

Creatr

Control board replacement procedure V01-02



Summary

This document describes the replacement of the Creatr 3D printer control board of Leapfrog BV and written with the intention of use by customers.

Revision history

Date	Change	Revision	Name
06-jul-2015	Creation of document	V01-01	DaBe
28-aug-2015	Update of document	V01-02	DaBe

NOTE: Document may only be used if the revision history states a "RELEASED" status

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1. Introduction

This document describes the replacement of the Creatr control board. The intended audience are customers of Leapfrog BV. All steps in this procedure are required to be followed in detail. If there are any deviations from this procedure, a remark can be placed in the comments section in this document and Leapfrog customer support may be contacted through the online ticket system.

2. Safety information

During the performance of this procedure no personal protective equipment (PPE) is required. There are no chemicals used during the performance of this procedure. The electrical work in this procedure is energized with energized parts uncovered and/or touchable. Caution is advised, please follow procedure. Common safety rules apply with regards to the Leapfrog Creatr 3D printer with regards to hot surfaces, pinch hazards and fume hazards (certain materials) only while printing, as well as heavy lifting, and crush hazards while moving and/or packing/unpacking the 3D printer.



**While performing
this procedure**



While printing



While printing



While printing
certain materials



While moving
or unpacking



While moving
or unpacking






This procedure requires working with live wires/terminals exposed! Proceed with caution, touching these wires/terminals may result in serious injury!

3. Additional information

During the performance of this procedure a clean working environment is required.





There must be enough room to manoeuvre around the work area and have good access to the printer.

4. Tools list

#	Description	Qty
1	Allen key set (Metric) 	1
2	Phillips head screwdriver 	1
3	Flat screwdriver (5mm) 	1

NOTE: Images are indicative, colours and/or shapes may vary.


5. Parts list

#	Description	Qty
1	Replacement control board 	1
2	Fan holder 	
3	Power cable <No image available>	
4	Replacement Y-motor cable 	
5	4x screw M3x20 	

NOTE: Images are indicative, colours and/or shapes may vary.

6. Additional parts (grab stock)

Make sure the following items are readily available during assembly:


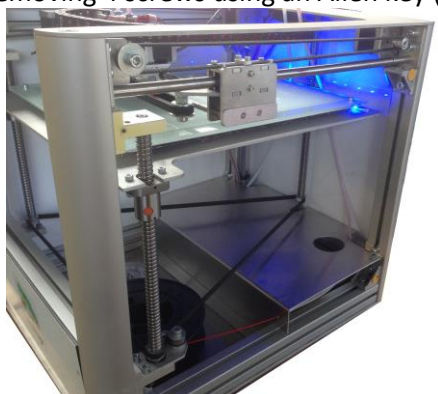
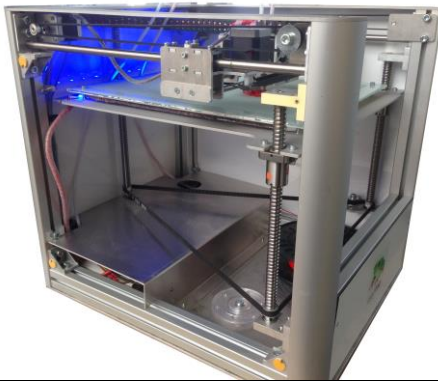
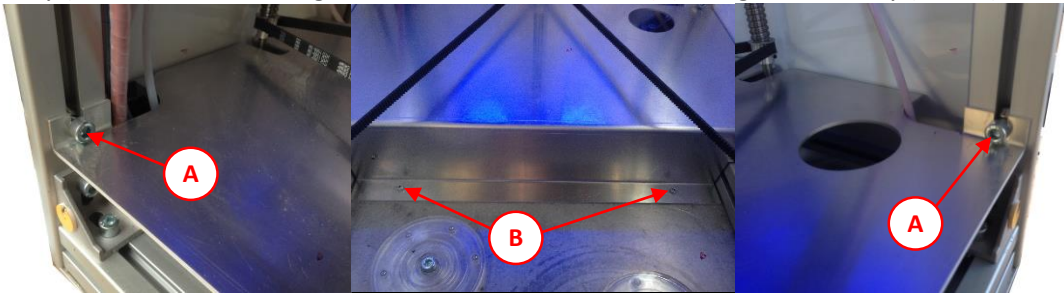
Description
Small tie-wraps (zip ties) 

NOTE: Images are indicative, colours and/or shapes may vary.

