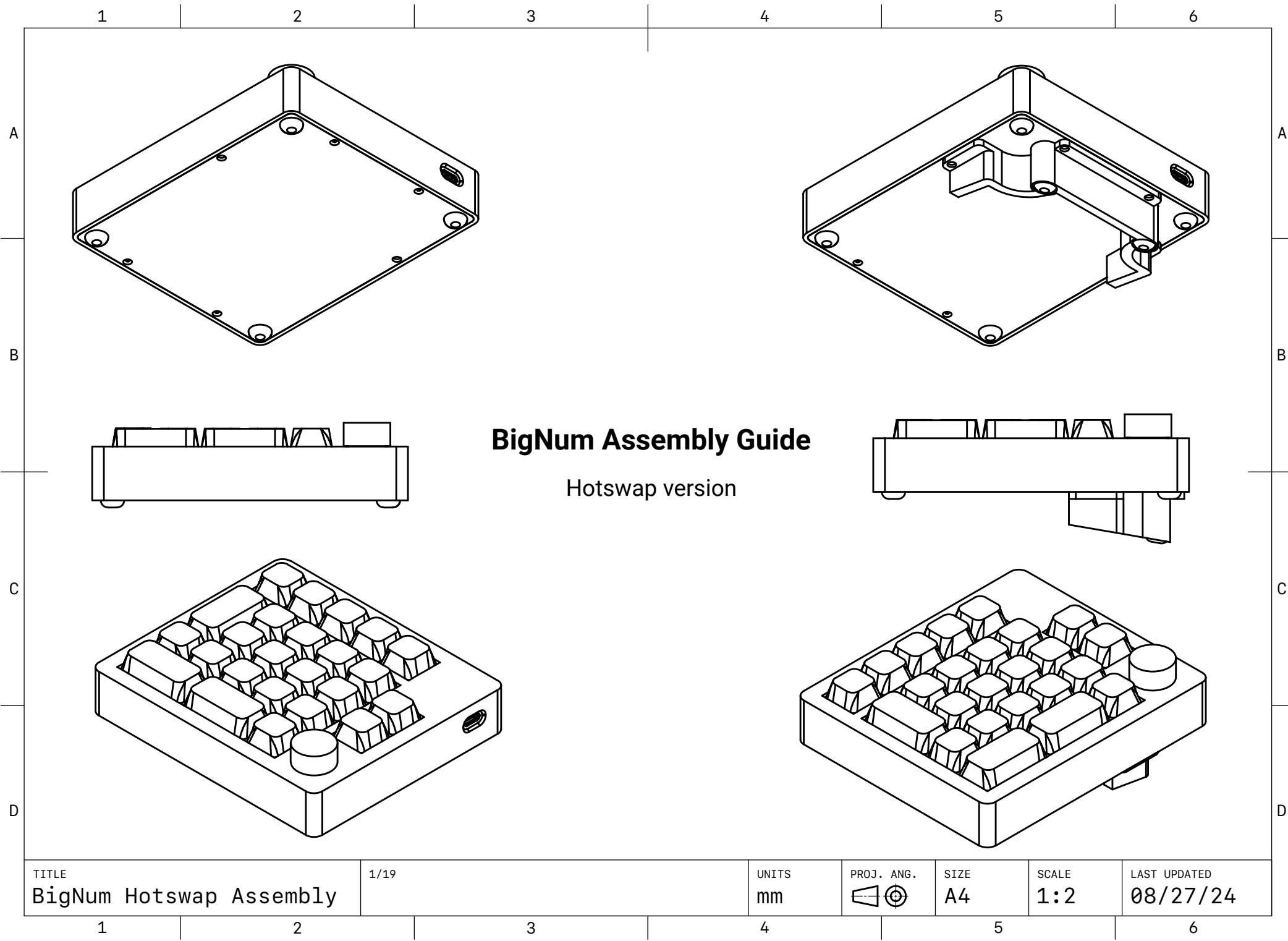




TITLE	1/19	UNITS	PROJ. ANG.	SIZE	SCALE	LAST UPDATED
BigNum Hotswap Assembly		mm		A4	1:2	08/27/24

