

## Description of Goods

**Nova Li  
hand held**

## Tools

Crimping tool  
Butt. splice  
Screw driver  
Multimeter

## Tools for rework

Crimp tool type HT-236E2



Buttery splice 0.5÷1.5mm<sup>2</sup>  
Symbol ST-061/R



Screw driver (head type: T10)



Multimeter



Prepared by  
Attila Frank

Date  
27/11/2014

## Description of Goods

**Nova Li  
hand held**

## Action

Hand unit  
disassembling

## Tools

Screw driver

## Components

PCB  
Battery set  
MFU

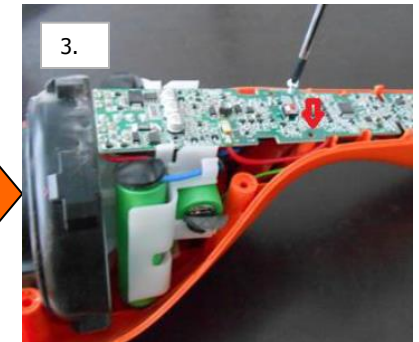
Prepared by  
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27/11/2014

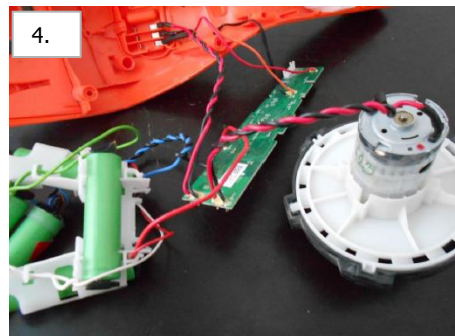
**The workplace needs to be ESD-protected for the assembling. Use RoHS-compliant solder-material. After removing the lid of the hand-held unit, the parts are under current! Do not touch the PCB with a metal-device (e.g. screw-driver) because it may cause short circuit.**

## **Disassembly steps:**

1. Push the knobs on both sides of the dust compartment and pull them out.
2. Remove the 5 screws from the bottom of the hand unit.
3. To pull of the PCB remove 2 screws.



4. Now all the 3 main components are accessible.



## Description of Goods

**Nova Li  
hand held**

## Action

Hand unit  
troubleshooting

## Tools

Multimeter

## Components

Battery pack  
PCB

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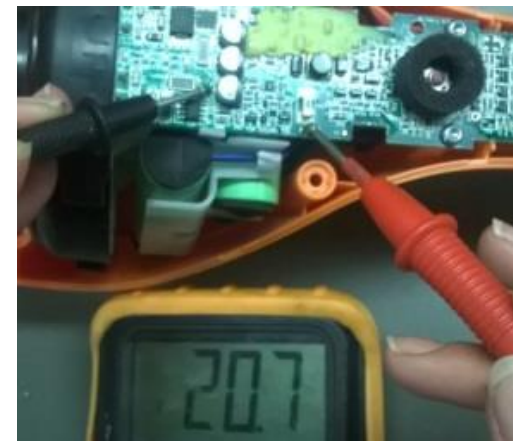
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## Troubleshooting

Failure: unit doesn't start, doesn't charge.

Need to check the battery current (pos.CN10,CN9).  
It must be over 16V.

If there is 0V after fuse (pos.CN10, FUSE1), then the fuse is gone, the whole PCB needs to be changed.  
You find the PCB change instruction on page 7 onwards.



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## Action

Hand unit  
troubleshooting

## Tools

Multimeter

## Components

Battery pack  
PCB

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## Troubleshooting

Battery voltage measuring. If the measured value is under the below limits the battery pack needs to be changed. You find the battery pack change instruction on page 5 onwards.

