MV-217 X'TAL *Design*

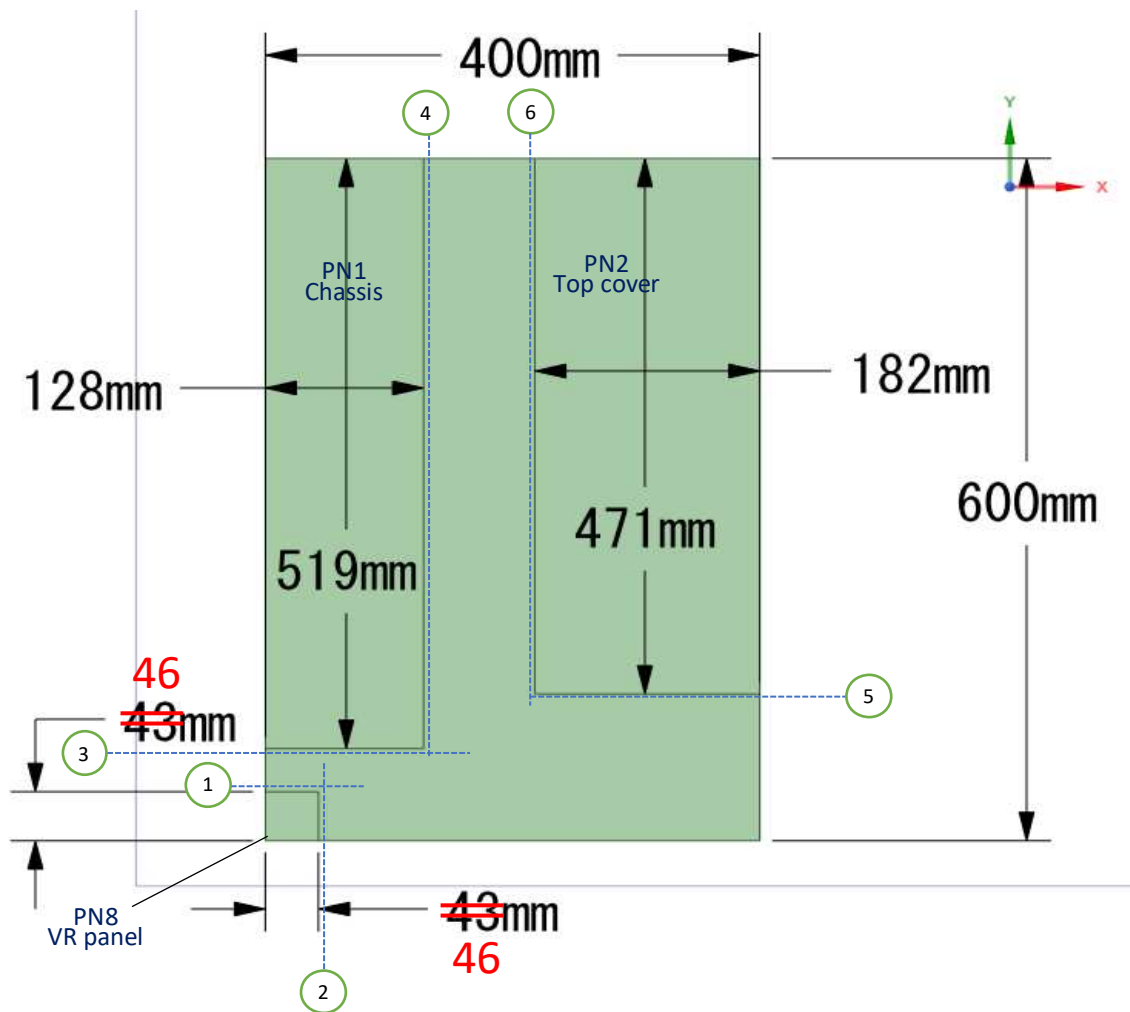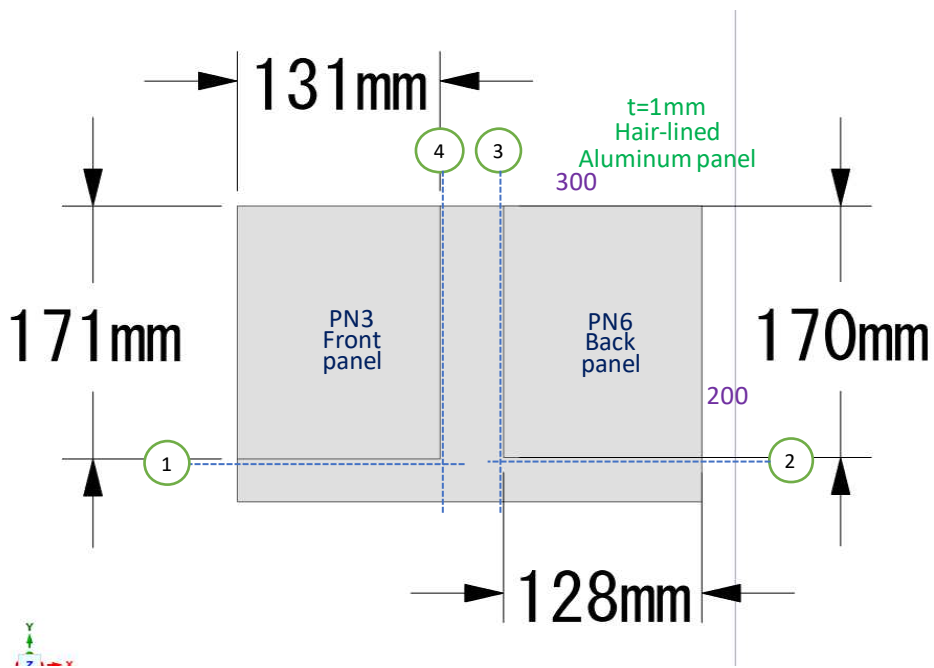2019/12/30