1

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6

A

B

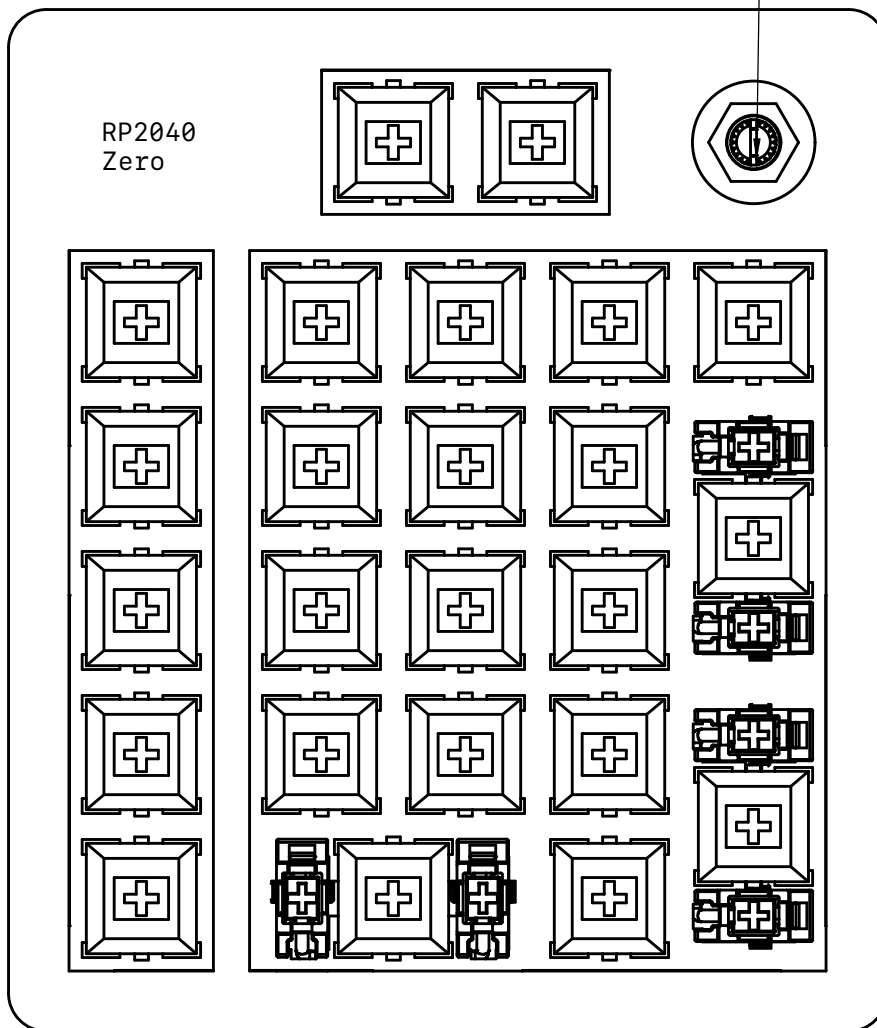
C

D

USB-C

RP2040
Zero

EC11_15mm

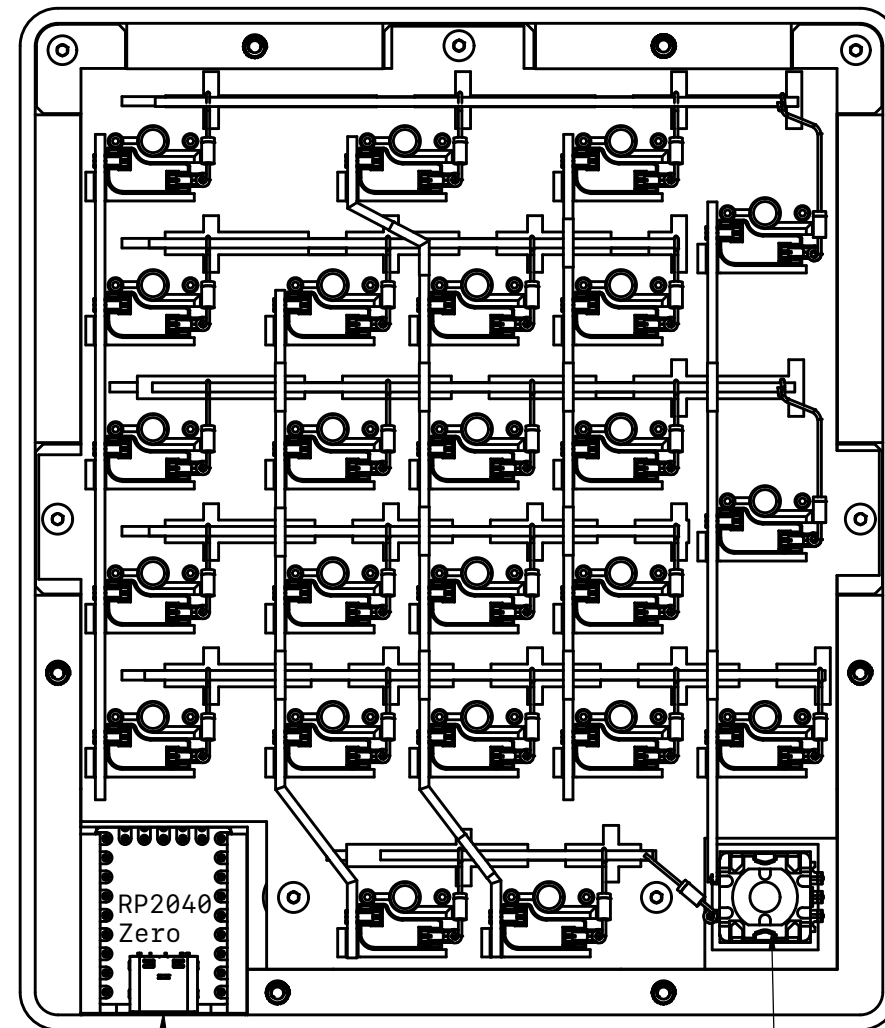


A

B

C

D



USB-C

EC11_15mm

TITLE

BigNum Hotswap Assembly

2/19

Top and Bottom view

UNITS
mmPROJ. ANG.
SIZE
A4SCALE
1:1LAST UPDATED
08/27/24

1

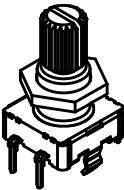
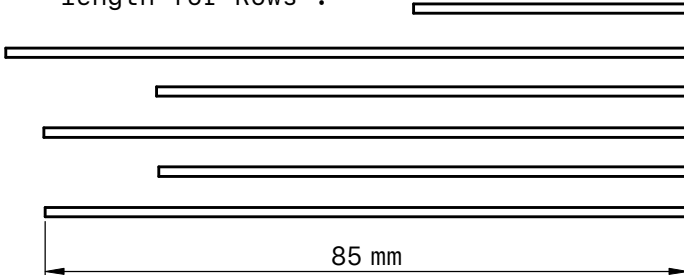
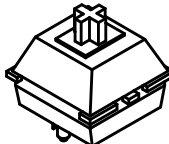
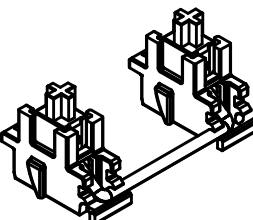
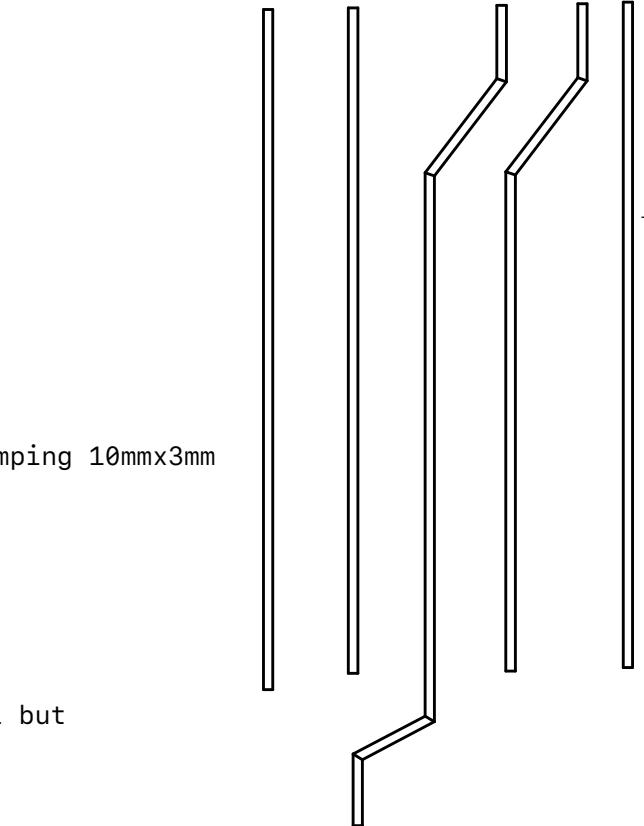
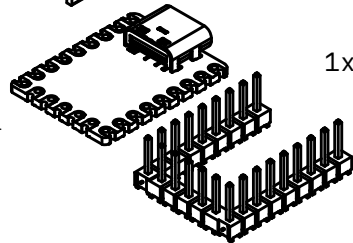
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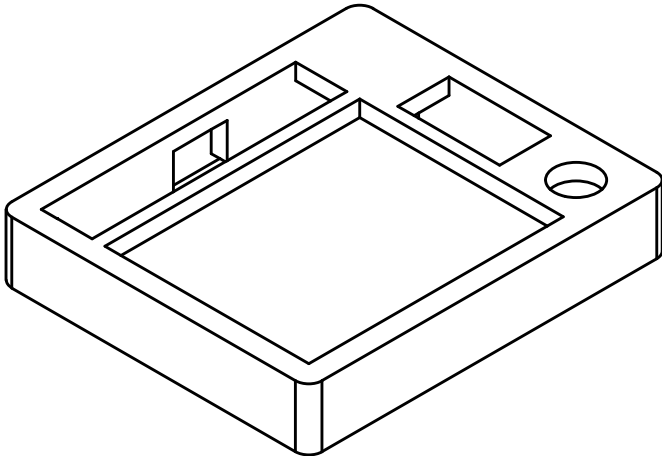
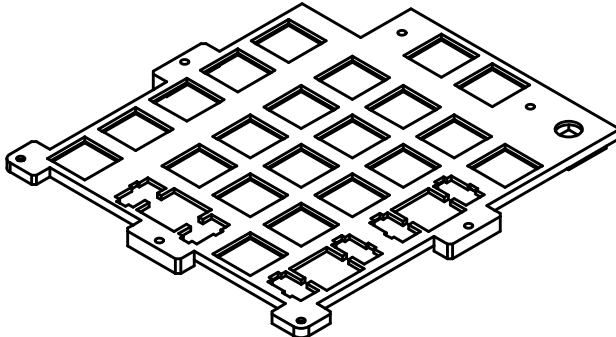
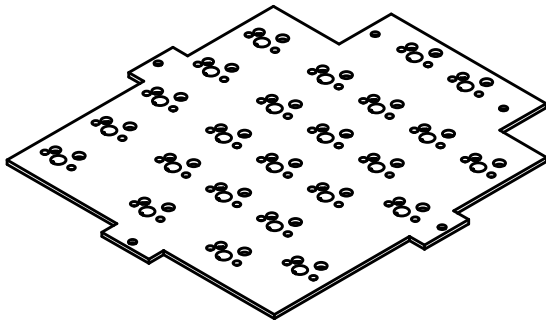
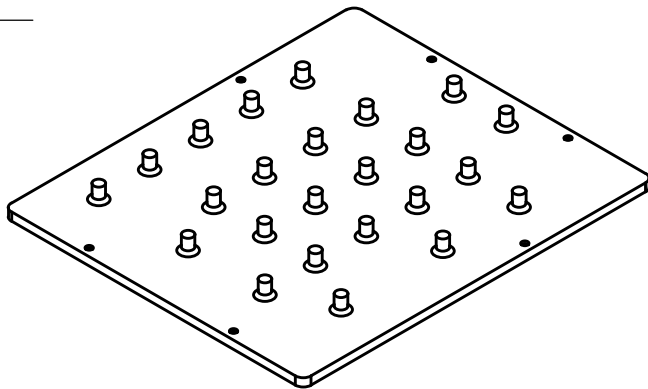
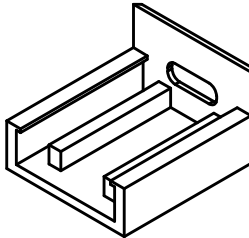
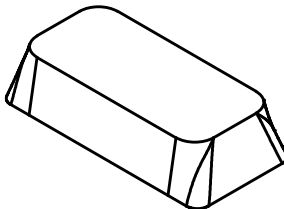
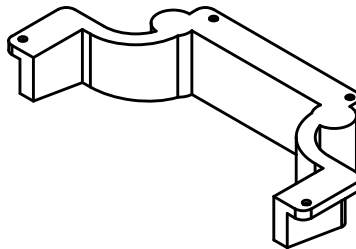
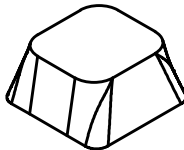
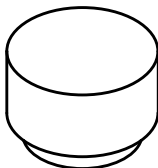
3

