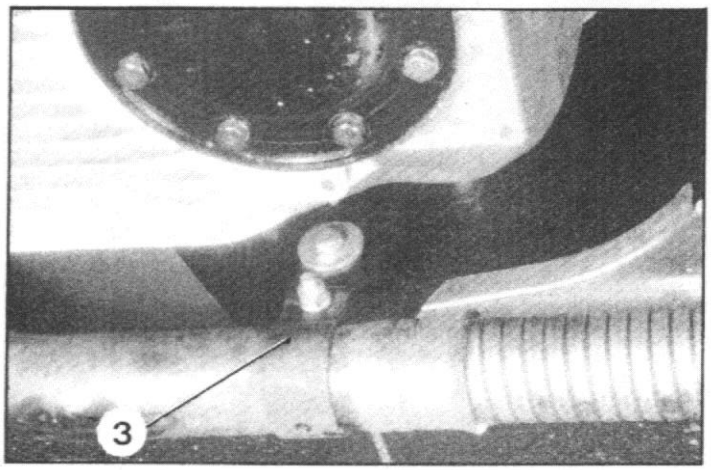


1399



1500

21. Place the assembly on stand 3083-T bis and gearbox support MR. 630-42/13.

FITTING

22. Arrange the rear engine supports.

23. Lift the engine/gearbox assembly by the hoisting bracket and offer it up to the vehicle.
Before letting the assembly rest on its supports, connect up the pressure regulator return pipe.
Tighten the collar.
Fix the flexible mountings on the rear supports (serrated washer and bearing plate under each screw head).

24. Connecting the front engine crossmember to the body sidemembers :

Position the packing pieces found during dismantling between the front crossmember and the sidemembers.
Tighten the screws.

NOTE : The difference in the distances between the brake disc and the sidemembers on each side must be 80 ± 2 mm, otherwise readjust by changing the packing pieces.

25. Connect the transmission shafts to the flanges of the gearbox outlet shafts. Tighten the nuts (1) to 85 - 110 mAN (8.5 to 11 m.kg).

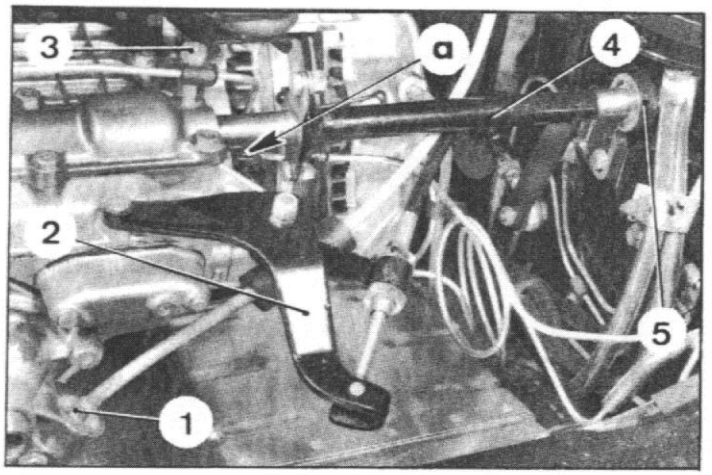
26. Connect the transmission shafts to the left and right-hand wheel swivels.
Fit and tighten the countersunk head screws (2).

27. Fit the handbrake cable.
Adjust the handbrake cable.

28. Connect the exhaust down pipe to the flexible pipe.

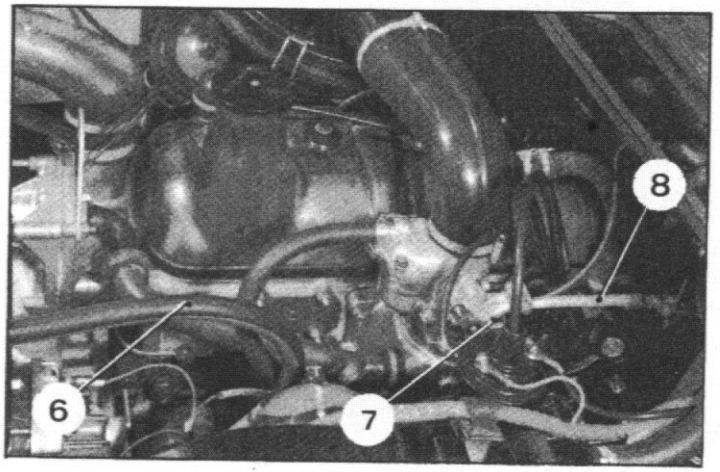
Tighten the screws of the fixing clamps (3) of the flexible exhaust pipe connections.

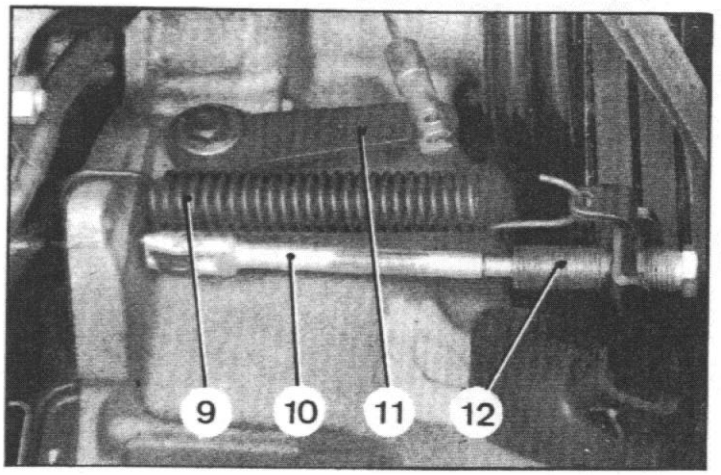
1807



2402

Manual 814-2





29. Connect :
- the feed pipe to the right-hand front brake unit, fix the brackets (3) holding the pipe on the gearbox cover,
- the feed pipe to the left-hand front brake unit, fix the bracket holding the pipe,
- the speedometer cable (1).

30. Connect up the gearchange control :
Fit the tube (4) in the ball housing (5) on the bodywork and connect it to the control shaft on the gearbox. If necessary, align the shaft by moving the housing (5).
Connect up the gearchange control to the tube
Fit the bracket (2) on the gearbox cover.
Fit the control lever in the shaft notch at « a ».

31. Connect :
- the petrol feed pipe to the pump,
- the pressure regulator outlet pipe to the union,
- the rubber tube to the left-hand heater unit,
- the heater pipe to the rigid tube on the cylinder block.

32. Fit the front suspension spheres.

33. Fit the steering.

34. Connect the suction pipe (6) to the HP pump.

35. Fit the accelerator control linkage (8) into the rear bearing and connect it to the carburettor.
Align if necessary.
Connect up the choke controls (7).

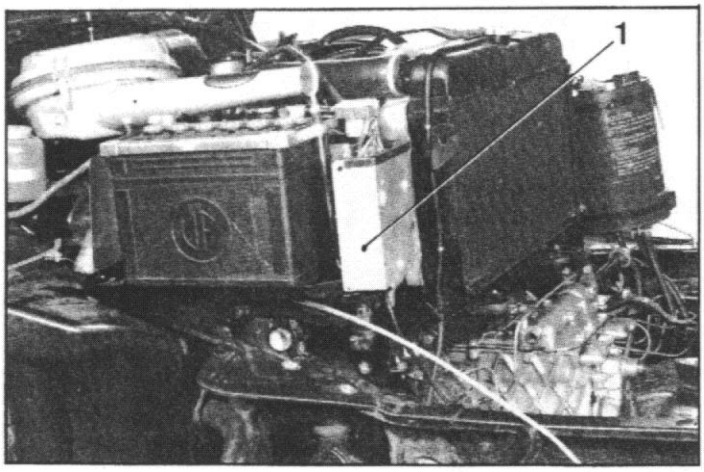
36. Connect :
- the alternator leads,
- the leads from the distributor to the coil (primary and secondary),
- the lead to the thermal sensor.

37. Connect up the clutch control :

Fit the sheath into the housing on the clutch casing.
Connect the cable to the lever (11).
Fit the push-rod (10).
Fit the return spring (9).
Adjust the clutch clearance using screw (12).

38. Fit the air filter :

Fit the rubber pipe between the filter and the rocker cover and the rubber pipe between the carburettor and the air filter.



2404

39. Fit :
- the battery support and the reservoir feeding the HP pump,
- the battery and its support with the screen (1),
- the battery frame.

40. Fit the front wheels.
Lower the vehicle to the ground.

41. Connect the cables to the battery terminals.
Tighten the pressure regulator release screw.

42. Adjust the static timing point if necessary.

43. Fill the radiator and the cylinder block with water.
Open the heater valve.
Start the engine and top up with water after a few minutes.

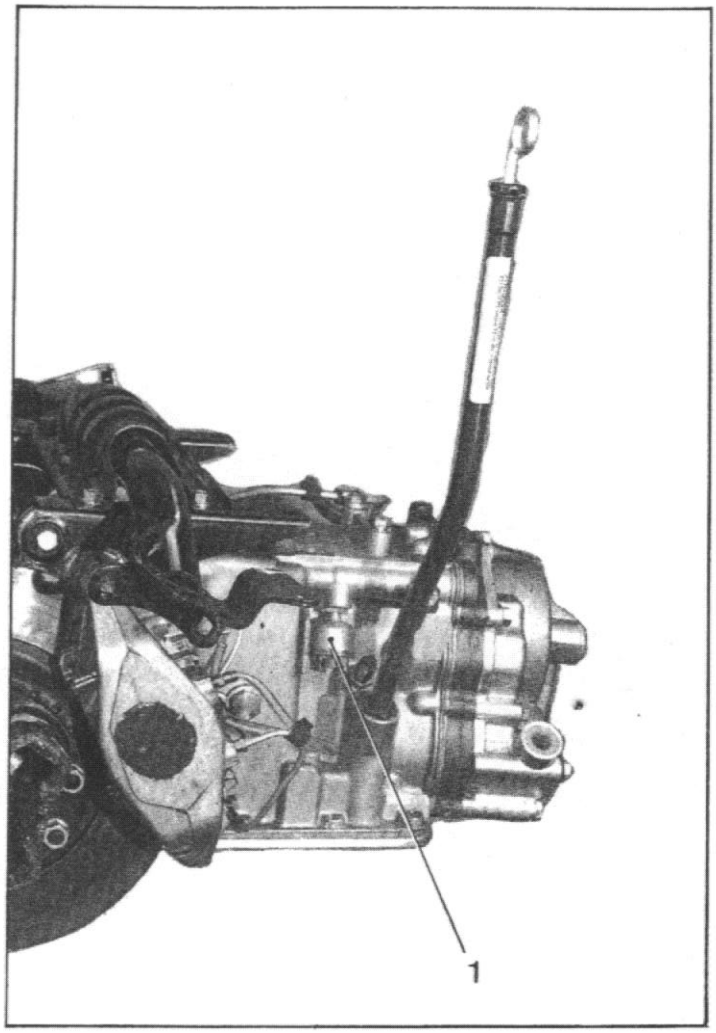
44. Have the hydraulic brake pedal depressed by an assistant to centralise the brake units.
Tighten the screws securing the units on the gearbox outlet housings to 130 - 140 mΛN (13 to 14 m.kg).

45. Bleed the brake circuits.

46. Adjust the idling speed.

47. Fit :
- the wings and connect the cable harnesses,
- the wheel embellishers,
- the radiator inlet duct assembly,
- the spare wheel crossmember,
- the spare wheel.

REMOVING AND FITTING AN ENGINE/GEARBOX ASSEMBLY



Manual 814-2

This operation differs from Operation Dm. 100-1 only as regards the following items :

REMOVAL.

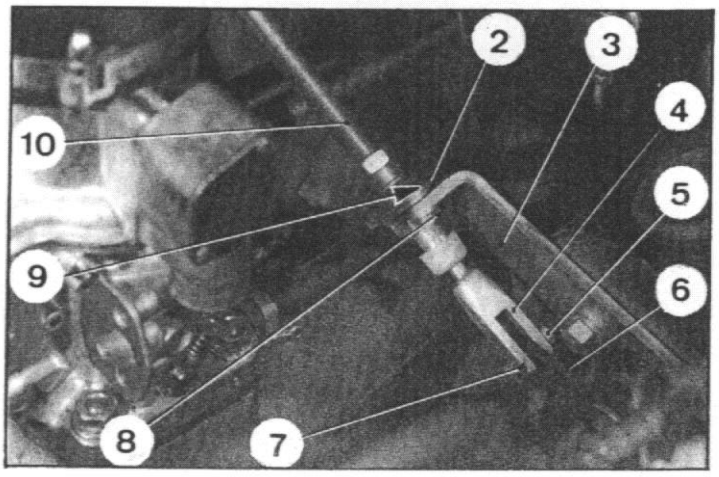
1. Remove the water header tank so that the engine/gearbox assembly can be hoisted.

2. Disconnect the leads from the control switch unit (1) on the gearbox, the leads from the thermal switch on the radiator, and the leads supplying the electric fan.

3. Disconnect the selector cable :

Remove the splitpin (7) and the pin (5).
Remove the two screws (9) and release the selector cable (10) from the lever (6) and the sheath bracket (3).

FITTING.



4. Connect up and adjust the selector cable :

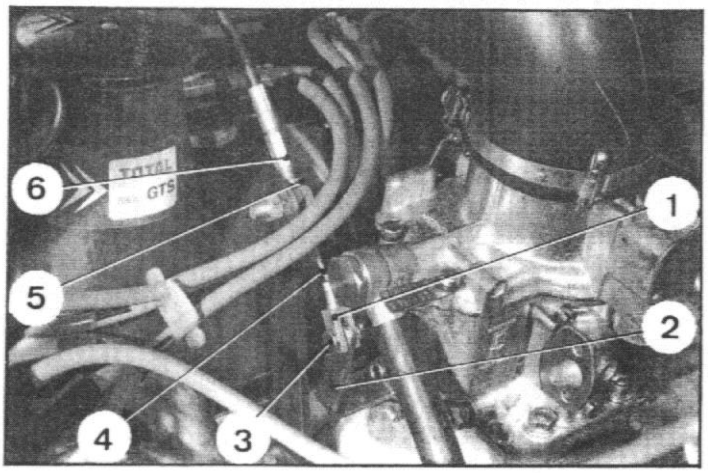
a) Connect the housing (2) to the sheath bracket (3). Fit the two screws (9). Tighten the nuts (8) (flat washer).

b) Place the selector lever in *position « 1 »* and pull on the cable by means of the fork (4) until the locking ball inserts in the last groove.

c) At this point, the holes for the link pin (5) in the fork (4) of the cable and in the lever (6) of the selector should correspond : the pin (5) should be a loose fit. Otherwise, reset the adjusting nuts at the end of the sheath (10).

d) Fit the pin (5) and the splitpin.

e) Check that the selector lever can be put into the *position « P »*.



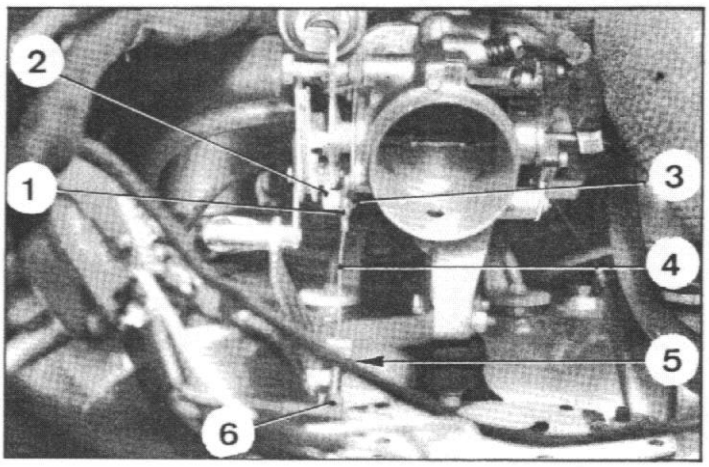
5. Check the adjustment of the KICK-DOWN cable :

a) Check that the accelerator pedal is at the correct height and the carburettor butterfly valves (or the air valve on vehicles with fuel injection system) are closed.

b) Pull on the cable (4) and then allow it to go back slowly to its original position.

c) At this point, with the cable taut but not being pulled, the holes for the link pin (3) in the yoke (1) of the cable and in the lever (2) should correspond : the pin (3) should be a loose fit.

Otherwise, slacken the locknut (5) and adjust the end fitting (6) in the appropriate direction.



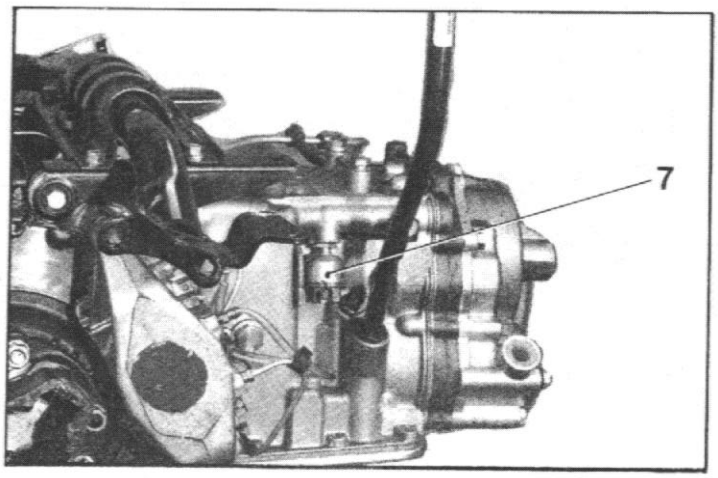
6. Check the adjustment of the control switch unit (7) (Starter inhibitor/reversing lamp switch) :

Use an ohmmeter or a test lamp.

a) With the selector in the *position* « *R* » (reverse gear), current should flow across the widest two tags.

b) With the selector in *position* « *P* » (park) or « *N* » (neutral), current should flow across the narrowest two tags.

Otherwise, slacken or tighten the switch and tighten the locknut.

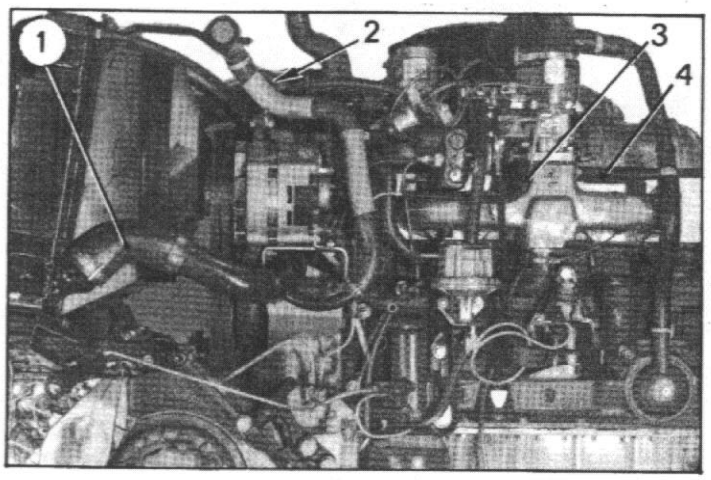


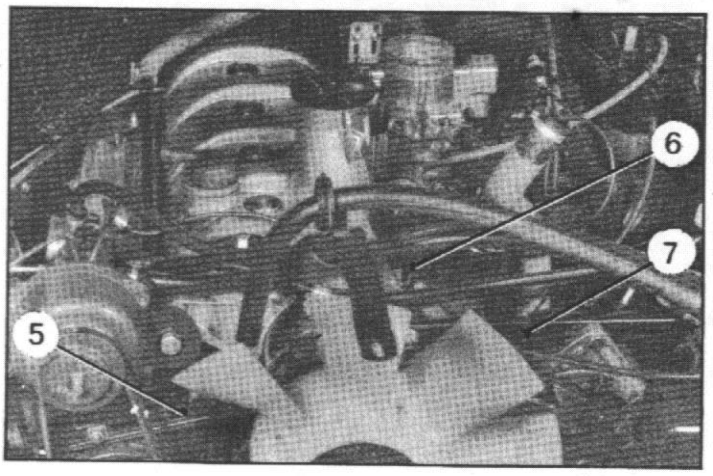
7. Connect the leads to the switch (7) on the gearbox, to the thermal switch on the radiator and to the motor of the auxiliary fan.

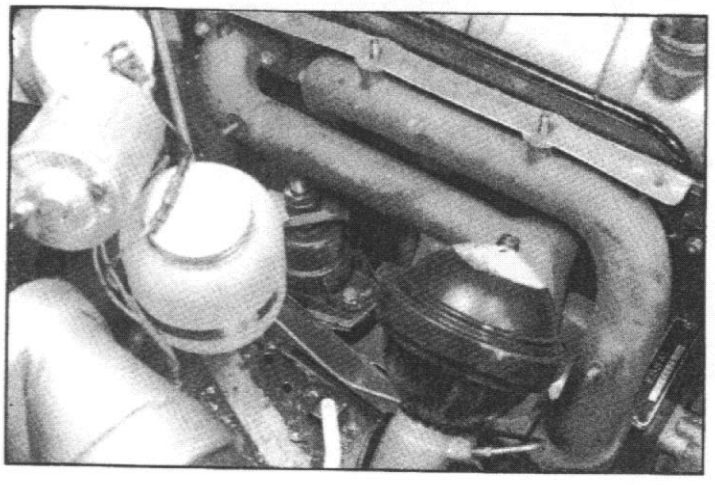
8. Fit the water header tank.

VEHICLES ALL TYPES
Except IE

REMOVING AND FITTING A CYLINDER HEAD OR A CYLINDER HEAD GASKET







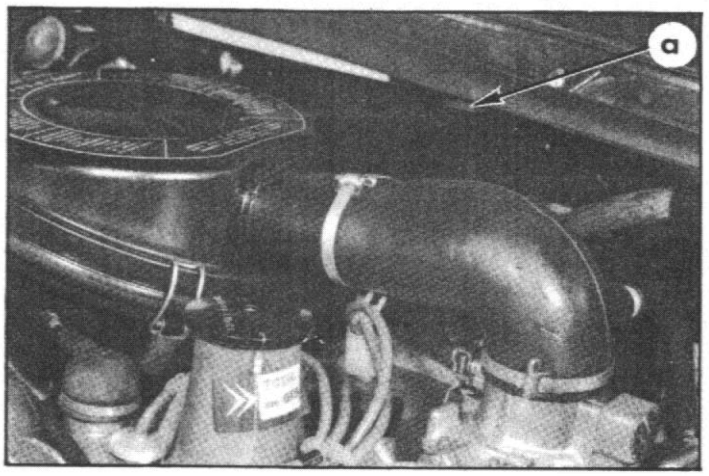
Manual 814-2

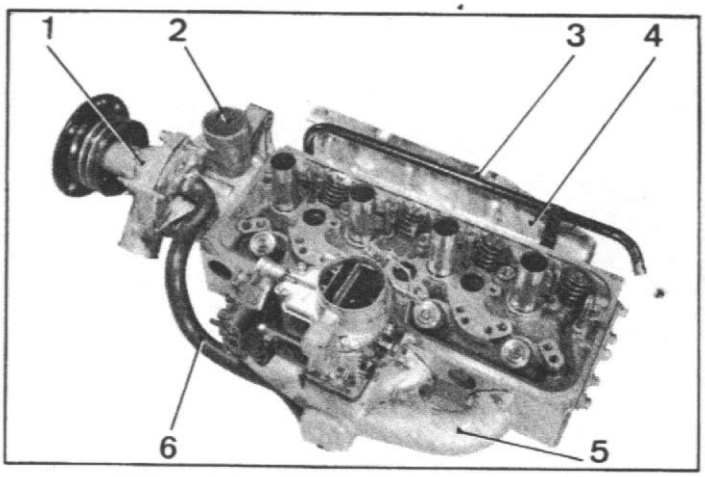
REMOVAL

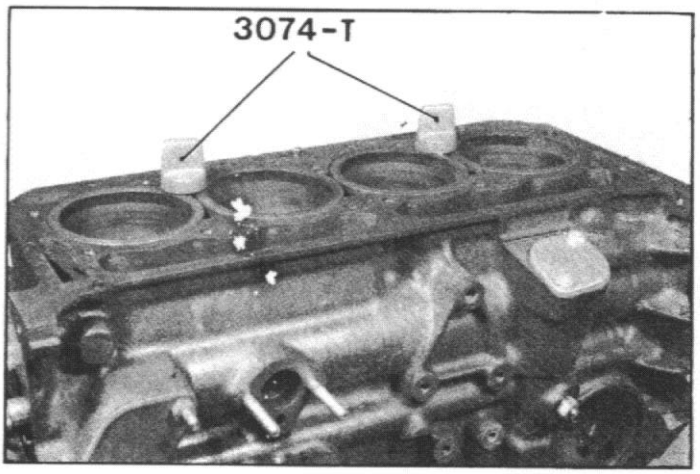
1. Drain the radiator and the cylinder block
2. Disconnect the cables from the battery terminals.
3. **Release the pressure in the circuits :**
   Place the height control in the *low position*.
   Slacken the pressure regulator bleed screw.
   Place the manual clutch control in the *clutch engaged position*.
4. Remove the air filter with its bracket and its flexible pipe.
5. Remove the water header tank.
6. Remove :
   - the spare wheel,
   - the headlamp controls,
   - the radiator inlet duct assembly and the cross-member supporting the spare wheel,
   - the inlet (1) and outlet (2) hoses.

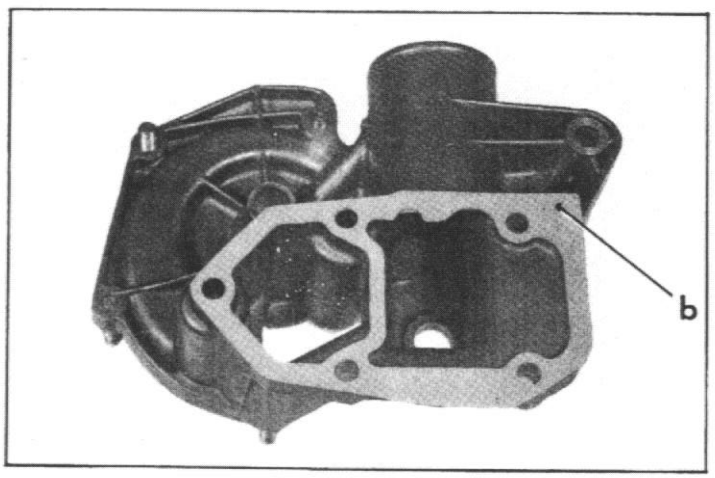
   Disconnect the supply leads from the electric fan and from the thermal switch on the radiator.
   Remove the radiator together with its fan.
7. Disconnect :
   - the pipe (3) from the fast idle device *(brb vehicles)*
   - the earth lead (6) from the water pump,
   - the accelerator control, the choke cable and the petrol feed pipe from the carburettor,
   - the return pipe (4) from the inlet manifold,
   - the tube assembly and the return pipe from the clutch re-engagement control *(brb vehicles)*.
   - the alternator tie-rod (7) from the water pump.

   Remove the alternator drive belts.
8. Remove :
   - the supply harness from the centrifugal regulator *(brb vehicles)*.
   - the pipe linking the centrifugal regulator to the the front right-hand brake unit *(brb vehicles)*.
   - the centrifugal regulator *(brb vehicles)*.
   - the HP pump tie-rod (5).
9. Disconnect the lubrication pipe from the cylinder head.
   Disconnect the supply lead from the thermal switch on the cylinder head.
10. Remove :
    - the front right-hand suspension spheres,
    - the exhaust shield.
11. Disconnect from the cylinder head :
    - the assembly of exhaust down pipes and headers
    - the flexible heater pipe from the tube on the cylinder head,
    - the clips holding the starter motor supply cable.









12. Remove :
- the rocker cover and its gasket,
- the sparking plugs,
- the sealing cups from the sparking plug wells and their rubber seals.

13. Slacken completely the cylinder head screws.
Remove the exhaust rocker shaft.
Remove the inlet rocker shaft.
NOTE : To remove the rear screw holding the inlet rocker shaft, remove the rubber plug from the engine recess, cut away the felt and remove the screws through this hole « a ».

Remove the push rods (mark their positions).
NOTE : To remove the exhaust push rod from the 4th cylinder, raise the cylinder head slightly.

14. Remove the cylinder head and the cylinder head gasket (take care of the dowels).
Retain the liners by means of two bolts (retaining bolts 3074-T).

15. **Stripping the cylinder head :**
a) Disconnect the heater pipe (6) from the inlet manifold.
b) Remove the water pump (1) and the cover (2) from the water pump.
Remove :
- the inlet manifold, (5),
- the exhaust manifolds,
- the heater pipe (3) and the exhaust shield (4),
- the inlet and exhaust manifold studs, and the water pump cover studs, if necessary.

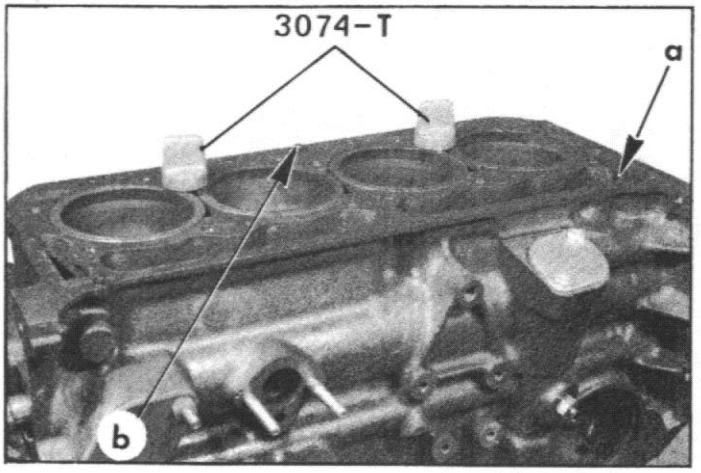
FITTING

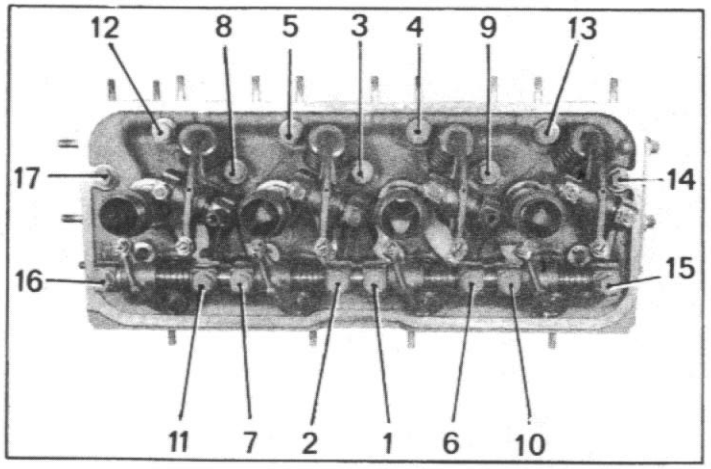
16. **Assembling the cylinder head :**
a) If necessary, fit the inlet and exhaust manifold studs and those of the water pump cover. Smear the threads of the studs with Loctite N° GX 01 459 01 A.
b) Fit the water pump cover (2) with the seal between the cover and the engine casing.
Fit the seal the right way round :
see the position of the corner « b » on the figure.
Fit the water pump (1) with the seal between the pump and the cover. Tighten the nuts, (special nuts, diameter 8 mm, 12 mm across flats).

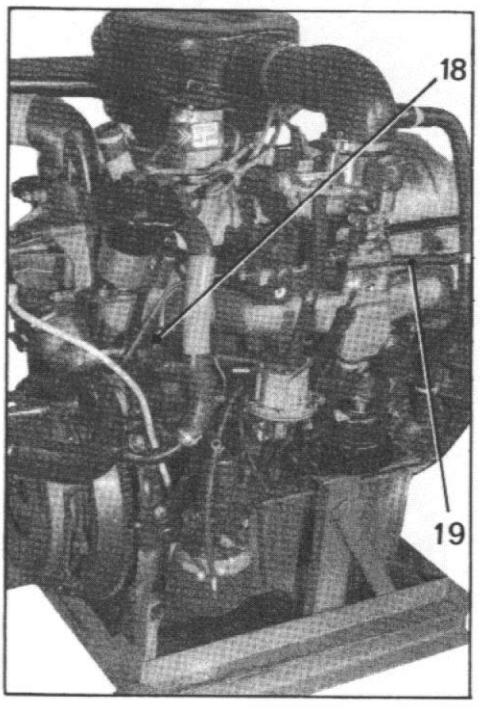
NOTE : The seals should be fitted « dry ».

c) Fit :
- the exhaust manifolds, and fit the nuts but do not tighten (flat washer),
- the heater pipe (3) after fitting the seal,
- the exhaust shield (4),
- the inlet manifold after fitting the gaskets.

Connect the heater pipe (6) to the inlet manifold and to the water pump cover. Tighten the collars.







Remove the liner retaining bolts (bolts 3074-T)

17. Fitting the cylinder head :

Position the cylinder head gasket, centring it on the two dowels « a » and « b ».

Position the cylinder head together with the exhaust rocker push rod of the 4th cylinder.

NOTE : This rod cannot be fitted once the cylinder head is in position.

18. Fit the push rods in the positions noted during dismantling. The exhaust push rods are the longest ones.

19. Fit the inlet rocker shaft :

Fit the rubber seals between the rocker shaft supports and the cylinder head, on the cylinder head screws (except on the front bolts).

Position the inlet rocker shaft, fitted with the shaft supports and the securing screws.

NOTE : In order to position the inlet rocker shaft, pass the head of the rear screw through the hole in the engine recess.

Screw down the screws gradually and in turn without tightening them.

20. Position the exhaust rocker shaft, *with the lubrication hole downwards and towards the valve.* Position the caps. Tighten the nuts on the exhaust rocker shaft studs.

21. Fit the cylinder head bolts :

The cylinder head screws (the shortest ones) are fitted with a washer under the screw head.

Screw down the cylinder head screws and tighten them (torque wrench 2471-T) :

- first tightening to 30 mN (3 m.kg).
- second tightening to 60 mN (6 m.kg)

Follow the tightening order given on the diagram.

22. Fix the starter motor cable clips.

Connect up the exhaust manifolds and tighten the nuts holding the manifolds on the cylinder head.

Connect the flexible heater pipe to the heater tube on the cylinder head.

23. Fit :

- the exhaust shield,
- the front right-hand suspension sphere.

24. Connect :

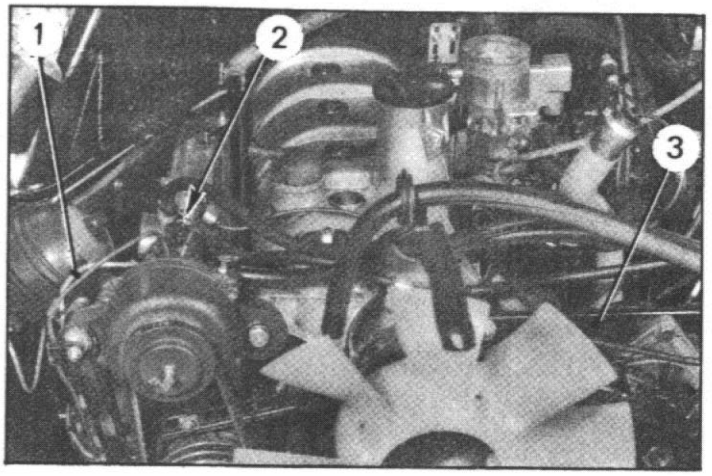
- the lubrication pipe (18) to the cylinder head,
- the return pipe (19) to the inlet manifold.

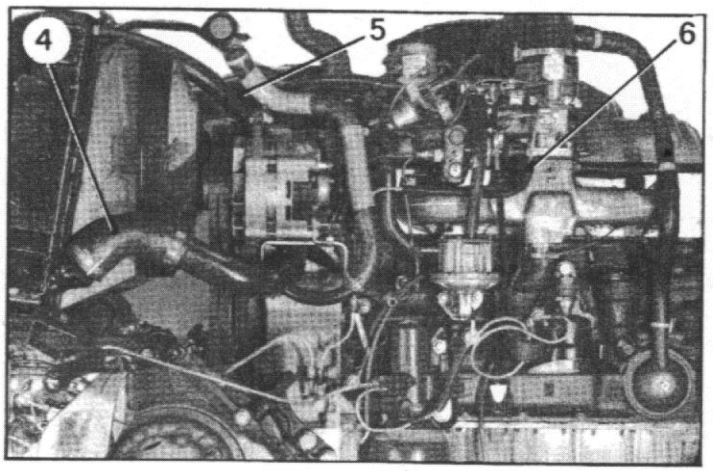
Connect the lead to the thermal switch.

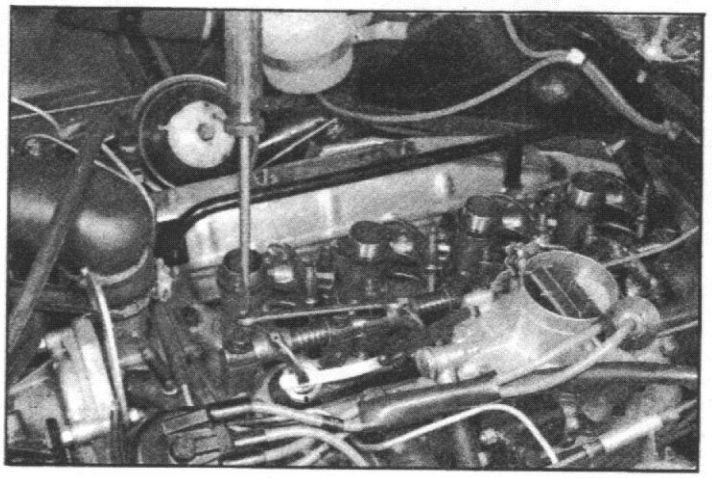
25. Fit :

- the HP pump tie-rod,
- the water pump earth lead,
- the centrifugal regulator *(bth vehicles).*

26. Fit the alternator drive belts *(check the alignment of the belts).*







27. Fit :
- the alternator tie-rod (3),
- the feed pipe assembly (2) to the centrifugal regulator *(brh vehicles)*,
- the tube (1) connecting the centrifugal regulator and the front right-hand brake unit *(brh vehicles)*,
- the pipe assembly and the overflow return pipe of the clutch re-engagement control *(brh vehicles)* and connect the supply tube (6) to the fast idle device *(brh vehicles)*.

28. Fit :
- the radiator,
(Connect the inlet (4) and outlet (5) hoses).
- the assembly of radiator inlet duct assembly crossmember supporting the spare wheel,
(Connect the leads to the electric fan and to the thermal switch on the radiator (if fitted) and link up the headlamp controls).

29. Set the valve clearances.

30. Fit the steel inserts and the seals in the sparking plug tubes.
Fit the rocker cover with its gasket.
Tighten the bolts (copper washer).

31. Fit the sparking plugs and the assembly of sparking plug leads and distributor head (where appropriate).

32. Fit the water header tank.

33. Fit the air filter and its support.

34. Fit the rubber plug in the hole in the engine recess.

35. Fill up the radiator (open the heater control valve).

36. Connect the cables to the battery terminals.

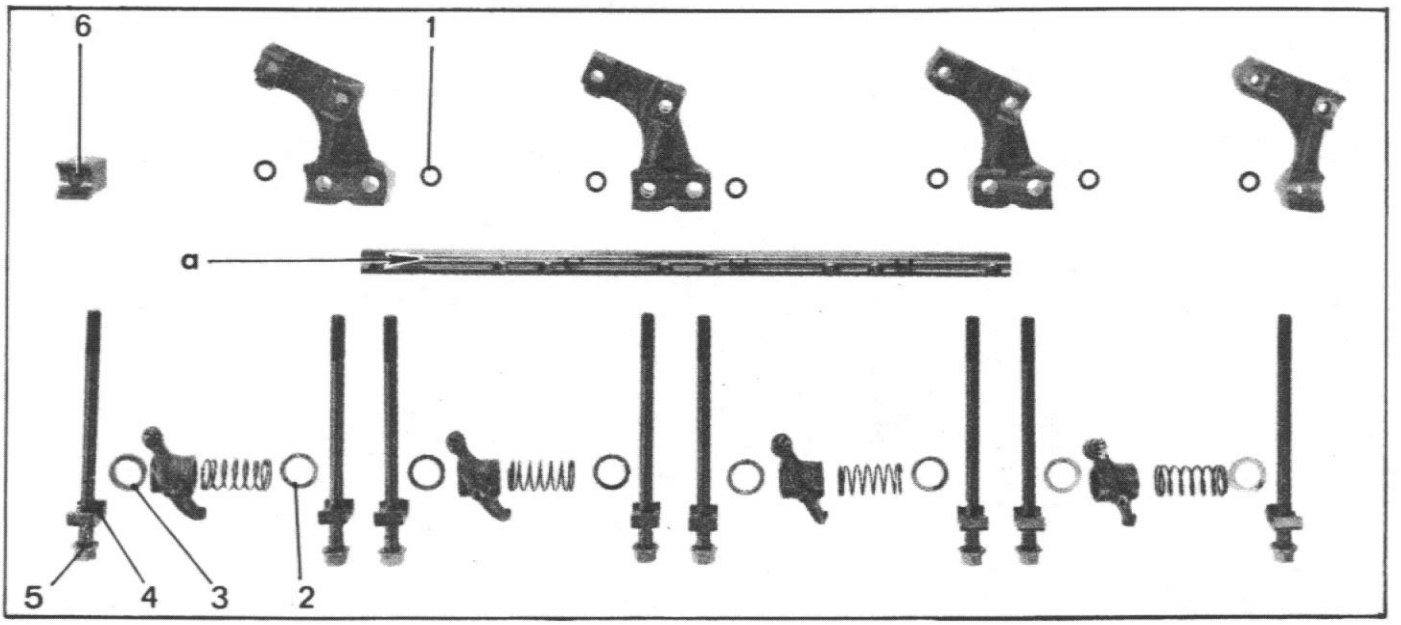
37. Fit the spare wheel.

38. Start the engine.

39. Pressurise the circuits.
Check the unions for leaks.

40. Bleed the centrifugal regulator *(brh vehicles)* and the brakes.

41. Adjust the idling speed setting or settings.



FITTING

9. Assemble the inlet rocker shaft assembly :

The front end of the rocker shaft has the lubrication hole « a » close to the end. Begin the assembly from this end. Oil the shaft and hold it with the lubrication holes downwards and towards the valves.

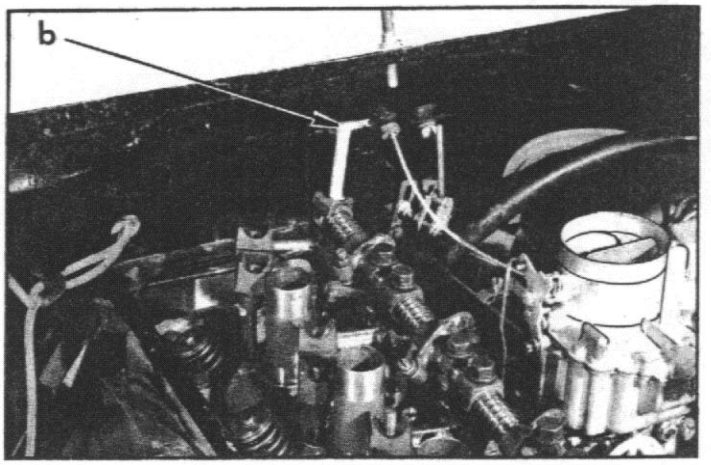
Fit :

- a long screw (5) fitted with its fixing cap (4),
- the thick washer (3),
- a rocker arm (see photograph for orientation),
- a spring,
- a thin washer (2),
- a long screw.

Continue assembly in the same order (the thick washer (3) is replaced by a thin washer (2) for the other cylinders).

Fit the shaft supports on the long screws. Position the supports as shown in the figure. The front support (6) has a chamfer which must face the push rod so that this can pass through. Fit an O-ring (1) on each of the long screws, between the shaft supports and the cylinder head (except on the front screw corresponding to support (6)).

VERY IMPORTANT : Do not place an O-ring between the front support (6) and the cylinder head. Such an O-ring would interrupt the lubrication circuit to the shafts.



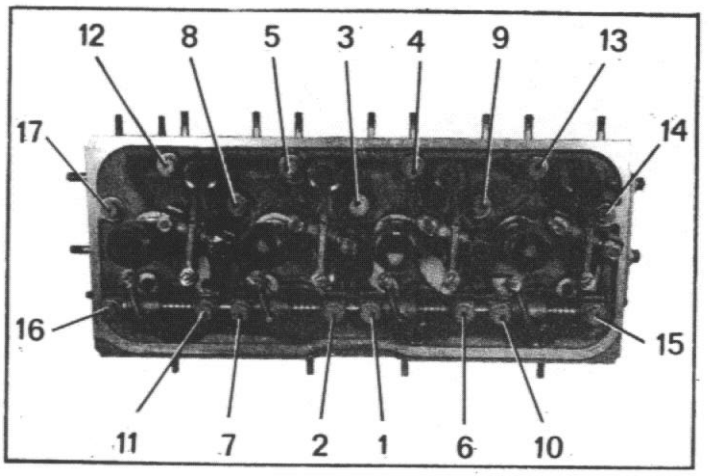
10. Fit the complete inlet rocker shaft assembly :

NOTE : To position the inlet rocker shaft assembly pass the head of the rear screw through the hole « b » in the engine recess,. Fit the shaft securing screws.

11. Fit the exhaust rocker shafts :

The lubrication hole must face downwards and towards the valve. Fit the caps. Tighten the nuts on the studs of the exhaust shafts, to 22 - 28 mN (2.2 to 2.8 m.kg).

The rear studs for the exhaust rocker shafts of cylinders N° 1 and N° 3 have been replaced by screws with the head recessed and tapped for securing the rocker shaft cover.



12. Slacken the cylinder head screws on the right-hand side. Then tighten all the screws (torque wrench 2471-T).
- 1st tightening to 30 mΛN (3 m.kg)
- 2nd tightening to 60 mΛN (6 m.kg)

Follow the tightening order given in the diagram.

While tightening, make sure that the push rods fit properly in the spherical heads of the adjusting screws.

NOTE : It is essential to re-tighten the cylinder head when a distance of 1000 km has been covered.

13. **Set the valve clearances :**

14. Fit the rocker cover with its gasket. Tighten the screws (copper washer).

15. Connect the leads to the sparking plugs.

16. Fit the air filter and tighten the collars.

17. Replace the rubber plug in the engine recess.

18. Fit the water header tank.

19. Fill up the radiator and open the heater control valve.

20. Connect the cables to the battery terminals.

21. Run the engine for a few minutes. Check the radiator level again.

Manual 814-2

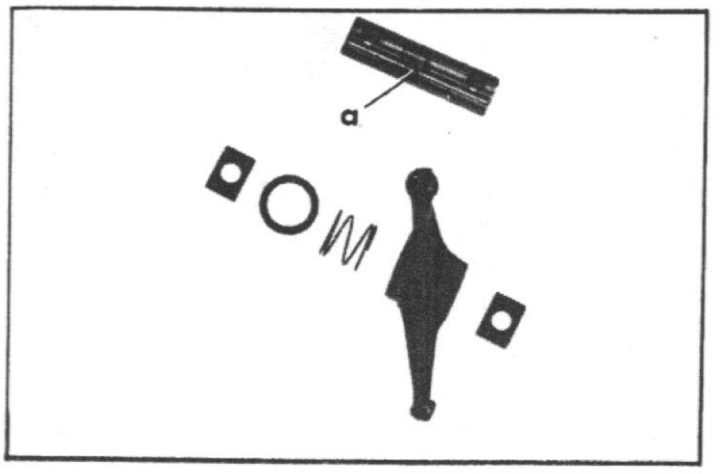
II. REMOVING AND FITTING AN EXHAUST ROCKER SHAFT ASSEMBLY

REMOVAL

1. Remove the assembly of air filter and bracket.

2. Disconnect the leads from the sparking plugs and the cables from the battery.

3. Drain the radiator and the cylinder block.
4. Remove the water header tank.
5. Remove the rocker cover and its gasket.



6. Remove the nuts holding the rocker shaft assembly.

7. Remove the shaft assembly and the caps.

8. **Strip the shaft assembly :**

Carefully clean the inside of the shaft and make sure that the lubrication holes are not blocked up.

NOTE : To replace a support, it is necessary to remove the inlet rocker shaft assembly.

FITTING

9. **Assemble the rocker shaft assembly :**

On the shaft (*with the lubrication holes « a » facing downwards*) fit the following, beginning from the front :
- one rocker arm,
- one spring,
- one washer.

10. Fit the assembly on its support.
Fit the caps which hold the shaft and the nuts.
Tighten them to 22 - 28 mAN (2.2 to 2.8 m.kg).

NOTE : The rear studs holding the exhaust rocker shaft assemblies for cylinders N° 1 and N° 3 are replaced by screws with head recessed and tapped for fixing the rocker covers.

