



A collection of electronic components and tools. In the background is a silver and black Severin toaster oven. To its right is a blue and white Beta digital multimeter with a black probe. In the foreground, there is a silver heat press with a yellow sheet of paper on it. To the left of the heat press are various items: a green PCB, a small black display with a red base, a container of solder, a soldering iron, a breadboard, and several small electronic components and wires.

30 Years Beta

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1. Reflow-Kit Components

- 1 Solder paste (flux) & data sheets
- 1 Handheld squeegee
- 1 Oven
- 1 Spatula
- 1 Tweasers
- 1 Dice Kit
 - 9 V block battery
 - PCB
 - Stencil
 - Components
- 1 Reflow controller V3 PRO
- 1 Magnetic workbench for small SMD stencils

1.1. Reflow-Oven

1.1.1. Intended Use

The Reflow-Oven is intended for the soldering of SMD components to a circuit board.

Any usage of this product other than that described above is likely to lead to damage including short-circuiting, fire, electric shocks etc. It is forbidden to alter and/or convert the entire product in any way.

This product fulfills the legal, national and European requirements. All company names and product designations are registered trademarks of the respective owners. All rights reserved.

Please follow all of the additional operating instructions for the product which you will find on our website **www.beta-estore.com/reflowkit_jub**.

1.1.2. Safety instructions



Any damage caused by failure to follow the operating instructions will render the guarantee/warranty null and void. We accept no liability for consequential damages.



We also accept no liability for material or personal damages caused by inappropriate handling or failure to follow the safety instructions. In such cases, the warranty/guarantee is null and void.



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- For safety and copyright (EU) reasons no arbitrary changes or alterations to the product are permitted. Never disassemble the unit!
- The product is designed for operation through the public mains supply only (230V~/50Hz) and must be properly earthed. Plug the controller into a regulation-compliant earth socket.
- This product is not a toy and is not intended for use by children. Operate and store the product out of children's reach. Children may attempt to insert objects into the openings of the unit, risking fatal electric shock.
- The product is only suited to dry indoor areas and must not get damp or wet. Never use the product outdoors or in damp or humid conditions, and never handle it with damp or wet hands. This could lead to fatal electric shock.
- Place the unit on a sturdy, even, sufficiently large surface, which must be heat-resistant. If necessary use a suitable heat-resistant mat. Keep sufficiently clear of inflammatory items. Do not incorporate the unit into furniture or the like, never operate the unit in a vehicle. Keep the area around the unit clear. Never cover the unit.
- Do not lay the mains cable directly beside, or on the unit. Lay the cable in such a way that nobody can trip over it. Do not step on the cable. Lay the cable in such a way that it is not damaged by sharp edges. Do not break the cable. Wind the cable up as tidily as possible. Never pull the power supply plug out of the socket by the cable. Grasp the power supply plug directly at the grasp surfaces and then pull it out of the socket.
- The product is only suitable for soldering procedures (e.g. soldering SMD components on a circuit board). It is not suitable for the preparation of meals, for drying articles or the like, or for other un-intended activities.
- When you first start up the unit it is possible that smoke and/or smells can be emitted, even without SMD components being soldered. This is normal.
- Pay attention to sufficient ventilation of the unit where it is being used. Soldering causes fumes that can be hazardous to health, these need to be allowed to ventilate safely (e.g. exhaust).
- The unit must always be operated under supervision.
- Do not operate the product in environments in which flammable gases, fumes or types of dust are present or could be present. Danger of fire and explosion! All rights including translation are reserved. Reproductions of any kind, e.g. Photocopy, microfilming, or the storage in electronic data-processing systems, require the written permission of the publisher. Reproduction, also in part, is forbidden. This instruction manual is based on the technical information at time of going to print. Changes in technology and equipment are reserved.
- Do not touch the product during use as it gets very hot and can cause burns. Allow the unit sufficient time to cool down before touching it (e.g. for transport or cleaning).



