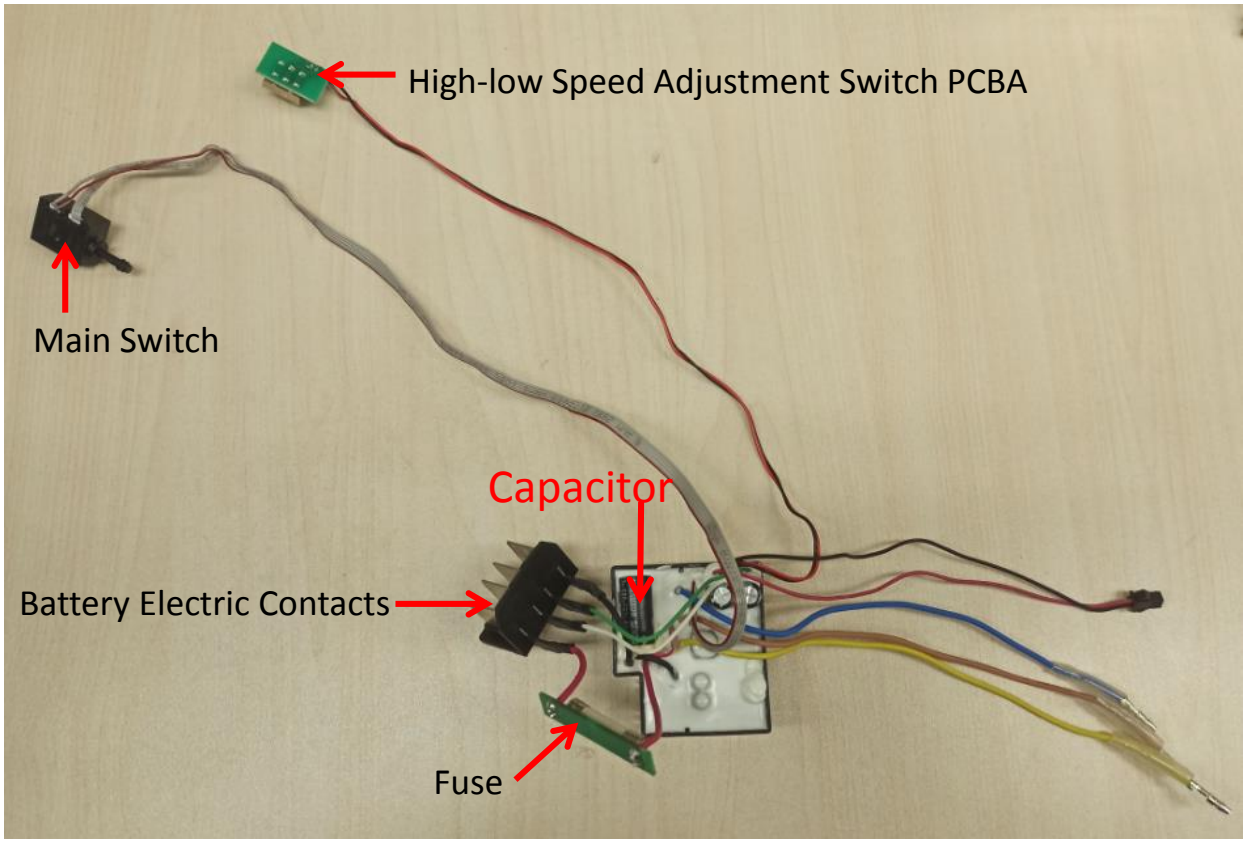
How to diagnose the PCBA and motor

Issue Date: 2021/01/13

How to diagnose the PCBA

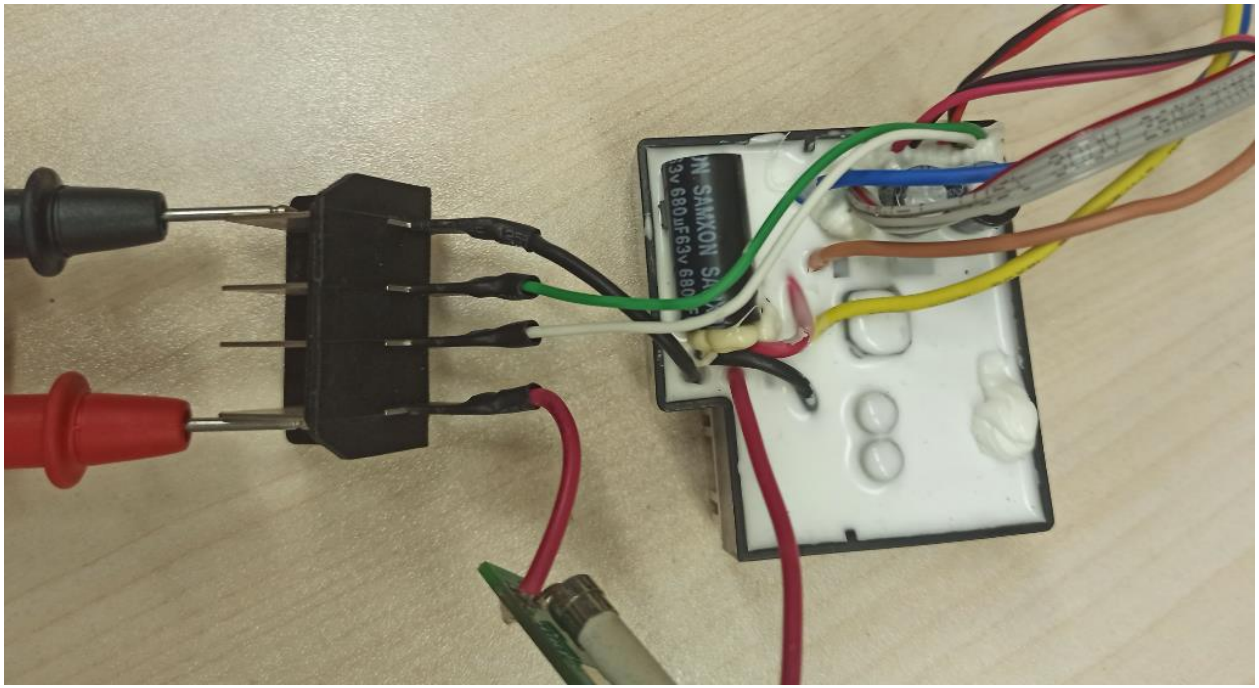
1. When having PCBA tested with a Multimeter, the capacitor should be discharged, otherwise the result will go wrong.

