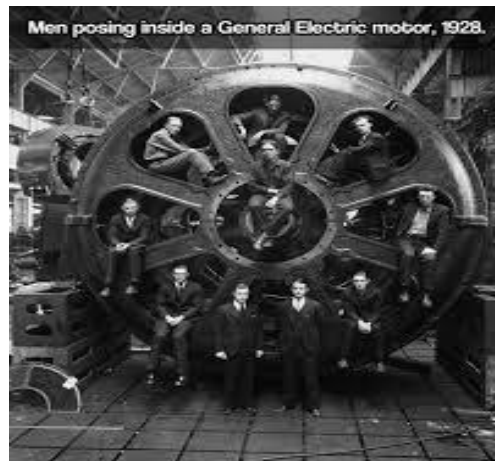




Factsheet updated 15 April 2014

Roof Motor Service



Tools etc required: Good and long cross head screwdriver, tweezers, 2 thin elastic bands, suitable grease, WD40/Plus Gas etc, copper grease, fine sandpaper, solvent cleaner, torch, vice/frame for holding motor, rags, bucket/underbed storage box or similar, grips, sticky tape/ electrical tape, small plastic syringe, wire wool, small wire brush, latex gloves or the like.

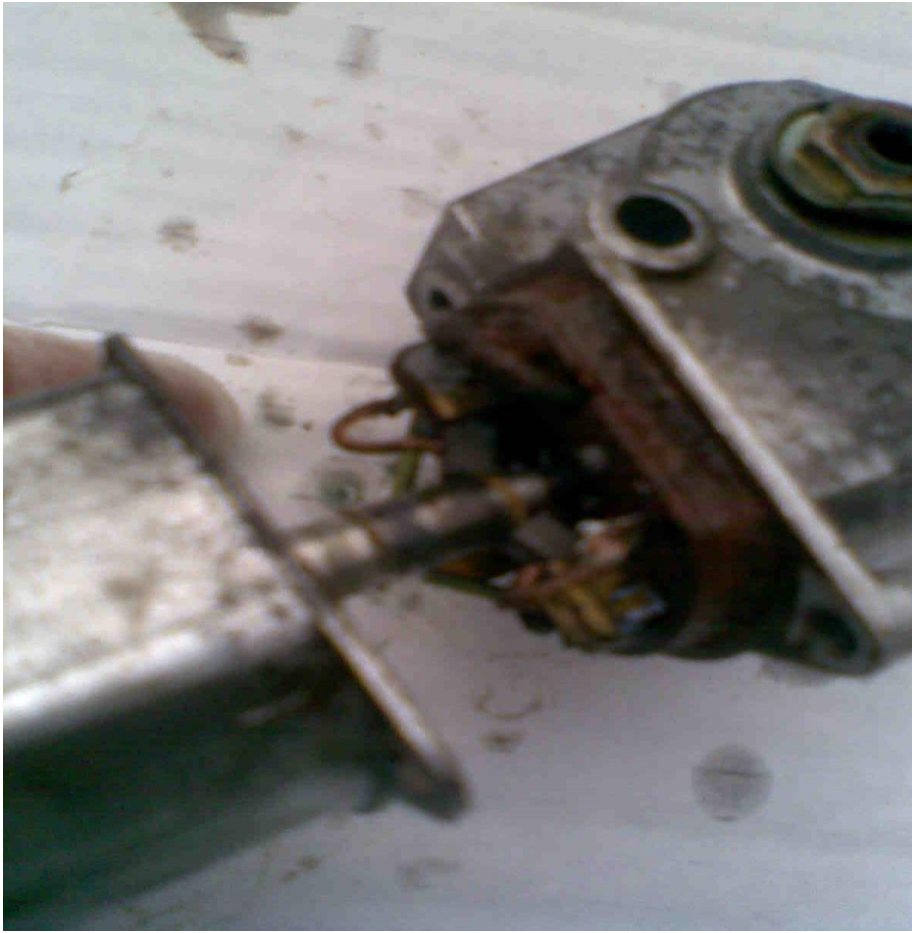
The way to safely remove the motors from the AFT is covered in another factsheet. This fact sheet is for servicing the motors only.

