



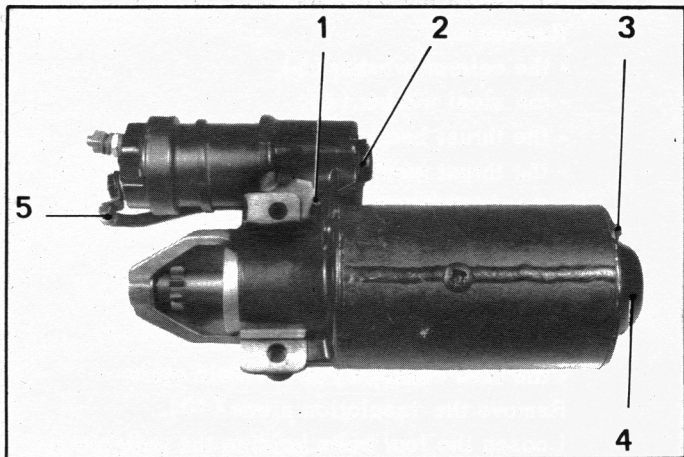
MANUAL N° 810 - 2

THIRD SECTION

Manual 810-2

ELECTRICAL SYSTEM

I. STARTER MOTOR TYPE DUCELLIER 6208 A or 6208 B



DISMANTLING.

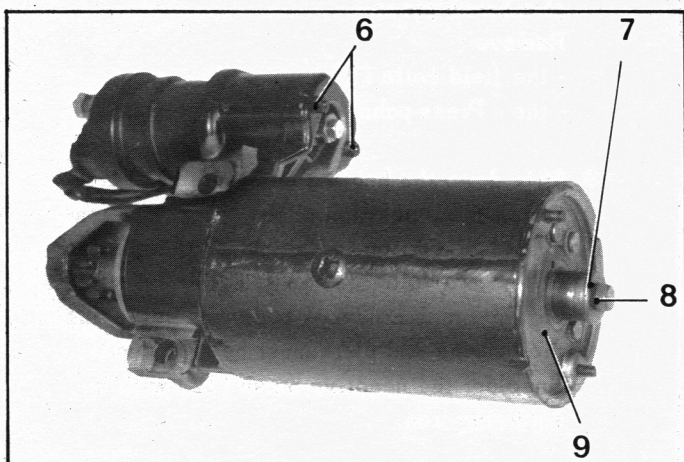
1. Disconnect the field coils supply lead (5).

2. Remove :

- the nuts (3) holding the bearing end plate,
- the rear cover (4),
- the plastic plug (2).

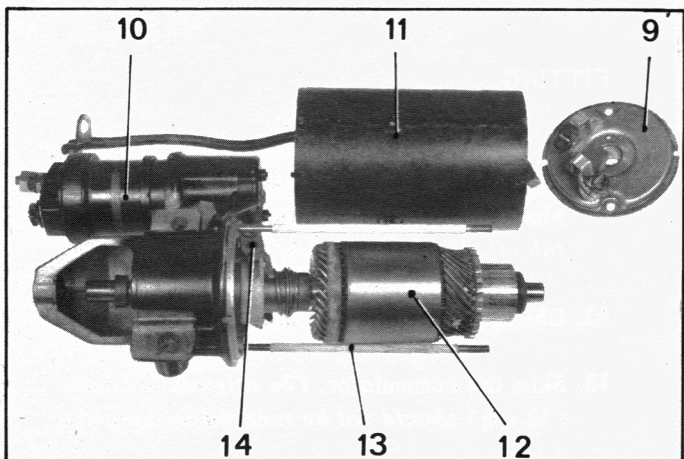
3. Drive out the fork hinge pin (1).

4. Hold the drive gear and remove the bolt (8) and its steel washer (7).



5. Remove :

- the bearing end plate (9) and release the positive brush and its guide.
- the yoke (11) from the two assembly rods (13),
- the solenoid (10) after removing the two nuts (6),
- the fork (14),
- the armature (12).