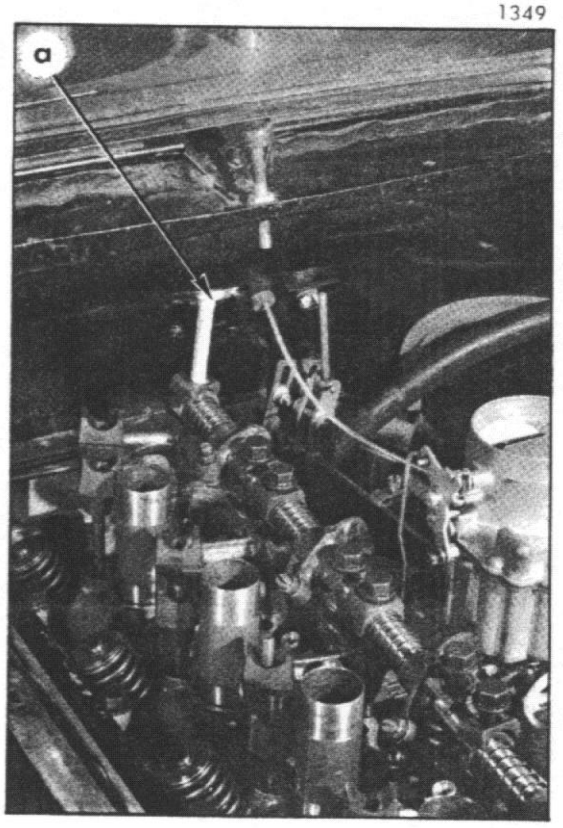
11. Adjust the valve clearances.
12. Fit the rocker cover with its gasket.
13. Connect the leads to the sparking plugs and the cables to the battery.
14. Fit the water header tank.
15. Fill up the radiator and open the heater valve.
16. Fit the air filter and its bracket.
17. Run the engine for a few minutes and check the radiator level again.

III. REPLACING A CORE PLUG

NOTE : When replacing a core plug (inlet manifold side), remove the cylinder head.

REMOVAL

1349



1. Drain the radiator and the cylinder block *(collect the water which contains anti-freeze).*

2. Disconnect the cables from the battery terminals.

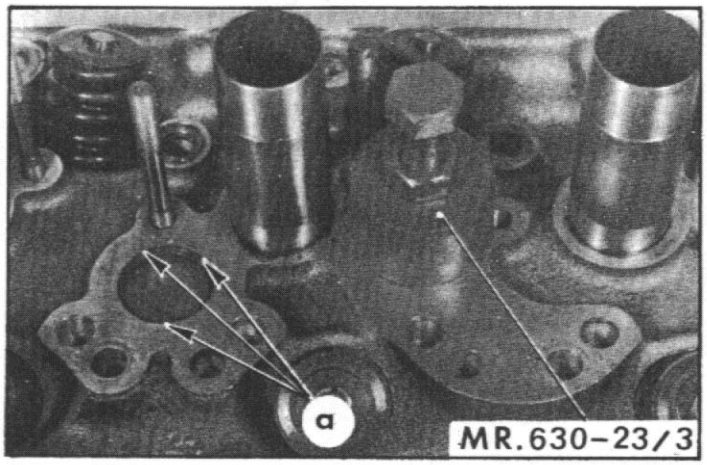
3. Disconnect the leads from the sparking plugs.

4. Remove :
- the air filter and its flexible pipe,
- the water header tank,
- the rocker cover and its gasket.

5. Slacken the screws holding the inlet rocker shaft assembly and the cylinder head screws.

6. Remove :
- the exhaust rocker shaft assemblies,
- the inlet rocker shaft assembly.

NOTE : In order to remove the rear screw of the inlet rocker shaft assembly, remove the rubber plug from the engine recess, cut away the felt and remove the screw through the hole at « a ».



7. Drill an 11.5 mm hole in the centre of the plate and tap it 14 by 200.

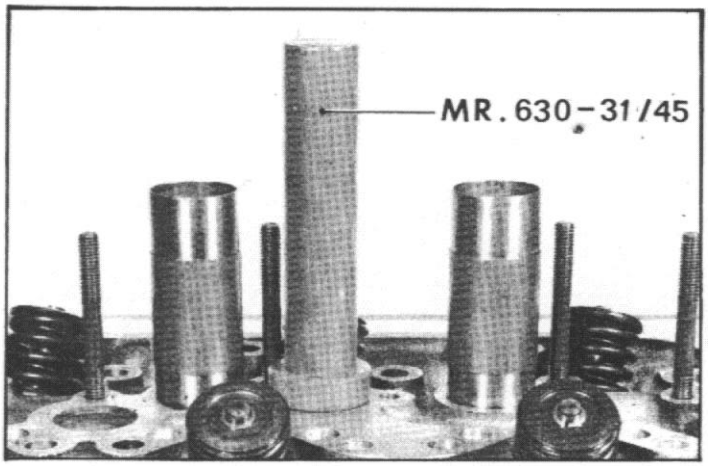
8. Using a bronze drift, drive the plug into the hole a few millimeters in order to free it from the three punch marks at « a ». Use a scraper to remove the metal turned down at the three locking points «a» of the plate.

9. Remove the core plug using the extractor MR. 630-23/3.

10. Clean the core plug hole in the cylinder head.

FITTING.

11. Smear the hole for the plate with Mastijoint HD 37.

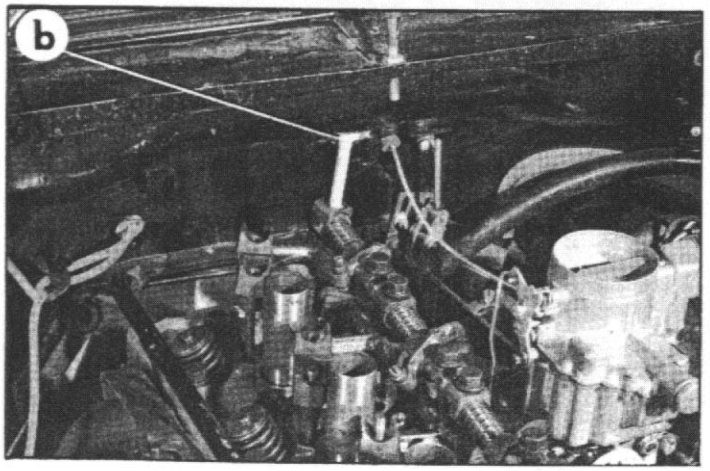


12. Using the mandrel MR. 630-31/45, fit the core plug using the press or a mallet.

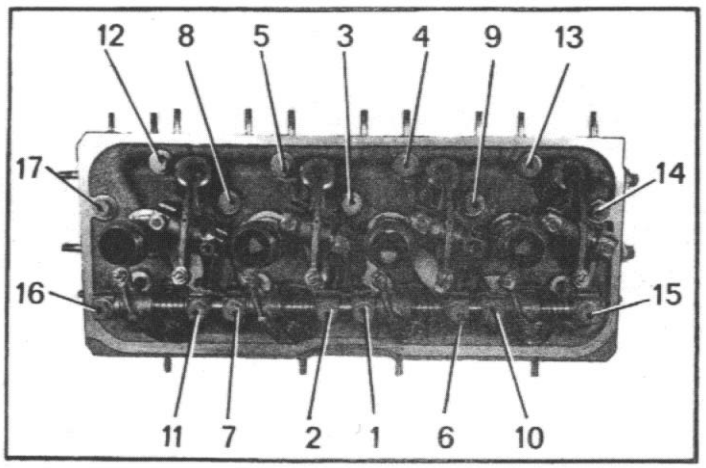
13. Punch over the metal at the three points « a » to fix the core plug into the cylinder head.

14. Fit the assembled inlet rocker shaft assembly.
NOTE : When fitting the inlet rocker shaft assembly, pass the head of the rear screw up through the hole « b » in the engine recess.

15. Fit the exhaust rocker shaft assemblies with the lubrication hole downwards and towards the valve. Fit the caps. Tighten the nuts on the exhaust rocker shaft studs to 22 - 28 mAN (2.2 to 2.8 m.kg).



NOTE : The rear studs holding the exhaust rocker shaft assemblies for cylinders N° 1 and N° 3 have been replaced by screws with the head recessed and tapped for fixing the rocker covers.



16. Fit the cylinder head screws and tighten them (torque wrench 2471-T).
    - 1st tightening to 30 mΛN (3 m.kg)
    - 2nd tightening to 60 mΛN (6 m.kg)

    Follow the tightening order given in the diagram.

    During tightening, make sure that the push rods fit properly into the spherical heads of the adjusting screws.

17. **Set the valve clearances.**

18. Fit the rocker cover with its gasket. Tighten the screws (copper washer).

19. Connect the leads to the sparking plugs.

20. Fit the air filter and tighten the collars.

21. Fit the rubber plug in the engine recess.

22. Fit the water header tank.

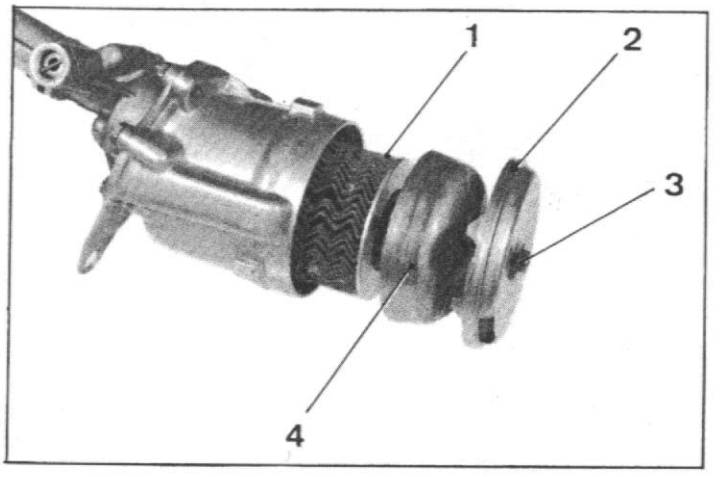
23. Fill up the radiator and open the heater control valve.

24. Connect the cables to the battery terminals.

25. Run the engine for a few minutes and check the water level again.

VEHICLES ALL TYPES

REPLACING AN OIL FILTER CARTRIDGE



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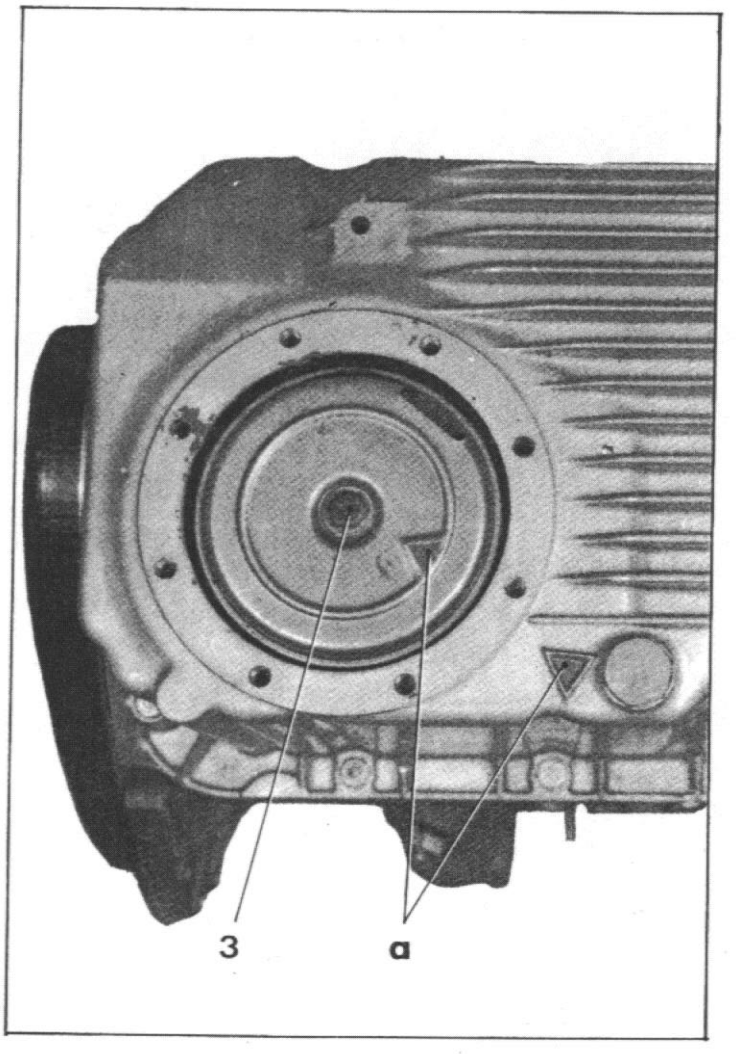


Manual 814-2
1899

REMOVAL

1. Chock up the vehicle (support 2505-T) or raise it on a lift.
   Drain the engine oil.
2. Remove the closing plate from the lower sump.
   NOTE : Since the sump never drains completely oil will continue to drip out.
3. Slacken the screw (3) and remove the screw, strainer and bell housing assembly (3,2,4).
   Remove the filter cartridge (1).
4. Clean the strainer with petrol.
   Blow through with compressed air.
   NOTE : Never refit a used cartridge.

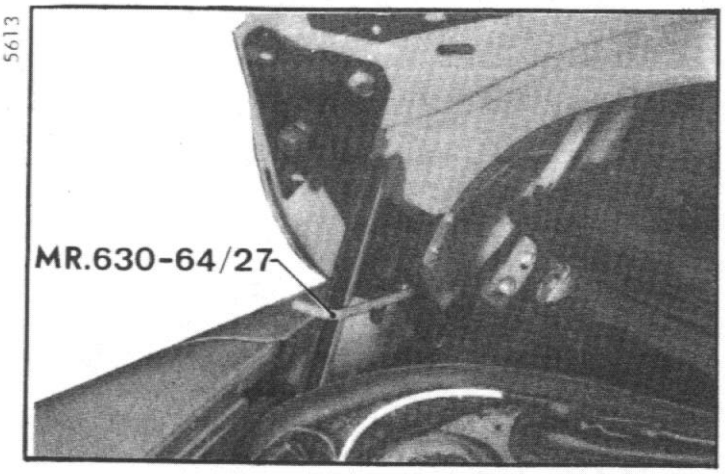
FITTING

5. Fit the new cartridge on the strainer assembly :
   The parts should be in the following order :
   - the screw (3),
   - the flat washer,
   - the strainer (2),
   - the bell housing (4),
   - the spring,
   - the flat washer,
   - the O-ring,
   - the filter bearing cap,
   - the filter cartridge (1).
6. Position the assembly thus built up on the filter so that the triangles « a », one on the strainer, the other on the sump, are opposite each other.
   Hold the assembly against the filter body and start the screw (3) by hand.
   Screw it up without tightening.
   CAUTION : *Make sure that the threads of the screw (3) are not crossed, for this would show that it is not engaged in the tapped hole in the pump body but has passed between the boss and the filter cartridge. In this case, engine lubrication would no longer be maintened.*
7. Before tightening the screw (3), check that the cover of the prefilter cannot rotate.
   Otherwise, the prefilter is badly positioned.
   The screw (3) must be tightened to 8 - 10 mAN (0.8 to 1 m.kg).
8. Fit the oil filter cover on the sump,
   Fit a new seal whenever removing the cover.
9. Fill the engine with oil. Lower the vehicle to the ground.
10. Run the engine for a few minutes and check that the oil pressure light goes out normally.

REMOVING AND FITTING A GEARBOX

D VEHICLES ALL TYPES
except BW

5613



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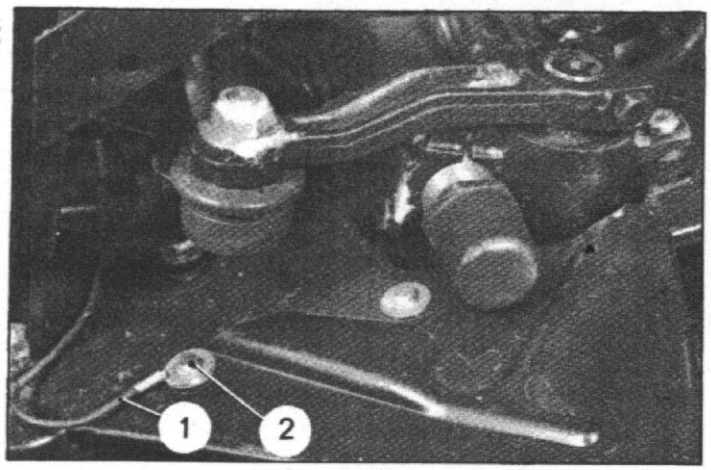

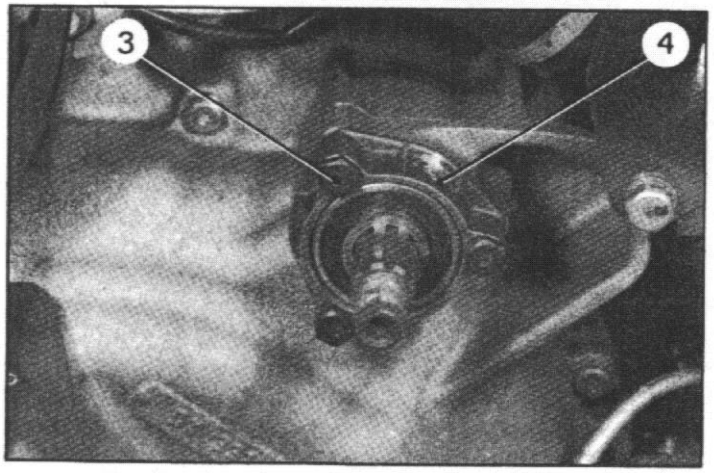

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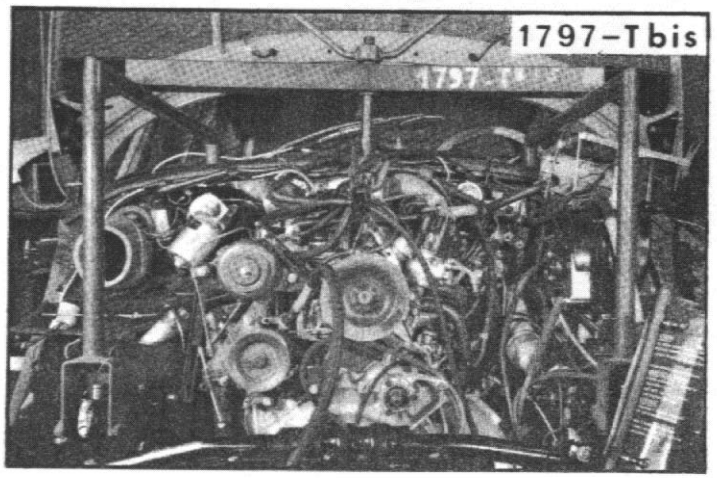


5678

Manual 814-2

REMOVAL

1. Raise the bonnet fully and secure it in this position using (catch MR. 630-64/27).
   Chock up the front of the vehicle (supports 2505-T).

2. Remove the spare wheel, the radiator inlet duct assembly and the crossmember supporting the spare wheel, the wings and the front wheels, the closing panel underneath the engine and the oil cooler air duct (*IE vehicles*)

3. Release the pressure in all circuits.

4. Drain the radiator.

5. Remove :
   - the water header tank,
   - the radiator (disconnect the leads from the electric fan and the thermal switch),
   - the main accumulator from the pressure regulator (*IE vehicles*).
   - the air filter and disconnect the air thermal sensor (*IE vehicles*).

6. **Remove the battery :**

   Disconnect the cables from the terminals and from the starter relay.
   Remove the nuts and springs holding the battery frame.
   Raise the frame and regulator assembly, release the speedometer cable from its bracket on the frame and take the frame away (without disconnecting the harness from the regulator).
   Free the electronic harness (*D.IE vehicles*).
   Remove the battery and its tray.
   Remove the screw (2) and take the earth wire (1) from the longitudinal member.

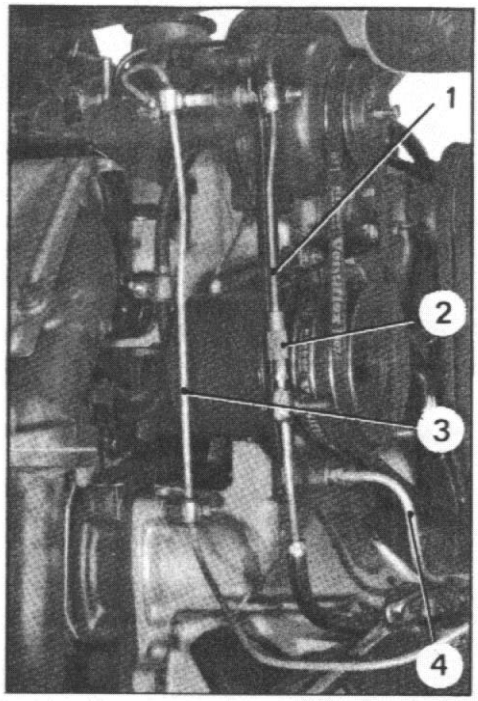
7. Remove the steering rack assembly (mark its position in the bearings).

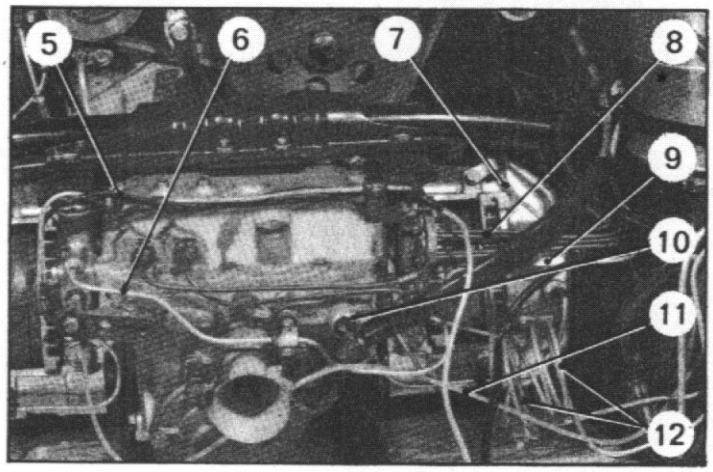
8. Disconnect the drive shafts from the differential shafts and wheel swivels and remove them.

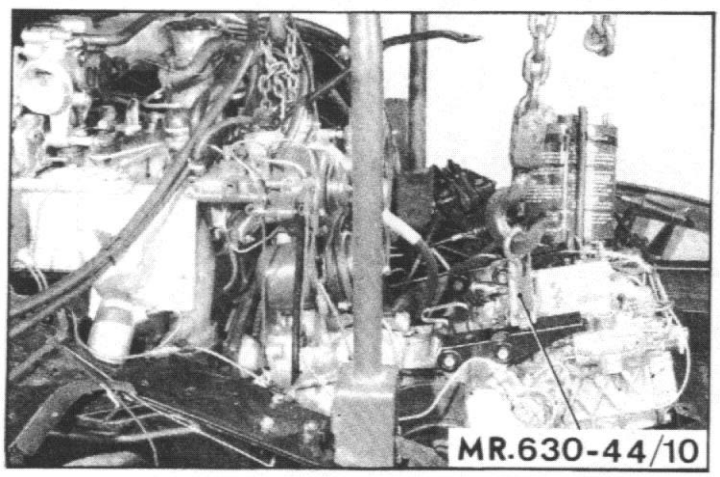
9. **Remove the drive pulley and its bearing :**

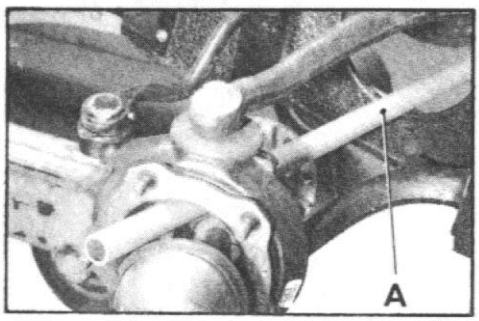
   Remove the nut holding the pulley.
   Slacken the bolts and nuts holding the alternator and the HP pump. Disconnect the HP pump and alternator tie-rods.
   Remove the driving belts and the pulley.
   Do not lose the shims.
   Remove the screws (3) holding the bearing (4) and take away the whole bearing assembly.

10. Take the weight of the engine/gearbox assembly using rig 1797-T bis and remove the engine support crossmember.









11. Remove the hand brake cable and caliper assembly :

Slacken the locknut and the bolt holding the outer plate on each caliper.
Slacken and remove the screws holding the calipers.
Remove the right-hand brake caliper, release the cable from its bracket on the gearbox and remove the left-hand brake caliper.

12. Disconnect the speedometer cable from the gearbox.

13. Disconnect the following *(brh vehicles)*:
- the pipe (1) connecting the centrifugal regulator and the clutch lock from the union (2),
- the pipe (3) between the right-hand brake caliper and the declutching activator, from the centrifugal regulator,
- the pipe connecting the clutch cylinder and the clutch re-engagement control, from the cylinder,
- the pipe (7) connecting the left-hand brake caliper and the fast idle device, from the latter,
- the gearchange control pipes (8),
- the clutch lock feedpipes (6) from the union (9),
- the clutch lock overflow return pipe (11) from the lock.

Disconnect the harness (5) from the brake pad wear indicator and from the reversing light switch (10).

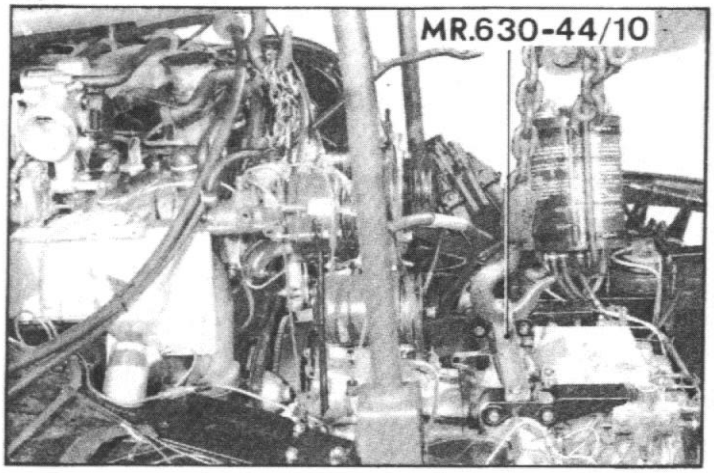
14. Disconnect the following :
- the brake caliper feed pipes (12) from the unions on the sidemember,
- the pipe (4) connecting the HP pump and the pressure regulator, from the pump,
- the feed pipe, the HP pump outlet pipe and the return pipe from the pressure regulator *(IE vehicles)*.

15. Disconnect the gearchange and clutch control *(brm vehicles)*.

16. Remove the gearbox :

Place the rig MR. 630-44/ 10 on the rear mountings of the engine support crossmember.
Remove the screws and extended head studs holding the clutch housing.
Pull the gearbox forward.
Insert a tube A (ϕ = 20 × 27 mm, length=1.5mm) through the left-hand wheel swivel and the transmission shaft openings in the sidemember.
Allow the gearbox to rest on this tube (at the rear) and on the starting handle extension guide bearing on the crossmember of the front suspension unit (at the front).
Place the rig MR. 630-44/ 10 on the front mountings of the engine supporting crossmember.
Lift the gearbox with the chain hoist and remove it.

5829



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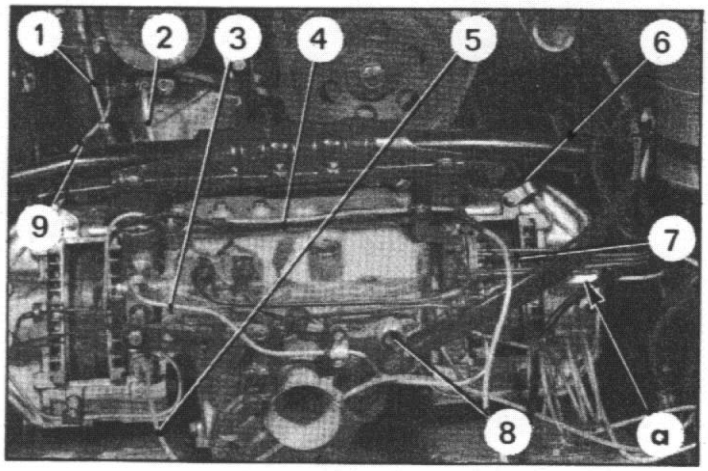

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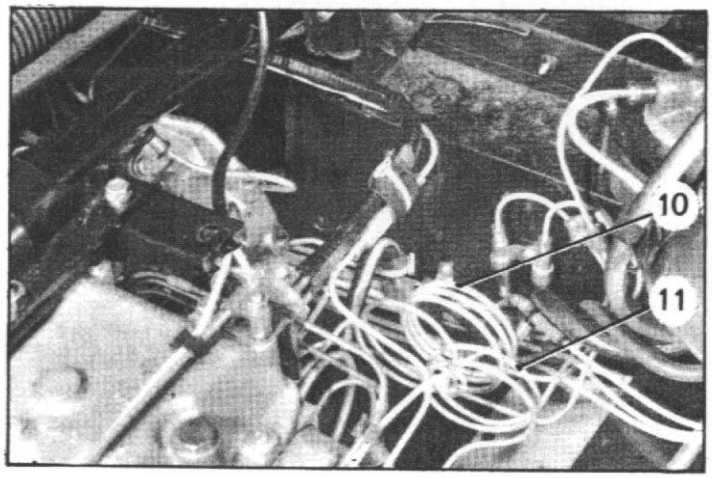


FITTING

17. **Fit the gearbox :**
Make sure that the centring dowels are in position on the engine casing.
Fit the rig MR. 630-44/10 on the front mountings of the engine support crossmember.
Bring up the gearbox and let it rest on the tube A and on the starting handle extension guide used during dismantling. Place the rig MR. 630-44/10 on the rear mountings of the engine support crossmember.
Lift the gearbox with the chain hoist, remove the tube and put the gearbox in place (rotate the primary shaft while pushing the gearbox in order to engage the splines).
Tighten the fixing screws and extended head studs.
Remove the rig MR. 630-44/10.

18. Connect up the following *(hvb vehicles) :*
- the clutch lock feed pipe (1),
- the gearchange control pipe (7),
- the pipe (6) linking the left-hand brake caliper and the fast idling device,
- the clutch cylinder feed pipe,
- the pipe (9) linking the right-hand brake caliper and the de-clutching activator.
- the pipe (3) connecting the centrifugal regulator and the clutch lock at « a »,
- the clutch lock overflow return pipe (5).

Connect the lead to the reversing light switch (8) and the lead (4) for the brake pad wear indicator.

19. Connect up :
- the brake caliper feed pipes (10) and (11),
- the pipe (2) linking the pressure regulator and the HP pump.

20. *On IE vehicles* (fuel injection),connect up :
- the HP pump outlet, feed and return pipes to the pressure regulator.

21. Connect up the speedometer cable.

22. Link up the gearchange and clutch controls *(hvm vehicles).*

23. *On IE vehicles.* fit the main accumulator on the pressure regulator after fitting the latter with a new O-ring smeared with LHM fluid. Screw the accumulator in position by hand.

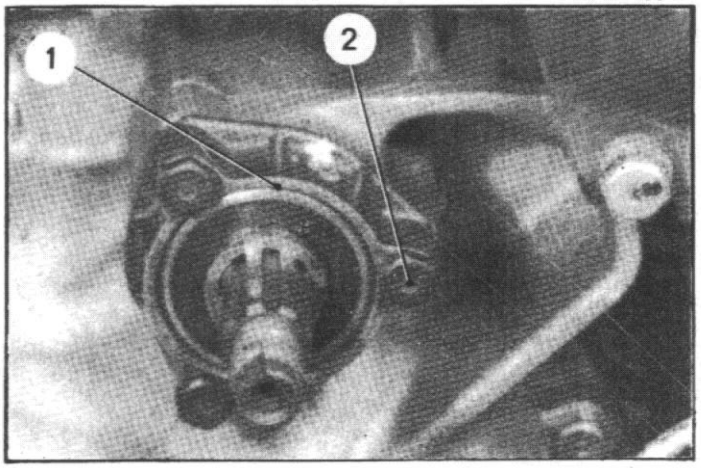
24. Fit the hand brake cable and caliper assembly.

25. **Fit the engine support crossmember :**
Place the shims removed during dismantling between crossmember and sidemembers and tighten the fixing screws (flat and serrated washers).

NOTE : The difference in the distances between brake disc and sidemember on the one side, compared with the other should be 80 ± 2 mm.

Change the thickness of shims, if necessary.

1337



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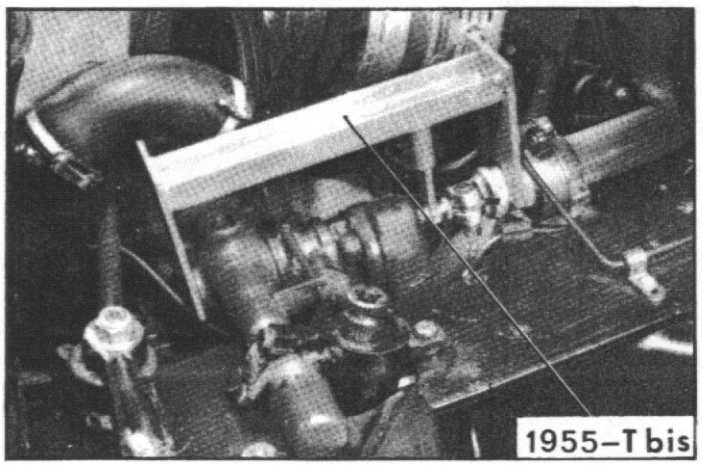


26. Fit the drive pulley :

a) Fit the front camshaft bearing (1).
Tighten the screw (2).
b) Fit the pulley. Insert the shims removed during dismantling (position the pulley so that when the 1st cylinder is at TDC- end of compression stroke-and the timing rod is inserted into the clutch housing and engine flywheel, the zero mark on the graduated sector corresponds with the mark on the pulley).
c) Tighten the nut.

27. Connect up the HP pump and alternator tie-rods to the water pump (plate, flat washer and serrated washer under the nut).
Check the alignment of the pulleys and tighten the driving belts. Tighten the bolts and nuts holding the alternator and the HP pump.

28. Fit the steering rack assembly :

Place the steering rack into its clamps, observing the marks made during dismantling.
Adjust the angular position of the steering (fixture 1955-T bis) and tighten the bearing cap bolts (flat washer).
Connect the track rod levers to the relay spindles Place the nuts towards the outside, tighten them to 25 mΛN (2.5 m.kg) (connect the lug of the headlamp directional control to the right-hand lever).
Connect the feed pipe assembly to the rotating union. Interpose the seal plate fitted with new seals.
Check the axial play in the steering wheel.

29. Fit the fan *(except on models DS 23)*.
Tighten the screws to 10 mΛN maximum (1 m.kg).
Fit the battery support.
Fit the radiator and the water header tank.
Tighten the collars on the hoses.
Fit the battery (but do not connect the earth cable).

30. Connect up the drive shafts :

- to the wheel swivels,
- to the differential shafts.

Tighten the nuts to 105 - 135 mΛN (10.5 to 13.5 m.kg).

31. Adjust the hand brake :
Set the clearance between brake pads and discs to 0.1 mm by means of the adjusting screws (insert a 0.1 mm shim between pad and disc) and tighten the locknuts.
CAUTION : Allowance must be made for the run-out of the discs.

32. Fit the air filter and connect up the air thermal sensor *(IE vehicles)*.

Fit the fan (connect the leads to the thermal switch and the electric fan *(vehicles type DS23)*.

33. Fill the cooling circuit. Make sure that the release screw on the pressure regulator is slackened.
Connect the earth cable to the battery.
Start the engine, prime the HP pump and connect the pump inlet pipe to the tank.

34. Bleed the front brakes.

35. Tighten the pressure regulator release screw.
Run the engine to restore pressure in the circuits.
Stop the engine.

36. Slacken the screws holding the main brake calipers. Have an assistant depress the brake pedal to centre the hydraulic brake units.
Tighten the screws holding the brake calipers to 130 - 140 mAN (13 to 14 m.kg).

37. Check that the circuits do not leak and that the gears change correctly.

38. Link up the oil cooler air duct and fit the closing panel of the front suspension unit *(IE vehicles)*

39. Fit the front wheels and wings, the radiator air inlet duct assembly, crossmember and the spare wheel.

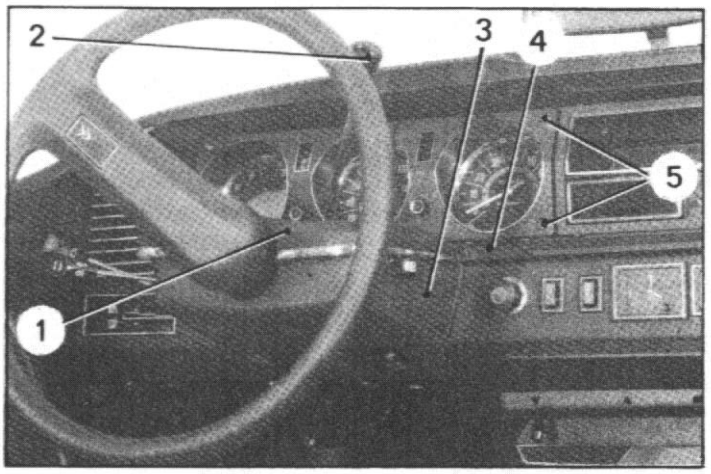
40. Check the clutch clearances :

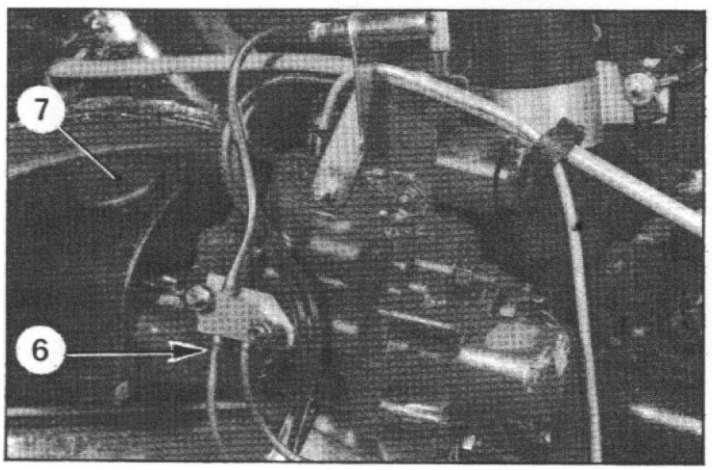
Check the adjustment of the clutch drag speed and of the clutch re-engagement control *(bth vehicles)*.

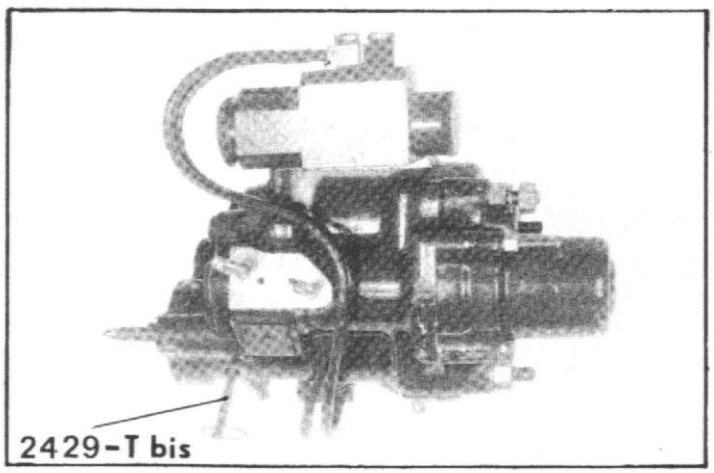
41. Adjust the secondary headlamps.

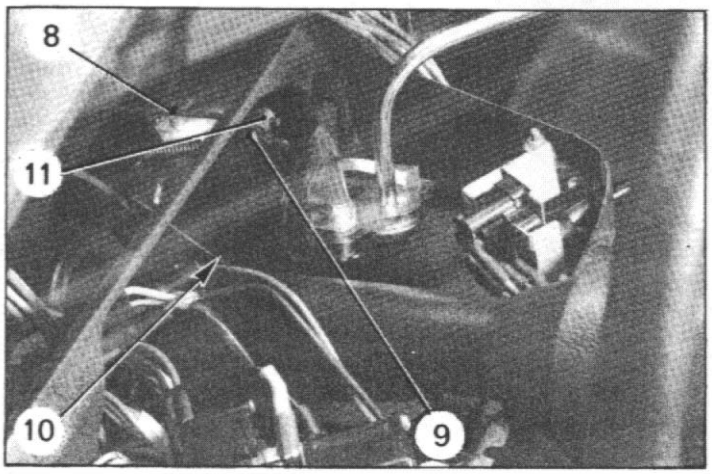
I. REMOVING AND FITTING A SELECTOR

BVH VEHICLES
except BW









REMOVAL

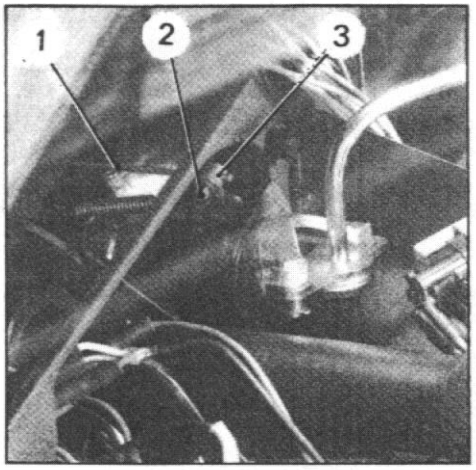
1. Hold the bonnet open (catch MR. 630-64/ 27). Disconnect the cable from the negative terminal of the battery.
2. Place the selector lever (2) in fourth speed position and remove the instrument panel (5). Disconnect the two parts of the speedometer cable and remove the speedometer.
3. Remove the cover joint (4) and the cover (1) from the bracket holding the electrical controls. Remove the bracket (3) without disconnecting the electric wiring.
4. Place the selector lever (2) in first speed position. Insert the alignment rod 2439-T bis in the hole of the hydraulic gear selector.
5. Remove the rubber plug (7) and slacken the rear screw of the coupling sleeve between the selector lever rod and the hydraulic gear control.
6. Slacken the screw holding the flasher unit. Slacken the screw (9) securing the manual clutch rod (8).
   Disconnect the leads from the starter motor switch.
7. Remove the selector securing screw (10) and the two nuts coupling the selector to the hydraulic gear control (Spanner 2431-T bis).
8. Remove the selector.

FITTING.

9. Offer up the selector taking care to pass the auxiliary clutch control rod (8) through the hole in the selector securing flange, then in the trunnion (11).

   Engage the gear change control rod into the sleeve connecting the selector to the hydraulic gear control.
10. Fit the nuts joining the selector lever assembly to hydraulic gear control (Flexible nut driver 2438-T or 2506-T or flexible tube) and tighten them (Swivel socket spanner 2431-T bis).
    Fit and tighten the screw (10) securing the selector on the steering column bracket (contact washer under the screw head).
11. Put the gear selector lever in the first speed position. Make sure that the alignment rod (2439-T bis) is in position in the hydraulic gear control.
    Tighten the sleeve connecting the selector to the hydraulic gear control.
    Remove the alignment rod, replace the rubber plug on the hydraulic gear control bracket.

Manual 814-2

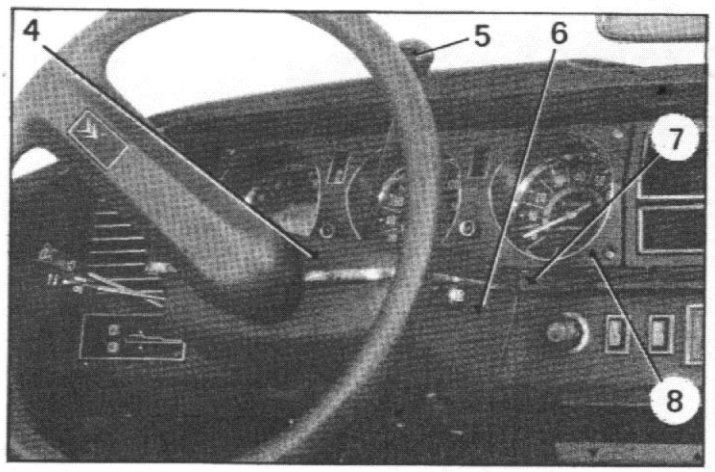


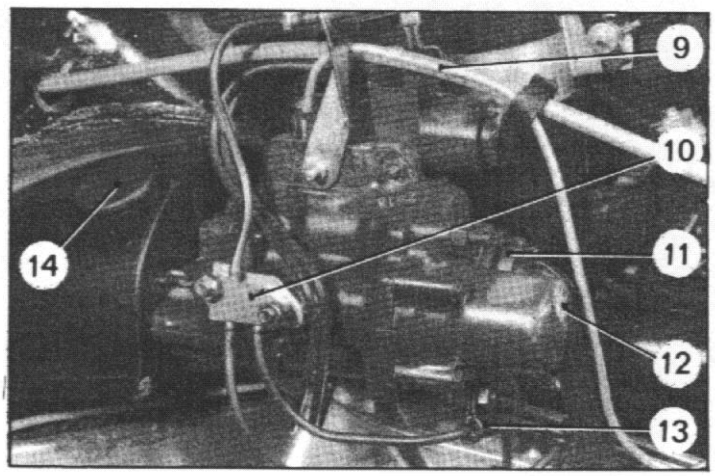
12. Adjust the auxiliary clutch control :
Push the linkage (1) as far as possible towards the hydraulic gear control.
Pull the gear selector lever towards the driver and tighten the screw (2) on the trunnion (3).

13. Connect the leads to the starter motor switch.
Fit the electrical control bracket (6) and its cover joint (7). Place the selector lever (5) in fourth speed position and fit the instrument panel (8) (connect up the speedometer cable).

14. Connect the cable to the negative terminal of the battery.
Link up the two parts of the speedometer cable.

II. REMOVING AND FITTING A HYDRAULIC GEAR SELECTOR





REMOVAL

1. Preparation : Disconnect the selector from the hydraulic gear control without removing the screws holding the selector.

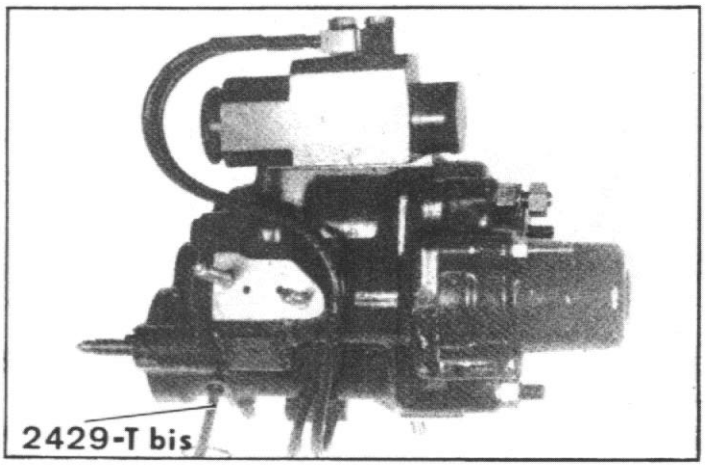
2. Slacken the pressure regulator bleed screw.
Release the pressure in all the hydraulic circuits.

3. Remove the front left-hand suspension sphere the ignition coil and the engine dipstick.

4. Remove :
- the two nuts from the flange (10) holding the pipe assembly connecting the hydraulic gear selector to the centrifugal regulator and remove the flange and the seal carrier plate,
- the screw and the two nuts from the plate holding the five tubes (13) for the gear change control,
Remove the flange and the seal carrier plate,
- the screwed union from the clutch lock connecting tube (9) and move the tube (9) away,
- the collar (11) and withdraw the overflow pipe (12).

5. Remove the rubber plug (14) from the hydraulic gear control bracket and slacken the front screw connecting the change speed lever to the hydraulic gear control.

6. Disconnect the auxiliary clutch control linkage from the slide valve on the hydraulic selector and remove the latter.

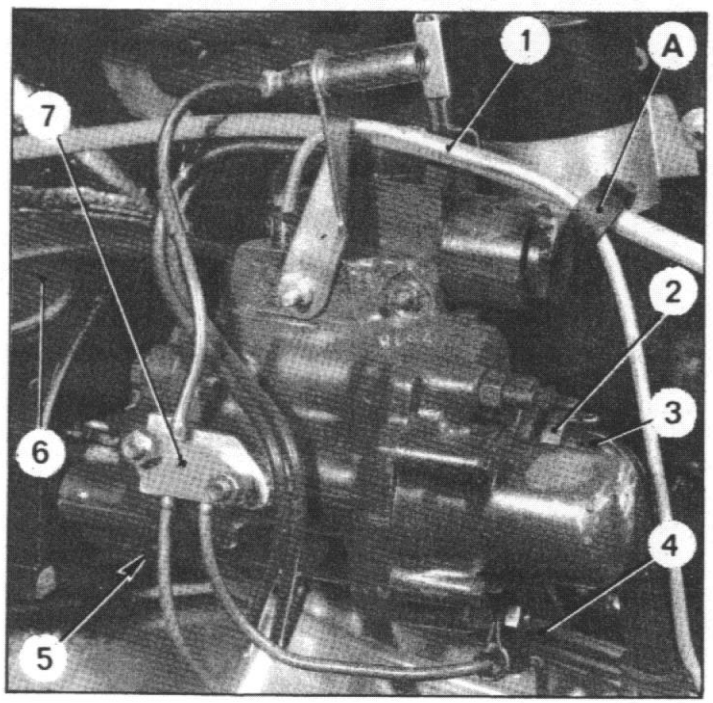


FITTING

7. Place the slide valve in the first speed position. To do this, pull and rotate the slide valve until the hole in the slide corresponds with that in the rear cap of the hydraulic gear selector.
Then insert the rod 2429-T bis. It must penetrate by about 30 mm. Otherwise, rotate the slide by half a turn.

8. Fit the hydraulic gear selector, taking care to pass the linkage of the auxiliary clutch control through the hole of the slide valve and into the trunnion of the auxiliary clutch control lever.

9. Fit :
- A seal-plate fitted with new seals and the flange (7) holding the pipe assembly which connects the hydraulic gear selector to the centrifugal regulator.
Screw up the nuts (serrated washer) but do not tighten them.
- A seal-plate fitted with new seals and the plate holding the five-tube assembly (4) for the gear change control. Screw up the nuts and the securing screw (serrated washer) but do not tighten them.



