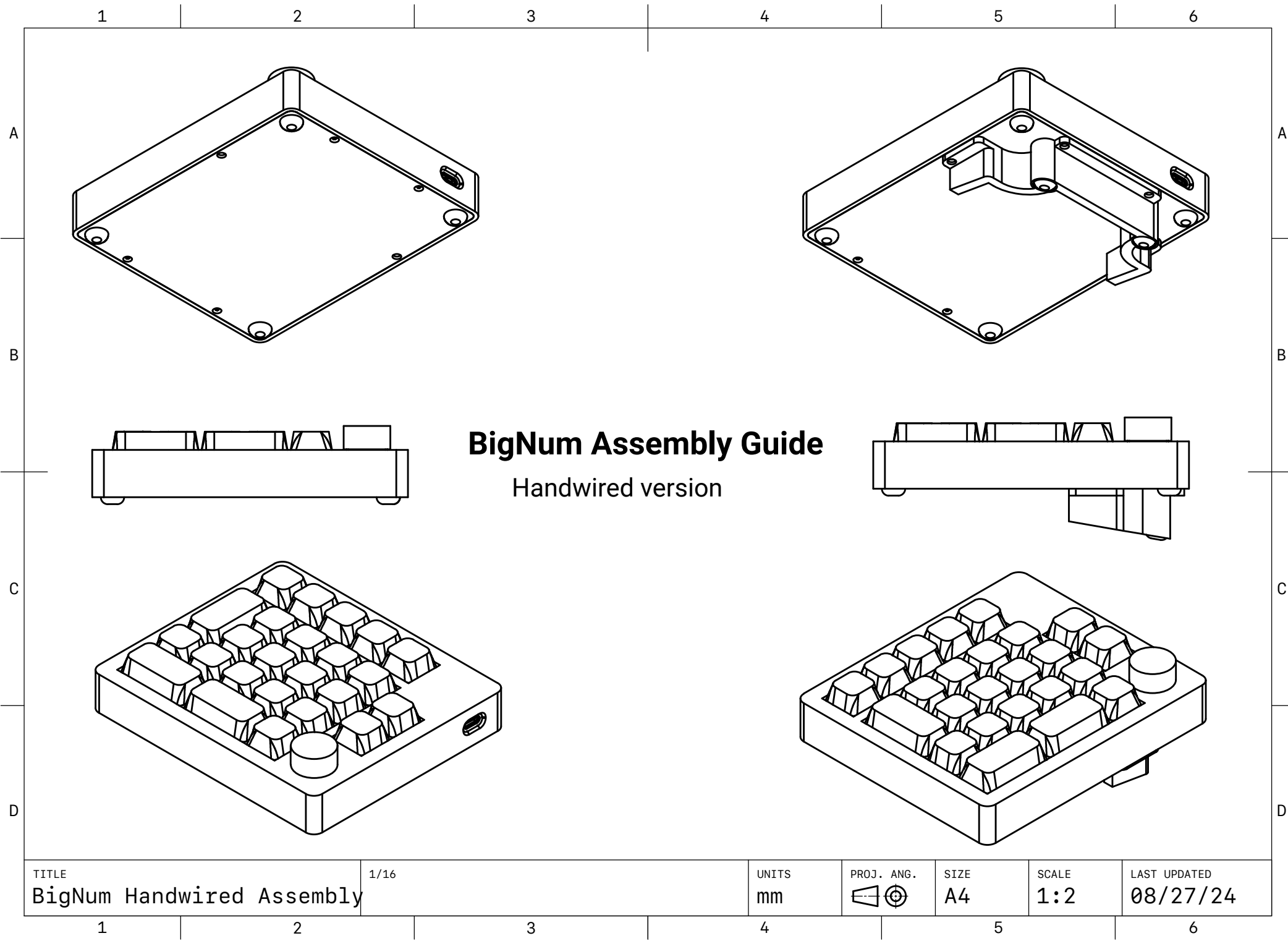




BigNum Assembly Guide
Handwired version

TITLE
BigNum Handwired Assembly

1/16

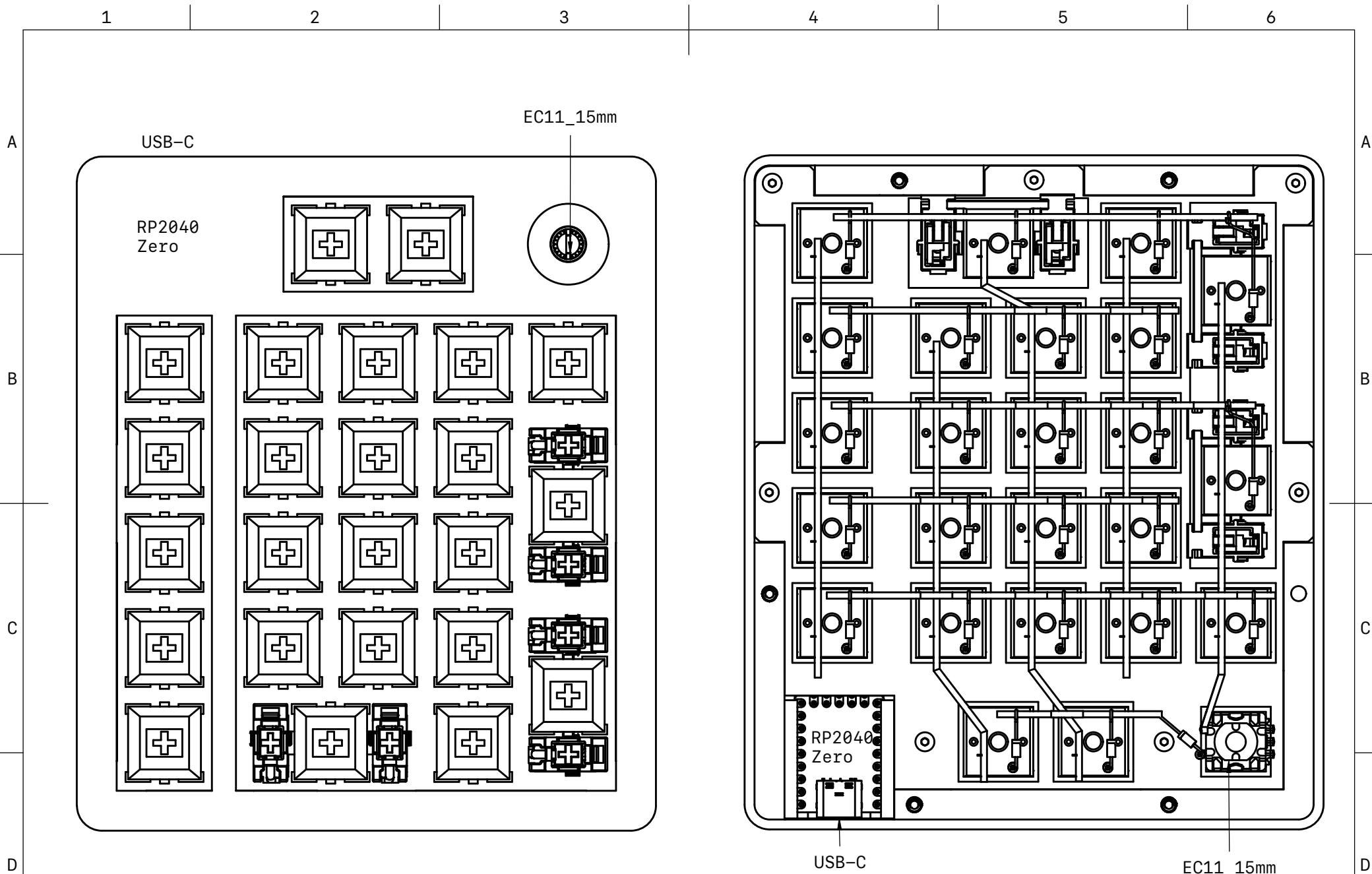
UNITS
mm