4

5

6

	1	2	3	4	5	6
A		1x Rotary encoder EC11 15mm Plum + bolt			1.2mm Ø Copper wire. length for Rows : 	A
		24x Cherry Mx Switches				
B		3x 2u Stabilizer (optional) Plate mount ONLY			1.2mm Ø Copper wire. length for Columns : 	B
		1x RP2040_Zero + Pin				
C		8x M2-5mm countersunk screws		25x 1N4148 DO-35 Diodes		C
		9x M2-10mm countersunk screws		6x Self-Adhesive Rubber Damping 10mmx3mm		
		13 x Heat insert M2xL3xOD3.2				
		24x Kailh Hotswap Sockets				
D		Heat shrink tube				D

	1	2	3	4	5	6														
A																				
B	Case		Switch plate (hotswap)		Hotswap socket plate															
C																				
D	Back plate		SCALE 1:1 RP2040_Zero container	SCALE 1:1 3x 2u keycaps	Foot 21mm or 17mm (optional)															
																				
			SCALE 1:1 21x 1u keycaps	SCALE 1:1 EC11 knob																
<table><tr><td>TITLE</td><td>4/19</td><td>UNITS</td><td>PROJ. ANG.</td><td>SIZE</td><td>SCALE</td><td>LAST UPDATED</td></tr><tr><td>BigNum Hotswap Assembly</td><td>3D printed parts list</td><td>mm</td><td></td><td>A4</td><td>1:2</td><td>08/27/24</td></tr></table>							TITLE	4/19	UNITS	PROJ. ANG.	SIZE	SCALE	LAST UPDATED	BigNum Hotswap Assembly	3D printed parts list	mm		A4	1:2	08/27/24
TITLE	4/19	UNITS	PROJ. ANG.	SIZE	SCALE	LAST UPDATED														
BigNum Hotswap Assembly	3D printed parts list	mm		A4	1:2	08/27/24														
	1	2	3	4	5	6														

1

2

3

4

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6

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 Hotswap Assembly

5/19

Assembly steps

UNITS
mmPROJ. ANG.
SIZE
A4SCALE
1:1LAST UPDATED
08/27/24

1

2

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4

5

6

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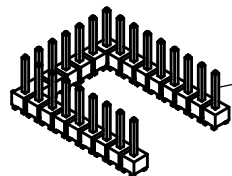
6

RP2040_Zero assembly

A

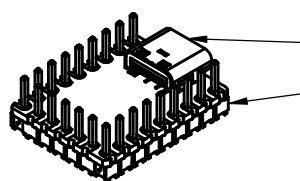


Step 2 :



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

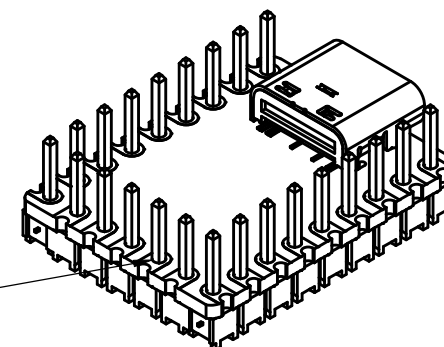
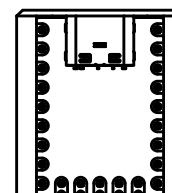
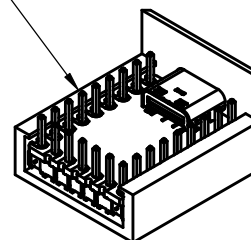
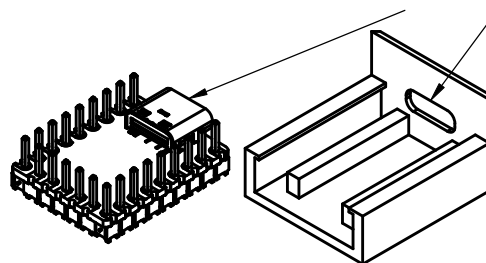
Step 4 :

Solder all the pin to the RP2040

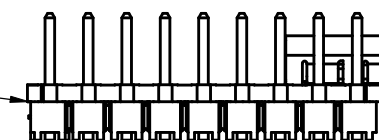
Make sure there is no gap before
soldering

Step 5 :

Put the RP2040 Zero in his container



SCALE 2:1



SCALE 2:1

C

C

D

D

TITLE

BigNum Hotswap Assembly

6/19

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

1

2

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4

5

6

1

2

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6

3D printed Hotswap plate assembly

A

A

B

B

C

C

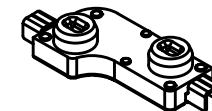
D

D

Step 6 :

Insert all hotswap sockets into their slots

Tips : Put the plate on a flat hard surface. Tolerances are tight, you may have to push the sockets hard in order to fit them in their slots.



SCALE 2:1

TITLE

BigNum Hotswap Assembly

7/19

Assembly Steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

1

2

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4

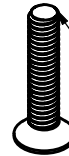
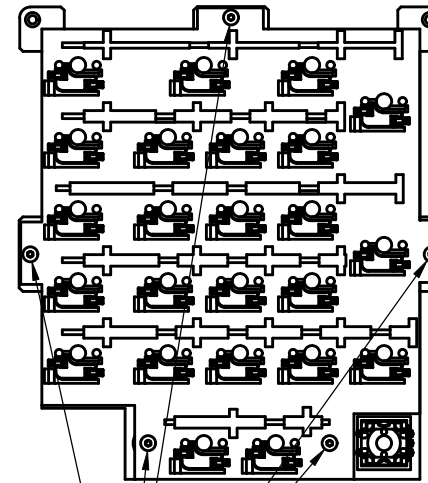
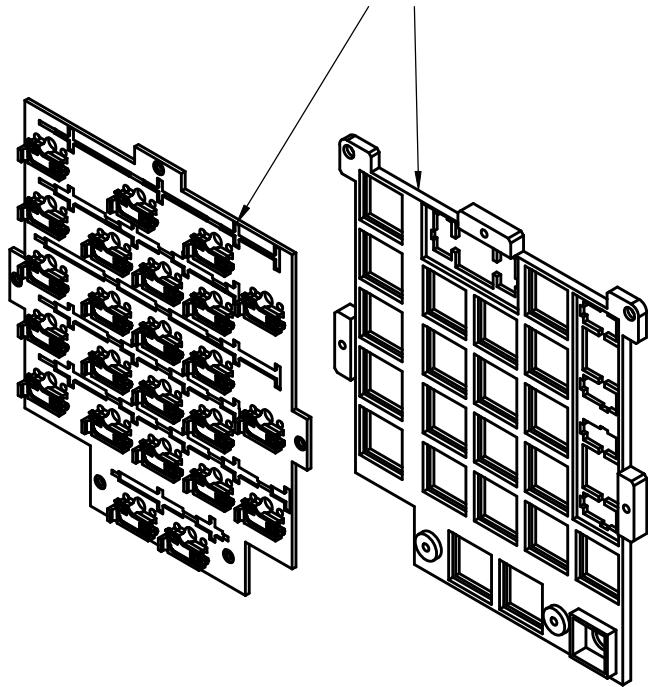
5