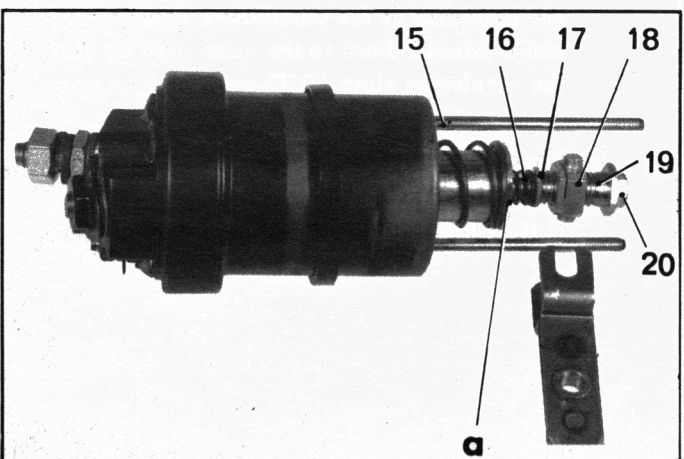


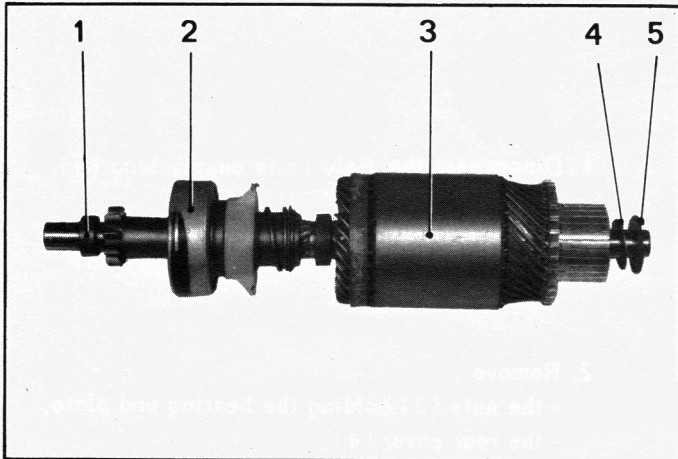
6. Strip down the solenoid :

Remove the two rods (15), the bolt (20) while holding the solenoid core by the two flats « a ».

Remove :

- the spring (16) and its washer (17),
- the adjustment sleeve (19) and its nut (18).





7. Strip down the armature (3) :

Remove :

- the celoron washer (5),
- the steel washer (4),
- the thrust bearing snap-ring (1),
- the thrust bearing (1),
- the driving gear (2).

8. Strip down the yoke (7) :

Unsolder (with a soldering iron) :

- the positive brush (8),
- the feed cable (6) to the field coils.

Remove the insulation piece (10).

Loosen the four bolts holding the pole pieces. Use a short screwdriver held in place by means of a bench press.

Remove :

- the field coils (9)
- the « Press-pahn » insulating material.

9. Strip down the bearing end plate (11) :

Check the insulation of the positive brush-holder in relation to the end plate using a 110 or 120 volts test lamp. If the lamp lights up, the brush-holder is badly insulated and the bearing end plate must be replaced. Unsolder the negative brush (12) with a soldering iron.

10. Clean the parts.

FITTING.

11. Inspect the armature shaft in two « V » blocks or between points. *The maximum tolerated out of round is 0,15 mm.*

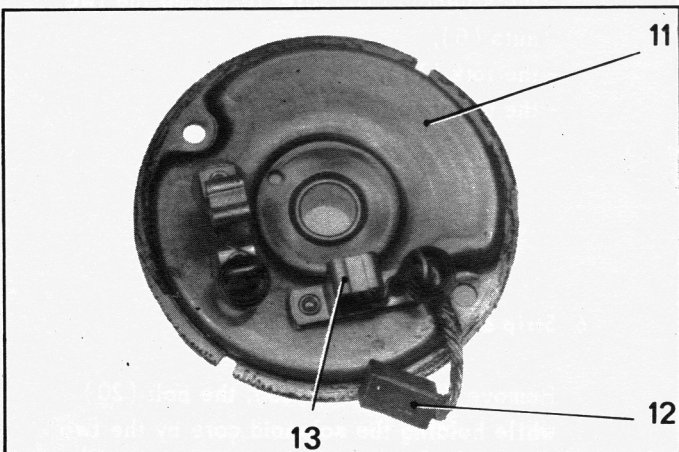
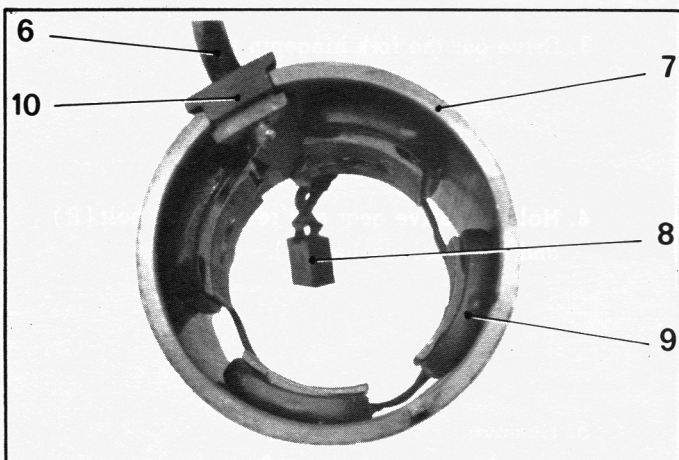
12. Check the armature on growl tester.