Cell 1 voltage check > 3.2V  
(pos.CN10, CN6 terminal1 on  
the PCB)



Cell 2 voltage check > 6.4V  
(pos.CN10, CN6 terminal2 on  
the PCB)



Cell 3 voltage check > 9.6V  
(pos.CN10, CN6 terminal3 on  
the PCB)



Cell 4 voltage check > 12.8V  
(pos.CN10, CN6 terminal4 on  
the PCB)



Cell 5 voltage check > 16V  
(pos.CN10, CN6 terminal5 on the PCB)



## Description of Goods

**Nova Li  
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## Action

Battery  
disassembly/change

## Tools

Crimp tool (HT-236E2)  
Butt splice (ST-061/R)  
Gloves

## Components

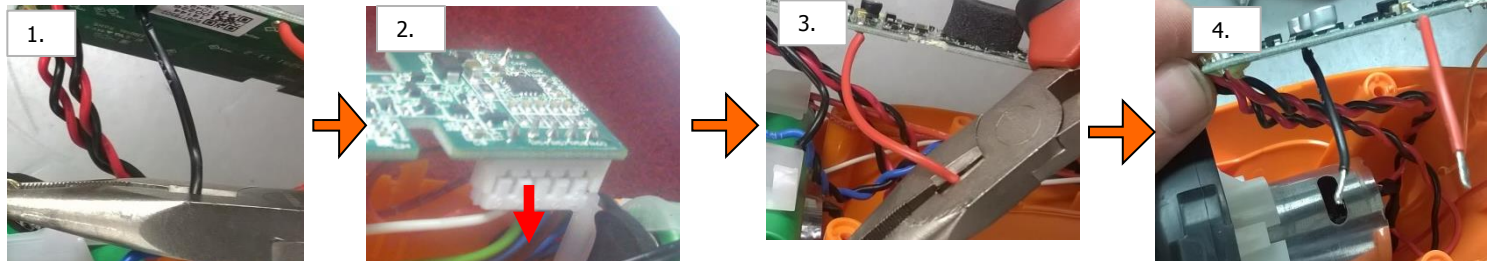
PCB  
Battery set

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Date  
27/11/2014

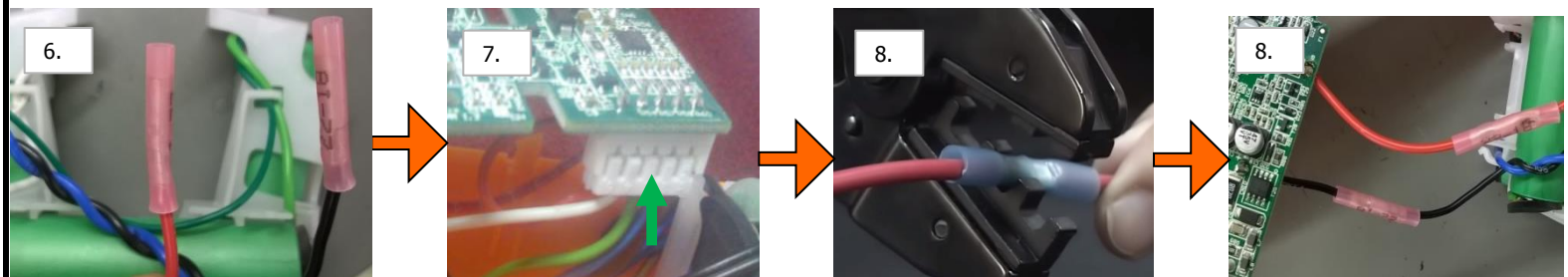
## Exchange battery pack:

1. Cut out black wire between PCB and battery pack. The wire length on the PCB is min. 50mm.
2. Disconnect the plug of the battery pack from the PCB.
3. Cut out red wire between PCB and battery pack. The wire length on the PCB is min. 50mm.
4. Strip the wires for 7-9mm. The wire length on the PCB min.50mm needed.
5. Check the new battery pack, its wires and cells must be intact.



6. Pull a battery splice to the battery pack wires. Then crimp the black wire together between PCB and Battery pack
7. Connect connectors of battery-pack to main PCB. Push contact till it stops.
8. Crimp the red wire together between PCB and battery pack.