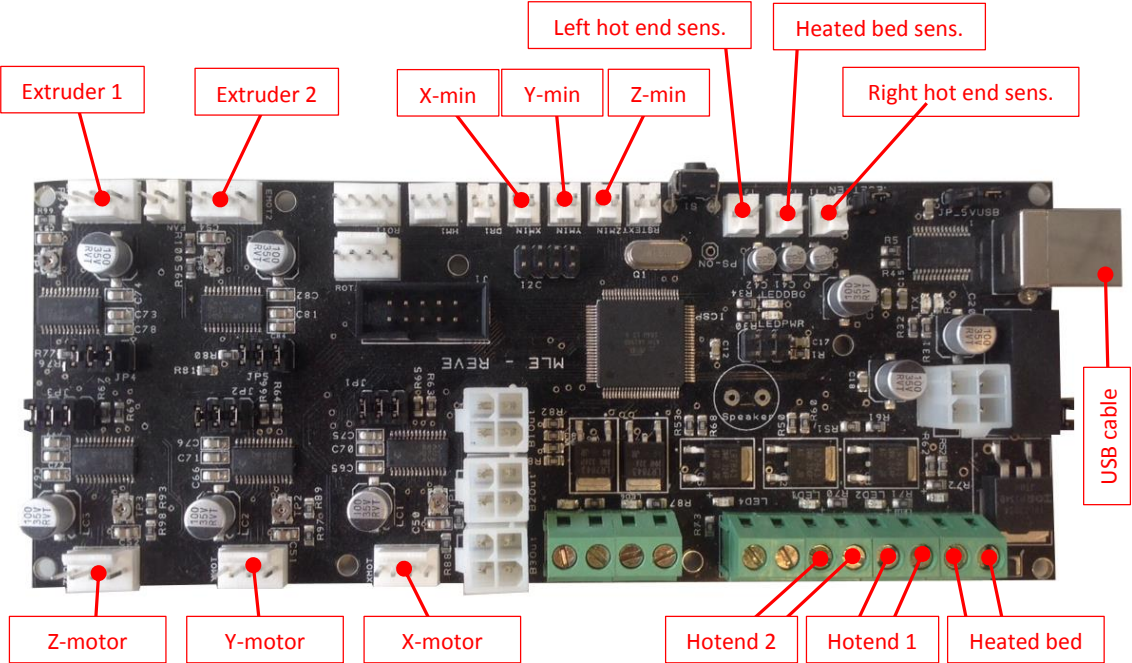
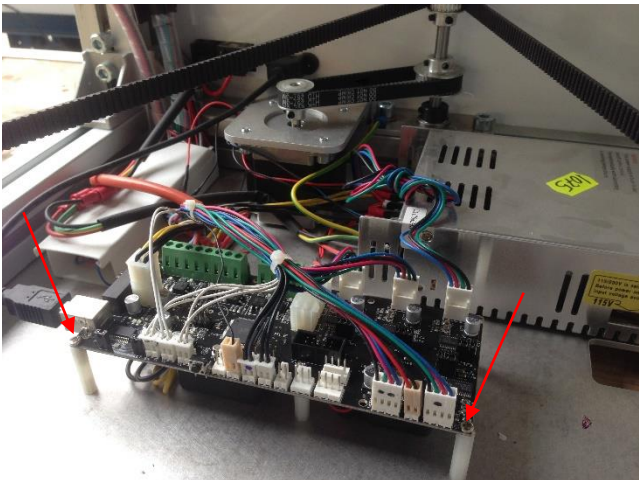
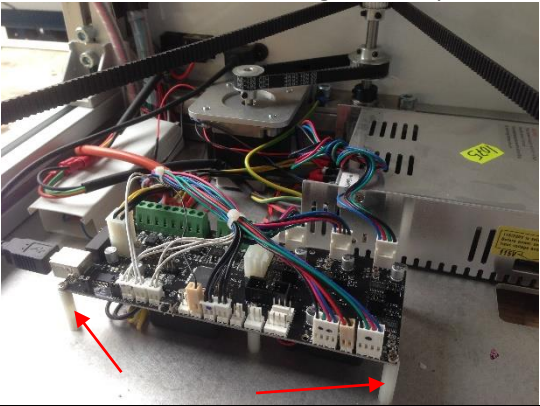
7. Preparation

Unpack all delivered parts and make sure all tool described in section 4 and parts described in section 5 are available for use.