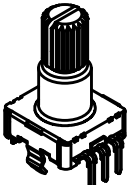
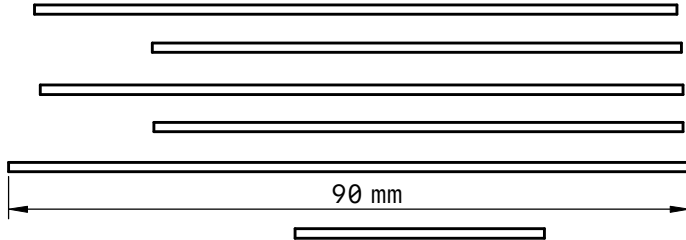
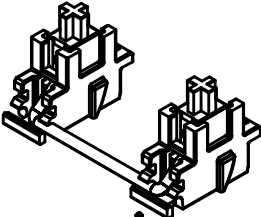
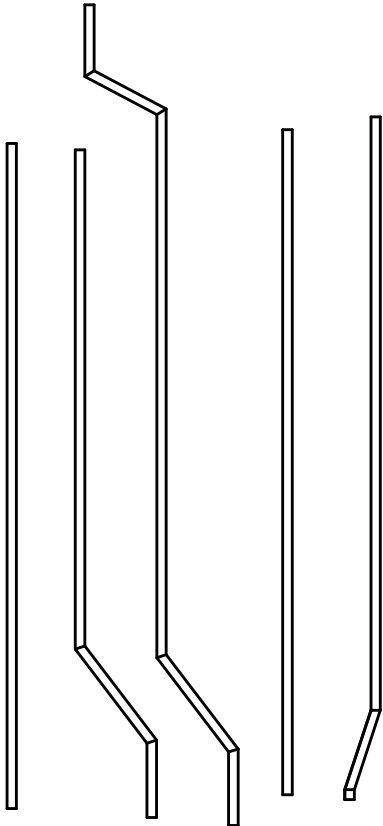
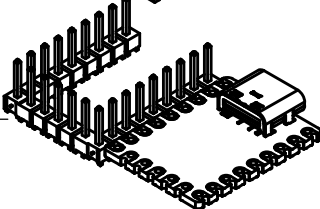
PROJ. ANG.