Metalwork
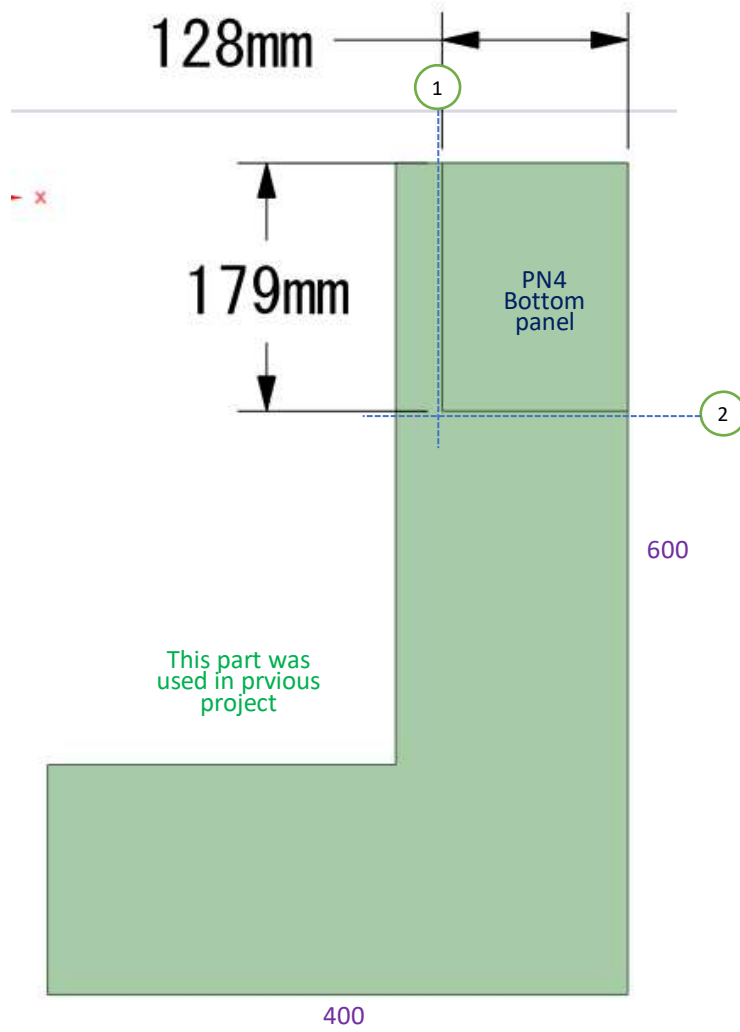
Aluminum Panels

* Cutout

Aluminum panels, PN1-2, PN4, PN8-10, are cut out from two (2) aluminum panels whose dimension is 1 x 600 x 400mm.

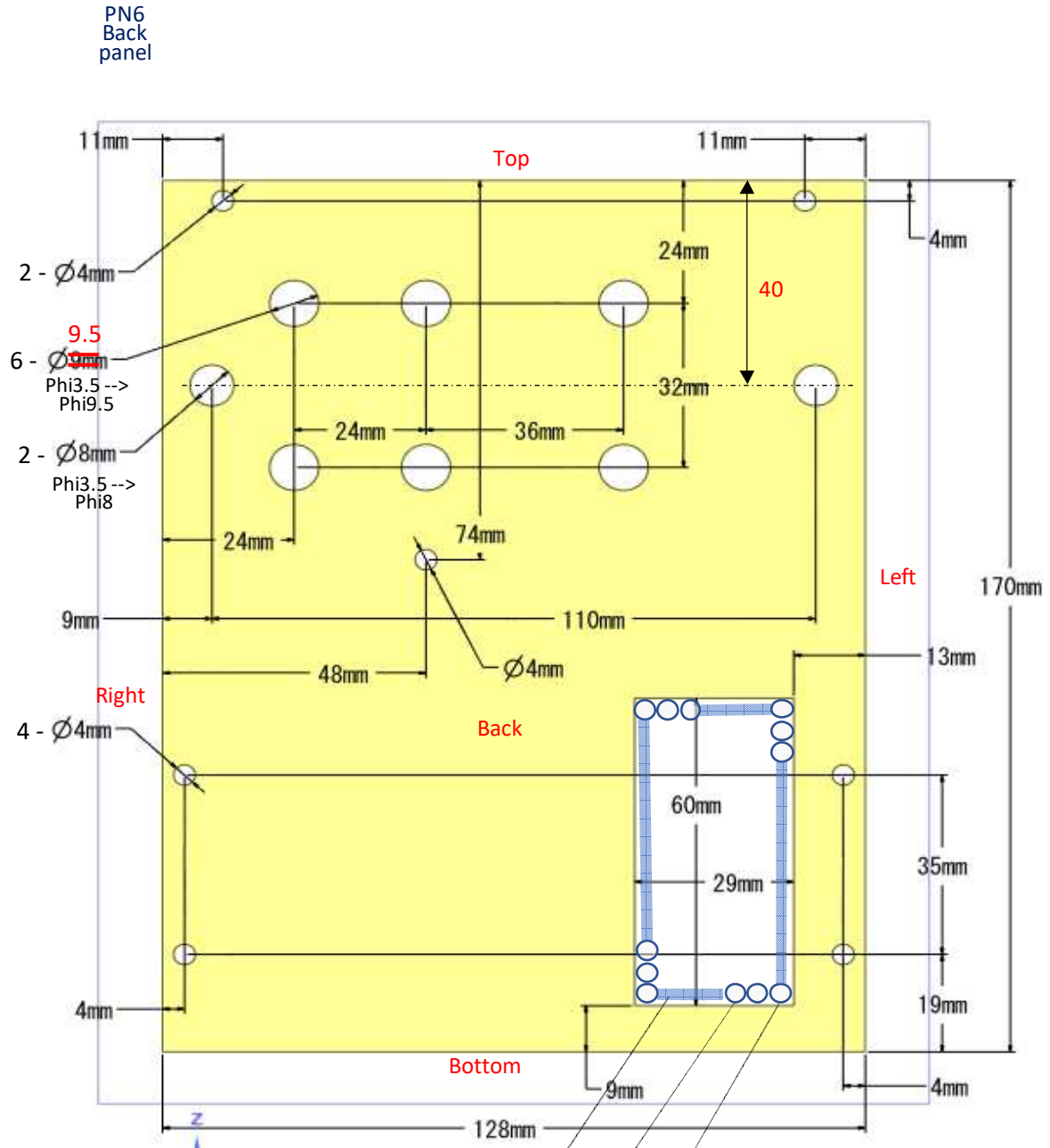Aluminum panels, PN3, PN6, are cut out from one (1) white-painted aluminum panels whose dimension is 1 x 300 x 200mm.