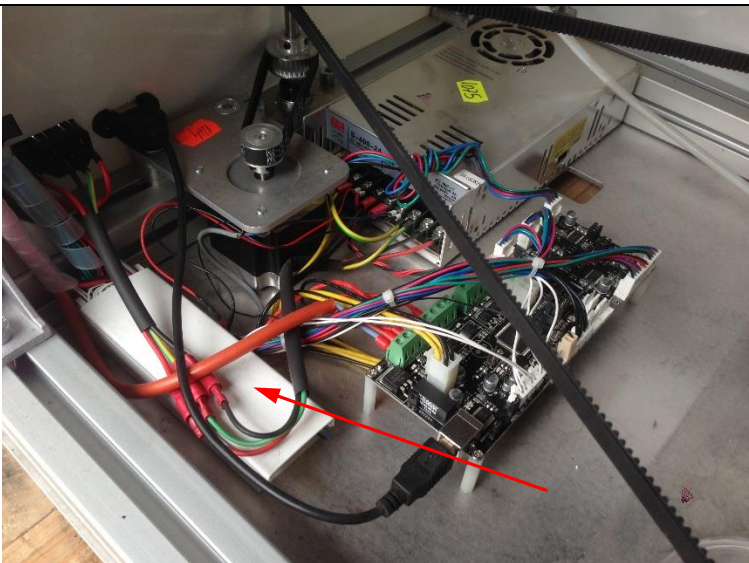

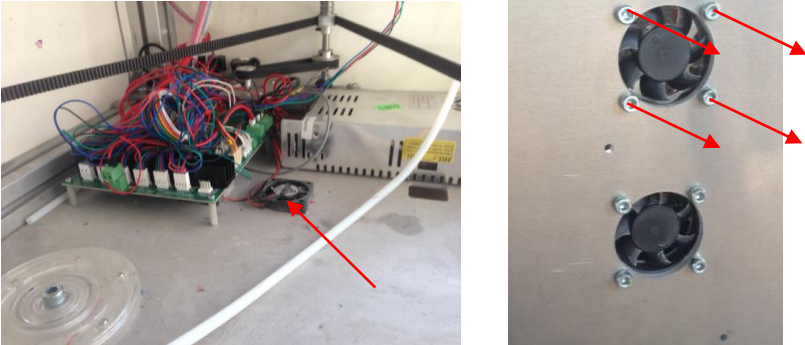
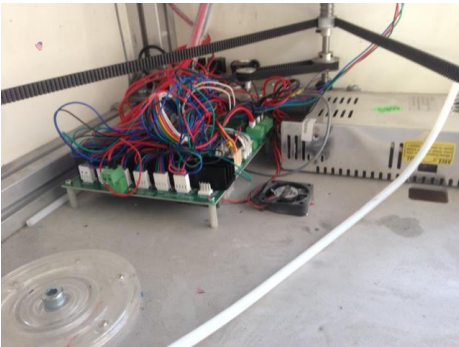
8. Procedure


