

# Reconditioning Ducellier Starter - Ref. 6081 Gasoline Engine

By Francis on Sunday, August 29 2010, 13:32

The starter once removed.



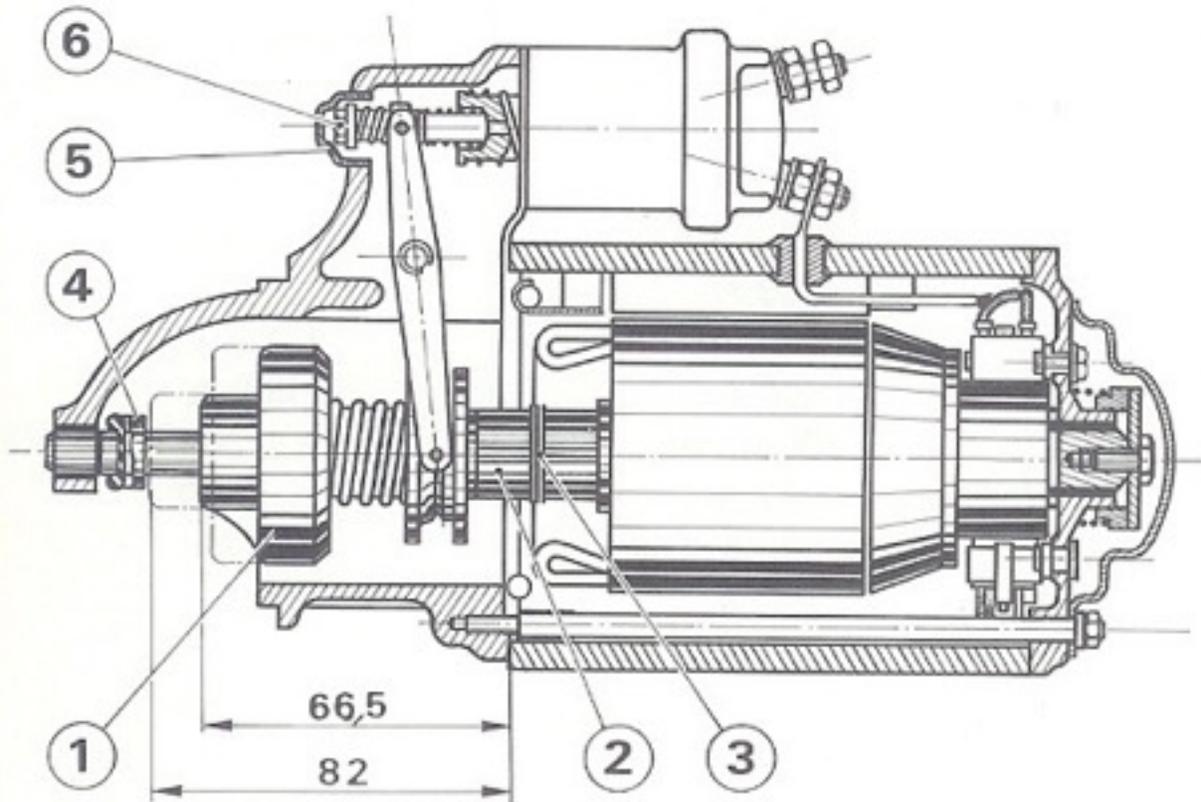
For simplicity see cf. Diagram below.

It is composed of an electric motor (large cylinder) surmounted by a solenoid (electromagnet).

During start-up the solenoid is fed (contact key), the electromagnet on the one hand pushes the toothed pinion on the flywheel of the flywheel and on the other hand thanks to a contact feeds the electric motor which rotates the toothed pinion previous.

This is to train the flywheel.

Once the contact key has been released, the solenoid no longer being supplied with power, a return spring pushes the mechanism (fork, toothed pinion) to rest (the pinion therefore disengages from the flywheel).



So now we can open.  
Remove the two nuts on the rear cover.



Remove the screw



From the lock washer, the nylon friction washer, the spring.



Removing the rear bearing, to detach it from the starter it is enough to release the positive broom of its guide by raising the spring.

Remove starter adjustment washers.

Note the rear cushion (brass color) in the center of the rear bearing.



Disconnect the leads from the solenoids by removing the 13 nut.  
The armature collector and the worn positive brush (5mm) can be seen  
for information the recommended minimum length is 8mm.



Then remove the carcass.



Removing the spindle from the solenoid fork using a pin hook.



Remove the plastic plug on the front of the solenoid and the two nuts (on each side of the plug) to hold the solenoid on the front body.



Disconnecting armature and solenoid from starter nose.

Below the armature with the launcher.



And after the solenoid with the fork.  
Note the plastic fork (in sheet metal on older starters).



To undress the solenoid.