6

3D printed Hotswap plate assembly

Step 7 :

Assemble the hotswap plate with the switch plate



SCALE 2:1

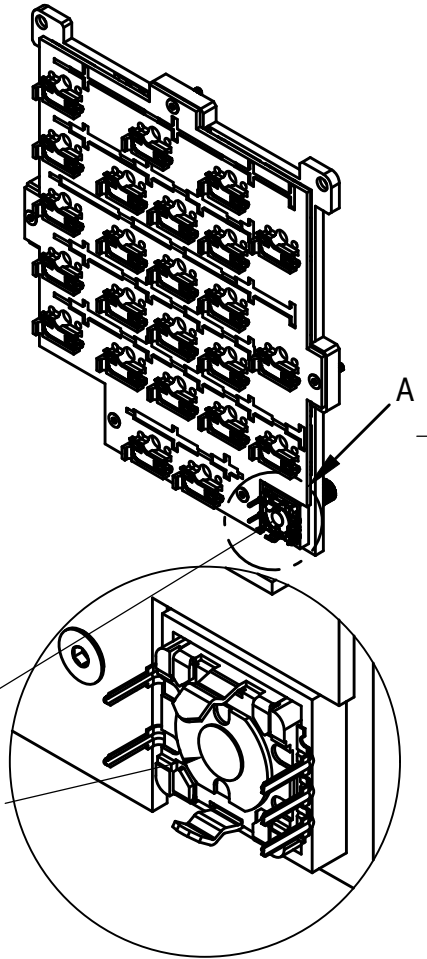
Step 8 :

Use 5x M2-10mm countersunk screws

Step 9 :

Insert the EC11 and secure it with his bolt

Caution : 2pin side toward the RP2040 (interior side)



A
SCALE 2:1

TITLE	8/19	UNITS	PROJ. ANG.	SIZE	SCALE	LAST UPDATED
BigNum Hotswap Assembly	Assembly steps	mm		A4	1:2	08/27/24

1

2

3

4

5

6

3D printed Hotswap plate assembly

A

Step 10 :

Solder all the diodes to the hotswap.
Careful to solder all on the same side
like this.

B

C

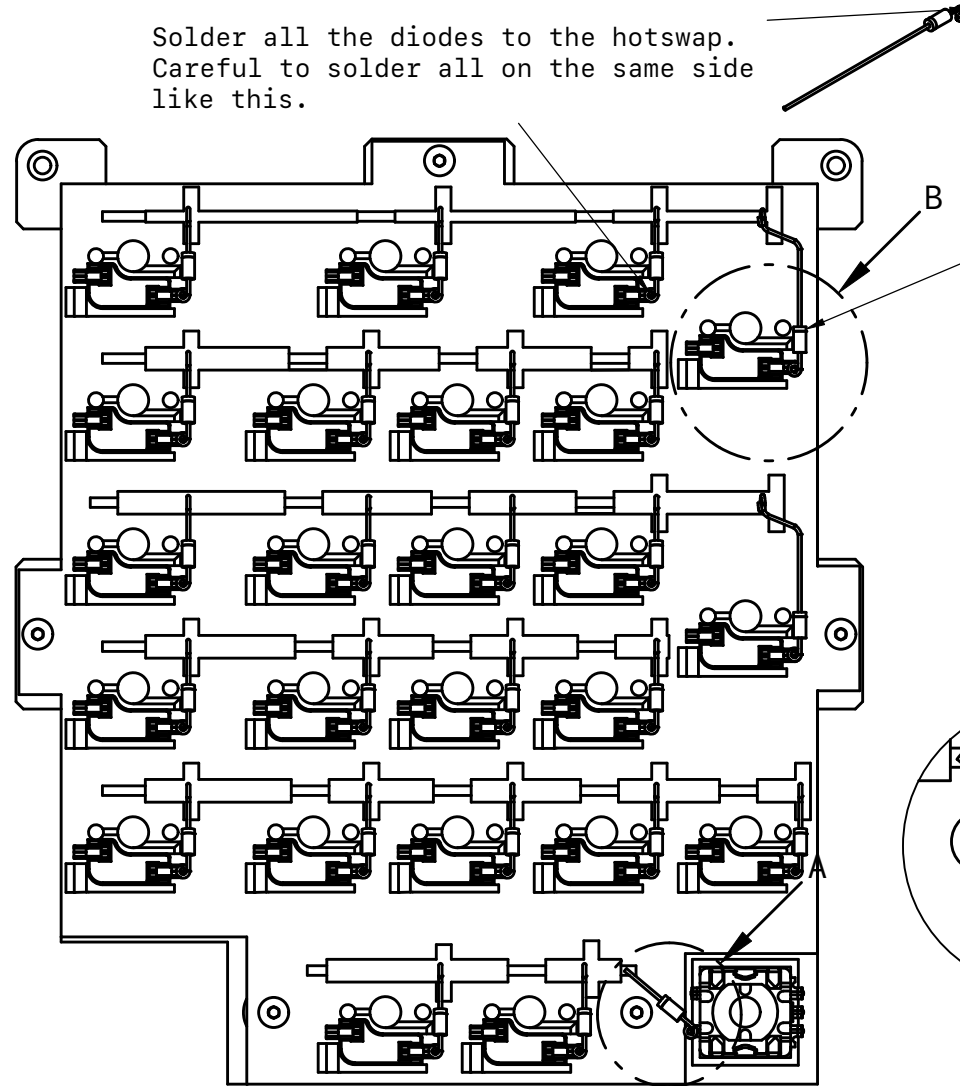
D

A

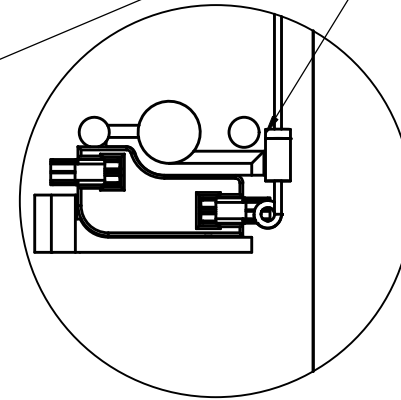
B

C

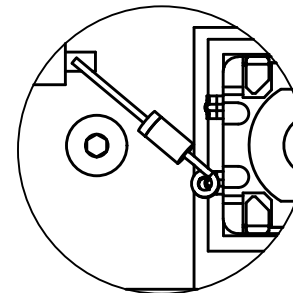
D



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



B
SCALE 2:1



A
SCALE 2:1

TITLE

BigNum Hotswap Assembly

9/19

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

1

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4

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6

3D printed Hotswap plate assembly

A

Step 11 :