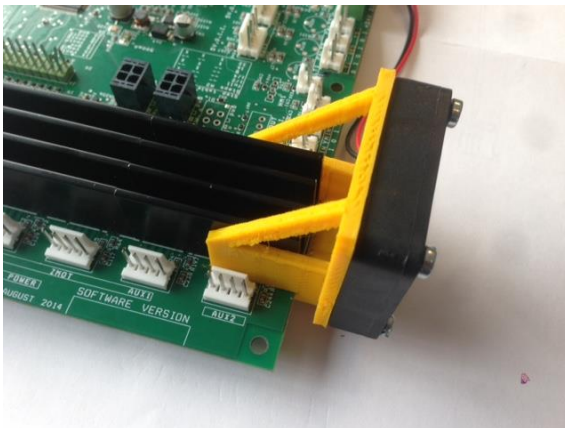
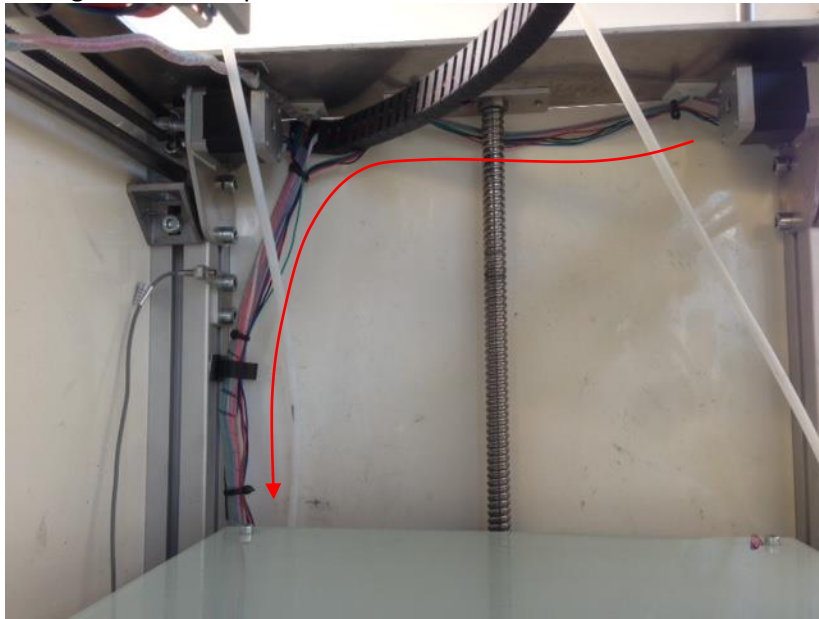
Step	Action
1	<p>Disconnect the power cord and USB cable from the 3D printer.</p> 
2	<p>Open the right side panel by removing 4 screws using an Allen key (Tool 1)</p> 
3	<p>Open the left side panel by removing 4 screws using an Allen key (Tool 1)</p> 
4	<p>Remove the electronics cover by loosening (do not remove) the screws on the