Tools: power zigsaw, linear guide, flat file

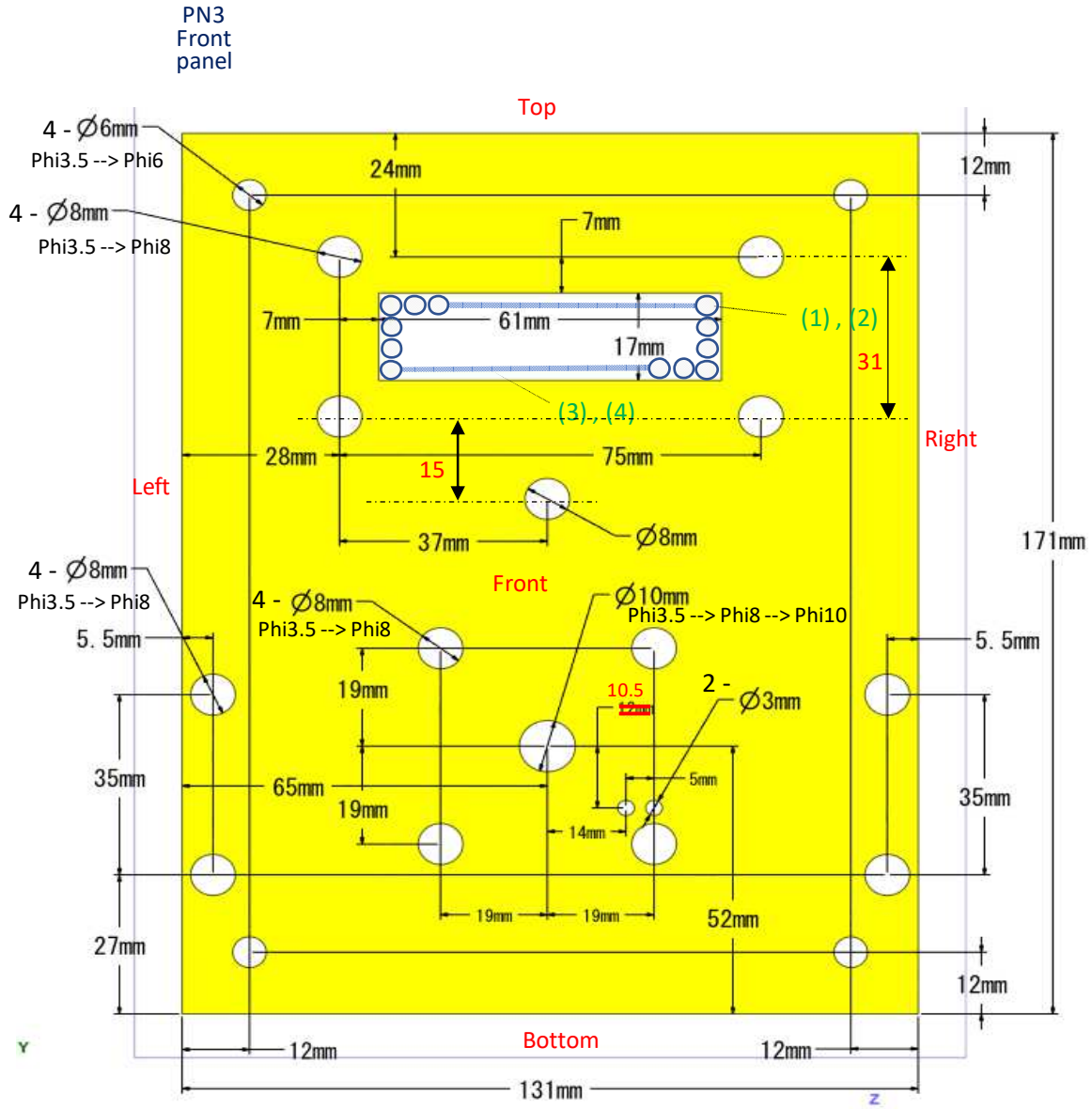Margin: 2mm (confirm it when #1 and #2 are cut)

128mm

1

179mm

PN4
Bottom
panel

2

600

This part was
used in prvious
project

400

131mm

t=1mm
Hair-lined
Aluminum panel

4 3

300

171mm

PN3
Front
panel

PN6
Back
panel

170mm

200

1

2

128mm

* Drilling

Process the panels in ascending order of size.