13. Skim the commutator. *The original diameter (32 mm) should not be reduced by more than 2 mm.*

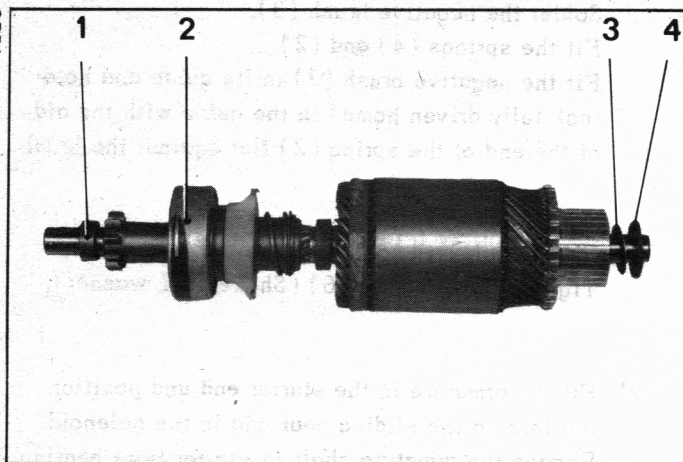
After skimming, undercut the insulators between the segments of the commutator using a saw-blade thinned down to the same size as that of the insulation slots (0.70 mm), or a scraper.

14. Check the brushes for wear and ensure that they slide freely.

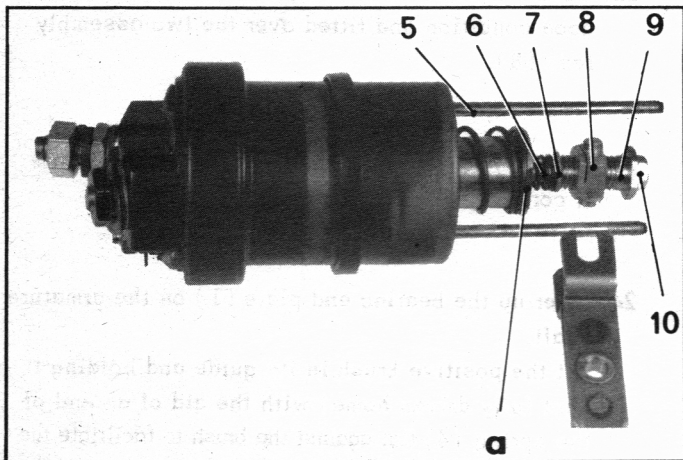
If they are less than 7 mm long, replace them.



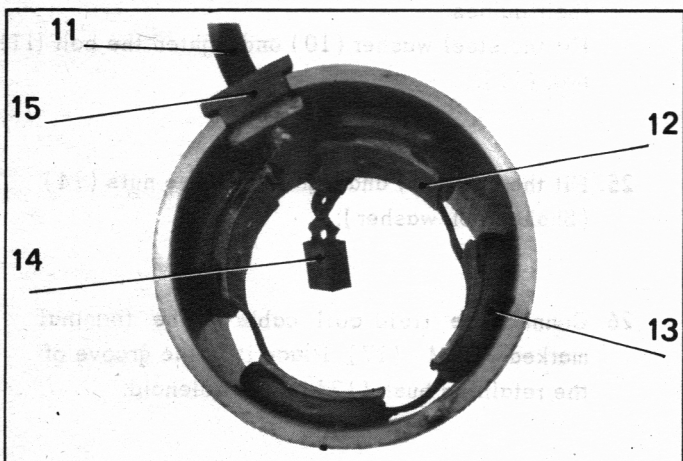
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Manual 810-2



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15. Check the solenoid :

- a) Check the resistance of the primary winding using an ohmmeter connected between the solenoid supply terminal (flat strip) and the terminal marked « DEM ». *This resistance should be on the order of 0,24 Ω.*
 - b) Check the resistance of the secondary winding using an ohmmeter connected between the solenoid supply terminal (flat strip) and the solenoid body. *This resistance should be 1.08 Ω.*
- If these conditions are not satisfied, replace the solenoid.

16. Prepare the armature :

- Fit the steel washer (3) and then the celoron washer (4) after oiling them.
- Oil the splines (use very thin oil) and fit :
- the drive gear (2),
 - the thrust bearing (1) and its stop-ring.