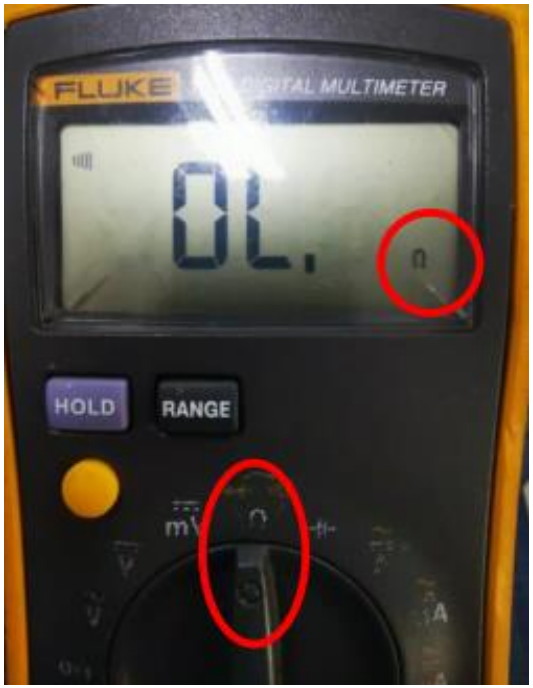
   One resistor with 1-10kΩ is recommended for discharging. If there is no such resistor or EGO special capacitor discharging fixture available, you can use the Multimeter for discharging (see next slide). **When the capacitor is fully discharged**, test the PCBA.