rear (A) using an Allen key (Tool 1) and removing the screws on the bottom (B) using an Allen key (Tool 1).</p> 
5	<p>Disconnect the all the wires to the PCB, please write down exactly where each cable is connected to the PCB so the wires are identifiable for re-connecting to the new PCB:</p>

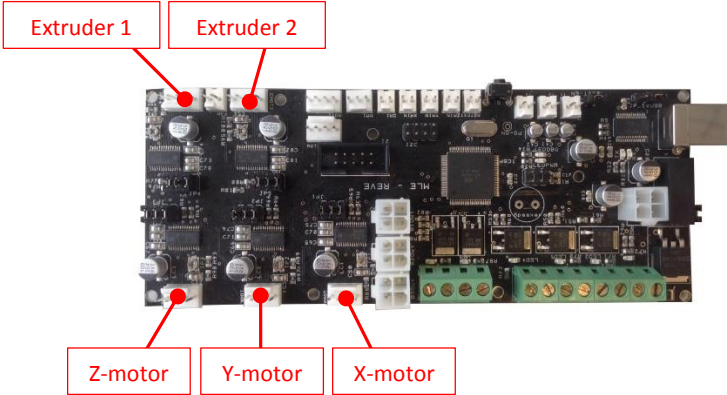
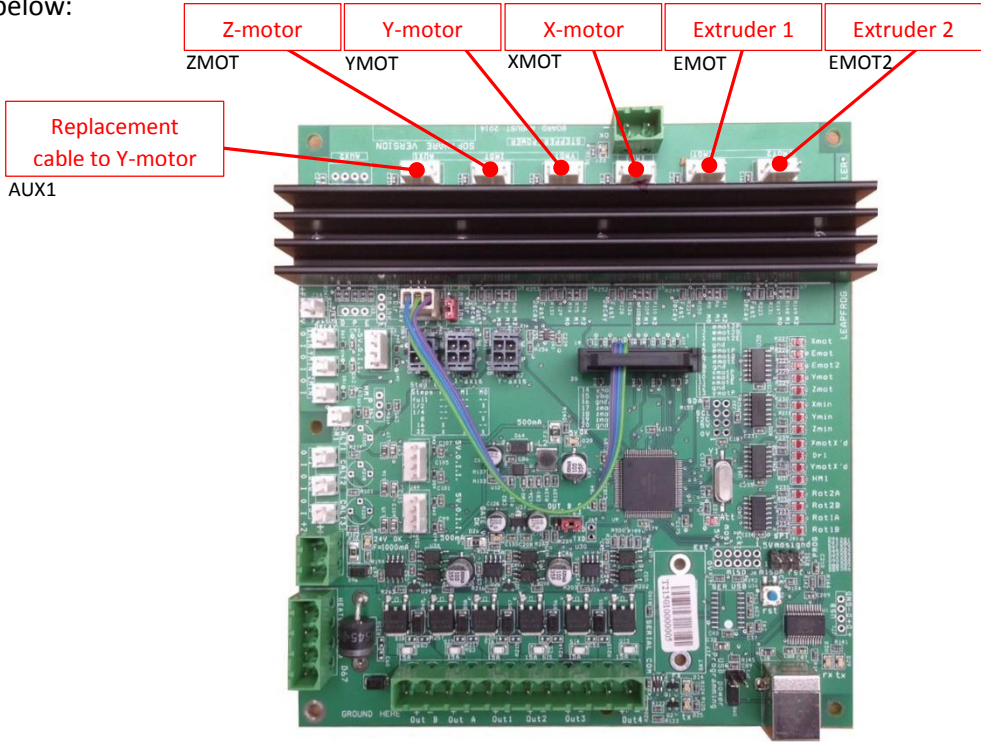
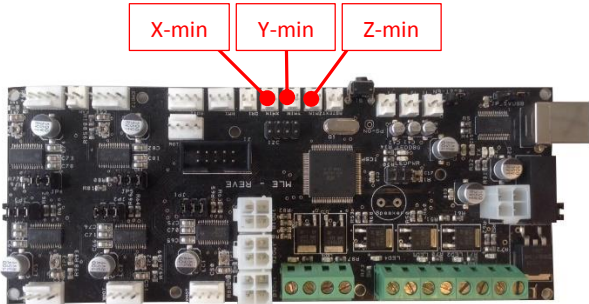