17. Prepare the solenoid :

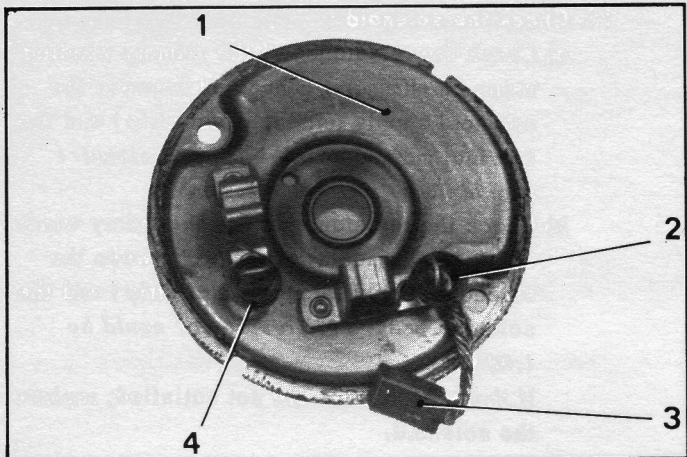
NOTE : The bolt (10) should be replaced at each dismantling.

- a) Fit on the bolt (10) :
 - the adjusting sleeve (9) and preset it halfway along its travel in the nut (8),
 - the celoron washer (7),
 - the spring (6).
- b) Now screw the bolt (10) completely into the solenoid core holding the latter with the two flats « a ».
- c) Fit the two rods (5).

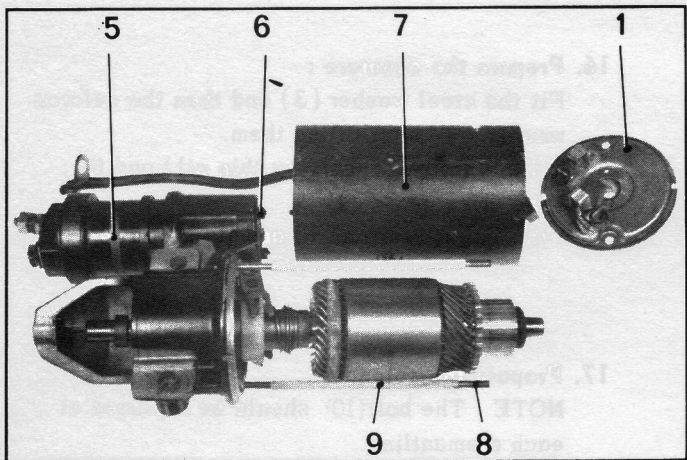
18. Prepare the yoke :

- Fit the winding (13) into the yoke and position the pole pieces (12). Hold these in place with the aid of the four holding screws.
- Fit the « Press-pahn » insulation under two windings and at the level of the feed cable connections (11) to the windings and the positive brush (14) to prevent a short circuit.
- Position the pole faces horizontally and tighten the securing screws with a short screw driver held in place by a bench press.
- Fit the insulation piece (15) and the feed cable (11) supplying the field coils.
- Solder the cable (11) and the positive brush (14).

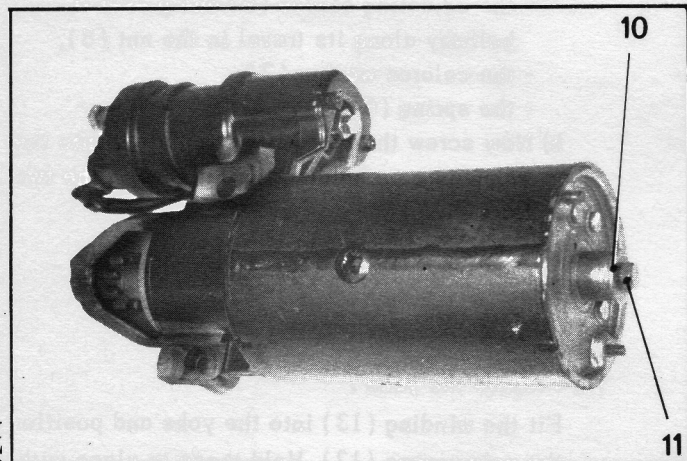
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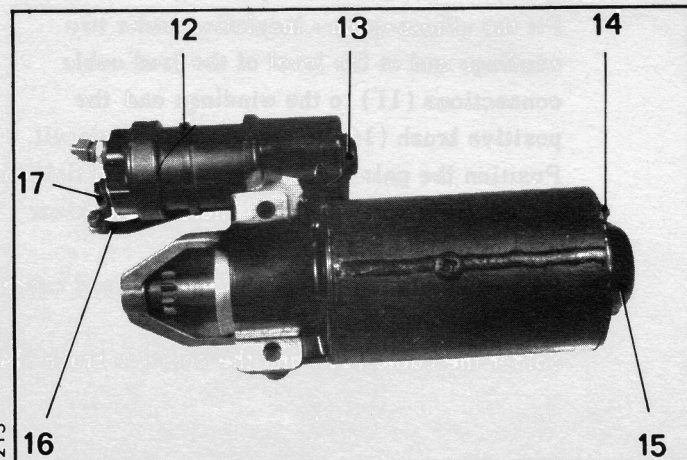
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19. Prepare the bearing end plate :