Tools: centerpunch, drilling press, round file, flat file, metal saw

**PN8
VR panel**

Phi3 --> Phi6 -->
Phi9.5

∅10mm
9.5

23mm

19mm   19mm

19mm

Top

Front   Right   12mm
                              10.5   46mm

23mm

6.5

Left

4 - ∅4mm   Φ3   Bottom

2 - ∅2mm

14mm   5mm

19mm

46mm

**PN4
Bottom
panel**

179mm

Left

4mm

28mm   4 - ∅4mm

24mm

Back   71mm   Bottom   Front

4 - ∅8mm   128mm

4 - ∅8mm   18mm 24mm 54mm 28mm

Phi3.5 --> Phi8

19mm   Right   4mm

PN6
Back
panel

Top

11mm   11mm

24mm   4mm

40

2 - Ø4mm

9.5
6 - Ø5mm   32mm
Phi3.5 -->
Phi9.5

24mm   36mm

2 - Ø8mm
Phi3.5 -->
Phi8

24mm   74mm

Left   170mm

9mm   110mm

48mm   Ø4mm

Right   13mm

4 - Ø4mm   Back

60mm   35mm

29mm

19mm

4mm   Bottom   4mm

9mm

128mm
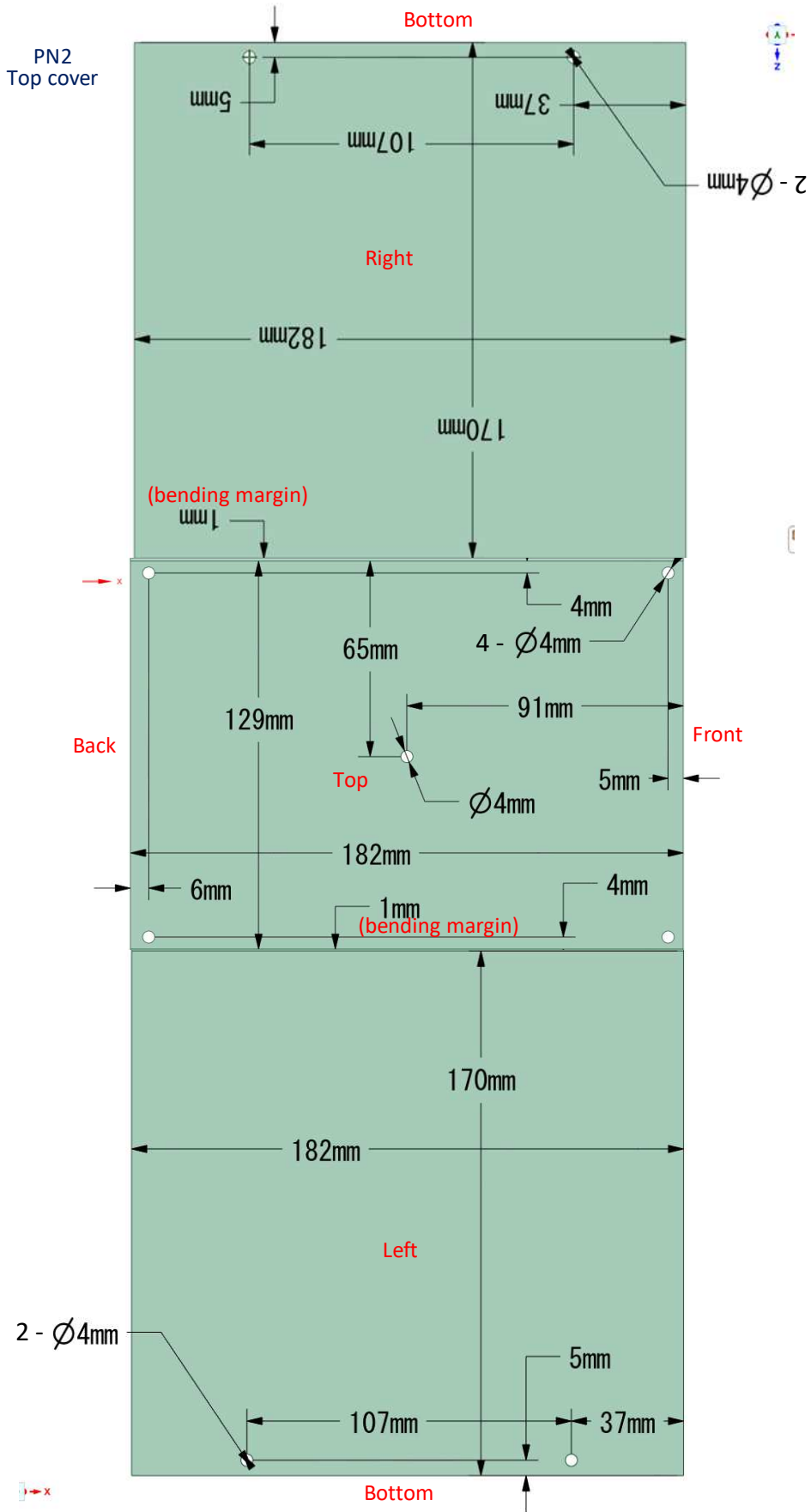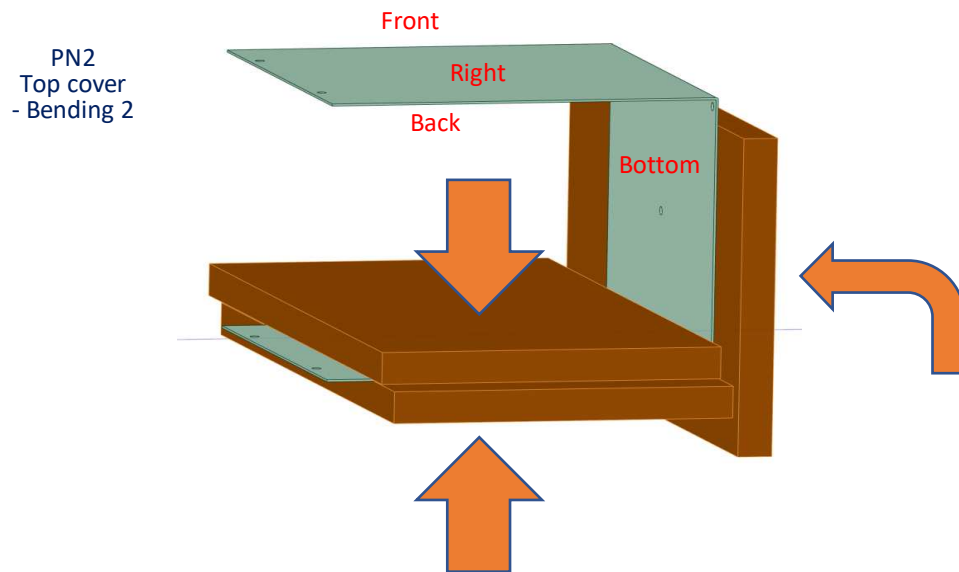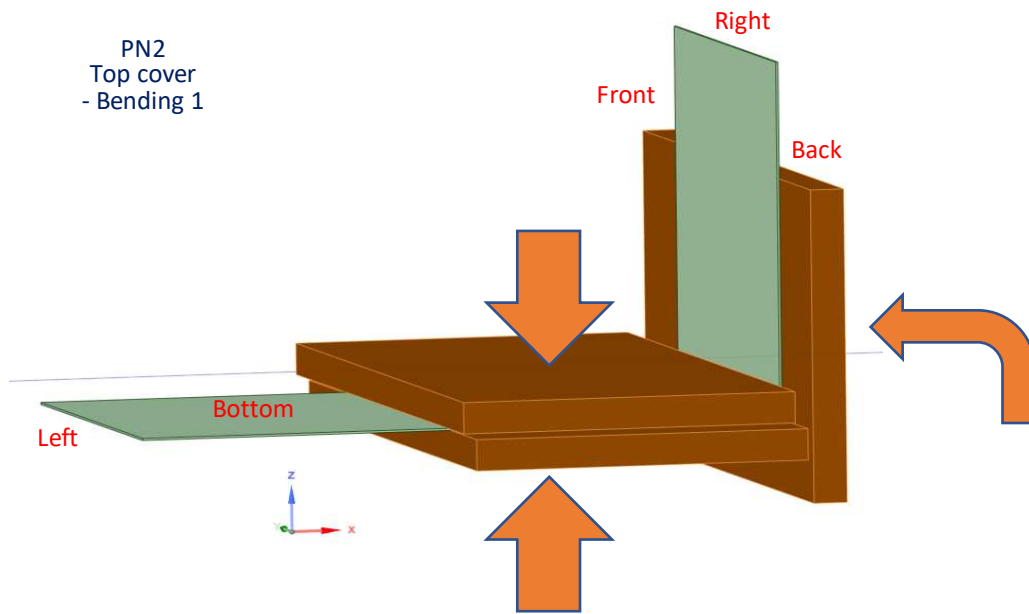
(1) Drill the 12 phi4 holes
(2) Make the 3 adjacent holes to one with round file
(3) Cut with metal saw