	
6	<p>Remove the 4 screws that hold the PCB to the white PCB spacers using the Philips head screwdriver (Tool 2)</p> 
7	<p>Remove the white PCB spacers from the old PCB using the Philips head screwdriver</p> 
8	<p>Remove the white cable duct by pulling it from the bottom panel. (It is stuck to the bottom panel with double sided tape)</p>

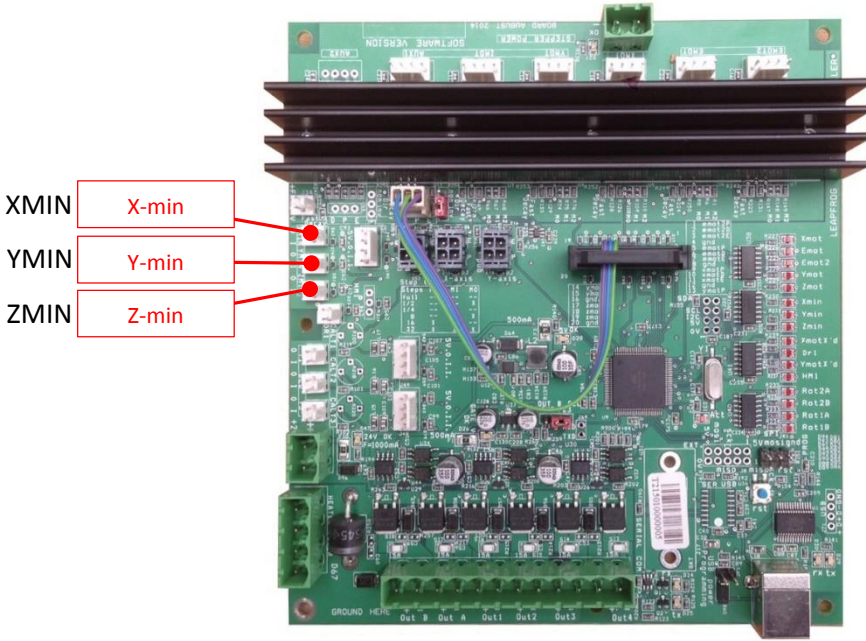
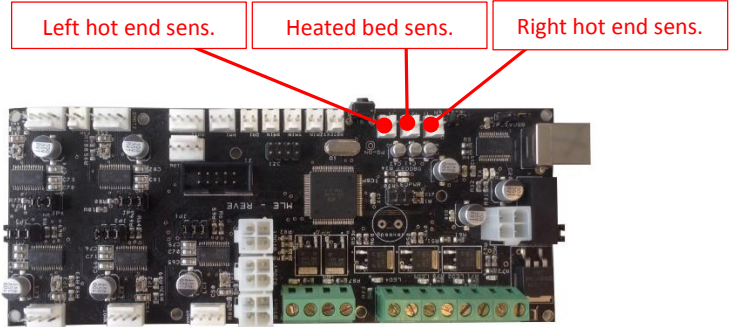
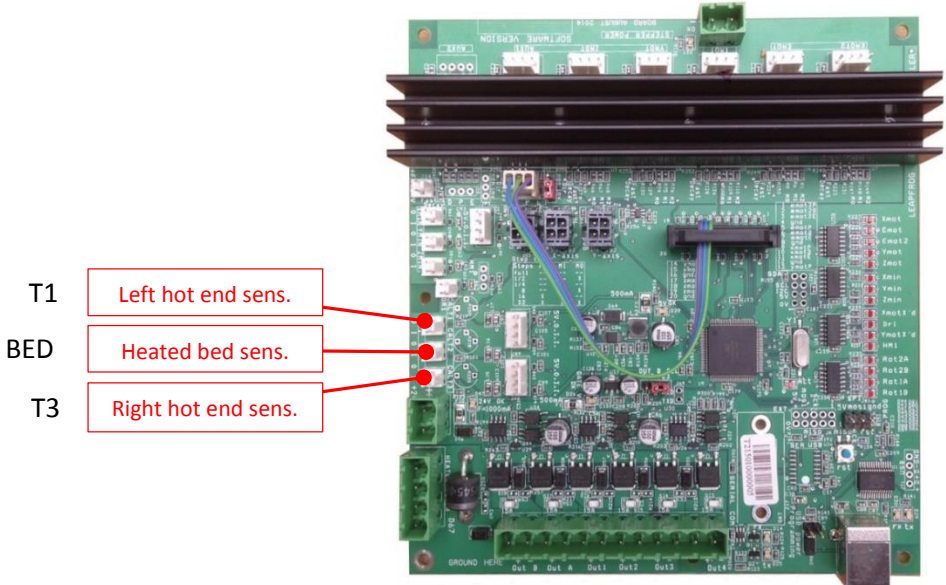


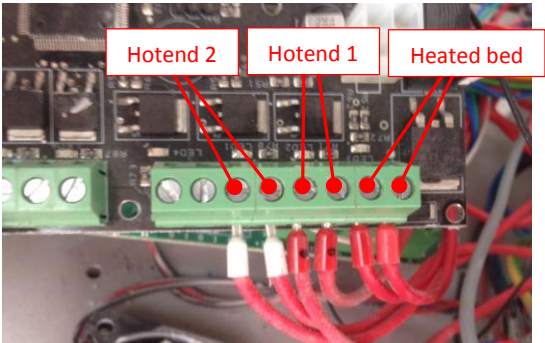
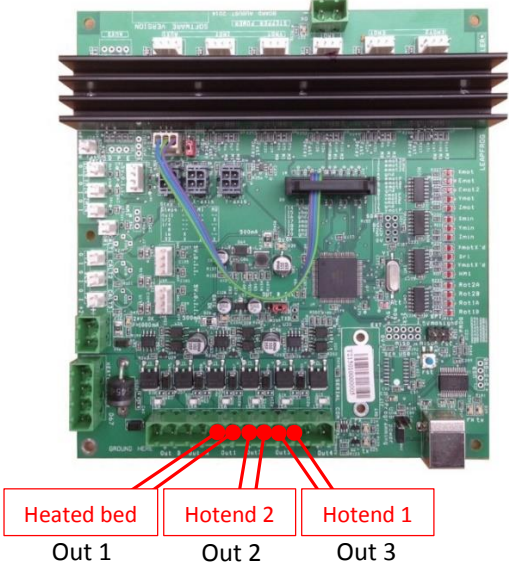