Unscrew the screw by holding the solenoid core with a flat key.



**Recover.**

(From right to left 2nd row) this screw, the insulating gun, the insulating washer, the spring.

(From right to left 1st row) the paper seal, the sheet joint.

(Right to left 3rd row) the nut housed in the fork, the fork adjustment screw, and the fork.



Solenoid control.

Control of call winding.

Put the ground of a battery on the output that goes to the inductors (big nut of the bottom of the solenoid).

Put the + of the battery on the excitation plug (flat terminal).

The control rod (core) must fit inside the solenoid.

Perform this test several times.

If the stem does not move, then the solenoid is not working.

Control of the solenoid holding winding.

Set the battery ground (-) to the ground of the solenoid (body).

Put the + battery on the solenoid excitation (flat lug).

Press down fully on the control rod (core).

The stem must remain pressed if not the solenoid is not working.

Control of solenoid contact.

(No battery).

Connect an ohmmeter between the solenoid supply terminal (large terminal a Right) and the inductor coil terminal (large terminal on the left).

Press down firmly on the control rod (core).

The ohmmeter should indicate 0 (current flow).

If non-solenoid not working.

To undress the armature.

Reach the stop using a flush towards the rear (towards the starter) to be able to remove the snap ring using a screwdriver.



Once the snap ring comes out the stop and the launcher.



Before reassembly check the inductors.

The inductors will not be deposited but only the positive broom after removal of the old one will be soldered with tin.

Note the insulating sheet beneath the leads of the inductors and the positive brush.

Note that the inductors on this model are not made of coils but of permanent magnets.

To remove the inductors, it is sufficient to desolder the feed wire and that of the positive broom and then unscrew the 4 retaining screws of the inductors located on the outside of the carcass.



After placing the positive brush check the insulation of the carcass with a 60W bulb and a battery connected in series:

From + battery to one stud of the bulb.

From the other end of the bulb to the positive broom.

From the carcass (ground) to the battery.

If the bulb does not light the insulation is OK.

It is also possible to check the insulation with an ohmmeter connected between the positive brush holder and the ground of the carcass if OK infinite value.



Rear bearing check.

The cushion will be inspected (self-lubricating ring) in particular trace of heating or scratches.

The insulation of the positive brush holder will be checked method identical to that of the inductors.



The negative brush will also be changed.



Checking the armature.

Check all heating and short circuits on the windings.

Here the collector does not carry a trace of shots (arcs between brush and collector) nor of wear (perfectly cylindrical without hollow) it will be polished simply

Note if this was not the case the collector would be rectified to the lathe followed by a milling of the micas

Using an abrasive paper (1200), repolish the collector after cleaning the blades of the latter using a hacksaw blade (thinned to 0.70mm).



Once finished we get that.



The insulation of the collector with respect to the axis (ground) is checked by means of the bulb or the ohmmeter.



Once the preliminary checks we can go back.

Replaces the launcher on the axis of the armature after light oiling of the grooves.

Then put the stop on the axle to the launcher (the part chamfered outwards).

Replacing the rod in the groove of the armature shaft.

Finally, to bring the stop bearing against the rod (in order to insert the rod into the groove of the stop, it is possible to place the limit stop on two wedges placed on the jaws of the vice, armature placed vertically, and A small blow on the axis of the armature using a mallet).

Induced and launcher ready to be assembled.



Replacing the solenoid.

Set up on the solenoid.

The sheet metal joint.

The paper seal.

Position the nut in the fork (slot facing forward).

Temporarily screw the adjustment screw (brass color) into the nut.

Place the insulating barrel (cannon shoulder flanged shoulder adjustment screw) into the adjusting screw, engaging the long screw in the barrel from the front.

On the other side of this screw insert the insulating washer and the spring.

Screw the assembly thus prepared into the core of the solenoid by holding it with a flat key (note I put a drop of front brake on the screw thread of the screw), screw fully in compressing the spring.



Lubricate the fork at the launcher launcher.

Thread at the same time the solenoid and the armature between positioning the branches of the fork on the walkman and threading the axis of the armature in the bushing of the nose of the starter.



Position the pin in the fork joint hole and make it flush with the nose of the starter.



Replace the solenoid nuts.