Solder all rows with $\varnothing 1.2\text{mm}$ copper wire
and the diodes

Use this as reference to cut the copper
wire.
1:1 scale

B

C

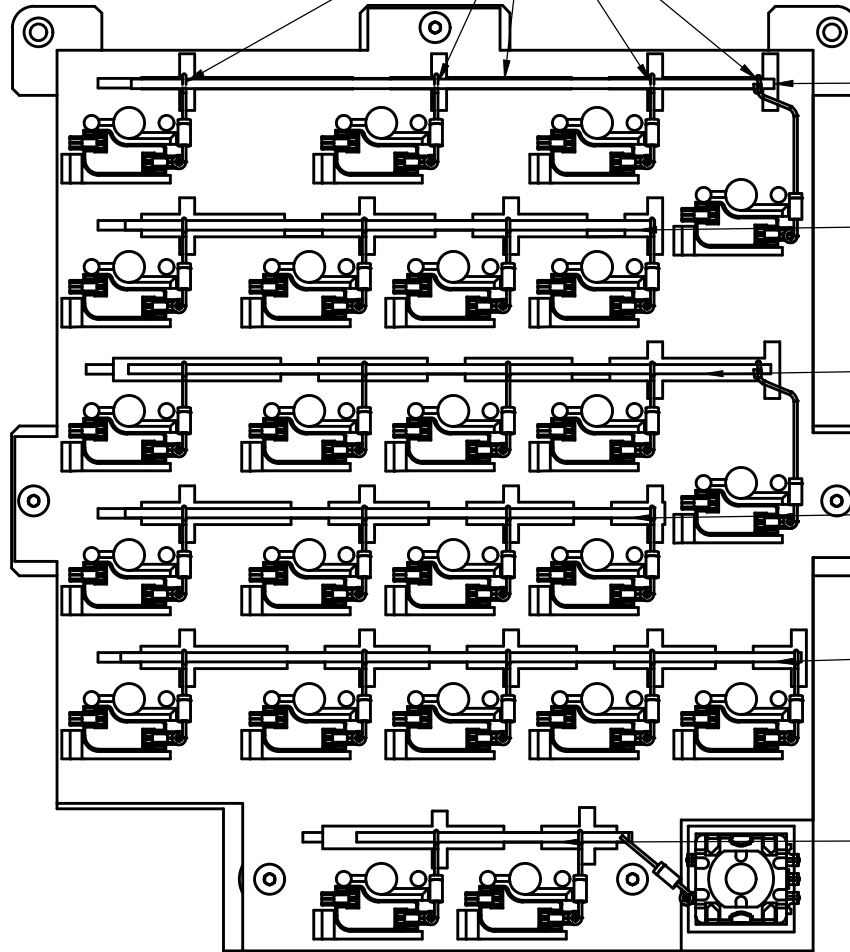
D

A

B

C

D



Row 5

85 mm

Row 4

70 mm

Row 3

85 mm

Row 2

70 mm

Row 1

90 mm

Row 0

36 mm

TITLE

BigNum Hotswap Assembly

10/19

Assembly steps

UNITS
mmPROJ. ANG.
SIZE
A4SCALE
1:1LAST UPDATED
08/27/24

1

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5

6

1

2

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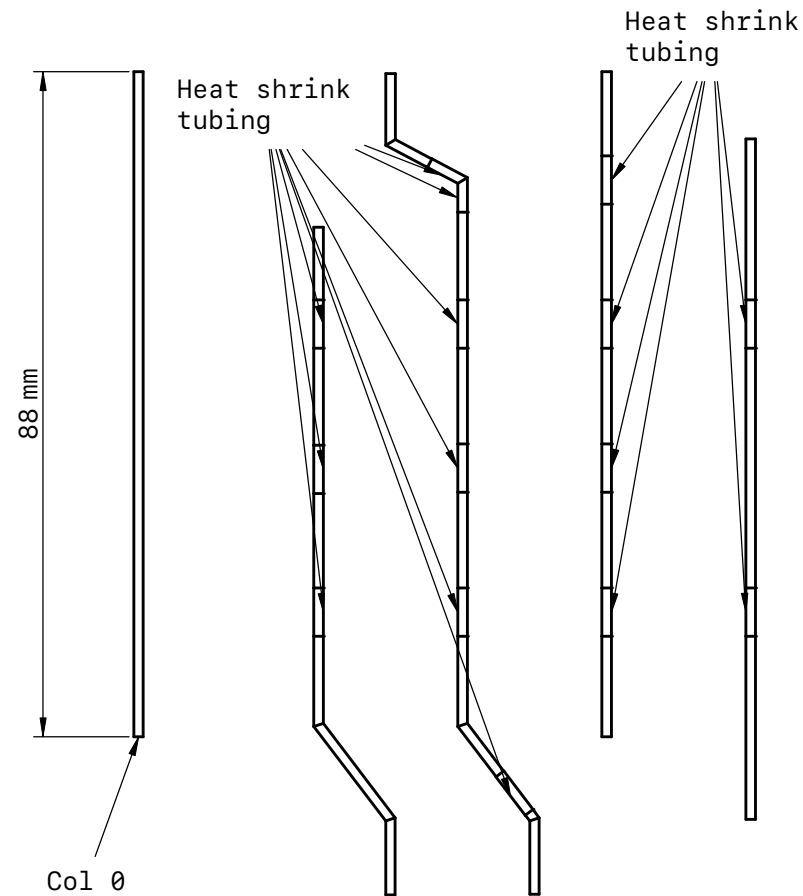
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6

3D printed Hotswap plate assembly

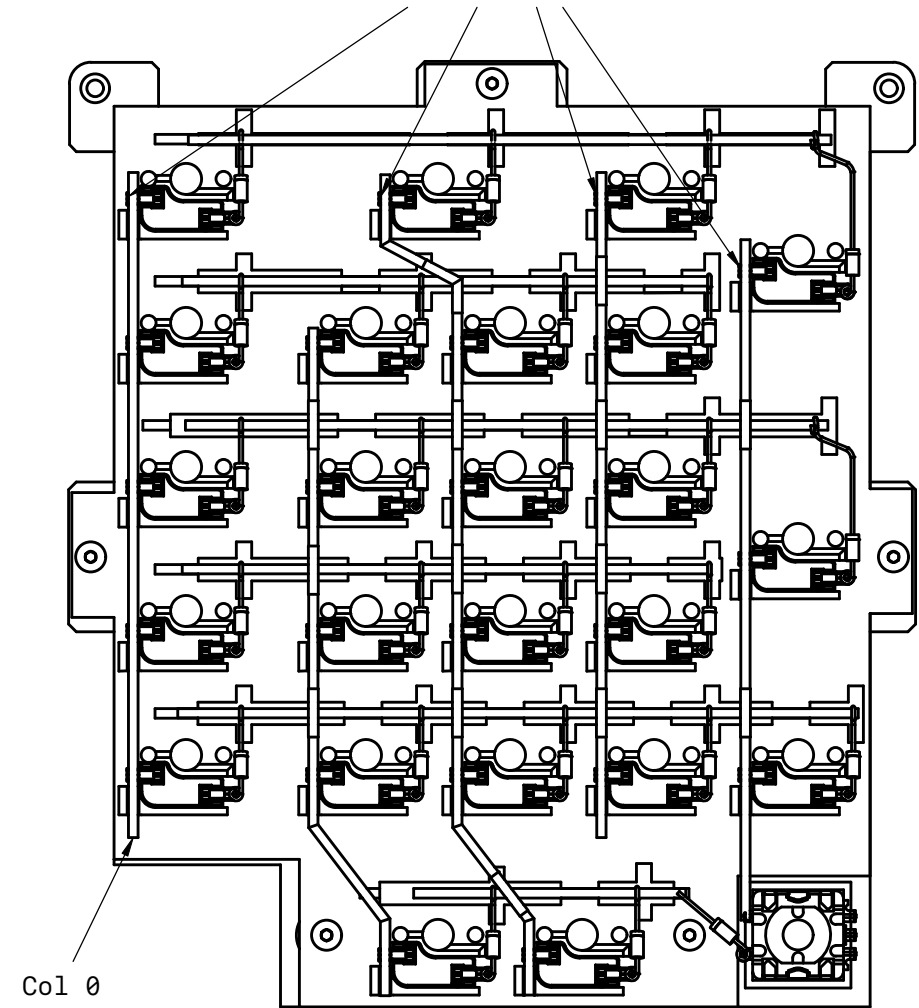
Step 12 :