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- This product is intended for private use only, it is not intended for commercial use.
- Handle the product with care as it can be damaged by impact or as a result of falling from even low heights.
- Do not continue to use the unit if the product housing or the mains cable gets damaged. If it is still connected to the mains, do not touch it or any other attached devices. First, break off the electrical circuit to which the unit is connected (switch off the automatic circuit breaker).
- You can now unplug the attached devices and remove them from the mains socket. Then bring the product to a repair workshop or dispose of it in an environmentally appropriate way.
- Dispose of packaging carefully as it could be dangerous in the hands of children.
- If you are concerned about the functioning, operation or safety of the product, consult a specialist. Do not work on the product yourself.

1.1.3. Technical Data

Operating Voltage:	230 V~/50 Hz
Max. connected load:	1500 W
Weight:	Ca. 6 kg
Dimensions:	Ca. 450 x 370 x 290 mm (W x D x H)

2. Advice before starting up

- For the cleaning of the stencil and any other parts which came into contact with solder paste (flux), you should keep paper towels and white spirits at the ready.
- The solder paste should be stored at a cool temperature. Ensure that the paste is not stored in close proximity to food e.g. in the same refrigerator.
- Briefly stir up the the solder paste before use with the spatula provided.

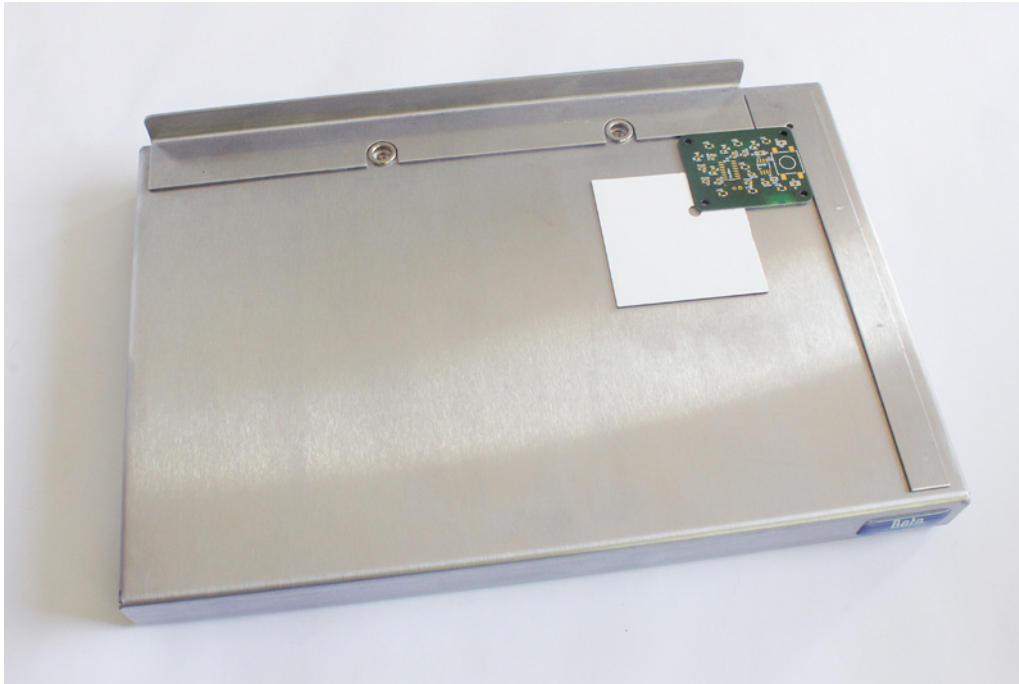
TIPP The solder paste will be more workable if it is taken from the refrigerator approx. 2 hours before use.

- The paste remains workable for 16 hours after application.