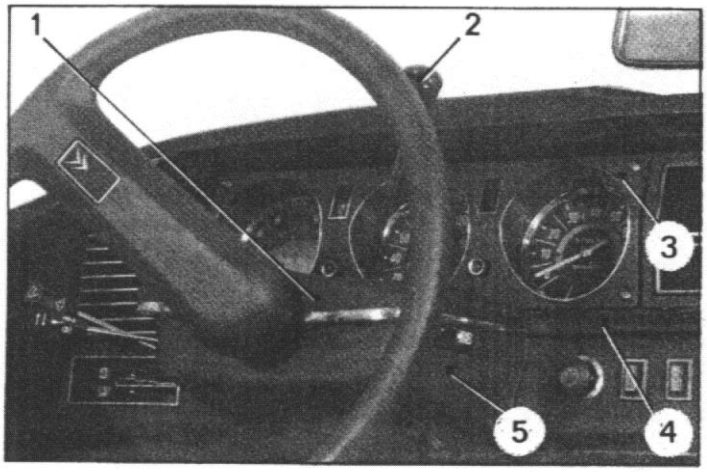
10. Fit the nuts securing the selector to the hydraulic gear control (flexible nut driver 2428-T or 2506-T or flexible tube) and tighten them (Swivel-socket 2431-T bis).

11. Make sure that the selector lever is in the first speed position and tighten the flange joining the selector to the gear change control slide valve. Remove the alignment rod, and replace the rubber plug (5) in the hole on the hydraulic gear control bracket.

12. Adjust the auxiliary clutch control :

13. Tighten the fixing nuts and screws :
- on the flange (7) securing the pipe assembly between hydraulic gear control and centrifugal regulator,
- on the flange securing the gear change (4) 5-pipe assembly.

14. Connect to the hydraulic gear control :
- the tube (1) from the clutch lock and fit the rubber collar A,
- the overflow pipe (3). Tighten the collar (2).



15. Fit the ignition coil and the engine dipstick.

16. Fit the front left-hand suspension sphere.
Interpose a new seal, smeared with LHM and placed in the suspension cylinder.
Tighten the sphere by hand.

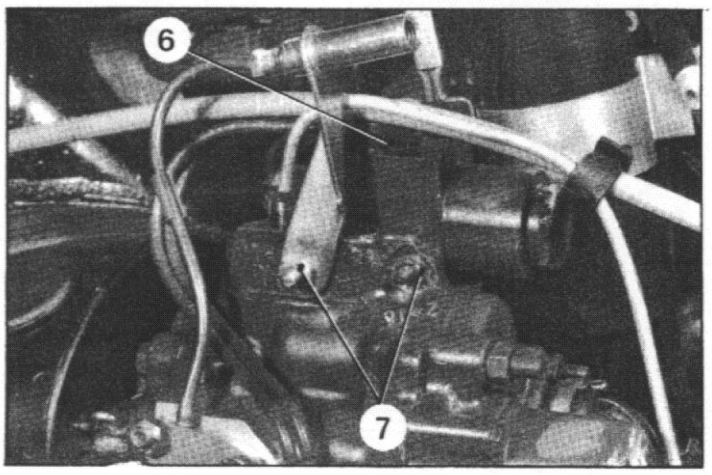
17. Tighten the nut holding the flasher unit and fit :
- the electrical control bracket (5) on the facia board,
- the cover (1) for the bracket,
- the cover joint (4),
- the instrument panel (3) (connect the cable to the speedometer), after placing the selector lever (2) in the fourth speed position.

18. Join up the two parts of the speedometer cable.
Connect the earth cable from the chassis to the negative terminal of the battery.

19. Start the engine, let it idle for a few minutes and tighten the pressure regulator.

20. Place the height control in « *normal* » *position*
Check all unions for leaks. Check that the gear change works correctly and bleed the hydraulic gear selector : change into each gear in succession while operating the hydraulic brake.

III. REMOVING AND FITTING A GEAR-CHANGE SPEED REGULATOR

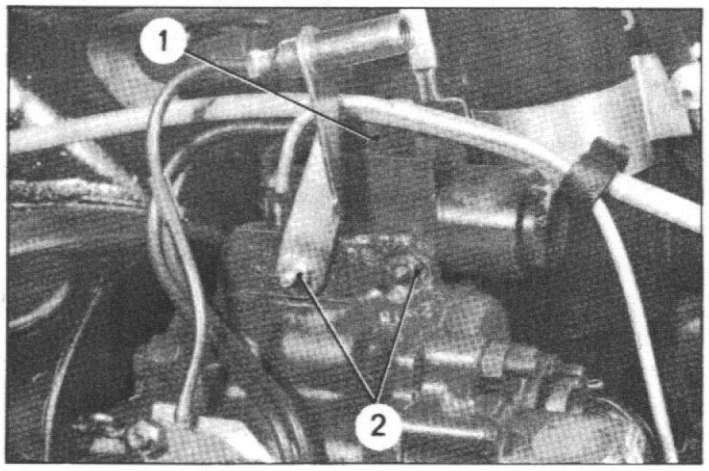


REMOVAL

1. Slacken the release screw on the pressure regulator and place the auxiliary clutch control lever in the « clutch engaged » position.

2. Remove the ignition coil.
Remove the securing screws from the feed flange of the gear-change speed regulator (6) and the nuts (7) securing the regulator on the hydraulic gear selector.

3. Remove the regulator.



FITTING

4. Position the regulator. Connect up the feed pipes, place a seal plate fitted with new seals under the flange (1) and fit the securing screws *without tightening them* (Shakeproof washer).

5. Tighten the nuts (2) holding the regulator on the hydraulic gear selector, then tighten the securing screws on the feed pipe assembly flange (1).

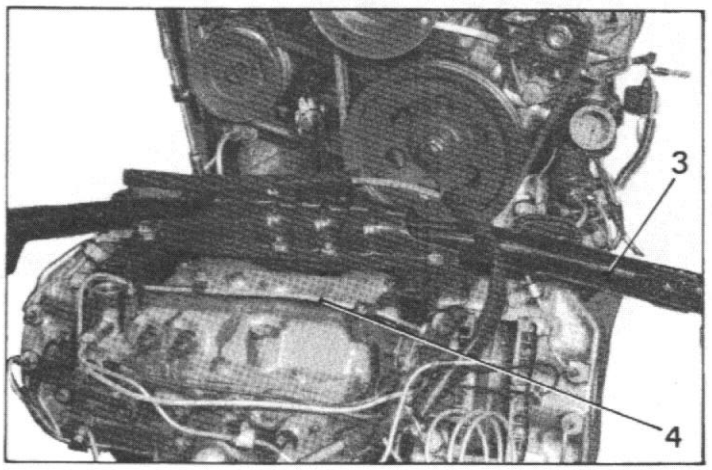
6. Fit the ignition coil.

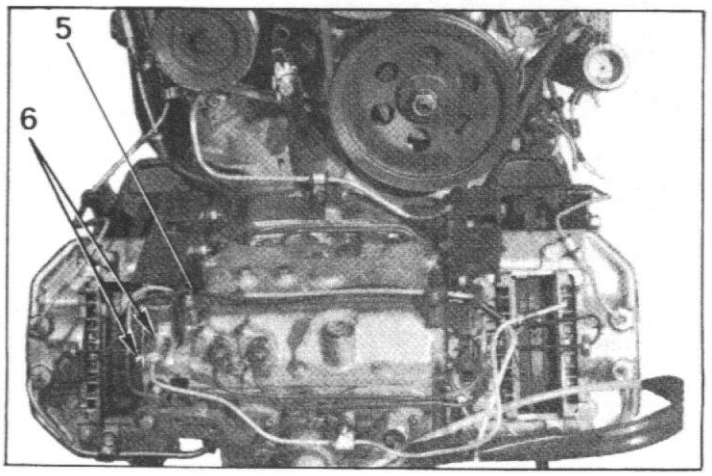
7. Tighten the release screw on the pressure regulator.

8. Bleed the gear change control circuit.

IV. REMOVING AND FITTING A GEARBOX COVER

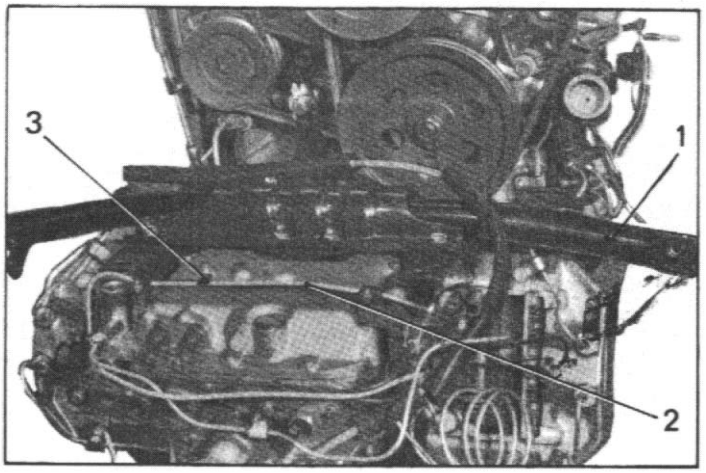
Manual 814-2

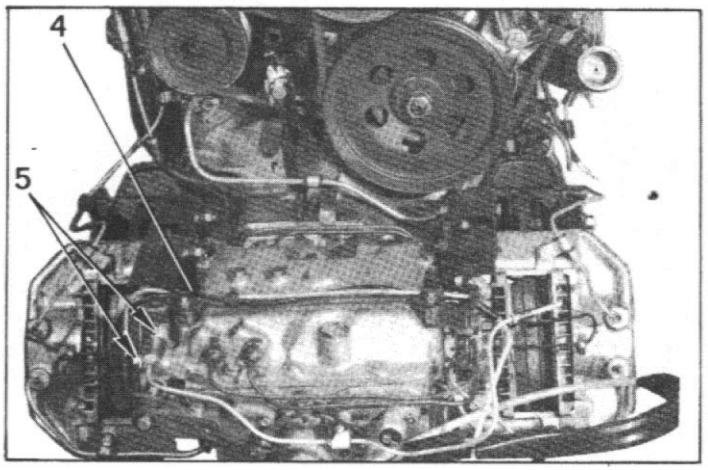


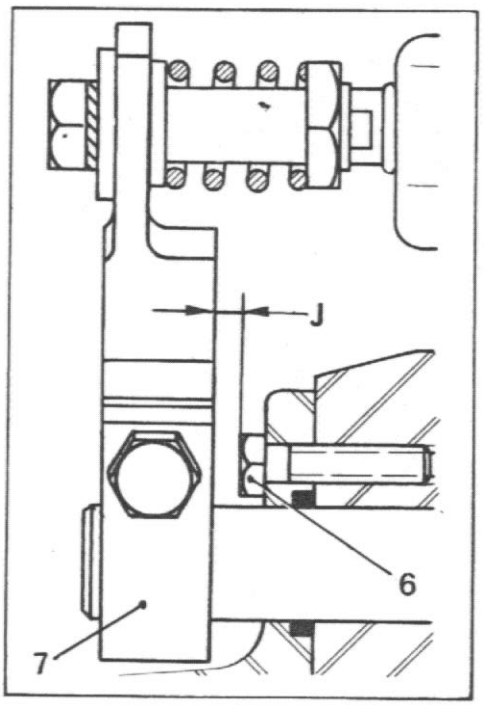


REMOVAL

1. Hold the bonnet open (MR. 630-64/ 27).
2. Remove :
   - the spare-wheel, the front wings and the radiator air cowl then the crossmember supporting the spare-wheel,
   - the battery and battery tray.
3. Release the pressure in the circuits.
4. Drain the radiator (collect the water which contains anti-freeze).
   Remove the radiator and the water header tank.
5. Support the engine/ gearbox assembly by the hoisting bracket using a workshop crane : with the wings removed, it is possible to use the support 1797-T bis on condition that the headlight swiveling control (on vehicles where this is fitted) is also removed from the right-hand steering relay lever.
6. Remove the crossmember (3) supporting the gearbox.
   NOTE : Do not lose the packing pieces which are placed between the crossmember and the side-members.
7. Remove the screws (6) securing the clutch lock and the plate.
8. Disconnect the 5-pipe assembly from the gearbox.
9. Disconnect the leads (5) from the brake pad wear indicator.
10. Remove :
    the feed pipe (4) from the right-hand brake unit.
11. Remove the cover.
12. **Strip the cover.**







FITTING

13. **Assemble the gearbox cover.**

14. Fit the gearbox cover and adjust the operating cylinders.

15. Fit the right-hand brake unit feed tube (2). Tighten the nuts holding the tube brackets (3).

16. Connect the lead (4) to the brake pad wear indicator.
Fit the collars.

17. **Fit the front crossmember (1) supporting the gearbox :**
Position the packing pieces removed during dismantling between crossmember and sidemembers. Tighten the securing screws (serrated washer).

18. Connect up the 5-pipe assembly, interposing the seal plate fitted with new O-rings.

19. Position the plate on the clutch-lock and fit and hand tighten the screws (5). Engage first gear and make sure that there is a clearance « J » of 1.7 mm minimum between the flange (7) and the head of the screw (6) securing the shaft cap. Tighten the clutch-lock securing screws (5).

20. Fit :
- the radiator (connect the leads to the thermal switch and the electric fan),
- the water header tank,
- the battery tray and the battery,
- the assembly of radiator cowl and the cross-member supporting the spare-wheel,
- the front wings,
- the spare wheel.

21. Fill up the radiator with the heater control valve open.

22. Tighten the release screw on the pressure regulator. Run the engine to restore pressure in all circuits.

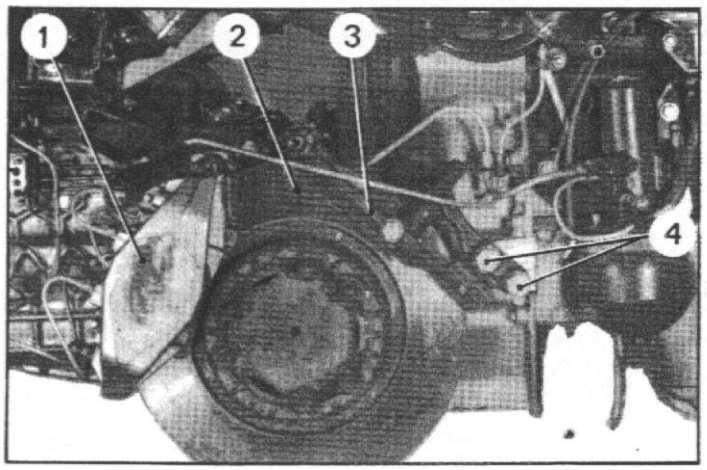
23. Bleed the gear change control circuit.

24. **Bleed the front brakes.**

VEHICLES ALL TYPES

I. REMOVING AND FITTING A DIFFERENTIAL SHAFT OR BEARING

REMOVAL



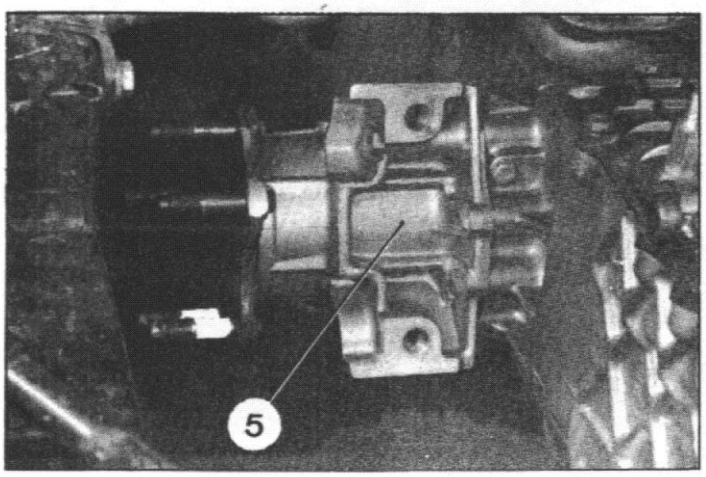
1. Remove :
   - the spare-wheel,
   - the headlamp control cross-bar,
   - the spare wheel crossmember,
   - the front wings and the radiator cowl,
   - the panel under the gearbox and the brake cooling ducts.

2. Raise the front of the vehicle on stands.
   Release the pressure in the suspension circuit.
   Drain the gearbox.
   Remove the front wheels.

3. **Remove the drive shaft and swivel assembly.**

4. **Remove the hydraulic brake unit (1).**

5. **Remove the handbrake caliper :**
   Remove the two screws (4) and remove the caliper (3).



NOTE : The right-hand side, is accessible from above whereas the left-hand side can only be reached from underneath the vehicle.

6. Remove the disc (2).

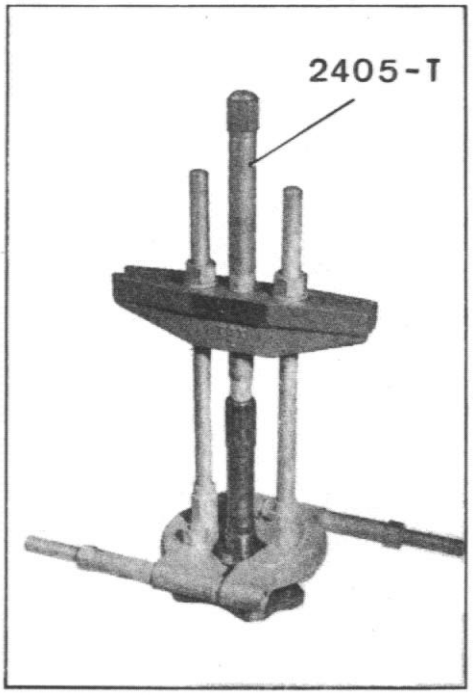
7. **Remove the gearbox outlet unit (5) :**

   Remove the screws securing the bearing.
   Free the bearing and shaft assembly.

   CAUTION : The position of the differential is determined by a spacer and several packing pieces. The thickness is determined when assembling the gearbox.

   These packing pieces must not be mixed.

   When the gearbox outlet unit is being replaced, it is necessary to adjust it again (see paragraph 9 b, same operation).



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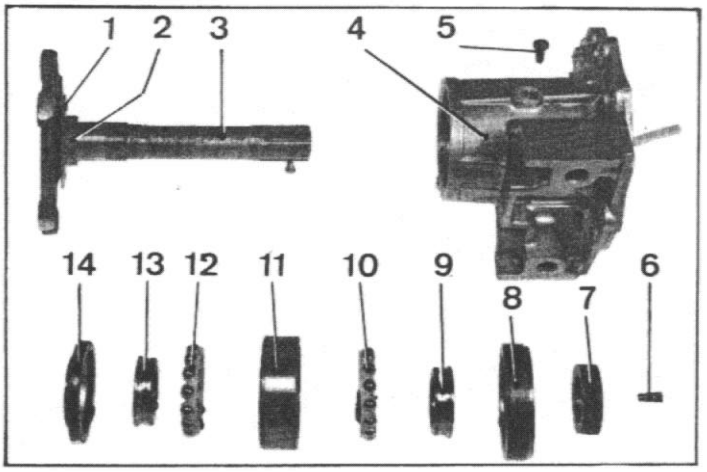

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8. Stripping the gearbox outlet :

a) Remove :
- the grubscrew (6) from the nut (7),
- the nut (7) (spanner 1770-T bis).

b) Drive out the shaft (3) using a copper drift.

CAUTION : The cage (13) remains on the shaft (3) but the nylon cage (12) comes off and the balls may fall out.
Take care not to lose them.

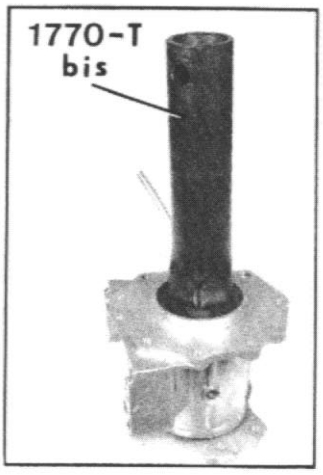
c) Extract the cage (13) (extractor 2405-T).
Remove the seal (14).

d) If necessary, remove the spacer (2) and the oil retaining washer (1).

e) Remove :
- the grubscrew (5) from the nut (8),
- the nut (8) (spanner 1771-T bis),
- the cage (9),
- the nylon cage (10).

f) If necessary, gently heat the casing (4) in order to extract the outer cage (11).

CAUTION : If the bearing is to be used again mark the position of the different components so that they can be reassembled in the same position.



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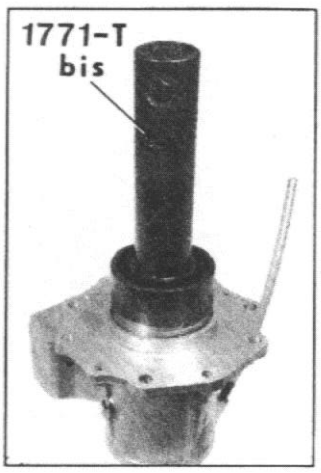

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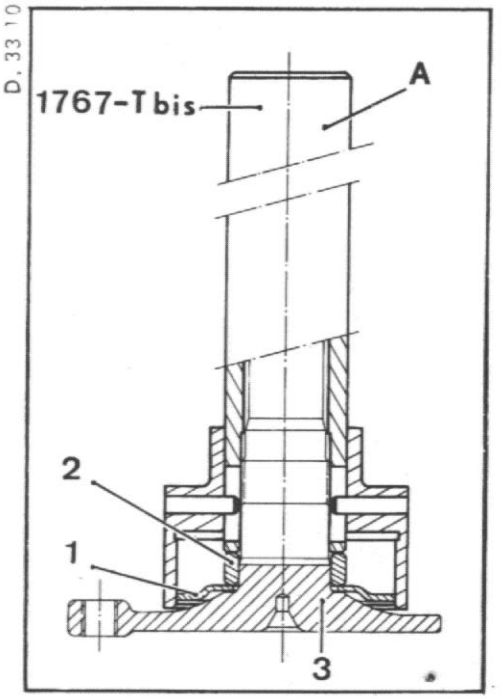


FITTING

9. Assembling the gearbox outlet :

a) Prepare the shaft :

- Fit the oil retaining washer (1) and the spacer (2) on the shaft (3).

- Using fixture 1767-T bis, centre the washer (1) and position the spacer (2) by tapping part A.

b) Prepare the casing (4) :

If the gearbox outlet is to be renewed , it is necessary to determine the thickness of the packing pieces for the differential. To do this :

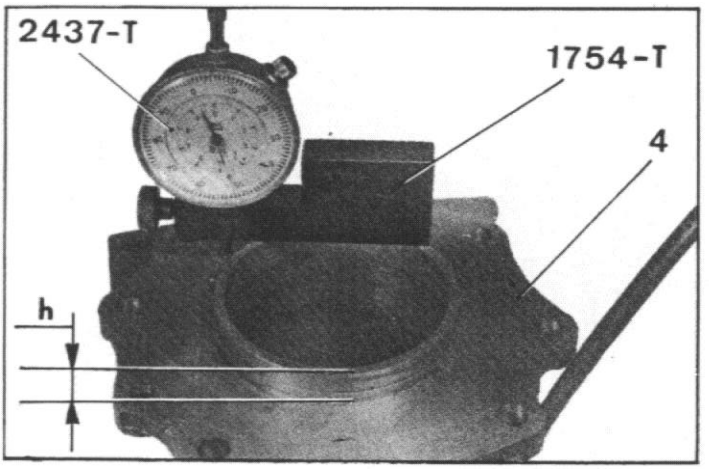
- Compare the height « h » of the flange on the new part and the old part.
- Fit a dial gauge 2437-T on support 1754-T. Place it on the gearbox outlet which has been removed as shown in the photograph opposite.
- Set the dial gauge at zero and note the position of the totalising needle, for example, between 9 and 0.
- Place the instrument on the new gearbox outlet and note the position of the needles.

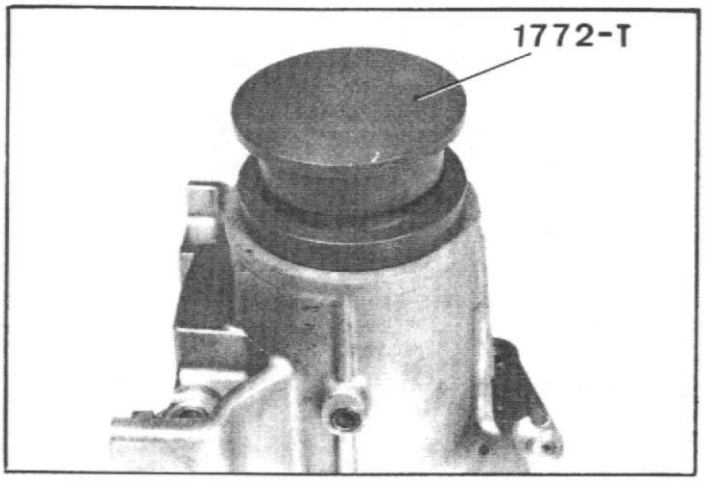
Example :

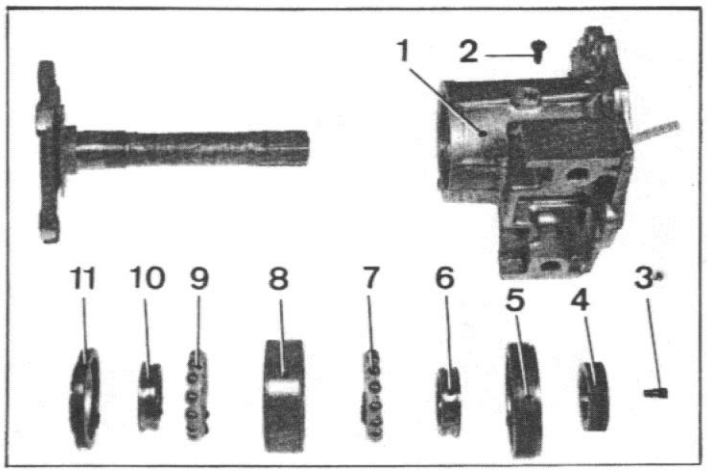
totalising needle between 9 and 0, large needle on 52.

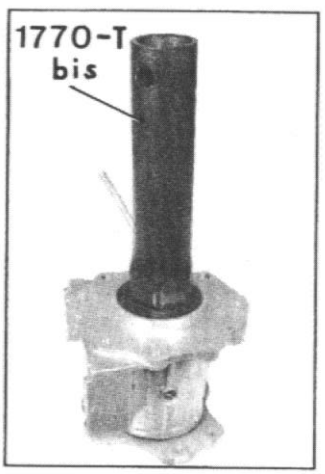
The new flange is higher than the old one by 0.52 mm; the thickness of the packing pieces must therefore be reduced by 0.52 mm.

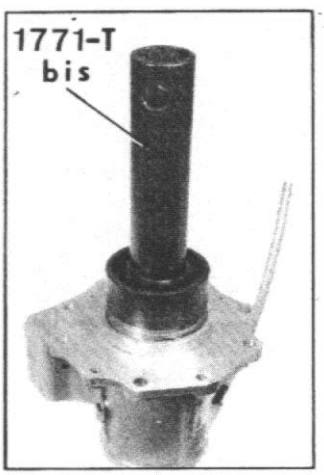
If the flange is lower than the old one, the thickness of the packing pieces would have to be increased by the difference between the two heights measured.

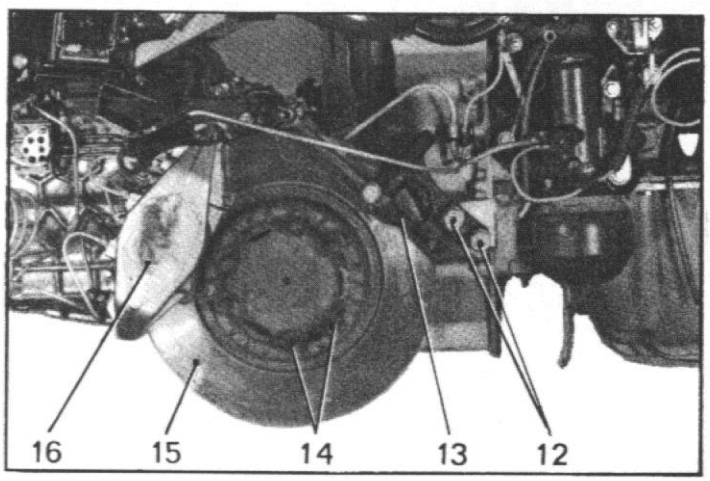












c) Fit the cage (8) using a tube :
- Fit the nylon cage (9) and the cage (10).
- Fit the seal (11) (fixture 1772-T).
- Fit the nylon cages (7) and (9).

CAUTION : The nylon cages (7) and (9) must be fitted the right way round :

The shouldered part of the nylon cage must be towards the inside of the bearing.

d) Tighten the nut (5) to 100 mΛN (10 m.kg) using spanner 1771-T bis.
Lock the nut with the grubscrew (2).

e) Offer up the shaft into the housing (1) and fit it using a press and a tube of 30 mm inside diameter.

f) Tighten the locknut (4) to 145 mΛN (14.5 m.kg) (spanner 1770-T bis) and lock it by the grub-screw (3) tightened to 7 - 10 mΛN (0.7 to 1 m.kg).

NOTE : The differential shaft on the left-hand side is longer than that on the right-hand side.

10. Fit the gearbox outlet :

Interpose the packing pieces removed during dismantling, or those determined under paragraph 9 b.
Tighten the screws :
Screws dia. 7 mm : 28 mΛN (2.8 m.kg)
Screws dia. 9 mm : 40 mΛN (4 m.kg)

11. Fit the brake disc and the handbrake caliper :

Fit the brake disc (15) into the caliper (13) and on the studs (14).

IMPORTANT : *Check that the maximum run-out of the disc, measured at the largest diameter, does not exceed 0.15 mm.*

Tighten the screws (12) securing the caliper (13) to 110 - 120 mΛN (11 to 12 m.kg).

12. Fit the hydraulically operated caliper (16)

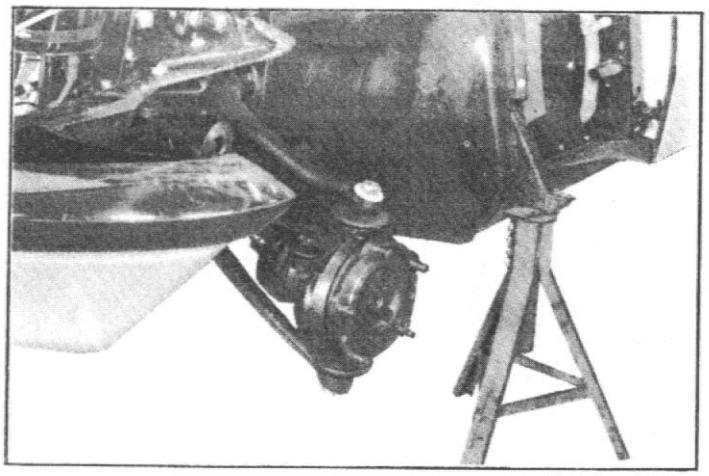
Fit the screws but *without tightening them.*

13. Fit the drive shaft and swivel assembly :

NOTE : *On vehicles produced between 1st March 1970 and 1st March 1971, it is recommended that a packing piece 2.5 mm thick and available from the Replacement Parts Department be interposed between the brake disc and the tri-axe housing.*

14. Fit the hydraulic pipe joining the two calipers (16).
Fit the brake pads and their retaining pins.

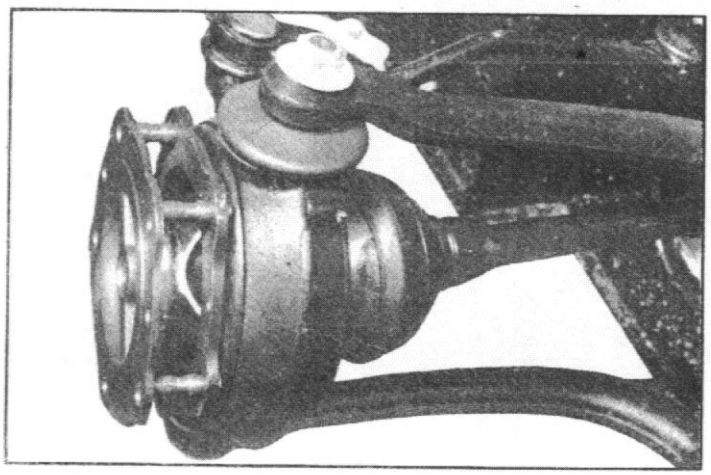
15. Start the engine. Put the circuits under pressure.



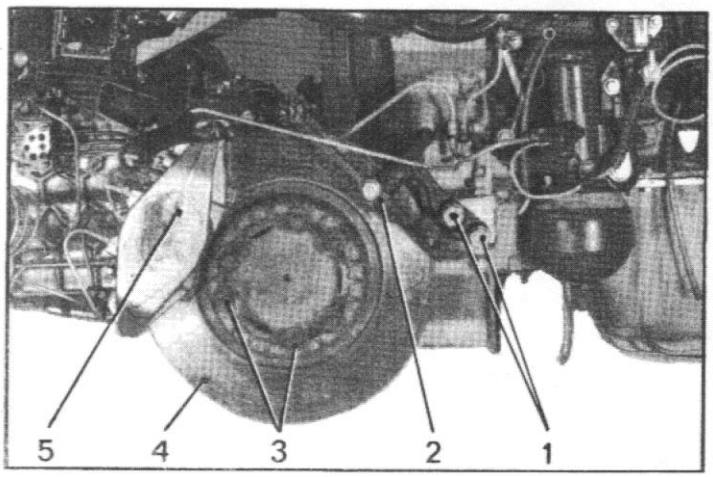
16. Have an assistant depress the brake pedal (to centre the unit) and tighten the screws securing the hydraulic brake unit.
17. Bleed the front brakes.
18. Fit :
    - the brake cooling ducts,
    - the panel under the gearbox,
    - the front wings,
    - the bar supporting the spare wheel with the radiator cowl,
    - the headlamp control bar,
    - the spare wheel,
    - the front wheels.
19. Lower the vehicle to the ground.

II. REMOVING AND FITTING A BRAKE DISC

REMOVAL



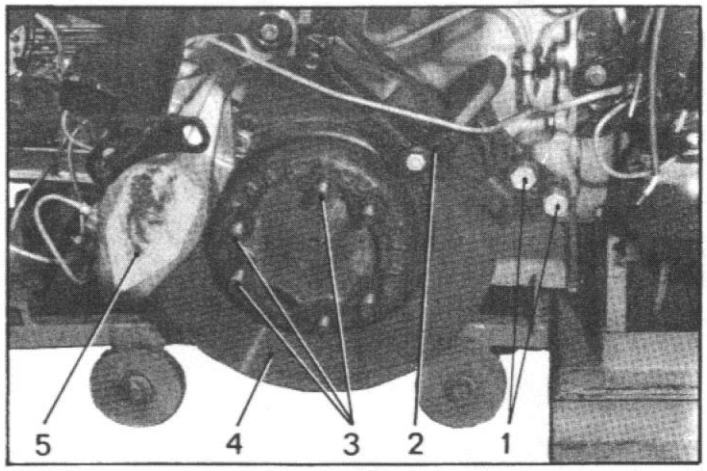
1. Remove :
    - the spare wheel,
    - the support crossmember for the spare wheel,
    - the front wings,
    - the radiator cowl.
2. Raise the front of the vehicle on stands.
   Release the pressure in the circuits :
   to do this, place the manual control in *low position*, open the bleed screw on the pressure regulator and empty the brake accumulator by operating the control *(if necessary)*.
3. Remove :
    - the front wheels,
    - the nuts holding the drive shafts on the gearbox drive outlet flange.
4. Free the drive shaft from the swivel bearing (towards the outside).
   To do this :
    - Remove the two countersunk screws.
    - Free the drive shaft from the studs on the gearbox drive outlet flange.

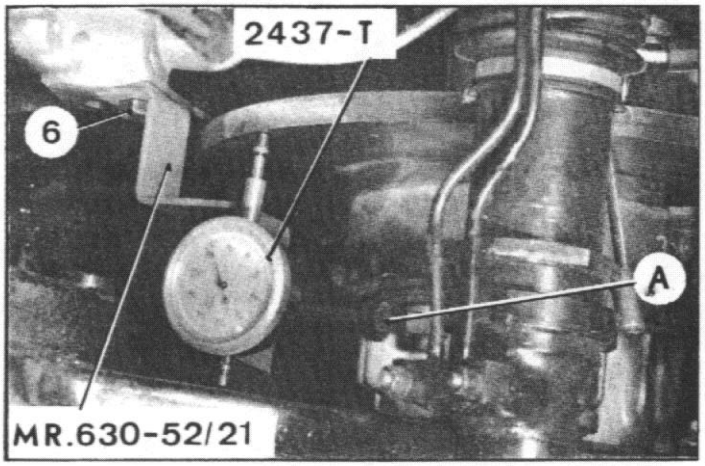


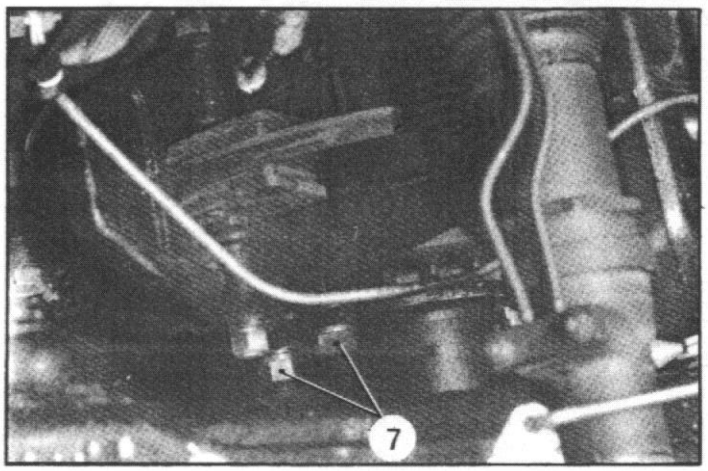
5. Remove the hydraulic brake unit (5).
6. Remove the two screws (1) securing the handbrake caliper (2).
   NOTE : The right-hand side is accessible from above whereas the left-hand side can only be reached from underneath the vehicle.
7. Remove the disc (4) together with the handbrake caliper (2).

FITTING

8. **Fit the brake disc :**
   Engage the brake disc (4) into the caliper (2) and fit this assembly on the studs (3).
   VERY IMPORTANT : *It is essential that the maximum run-out of the disc measured at the largest diameter does not exceed 0.15 mm.*







9. Check the run-out of the brake disc :

a) Interpose washers or spacers between the nuts and the disc (4) to ensure correct tightening of the latter against the differential shaft plate.

If there is a yellow mark on the gearbox drive flange and on the disc, these two marks must be placed as close to each other as possible during fitting.

b) Fix the dial gauge 2437-T on a support MR. 630-52/ 21 using the screw A (this screw forms part of tool 2041-T).
Hold the support on the clutch housing by the upper screw (6) securing the handbrake caliper.

c) Place the dial gauge stem on the largest diameter of the disc face.
Tighten screw (6).

d) Rotate the disc; *the maximum run-out read on the dial gauge must not exceed 0.15 mm.*

e) Otherwise, remove the disc, rotate it clockwise by one-third of a turn and replace it.

f) Measure the run-out again.

If the run-out is greater than 0.15 mm, shift it round a further one-third of a turn clockwise.

g) If the run-out is still greater than 0.15 mm, the disc must be changed.

h) Check the run-out of the new disc and proceed as indicated in paragraphs d) to f) above, if necessary.

i) If the run-out of the new disc is still greater than 0.15 mm in all three possible positions, the differential shaft must be replaced.

j) Tighten the screws (1) securing the handbrake calipers (2) to 110 - 120 mAN (11 to 12 m.kg).

10. Fit the hydraulic brake unit (5).
Fit the securing screws but *do not tighten them.*

11. Fit the drive shaft :
Engage the shaft on the studs (3) of the gearbox drive outlet flange.

NOTE : *On vehicles produced between 1st March 1970 and 1st March 1971, it is recommended that a 2.5 mm thick packing piece available from the Replacement Parts Department be interposed between the brake disc and the drive shaft.*

Fit the nuts (7) and tighten them to 105 - 135 mAN (10.5 to 13.5 m.kg) (17 mm socket spanner and extension).

12. Fit the drive shaft plate on the wheel hub (two countersunk screws).
Fit the front wheels.

13. Fit the hydraulic pipe joining the two calipers (5).
Fit the brake pads and their retaining pin.

14. Start up the engine. Put the circuits under pressure (tighten the bleed screw of the pressure regulator and place the manual height control lever in « *normal* » *position*).

15. Have an assistant depress the brake pedal (to centre the brake unit) and tighten the screws securing the hydraulic brake unit.

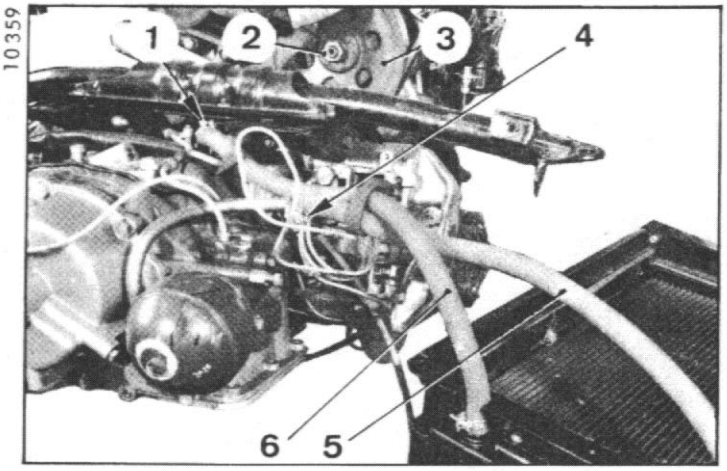
16. Bleed the front brakes.

17. Fit :
- the front wings,
- the spare wheel support crossmember with the radiator cowl,
- the spare wheel.

REPLACING AN AUTOMATIC GEARBOX

DBW VEHICLES ALL TYPES

10359



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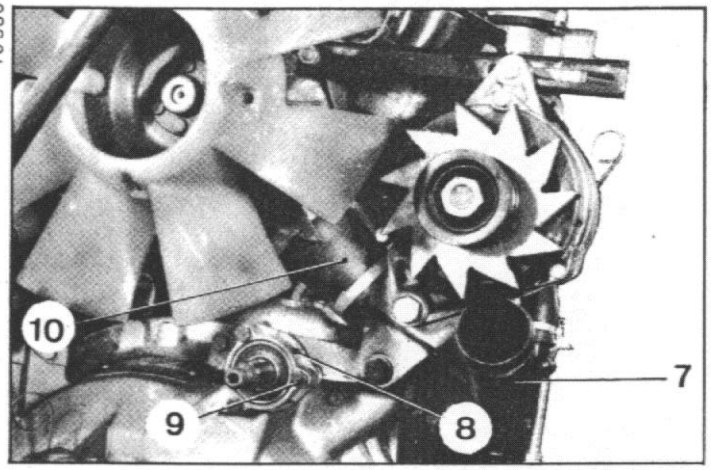
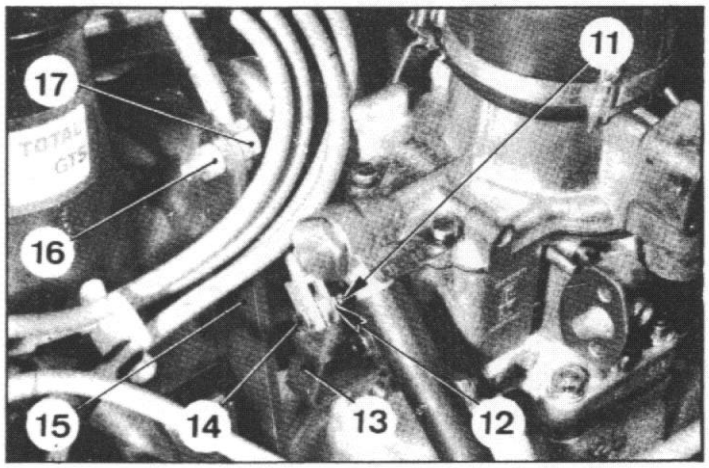


Manual 814-2



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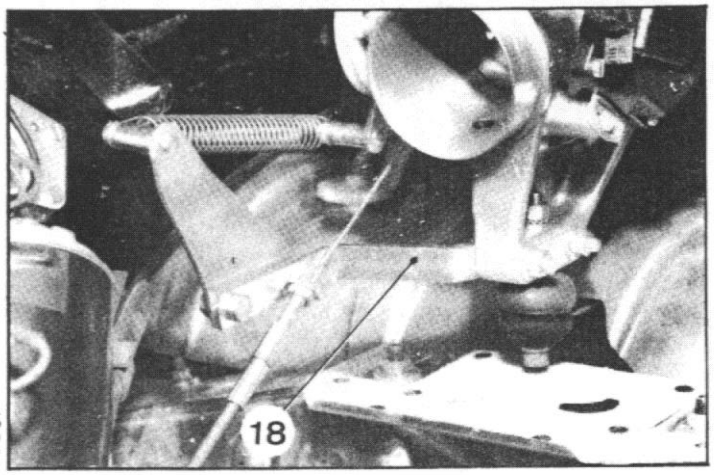


10387

REMOVAL

1. **Remove the engine/gearbox assembly.**

2. **Remove the radiator :**

   a) Disconnect the two hoses and the tie-rod from the radiator.

   b) Remove the two screws securing the radiator on the front gearbox support crossmember.

   c) Remove the radiator, then remove the clips (1) and (4) in order to disconnect the oil pipes (5) and (6) from the gearbox.

3. Remove the engine crossmember.

4. **Remove the front camshaft bearing:**

   a) Slacken the nuts on the tie-rods and the screws securing the H.P. pump and the alternator. Remove the alternator drive belts.

   b) IMPORTANT : Mark (a touch of paint) the position of the drive pulley with respect to the graduated sector for ignition timing.

   c) Remove the nut (2) and the pulley (3). Remove the drive belts from the H.P. pump.

   d) Remove the three screws (9) and take out the bearing (8).

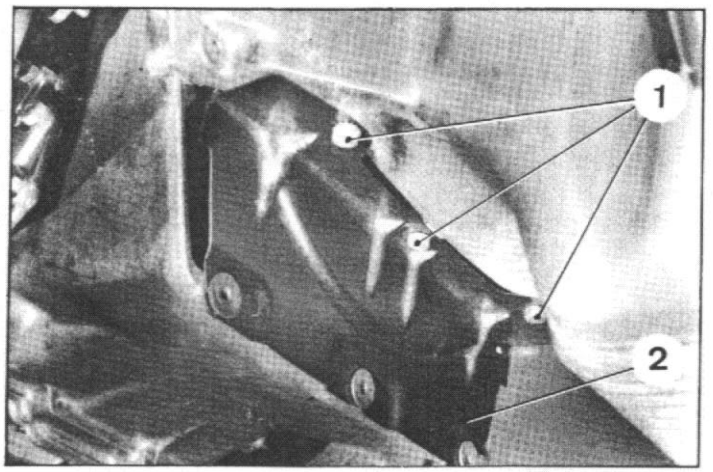
5. **Disconnect the « Kick-down » cable from the engine :**

   Remove :
   - the split pin (11), the washer (12), and the link-pin (14) from the lever (13) (on the carburettor) or from the lever (18) (on the throttle casing of vehicles type D.IE.).

   - the nut (16) and remove the clamp (17) from the bracket (15) holding the cable sheath.

6. Disconnect :

   - the H.P pump tie-rod from the water pump,
   - the alternator tie-rod from the alternator,
   - the intake hose (10) from the water pump and remove the assembly of the steel tube (7) and hose (10).



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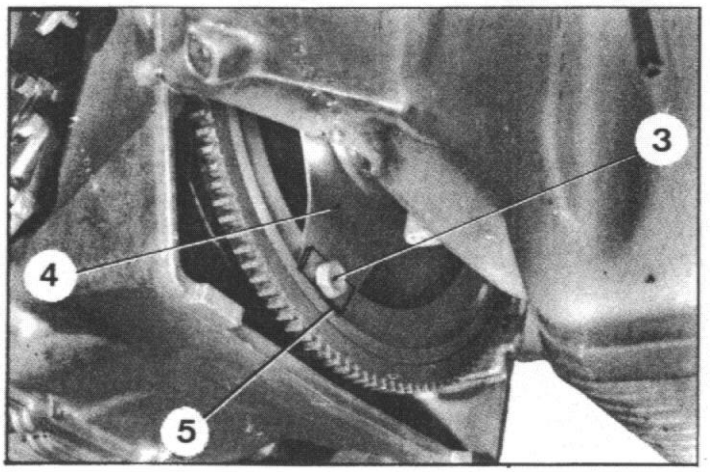

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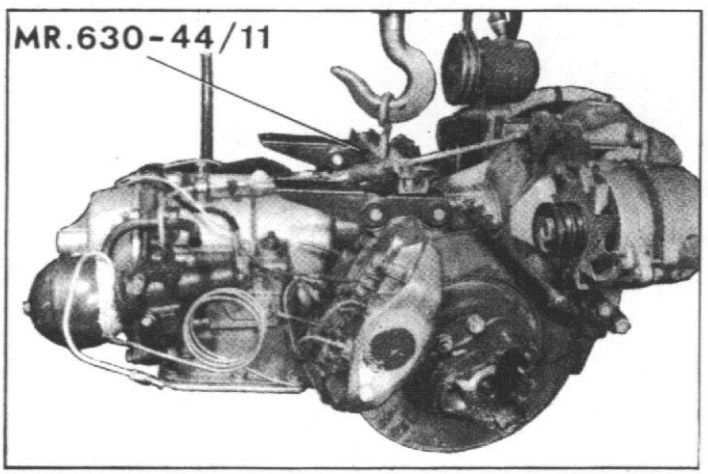

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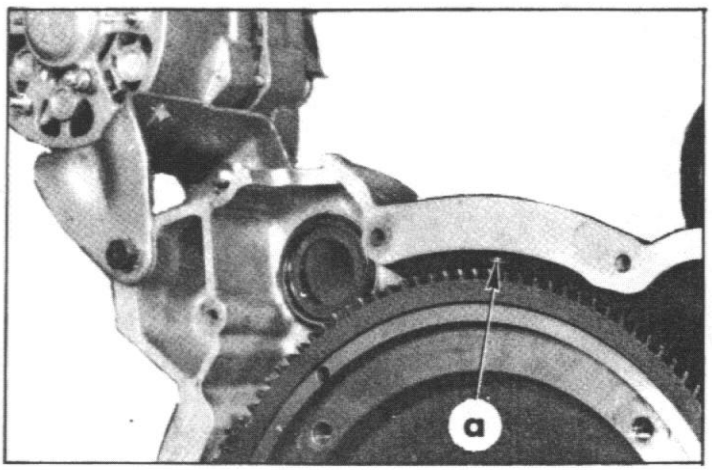


10126

7. Disconnect the drive plate from the converter :

a) Remove the screws (1) and the protective plate (2).

b) IMPORTANT : With a touch of paint, mark the position of the drive plate (4) with respect to the converter and remove the four screws (3) securing the drive plate together with the spacers (5).