**Keep attention the colour of the wires! Black meets with black and red with red!**



## Description of Goods

**Nova Li  
hand held**

## Action

Unit assembly

## Tools

Glooves  
Screw driver  
Tape

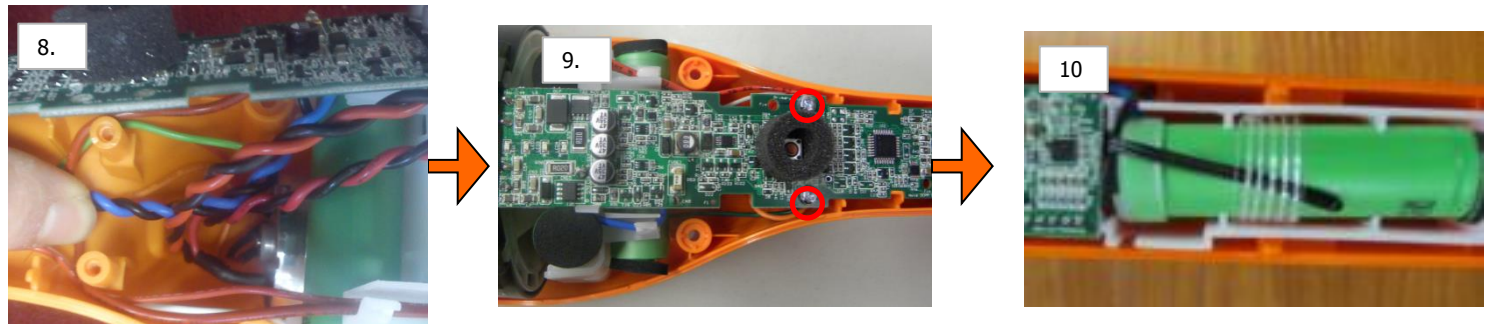
## Components

PCB  
Battery set

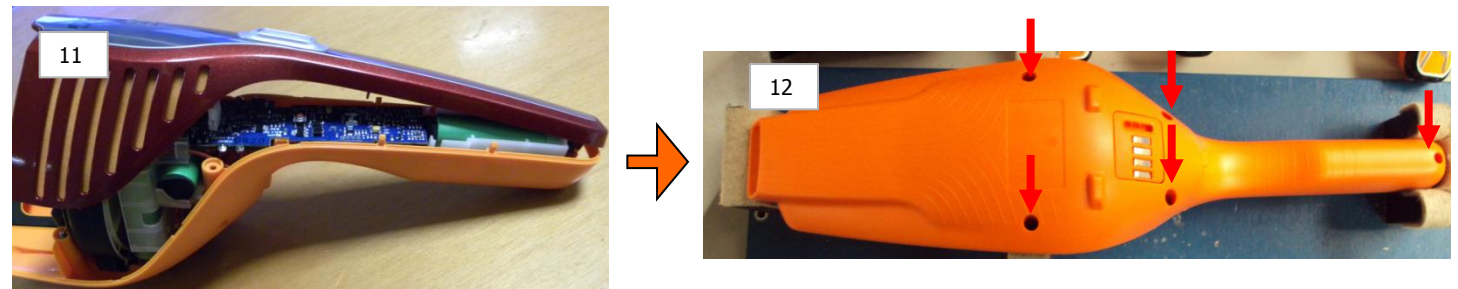
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8. Guide the wires under the PCB.
9. Fix the PCB to the bottom part by two screws. Make sure to avoid wires under the screw.
10. Fix the thermo control to the cell with tape. **SAFETY: wrong fixing of the NTC could cause overheating!**



11. Put the hand unit cover into the bottom part.
12. Fix it with screw (5x).



If you don't follow the sequences of the instruction during wire connection it could result in the unit not working some of the times. Take the appliance to the charging stand. Charge it min.10 minutes, then check it again.