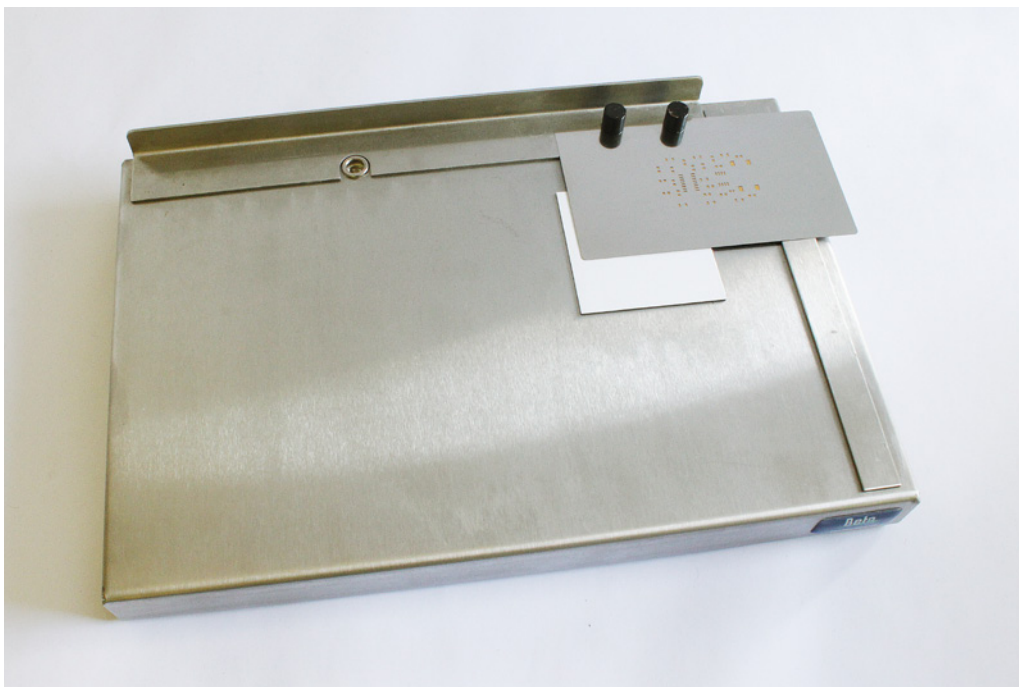


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3. Soldering process



- Cut a small corner out of the white magnetic foil to fasten the circuit board with.



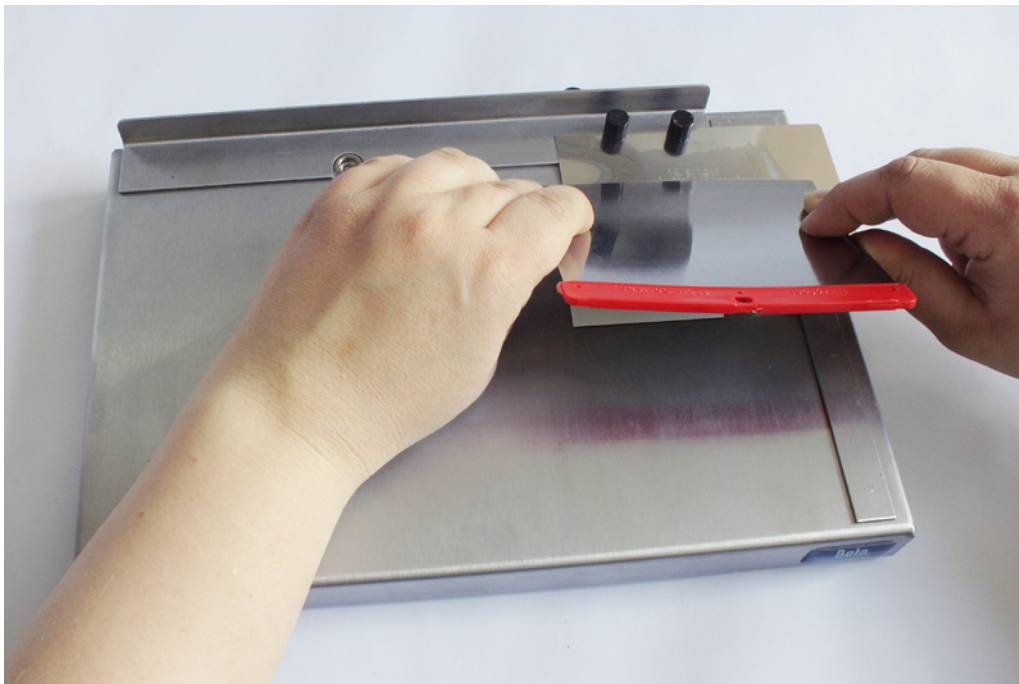
- Align the stencil with the circuit board so that the circuit board pads are completely visible through the stencil opening. The stencil is now locked in place by the magnets. Please ensure that the stencil is fastened solely on the fold-out side.