(4) Smooth the cutout with flat file

PN3
Front
panel

Top

4 - Ø6mm
Phi3.5 --> Phi6

24mm

12mm

4 - Ø8mm
Phi3.5 --> Phi8

7mm

7mm   61mm   (1) , (2)

17mm   31

(3) , (4)

Left   28mm   75mm   Right

15

37mm   Ø8mm

Front

4 - Ø8mm
Phi3.5 --> Phi8

4 - Ø8mm
Phi3.5 --> Phi8

Ø10mm
Phi3.5 --> Phi8 --> Phi10

5. 5mm

19mm   10.5   2 -
12mm   Ø3mm

5. 5mm

35mm   65mm   5mm   35mm

19mm   14mm

19mm   19mm   52mm

27mm   12mm

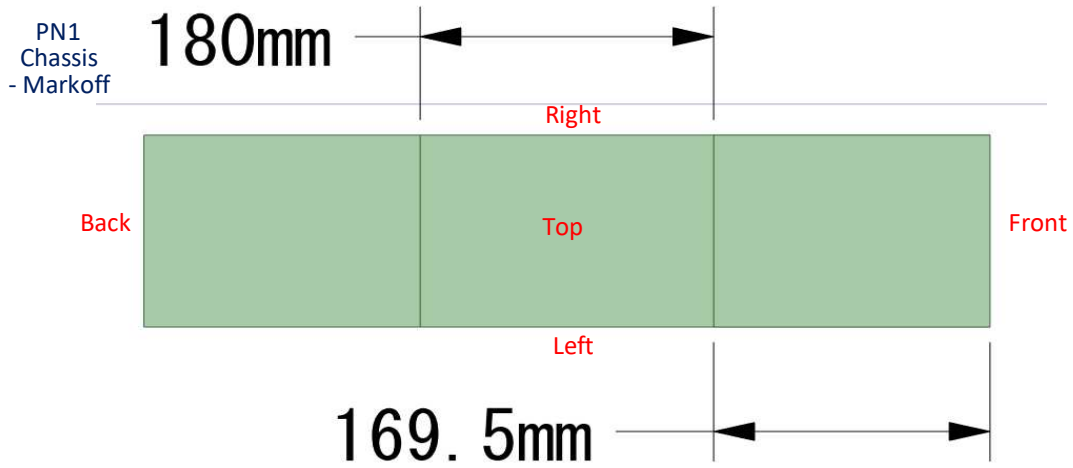12mm   12mm   12mm

Bottom

131mm

171mm

Y   z

(1) Drill the 12 phi4 holes
(2) Make the adjacent holes to one with round file
(3) Cut with metal saw
(4) Smooth the cutout with flat file
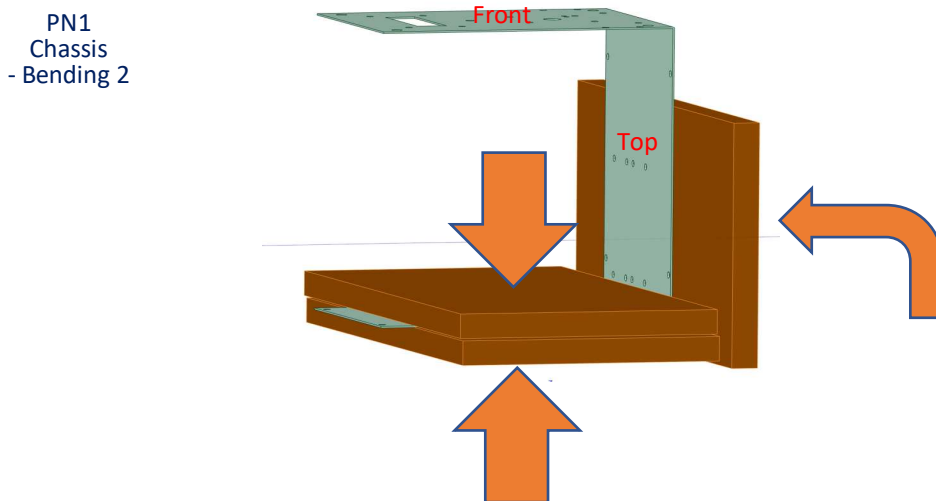
PN2
Top cover

Bottom

5mm

37mm

107mm

2 - Ø4mm

Right

182mm

170mm

(bending margin)
1mm

4mm

65mm

4 - Ø4mm

129mm

91mm

Back

Front

5mm

Top

Ø4mm

182mm

6mm

4mm

1mm
(bending margin)