## Description of Goods

**Nova Li  
hand held**

## Action

PCB disassembly

## Tools

Gloves  
Protective cutter

## Components

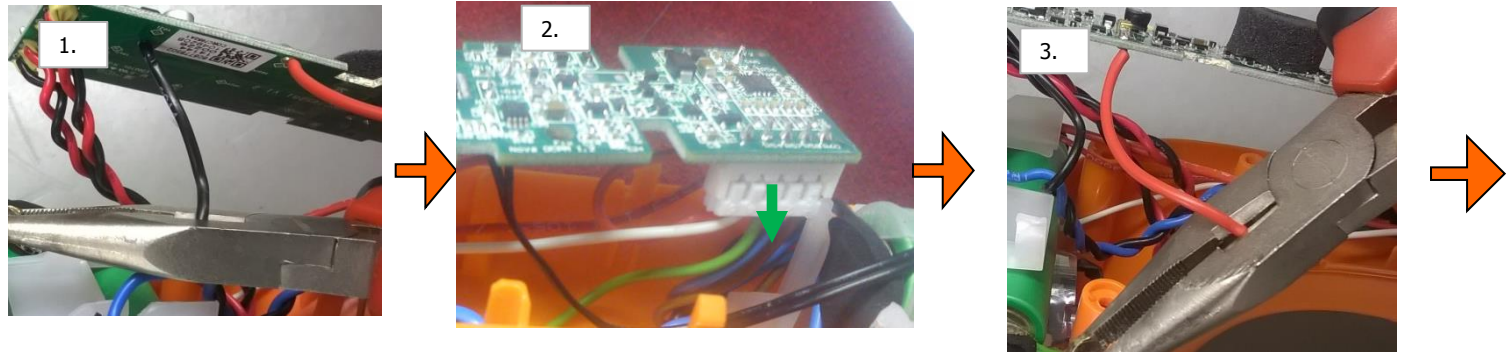
PCB  
Battery set

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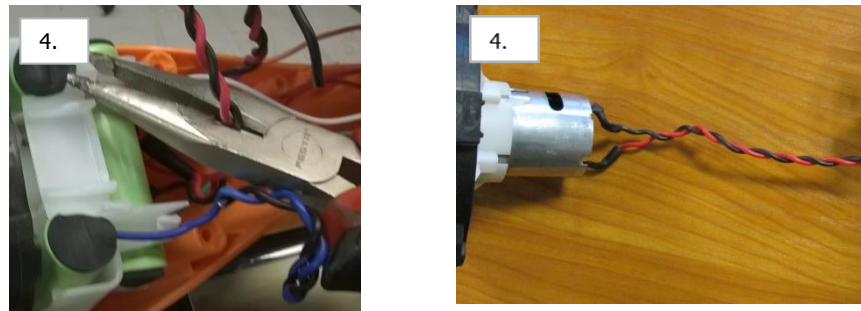
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## Exchange PCB:

1. Cut black wire between Battery pack and PCB.
2. Disconnect the plug of the battery pack from the PCB.
3. Cut red wire between Battery pack and PCB.



4. Cut the wires between PCB and MFU. The wire length on the MFU need minimum 100mm. There should be minimum 6 turns between MFU black and red wire.



## Description of Goods

**Nova Li  
hand held**

## Action

PCB rework

## Tools

Glooves  
Crimp tool (HT-236E2)  
Butt splice (ST-061/R)