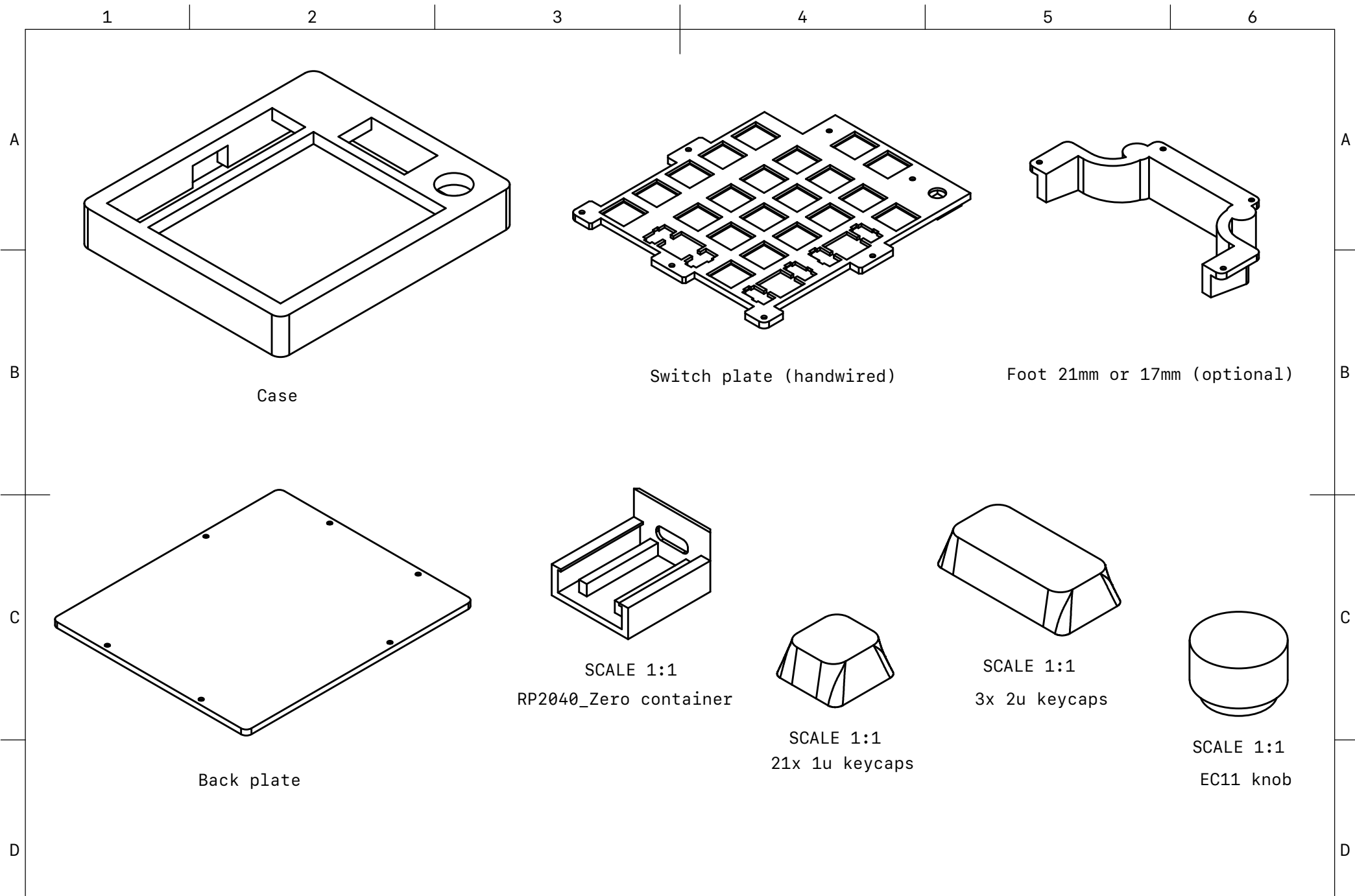
SIZE
A4

SCALE
1:2

LAST UPDATED
08/27/24



1		2		3		4		5		6					
A			1x Rotary encoder EC11 15mm Plum + bolt		Ø1.2mm Copper wire. Length for rows : 							A			
			24x Cherry Mx Switches												
			3x 2u Stabilizer (optional)		Ø1.2mm Copper wire. Length for columns : 										
B			1x RP2040 Zero + pin		- Soldering iron - Soldering tin - Single copper wire 24AWG - Digital multimeter (optional but recommended)							B			
			13x M2-5mm countersunk screws												
			4x M2-10mm countersunk screws												
			13x Heat insert M2xL3xOD3.2												
			Heat shrink tubing												
C			25x 1N4148 DO-35 diodes									C			
			6x Self-adhesive Rubber Damping 10mmx3mm												
D												D			
TITLE			2/16			UNITS		PROJ. ANG.		SIZE		SCALE		LAST UPDATED	
BigNum Handwired Assembly			Components list			mm				A4		1:1		08/27/24	
1		2		3		4		5		6					



TITLE		4/16	UNITS		PROJ. ANG.	SIZE	SCALE	LAST UPDATED
BigNum Handwired Assembly		3D printed parts list	mm			A4	1:2	08/27/24

1

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Case assembly

A

A

B

B

C

C

D

D

Step 1 :
Insert all heated inserts in the 3D
printed case

13x Heated inserts M2xL3xOD3.2



SCALE 3:1

TITLE

BigNum Handwired Assembly Assembly steps

5/16

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mmPROJ. ANG.
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A4SCALE
1:1LAST UPDATED
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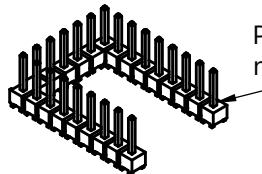
RP2040_Zero assembly

A



Step 2 :

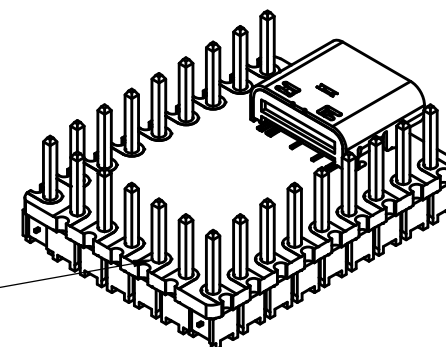
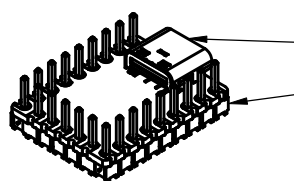
Push all the pin to the top, all pin
need to be on one side.



B

Step 3 :

Assemble the pin with the RP2040 Zero
like this



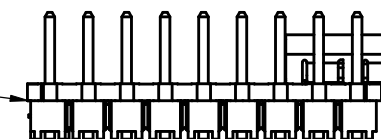
SCALE 2:1

Step 4 :

Solder all the pin to the RP2040

Make sure there is no gap before
soldering

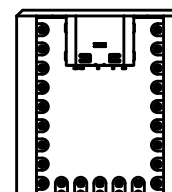
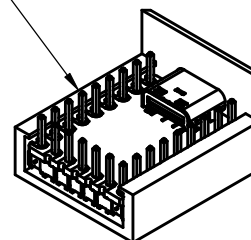
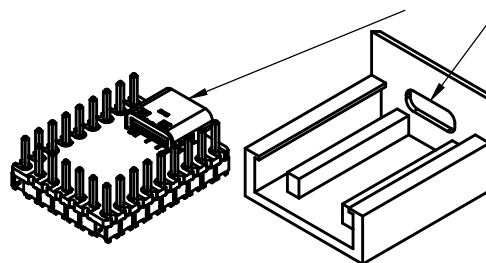
C



SCALE 2:1

Step 5 :