Once I had the motor removed I took the clear plastic underbed storage box. Holding the motor in the box I carefully removed the 2 cross head screws that hold the 2 sections of the casing together. This has to be done slowly and carefully as there are springs and ball bearings that can be easily be lost.



It may be necessary to soak the screws with WD40 first and use a vice or holding frame to get purchase on the screws when removing. I needed to grip the screw with a small set of mole grips on one of the motors to get the initial turn. Once the screws have loosened the motor can be taken out of the holding device and the screws can be fully removed back in the underbed box.

Slowly ease the 2 halves of the motor casing apart. The long end maybe easiest to pull away first, they'll will be some resistance due to the powerful magnets in the casing. When the long end of the casing is removed the ball bearings if lucky should still be attached to each end of the spindle on the rotor. The bearing may fall into the box or it could be stuck on the magnets inside the long casing. Use a torch if necessary to locate the bearing and remove it with a suitable implement. It may take a few attempts. Clean the bearing and store safely. Placing it on sticky tape is handy.



The plates on the exposed end of the rotor can now be seen. Mine had rust and dirt on them and the long casing was rusty and generally gunged up inside. After servicing three motors this seems to be the main weak point, the join between the two sections of casing. I will cover this later. Now slowly remove the other end of the rotor from the other side of the casing.

There is a threaded spindle on the end so it may need to be twisted around a bit etc. On the end of the threaded spindle is a very small ball bearing. Remove the bearing, clean it and stick onto some tape. The picture below shows the rotor removed. The plates have had an quick clean before the photo, they may be in a much worst state than this. On each end of the rotor is the recess where the ball bearings are located. The bearing on the threaded end is very small.