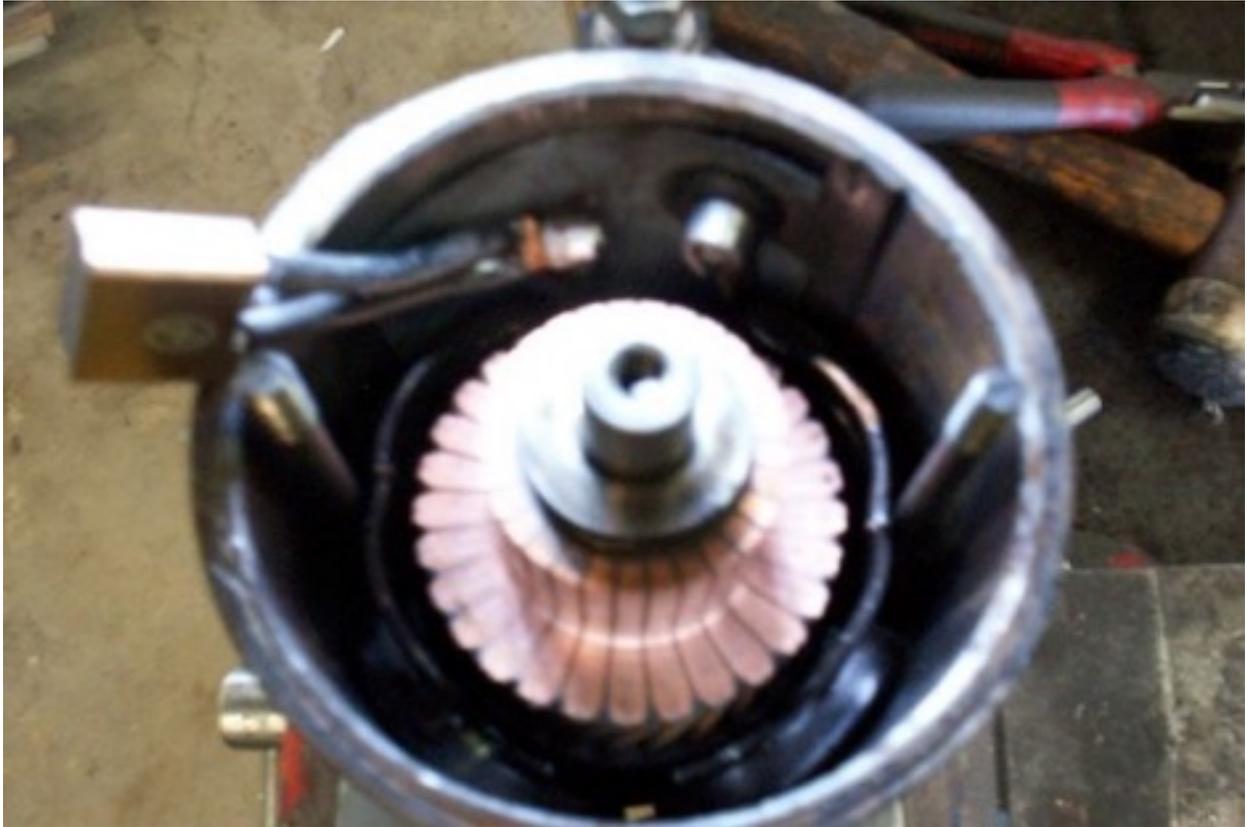


Return the assembly to the vice.  
Refit the studs.

Refit the starter adjustment shims.



Refit the carcass.



All that remains is to replace the rear bearing, taking care to reposition the positive broom in its housing.

Push the two brushes back and hold them with two small screwdrivers to prevent them from catching on the edge of the manifold.

Once the bearing is rested.

Lay the spring on the bottom strand in a hole on the bearing.



Then install the oiled friction washer on both sides (top strand of the spring in the friction washer housing).  
Install the lock washer and the screw, compressing the spring.



Replace the rear cover with two nuts.



Reconnect the inducer power wire to the solenoid.

All that remains is to adjust the launching distance or rather to verify it because the parts have not been changed. There is no reason (modification modified using shims previously seen on the armature axis.