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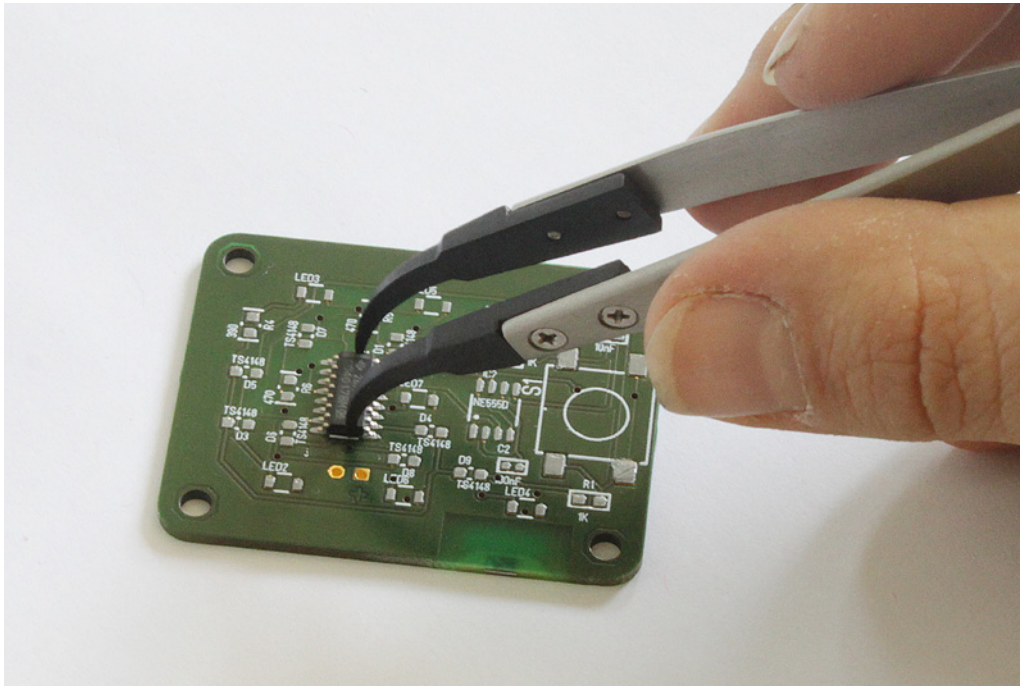
- Apply the solder paste, in a horizontal line to the pad layout, in order to spread it over the stencil.



- Spread the solder paste evenly in a single motion, and in one direction, over the stencil, so that all openings are filled.