Solder the negative brush (3).
Fit the springs (4) and (2).
Fit the negative brush (3) in its guide and hold (not fully driven home) in the guide with the aid of the end of the spring (2) flat against the brush.

20. Fit the solenoid (5) on the starter driving end.
Tighten the two nuts (6) (Shakeproof washer).

21. Fit the armature in the starter end and position the fork on the sliding gear and in the solenoid.
Engage the armature shaft in starter front bearing.
Fit the split pin into the fork hinge hole.

22. Ensure that the insulating sleeves (9) are in good condition and fitted over the two assembly rods (8).

23. Fit the yoke (7) over the two rods and orientate it correctly.

24. Offer-up the bearing end plate (1) on the armature shaft.

Fit the positive brush in its guide and holding it (not fully driven home) with the aid of an end of the spring (4) flat against the brush to facilitate the passage of the brushes on the commutator.
Bring the end plate into contact with the yoke after releasing the brushes.
Fit the springs on the centre of the brushes in their guides.
Fit the steel washer (10) and tighten the bolt (11).
bolt (11).

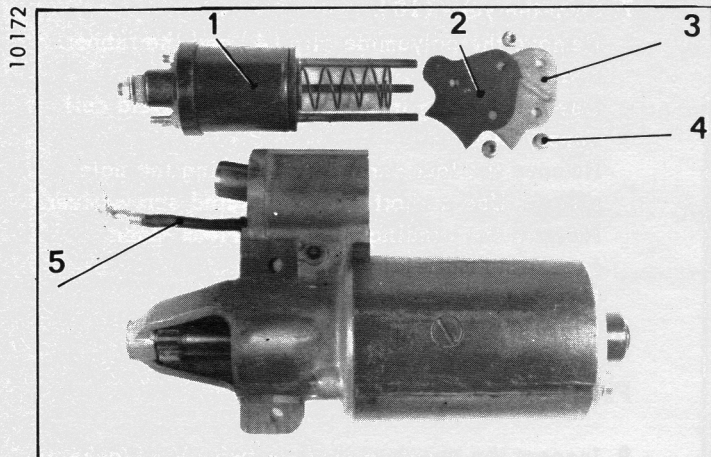
25. Fit the cap (15) and tighten the two nuts (14) (Shakeproof washer).

26. Connect the field coil cable to the terminal marked « DEM » (17). Place it in the groove of the retaining bush (12) on the solenoid.

27. Adjust the travel of the starter drive.

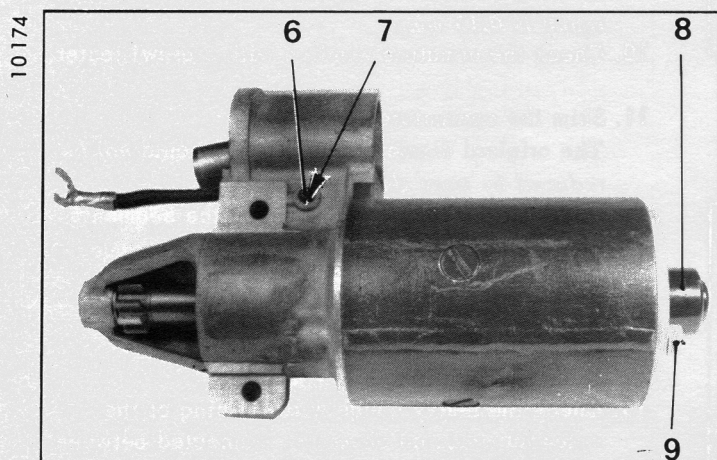
28. Fit the plastic plug (13).

II. STARTER MOTOR TYPE PARIS-RHONE D8 . E 103



DISMANTLING.

1. Remove the solenoid :
Disconnect the field coil cable (5).
Remove the three nuts (4) and release :
- the clamp plate (3),
- the fibre seal (2),
- the solenoid (1).



2. Pull off the plastic cap (8).
3. Drive out the hinge pin (6) of the operating lever and its support (7).

4. Remove the two assembly bolts (9).
Partly separate the end plate, commutator end (12), from the yoke and lift the positive brush (11) from its guide.