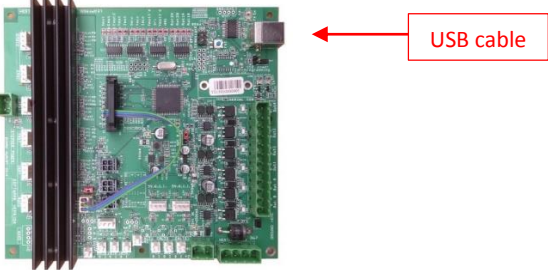
		
9	<p>Place the PCB spacers from the old board onto the new PCB using the Philips head screwdriver (Tool 2)</p> 	
10	<p>Remove the 4 screws that hold down the right cooling fan to the bottom panel.</p>  <p><i>NOTE: In the right image, the Creatr is turned on its left side, this is the bottom view.</i></p>	
11	<p>Place the new PCB on the left rear side.</p>  <p><i>NOTE: In this image the wires are already connected</i></p>	
12	<p>Mount the cooling fan to the bracket using the 4 x M3 screws (Part 5)</p>	


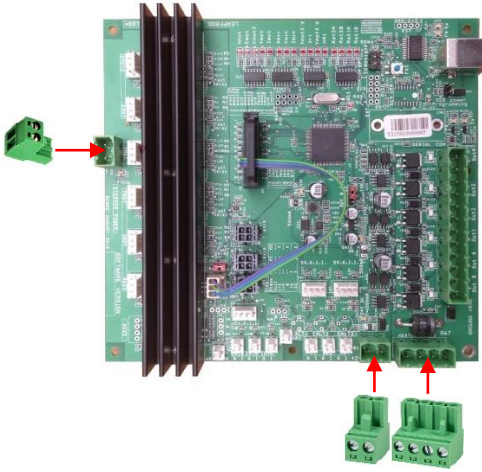

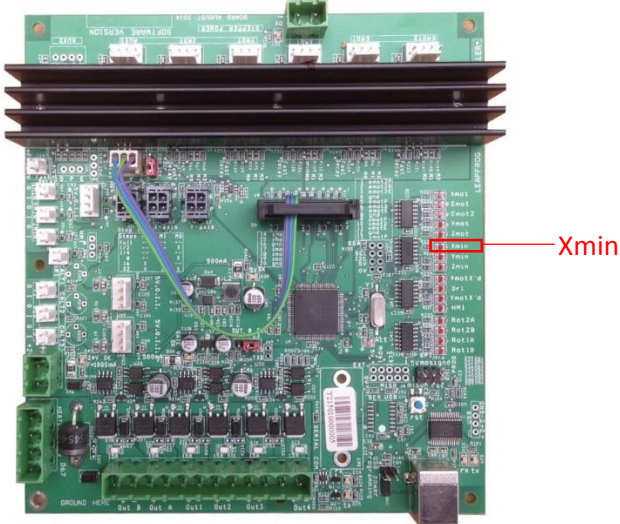
	
13	<p>Place the cooling fan bracket onto the PCB</p> 
14	<p>Disconnect the cable to the stepper motor (Y-motor) on the right rear side and connect the replacement stepper motor cable (Part 4) to the motor. Route the new stepper motor wire through the frame along the old stepper motor wire towards the control board. Fasten the wire using small tie wraps</p>  <p><i>NOTE: You can leave the old wire in place, it does not need to be removed.</i></p>