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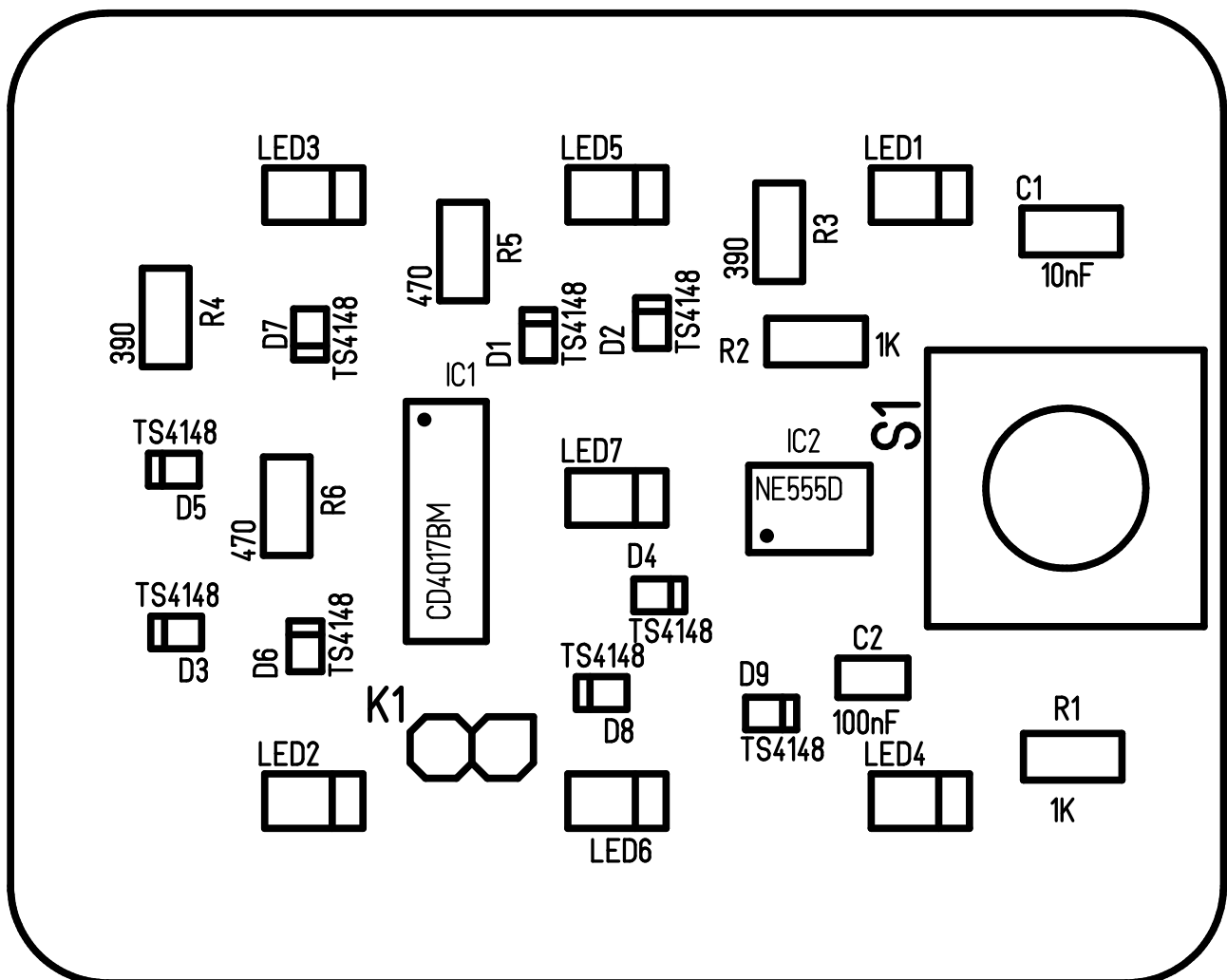


- Assemble the SMD components by hand using the tweasers provided.



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Kit assembly plan



Parts list

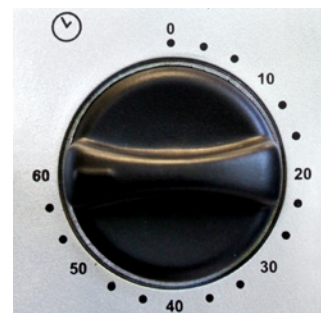
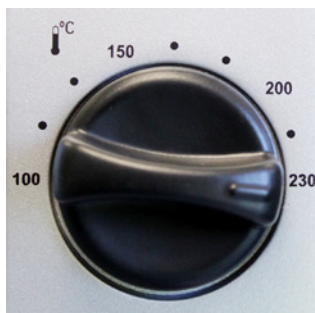
Name	Value	Housing	Number
C1	10nF	805	1
C2	100nF	603	1
D1, D2, D3, D4, D5, D6, D7, D8, D9	TS4148	805	9
IC1	CD4017BM	SOIC16/WB3,9/P1,27	1
IC2	NE555D	SO8/WB3,9/P1,27	1
K1	Battery clip pushbutton		1
LED1, LED2, LED3, LED4, LED5, LED6, LED7	LED-SMD1206_ROT	1206	7
R1, R2	1K	805	2
R3, R4	390	805	2
R5, R6	470	805	2
S1	SMD button 1618.11	TASTER 1618.11	1