170mm

182mm

Left

2 - Ø4mm

5mm

107mm

37mm

Bottom

PN1
Chassis - Front

Top

4 - Ø6mm

23mm

11mm

7mm   7mm

27mm

61mm

17mm

31mm

4 - Ø4mm

(1) Drill the 12 phi4 holes
(2) Make the adjacent holes to one with round file
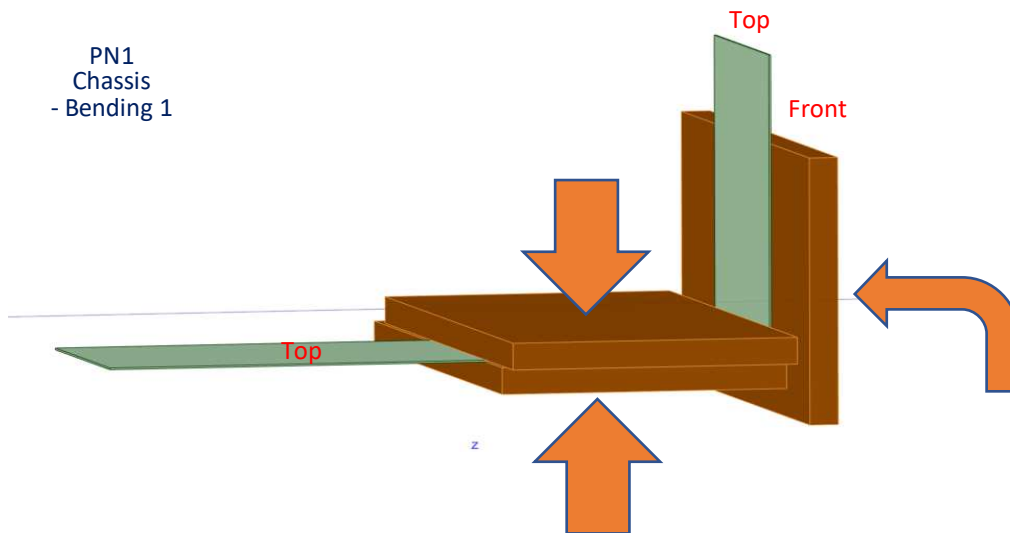(3) Cut with metal saw
(4) Smooth the cutout with flat file

70mm   75mm

64mm   Ø5mm

169mm

Left   4 - Ø4mm   19mm   19mm   **Front**   **Right**

4mm   4mm

10.5

Ø10mm   19mm

4 - Ø4mm   19mm   2 - Ø3mm

64mm   35mm

19mm

51mm   14mm

26mm

11mm   **Bottom**   11mm   11mm

128mm   z

PN1
Chassis
- Bottom   **128**

Front

28mm

4 - Ø4mm

8 - Ø4mm

Bottom   **179**

Left   **Right**

24mm   24mm   18mm

4mm   12mm   4mm

28mm 19mm   71mm

Back

PN1
Chassis
- Back

2 - Ø4mm
11
Top
11

24mm   24mm   36mm   24mm
4mm

40mm

6 -
Ø9mm
9.5
Ø
32mm

2 - Ø4mm

Ø4mm   74mm
48mm
9mm   110mm

Right
Back

Left   169mm

13mm

4 -
Ø4mm

(1) Drill the 12 phi4 holes

(2) Make the adjacent
holes to one with
round file

60mm
29mm   35mm

(3) Cut with metal saw

(4) Smooth the cutout
with flat file

18mm

Bottom
4mm   8mm   4mm
z
128mm

* Bending

Bend PN1 (Chassis) and PN2 (Top Cover) into horse-shoe shape.

Tools: three (3) wood boards, stabber, acrylic cutter.

PN2
Top cover
- Markoff

130mm

Front

Left   Bottom   Right

Back

170. 5mm

Deepen the markoff lines by 0.3mm with the acrylic cutter.

Bend PN2 by using three (3) wood boards.

PN2
Top cover
- Bending 1

Right

Front

Back

Bottom

Left

PN2
Top cover
- Bending 2

Front

Right

Back

Bottom

**PN1
Chassis
- Markoff**

180mm

Right

Back   Top   Front

Left

169. 5mm

Deepen the markoff lines by 0.3mm with the acrylic cutter.

**PN1
Chassis
- Bending 1**

Top

Front

Top

**PN1
Chassis
- Bending 2**

Front

Top

Confirm the result.