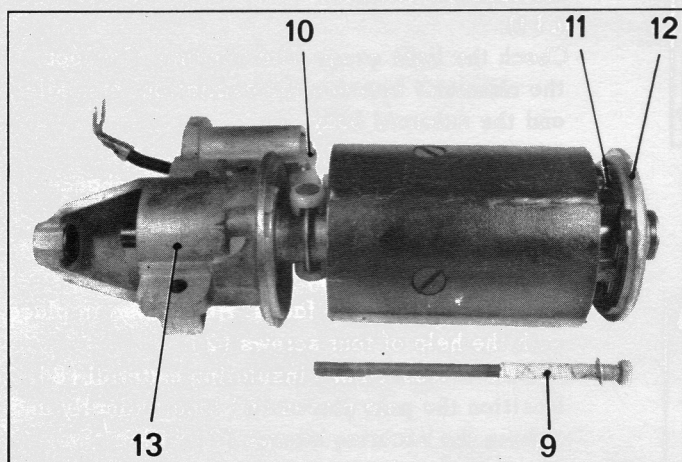
Remove :

- the starter bearing, driving end (13),
- the operating lever (10),
- the end plate (12) commutator end, armature and starter drive assembly,
- the starter drive (14).

5. Remove the end plate, commutator end, (12) from the armature (18).

To do this, remove the bolt (16), the thrust washer (15), the friction washer (17).

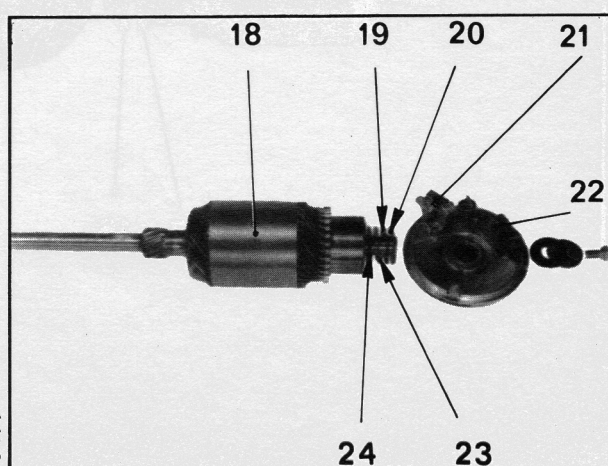
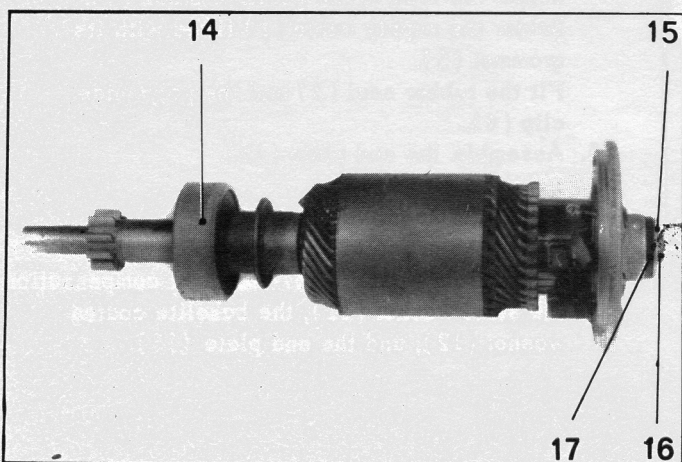
Release the end plate (12), the bakelite coated washer (20), the steel washer (19), the flexible washer (23) and the steel washer (24).