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- Please turn on the upper and lower heating elements and place the grill in the middle of the oven. The oven can only be switched on and off using the timer. Simply select a setting of > 30 mins. Once the soldering procedure is completed the timer can be set simply to 0 and the oven will turn off.



- You can monitor the temperature on your Reflow controller V3 PRO. The gauge sensor should be attached to an unused part of a circuit board, in such a way that it measures the circuit board temperature and not the air temperature. The composition of this circuit board should further be as identical as possible to that of the circuit board to be soldered (single or double-sided, with or without solder mask, etc.). The position in the oven should be as close as possible to the centre, near the circuit board to be soldered.

The completion of the soldering procedure is indicated by the melting of the solder paste and the temperature gauge should indicate approx. 232°C. Please note that the flux shines as it melts. Shortly afterwards you can observe that the SMD components



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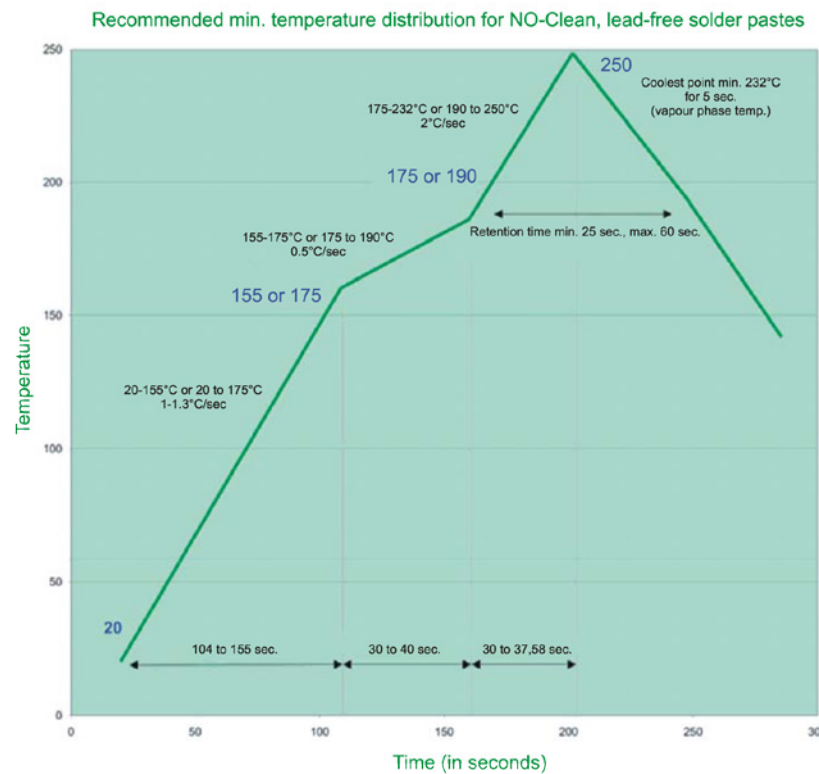
have sunk into the solderpaste. Only now is the soldering process is complete. The circuit board should be left in the oven for a short time before being carefully removed from the oven and left to cool.



Shaking or vibration can cause the components to dislodge!

FYI: Please consult the temperature graph on this page.

3.1. Soldering temperature



The soldering temperature is the most important parameter in this process. If the soldering temperature on the circuit board is achieved (when you see the melting point reached), then soldering is complete.



The circuit board will turn brown if left in the oven for too long!

Please also follow the operating instructions for the **Reflow Controller V3 PRO** at www.beta-eSTORE.com/RKCV3 and for the stencil printer.