8. Separate the gearbox from the engine :

a) Take the weight of the gearbox (support MR. 630-44/11).

b) Remove the screws securing the converter housing on the engine casing.

c) Disconnect the gearbox from the engine
Take care to prevent the converter from falling.

FITTING

9. Connect the gearbox to the engine :

a) Hold the engine horizontal (stand 3083-T bis).

b) *Make sure that the first cylinder is at TDC.*
At this point, the centring pin of the drive plate on the crankshaft flange should be approximately at « 7 o'clock »

c) *Rotate the converter to bring the TDC setting groove opposite the timing hole « a ».*

d) Take the weight of the gearbox (support MR. 630-44/11).
Lightly grease the « nose » of the converter and connect the gearbox to the engine.

Tighten the screws holding the converter housing on the engine casing.

10. Connect the drive plate to the converter :

IMPORTANT : Observe the markings made when dismantling.

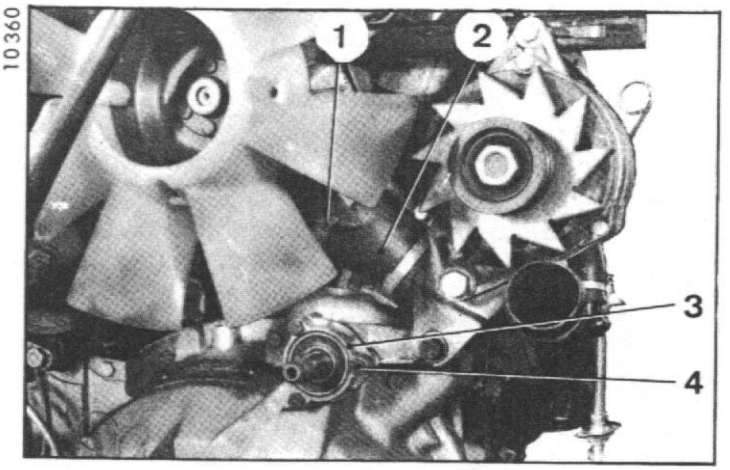
Fit the spacers (5).

Tighten the four screws (3) to 70 mAN (7 m.kg)

Fit the protective plate (2).

Tighten the screws (1) (serrated washer).

10360



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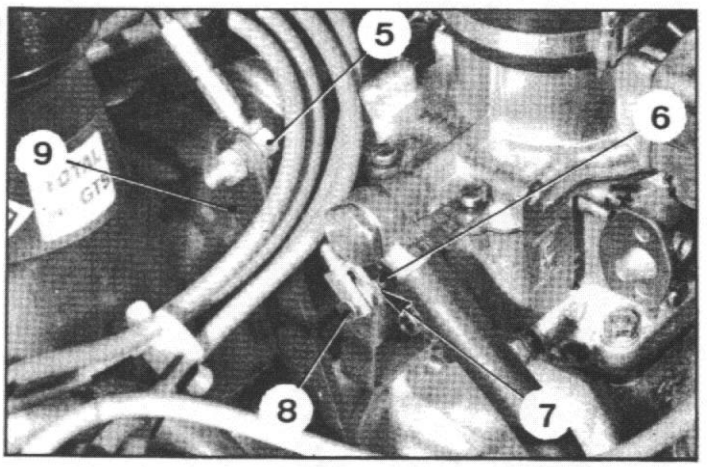
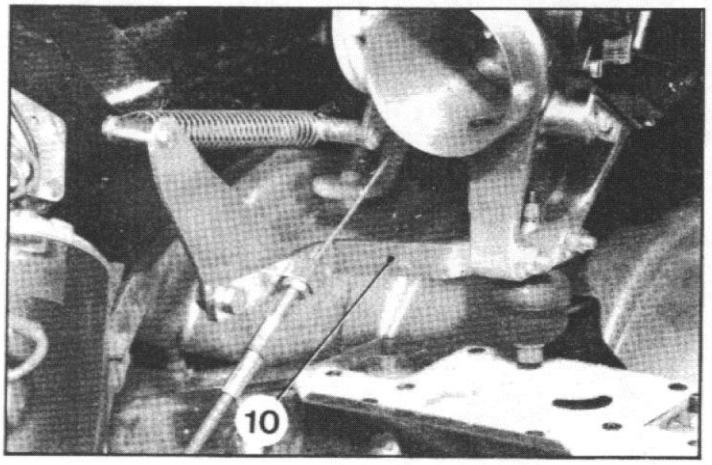


Manual 814-2

10387



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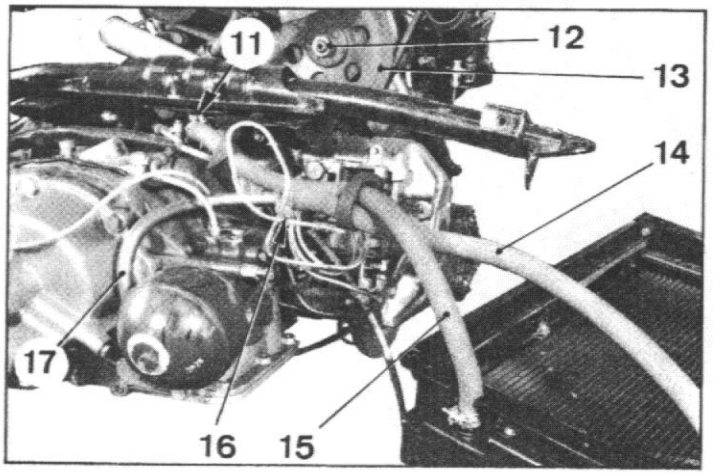


11. Connect :
- the inlet hose (2) to the water pump and tighten the collar (1),
- the alternator tie-rod to the alternator (plate, flat and serrated washers under the nut),
- the H.P. pump tie-rod to the water pump (plate, flat and serrated washers under the nut).

12. **Connect the « Kick-down » cable to the engine :**

a) Connect the fork (5) to the bracket (9) holding the cable sheath (or bracket (10) on *vehicles type D.IE).*

b) *Check the adjustment of the cable.*

c) Fit the link pin (8), the washer (7) and the split pin (6).

13. Fit :
- the front camshaft bearing (3) and tighten the three screws (4),
- the drive pulley (13).

IMPORTANT : Observe the marks made when dismantling and tighten the nut (12) to 70 - 80 mAN (7 to 8 m.kg).

- the drive belts of the H.P. pump, the water pump and the alternator.

14. **Tighten the drive belts.**

15. Fit the engine bearing crossmember.

Tighten the securing screws (flat and serrated washers).

16. **Fit the radiator :**

a) Connect the flexible oil return pipe (14) of the gearbox (upper union on the radiator) to the front tube (17), and the flexible outlet pipe (15) to the rear tube on the gearbox. Tighten the collars (11) and (16).

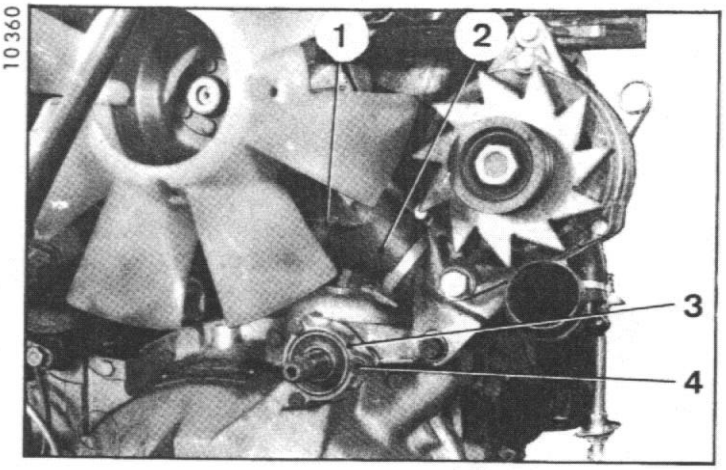
b) Fit the radiator after inserting the *flexible* mountings.

Connect the two hoses to the radiator and tighten the collars.

Tighten the two screws securing the radiator to the front gearbox support crossmember and connect the tie-rod to the radiator (large contact washer under the screw head).

17. **Fit the engine/gearbox assembly** on the vehicle.

10360



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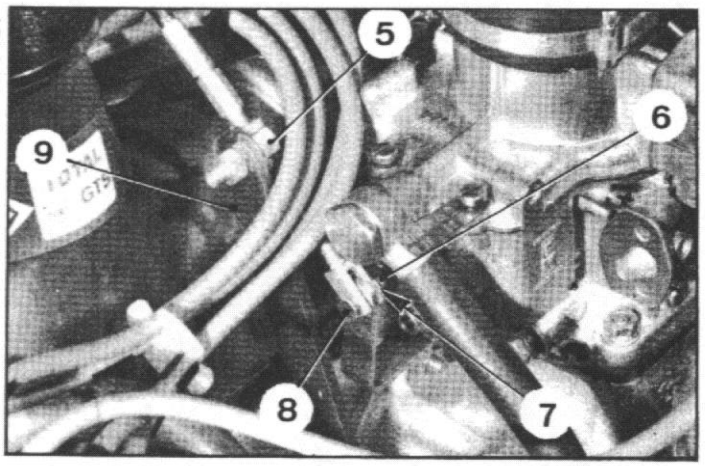

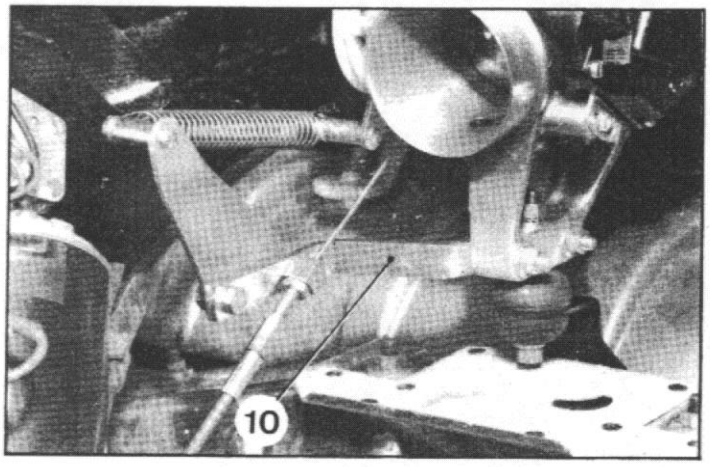

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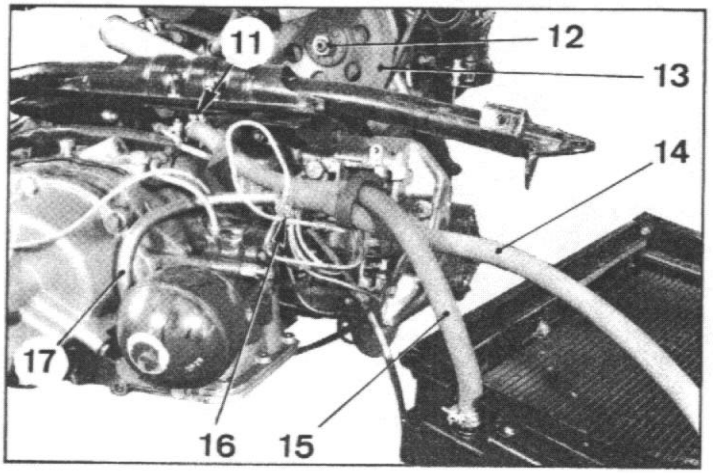


10359

Manual 814-2

11. Connect :
- the inlet hose (2) to the water pump and tighten the collar (1),
- the alternator tie-rod to the alternator (plate, flat and serrated washers under the nut),
- the H.P. pump tie-rod to the water pump (plate, flat and serrated washers under the nut).

12. **Connect the « Kick-down » cable to the engine :**

a) Connect the fork (5) to the bracket (9) holding the cable sheath (or bracket (10) on *vehicles type D.IE*).

b) *Check the adjustment of the cable.*

c) Fit the link pin (8), the washer (7) and the split pin (6).

13. Fit :
- the front camshaft bearing (3) and tighten the three screws (4),
- the drive pulley (13).

IMPORTANT : Observe the marks made when dismantling and tighten the nut (12) to 70 - 80 mAN (7 to 8 m.kg).

- the drive belts of the H.P. pump, the water pump and the alternator.

14. **Tighten the drive belts.**

15. Fit the engine bearing crossmember.

Tighten the securing screws (flat and serrated washers).

16. **Fit the radiator :**

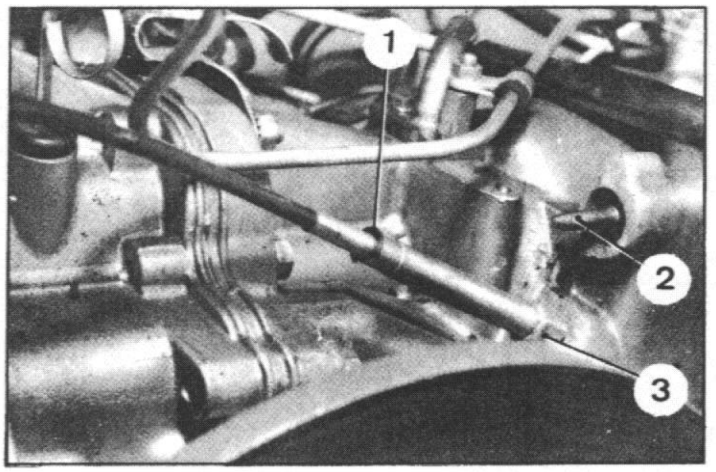
a) Connect the flexible oil return pipe (14) of the gearbox (upper union on the radiator) to the front tube (17), and the flexible outlet pipe (15) to the rear tube on the gearbox. Tighten the collars (11) and (16).

b) Fit the radiator after inserting the *flexible* mountings.

Connect the two hoses to the radiator and tighten the collars.

Tighten the two screws securing the radiator to the front gearbox support crossmember and connect the tie-rod to the radiator (large contact washer under the screw head).

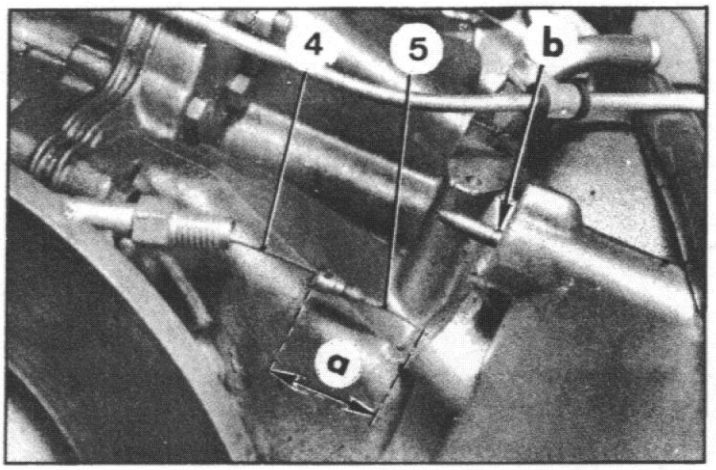
17. **Fit the engine/gearbox assembly** on the vehicle.



10369

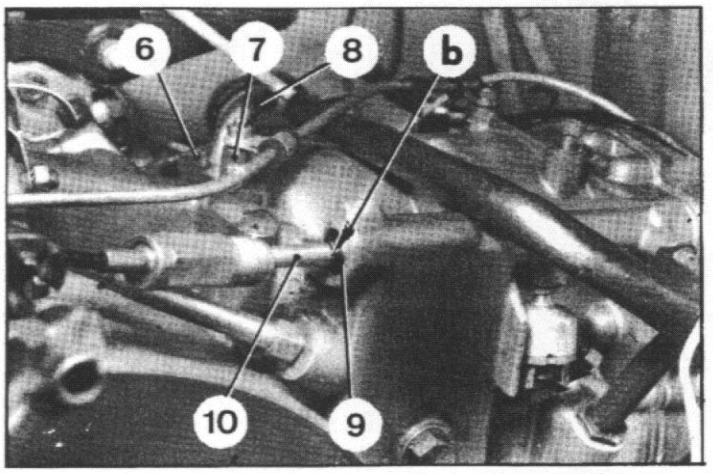
6. Remove the « Kickdown » cable :
Remove the circlip (1) and unscrew the end-piece (3). Remove the end of the outer cable (4) from the end-piece of the cable (5) on the gearbox.

ASSEMBLY.



10370

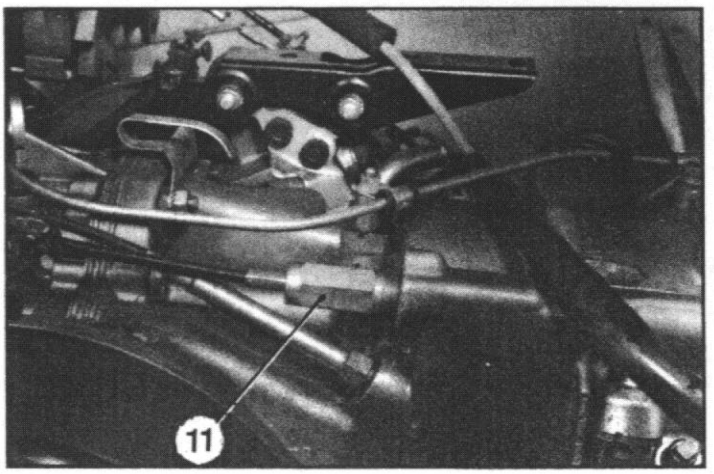
7. Fit the « Kickdown » cable :
a) Make sure that the cable (5) is in position on the gearbox : to do this, operate ist slowly, then measure the length « a ». This length must not be exceed 32 mm.
b) Fit the end of the outer cable (4) into that of the cable (5).
Screw up the end-piece (3) while keeping the cable just taut and tighten it to 20 mAN (2 m.kg).
Fit the circlip (1)



10368

8. Fit the selector cable :
a) Fit the end of the cable (10) to the end of the control slide valve (2) and fit the spring (9). Make sure that the spring is proprely inserted in the groove « b » of the slide valve (2).
b) Tighten the end-piece (11) ; tighten it to 30 mAN (3 m.kg).

9. Fit the oil pipe (8) (interpose the O-ring).
Tighten the screw (6) and extended head stud (7) (serrated washer).
Fit the pipe (12).
Tighten the securing screw to 50 to 65 mAN (5 to 6.5 m.kg) (interpose the two copper seals).



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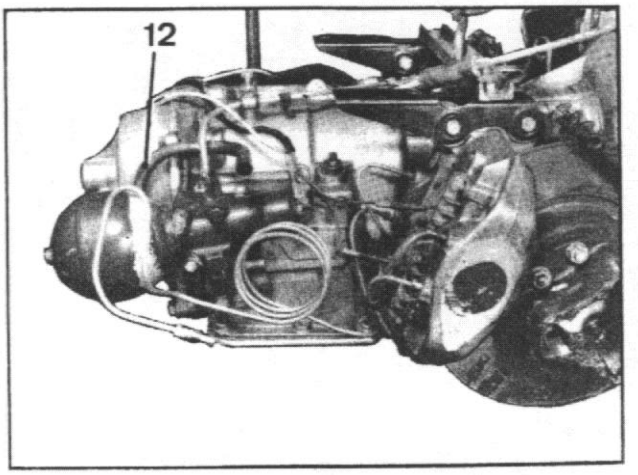

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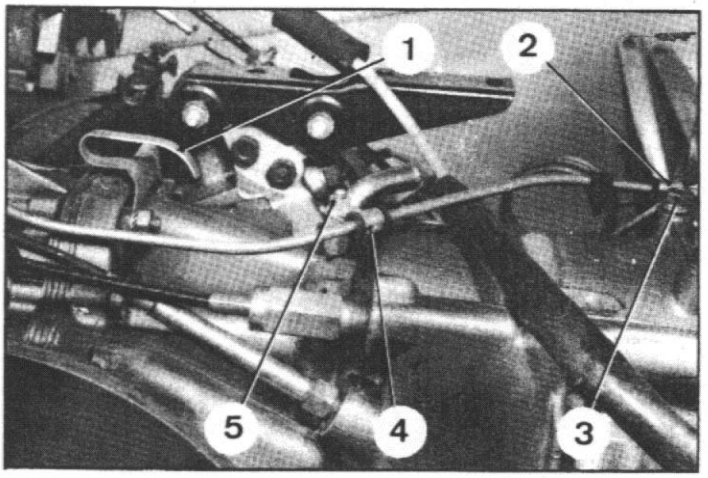

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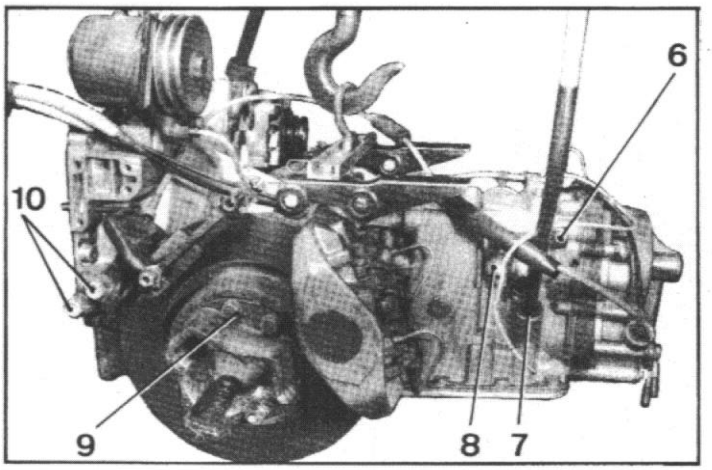
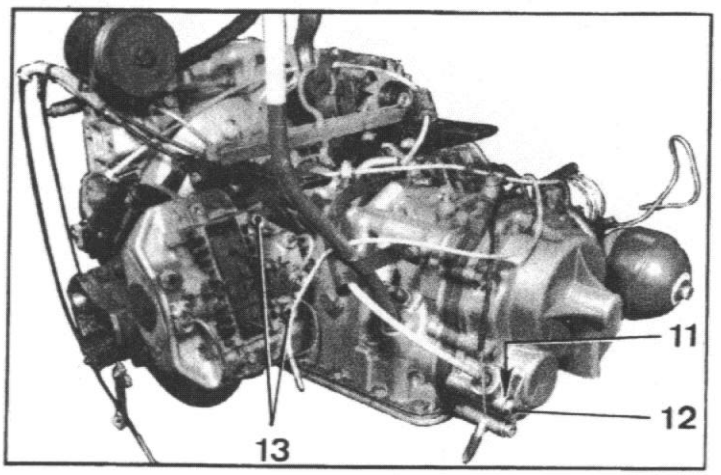


10. Fit :

- the hand brake cable bracket (1) (serrated washer under the nuts),
- the control switch unit (8) (which will be adjusted ulteriorly),
- the dipstick and its tube. Tighten the union (7) to 10 mΛN (1 m.kg) (interpose the seal under the shoulder of the dipstick tube), Tighten the screw (6) (contact washer)
- the discs, the tri-axe housings and tighten the nuts (9) to 105 to 135 mΛN (10.5 to 13.5 m.kg),
- the hydraulic brake unit and tighten the screws (13) to 130 to 140 mΛN (13 to 14 m.kg) (plain washer under screw heads),
- the hand brake calipers and tighten the screws (10) to 100 to 110 mΛN (10 to 11 m.kg),
- the alternator, and fit the securing screws (15) without tightening them (plain and serrated washers under the screw heads),
- the H.P pump (interpose the distance washer between the pump bearing and the mounting boss) and fit the nut, without tightening it,
- the pressure regulator. Tighten the extended head stud (14) and the two screws (16).

Manual 814-2

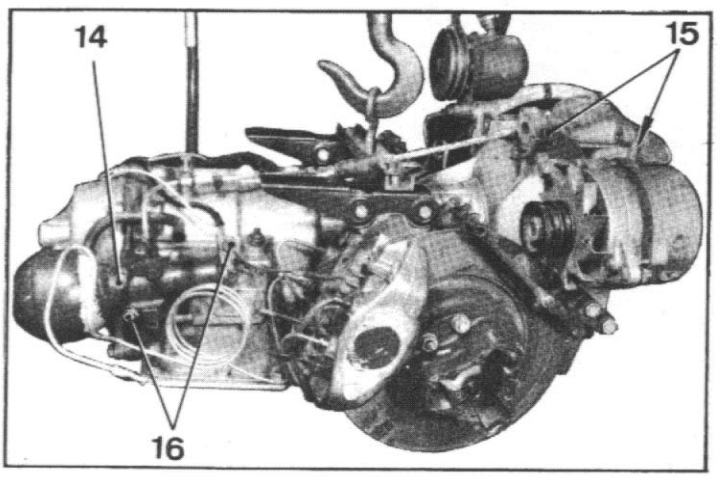
10363



11. Fit the pipe connecting the H.P pump to the pressure regulator.
Tighten the unions to 10 mΛN (1 m.kg).
Fit the brackets (2) and (4) (place a serrated washer under each bracket).
Tighten the nut (5) and the screw (3).

12. Fit the speedometer cable and tighten the screw (12) to 16 to 20 mΛN (1.6 to 2 m.kg) (fit a new copper seal (11)).

10364

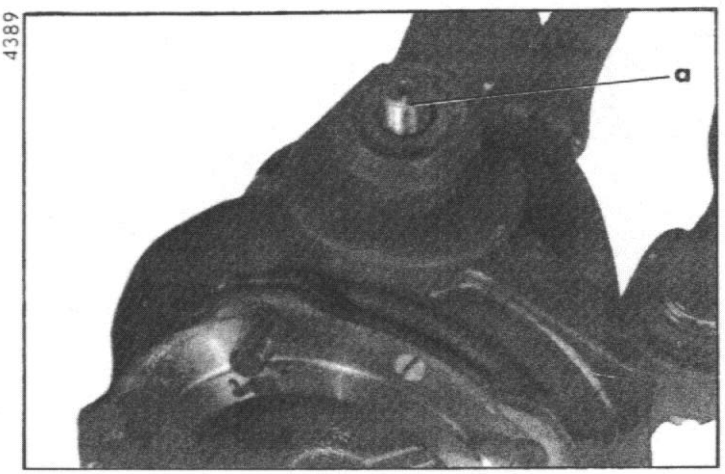


13. Fit the converter, first placing the oil pump drive slots vertically to facilitate insertion.

VEHICLES ALL TYPES

I. REMOVING AND FITTING A DRIVE SHAFT OR WHEEL SWIVEL

(Shaft with aluminium drive unit housing)



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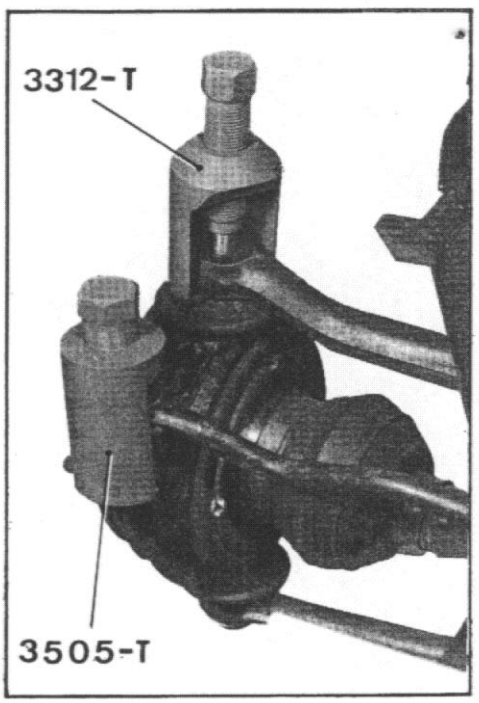


1964

Manual 814-2

REMOVAL

1. Raise the front of the vehicle on stands.(support 2505-T).
2. Remove :
   - the spare wheel,
   - the spare wheel crossmember,
   - the wing and the front wheel on the relevant side,

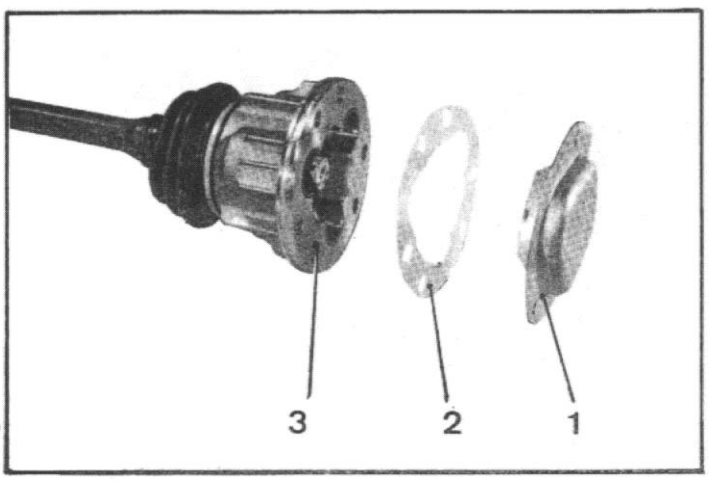
   Release the pressure.
3. **Remove the swivel and drive shaft assembly :**
   NOTE : If the swivel is to be used again, the ball pins must be marked so that they can be replaced in their original position (to avoid seizing)

   a) Remove the nuts holding the ball pins and make a mark « a » perpendicular to the vehicle centre line on the end of each ball pin stem.

   b) Disconnect :
   - the drive unit housing (3) from the gearbox outlet flange,
   - the track rod from the lever on the swivel (extractor 3505-T),
   - the wishbone from the swivel (extractor 3312-T)

   Remove the swivel and drive shaft assembly.
4. **Remove the drive unit housing :**

   Remove :
   - the protective plate (1) and the gasket (2),
   - the balls (4) from the tri-axe (5),
   - the circlip (6).



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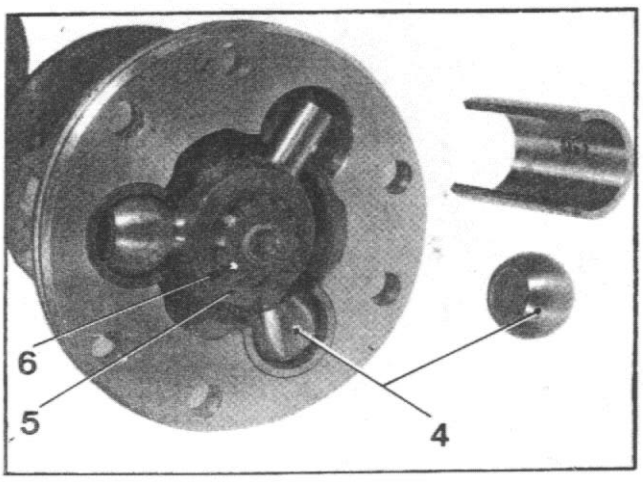

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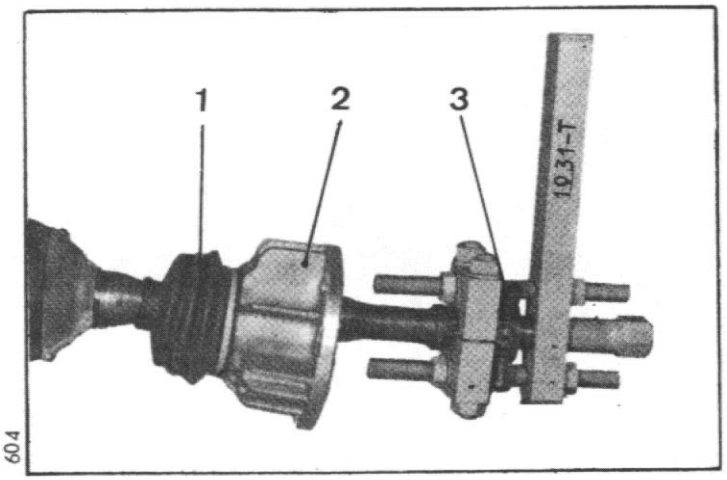
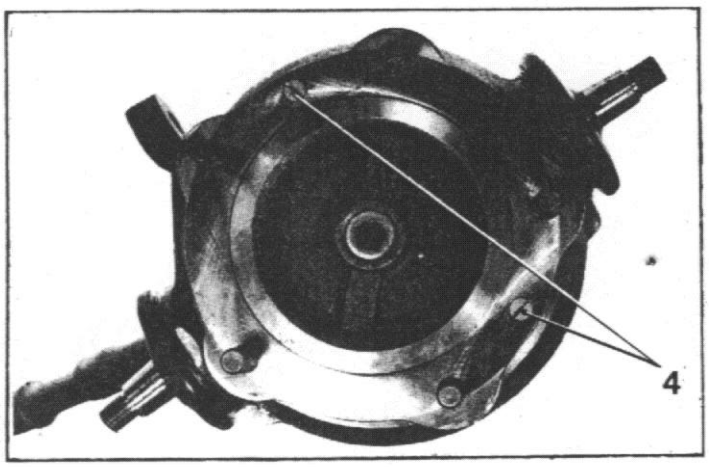
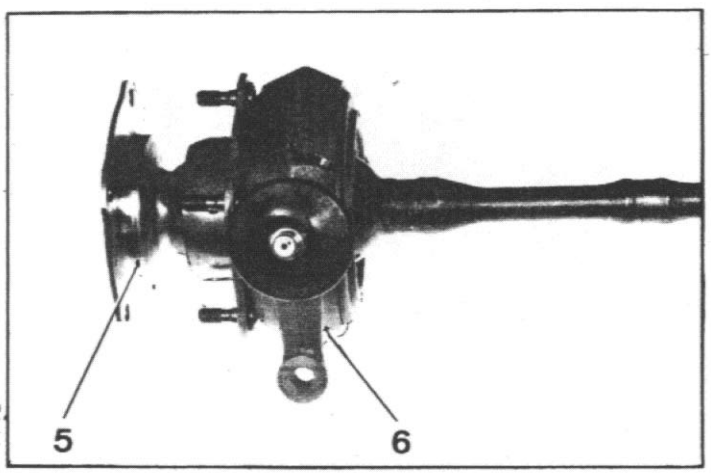
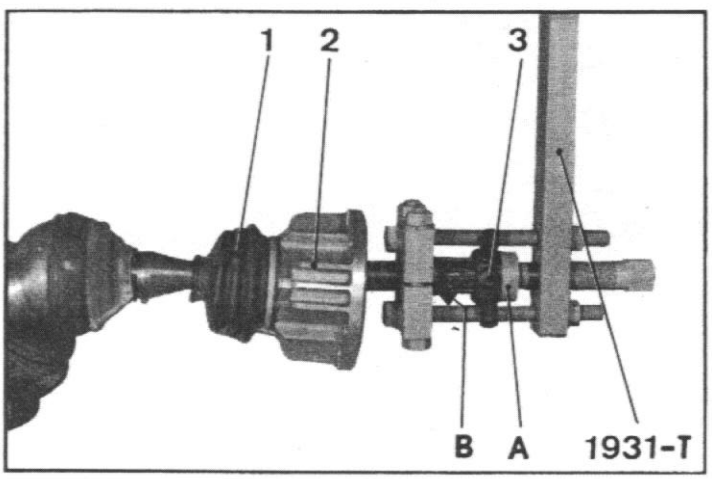








5. Remove the tri-axe (3) (extractor 1931-T) :
Remove the drive unit housing (2) fitted with its protective bellows (1).

6. Disconnect the drive shaft from the wheel swivel :
a) Remove the two screws (4).
b) Remove the drive shaft (5) from the swivel (6).

FITTING

7. Connect the drive shaft (5) to the swivel (6). Tighten the two screws (4).

8. Fit the drive unit housing (2) together with its protective bellows (1) on the drive shaft.

9. Fit the tri-axe (3) using extractor 1931-T - fitted with pad A and shells B.
Fit the circlip.

10. Fit :

- the balls on the tri-axe,
- the protective plate together with its gasket.

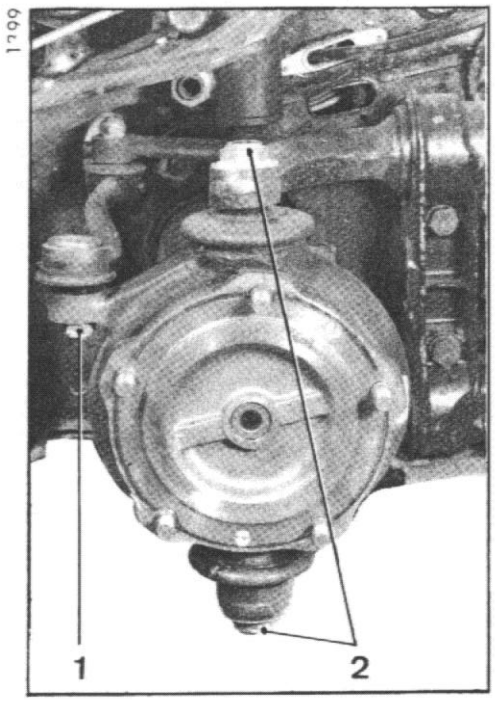
Spread 200 g of bearing grease (TOTAL MULTIS) on the gasket, the liners and the balls.

11. Fit the swivel and drive shaft assembly :

a) Grease the swivel.
The upper and lower ball pins of the swivel must be greased before use. For this purpose, two nipples have been left in place.

When fitting, insert grease until it escapes from the ball pin housing, then fit the rubber bellows (do not put too much grease in the rubber bellows as this may displaced it.).

After greasing, remove the nipples and replace them by the screws taken from the old swivel.



b) Connect the ball pins to the wishbone, taking care to orientate them correctly (see paragraph 3 a) before they are immobilized by the cone of the wishbone.

Tighten the ball pins nuts (2) to 100 mAN (10 m.kg).

Tighten the nut (1) on the track rod end to 70 mAN (7 m.kg).

Tighten the nuts on the studs holding the drive unit housing to 85 - 110 mAN (8.5 to 11 m.kg)

NOTE : Swivels sent for renewal or under guarantee should be fitted with nipples.

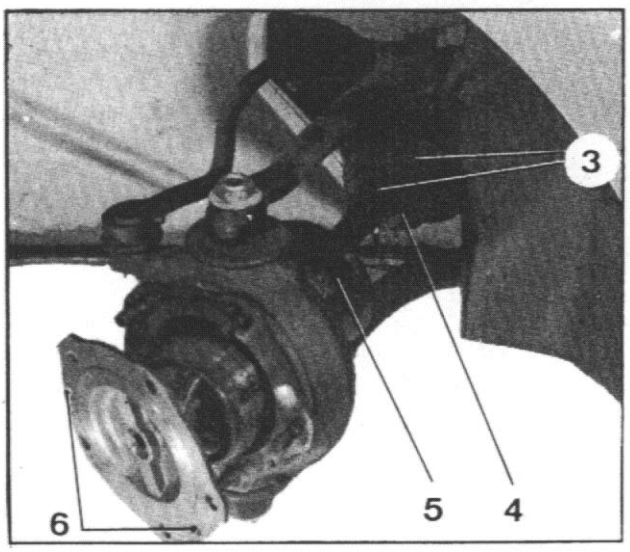
12. Fit :
- the front wheel and the wing,
- the spare wheel support crossmember and the spare wheel.

13. Lower the vehicle to the ground.

Manual 814-2

II. REMOVING AND FITTING A DRIVE SHAFT OR WHEEL SWIVEL

(Shaft with steel drive unit housing)



REMOVAL

NOTE : If the drive shaft only is to be removed, it is not necessary to remove the wheel swivel.

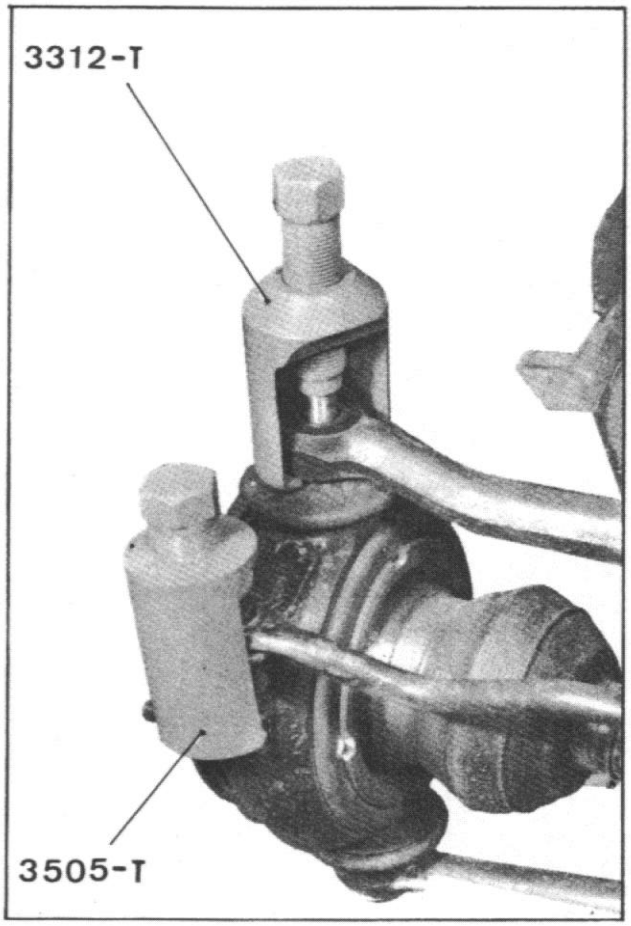
1. Raise the front of the vehicle on stands (support 2505-T).
Release the pressure in the suspension circuit.
Remove the wheel on the side where the work is to be carried out.

2. Remove the drive shaft :

a) Remove the bellows (5) from the double joint by turning it back on itself.
Remove the two countersunk screws (6) and release the drive shaft from the swivel.

b) Remove the two collars (3) and free the edge of the bellows (4) from the drive unit housing.

CAUTION ; Carefully free the drive shaft from the drive housing, holding the bellows (4) around the tri-axe to prevent the balls from falling out.



1964

c) Remove the balls from the tri-axe.

d) Remove the drive shaft through the swivel, first passing through the rubber bellows (3) on its own.

e) *If the complete drive shaft is to be removed,* remove the drive unit housing.

3. Remove the wheel swivel :

NOTE : If the swivel is to be used again, the ball pins must be marked so that they can be replaced in their original position (to avoid seizing).

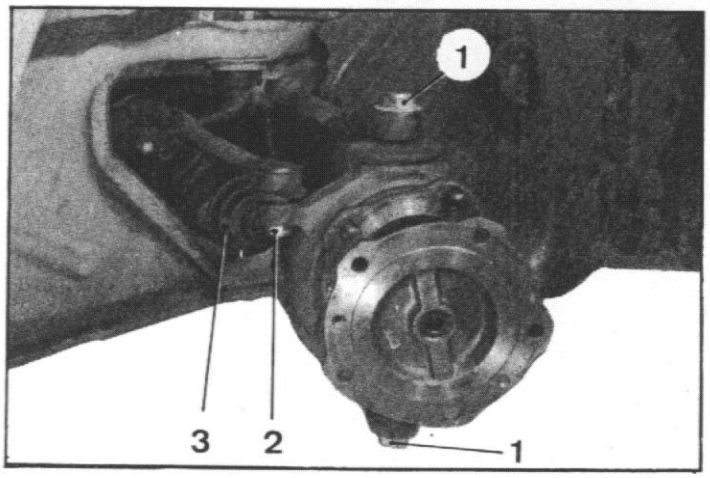
a) Remove the nuts holding the ball pins. On the end of each ball pin stem, make a mark perpendicular to the vehicle centre line.

b) Disconnect :
- the track rod from the swivel (extractor 3505-T),
- the wishbone from the swivel (extractor 3312-T).

FITTING

4. Fit the wheel swivel :

NOTE : The swivel ball pins must be greased before use. Two nipples have been left in position for this purpose.

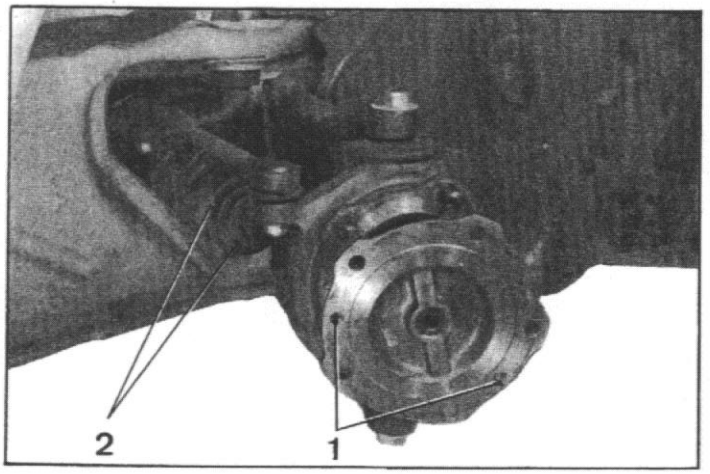


9910

a) Before fitting, insert grease until it escapes from the ball pin housing, then put the rubber bellows into position : do not put too much grease inside the bellows as this may displaced it.

b) Connect the ball pin to the wishbone, orientating them correctly (see paragraph 3 a) before they are immobilized by the cone of the wishbone.
Tighten the upper and lower nuts (1) to 100 mAN (10 m.kg).

c) Connect the ball pin to the track rod.
Tighten the ball pin nut (2) to 70 mAN (7 m.kg).



9910

5. Fit the drive shaft :

CAUTION :
Clean all surrounding parts, and proceed very carefully to prevent any foreign body from entering the drive unit housing or reaching the tri-axe.

Distribute 200 g of bearing grease (TOTAL MULTIS) in the drive unit housing.

a) *Fitting the drive shaft only :*

Fit the drive unit housing on the gearbox outlet flange. Tighten the securing nuts (without washer) to 105 - 135 mAN (10.5 to 13.5 m.kg).

NOTE : *Vehicles produced between March 1970 and March 1971 :*
It is recommended that a 2.5 mm packing piece be interposed between the brake disc and the drive unit housing.

b) Fit the drive shaft through the wheel swivel. Grease the balls and fit them on the tri-axe. Hold the balls and insert the assembly into the drive unit housing and on the studs on the wheel swivel.

c) Fit the rubber protective bellows and the two collars (2).

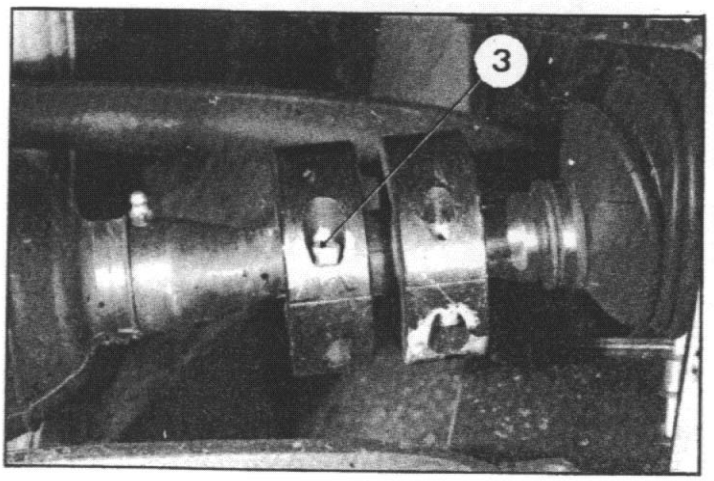
d) Fit and tighten the screws (1).