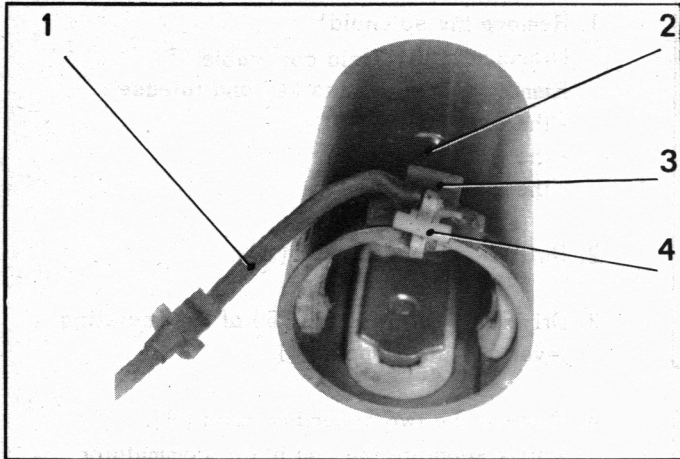


6. Strip the end plate, commutator end (12) :

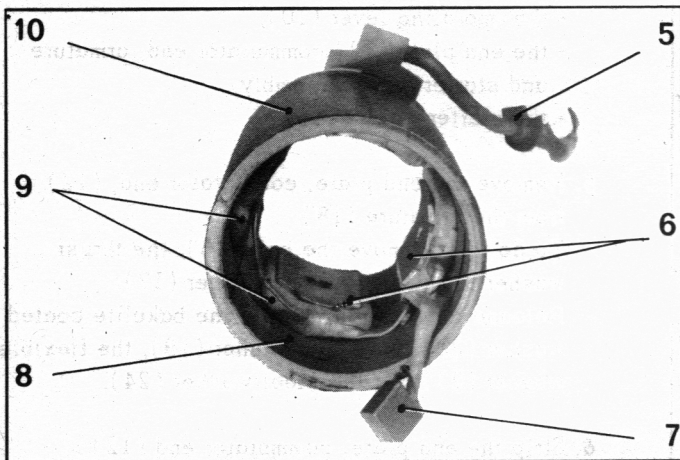
Unsolder the negative brush (21) :

Clean the end plate and check the positive brush-holder insulation (22) using an ohmmeter or a 110 or 220 volts test lamp. If the lamp lights up, the positive brush-holder is badly insulated, and the end plate (12) must be replaced.

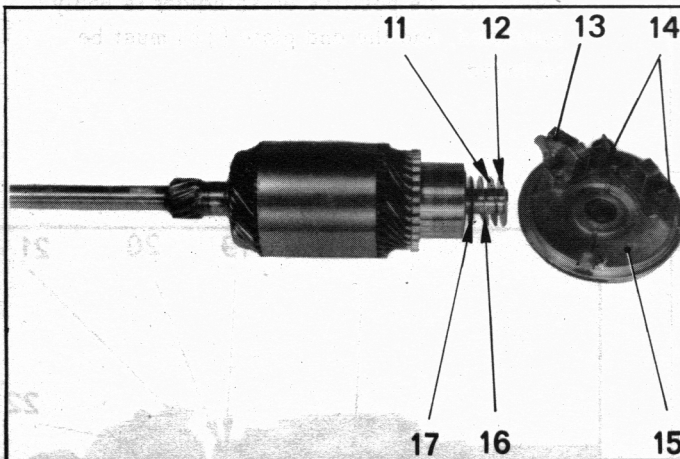




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7. Strip the yoke (10).

Remove the polyamide clip (4) and the rubber seal (3).

Use a soldering iron to unsolder the field coil supply lead.

Remove the four screws (2) holding the pole pieces. Use a short wheel-operated screwdriver. Remove the windings and the «Press-pahn» insulating material (8).

Unsolder the positive brush (7).

8. Clean the parts.

FITTING.

9. Inspect the armature shaft in two «V» blocks or between points. *The maximum tolerated out of round is 0.15 mm.*

10. Check the armature winding with a growl tester.

11. Skim the commutator.

The original diameter (36.5 mm) should *not be reduced by more than 1.5 mm.*

Undercut the insulators between the segments using a saw blade thinned down to the same width as that of the slots, or a scraper.

12. Check brushes for wear :

Nominal length = 14 mm.

Minimum worn length = 7 mm.

13. Check the heavy gauge wire winding of the solenoid using an ohmmeter connected between the excitation terminal of the solenoid (tag) and the opposite terminal. *The resistance must be 0.3 Ω.*

Check the light gauge wire winding. Connect the ohmmeter between the excitation terminal and the solenoid body.

The resistance must be 1 Ω.

If these conditions are not satisfied, change the solenoid.

14. Prepare the yoke :

Fit the field coils (9) in the yoke (10) and offer up the pole faces. Hold these in place with the help of four screws (2).

Fit the «Press-pahn» insulating material (8). Position the pole pieces (6) longitudinally and tighten the securing screws (2) with a short wheel-operated screwdriver.

Solder the lead to the positive brush (7).

Solder the supply cable (1) fitted with its grommet (5).