How to diagnose the PCBA

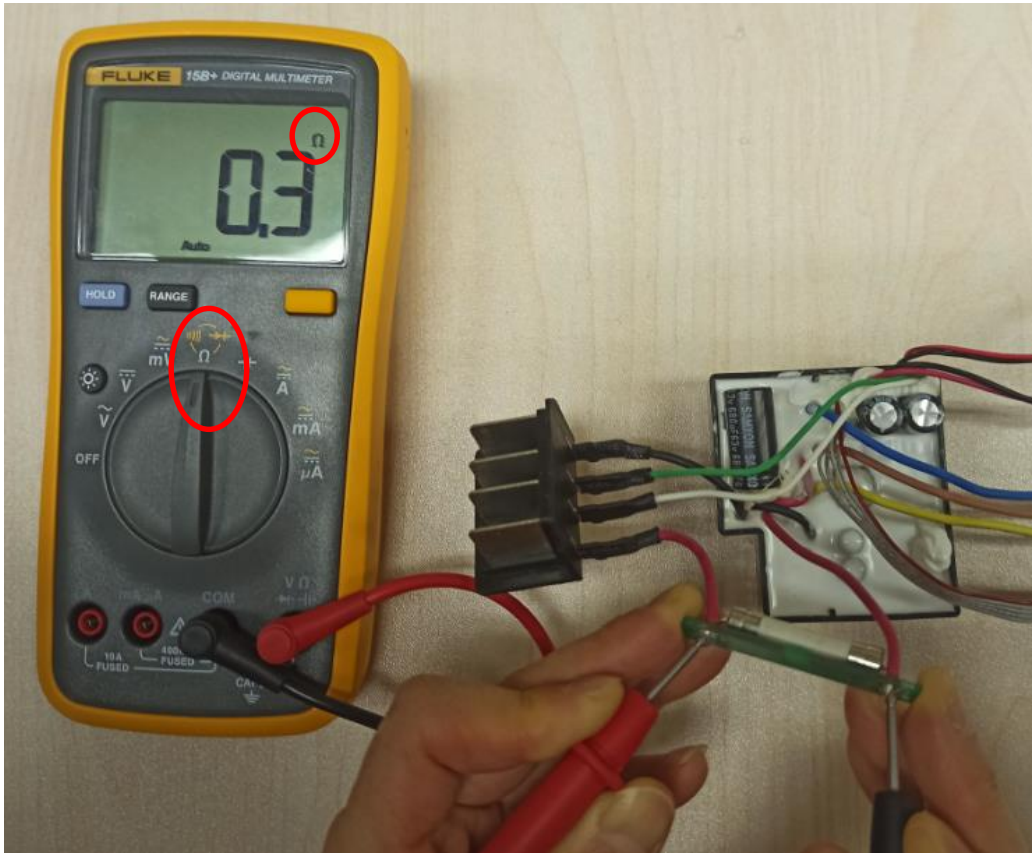
2. With the Multimeter function set to “Ω”, get through the two terminals of the battery electric contacts, with black pen pin contacted to the negative terminal(black wire) and red pen pin contacted to positive terminal(red wire).
3. When the value displayed is 0L., the discharging process is finished. This process is about 12 seconds.





How to diagnose the PCBA

4. Measure the fuse. With the Multimeter function set to “Ω”, get through the fuse with black pen pin and red pen pin contacted either terminal of the fuse.
5. If the value displayed is below 1Ω, the fuse is good. Go on next PCBA MOSFET testing, otherwise replace the whole PCBA directly. No separate fuse replacement is allowed.