- Prepare the $\varnothing 1.2\text{mm}$ copper wire
- add heat shrink tubing to insulate the wires from the rows
 - bend the copper wires



Step 13 :

- Solder all columns with $\varnothing 1.2\text{mm}$ copper wire and the hotswap



TITLE

BigNum Hotswap Assembly

11/19

Assembly steps

UNITS
mmPROJ. ANG.
SIZE
A4SCALE
1:1LAST UPDATED
08/27/24

1

2

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1

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Step 14 :

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

Clearer Schematic on the next page

RP2040 Zero wiring

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 15 :

Connect the columns with single copper wire 24AWG

Step 16 :

Connect the EC11 with single copper wire 24awg

ENC1B to pin n°27

Center pin to the 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 Hotswap Assembly

12/19

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

1

2

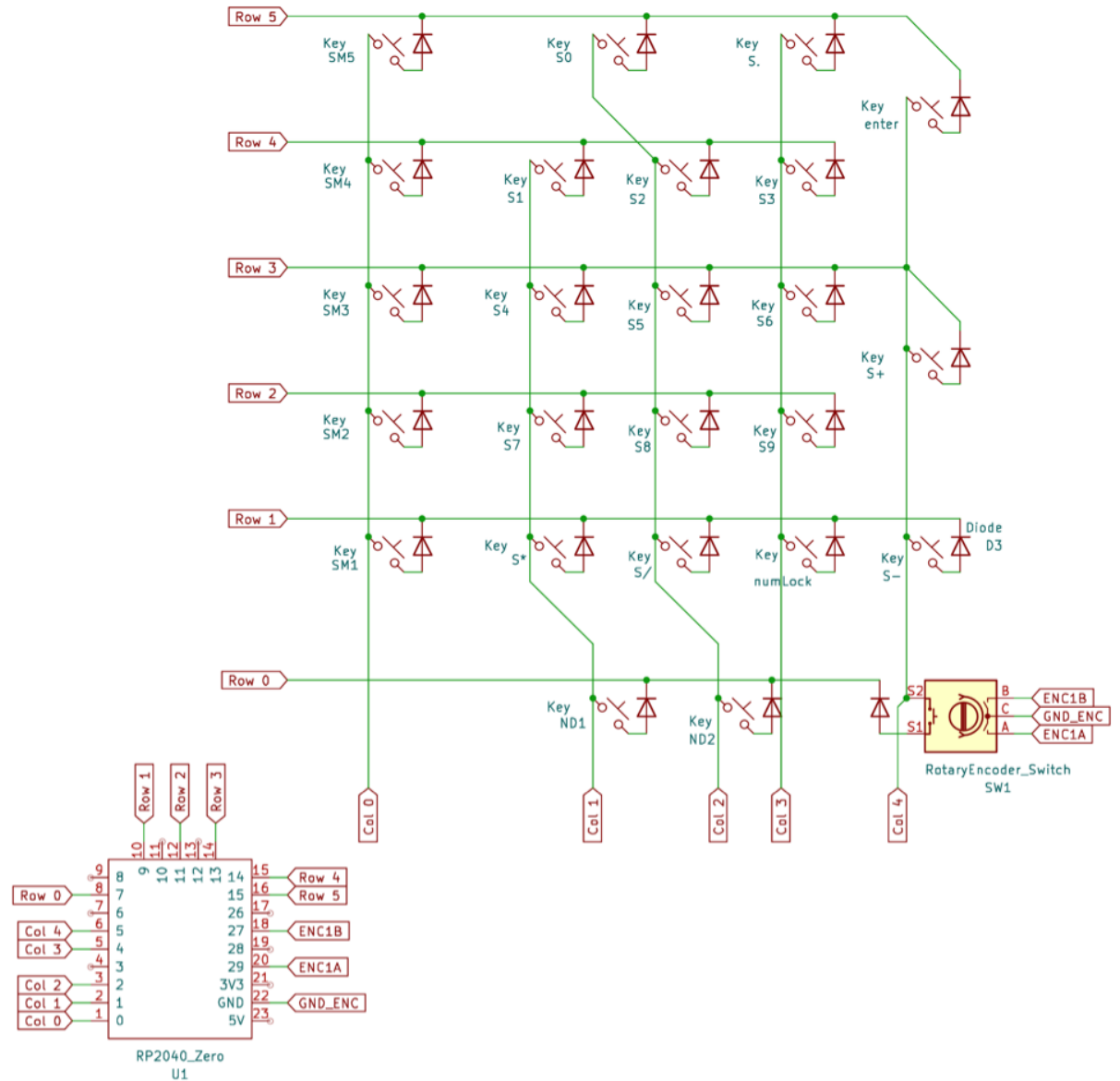
3

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BigNum Schematic



Step 17 :

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

This is optional but it will help to prevent issues.

1

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6

A

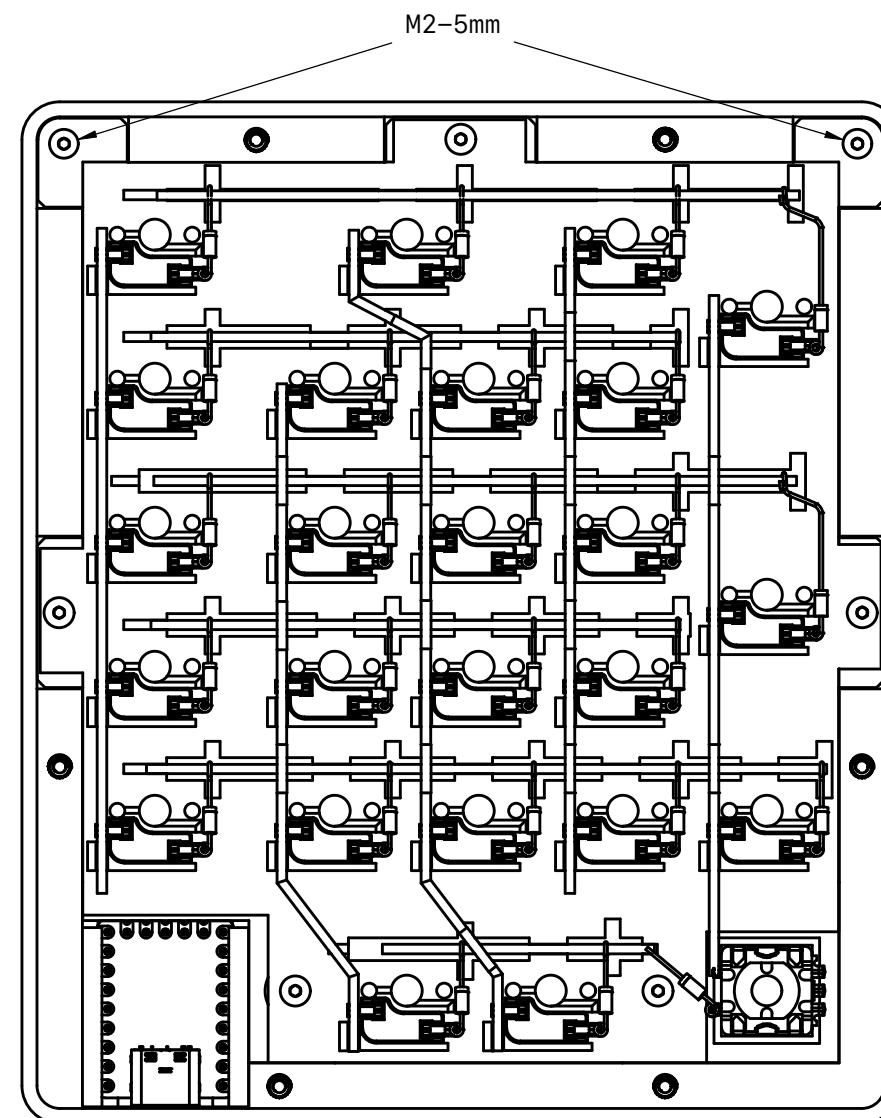
B

C

D

Step 18 :

- Assemble the complet hotswap plate wired and the RP2040 Zero with the case
- Screw the 5x M2-10mm and 2x M2-5mm



A

B

C

D

TITLE

BigNum Hotswap Assembly

14/19

Assembly steps

UNITS
mm

PROJ. ANG.