Aluminum L-shape Angles
* Cutout

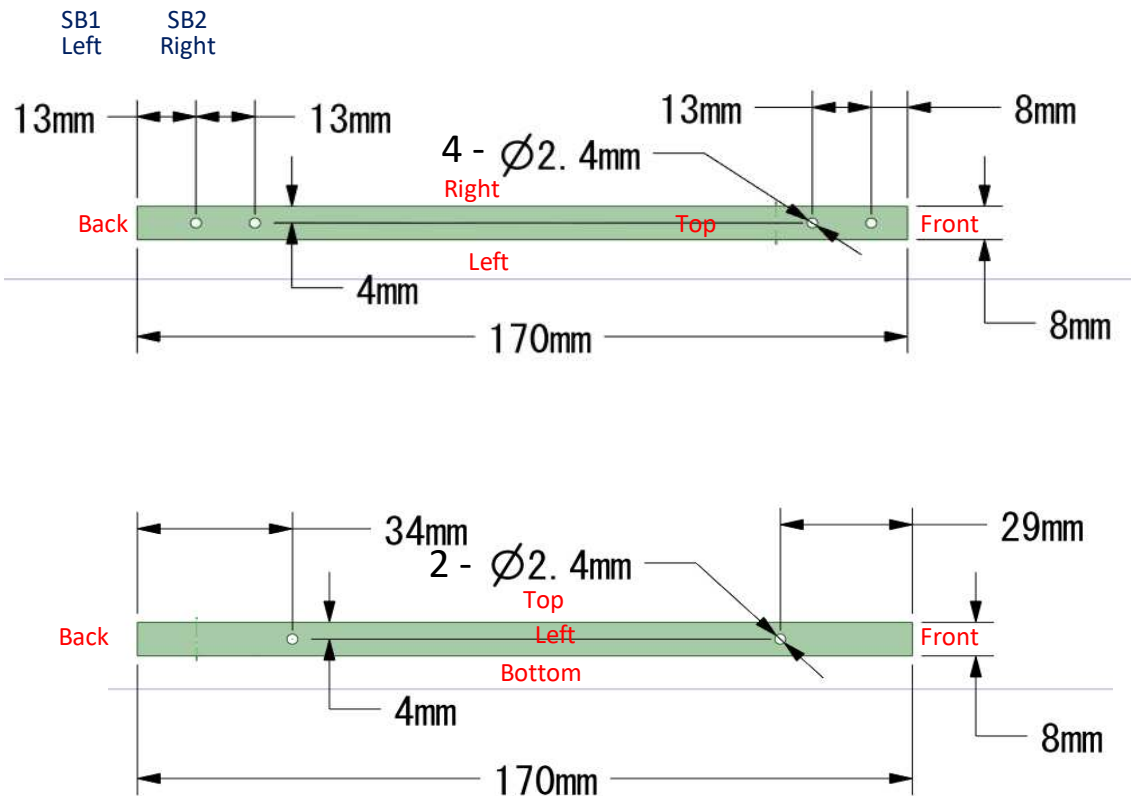Cut four (4) 8mm-wide L-shape angles out of the aluminum L-shape angle of 3 x 50 x 50 x 300mm.
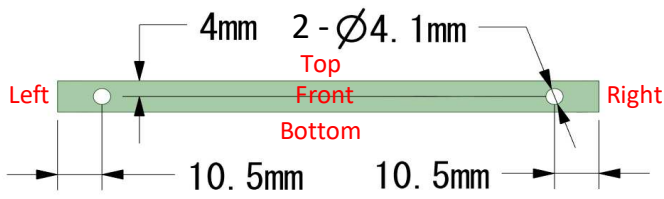
Tools: power zigsaw, linear guide, flat file

Margin: 3mm

* Drilling

Tools: centerpunch, drilling press

AG1
Front Left

8mm

2 - ∅2.4mm

Top

Left   Front   Right

35mm

50mm

4mm

10mm

Bottom

AG1
Front Left

2 - ∅4mm   13mm   15mm

Left

Back   Bottom   Front   8mm

Right

4mm

50mm
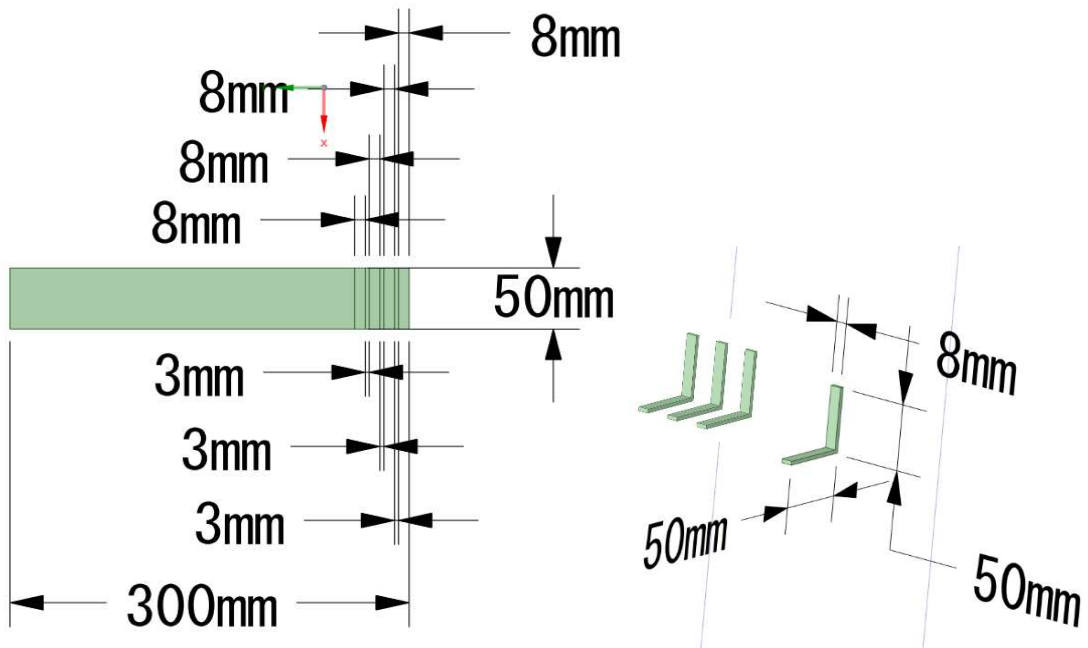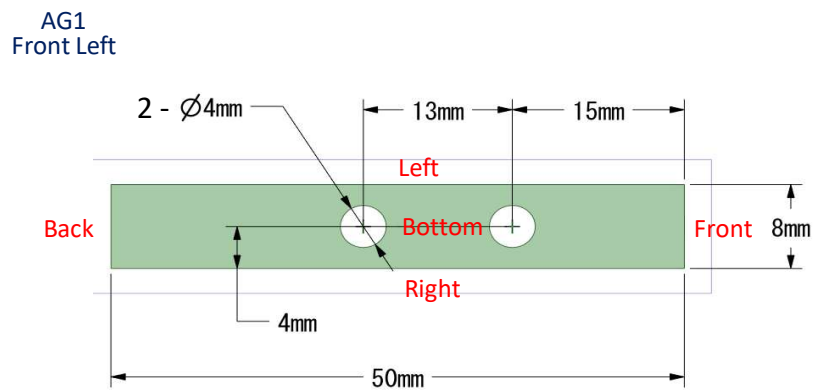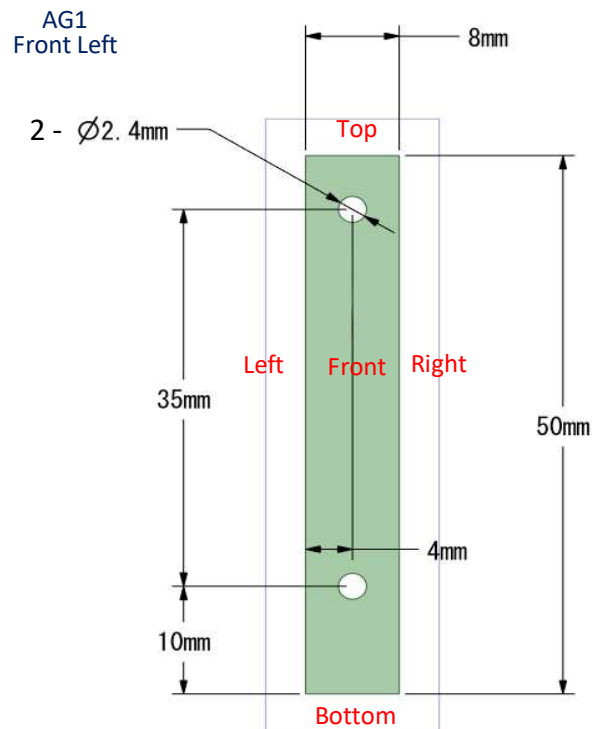
AG2, AG3, AG4 are the same in dimension.