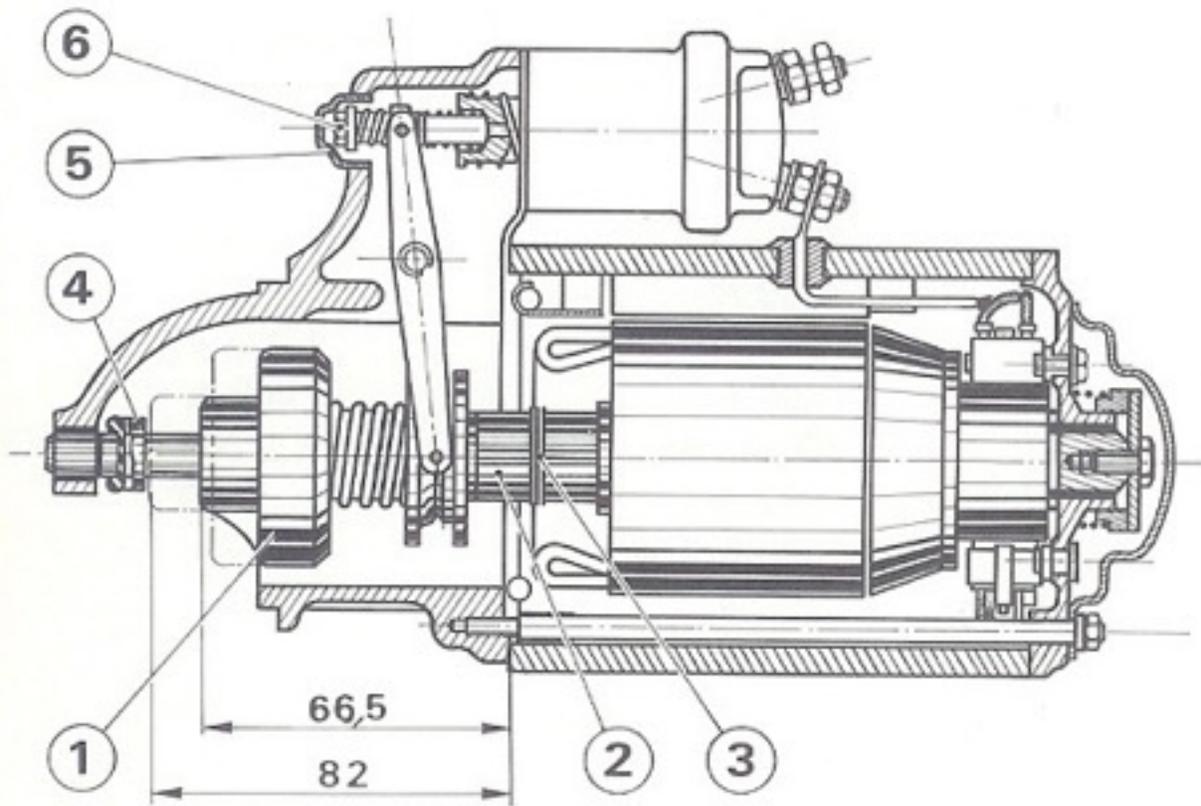
Distance between carcass and toothed drive gear 66.5mm.

Distance between stop and housing 82mm.

On the other hand, adjustment of the solenoid is necessary.

Loosen the adjusting nut N ° 6 (brass color not to be confused with the long holding screw of the assembly) key of 10 or 11 until removal of the play of the launcher then tighten by a quarter of turn.

Replace the plastic cap.



Your starter is finally ready.  
Not quite.  
A touch of paint makes it more attractive.



## Reviews

[1.](#) On Sunday, July 24 2011, 09:06 by MICHEL

Hello

I disassembled a ducellier starter (DUCEL ref: 6155) of my 304 S which looks like bcp to that of the 404, surely the same

We have all degreased, sanded, insulated, and the starter has started again 5 times by running the engine correctly, but now it no longer responds, you have to again hit the coals or push my 304 S ...

Question: is it can be a problem of length of coals,

If the length is inf to 8 mm (to check at the new disassembly), must it really change them with new ones?

If, on the contrary, the length be good, what must we do now?

Is this also a collector problem? , Which with time has been worn normally by the coals, it is a little rounded, like a small bathtub, is this generant / coals?

If I put new coals, the contact with the collector will not be flat and rectilinear, the thistles are flat at the end because new, but the collector is already tub-shaped, and the hollows are shallow?

Please indicate your solution?

Cdl

Eric

cordially

[2.](#) On the Sunday, July 24 2011, 10:06 by francis

Actually your problem can come from a conduction defect at the level of the coals

The length of 8mm is what is advocated by ducellier under generally as a rule it works but if the length too low the support therefore the contact is of poor quality and arcs can be created between collector and charcoal (black traces on the collector Called shots)

The collector must also be perfectly cylindrical for good contact

If these two things are not met it may not work properly

Therefore rectification of the collector to the lathe followed by a milling of the micas

[3.](#) On Thursday, May 10 2012, 11:51 by roman13

It's the same for diesel starter ???

[4.](#) On tuesday, may 29 2012, 11:32 by julien

Hello I have a ducellier starter mounted on a 2 CV the brooms we air identical to your but I do not find them in nine can you indicate me an address or a cordially julien reference

2cv AZU b 1974

[5.](#) The Friday, June 8 2012, 06:14 by yvonf

I "fall" by chance on this page very well realized: Bravo

For Eric:

The problems of difficulty of "starting the starter" are very often due to a clogging of the launcher ...

Let me explain: the core of the electro-magnet (solenoid) which actuates the fork and which ensures the electrical contact at the end of the stroke is often "fake" because the grease that lubricates it "erases" with the age  
Making it susceptible with age :-)

When you lightly strike the starter you can unlock it.

The remedy is to dislodge the core, to clean and grease it to see the bp disappear.

If it can help ....

In addition,

Yvonf