Put the RP2040 Zero in his container



D

A

B

C

D

TITLE

BigNum Handwired Assembly

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Assembly steps

UNITS

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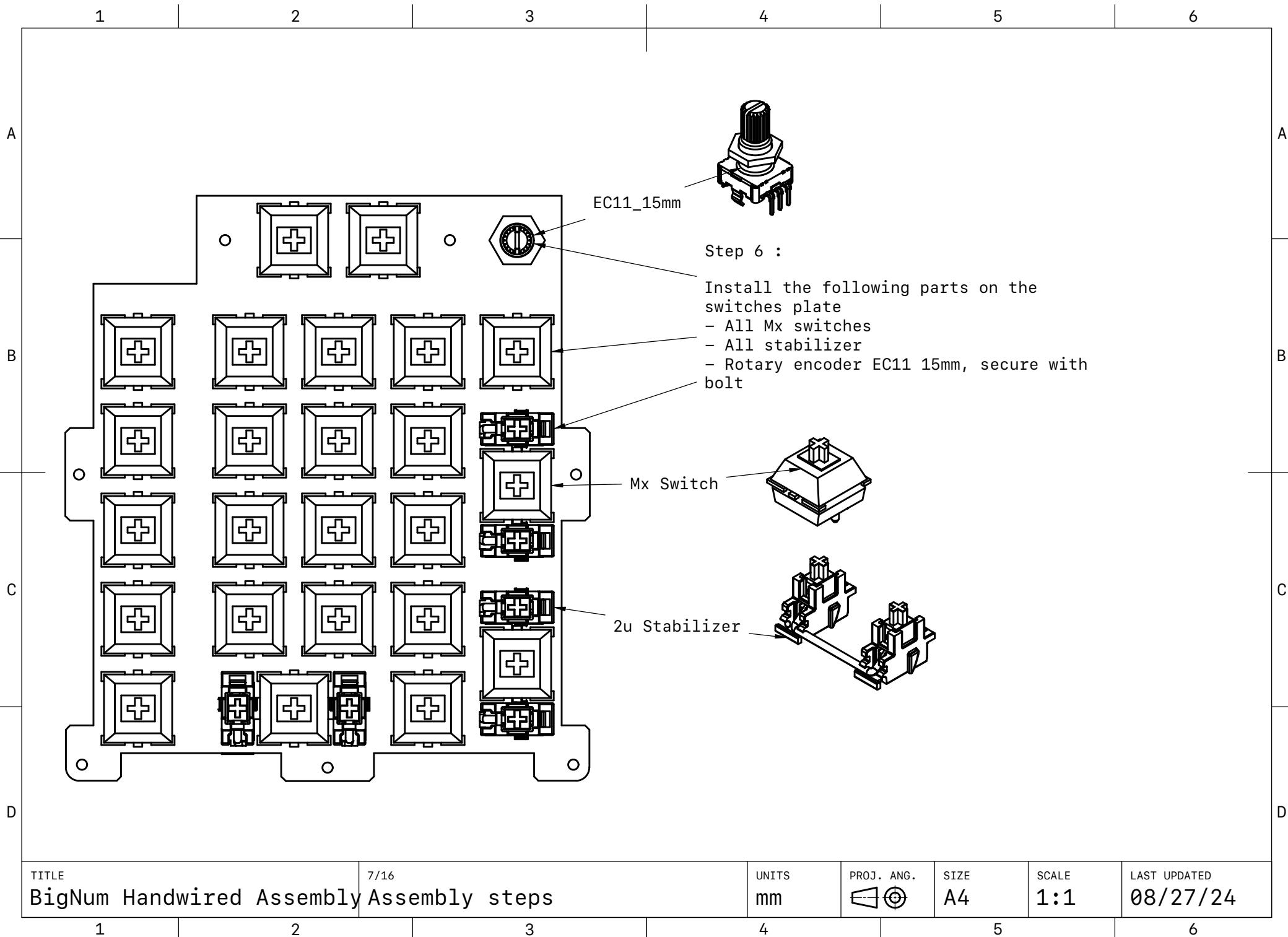
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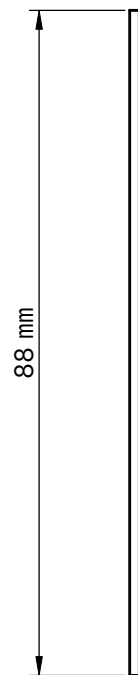
5

6

A

Step 7 :

Prepare the Ø1.2mm copper wire :
- bend the copper wire, use this as a
reference (1:1 scale)



88 mm

Col 0

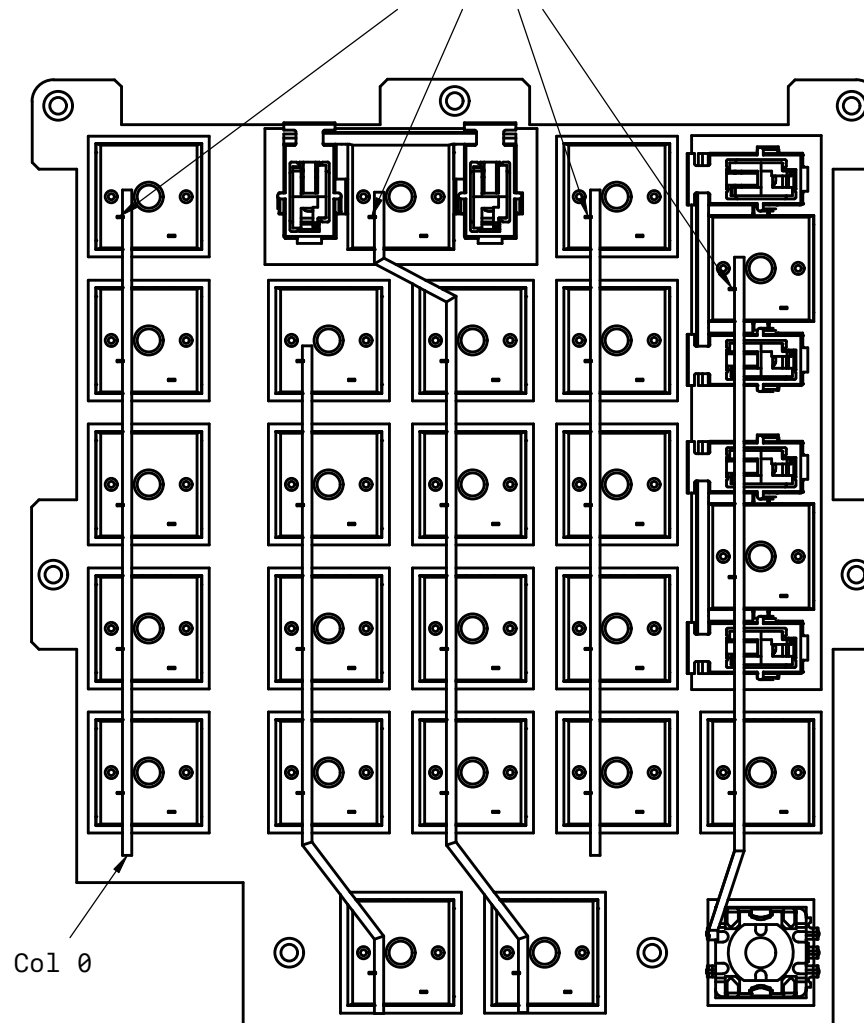
B

C

D

Step 8 :

Solder all columns with Ø1.2mm copper
wire to the dedicated switches pins.