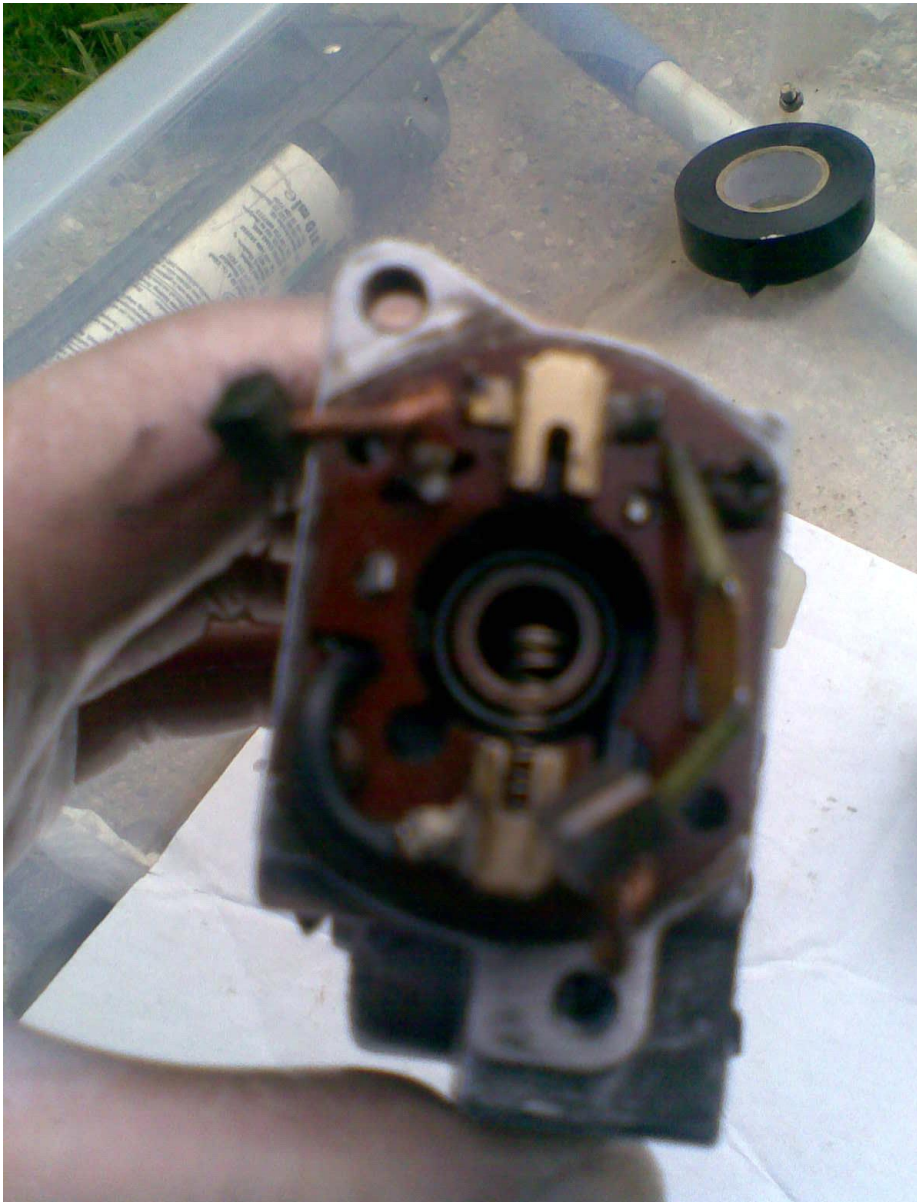


Photo Above - Rotor Before Cleaning

Photo Below - Rotor After Cleaning



You will see 2 springs on the cog side of the casing which hold the brushes against the rotor. Note the position/angle of the brushes before you remove the rotor if you can. The brushes are slightly concave where they're held against the body of the rotor. This is the way they need to go back in. The wiring that connects them goes through the little slot at the top of the housing where the brushes are located. It's possible to put these back in 180 degrees out, so make a note of positions at this point. The picture shows the housings for the springs and brushes. You can just see one of the brushes by my finger and a spring sitting in one of the housings.



When the threaded spindle end of the rotor arm is removed cleaning can begin.

I used a very fine wet/dry paper to rub down the rusty plates on the rotor arm. Make sure the rotor is free from any dust after you've finished. They came up quite nicely. Also the area where the brushes make contact on the rotor arm. (copper coloured band at the midway point that wraps around the rotor)

Next I got some wire wool and stuffed it into the long casing end and used some solvent to wash away the crud. I did treat the rust as well with rust treatment from the local auto shop.