6. Fit the wheel and lower the vehicle to the ground Restore the pressure in the suspension circuit.

Manual 814-2

III. REMOVING AND FITTING A VIBRATION DAMPER

(on the vehicle)
D vehicles All Types except DV.DT.DP



4487

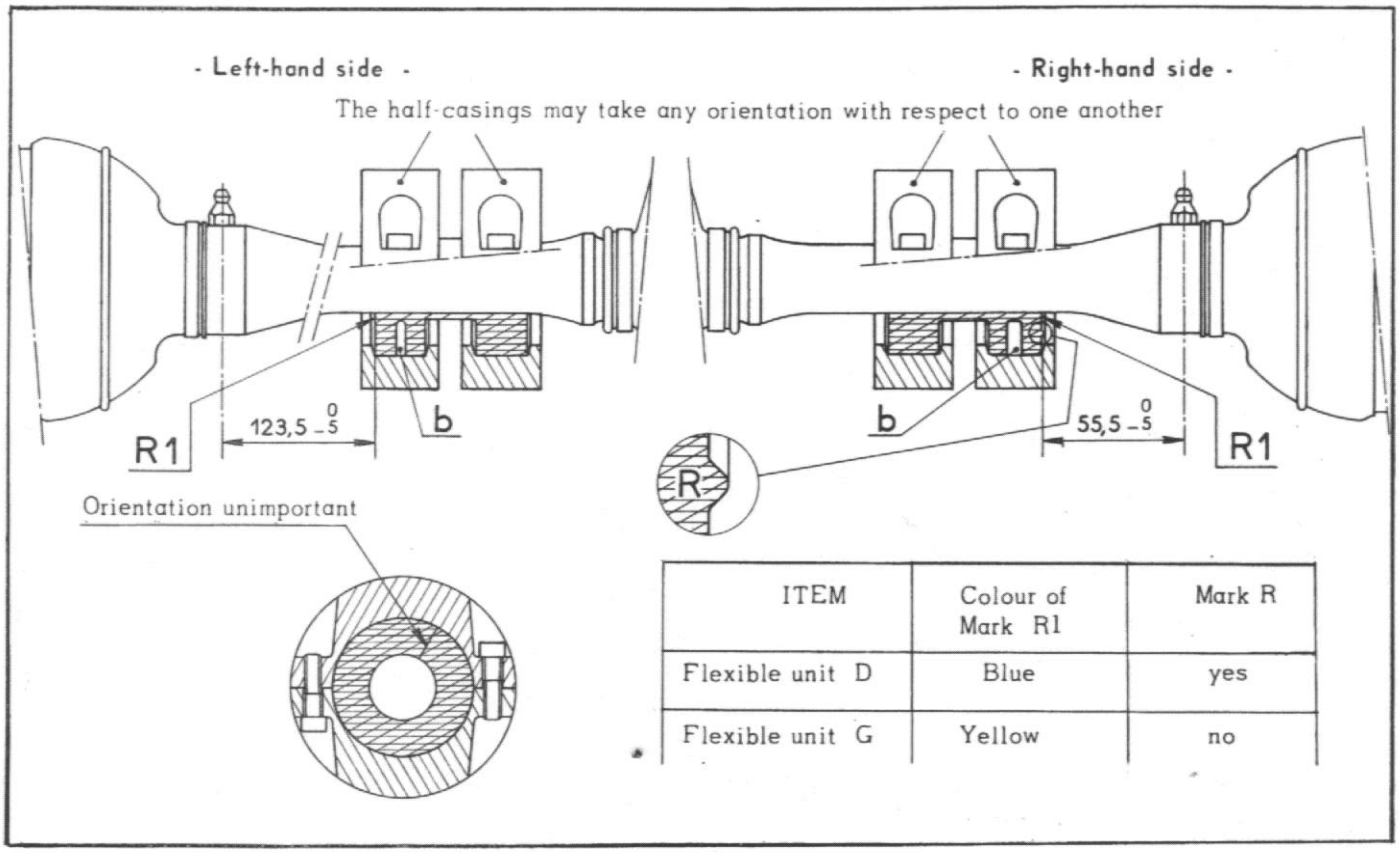
REMOVAL

1. Raise the front of the vehicle on stands. Remove the front wheel.

2. Slacken the assembly screws (3) using a 5 mm Allen key.

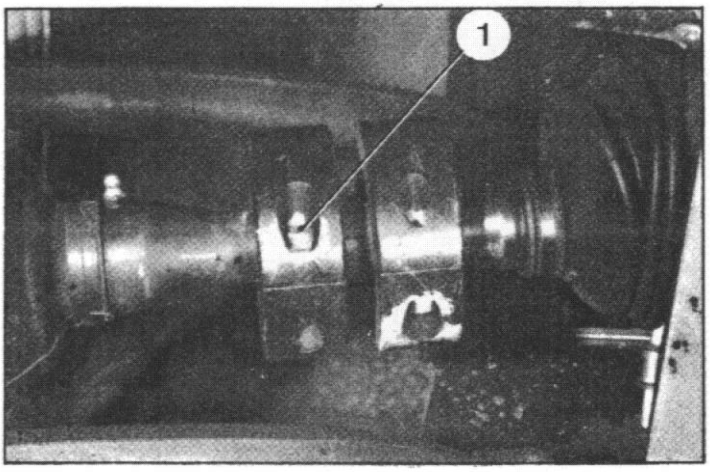
3. Remove the four parts of the vibration damper.

4. Remove the unit.



ITEM	Colour of Mark R1	Mark R
Flexible unit D	Blue	yes
Flexible unit G	Yellow	no

D. 37-2



4487

FITTING

NOTE :
- The right-hand side flexible unit is marked with a touch of blue paint « R1 » and by a rim « R » on the edge.
- The left-hand side flexible unit is marked by a touch of yellow paint « R1 » and has no rim.

5. Fit the flexible unit (with the circular groove «b» facing the wheel).

6. Fit the half-casings without tightening the screws.

7. Position the vibration damper as shown in the above diagram.

8. Tighten the assembly screws (1) to 13 mAN (1.3 m.kg).

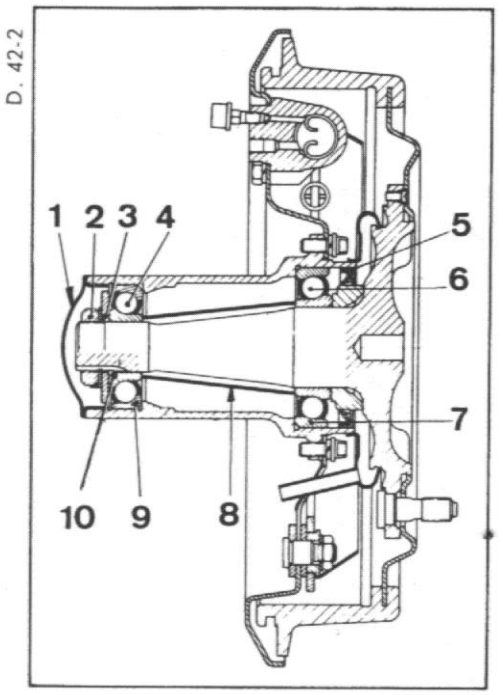
9. Fit the wheel.

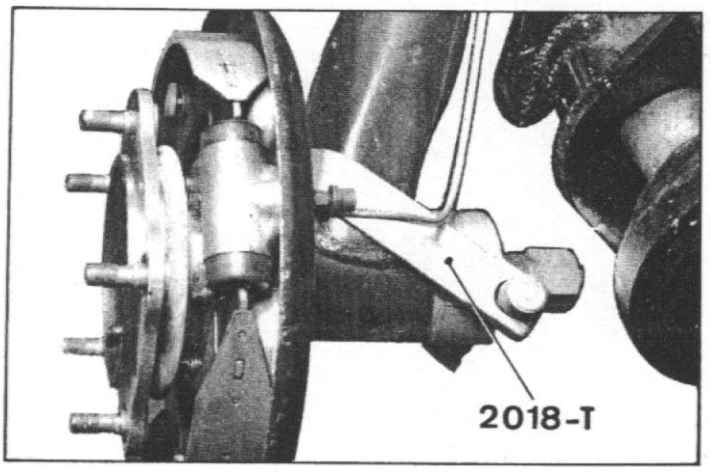
10. Lower the vehicle to the ground.

VEHICLES ALL TYPES

REMOVING AND FITTING A REAR WHEEL STUB AXLE

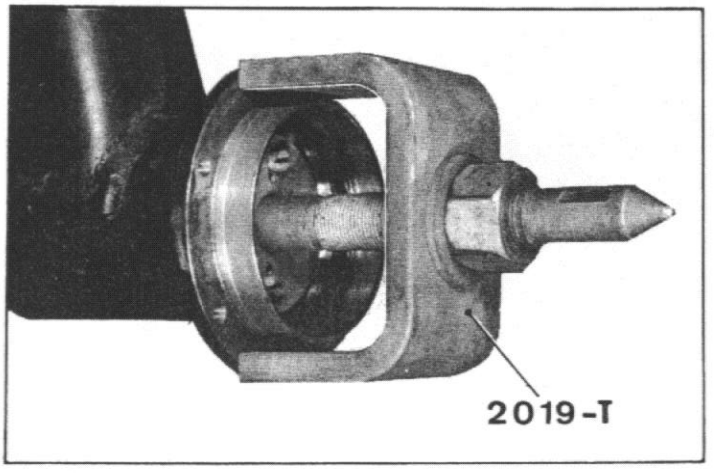
(Stub axle bearings or a wheel stud)





Manual 814-2

1643



1469

REMOVAL

1. Raise the rear of the vehicle on stands.
Remove the wing and the wheel on the relevant side.

2. **Removing the stub axle.**

a) Remove the hub sealing cap (1).

b) Immobilize the drum by tightening the brake shoe adjusting cams.

c) Remove :
- the nut (2),
- the lockwasher,
- the thrust washer (3).

d) Slacken the brake shoe adjusting cams to release the drum.
Remove the screws securing the drum.
Remove the drum *after marking its position with respect to the axle.*

e) Remove the stub axle. Use extractor 2018-T.

f) Remove :
- the balls and cage (4) of the inner bearing,
- the inner race (10) of the inner bearing,
- the spacer (8) and the shim if one is fitted,
- the seal (5),
- the balls and cage (6) of the outer bearing.

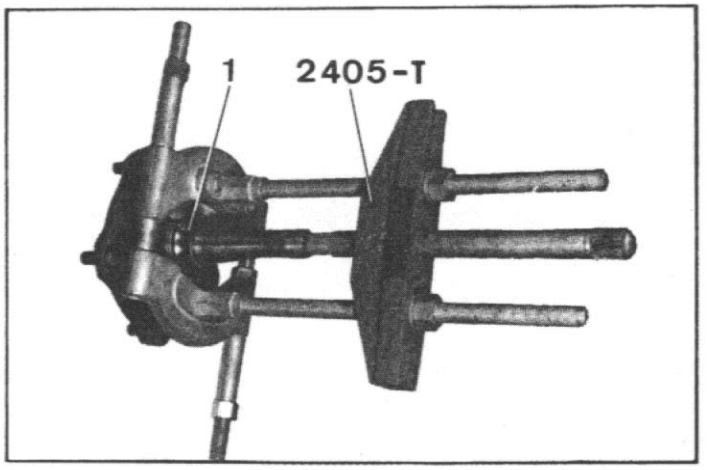
g) Remove :

- the outer race (7) of the outer bearing.

Use extractor 2019-T.

Remove the outer race (9) of the inner bearing.

Use a tube (outer dia. = 53.5 mm - length = 200 mm).



1643

3. Strip the stub axle :

Remove the inner bush (1) of the outer bearing.

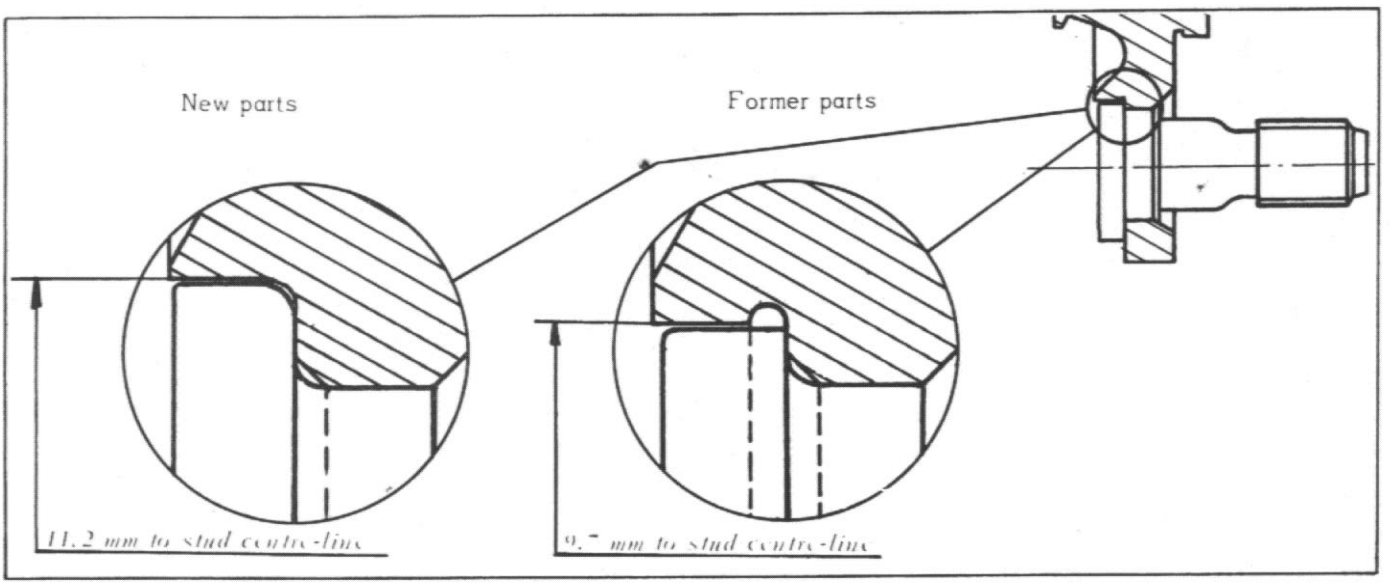
Use universal extractor 2405-T

4. If necessary, extract a wheel stud.

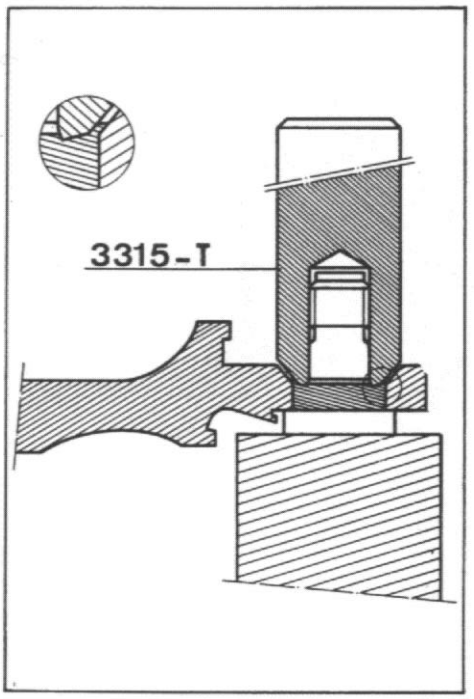
Drive out the stud using a press.

FITTING.

5. Fit a wheel stud.



D. 42-6



D. 42-4

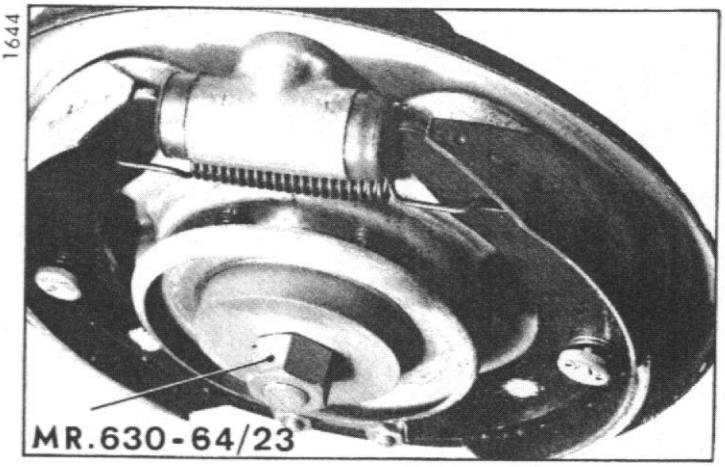
CAUTION : *Vehicles* ⟶ *2/ 1968* : the rear wheel studs and stub axles are modified.

It is not possible to fit a new stud on a former stub axle.

It is not possible to fit a former stud on a new stub axle.

Insert the stud in its housing and then crimp it in position using a press and snap tool 3315-T.

1644



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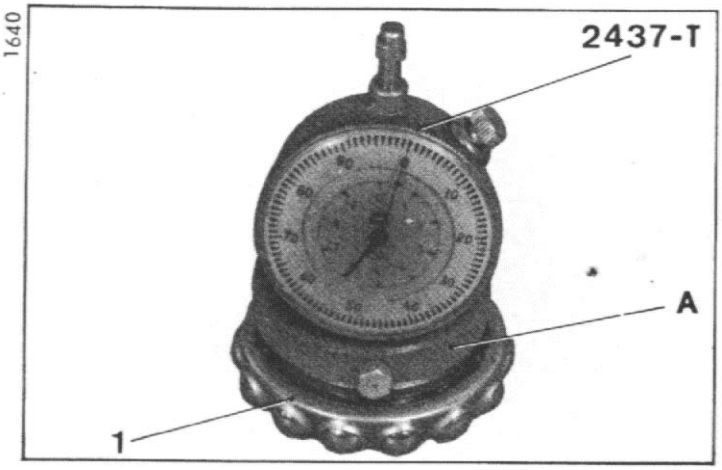
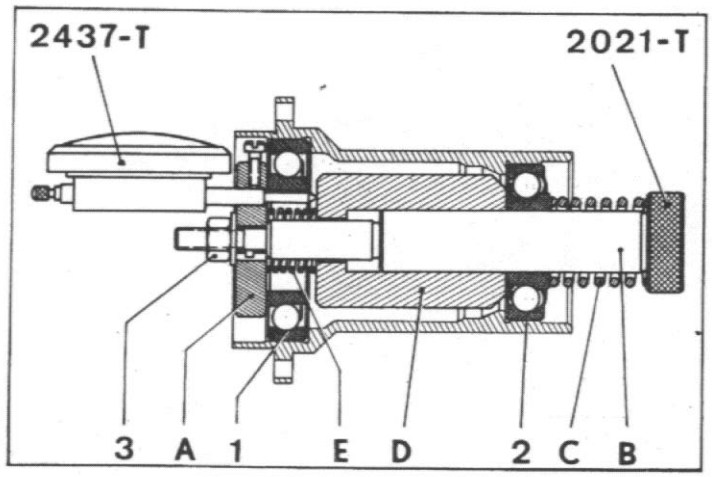


Manual 814-2



D. 42-3

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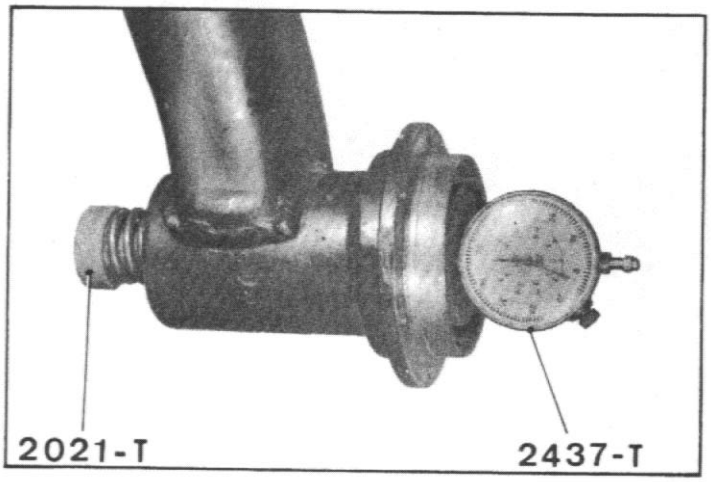


6. Prepare the stub axle bearings :

Fit the bearing outer races (grease them slightly before fitting). Use fixture MR. 630-64/ 23.

7. Adjust the clearance in the stub axle bearings :

It is necessary to determine the length of the spacer which will give a clearance = 0.

Proceed as follows, using fixture 2021-T.

a) Set the dial gauge :
Place the outer bearing (1) (inner race and ball cage assembly) on a surface plate.
Offer up the plate A fitted with dial gauge 2437-T.
Set the moving scale at zero and note the position of the totalising needle (it should read about 4 or 5).

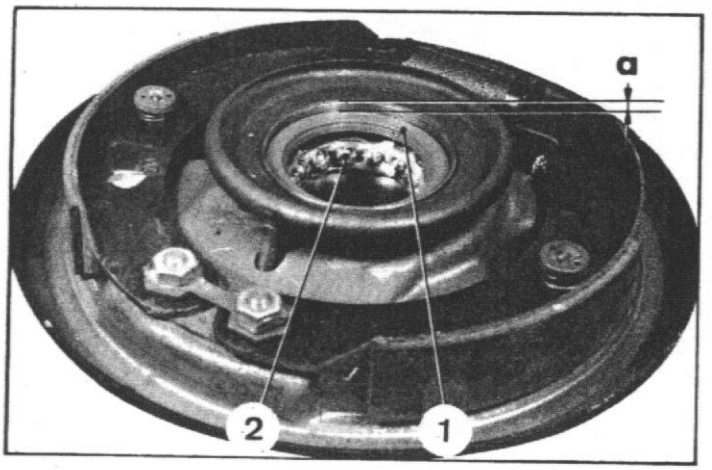
b) Position the fixture in the hub.
Engage the inner bearing (2) on the shaft B, with the inner race bearing on the spring C.
Engage this assembly in the hub of the suspension arm and then position it on the shaft B : the bush D, the bush retaining spring E, the outer bearing (1), and the support plate A fitted with dial gauge. (Take care not to alter the setting of the dial gauge). Tighten the nut (3).
Rotate the assembly to make sure that the ball bearings are in position.

c) Bring the needles of the dial gauge to the calibration position.
Let the dial gauge spindle return until it is in contact with the bush D, counting the revolutions and fractions of a revolution, for example 0.97 mm.

d) To obtain correct clearance in the bearings (j = 0), the length of the spacer which must be fitted in the hub would be 0.97 mm, plus the length of the bush D.
This length is engraved on the bush, for example 74.71 mm. The length of spacer to be fitted would then be :

$$74.71 + 0.97 = 75.68 \text{ mm}$$

NOTE : To simplify storekeeping, the Replacement Parts Department sells only one spacer whose length is 72.78 ± 0.02 mm.
Only the number of hundredths of a millimeter is engraved on the spacer : for example « 80 » means that the spacer measures 72.80 mm. (The length is measured under load and cannot therefore be checked with a sliding gauge).
The required setting will be obtained by using a set of washers.



1641

e) In the example chosen, the dimension to be obtained is : 75.68 mm. The selected spacer measures 72.80 mm and it will therefore be necessary to fit a washer of :

75.68 - 72.80 = 2.88 mm

The appropriate washer should be chosen from those sold by the Replacement Parts Department.

NOTE : If the thickness of the washer should be exactly equal to a limiting size of washer (for example 2.86), choose the next washer lower in thickness (for example D. 421-321 or 2.82 to 2.86 mm).

f) Remove the fixture 2021-T.

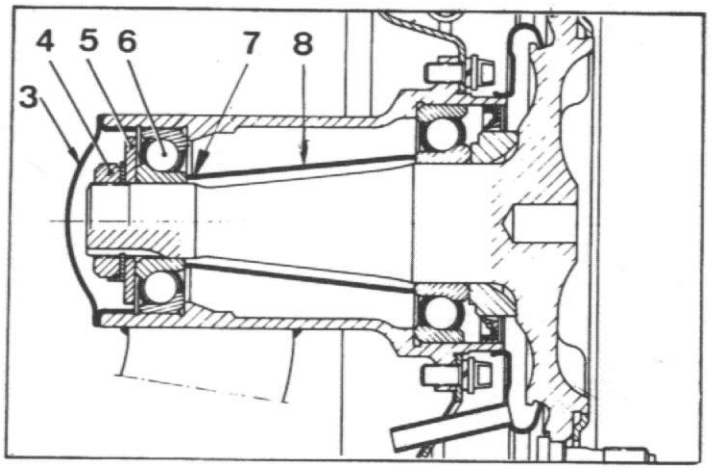
8. Prepare the suspension arm :

a) Grease the ball race (2) of the outer bearing. Put it in position.

b) Fit the seal (1) using mandrel MR. 630-31/72 which positions it correctly : *The seal should be below the surface of the hub : a = 4.5 mm.*

9. Assemble the stub axle :

Fit the inner cage of the outer bearing with a press using a tube.
(inner dia. = 40 mm, length = 250 mm).



10. Fit the stub axle :

Offer up the stub axle to the suspension arm.
Insert 50 g of special bearing grease into the casing.

Position the spacer (8) and the adjusting washer (7) of the thickness determined in paragraph 7.

Fit :
- the balls and cage (6) previously greased,
- the inner race of the inner bearing,
- the thrust washer (5) (the cut-away part next to the bearing),
- the lockwasher,
- the nut (4) (tighten it to 100 mΛN (10 m.kg) and bend over the locking tab),
- the hub sealing cap (3) filled with bearing grease.

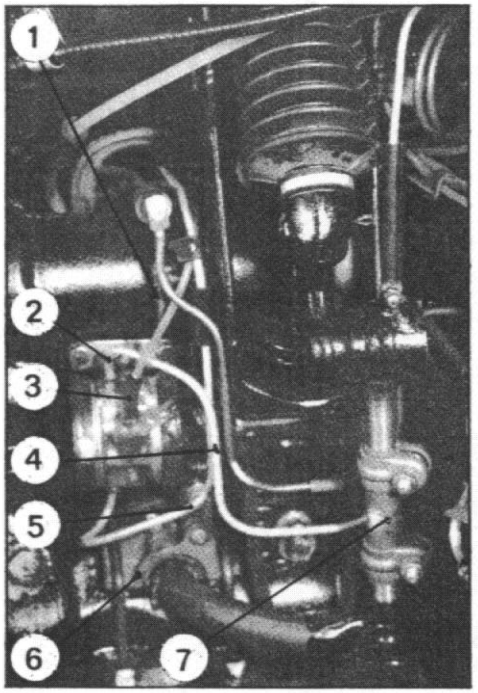
11. Centre the brake shoes.

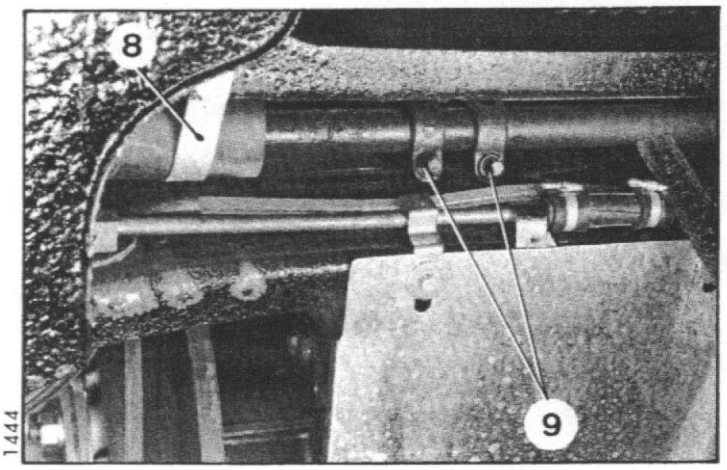
Use fixture 3565-T.

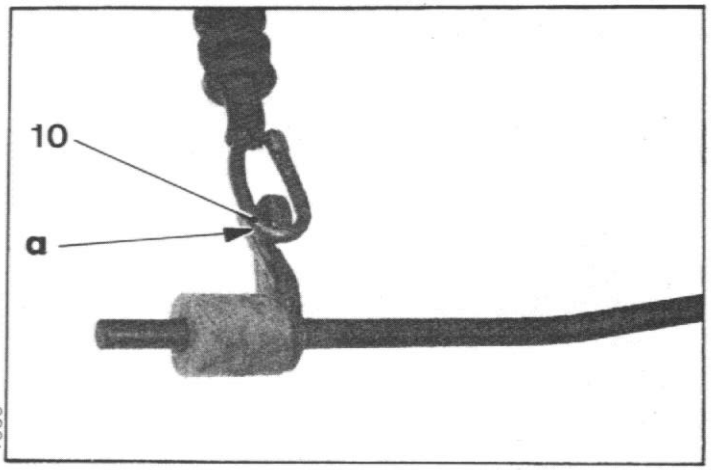
12. Fit the wheel and the wing.
Lower the vehicle to the ground.
Finally tighten the wheel nuts.

VEHICLES ALL TYPES

I. REMOVING AND FITTING A FRONT ANTI-ROLL BAR







REMOVAL.

1. Place the front of the vehicle on stands (jacking bracket 2505-T).
   Remove the front wheels, the spare wheel, the headlamp levelling control rod, the spare wheel support bar, the front wings, and the side and lower suspension mudshields.

2. Slacken the pressure regulator release screw and place the height control lever in *low position*.

3. **Remove the height corrector :**
   a) Disconnect :
   - the feedpipe (2) from the corrector,
   - the corrector return pipe (1),
   - the overflow return pipe (3),
   - front suspension cylinder feed

   b) Connect the return pipe (1) to the overflow return (3) to prevent the overflow of liquid through the return pipe.

4. Remove the sleeves (7) :
   - right-hand side : screw the sleeve on the suspension lever,
   - left-hand side : remove the sleeve (right-hand and left-hand threads).

5. Remove the anti-rattle springs (8) then slacken the screws (9) holding the clamps of the height control rods and the headlamp levelling control rods (spanner 1677-T).

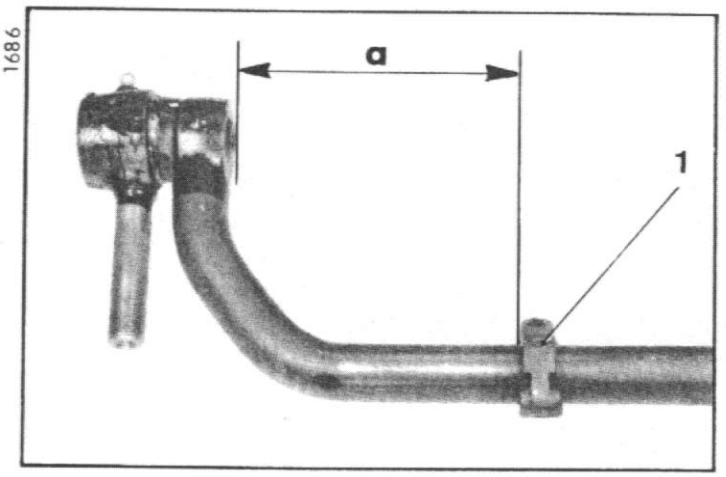
6. Remove the anti-roll bar bearings (6).

7. Disconnect :
   - the height control,
   - remove the sleeve nut (4),
   - the headlamp control,
   - bend back the tab « a » as shown in the adjacent diagram then unfasten the bracket (10) from the cable.

8. Remove the anti-roll bar towards the left-hand side of the vehicle.

9. **Strip the anti-roll bar :**
   Remove the headlamp and height controls.
   Remove the lateral stop clamp from the bar.

1686



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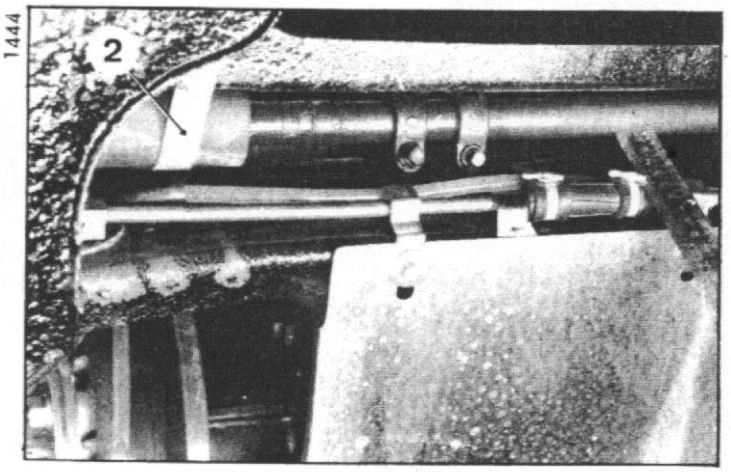

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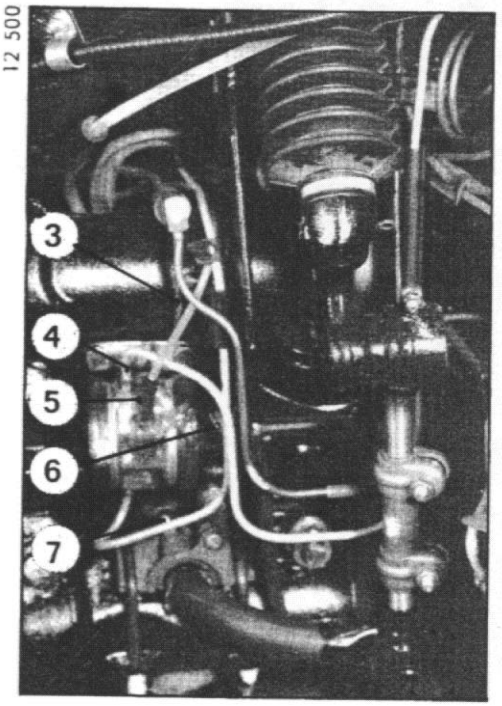


FITTING.

10. **Prepare the bar :**
Fit the lateral stop clamps to the bar.
Position the right-hand clamps (1) so as to give a distance « a » of 110 ± 0.5 mm between the inner face of the ball pin securing boss and the outer surface of the stop.
Fit the headlight and height control rods without tightening the clamp.

11. Insert the bar thus equipped from the left-hand side of the vehicle.

12. **Adjust the end clearance of the bar :**
With the bar pushed towards the right, the right-hand stop pressed against the bearing, place the left-hand stop so as to obtain a clearance of 0.5 mm between it and the left-hand bearing.

13. **Adjust the bearing caps and fit them.**

14. **Connect up the controls :**
a) Fasten the bracket of the headlamp control cable to the lever on the rod and bend back the tab.
Insert the end of the rod into the hole of the bearing cap.
b) Insert the end of the height control rod into the hole of the bearing cap and connect the manual control to the lever. Fit the sleeve nut (4).

15. **Fit the height corrector :**
Connect the pipes (3), (5), (6) and (7) to the corrector.

16. Connect the anti-roll bar to the suspension lever.

17. Fit the anti-rattle springs (2), previously greased.

18. **Pre-set the heights.**

19. Fit the lower and side mudshields.
Fit the front wheels, the front wings, the spare wheel support and the headlamp levelling control rod. Adjust the rod.

20. Tighten the pressure regulator bleed screw and place the control lever in *normal position.*

21. Lower the vehicle to the ground.

22. **Adjust the heights.**

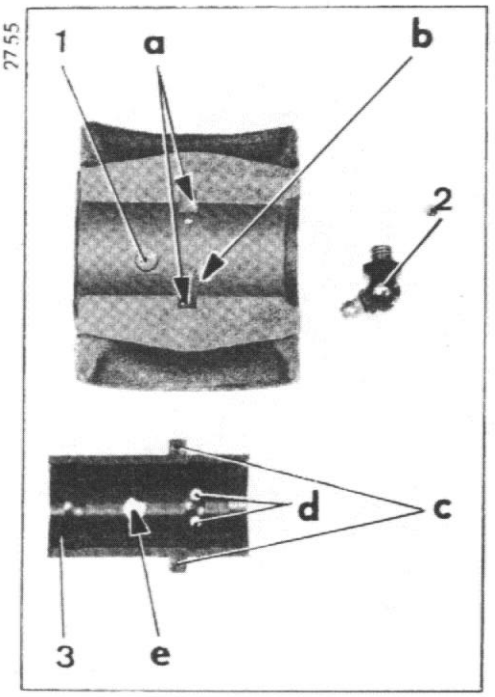
23. Adjust the spindle for the automatic headlamp control levers.
Adjust the headlamps.

24. Fit the spare wheel.

II. REPLACING THE BEARING SHELLS OF THE FRONT ANTI-ROLL BAR.

NOTE : The upper bearing shells for the anti-roll bar, sold by the Replacement Parts Department do not have a centring hole for the stud.

1. Remove the anti-roll bar.



2. Drill the upper bearing shell :

a) Remove the nipple (2).
Remove the stud (1) using a press.

b) Place the shell (3) in its bearing block, with the lugs « c » in the slots « a » of the bearing and the lubrification holes « d » towards the hole « b » of the nipple.

c) Place the assembly of bearing and shell flat on the joint face.
To compensate for the overlap of the shell, place packing pieces under the thrust faces of the bearing.

d) Using a 6 mm diameter drill, drill the shell using the stud hole (1) as a guide. If necessary, eliminate the burrs from the hole « e » in the shell.
Fit the stud (1) using a press.

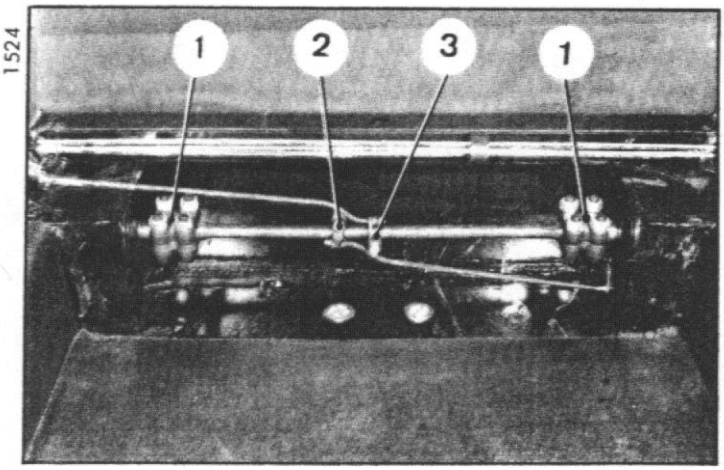
CAUTION : The stud should be 0.2 to 0.6 mm below the surface of the shell.

3. Fit the lower shell.

4. Fit the anti-roll bar.

III. REMOVING AND FITTING A REAR ANTI-ROLL BAR.

1524



REMOVAL.

1. Place the vehicle on stands.
   Slacken the release screw on the pressure regulator and place the manual height control in *low position.*

2. Remove the wing and the shield protecting the suspension mechanism at the upper rear left-hand side.

3. Remove the protection shield from the corrector control (inside the boot).

4. Unhook the return spring from the dynamic headlamp control bar (at the front).

5. Disconnect from the anti-roll bar :
   - the clamp (3) of the corrector control rod,
   - the clamp (2) of the dynamic headlamp control rod.

6. Disconnect the clamps (1) linking the anti-roll bar to the suspension arm spindles.
   Remove the anti-roll bar.

FITTING.

7. **Fit the anti-roll bar :**
   Fit the clamps (1) linking the anti-roll bar to the suspension arm spindles.
   Equalize the anti-roll bar clearance on each end.
   Centre the clamps (1).
   Tighten the nuts diagonally to 105 mΛN (10.5 m.kg).

8. Connect to the anti-roll bar :
   - the clamp (3) for the corrector control rod,
   - the clamp (2) for the dynamic headlamp control rod.

9. **Pre-set the heights.**

10. Tighten the pressure regulator release screw and place the height control lever in *normal position.*

11. **Set the heights.**

12. Fit the return spring for the dynamic headlamp control bar.

13. **Adjust the dynamic headlamp control.**

14. Fit the protection shield for the suspension mechanism on the upper rear left-hand side.
    Tighten the screws and the nuts.
    Fit the rear left-hand wing.

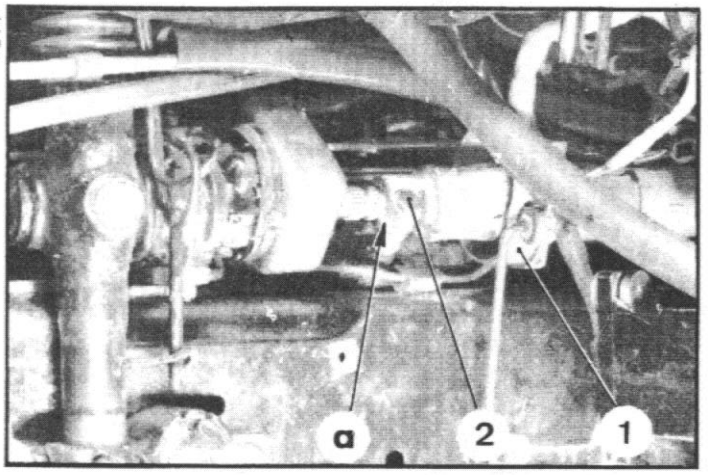
15. Fit the protection shield for the corrector control (inside the boot).

16. Lower the vehicle to the ground.

I. REMOVING AND FITTING A STEERING WHEEL

VEHICLES ALL TYPES
with power steering

1299



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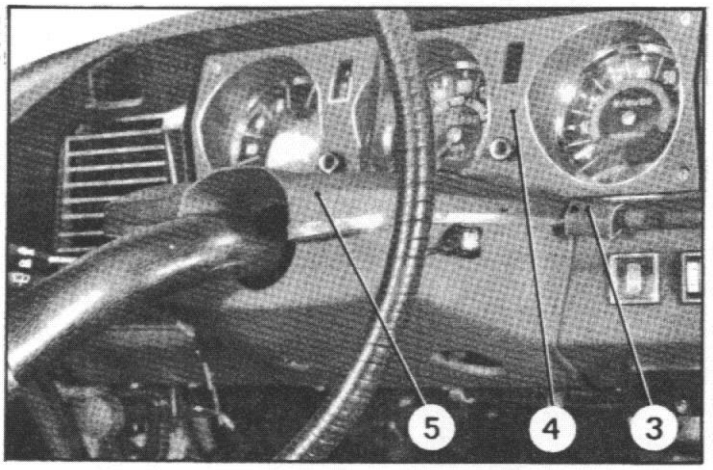
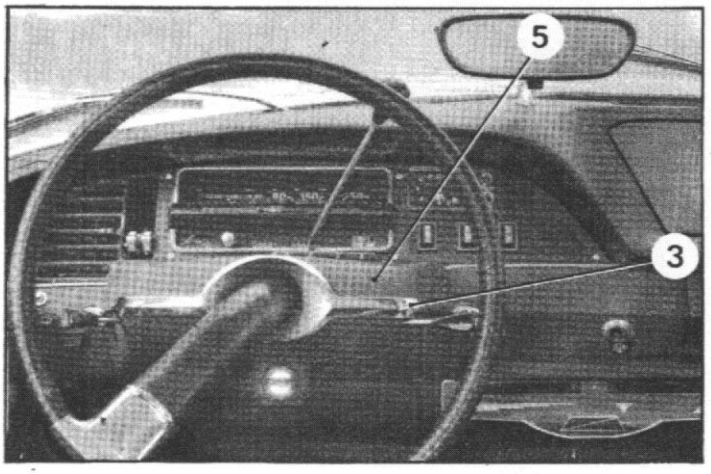




17 848

Manual 814-2

REMOVAL.

1. Release the pressure in the suspension circuit by placing the manual height control in *low position.*

2. Remove the front left-hand suspension sphere.

3. If the battery is on the left, remove it together with its tray.

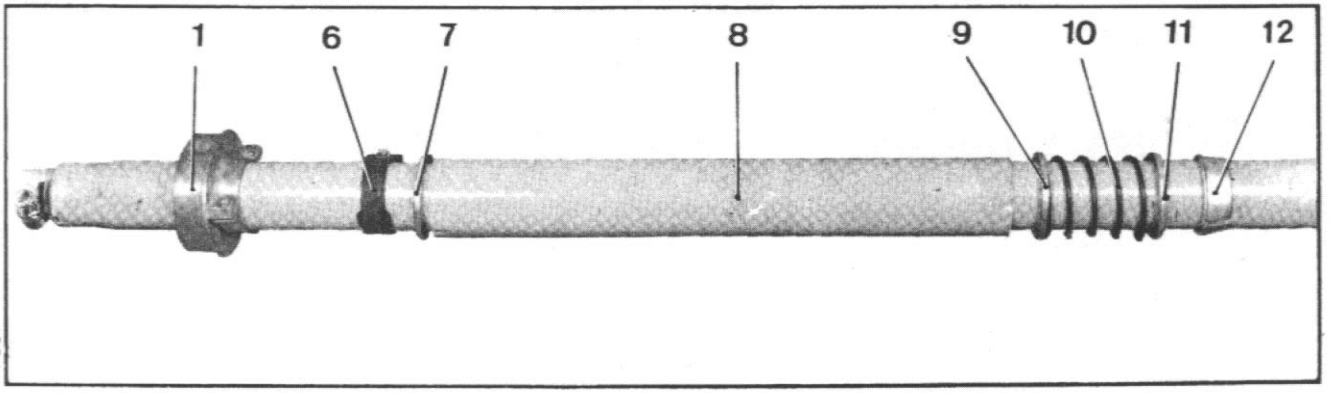
4. If the same steering wheel is to be refitted, mark the longitudinal position of the centralising cam (1). Mark also the position of the slot «a» on the splines of the steering pinion.

5. Slacken the securing screw on the cam (1). Slacken the screw of the clamp (6) (spanner 1994-T) and allow the spring (10) to extend. Remove the clamp screw (2). Disconnect the two parts of the speedometer cable (*Vehicles* ⟼ 9/1969).

6. Remove :
   - the instrument panel (4) (*Vehicles* ⟼ 9/1969),
   - the finisher (3),
   - the cover (5) from the electrical control support.

7. By pulling the steering column from the inside of the vehicle, remove the following :
   - the centralising cam (1),
   - the clamp (6),
   - the cup (7),
   - the tube (8),
   - the cup (9),
   - the spring (10),
   - the cup (11),
   - the cone (12).

   Remove the steering wheel from the inside of the vehicle.



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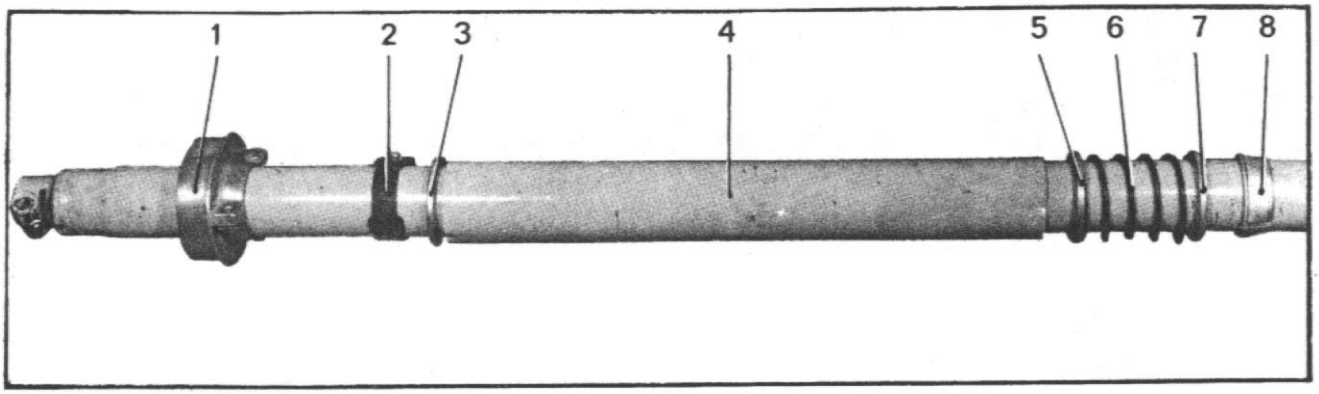

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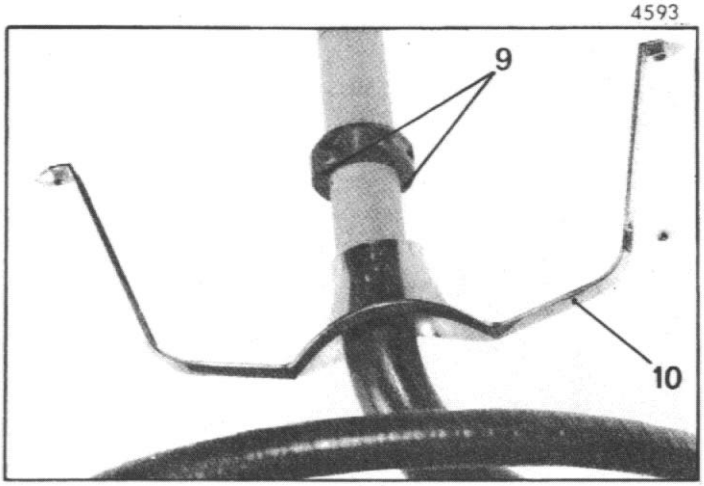

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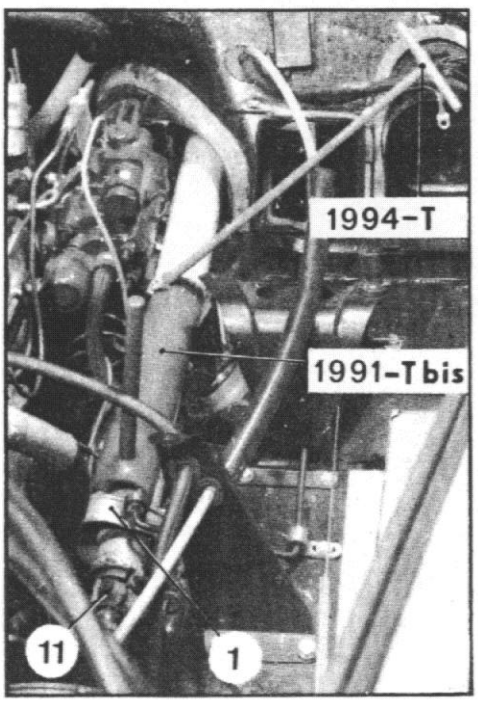


8. Strip the steering wheel :
   Remove :
   - the anti-theft ring half-bushes (9) (mark the angular and longitudinal positions using a scriber,
   - the finisher (10) .

FITTING.