Col 0

A

B

C

D

TITLE

BigNum Handwired Assembly Assembly steps

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A

Step 9 :

Solder all the diodes to the other pin
of the switches. Careful to solder all
on the same side

B

C

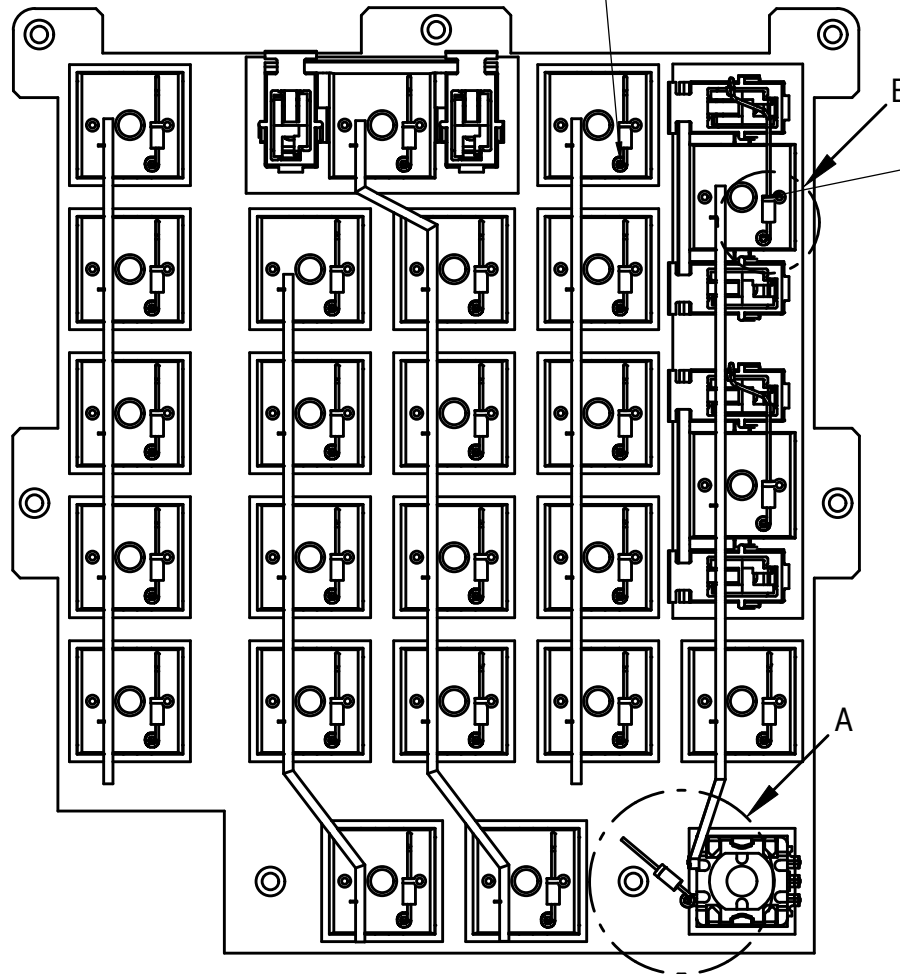
D

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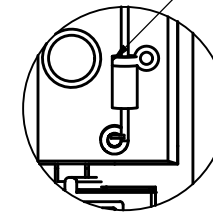
B

C

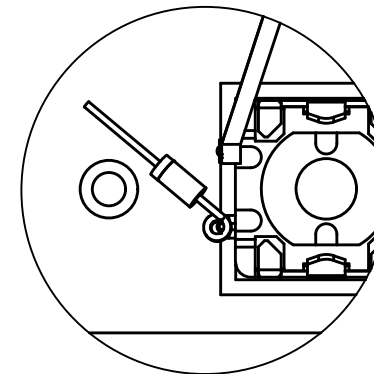
D



The black line need to be at the
opposite of the pin



B
SCALE 2:1



A
SCALE 2:1

TITLE

BigNum Handwired Assembly

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Assembly steps

UNITS
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PROJ. ANG.

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SCALE
1:1

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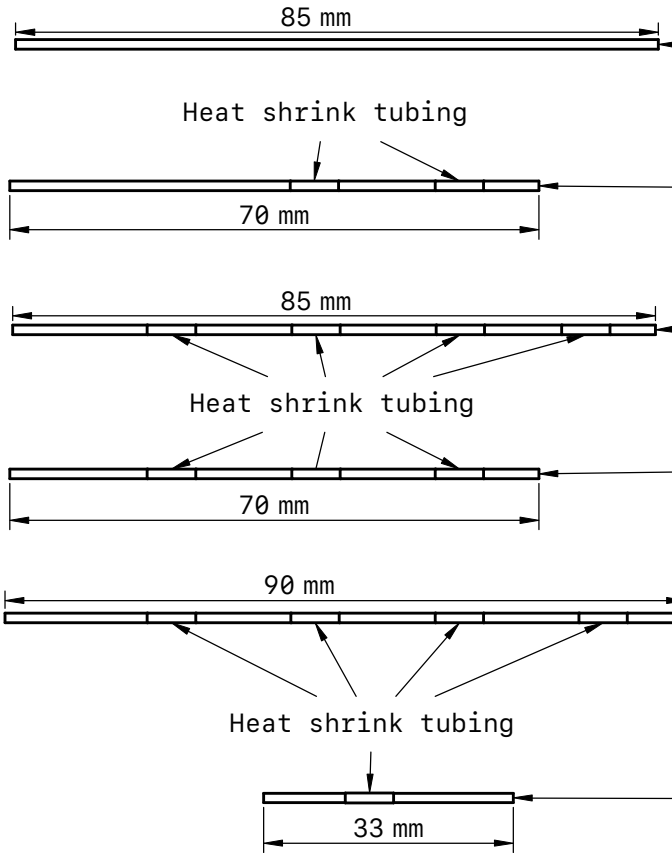
5