How to diagnose the PCBA

6. Measure the MOSFET in the PCBA (Step 1).

a) Set the Multimeter function at “Diode measuring”.

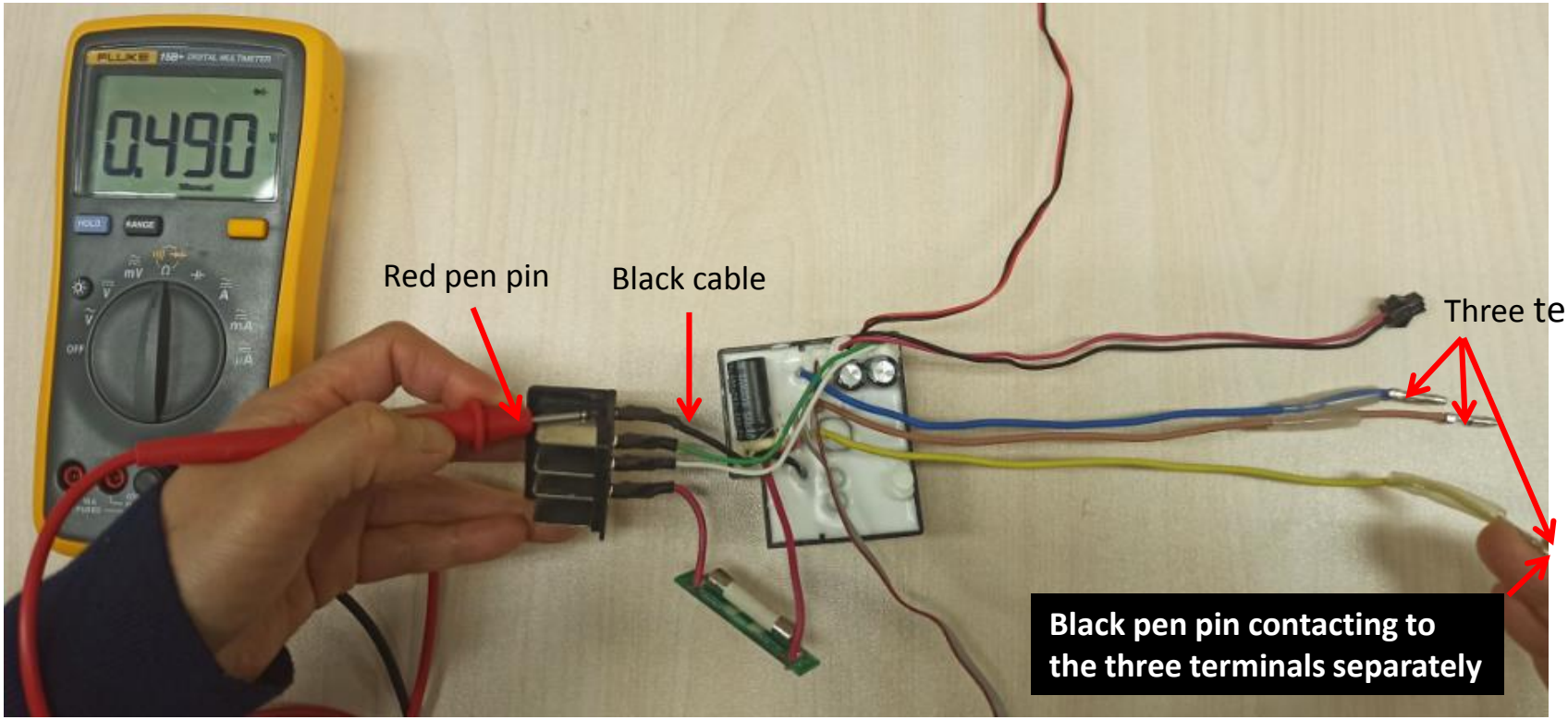
b) Contact the red pen pin to the battery electric contact that is connected to the black cable (Negative electric contact).

c) Contact the black pen pin to the three terminals separately and measure each voltage (see next slide).

d) If the LCD displays 0.45~0.55V for each measurement, go to the next testing step, otherwise means the PCBA is broken (When LCD displays both around 0.1V or 0L., the MOSFET are broken).

e) Follow the procedures in “***Repair Guideline_ Replace the PCBA***” to replace a new PCBA.