9. Place the finisher (10) on the steering column.
   CASE 1 : **the steering wheel has not been renewed.**

10. Offer up the half-bushes (9) and position them according to the marks made when dismantling. Tighten the screws.

11. Fit the steering wheel from inside the vehicle.

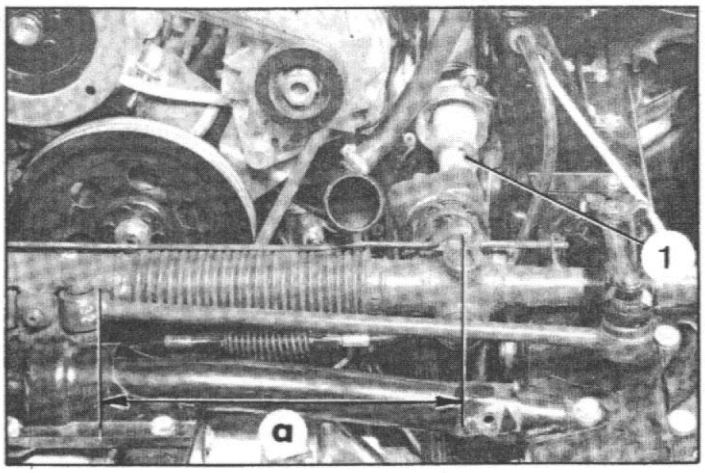
12. Place the following on the steering column :
   - the cone (8),
   - the cup (7),
   - the spring (6),
   - the cup (5),
   - the tube (4),
   - the cup (3),
   - the collar (2),
   - the cam (1).

13. Engage the steering column on the rack pinion according to the mark made when dismantling.

14. Fit the screw (11) and tighten the nut.
   CAUTION : Fit only DM. 441-00 screws with smooth shanks.

15. Get an assistant to compress the spring using spring compressor 1191-T bis).
   There should be a clearance of 0.5 to 1 mm between the spring coils.
   Tighten the clamp using spanner 1994-T.
   Fit the cam for straight-line steering position (1).
   Adjust the straight-line position approximately.
   Tighten the screw securing the cam.

3408



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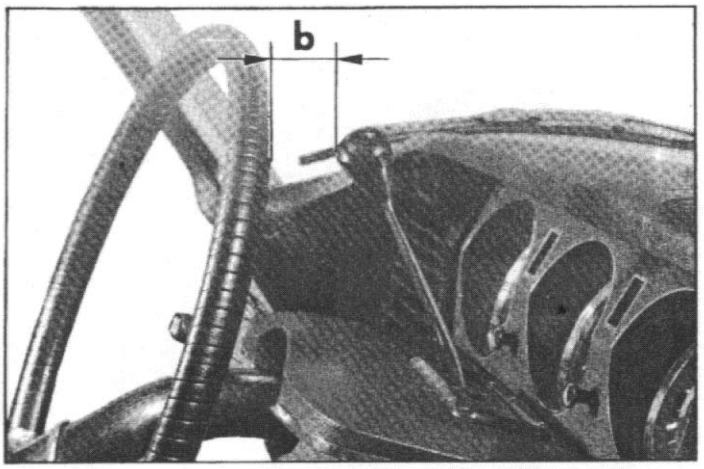

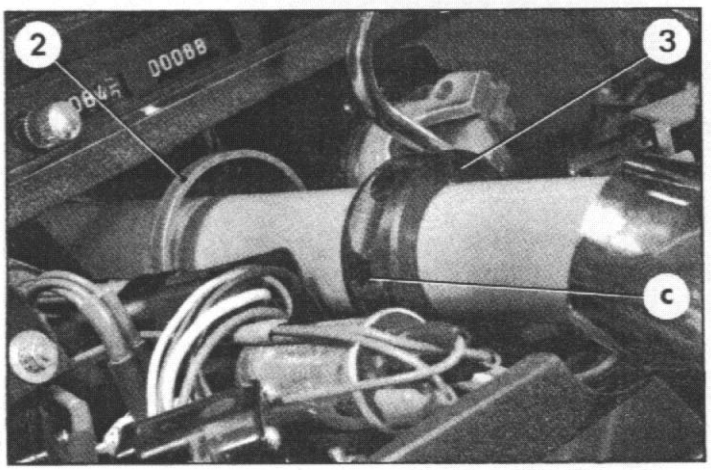

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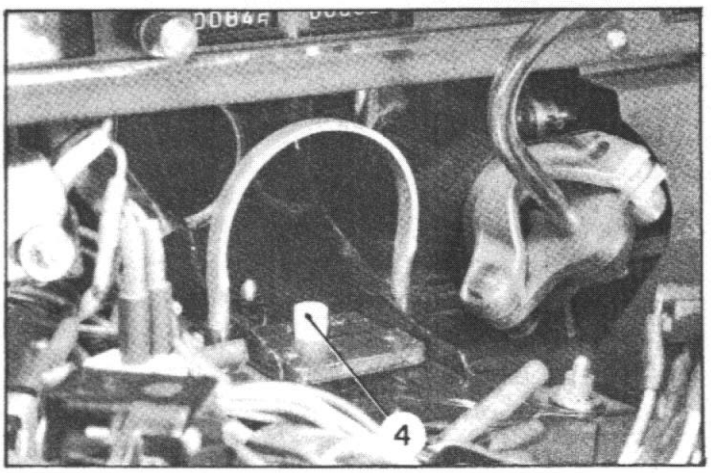


4592

16. Fit :
- the cover on the electrical control support,
- the front left-hand suspension sphere.

Connect the cable to the negative terminal of the battery.

17. Start the engine and tighten the bleed-screw on the pressure regulator.

18. Adjust the « straight line steering » position.
CASE 2 : **the steering wheel has been renewed.**

19. Place the half-bushes (3) on the steering column (fit, but do not tighten the screws).

20. Fit the steering wheel from inside the vehicle.

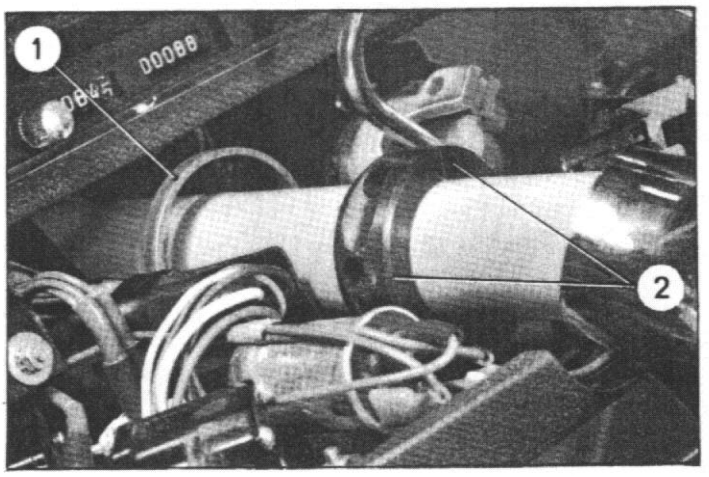
21. Rotate the steering pinion to bring the outer bush of the left-hand track rod silentbloc to a distance « a » = 275 mm from the centre line of the steering rack plunger.

22. Turn the steering wheel until the spoke is about 30° below the horizontal, to the left.

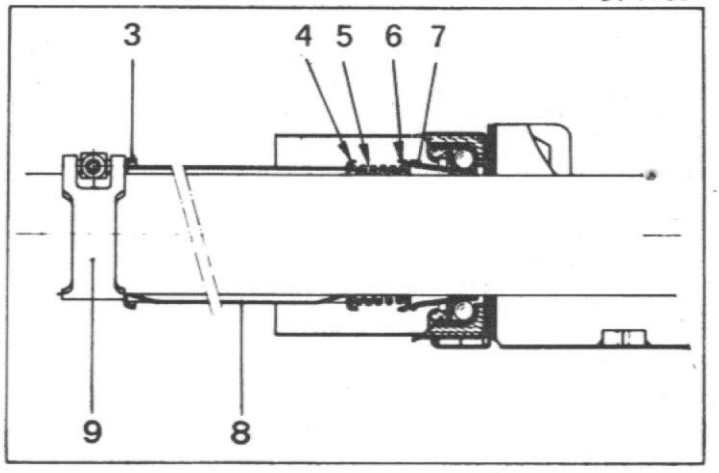
23. Engage the rack pinion in the splines of the steering column.
Put the gear lever in « 2nd gear » position and then gently push on the steering wheel ; the distance « b » should be between 40 and 60 mm.
Choose a groove in the steering pinion to fulfil this condition (mark the groove).
Temporarily fit the screw (1).

24. Position the anti-theft bush :
- Place the bush (3) under the stirrup (2) ; the half-bush with the hole « c » should be underneath the steering column.
- Lock the anti-theft device using the key so that the stud (4) engages properly in the hole « c ».
- Push the bush as far as it will go forwards (mark its position on the steering column using a scriber.
- Withdraw the bush as far as it will go towards the rear (mark its position).
- Take the average of the two marks ; this will give the final position of the bush.
- Turn the steering wheel to the right so as to bring the spoke horizontal, to the left-hand side (with stud (4) still engaged in the hole « c »).

4591



D. 44-50



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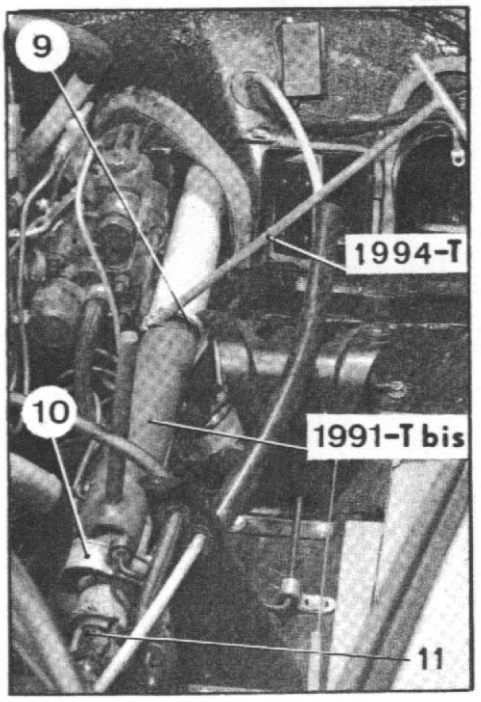


- Mark the position of the half-bushes with respect to the steering column.
  Remove the securing screw (11) and free the steering column from the grooves of the steering pinion.
- Pull on the steering wheel from inside the vehicle so as to release the anti-theft bush (2) from the stirrup (1).

25. Fix the half-bushes (2) taking account of the marks made previously.

26. Place on the steering column :
- the cone (7),
- the cup (6),
- the spring (5),
- the cup (4),
- the tube (8),
- the cup (3),
- the clamp (9),
- the cam (10).

27. Engage the steering column on the steering pinion taking account of the marks (spots of paint).

28. Fit the screw (11) (DM. 441-00).

29. Get an assistant to compress the spring using spring compressor 1991-T bis.
There should be a clearance of 0.5 to 1 mm between the coils of the spring.
Tighten the retaining clamp (9) using spanner 1994-T.

30. Fit the cam (10) for straight-line steering position.
Approximately adjust the « cam » position.
Tighten the screw securing the cam (10).

31. Fit :
- the cover for the electrical controls,
- the instrument panel
  (*Vehicles* ⟼ 9/1969)
- the finisher,
- the front left-hand suspension sphere,
- the battery tray and the battery.

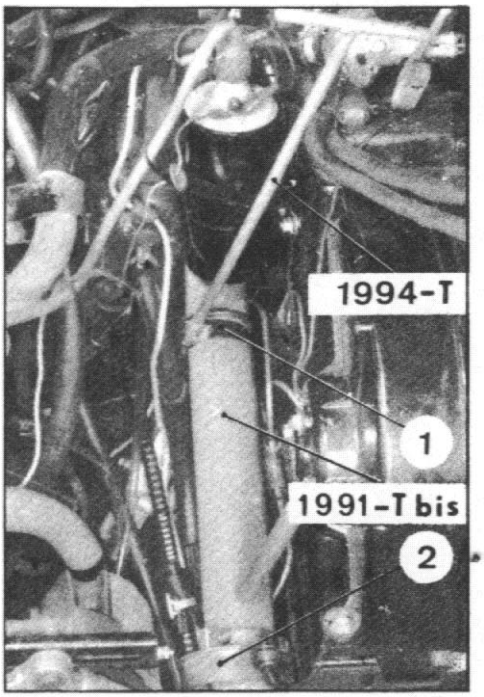
Connect the drive cable to the speedometer.
(*Vehicles* ⟼ 9/1969).

32. Start up the engine and tighten the release screw on the pressure regulator.

33. Adjust the « straight-line steering » position.

II. REMOVING AND FITTING A CAM FOR STRAIGHT-LINE STEERING POSITION

7079



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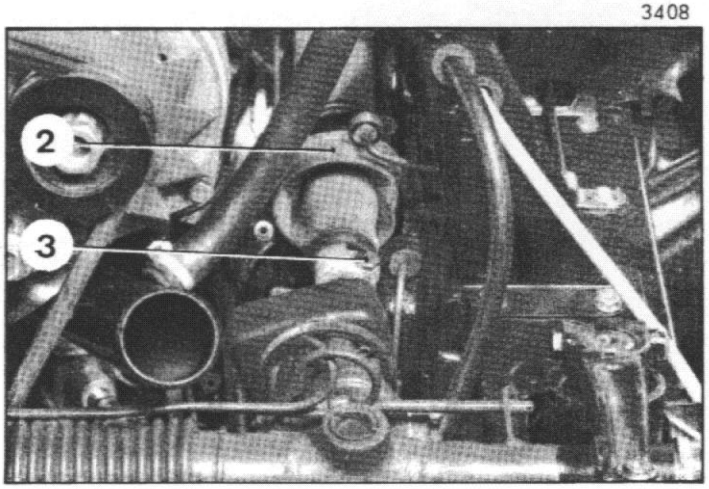


REMOVAL.

1. Release the pressure in the suspension circuit by placing the manual height control in *low position.*

2. Remove the front left-hand suspension sphere.

3. Remove the battery and its tray (battery on the L.H side). If the battery is on the R.H. side, disconnect the cable from the negative terminal.

4. Mark the longitudinal position of the centralising cam (2).
Mark the position of the steering pinion grooves with respect to those on the steering column.
Also mark the groove corresponding to the securing screw (3).

5. Slacken the securing screw on the cam (2).
Slacken the screw in the clamp (1) (spanner 1994-T) and allow the spring to extend.
Remove the screw (3).

6. Pull the steering column slightly from the interior of the vehicle and remove the centralising cam (2).

FITTING.

7. Fit the cam (2) on the steering column (fit the cam the correct way round).
Engage the steering column with the steering pinion (observe the mark made when dismantling).
Fit and tighten the screw (3) (place the screw in the groove of the drive pinion marked when dismantling).

8. Get an assistant to compress the spring using spring compressor 1991-T bis.
There should be a clearance of 0.5 to 1 mm between the coils of the spring.
Tighten the clamp (1) using spanner 1994-T.

9. Position the cam (2) on the steering column observing the marks made when dismantling.
Adjust the « straight-line » position approximately.
Tighten the cam securing screw (2).

10. Fit :
- the front left-hand suspension sphere,
- the battery tray and the battery (battery on the L.H side),
- connect the cable to the negative terminal of the battery (battery on the R.H side).

11. Place the height control in *normal position* and run the engine to put the circuit under pressure.
Check that there are no leaks between the sphere and the front left-hand suspension cylinder.

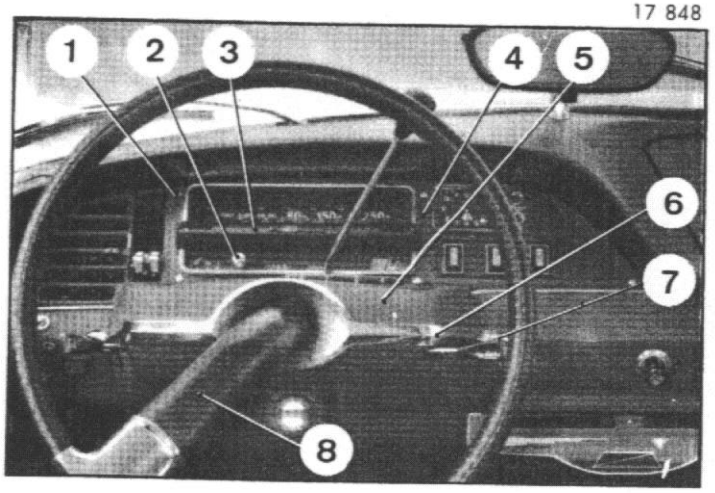
12. Adjust the « straight-line » position.

VEHICLES ALL TYPES

→| 9 1969

III. REMOVING AND FITTING A STEERING COLUMN BRACKET.

17 848



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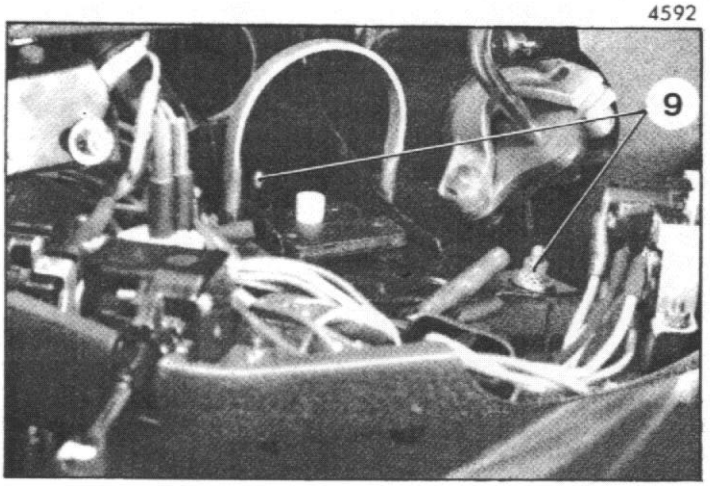

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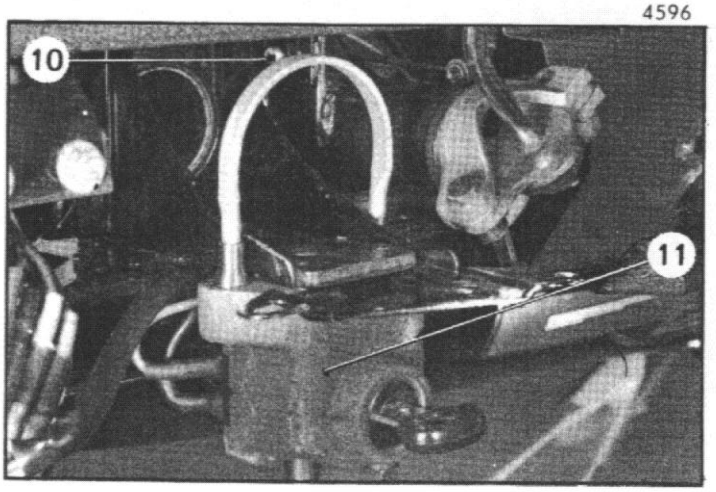


REMOVAL.

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

2. Slacken the screw (7) holding the finisher (6).
Remove the finisher (6) from the steering column aperture (leave it on the steering column) and its rubber stops.
Remove the cover (5) for the electrical controls together with its rubber fittings.
Remove the speedometer reset knob (2).
Remove the five screws (1) securing the speedometer surround.
Pull the speedometer surround (4) towards the right.
Disconnect the cable from the speedometer (unscrew it by hand).
Move the speedometer (3) towards the left.

3. Remove the steering wheel (8).

4. Remove the finishing panel from under the dashboard.

5. Slacken the five screws (9) holding the steering bracket and the screw (10) retaining the selector.

6. Remove the anti-theft device (11).

7. Remove the steering bracket and its sealing sleeve.

FITTING.

8. Position the bracket and its sealing sleeve.
Engage the sleeve on the stop bush.
Screw up the five screws (9) holding the steering bracket and the screw (10) retaining the selector.

9. Fit the anti-theft device (11).

10. Fit the finishing panel under the dashboard.

11. Fit the steering wheel (8).

12. Replace the speedometer (3).
Connect the speedometer cable.
Fit the speedometer surround (4).
Tighten the five screws (1) holding the speedometer surround.
Fit the speedometer reset knob (2).

13. Fit the cover (5) for the electrical controls together with its rubber trims.

14. Tighten the screws (7) for the finisher (6) around the steering column aperture (do not forget the rubber stops).

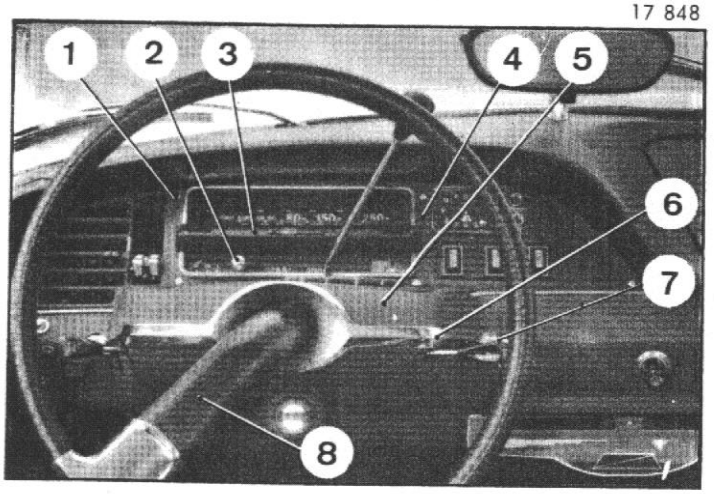
15. Connect the cable to the negative terminal of battery.

VEHICLES ALL TYPES

→| 9 1969

III. REMOVING AND FITTING A STEERING COLUMN BRACKET.

17 848



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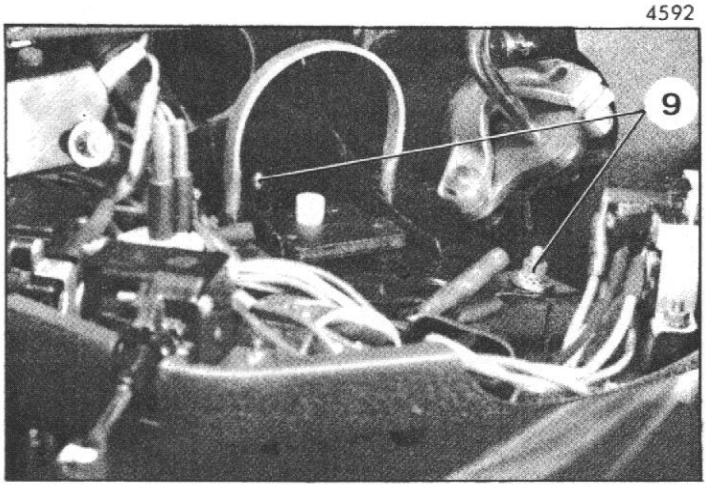

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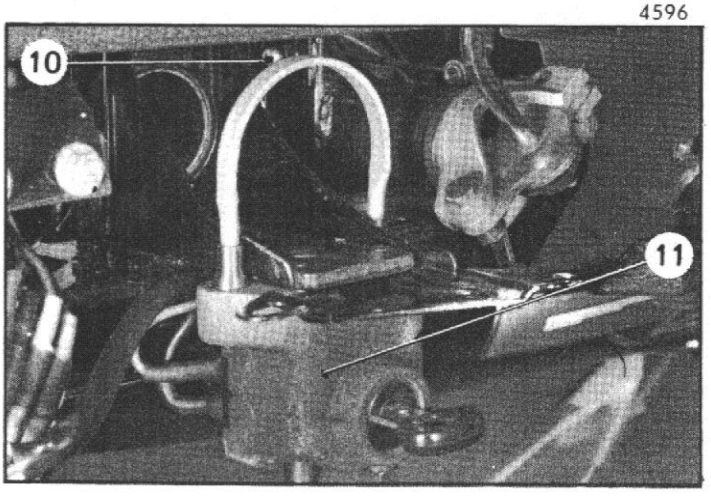


REMOVAL.

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

2. Slacken the screw (7) holding the finisher (6).
Remove the finisher (6) from the steering column aperture (leave it on the steering column) and its rubber stops.
Remove the cover (5) for the electrical controls together with its rubber fittings.
Remove the speedometer reset knob (2).
Remove the five screws (1) securing the speedometer surround.
Pull the speedometer surround (4) towards the right.
Disconnect the cable from the speedometer (unscrew it by hand).
Move the speedometer (3) towards the left.

3. Remove the steering wheel (8).

4. Remove the finishing panel from under the dashboard.

5. Slacken the five screws (9) holding the steering bracket and the screw (10) retaining the selector.

6. Remove the anti-theft device (11).

7. Remove the steering bracket and its sealing sleeve.

FITTING.

8. Position the bracket and its sealing sleeve.
Engage the sleeve on the stop bush.
Screw up the five screws (9) holding the steering bracket and the screw (10) retaining the selector.

9. Fit the anti-theft device (11).

10. Fit the finishing panel under the dashboard.

11. Fit the steering wheel (8).

12. Replace the speedometer (3).
Connect the speedometer cable.
Fit the speedometer surround (4).
Tighten the five screws (1) holding the speedometer surround.
Fit the speedometer reset knob (2).

13. Fit the cover (5) for the electrical controls together with its rubber trims.

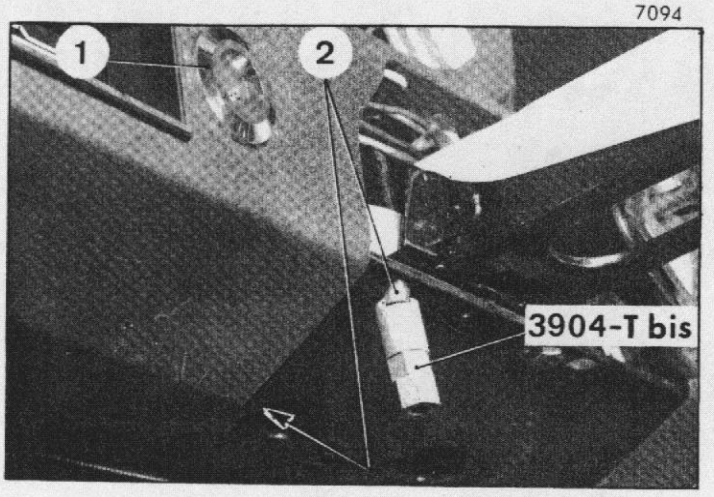
14. Tighten the screws (7) for the finisher (6) around the steering column aperture (do not forget the rubber stops).

15. Connect the cable to the negative terminal of battery.

VEHICLES ALL TYPES
→ *9/1969*

IV. REMOVING AND FITTING A STEERING WHEEL BRACKET.

7094



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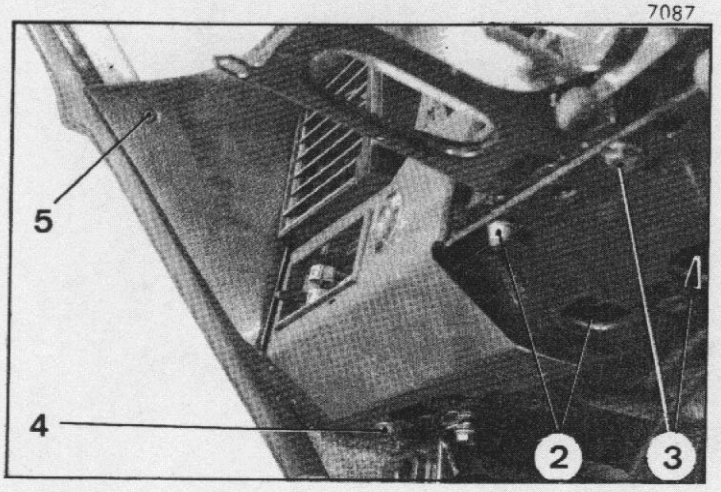

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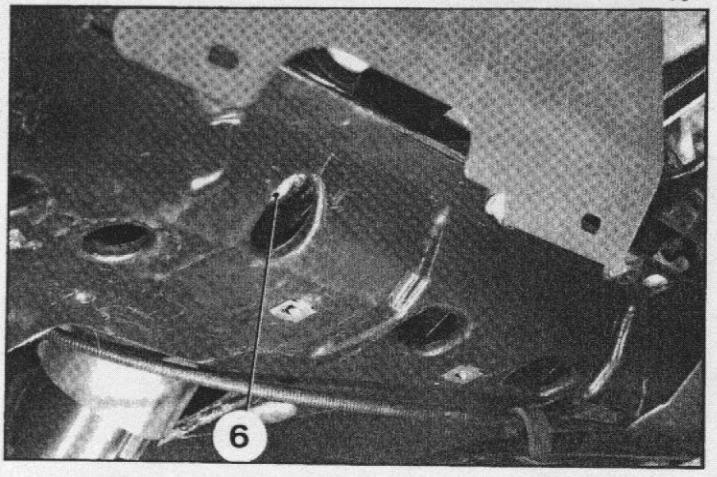


Manual 814-2

REMOVAL.

1. Remove :
   - the front left-hand suspension sphere,
   - the battery and its tray,
   - the steering wheel.

2. **Removing the anti-theft device :**
   Remove :
   - the bracket supporting the electrical controls,
   - the conical nuts (2) (extractor 3904-T bis),
   - the chromium-plated nut (1) (tool 2661-T),
   - the two screws (4) and (5),
   - the screws (6), after moving the bottom of the instrument panel.

   Remove the anti-theft device.

3. **Removing the steering wheel bracket :**
   Remove :
   - the screws (3) holding the dashboard bracket,
   - the screws holding the selector on the steering wheel bracket.

   Remove the steering wheel bracket and its sealing sleeve.

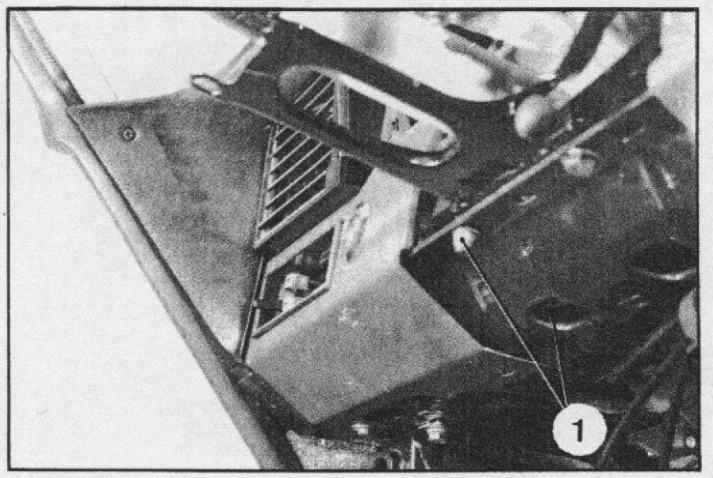
FITTING.

4. **Fit the steering wheel bracket :**
   a) Offer up the bracket and sealing sleeve assembly.
   Engage the sleeve on its stop bush.
   b) Fit, but do not tighten :
   - the screws (3) holding the bracket on the dashboard (contact washer),
   - the screws holding the gear selector on the steering wheel bracket.

5. **Fit the anti-theft device :**
   Position the anti-theft device. Fit and tighten :
   - the screw (6), after moving the bottom of the instrument panel (contact washer),
   - the conical nuts (2) (tighten them moderately, contact washer),
   - the chromium-plated nut (1) (tool 2661-T),
   - the screw (5) holding the trim,
   - the screw (4) holding the instrument panel (contact washer).

6. Tighten the screws (3) holding the steering wheel bracket and the screw holding the gear selector on the steering wheel bracket.

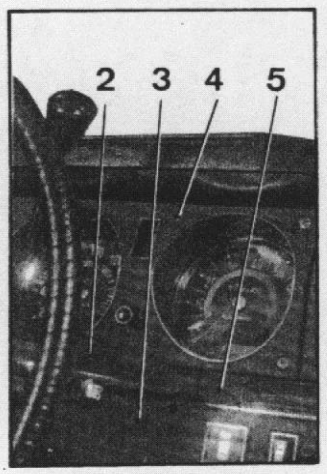
7. Fit the steering wheel.



7087

8. Fit the anti-theft bush on the steering wheel and position it so that locking is obtained when the steering wheel spoke is horizontal and on the L.H side (front wheels turned slightly to the right).
Turn the steering wheel through at least one turn and make sure that in the « unlocked » position the locking pin does not touch the anti-theft bush.

9. Temporarily position the parts of the instrument panel.
Fit the battery and its tray.
Check the mechanical and electrical operation of the anti-theft device.
Tighten the nuts (1) until the heads break off.



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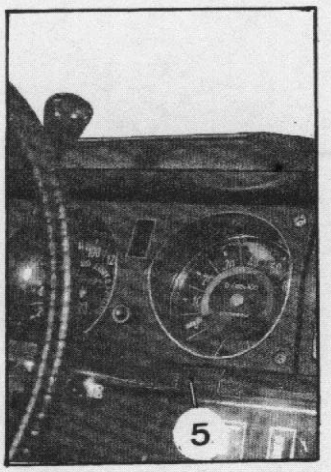


7547

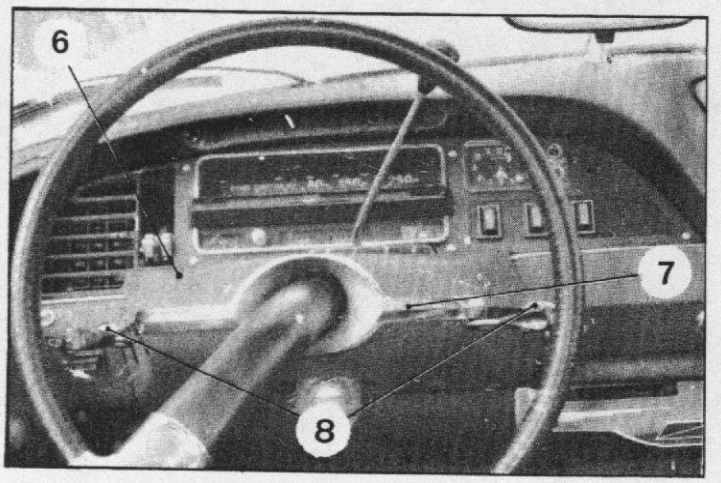
10. Disconnect the cable from the negative terminal of the battery and finally position the various parts of the instrument panel :
Fit :
- the bracket holding the electrical controls (2),
- the cover (3),
- the cover joint (5),
- the instrument unit (4).

Connect up the two parts of the speedometer cable.

Fit the cover joint (5), by sliding it to the left.

VEHICLES ALL TYPES
→| 9/1969

V. REPLACING AN ANTI-THEFT DEVICE.



17848

REMOVAL.

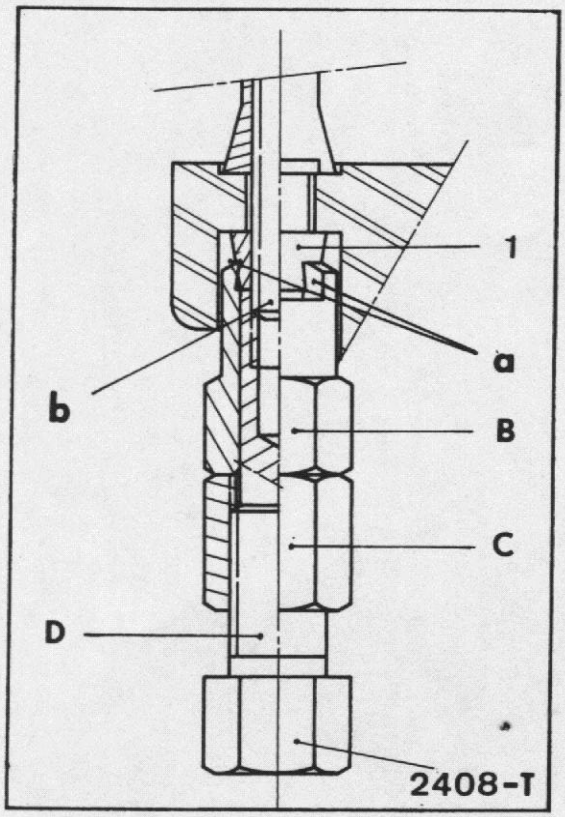
1. Disconnect the cable from the negative reminal of the battery.

2. Slacken the screws (8) holding the finisher (7) around the steering column aperture.

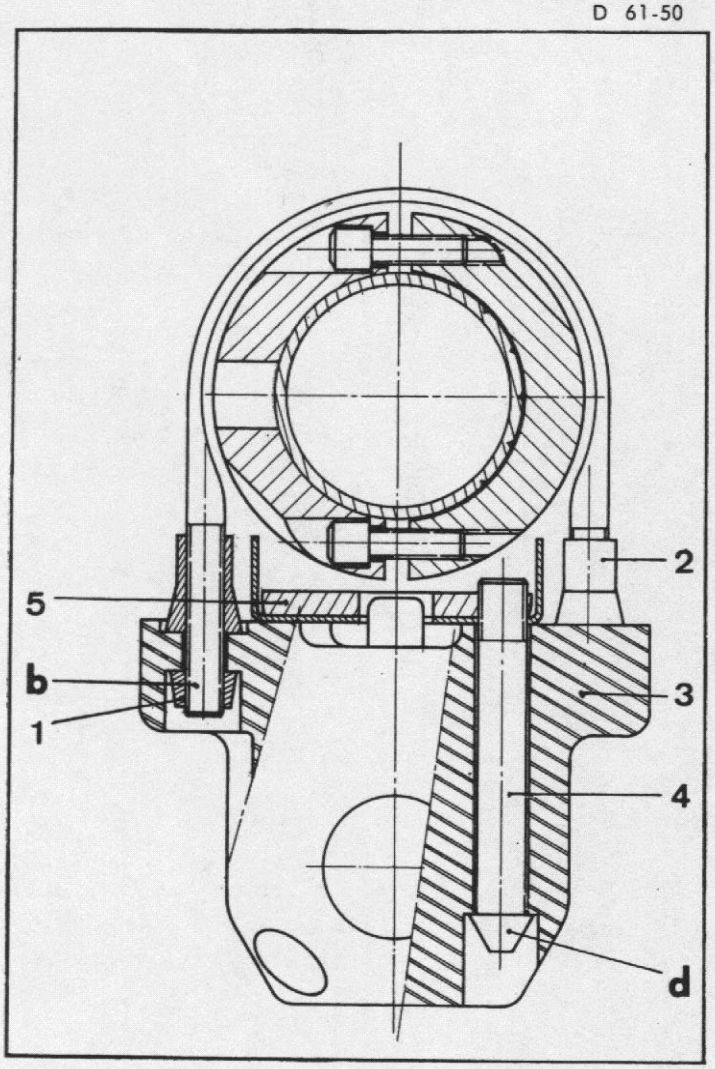
Remove the finisher (7) from the steering column aperture (the finisher remains on the steering column) and its rubber stops.

3. Remove the cover (6) from the electrical control bracket together with its rubber seals.

D 61-51



D 61-50



4. Remove the stirrup (2) holding the anti-theft device :

a) Place tool 2408-T on the end « b » of the threaded part of the stirrup (2).

b) Screw up the part D of tool 2408-T until it comes into contact with the nut (1).

c) Turn the lock-nut C until the lugs « a » of the body B of the tool penetrate into the nut. To do this, bring the lugs « a » in contact with the nut (1) by screwing the lock-nut C.

d) Make the lugs « a » penetrate by continuing to screw up the lock-nut C by one and a half turns.

e) Remove the nut (1) by unscrewing the tool assembly 2408-T using a open-end 13 mm spanner
NOTE : Turn parts B and C of tool 2408-T at the same time.

f) Proceed in the same manner for the other nut of the stirrup (2).

g) Remove the stirrup (2).

5. Remove the body (3) of the anti-theft device :

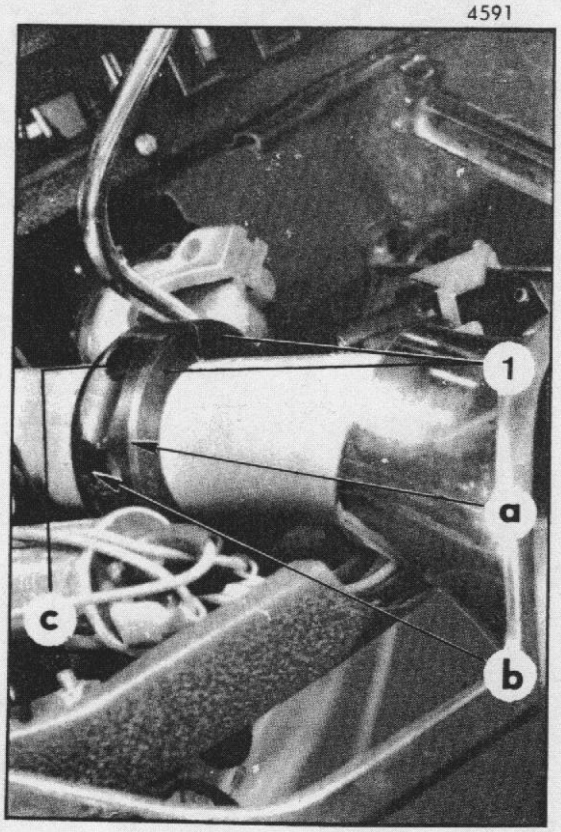
- Drill the end « d » of the screws (4) using a 7.25 mm diameter drill.

- Remove the body (3) of the anti-theft device.

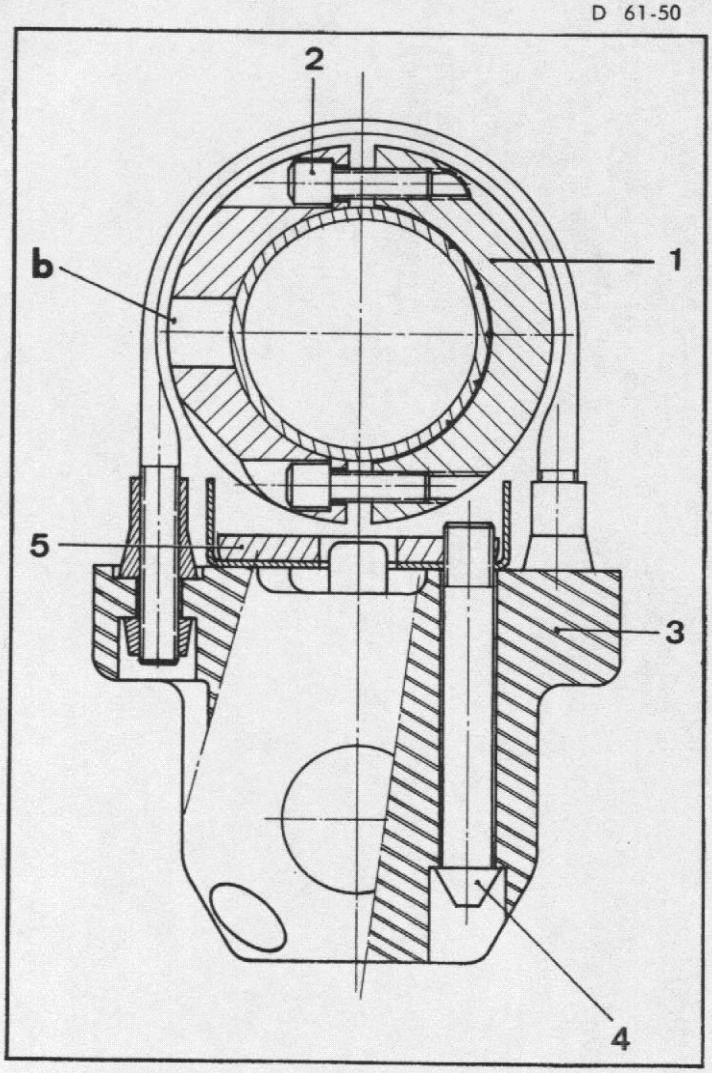
6. Disconnect the electrical connections from the anti-theft device.

7. Unscrew the two screws (4) from the back-plate (5).

4591



D 61-50



8. Remove the anti-theft- bush from the steering column :

- Slacken the screws holding the two half-bushes (1) using a 5 mm Allen key.
- Remove the two half-bushes from the steering column.

FITTING.

9. Fit the body of the anti-theft device (3) :

- Screw the two screws (4) with break-off heads through the body (3) into the plate (5).
- Position and connect up the electrical connections to the anti-theft device.

10. Position the anti-theft bush on the steering column :

a) Place the half-bush with the hole « b » underneath the steering column. (The small chamfer « a » should be towards the steering wheel).

b) Lock the anti-theft device using the key so that the locking pin engages properly in the hole « b ».

c) Turn the steering wheel to the right until the spoke is horizontal and orientated towards the left-hand side.

d) Push the half-bush as far as it will go forward (mark its position on the steering column using a scriber. Then push the half-bush as far as it will go backwards (mark its position). Take the average of the two positions : this will be the final position of the bush.

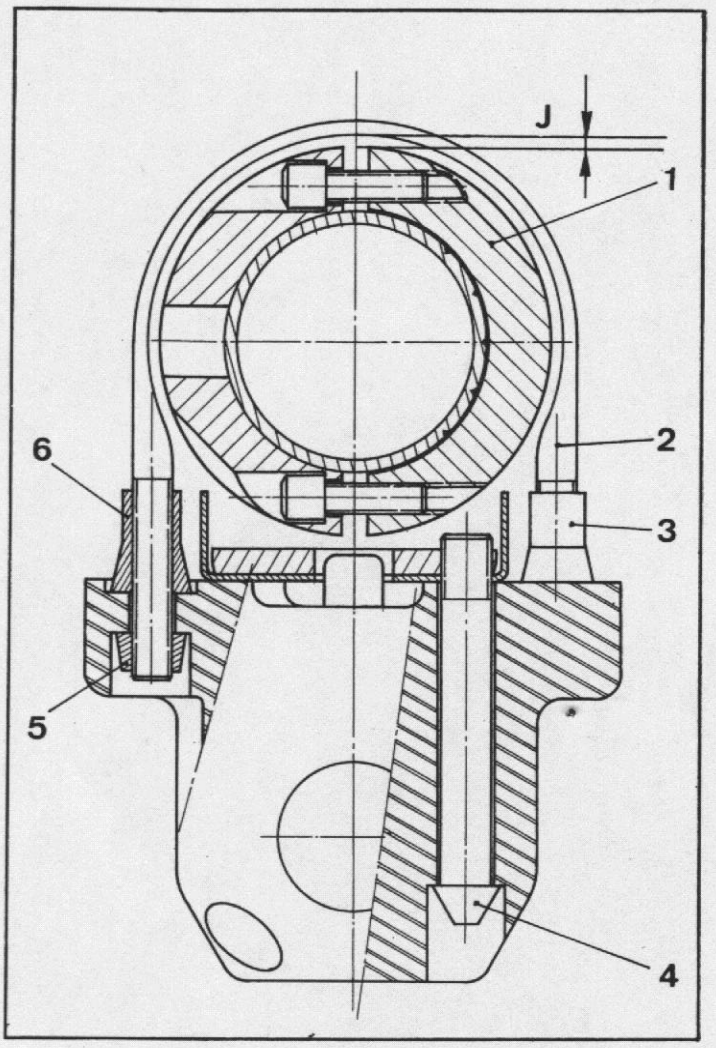
e) Fit the upper half-bush on the lower half-bush.

f) Unlock the anti-theft device.

g) Turn the steering wheel through half a turn in order to clear the holes « c » so that the recessed hexagon screws (2) holding the two half-bushes (1) can be fitted.
During this operation, hold the two half-bushes on the steering column and turn them with the latter.

Tighten the screws (2) using a 5 mm Allen key.

D 61-50



Manual 814-2

11. Fit the stirrup (2) holding the anti-theft device :

a) Screw the lock-nuts (3) and (6) right home on the stirrup (2).

b) Position the stirrup (2) by offering it up obliquely.

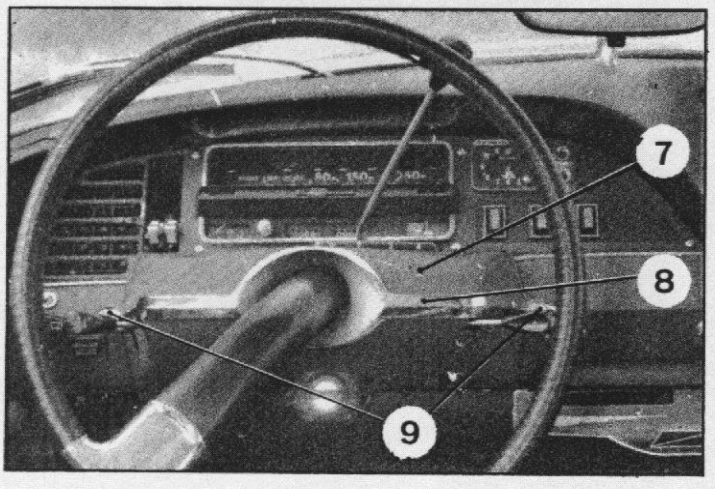
c) Obtain a *clearance « J » of 1 to 3 mm* between the top of the stirrup (2) and the bush (1).
To do this, turn the lock-nuts (3) and (6) by the same amount.
Check that this clearance is the same for all angular positions of the steering wheel.
Check that the flats of the lock-nuts are correctly positioned in the body of the anti-theft device.

d) Tighten the nuts (5) using a 10-mm box spanner.

12. Tighten the screws (4) using a 12 mm box spanner until the heads break off.

13. Fit the cover (7) to the electrical controls.

17848



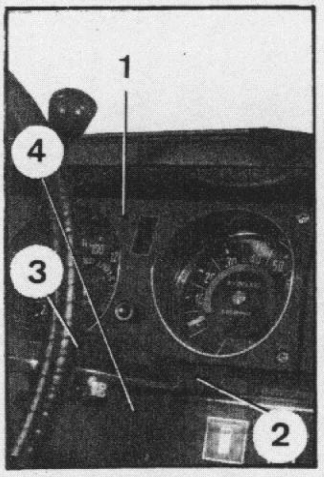
14. Fit the finisher (8) to the steering column aperture and its rubber stops.