* Tapping

The phi2.4 holes of AG1, AG2, AG3, AG4 are to tapped with M3 tap.

Tools: M3 tap, tapping handle

Aluminum Square Bars

* Cutout

Cut out SB1-SB6 from the aluminum square bar of 8 x 8 x 1000mm.
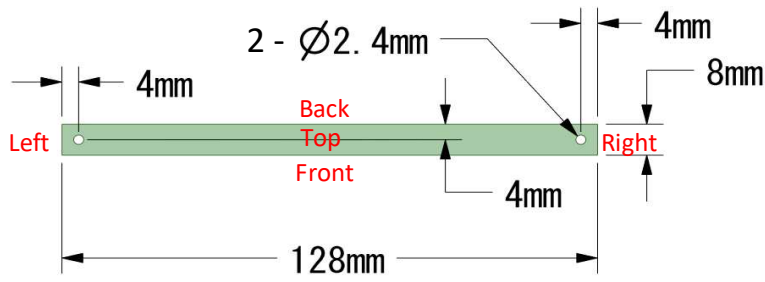
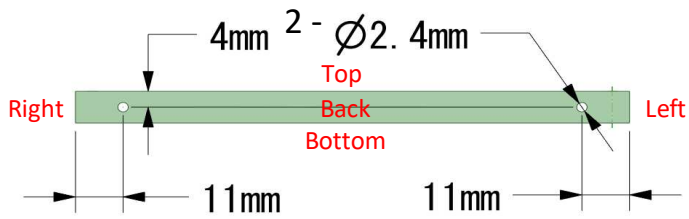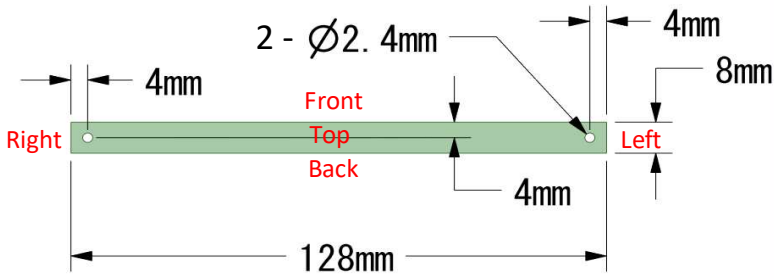Tools: power zigsaw, linear guide, flat file

Margin: 3mm
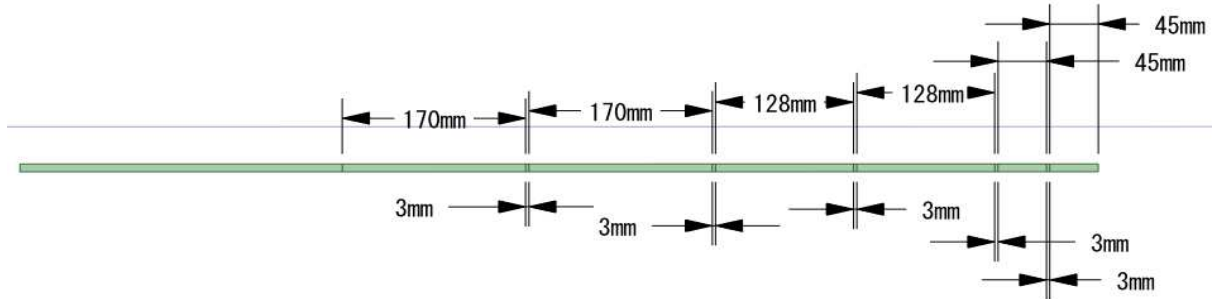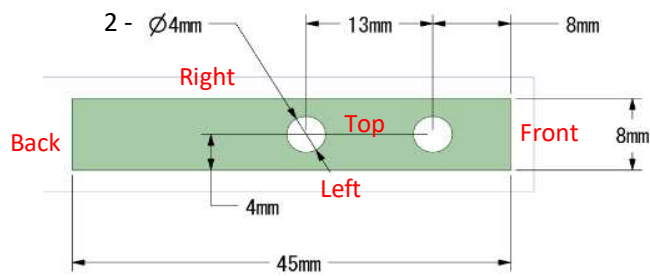

* Drilling

Tools: centerpunch, drilling press

SB3
Front

2 - Ø2.4mm

4mm

4mm

8mm

Back
Top
Front

Left   Right

4mm

128mm

4mm   2 - Ø4.1mm

Top
Front
Bottom

Left   Right

10.5mm   10.5mm

SB4
Back

2 - Ø2.4mm

4mm

8mm

Front
Top
Back

Right   Left

4mm

4mm

128mm

4mm   2 - Ø2.4mm

Top
Back
Bottom

Right   Left

11mm   11mm

SB5
Left upper

SB6
Right upper

2 - Ø4mm

13mm   8mm

Right

Back   Top   Front   8mm

Left

4mm

45mm

* Tapping

The phi2.4 holes of SB1, SB2, SB3, SB4 are to tapped with M3 tap.

The phi4.1 holes of SB3 are to tapped with M5 tap.

Tools: M3 tap, M5 tap, tapping handle

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