SIZE
A4SCALE
1:1LAST UPDATED
08/27/24

1

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1

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6

A

B

C

D

A

B

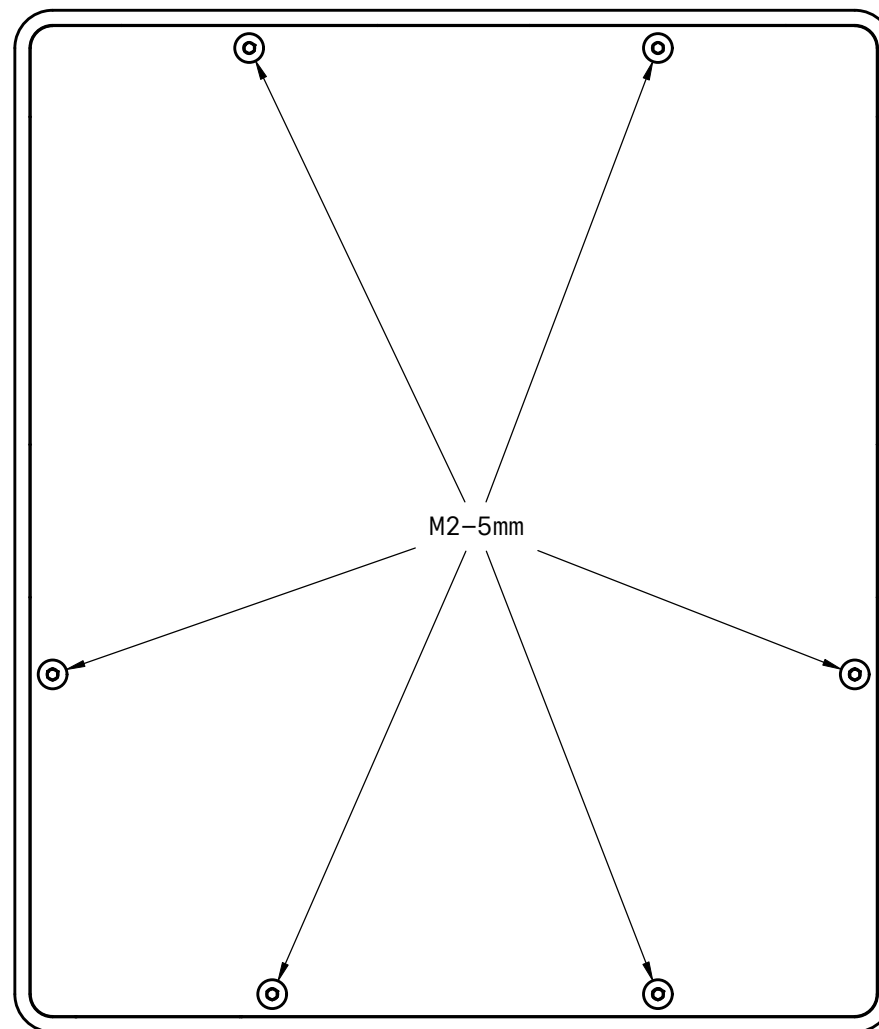
C

D

Step 19 :

Assemble the back plate and screw the 6x
M2-5mm

The back plate will help adding the
switch without losing the hotswap
sockets



TITLE

BigNum Hotswap Assembly

15/19

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

1

2

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A

A

Step 20 :

Add all the switch and stabilizers

Caution :

Make sure that all switches pin are
straight and not slightly bend

B

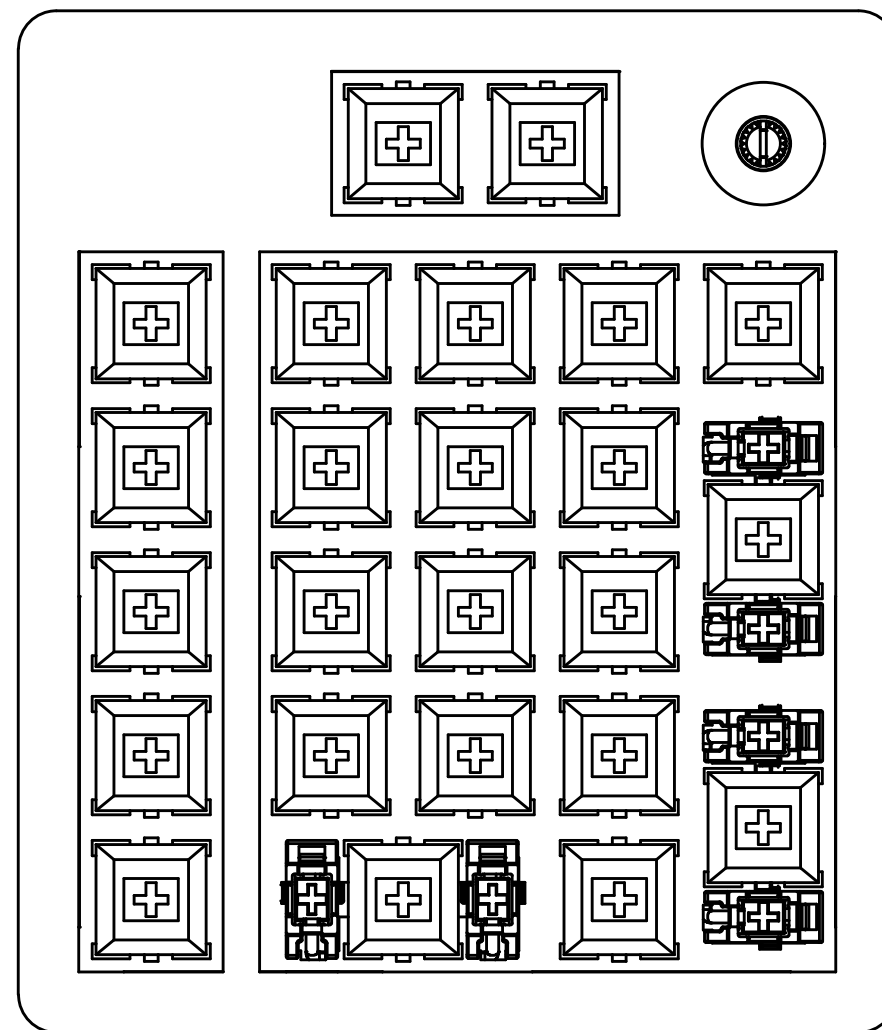
B

C

C

D

D



TITLE

BigNum Hotswap Assembly

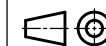
16/19

Assembly steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

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A

Step 21 :

Remove the backplate in order to have access to the RP2040 Zero BOOT button

A

Step 22 :

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

B

B

Step 23 :

- 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

C

Step 24 :

- 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
- You can also check from the bottom if all pin are correctly in their hotswap

D

D

Step 25 :

- If everything works, you can put the back plate back on
- You can now put all the keycaps

TITLE

BigNum Hotswap Assembly

17/19

Firmware steps

UNITS

mm

PROJ. ANG.