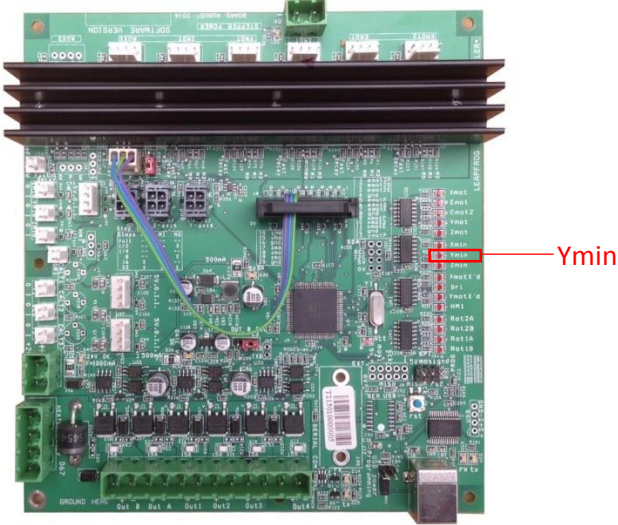
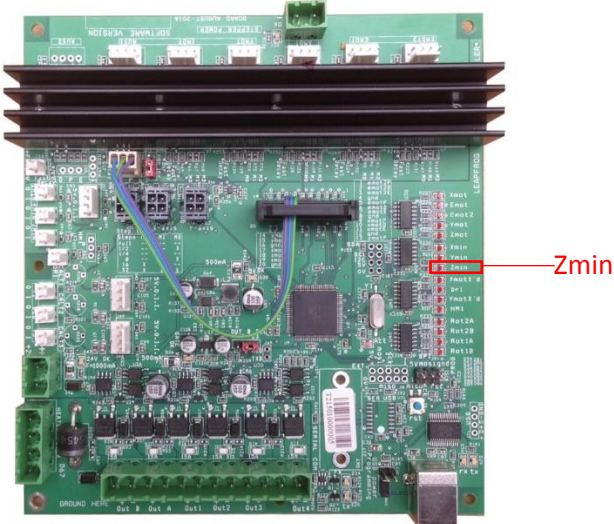
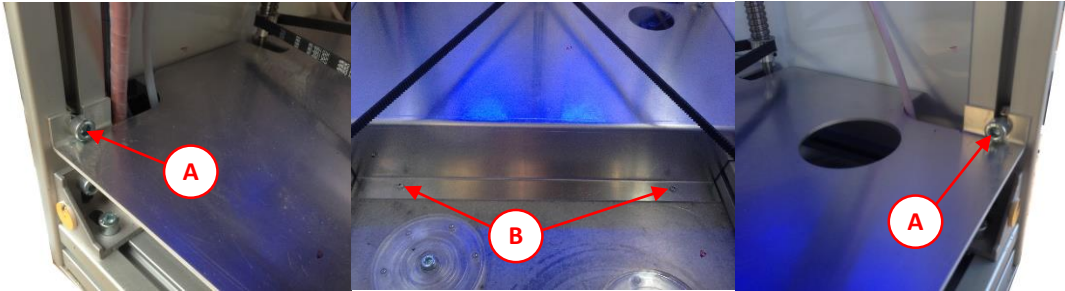
NOTE	<p>The image below shows where the connectors on the old board were to help you to perform the next step.</p> 
15	<p>Connect the stepper motor wires from the old control board to the replacement PCB as shown below:</p>  <p>Connect the additional Replacement Y-motor cable (Part 4) to the AUX 1 output</p>
NOTE	<p>The image below shows where the connectors on the old board were to help you to perform the next step.</p> 




16	<p>Connect the end switches from the old control board to the replacement PCB as shown below:</p> 
NOTE	<p>The image below shows where the connectors on the old board were to help you to perform the next step.</p> 
17	<p>Connect the temperature sensors from the old control board to the replacement PCB as shown below:</p> 

NOTE	<p>The image below shows where the components/parts can be found to perform the next step. On the old Creatr PCB:</p> 
18	<p>Connect the heating elements to the large connector of the replacement PCB as shown below using the slotted screwdriver (Tool 3):</p> 
NOTE	<p>The image below shows where the connectors on the old board were to help you to perform the next step.</p> 
19	<p>Connect the USB cable from the rear panel to the replacement PCB:</p> 

20	<p>Connect the supplied power cable (Part 3) to the power supply as shown below with the red wire to any terminal marked + and the black wire to any terminal marked -:</p> 
21	<p>Connect the green connectors from the supplied power cable (Part 3) to the replacement PCB (Part 1) as shown below:</p> 
	<p>You may re-connect the mains power cable and power up the 3D printer. Do not touch anything inside the electronics enclosure as there are live wires inside!</p>
22	<p>When the printer is switched on, push the X-home switch manually and check on the new PCB if the X-Min LED lights up:</p> 

23	<p>When the printer is switched on, push the Y-home switch manually and check on the new PCB if the Y-Min LED lights up:</p> 
24	<p>When the printer is switched on, hold a metal object to the Z-home sensor and check on the new PCB if the Z-Min LED switches off : (inverted signal)</p> 
25	<p>Test the Creatr on proper working by printing a small test print. When the test print is satisfactory the rest of the procedure can be performed.</p>
26	<p>Place back the electronics cover by fastening the screws on the rear (A) using an Allen key (Tool 1) and placing back the screws on the bottom (B) using an Allen key (Tool 1).</p> 

27	<p>Place back both sides and fasten them, Connect the power cord and USB cable to the 3D printer.</p> 
28	Clean up obsolete parts and pieces
29	Done
Comments	
<p><i>Use this area to write down any comments or issues while performing the procedure</i></p>	