6

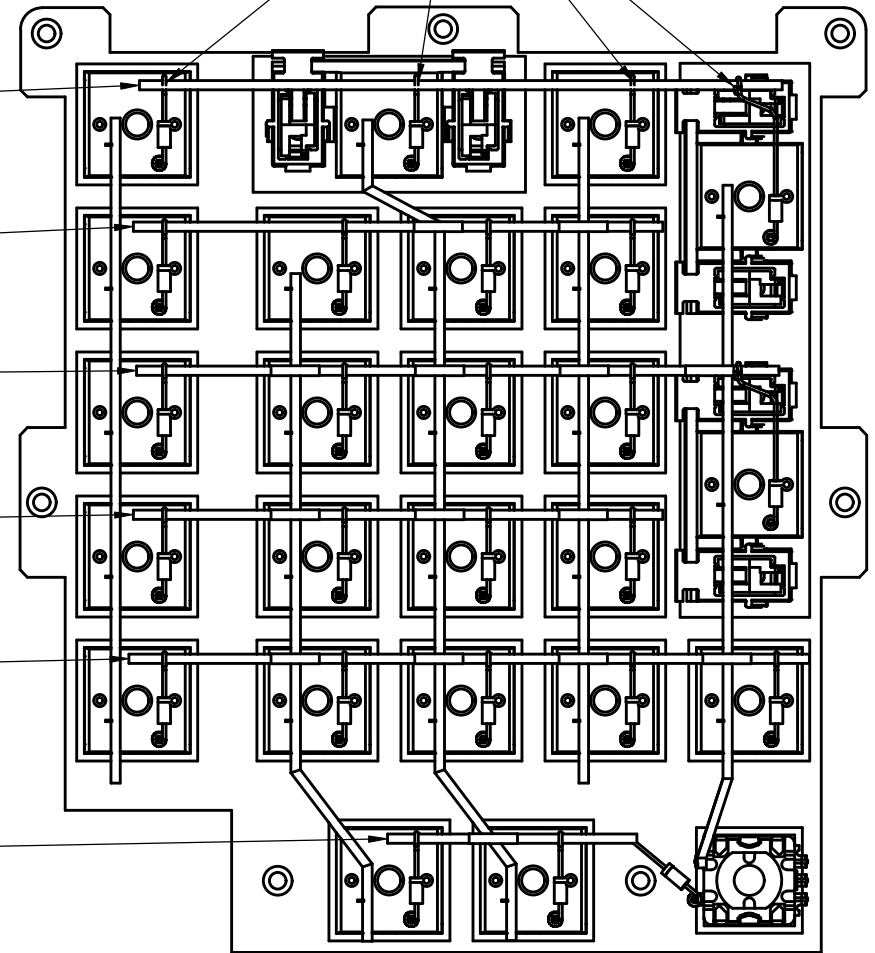
Step 10 :

Prepare the copper wires

- Cut the right length, use this as reference (1:1 scale)
- Add heat shrink tubing to insulate the wires from the columns



Step 11 : Solder all rows with Ø1.2mm copper wire and the diodes



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Step 12 :

RP2040 Zero wiring

Connect the row with single copper wire 24AWG to the RP2040 Zero

Clearer schematic on the next page

Row 5 to pin n°15

Row 4 to pin n°14

Row 3 to pin n°13

Row 2 to pin n°11

Row 1 to pin n°9

Row 0 to pin n°7

Step 13 :

Connect the columns with single copper wire 24AWG

Step 14 :

Connect the EC11 with single copper wire 24AWG

ENC1B to pin n°27

Center pin to GND

ENC1A to pin n°29

Col 0 to pin n°0 Col 1 to pin n°1 Col 2 to pin n°2 Col 3 to pin n°4 Col 4 to pin n°5

TITLE

BigNum Handwired Assembly

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Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