SIZE

A4

SCALE

1:1

LAST UPDATED

08/27/24

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A

A

B

B

C

C

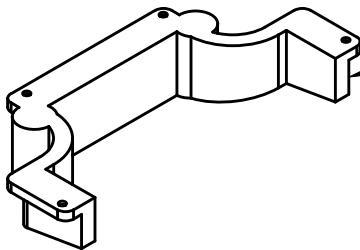
D

D

Optional :

You can add the 21mm or 17mm foot

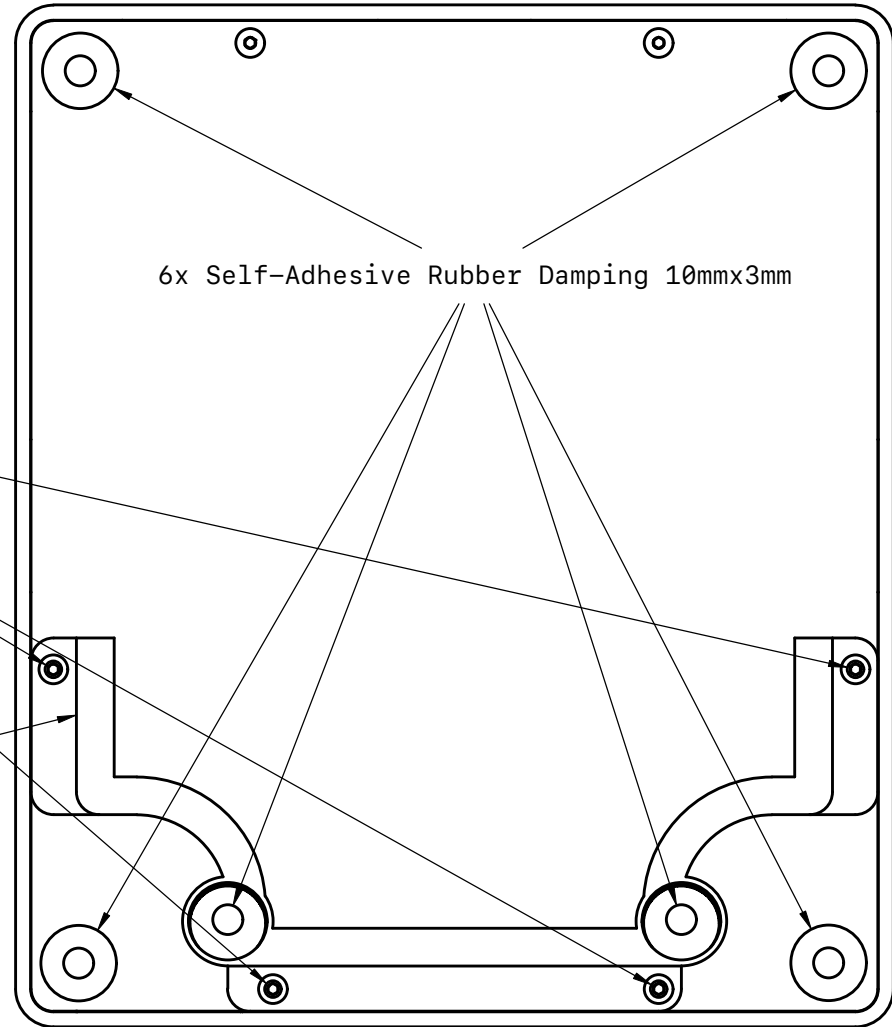
Replace these 4x M2-5mm screws with
M2-10mm ones



SCALE 1:2

Foot

6x Self-Adhesive Rubber Damping 10mmx3mm



TITLE

BigNum Hotswap Assembly

18/19

BigNum dimensions

UNITS
mm

PROJ. ANG.

SIZE
A4

SCALE
1:1

LAST UPDATED
08/27/24

1

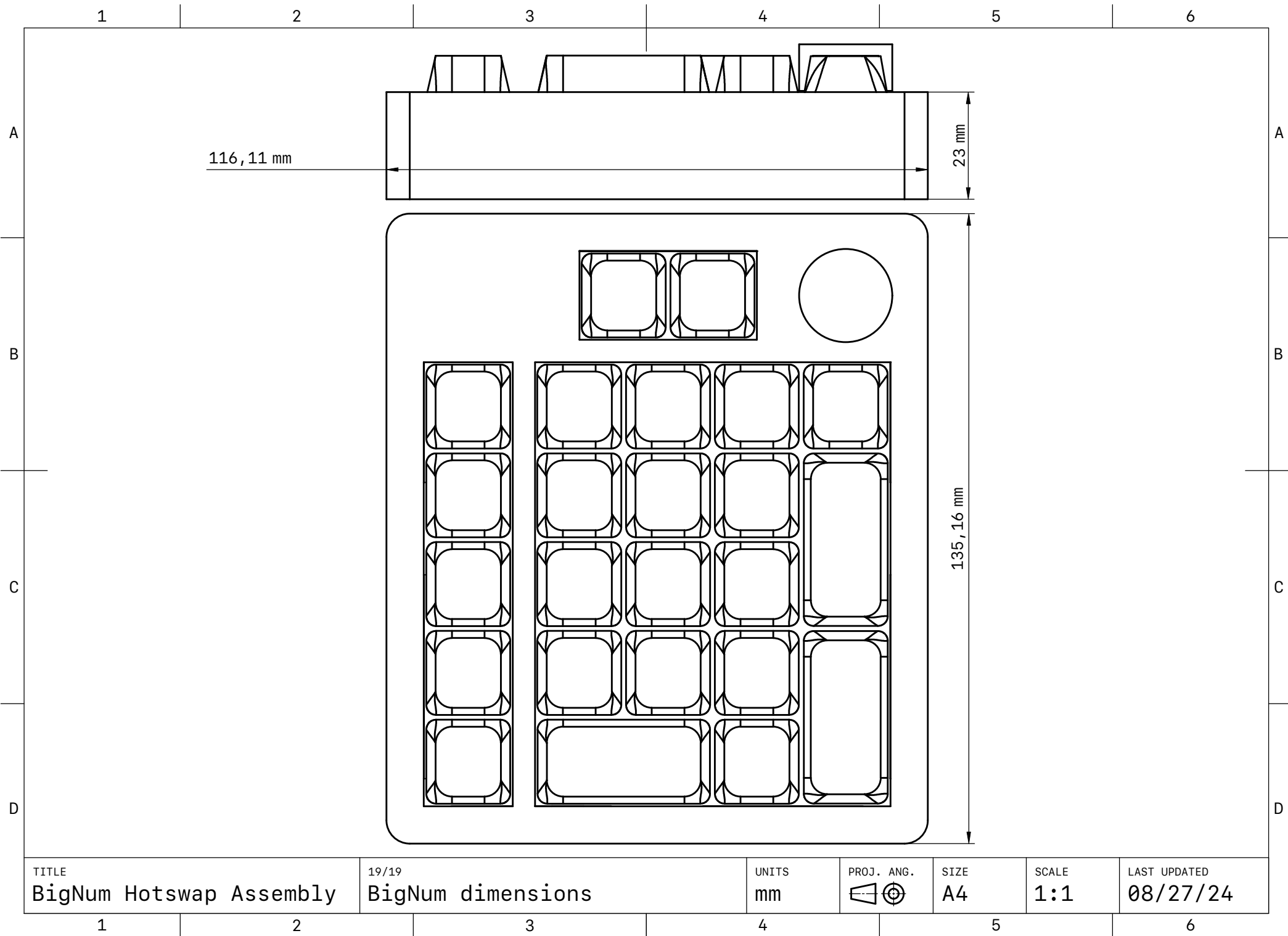
2

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4

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6



TITLE	19/19	UNITS	PROJ. ANG.	SIZE	SCALE	LAST UPDATED
BigNum Hotswap Assembly	BigNum dimensions	mm		A4	1:1	08/27/24