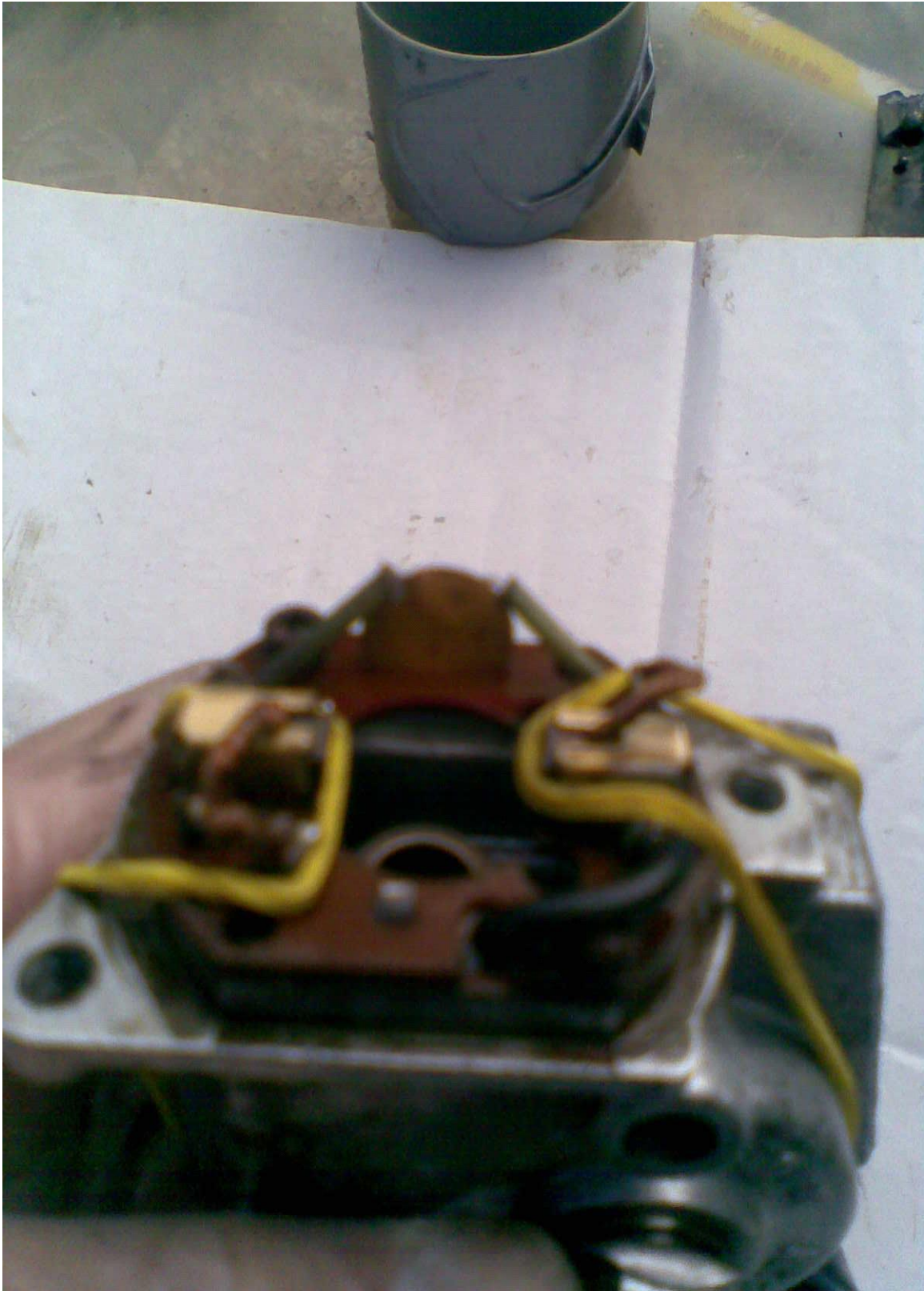
The nut that is on the opposite side to the cog was also quite rusty on my motors. I used a small wire brush and removed what surface rust I could then soaked the nut in Plusgas. For this I found a old plastic Carte d'or Ice cream container and the plastic screw top from a milk container worked well. Turn the plastic top upside down and place it in the ice cream container or whatever you are using. Fill the plastic top up with WD40/Plus Gas etc and place the motor in the plastic container so that the nut is fully submerged in the WD40. I left mine like that for a few hours. Then clean off excess and put a smear of grease on.

I cleaned out this side of the casing with some brake cleaner, filling it to the top, shaking a couple of times and repeating. I did wonder whether the brake cleaner might be a bit over the top, but there's little access to this part of the motor and it was near knackered anyhow. It doesn't appear to have had any adverse effects.... I let the brake cleaner fully drain out upside down on a rag. Then re-greased inside. For this I used a small plastic syringe, these can be purchased cheaply from chemists. Filled the syringe with grease then into the cavity of the casing. I did not, and don't think it's advisable, to grease inside the long ended casing where the magnets are located, except for a small amount of copper grease right at the very end where the ball bearing sits.

Now comes the tricky bit, reassembly. This little brainwave probably saved me many hours trying to get the springs and brushes located correctly. It's mind bogglingly fiddly without this method. Get two thin elastic bands and a pair of tweezers. Place the first spring back in its housing and hold in with a finger or a small lolly stick etc, if your fingers are like sausages. Use fingers if you're nimble or tweezers to locate the brush back into the housing. Hold the spring in position. Then push the spring in as far as possible with the brush. Make sure the brush has the wiring located at the slot in the top of the housing with the curved face located correctly, facing the rotor.