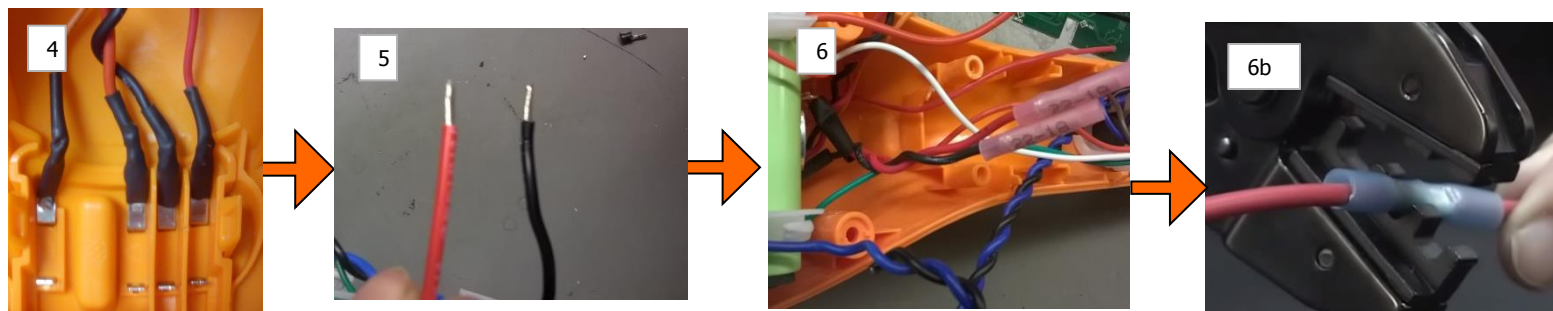
## Components

PCB  
Battery set

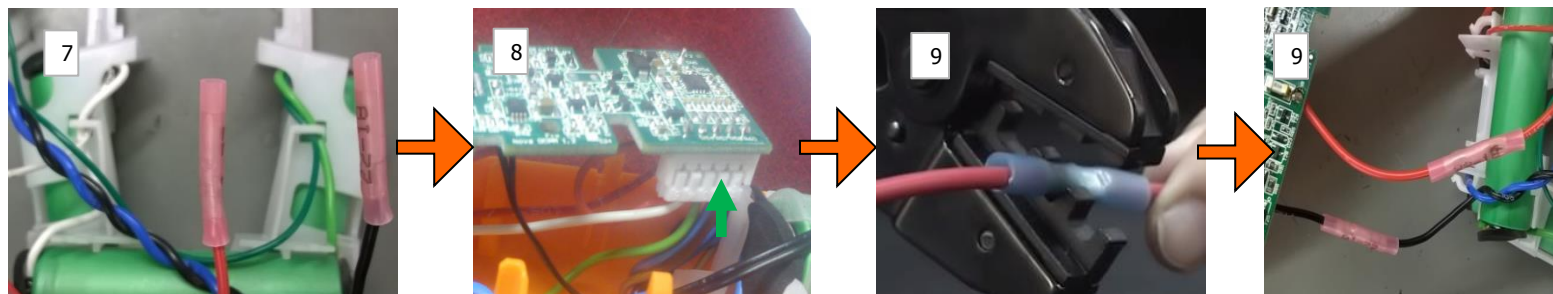
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27/11/2014

4. Check the new PCB, its wires must be intact. Bend back the contact plates until it stops.
5. Strip the wires for 7-9mm on the MFU.
6. Pull butt splice to the motor-wires. Then crimp the wires together between PCB and MFU.



7. Pull butt splice to the battery pack wires. Then crimp the black wires together between PCB and battery pack.
8. Attach connectors of battery-pack to the PCB. Push contact till it stops.
9. Crimp the red wires together battery pack and PCB. **Pay close attention the colour of the wires! Black with black and red with red!**