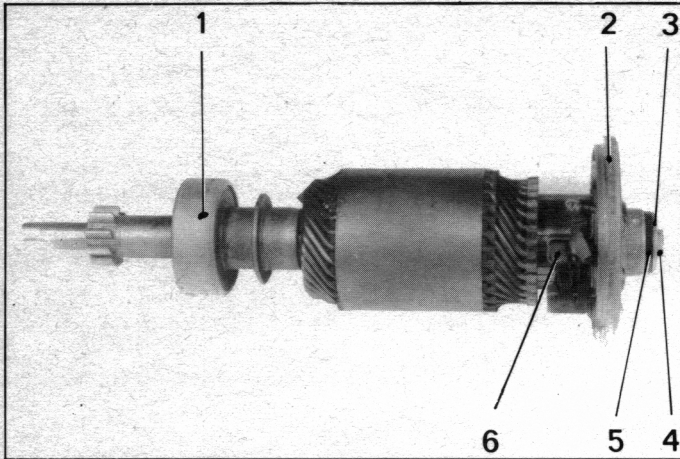
Fit the rubber seal (3) and the polyamide clip (4).

15. Assemble the end plate (15).

Fit the springs (14).

Solder the negative brush (13).

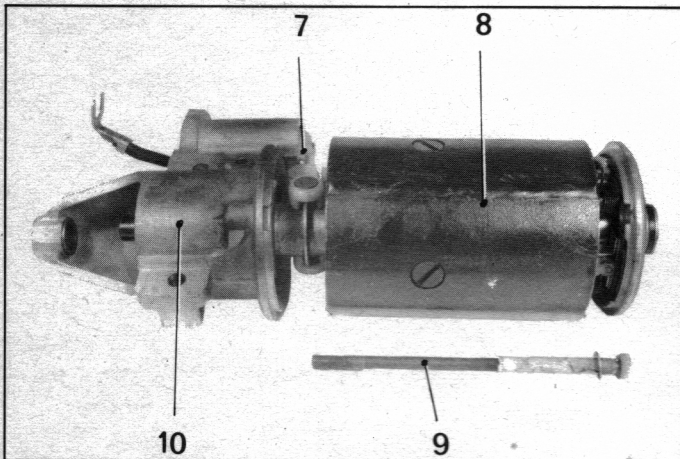
16. Fit on the armature shaft the steel washer (17), the flexible washer (16) (end-float compensation), the steel washer (11), the bakelite coated washer (12), and the end-plate (15).



17. Secure the end plate (2) on the end of the armature shaft.
Fit the friction washer (5) and the thrust washer (3). Tighten the bolt (4).
Fit the negative brush in its guide and bring the spring into contact with the brush.
Fit the plastic cap (17).

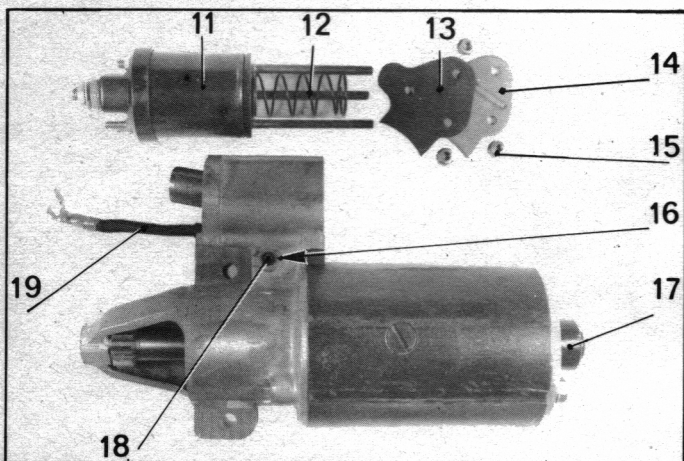
18. Oil the armature splines with « ANTAR RT 96 » grease and fit the starter drive (1).

19. Fit the armature into the yoke.
Fit the end plate (2).
Insert the positive brush into its guide and fit the spring.



20. Offer up the starter drive bearing (10) with the operating lever (7).
Position the latter on the starter drive (1).

21. Press the starter drive bearing (10) and the end plate (2) against the yoke (8).
Fit the assembly rods (9). (The rod with insulating tape (see illustration), placed between the two brush supports).
Tighten them to 8 to 11 mAN (0.8 to 1.1 m.kg).



22. Fit the support (16) for the operating lever hinge pin and the pin (18).

23. Fit the solenoid (11) equipped with its spring (12) and orientate it correctly.
Fit the fibre seal (13) and the clamp plate (14).
Tighten the nuts (15).
Connect the field coil supply cable (19).

24. Check and adjust the starter drive :

LIST OF SPECIAL TOOLS MENTIONED IN THE
THIRD SECTION OF THE MANUAL 810-2

DESCRIPTION	REFERENCE of tool on sale
<p>② CARBURATION</p> <p>Kit for checking fuel pump pressure</p>	<p>4005-T</p>
<p>③ IGNITION</p> <p>Gratuated scale for setting distributor</p>	<p>3093-T</p>