15. Tighten the nuts (9) holding the finisher (8) on the steering column aperture.

16. Connect the cable to the negative terminal of the battery.

VEHICLES ALL TYPES

→ *9/1969*



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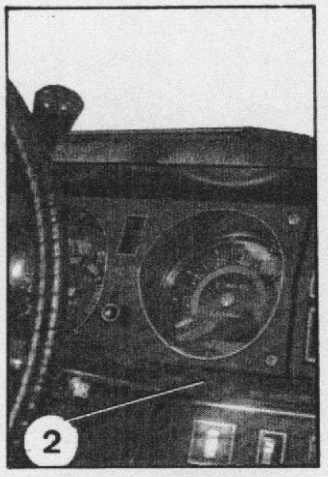

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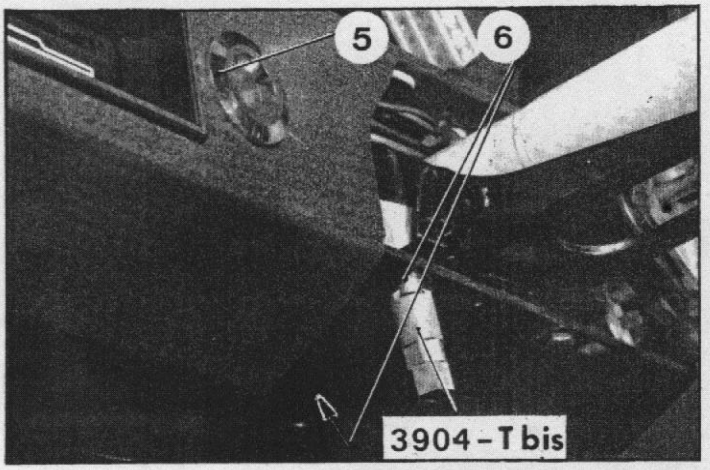

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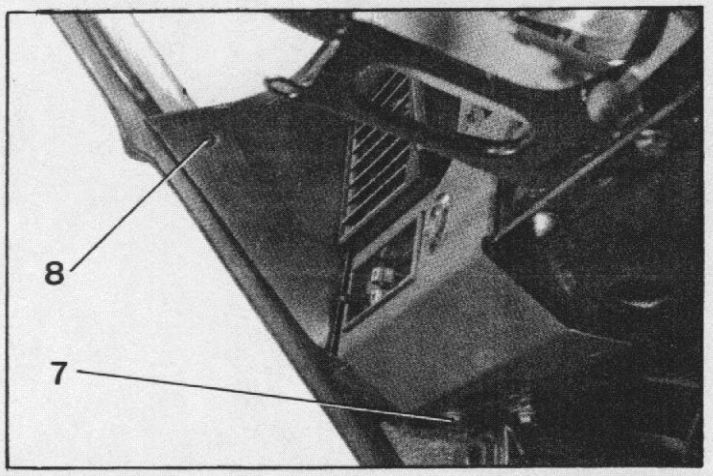

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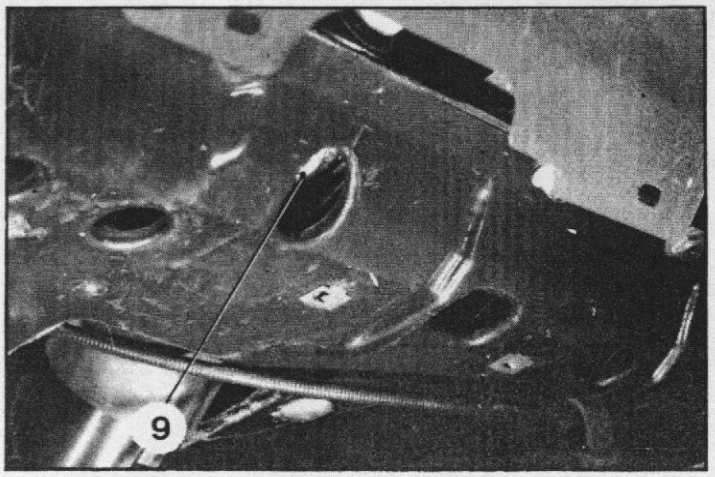


7081

VI. REPLACING AN ANTI-THEFT DEVICE.

REMOVAL.

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

2. **Remove :**
   - the instrument unit (1) (disconnect the two parts of the speedometer cable), and release the cover joint (2) by sliding it to the right,
   - the cover (4) from the electrical control bracket,
   - the bracket (3),
   - the conical nuts (6) (extractor 3904-T bis),
   - the chromium-plated nut (5) (tool 2661-T),
   - the screws (7) and (8) holding the instrument panel and the trim,
   - the screw (9), after moving the bottom of the instrument panel.

   Remove the anti-theft device after disconnecting the electrical leads.

FITTING.

3. **Fit the anti-theft device :**
   Offer up the anti-theft device. Fit and tighten :
   - the screw (9), after moving the bottom of the instrument panel (flat washer),
   - the conical nuts (6) and tighten them moderately (flat washer),
   - the chromium-plated nut (5) (tool 2661-T),
   - the screw (8) holding the trim,
   - the screw (7) holding the instrument panel (flat washer).

4. Fit the anti-theft bush on the steering wheel and position it so that locking takes place when the steering spoke is horizontal and to the left (front wheels turned slightly to the right).
   Turn the steering wheel by at least one turn and make sure that in the « unlocked » position, the locking pin does not touch the anti-theft bush.

5. Temporarily position the parts of the instrument panel.
   Connect the cable to the negative terminal of the battery.

6. Check the mechanical and electrical operation of the anti-theft device.
   Tighten the nuts (6) until the heads break off.

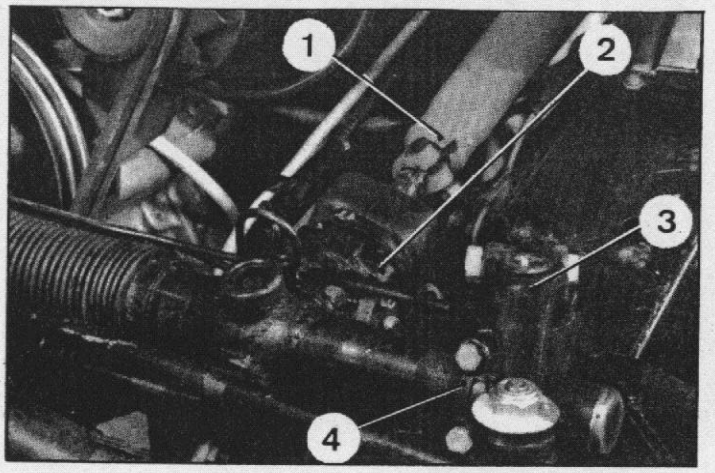
7. Disconnect the negative terminal of the battery and finally fit the different parts of the instrument panel. Fit :
   - the bracket for the electrical controls (4),
   - the cover (3),
   - the instrument unit (1).

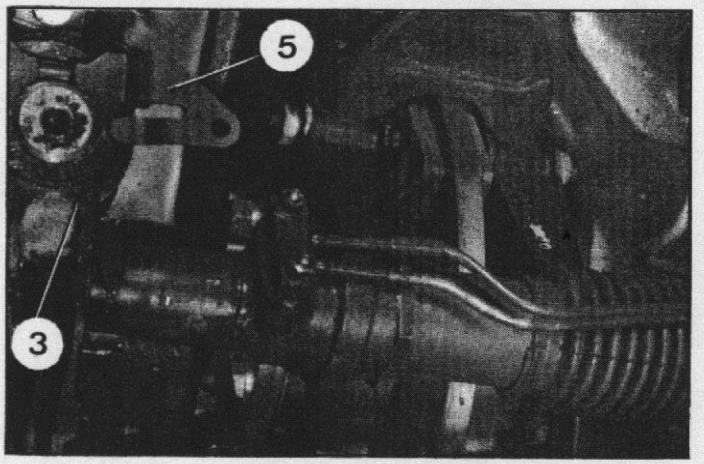
   Connect up the two parts of the speedometer cable. Fit the cover joint (2) by sliding it to the left.

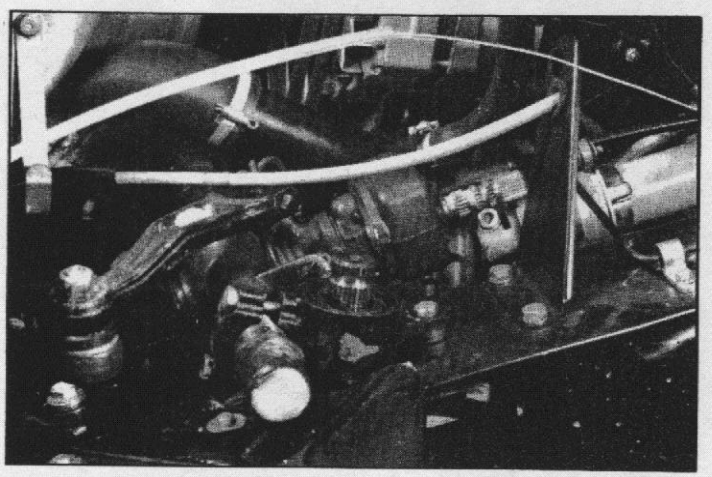
8. Connect the cable to the negative terminal of the battery.

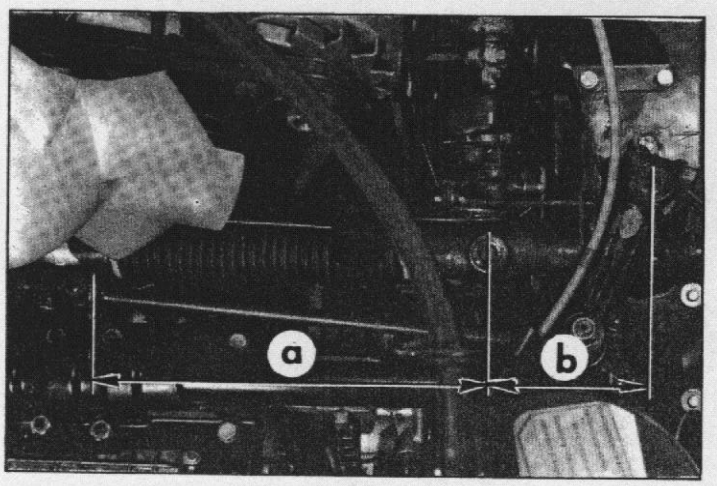
I. REMOVING AND FITTING A POWER STEERING RACK ASSEMBLY

VEHICLES ALL TYPES
with power steering









Manual 814-2

REMOVAL

1. Remove :
   - the spare wheel,
   - the front wings.

2. Slacken the release screw on the pressure regulator.

3. Disconnect :
   - the steering column (1) from the steering pinion,
   - the pipe assembly from the steering pinion housing (2), Remove the seal plate. Place
   - a blanking plate on the pipe assembly flange so as to prevent the reservoir from draining,
   - the steering levers (3) from the relay spindles,
   - the bracket (5) which operates the directional headlight (if fitted).

4. Remove the steering clamp caps (4) (mark their positions and orientations).
   Disconnect the steering rack assembly from the steering column.
   Turn the left-hand front wheel to the left.
   Slacken the screw holding the radiator tie-rod to the radiator.
   Remove the steering rack from the left-hand side of the vehicle.

FITTING

5. Insert the steering rack from the left-hand side of the vehicle.

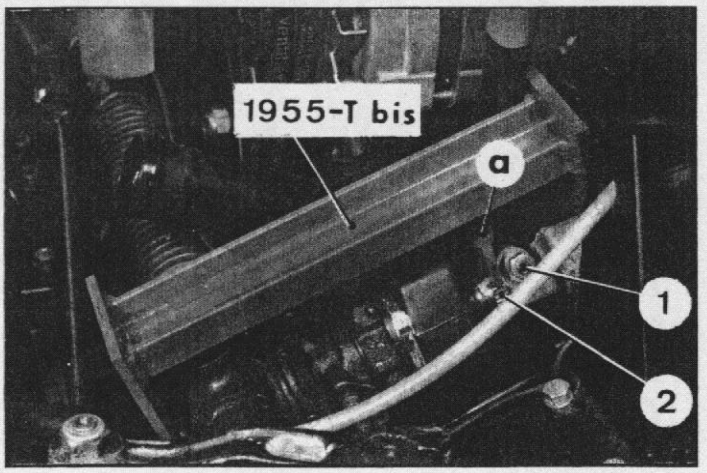
6. Turn the steering pinion until the outer bush of the left-hand steering track rod silentbloc is at a distance « a » = 275 mm from the centre line of the rack pinion pressure pad.

   Rotate the steering wheel until the spoke is about 30° below the horizontal and on the left-hand side

   Engage the steering pinion into the steering column splines.

7. Place the steering rack into its clamps.
   Adjust its lateral position in order to obtain a distance « b » = 122.5 ± 2.5 mm between the centre line of the spindle of the lower left-hand lever and the centre-line of the rack pinion pad nut.

3526



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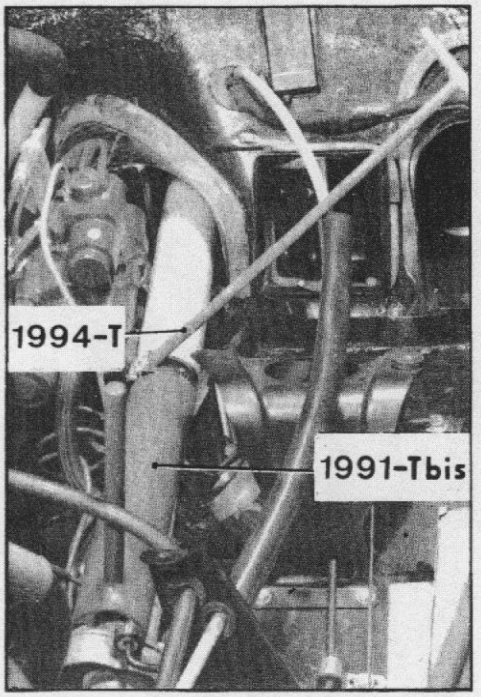

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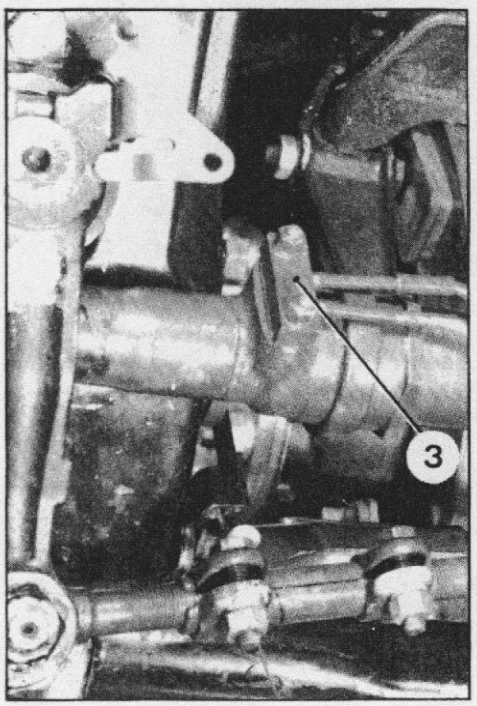


8. Fit the clamp caps, *without tightening the screws* (according to marks made during dismantling).
Fit the coupling screw (1) to the steering column and tighten the nut.

9. **Adjust the angular position of the steering :**
Position the fixture 1955-T bis.
Rotate the steering rack assembly in its clamps until the steering pinion (2) is in contact with the central gauge pin « a » of the fixture.
Tighten the securing screws on the clamp caps.
If necessary compress the thrust spring for the axial play in the steering column using spring compressor 1991-T bis.
There should be a clearance of 0.5 to 1 mm between the coils of the spring.
Tighten the retaining collar using spanner 1994-T (check the play in the steering wheel).

10. Connect :
- the steering levers to the relay spindles (with the nuts facing outwards) and tighten the nuts to 25 mΛN (2.5 m.kg).
- the directional headlamp operating bracket to the right-hand lever,
- the pipe assembly to the steering pinion housing Interpose the seal plate fitted with new O-rings.

11. Tighten the screw securing the radiator tie-rod.

12. Connect the cables to the battery.

13. Pressurize the circuits. Check unions for leakages.

14. Adjust the parallelism.

15. Adjust the steering lock.

16. Fit the front wings and the spare wheel.

17. Adjust the « straight ahead » position.

II. REPLACING A RACK HYDRAULIC CONTROL
(without removing the steering)

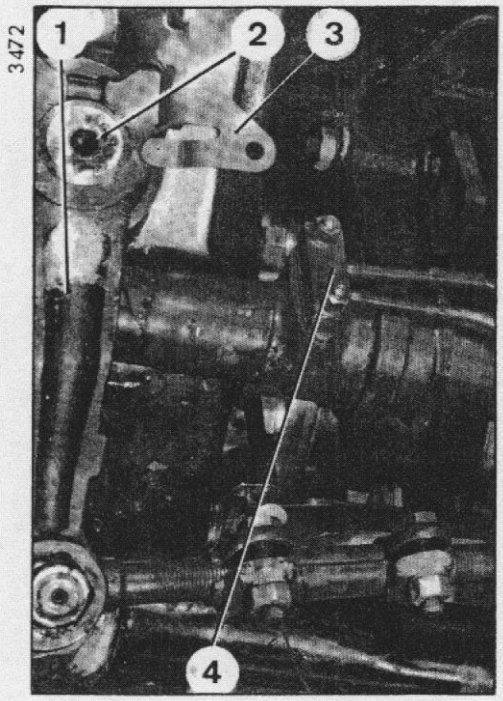
REMOVAL

1. Disconnect the cables from the battery terminals.

2. Remove :
- the front right-hand wing,
- the battery tray with the battery and place these near the right-hand front wheel on a support without disconnecting the terminals of the regulator.

3. Slacken the pressure regulator bleed screw.

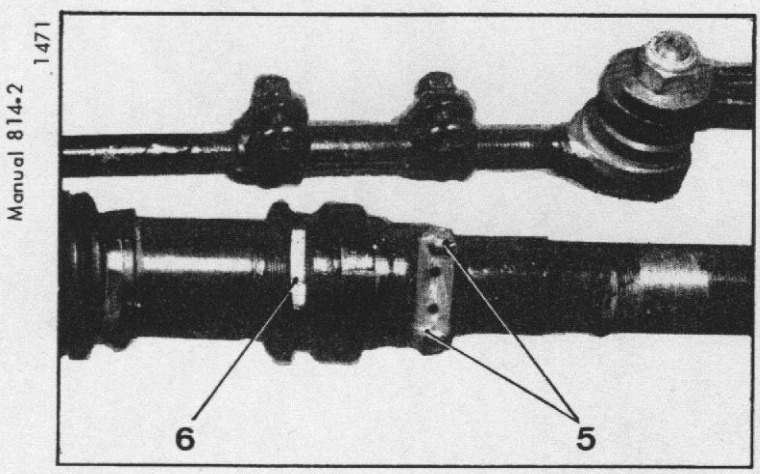
4. Drain the steering circuit by turning the steering wheel to full lock to the right and then to the left.
Place a cloth under the flange (3).
Disconnect the flange of the pipe assembly on the end of the steering housing and remove the seal holder plate.



5. Disconnect the steering lever (1) from the R.H. relay spindle (2) and remove the directional headlamp control bracket (3) (if fitted).

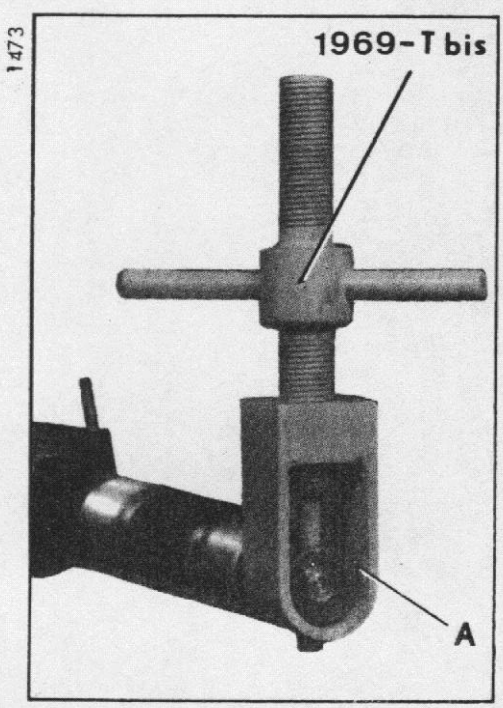
On the right-hand side, slacken the locknut on the steering lock stop and remove the stop.

6. Slacken the locknut (6) on the end of the steering housing and remove the two studs (5).



7. Turn the steering to full right-hand lock.

Remove the cap from the right-hand clamp (mark the position of the cap).

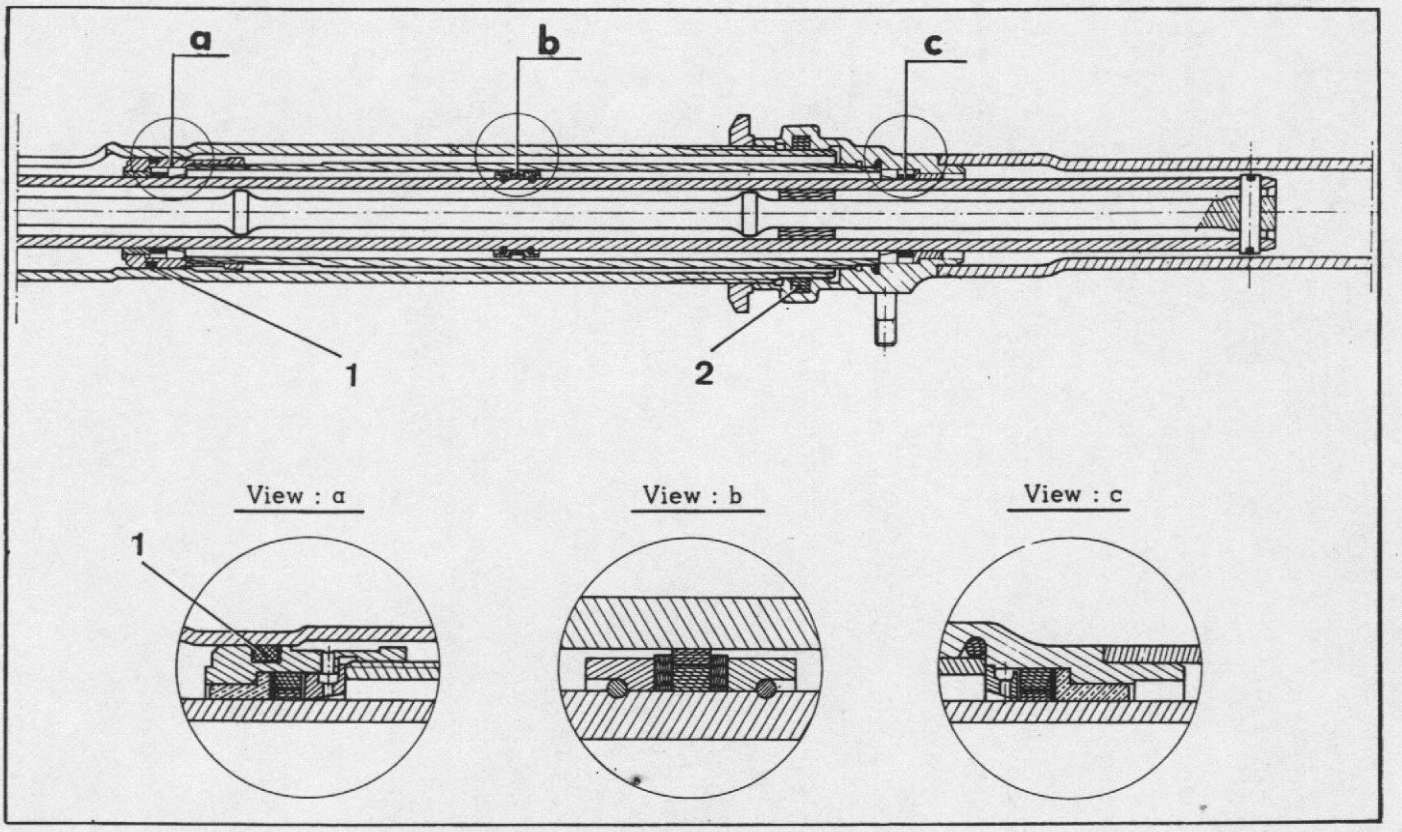


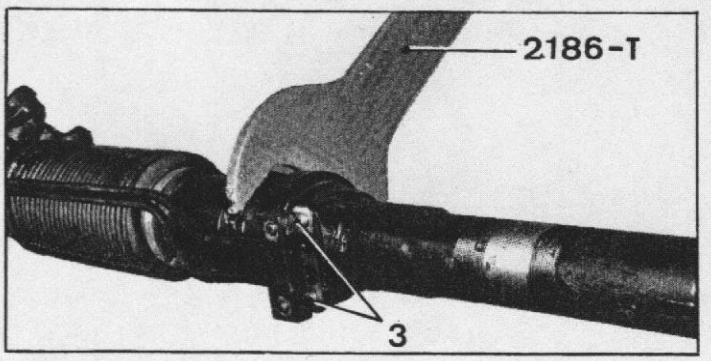
8. Remove the circlip from the end of the piston.

Remove the connecting pin from the rack control rod using extractor 1969-T bis and foil A.

9. Unscrew the steering end-piece, cylinder-piston assembly, then remove this assembly by pulling it towards the front of the vehicle as far as possible.

D. 44-1





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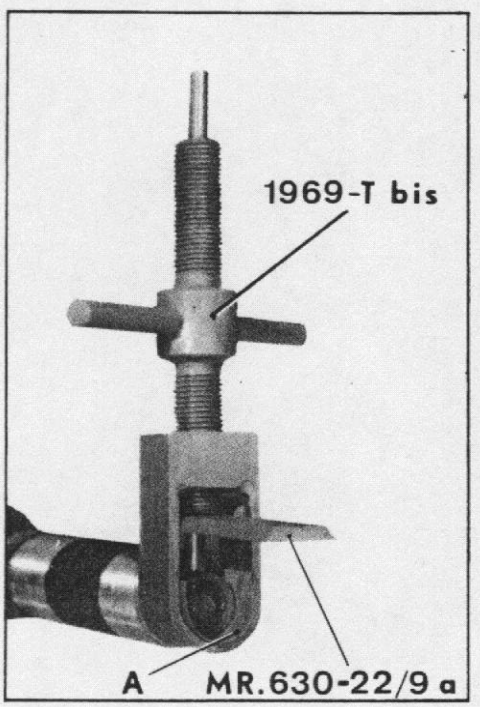
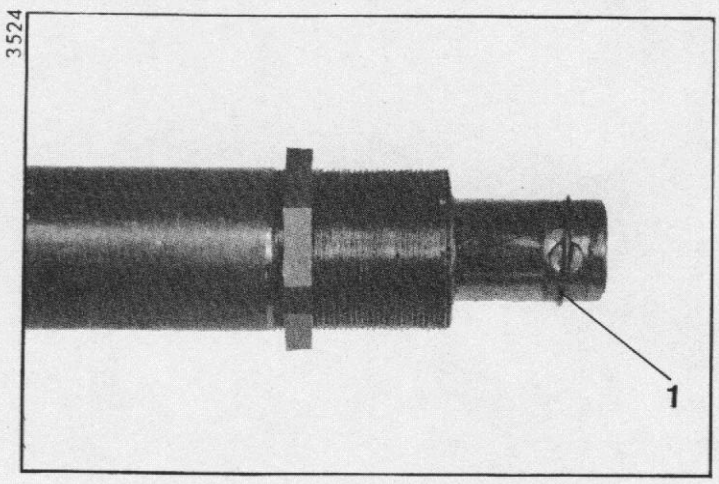


3533

FITTING

10. Smear the cylinder and piston assembly with *LHS 2 or LHM fluid, as appropriate* and fit it into the steering housing.
Make sure that the seals (1) and (2) are in position.
The operation is made easier by pulling the steering towards the front of the vehicle as far as possible.
Screw in the assembly of steering housing end-piece cylinder-piston until the pipe assembly flange can be put into position *without forcing*.
Fit the two studs (3).
Hold the steering housing end-piece and tighten the locknut to 100 mΛN (10 m.kg) (spanner 2186-T).

11. Turn the steering system to full right-hand lock until the hole in the rack control rod is opposite the holes in the piston.
Line up the holes in the piston and in the rod using a pin.
Fit the link pin using extractor 1969-T bis fitted with foil A and the plate MR. 630-22/9 a (orientate the link pin in such a way that the circlip can be correctly positioned subsequently).



Fit the circlip (1).
The link pin should be replaced if it is too loose in its housing.

12. Fit the cap on the right-hand clamp and turn it according to the mark made when dismantling (shakeproof washer under the screw heads).

13. Tighten the caps on the right and left-hand clamps.

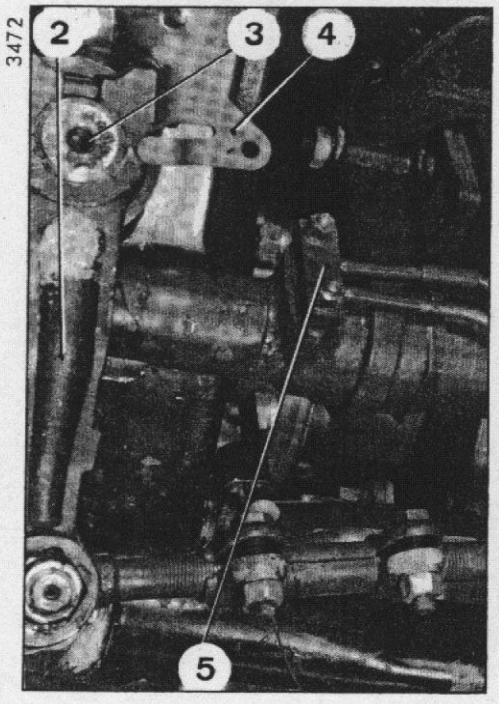
Connect the steering relay lever (2) to the relay lever spindle (3) and the headlamp directional control bracket (4) (if fitted).

Connect up the pipe assembly flange (5).

Interpose the seal holder plate. Tighten the nuts (shakeproof washer).

14. Fit the battery tray and the battery.

15. Connect the cables to the battery terminals.



16. Start up the engine.

Tighten the pressure regulator bleed screw.

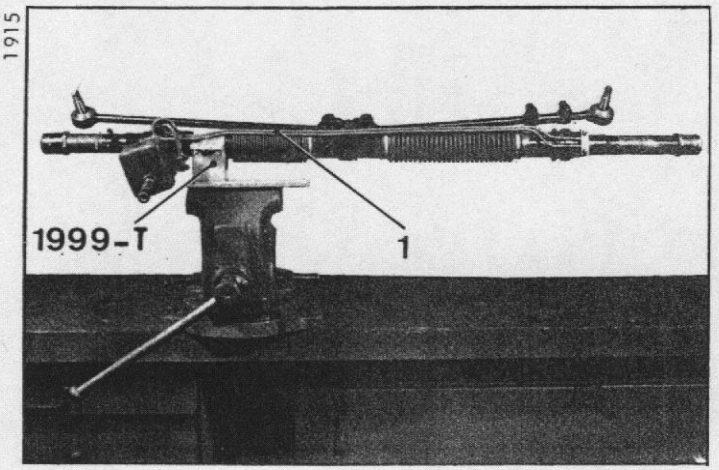
Operate the steering and check all unions for leakages.

17. Adjust the steering lock.

18. Fit the right-hand wing.

III. REPLACING A PINION AND ROTATING UNION ASSEMBLY

1915

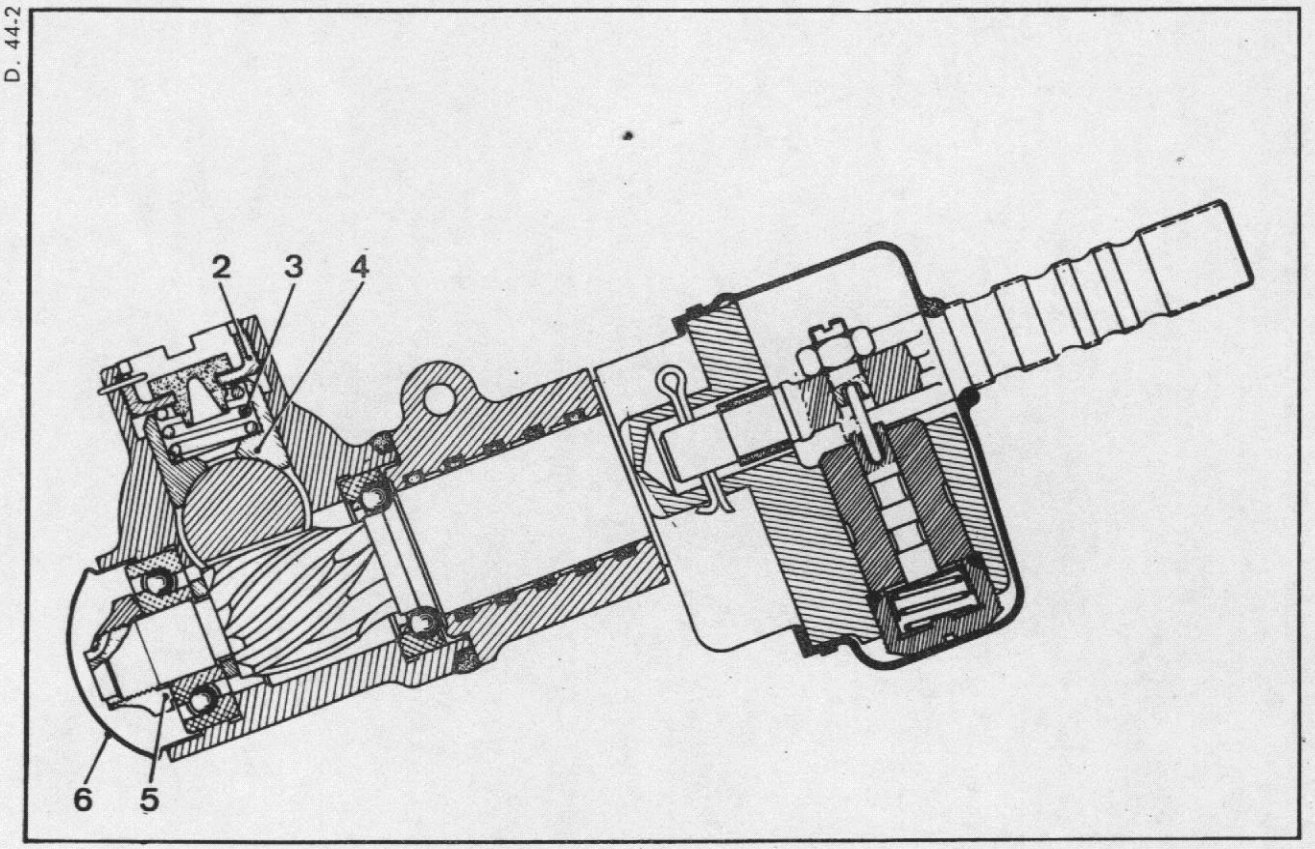


REMOVAL

1. **Remove the steering unit.**
2. Hold the steering in a vice using bracket 1999-T. Remove the assembly (1).
3. Remove the nut (7) and the stop rod (8) from the rotating union.
4. Remove the metal cap (6). Unlock and remove the nut (5).
5. Remove the split pin and then the nut (2) from the rack pressure pad using spanner MR.630-16/7. Remove the spring (3) and the pressure pad.(4).
6. Free the pinion and rotating union assembly, if necessary by tapping the end of the pinion with a brass rod.

   CAUTION : Do not lose the balls from the upper bearing.

D. 44-2



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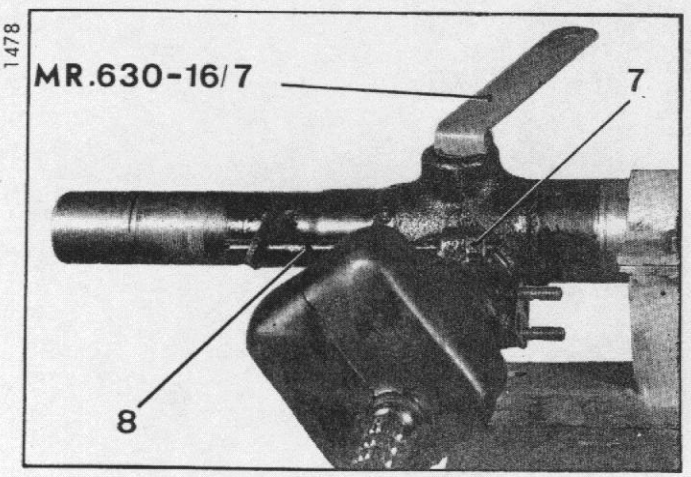


FITTING

7. Fit and adjust the pinion and rotating union assembly.
8. Fit the rack pressure pad (4).
   Fit the spring (3).
   Tighten the nut (2) and then slacken it by one-sixth of a turn using spanner MR. 630-16/7.
   Split-pin the nut.
9. Remove the steering unit from the support.
10. Fit the steering unit in the vehicle.

LIST OF SPECIAL TOOLS MENTIONED IN THE SECOND SECTION OF THE MANUAL 814-2

ITEM	NUMBERS Methods-Repairs Old	NUMBERS Methods-Repairs New	REFERENCE of tool sold
ENGINE			
Bolt for retaining liners			3074-T
Fixture for fitting 86 mm ϕ piston rings			3070-T
Fixture for fitting 90 mm ϕ piston rings			3072-T
Mandrel for centring clutch disc			3106-T
Push-rod extractor	MR. 3670	MR. 630-27/4	
Mandrel for crimping plugs in cylinder block	MR. 3436-200	MR. 630-31/43	
Valve spring contractor			3084-T
Supports and rods for replacing valves			3077-T
Support for holding valves	MR. 4156-40	MR. 630-63/13	
Tools for replacing valve guides			3079-T
Valve grinder			1615-T
Mandrel for fitting sparking plug tubes	MR. 3676-400	MR. 630-31/71	
Extractor for front suspension arm and oil pump gear			3312-T
Intermediate fitting for extracting oil pump drive pinion			3316-T
Plate for fitting liner seals		MR. 630-64/25	
Mandrel for positioning distributor drive dog on its shaft		MR. 630-31/44	
CLUTCH			
Tool for adjusting clutch			1701-T
Fixture for adjusting clutch			3107-T
Plate for adjusting clutch			3108-T
Mandrel for fitting starter motor pole pieces (also used for clutch cylinder)	MR. 3045-60	MR. 630-31/11	
GEARBOX			
Stand for gearbox on work bench			3169-T
Tee spanner for clutch housing securing bolts			1677-T
Gauge for setting reverse gear idler to « neutral » *(up to 9/1969)*			3183 T
Spanner for bevel pinion nut			3179-T
Puller with separator			2405-T
Pad for differential bearing			1742-T
Socket for locking bearing nut on differential shaft			1770-T bis
Socket for locking bearing nut in gearbox outlet			1771-T bis
Gauge for setting reverse gear idler to « neutral » *(9/1969 onwards)*			3188-T
Bush and mandrel for fitting gearbox outlet seal			1772-T
Dial gauge straight edge			1651-T
Dial gauge			2437-T
Tool for holding in position secondary gear train			3181-T
Fixture for conic distance adjustment			3170-T
Spanner for bevel pinion shaft nut and its bearing cage nut			1734-T bis
Fixture for backlash adjustment			3175-T
Fixture for setting reverse gear control spindle to « neutral » position			3174-T

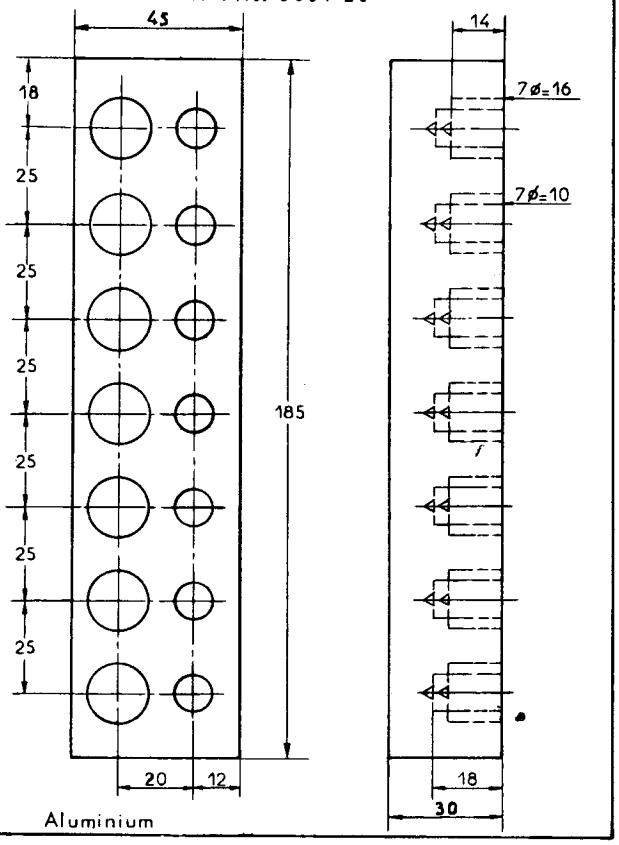
LIST OF SPECIAL TOOLS MENTIONED IN THE SECOND SECTION OF THE MANUAL 814-2

ITEM	NUMBERS Methods - Repairs Old	NUMBERS Methods - Repairs New	REFERENCE of tool sold
GEARBOX (Continued)			
Extension for dial gauge			3176-T
Fixture for setting operating dogs			3172-T
Fixture for setting reverse gear operating dogs			3173-T
Clamps for retaining differential	MR. 3644-50	MR. 630-64/15	
Pin for holding reverse gear shaft in « neutral »	MR. 3045-150	MR. 630-64/3	
Support for hydraulic gear selector	MR. 3053-200	MR. 630-43/12	
Rack for H.P. pump pistons	MR. 3053-210	MR. 630-43/13	
Tool for manipulating fork shafts		MR. 630-66/19	
Clamps for setting differential bearings	MR. 3644-60	MR. 630-64/16	
Dial gauge support			5602-T
HIGH PRESSURE PUMP			
Extractor for high pressure pump cover and spindle			2282-T
Rack for high pressure pump cylinder/piston assembly	MR. 3301-80	MR. 630-42/6	
Extractor			1671-T
End fitting with plunger for extracting high pressure pump needle cage			2217-T
Sleeve for fitting inner race of needle bearing	MR. 3045-140	MR. 630-32/5	
Dial gauge support			2039-T
Support for measuring needle length	MR. 3365-60	MR. 630-52/8	
Dial gauge			2437-T
Dial gauge extension			2438-T
Sleeve for fitting high pressure pump spacer	MR. 3436-110	MR. 630-31/80	
Clamps for fitting pistons			2284-T
Pad and mandrel for fitting high pressure pump shaft	MR. 3676-200	MR. 630-34/18	
Pad and mandrel for fitting high pressure pump cover			3653-T
Test bench for hydraulic components operating with LHS2 (red)			2290-T
Test bench for hydraulic components operating with LHM (green)			3654-T
Accessories for hydraulic test			3655-T
Cone for O-ring on pressure regulator bleed screw			2225-T
FRONT AXLE			
Vice support for front semi-axle	MR. 3053-120	MR. 630-43/8	
Block and mandrel for fitting front seal on axle body	MR. 3676-140	MR. 630-34/17	
Mandrel for fitting rear seal on axle body	MR. 3676-150	MR.630-31/60	
Tool for checking and adjusting castor angle			2321-T
Block for fitting lower ball joint seat		MR. 630 21/23	
REAR AXLE			
Vice support for rear suspension arm	MR. 3053 90	MR. 630 43/5	
Spanner for clutch housing securing screws			1677 T
Extractor for outer cage of outer bearing (rear drum hub)			2019 T bis
Mandrel for fitting ring seal of rear outer bearing	MR. 3676-170	MR. 630-31/72	
Pliers for removing and fitting brake shoe springs			2110-T

LIST OF SPECIAL TOOLS MENTIONED IN THE SECOND SECTION OF THE MANUAL 814-2

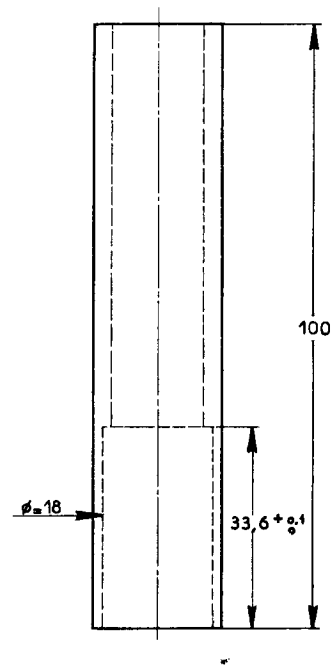
ITEM	NUMBER Methods - Repairs Old	NUMBER Methods - Repairs New	REFERENCE of tool sold
REAR BRAKE (Continued)			
Tool for removing and fitting caps from brake shoe springs			3556-T
Mandrel for regrinding rear brake drums			3566-T
Flanges for rear hub outer race	MR. 4114	MR. 630-64/23	
Dial gauge			2437-T
Tool for centring brake linings			3565-T
Tool for crimping brake shoe cams		MR. 630-62/17	
SUSPENSION			
Torque wrench			2473-T
Support for suspension cylinder	MR. 3407-30	MR. 630-43/24	
Test bench for hydraulic components operating with LHS2 (red)			2290-T
Test bench for hydraulic components operating with LHM (green)			3654-T
Support for suspension cylinder			2293-T
Support for height corrector	MR. 3053-260	MR. 630-43/16	
Union for bleeding height corrector			2218-T
STEERING SYSTEM			
Bracket for holding steering in vice			1999-T
Extractor for disconnecting central yoke from ball joint			1967-T
Extractor for pin connecting piston to steering rack control rod			1969-T bis
Spanner for adjusting nut on steering end-housing			2186-T
Spanner for steering rack control rod			1982-T
Extractor for central ball joint			1966-T
Extractor for removing ball joint from steering rack and steering lever			1964-T bis
Pad for tool 1964-T bis			1968-T
Support for dial gauge used in adjusting steering pinion			1997-T
Dial gauge			2437-T
Torque wrench (0 to 14 m.kg)			2471-T
Gauge for adjusting O-ring on steering rack operating piston			1983-T
Mandrel, bush, cone for fitting teflon seal			
Extractor for steering rack connecting pin	MR. 3404-50 a	MR. 630-22/9 a	
Spanner for steering rack pressure pad	MR. 3691-70	MR. 630-16/7	
Mandrel for fitting track rod flexible bushes	MR. 3676-110	MR. 630-31/57	
Soft jaws for holding rack control cylinder in a vice	MR. 3407-20	MR. 630-43/23	
End-piece for relay nut			3506-T
BRAKES			
Spanner for plug on hydraulic brake pedal gear	MR. 3691-50	MR. 630-16/5	
Rack for selector pistons of hydraulic gear	MR. 3053-210	MR. 630-43/13	