How to diagnose the PCBA



How to diagnose the PCBA

Measure the MOSTET in the PCBA (Step 2).

a) Keep the Multimeter function setting at “Diode measuring”.

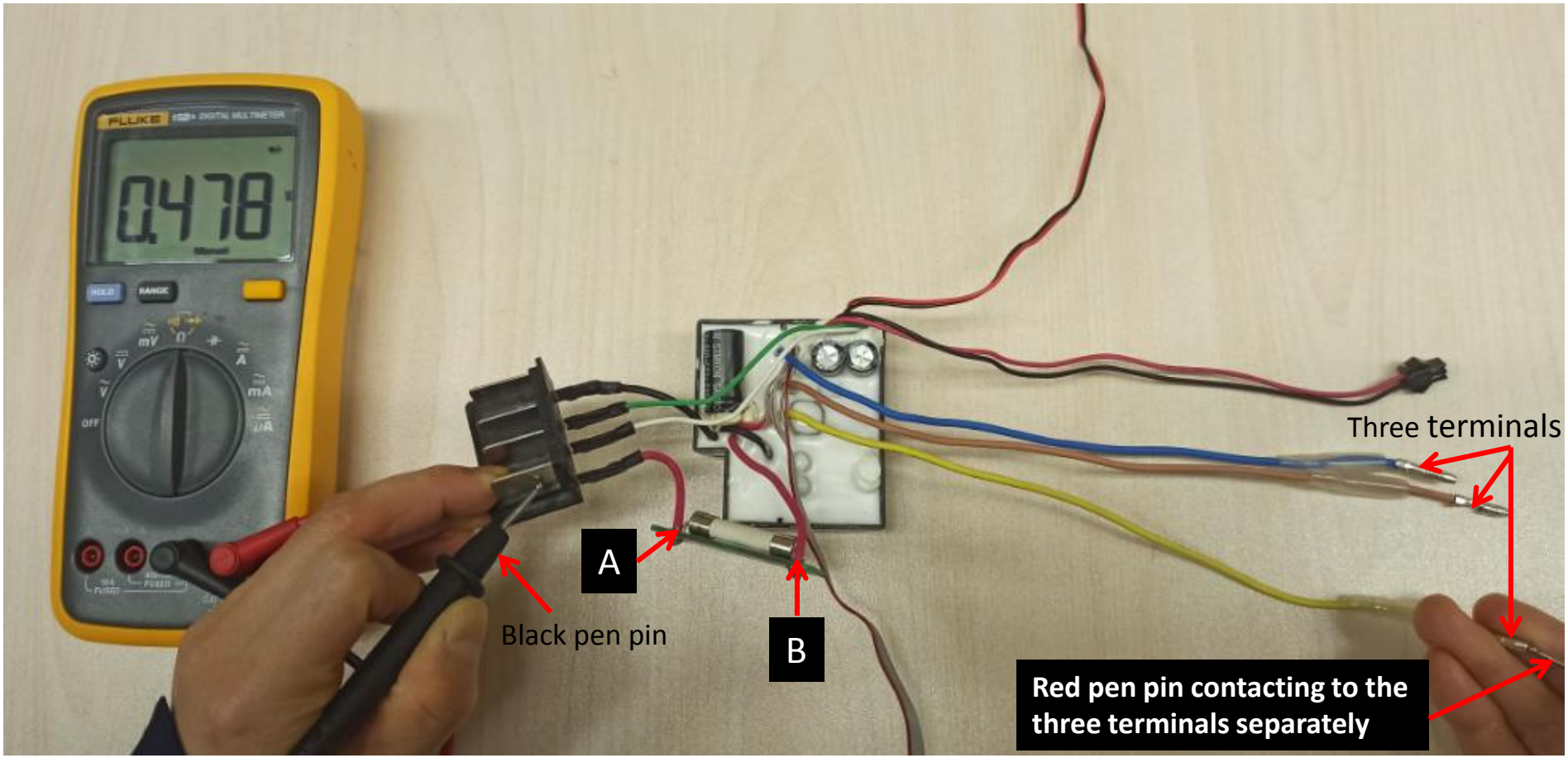
b) Contact the black pen pin to the battery electric contact that is connected to the red cable (Positive electric contact).