## Description of Goods

**Nova Li  
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## Action

Unit assembly

## Tools

Glooves  
Screw driver  
Tape

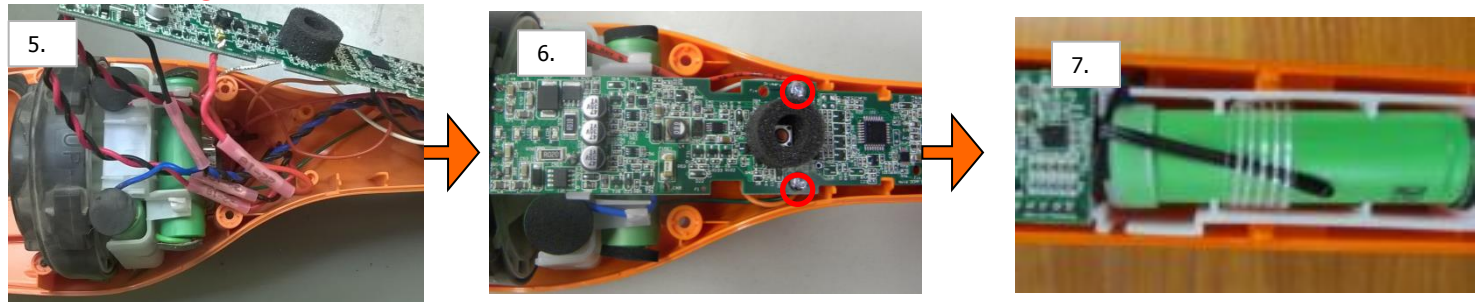
## Components

PCB  
Battery set

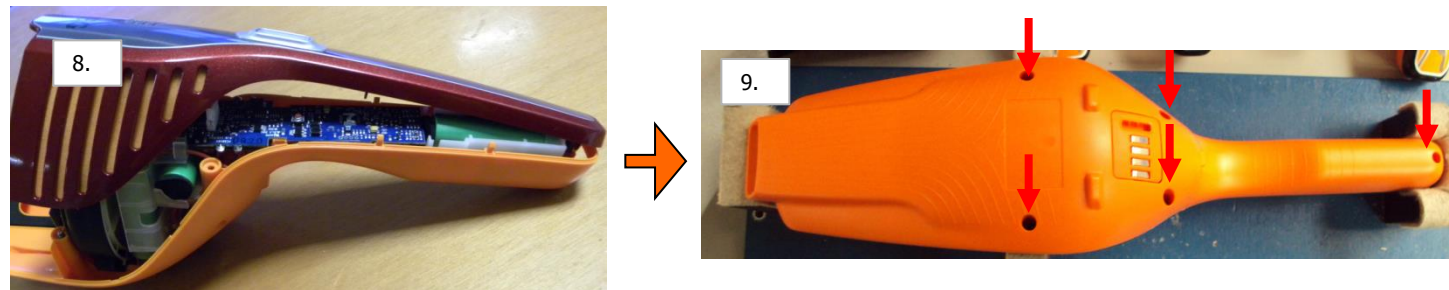
Prepared by  
**Attila Frank**

Date  
**27/11/2014**

5. Lead the wires under the PCB.
6. Fix the PCB to the bottom part by two screws. Keep on eyes to avoid wires under the screw.
7. Fix the thermo control to the cell with tape. **SAFETY: wrong fixing of the NTC could cause overheating!**



8. Put the hand unit cover into the bottom part.
9. Fix it with screw (5x).



If you don't follow the sequences of the instruction during wire connection it could result in the unit not working some of the times. Take the appliance to the charging stand. Charge it min.10 minutes, then check it again.

## Nova Li hand held

### Action

Scraping  
batteries

### Tools

Tape  
Plastic bag

### Components

Battery set

Prepared by  
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Date  
27/11/2014

## Battery scrapping steps:

1. Remove all plastic parts from cells
2. Remove wires and contact plates from cells. Omitted metal -parts may damaged insulation!
3. Stick together cells by glue-tape (max. 10 cells).
4. Insulate both poles of cells by gluing-tape. **Safety: without it short-circuit may occur!**
5. Put insulated cells to a plastic bag and close it by gluing-tape.
6. Collect closed plastic bags in plastic **barrel**. **SAFETY: Forbidden to use metal-barrels! (short-circuit)! Do not mix Li-ion cells and NiMH-cells!**