MR. 630-42/6
ex MR. 3301-80



Aluminium

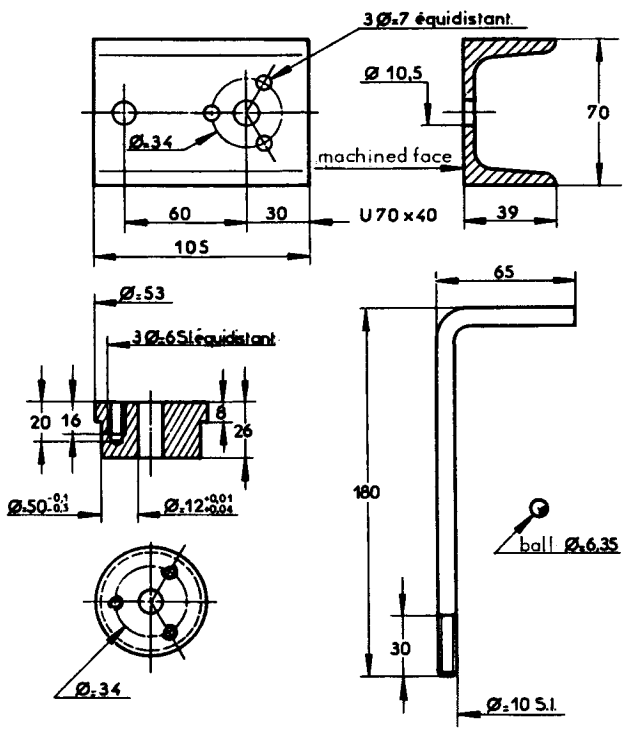
MR. 630-32/5
ex MR. 3045-140



Drawn semi-hard steel tube 15 · 21 mm

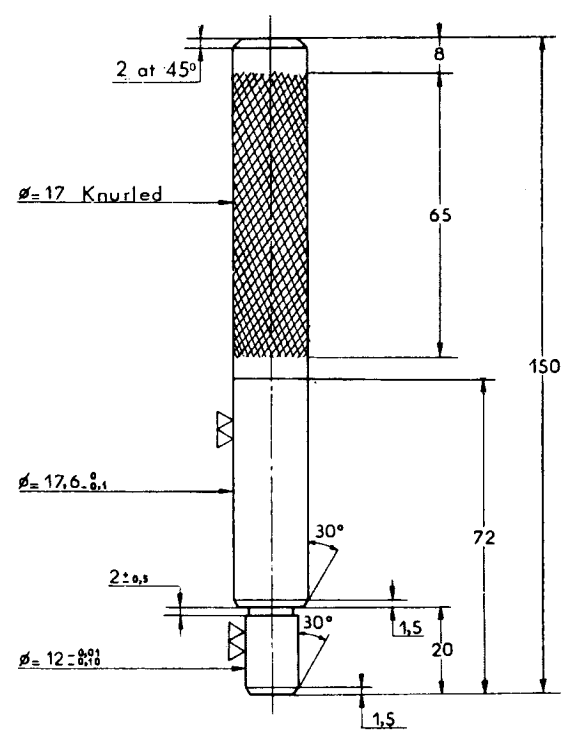
Manual 814.2

MR. 630-52/8
ex MR. 3365-60



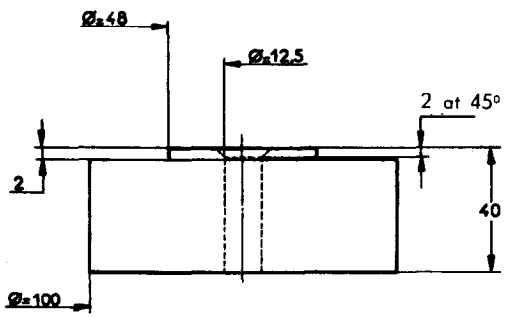
Semi-hard steel Drawn ♁ 10

MR. 630-31/80
ex MP 3436-110



Semi-hard steel

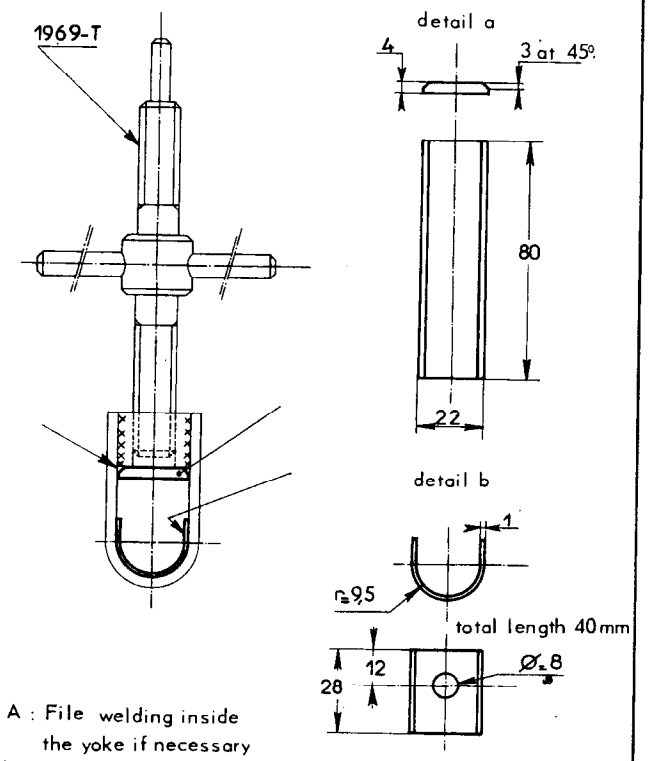
MR. 630-34/18
ex MR. 3676-200



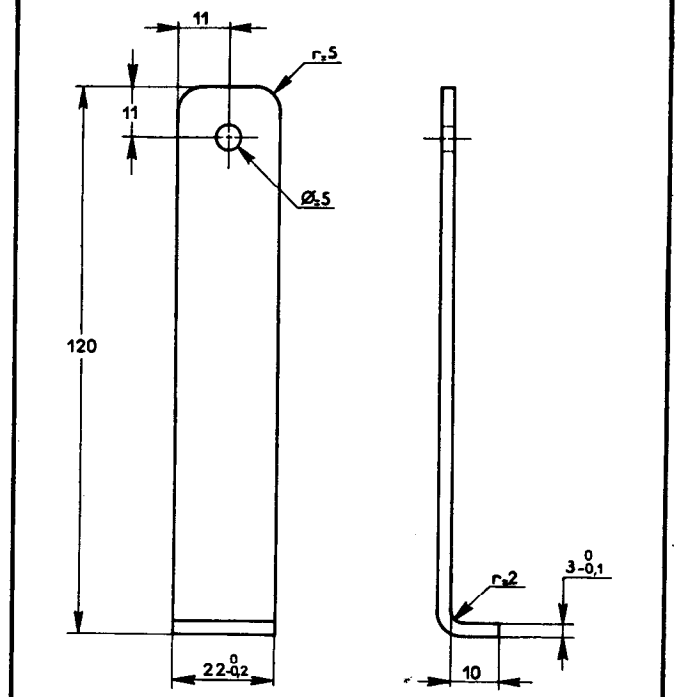
▽ Everywhere

Semi-hard steel

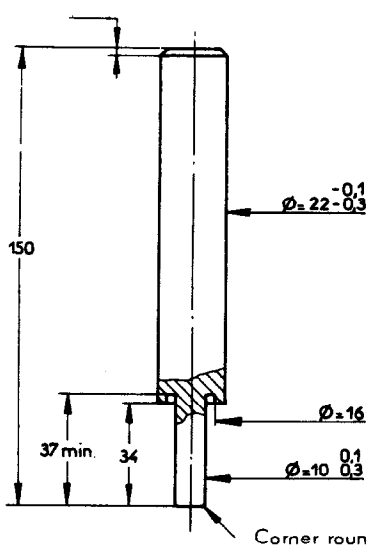
MR. 630-22/9 a
ex MR. 3404-50 a



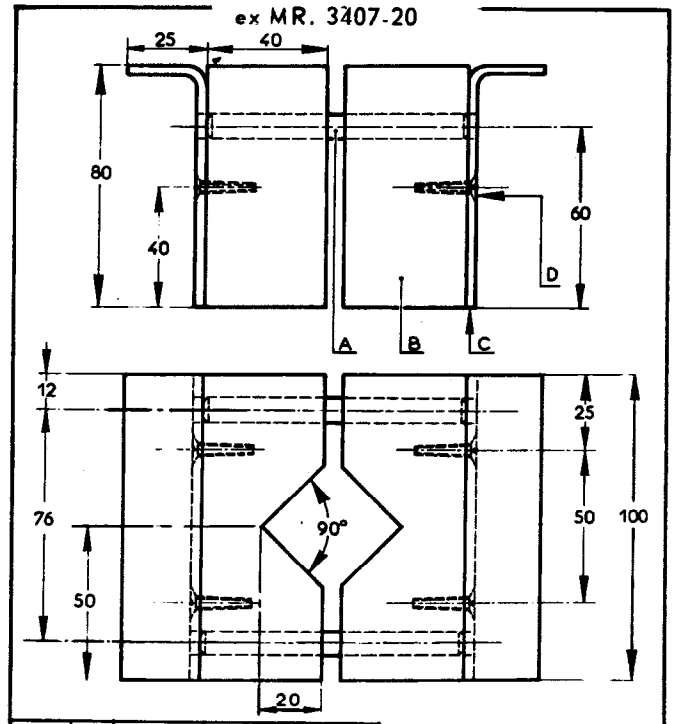
MR. 630-16/7
ex MR. 3691-70



MR. 630-31/57
ex MR. 3676-110

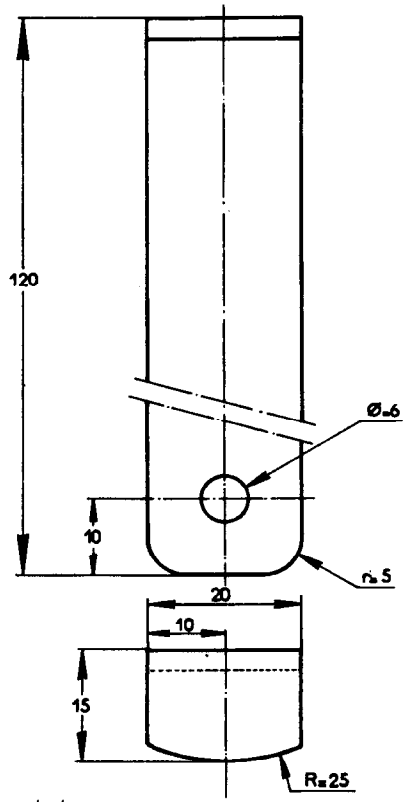


MR. 630-43/23
ex MR. 3407-20



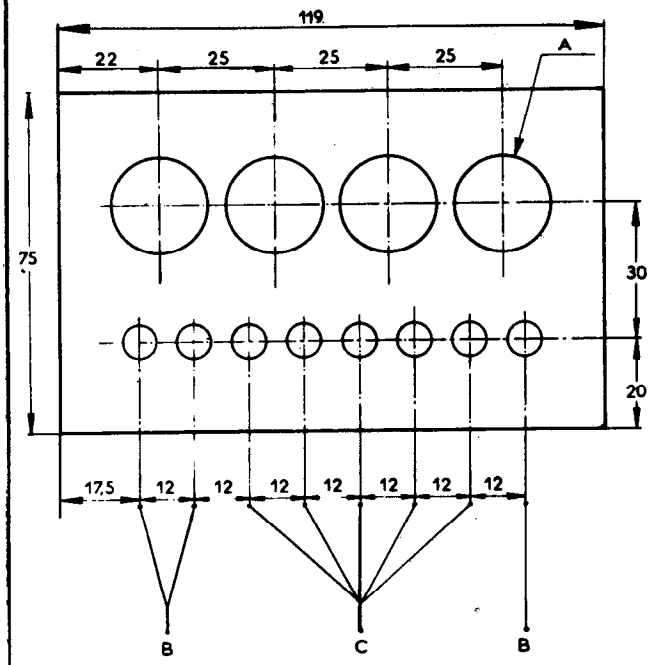
Ref.	N°	Item	Material
A	2	Guide	drawn ⌀ 8 mm length 85 mm
B	2	Jaw	hard wood
C	2	Jaw	3 mm steel sheet
D	4	Woodscr.	⌀ 4 mm L. 20 mm

MR. 630-16/15
ex MR 3691-50



2.5 steel sheet

MR. 630-43/13
ex MR 3053-210

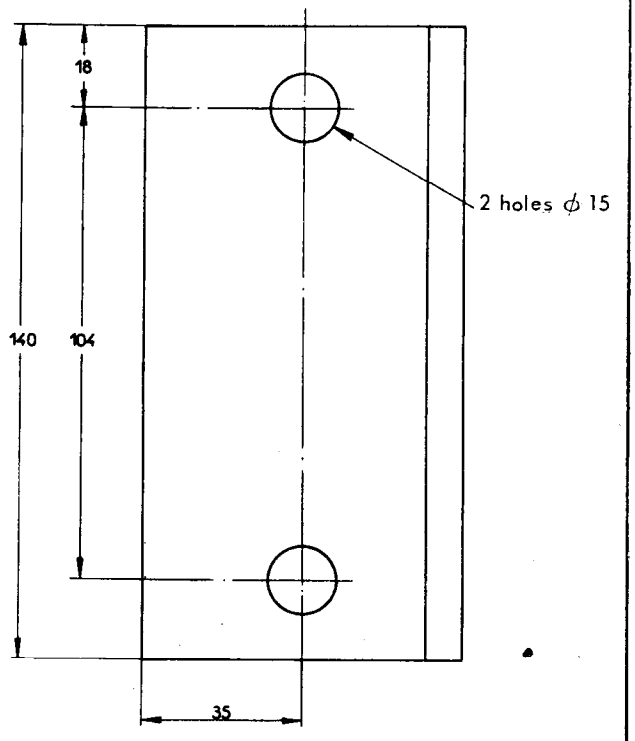


A : 4 Ø.21 L=6
B : 3 Ø.7.5 L=12
C : 5 Ø.7.5 L=3

Thick. 25 mm aluminium

MR. 630-43/8

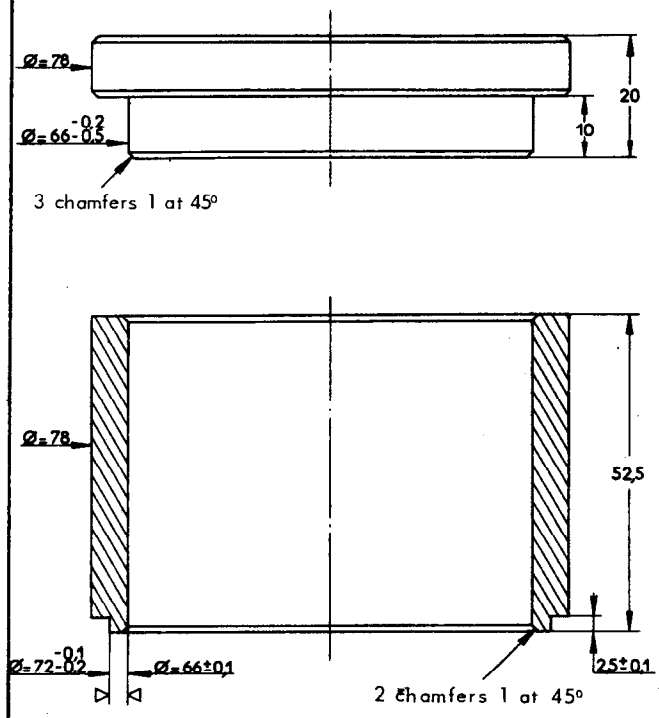
ex MR. 3053-120



Angle iron 70×70

MR. 630-34/17

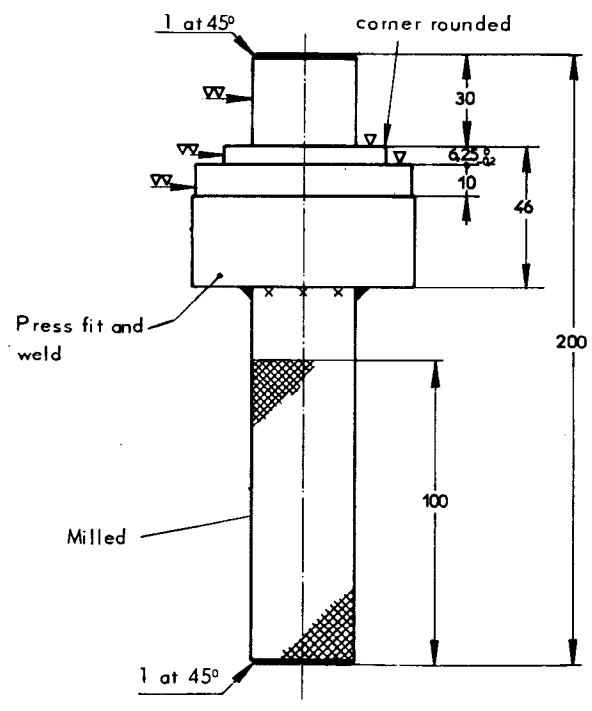
ex MR. 3676-140



Semi-hard steel

MR. 630-31/60

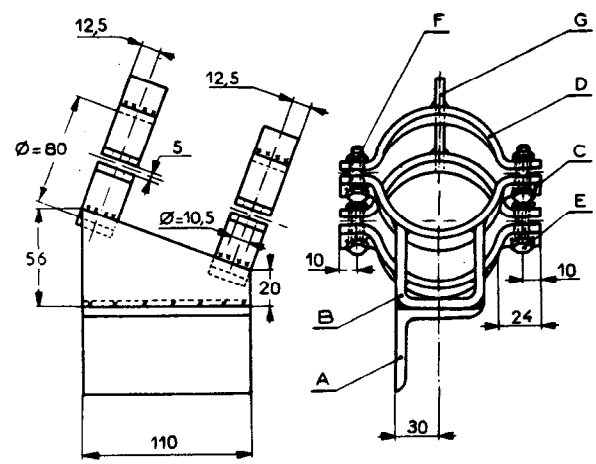
ex MR. 3676-150



Semi-hard steel

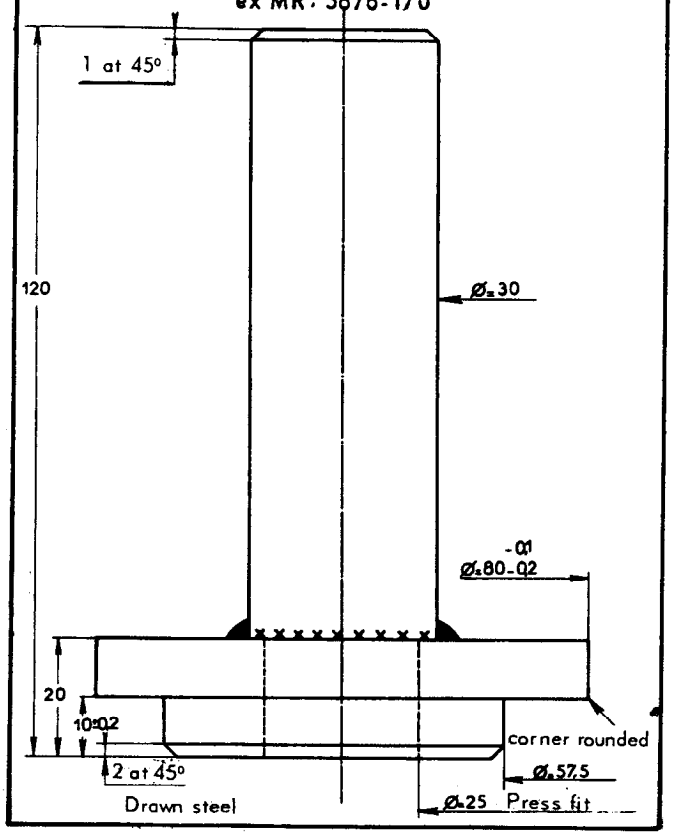
MR. 630-43/5

ex MR. 3053-90

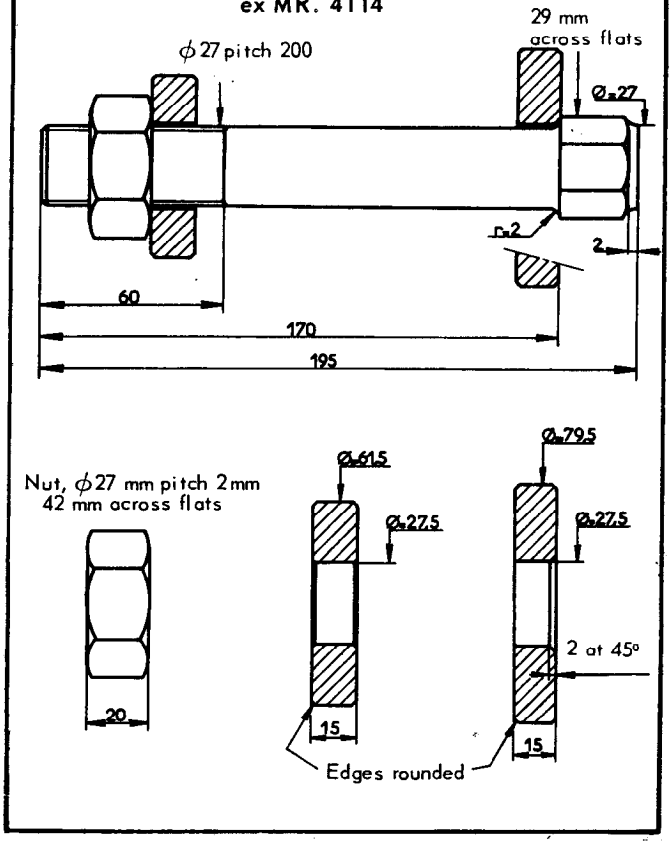


Nº	Qu.	Description
A	1	Angle iron 60 × 60 × 6, length 110 mm
B	1	4 mm steel sheet, total length 170 - welded on A
C	2	Semi-collars, 4 mm steel sheet, width 25 mm, total length 180 mm welded on B
D	2	Semi-collars, 4 mm steel sheet, width 25 mm total length 180 mm
E	4	Screws, ϕ 10 mm, pitch 1.5, length 30 mm, welded at C
F	4	Nuts ϕ 10 mm, pitch 1.5 mm
G	2	Brackets, thickness 4 mm, width 25 mm, height 20 mm welded on D

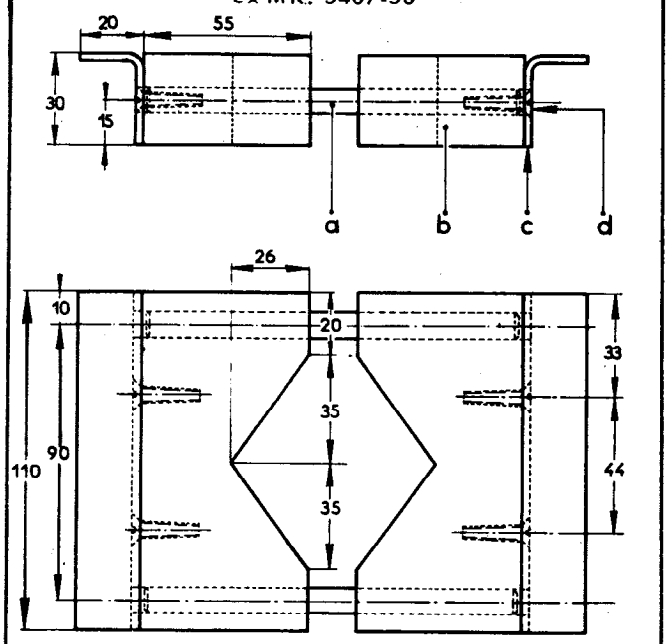
MR. 630-31/72
ex MR. 3676-170



MR. 630-64/23
ex MR. 4114

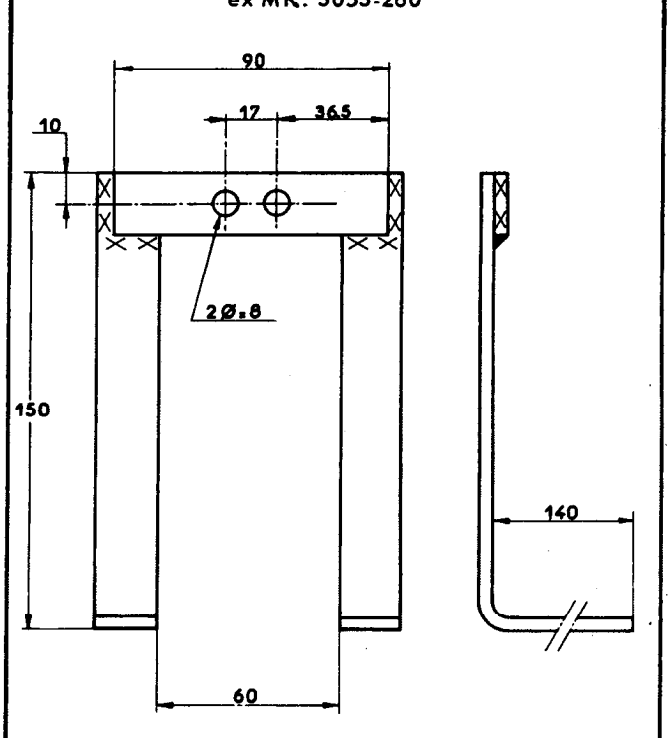


MR. 630-43/24
ex MR. 3407-30



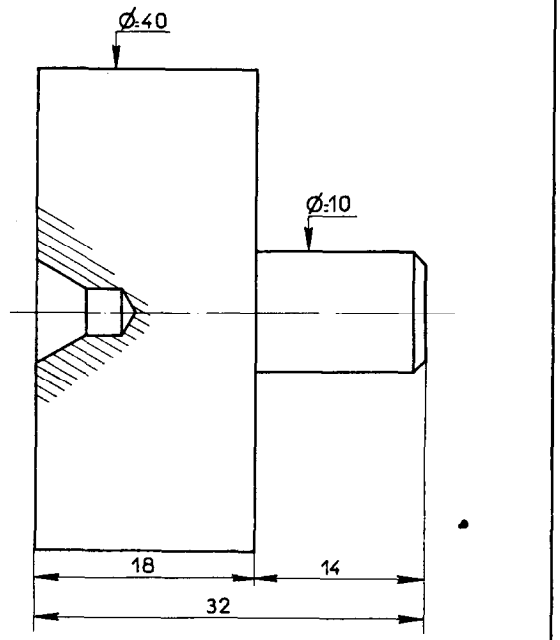
Ref	Qu.	Description	Material
a	2	Guide	Drawn φ 8, length 120
b	2	Jaw	Hard wood
c	2	Jaw	3 mm steel sheet
d	4	Wood screw	φ 5 mm, length 20 mm

MR. 630-43/16
ex MR. 3053-260

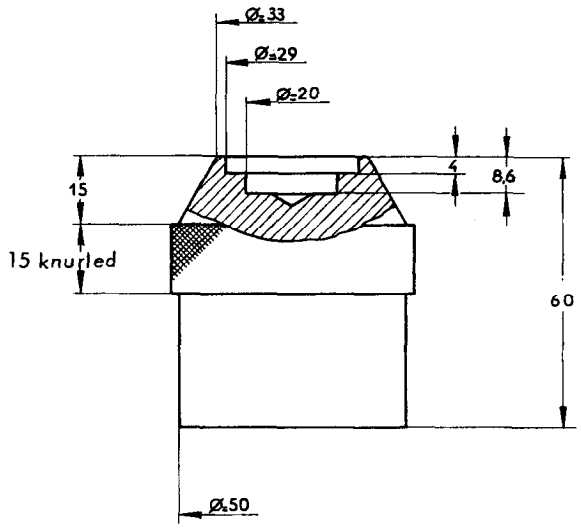


Flat bar 20 × 4 mm

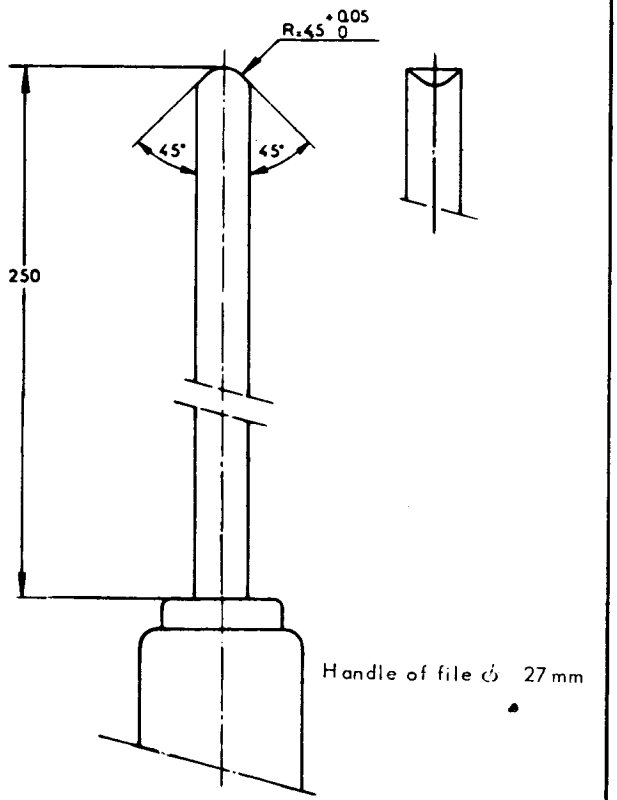
MR. 630-21/23
ex. MR. 3408-270 a



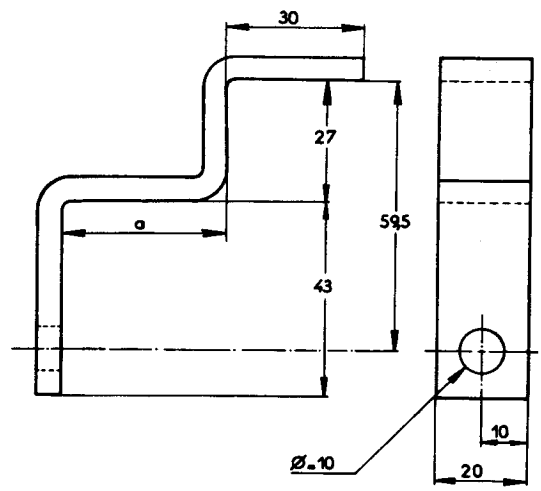
MR. 630-62/17
ex. MR. 3354-40



MR. 630-64/3
ex MR. 3045-150



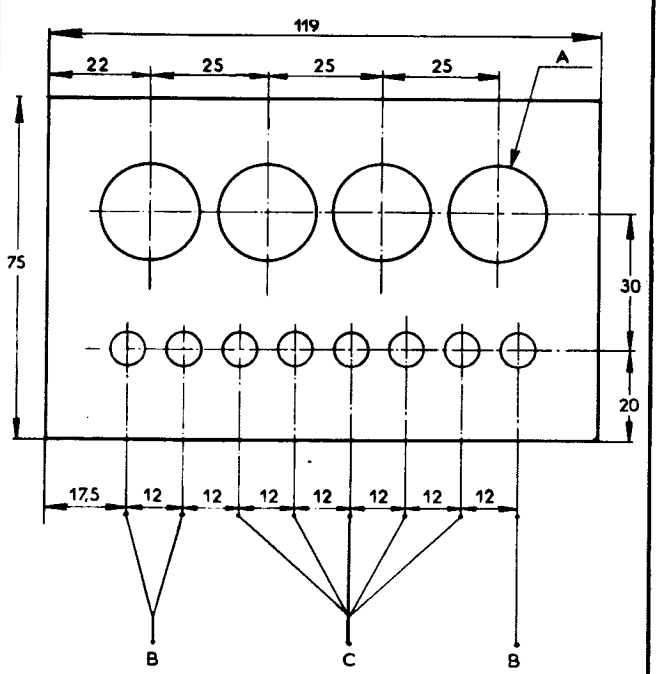
MR. 630-64/15
ex MR. 3644-50



1 part with a 14 mm
1 part with a 35 mm

Flat bar : 20 · 5 mm

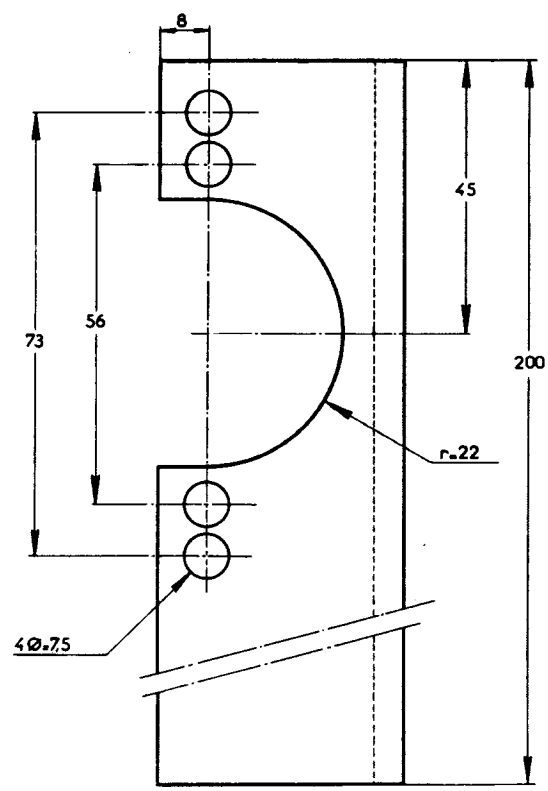
MR. 630-43/13
ex MR. 3053-210



A : 4 Ø=2.1 L=6
B : 3 Ø=2.5 L=12
C : 5 Ø=2.5 L=3

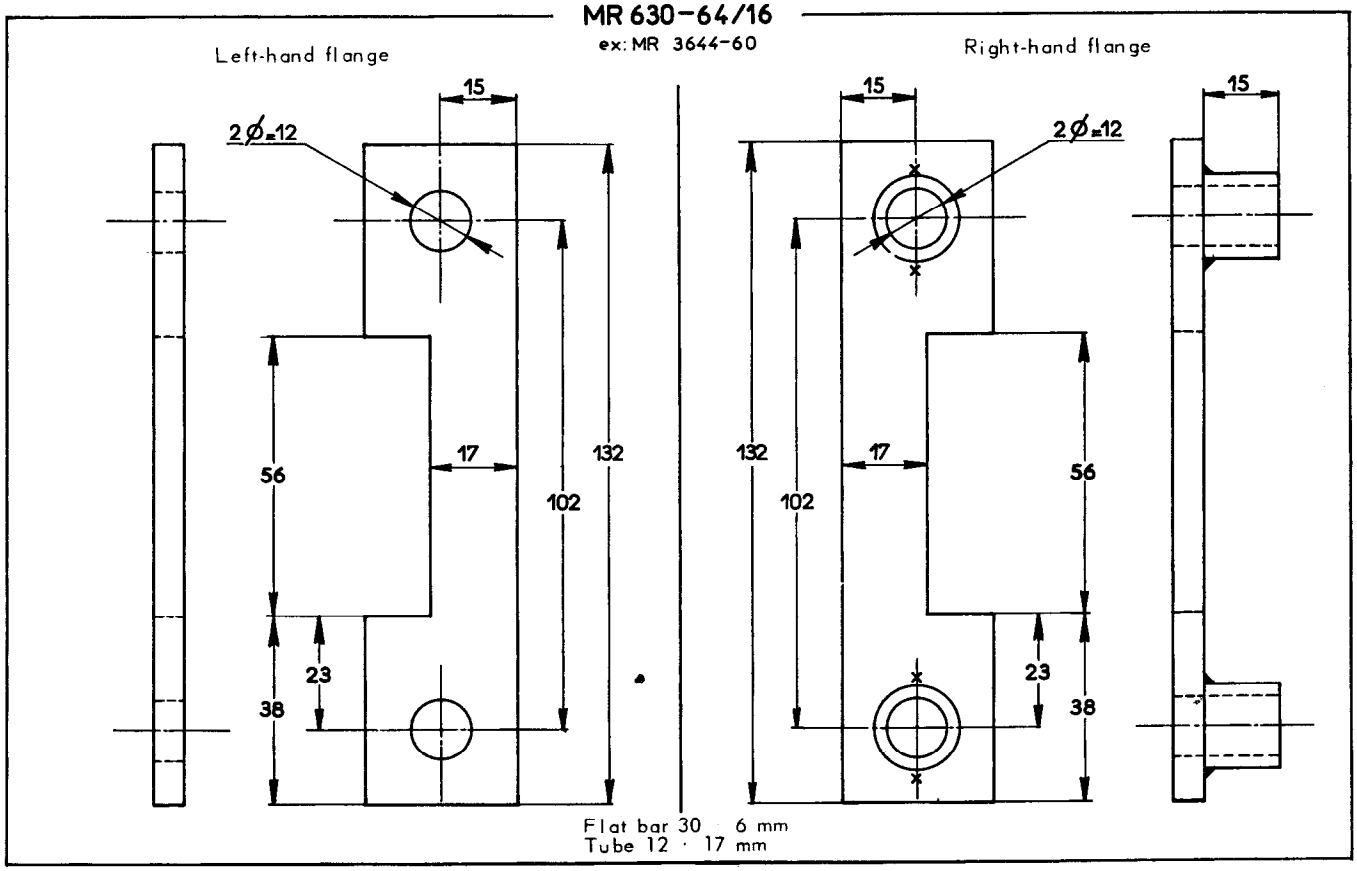
25 mm aluminium sheath

MR. 630-43/12
ex MR. 3053-200

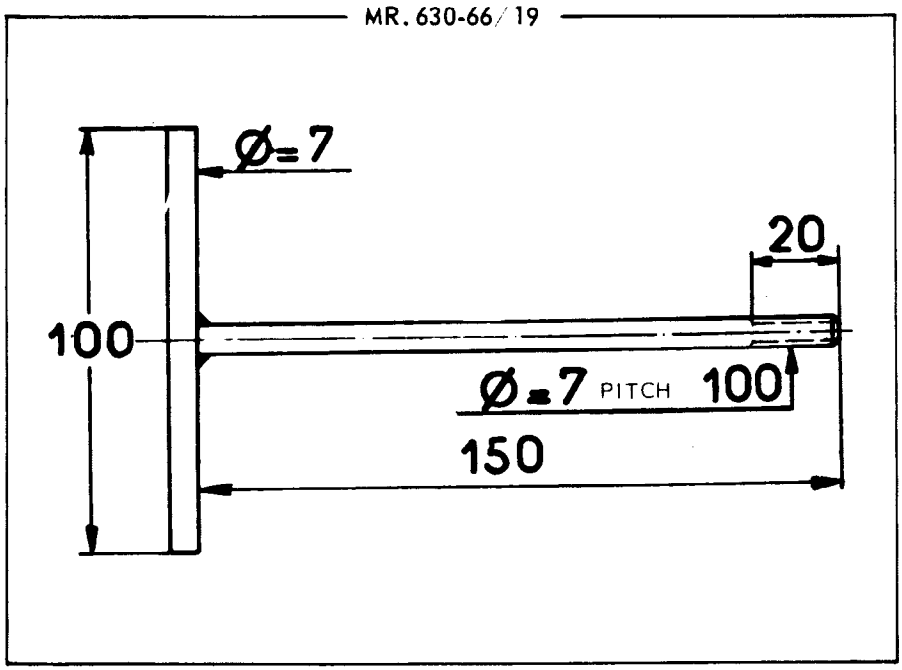


Angle bar 40 · 40 · 5 mm

MR 630-64/16
ex: MR 3644-60

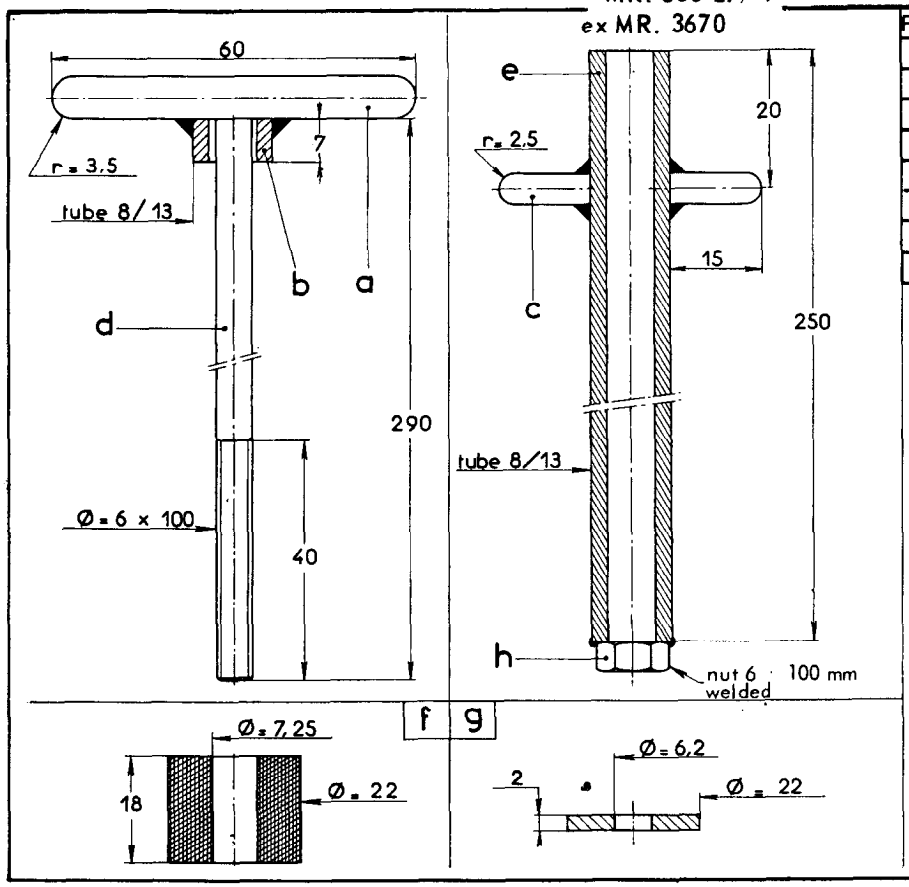


MR. 630-66/19

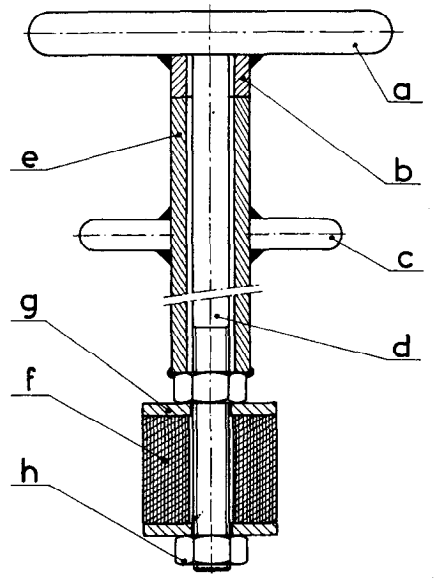


MR. 630-27/4

ex MR. 3670



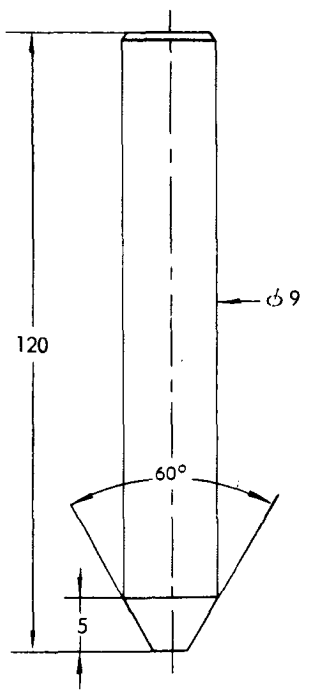
Rep.	Qu.	Material	Description
a	1	Steel ϕ 7 mm	Handle
b	1	Steel tube 8/13 mm	Spacer
c	2	Steel ϕ 5 mm	Operating arm
d	1	Steel ϕ 6 mm	Central rod
e	1	Steel tube 8/13 mm	Body
f	1	Rubber	Clamp
g	2	Steel ϕ 25 mm	Washer
h	2	Steel	Nut 6 · 100 mm



Manual 814-2

MR. 630-31/43

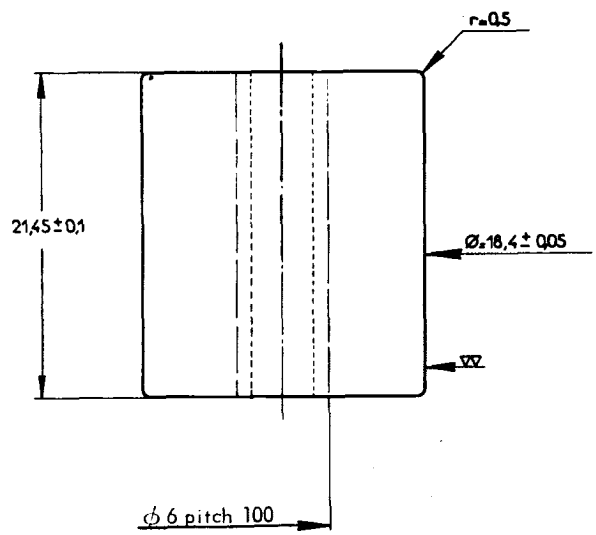
ex MR. 3436-200



Semi-hardened steel

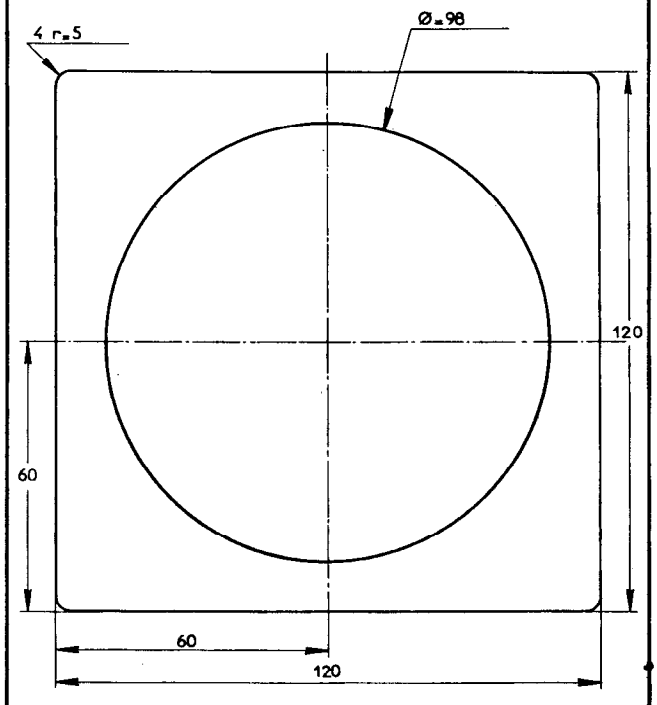
MR. 630-31/11

ex MR. 3045-60



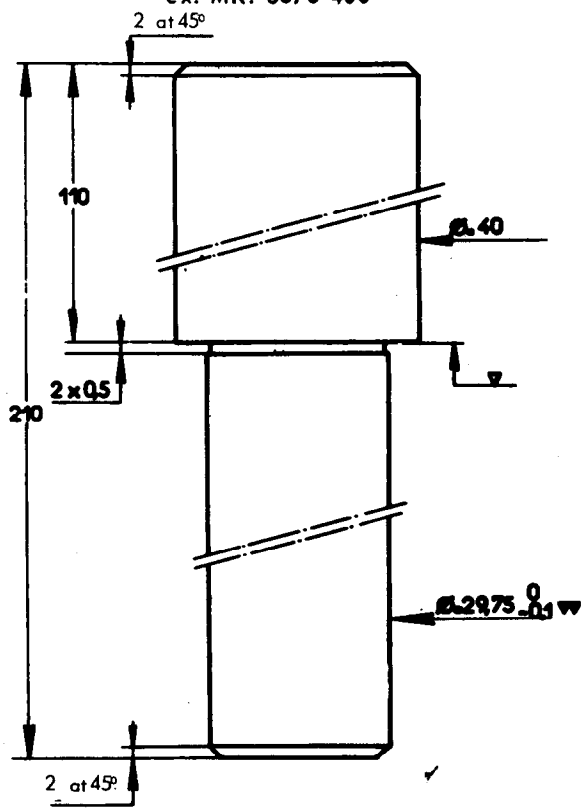
Semi-hardened steel

MR.630-64/25



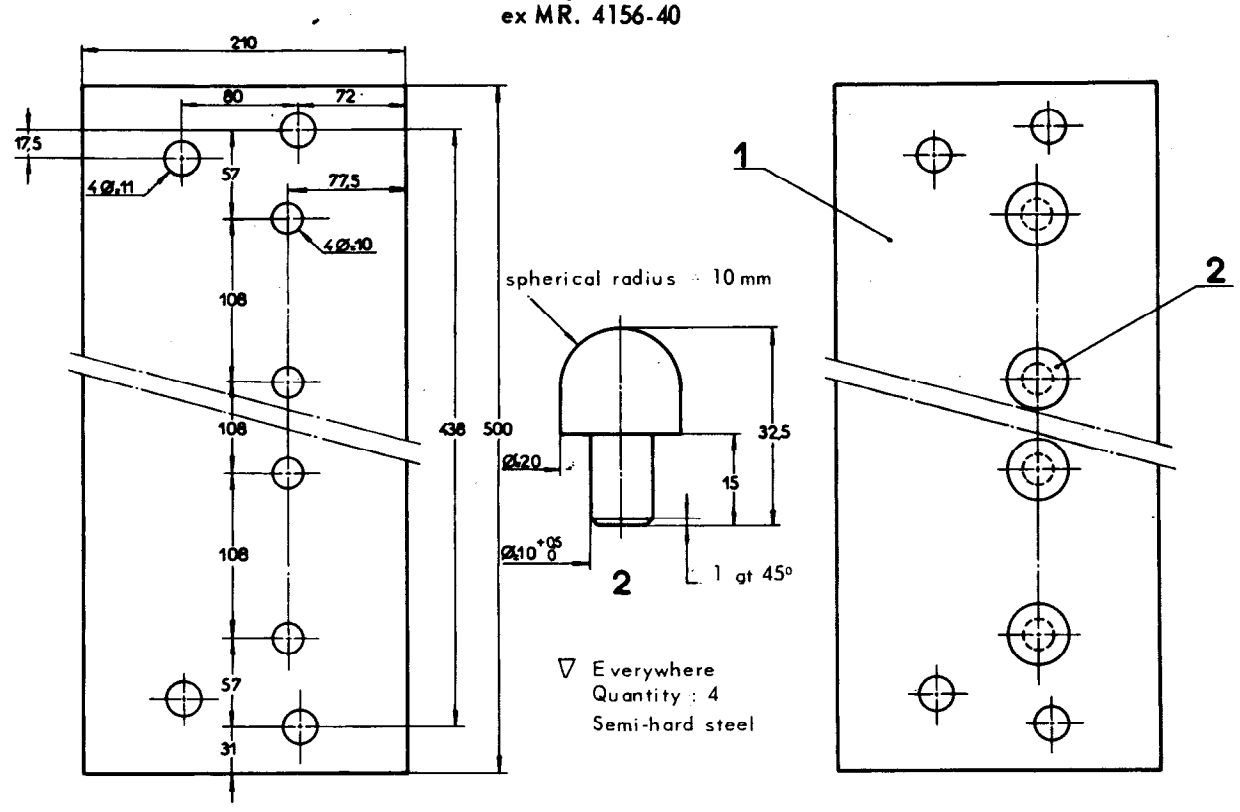
2 mm steel sheet

MR.630-31/71
ex. MR. 3676-400



Material : Drawn ϕ 40 mm

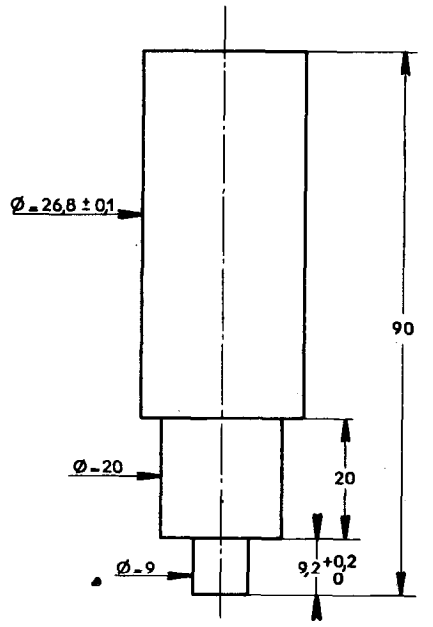
MR. 630-63/13
ex MR. 4156-40



▽ Everywhere
Quantity : 4
Semi-hard steel

Hard plywood, thickness about 20 mm

MR 630_31/44



▽ Everywhere

Material : Aluminium