Replacing motor brushes for SMART models 251, 353, 361, 371, 400, 600, Bu180, Bu160.
UNPLUG THE POWER UNIT FROM THE MAINS SUPPLY. DO NOT ATTEMPT TO WORK ON THE MACHINE IF IT IS PLUGGED IN. DO NOT TEST THE MACHINE WITH THE LID OFF.

1. Dismount the power unit from the wall.
    a) Unplug the power unit from the socket.
    b) Disconnect the white low voltage wire by pulling the spade connectors out of the machine (Wiggling them from side to side should help. Be careful not to pull the wires out of the spade connectors).
    c) Ease the PVC pipe out of the power unit intake (it should not be glued in).
    d) Remove the ducting going to the external vent (if applicable).
    e) Lift the power unit off the mounting bracket.
2. After removing the lid of the power unit you will see a black plastic casing and the back ends of the plastic brush housings poking out either side of this casing. The black casing must be removed. On some models the casing is held in place with metal clips just above the brushes, bend these clips away from the black cover – they are not particularly important, so if you bend them beyond repair in doing so don't worry about it. These clips can be re-bent when reassembling the motor. The black casing is then held in place by pairs of barbed prongs that hook under the motor brushes. Using a flat-bladed screwdriver, ease these prongs away from the brushes and the case should come off. Once again, if you break these prongs don't worry because the metal clips will retain the black cover in place.
3. The metal brackets securing the brushes in place are fixed with two phillips screws. Remove these screws and take off the brackets.
4. You should now be able to move the brushes sufficiently to inspect them. If one or both of them is worn all the way down, there is a good chance that new brushes will solve the problem. If there is some life (E.g.10mm each of carbon or more) remaining in both brushes, then replacing them will not make any difference and you are likely to require a new motor. A substantial difference in wear on the brushes could be an indication of other problems. If a brush replacement does prove ineffective or there is still substantial arcing and sparking between the carbon brushes and armature, then a motor replacement will be necessary.
5. While you have access to the motor, it is a good idea to check for wobble on the armature. Grab the top fan and try to move it from side to side, then do the same with the turbine retaining nut on the bottom. If there is any movement whatsoever you will need to replace the motor.
6. *You will need to be careful with the next procedure. There is a copper wire running into the top front of the brush. The end of the wire sits on top of the metal brush housing and is connected to a copper male spade connector strip that slots into the brush. It is necessary to remove this copper strip out of the brush. This can be tricky because there is a barb on the upper face of the copper strip holding it in place. Lift the end of the wire sitting on the brush housing and pull gently on this with some long nosed pliers, trying to ease the copper strip some of the way out. If you get any of the strip out; try to manoeuvre the pliers directly onto it and pull it the rest of the way out. If you try to pull too hard on any other part of the wire other than the copper strip, you may end up breaking the wire.
    *An alternative procedure would be to cut away the raised plastic rim on top of the brush using a junior hacksaw (cutting horizontally) in order to relieve pressure on the barb thus allowing the copper strip to come out easily. A similar result could also be achieved by drilling into the top of the plastic brush housing.

Please note that the picture numbers on the accompanying sheet do not correspond with the numbers on this written instruction.