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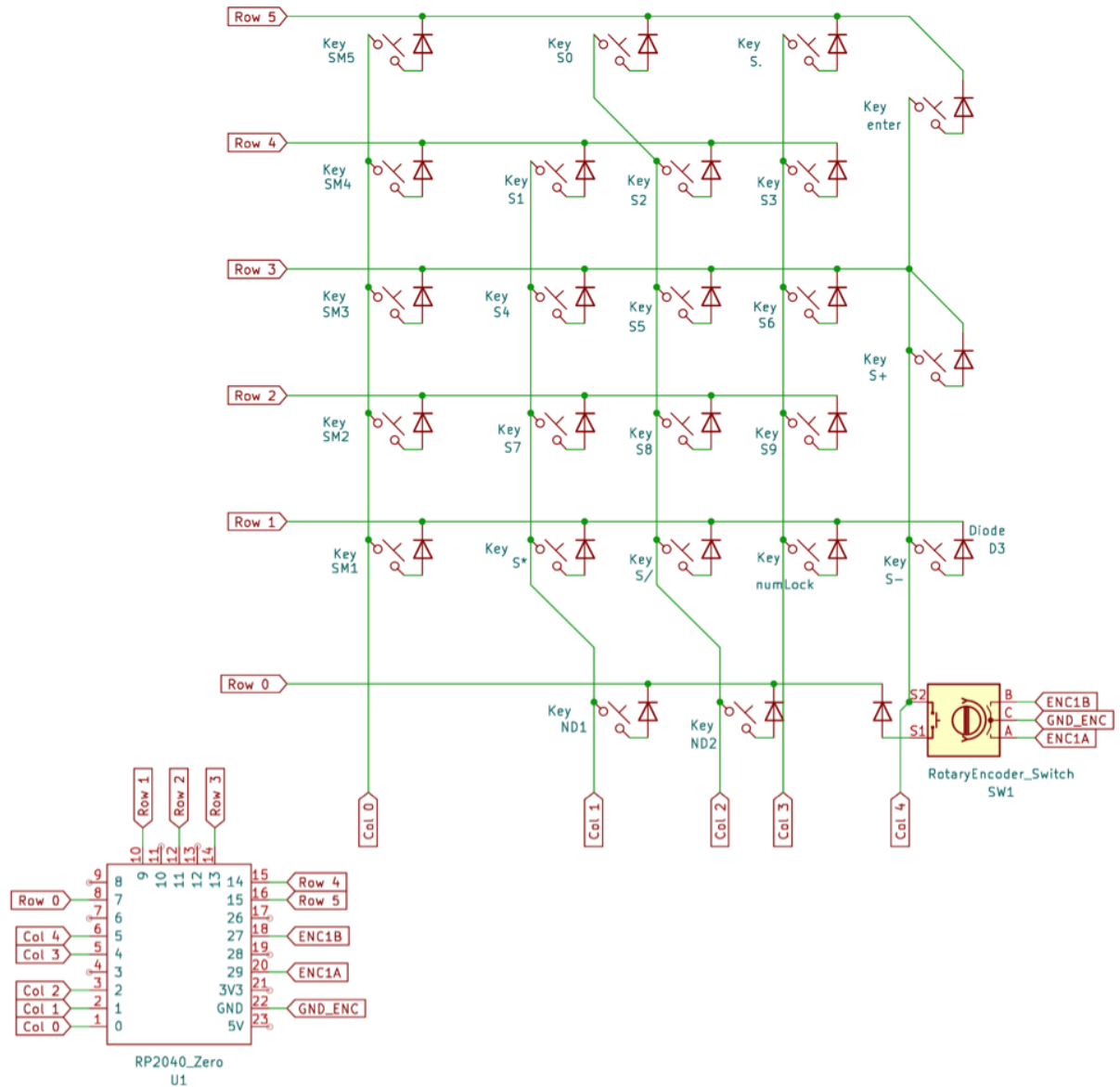
6

BigNum Schematic

Step 15 :

When everything is solder, test all connection with a multimeter.

This is optional but it will help to prevent issues.



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A

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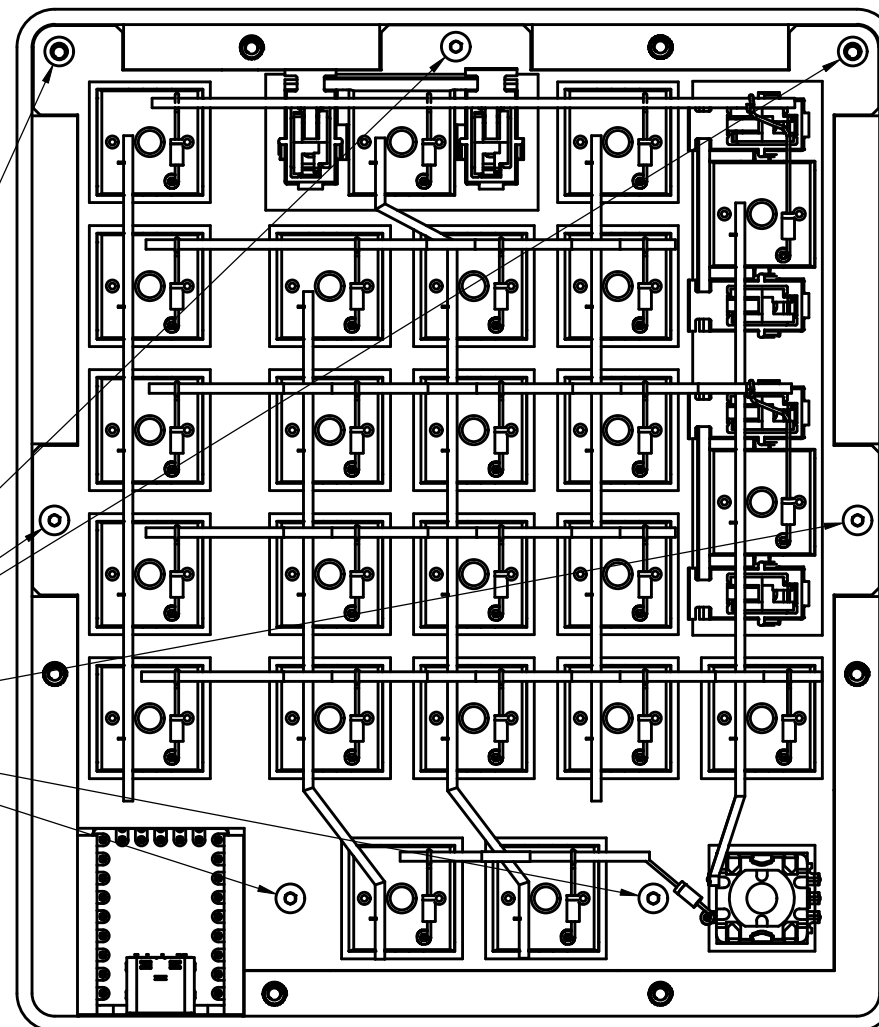
C

D

Step 16 :

- Assemble the complete wired switches plates with the RP2040 Zero to the case
- Screw 7x M2-5mm

7x M2-5mm



TITLE

BigNum Handwired Assembly

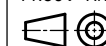
13/16

Assembly steps

UNITS

mm

PROJ. ANG.



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A

Step 17 :

- Install Vial on your computer
- Download the vial file
- « big_num_vial.uf2 »

B

Step 18 :

- On the RP2040 Zero, press the boot button, while holding it down, plug in the RP2040 Zero to the computer
- Your computer should now recognize this device, drag and drop the file « big_num_vial.uf2 » into the RP2040 location

C

Step 19 :

- Open Vial
- Go to « Matrix tester », clic unlock on the bottom right
- Test each key, if there is any issue, go back with the multimeter

D

Step 20 :

- If everything works, you can now put all the keycaps

TITLE

BigNum Handwired Assembly Firmware steps

14/16

UNITS

mm

PROJ. ANG.