c) Contact the red pen pin to the three terminals separately and measure each voltage (see next slide).

d) If the LCD displays 0.45~0.55V for each measurement, all the MOSFETs in the PCBA are good, namely the whole PCBA is good, otherwise means the PCBA is broken.

e) Follow the procedures in “***Repair Guideline_ Replace the PCBA***” to replace a new PCBA.

How to diagnose the PCBA

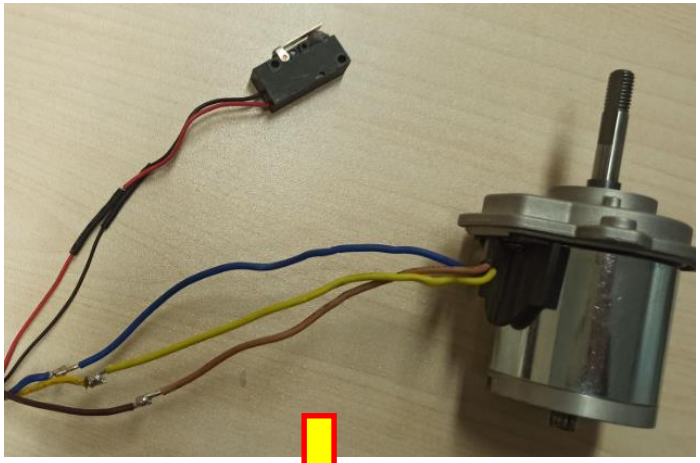


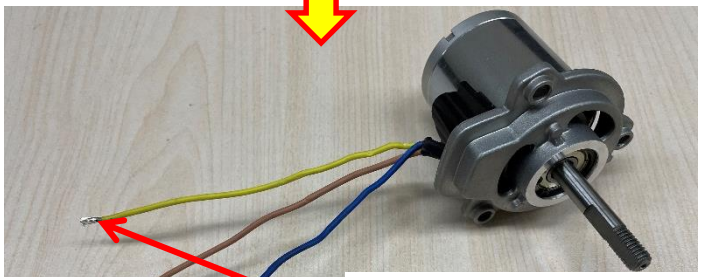
NOTICE: in this step, the fuse must be measured as good. Otherwise, the black pen pin should be contacted to “B”, rather than “A” (the battery electric contact that is connected to the red cable side), before having fuse final measurement.

How to diagnose the motor

Follow the procedures in "***Repair Guideline_Replace the Motor***" to disconnect the motor from the wire harness and follow below steps to test the motor (Multimeter can only judge if it is open-circuit).

NOTICE: Judge if there is any burning smell of the motor before having diagnosis. If yes, the motor is burned. Replace it. Otherwise, go on below detection.





Measure the resistance between any of the two terminals

a) Set the Multimeter function to "Resistance measuring".

b) Measure the resistance between any of the two terminals.

c) If any of the measurements is infinite, means the circuit between the two terminals is open circuit, the motor is damaged. Replace with a new motor.

d) If the motor is shorted inside, Multimeter is not applicable for detection. Directly test with a new motor after disconnecting the connectors.

THE END