When the brush and spring are in position use the elastic band to hold the brush in position by stretching it across the face of the brush and then wrapping it around the bottom body of the casing. It's important that the rubber band is not too thick, thinner the better without breaking too easy. The first brush will now stay in position and you can repeat the process for the other side. Picture below shows the first spring and brush being held in position by the elastic band.





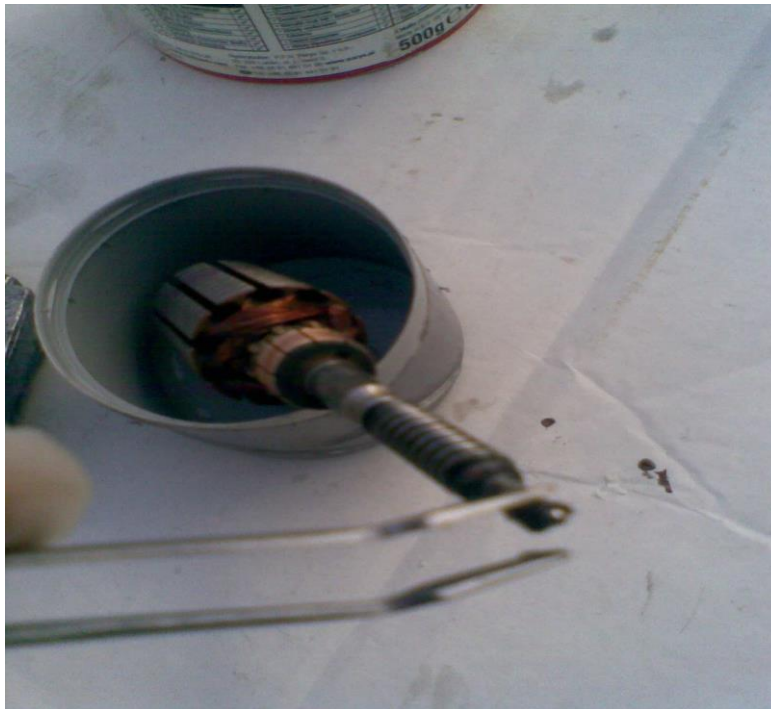
Now after greasing the spindle, and ensuring the small ball bearing is seated on the end with copper grease, carefully lower it into the casing. It will need to be wiggled and twisted carefully to get it to sit down fully. On one of the motors I did, it took a while to seat the rotor correctly. At this point the contacts on the rotor will press against the rubber bands (this is why they need to be thin). The bands can now be cut one at a time close to the rotor. Then with a half turn or so of the rotor, the rubber band will come out completely and can be pulled clear. Repeat for other side.

Pictures Below show show grease being injected with the plastic syringe into the cog end of the casing and the rotor in position after being lowered back into the casing and the elastic bands removed.





The next bit I found tricky as well. The ball bearings needs to be located in the recess on the ends of the spindles on the rotor arm. However the magnets will pull it straight out when putting on the long casing side (large ball bearing end). I got round this by putting a dab of copper grease on the end and then putting the casing on. It took a couple of attempts, but less than 5 minutes. Without something to keep the ball bearing in position it's near on impossible. You can see the large ball bearing in position in the previous picture and the small bearing at the threaded end below.



I closed the 2 casings together. If you find there's a gap, then the end which drives the cog is probably not seated properly and will need to be twisted around a bit until you feel it sit down fully. This could be easy or may take some time, two motors were easy one took much longer to do. Replace the screws and tighten fully. At this point I tested the motor on 12v and it worked a treat. Then I put some sealant around the join in the 2 casings to help prevent future ingress of moisture as this seems to be the main weak spot. I made a bit of a mess with the sealant but the picture below will give you an idea. Not pretty but hopefully effective. Not a job you want to have to repeat in a few years time.



The final result is my roof now goes up quicker than it ever has and fully first attempt.

Bongo Fury welcomes members' contributions to our factsheet series. To report errors or omissions, or suggest updates to this factsheet contact ian@bongofury.co.uk

*Many thanks to **Bluespanner** for this article.*

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