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Step 21 :

Close BigNum with the back plate

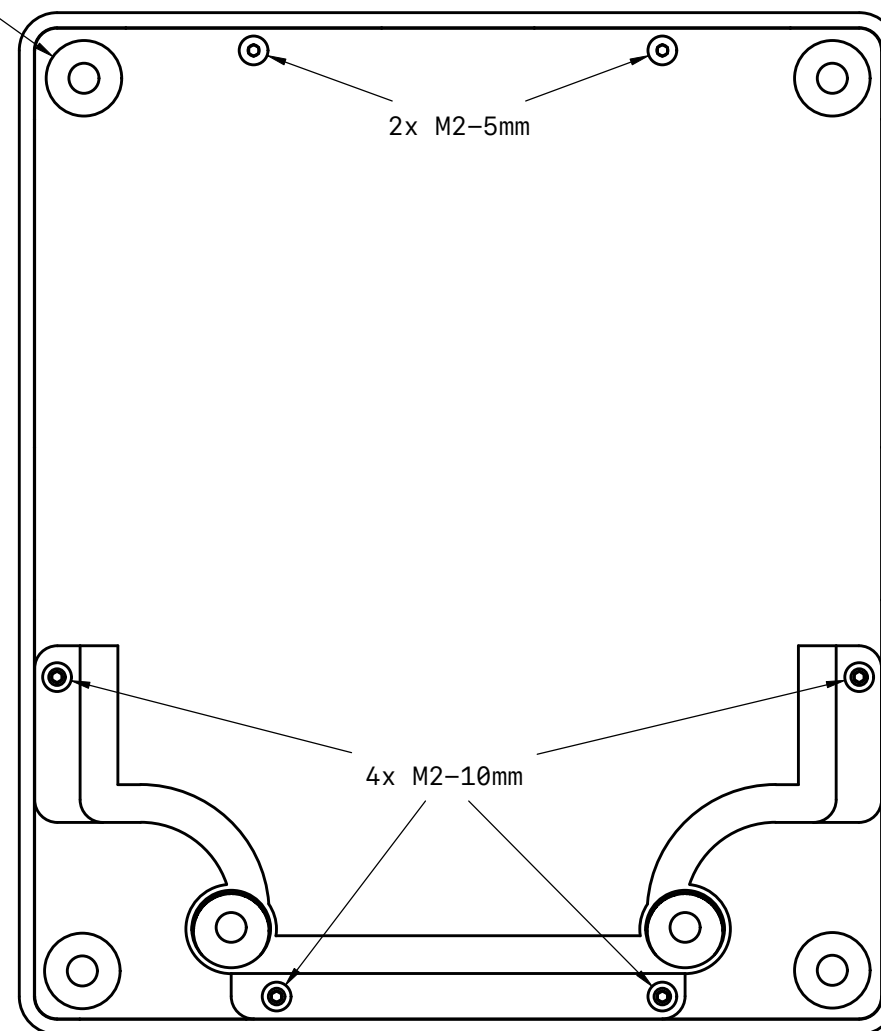
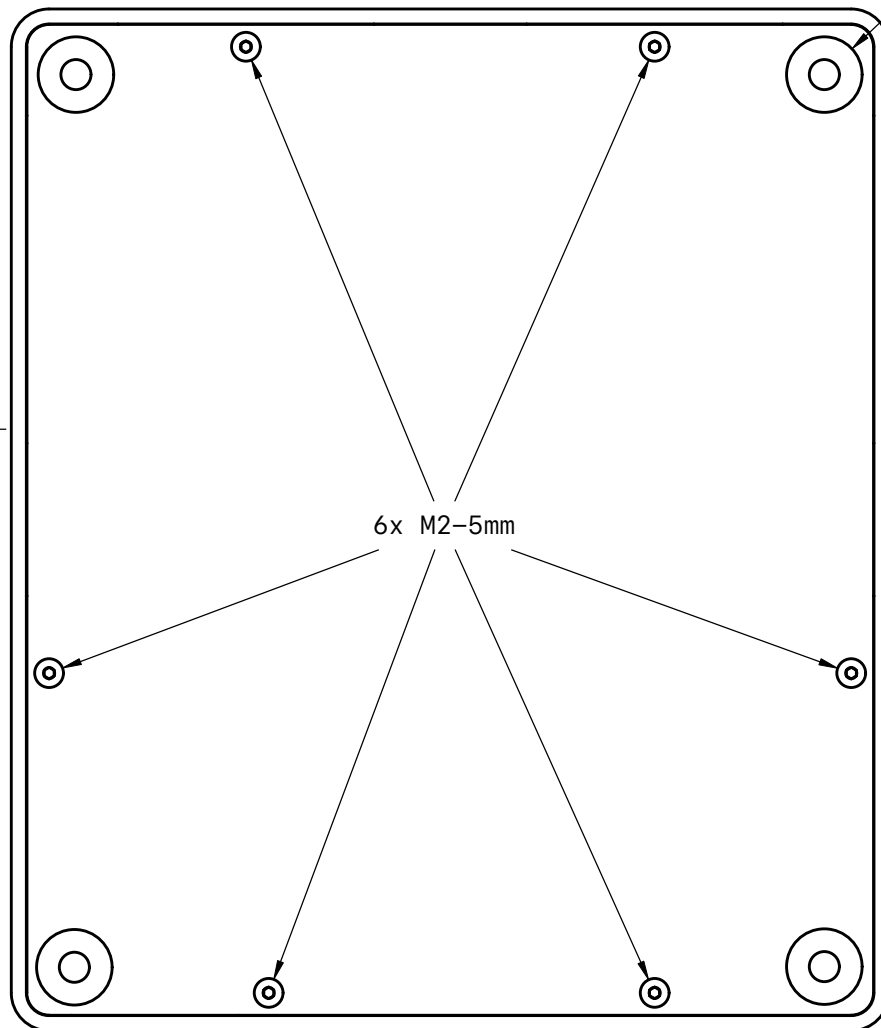
Option 1 :

Without foot

Self-adhesive Rubber Damping 10mmx3mm

Option 2 :

With foot, 21mm or 17mm height



TITLE

BigNum Handwired Assembly

15/16

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

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SCALE

1:1

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