

# OPITEC

113.989

## Battery Torch with LED



### Tools required:

Pencil, Ruler,  
Fretsaw,  
Philips,  
Wood Glue,  
Drill Ø2,3,8,12 mm,  
Sandpaper,  
File

### Please note:

The OPITEC handicraft packs are not toys in a typical off-the-shelf sense, but rather additional teaching and learning material for educational purposes. This craft pack may only be constructed by children and adolescents under the guidance and supervision of experienced adults. Not suitable for children under 36 months. Choking hazard!

Stocklist				
	Quantity	Size( mm)	Description	Part-Nr
Wooden Board	1	100x100x10	Cover Plate	1
Wooden Strip	4	100x25x10	Frame Strip	2
Plywood	1	100x100x3	Back Side	3
Battery Holder	1		Current Supply	4
Aluminium Strips	1	250x10x2	Handle	5
Acrylic Glass	1	60x60x2	LED Cover	6
LED super bright	1	ø10	Lighting	7
Sliding Switch	1	19x6	ON/OFF-Switch	8
Push Button	1			9
Reflector	1	ø40	Reflector	10
Connecting Wire	1	500	Wiring	11
Tapping Screw	6	2,9x13	Screwing	12
Tapping Screw	4	2,2x6,5	Screwing	13
Washer	2	4,3/9	Spacer for Handle	14

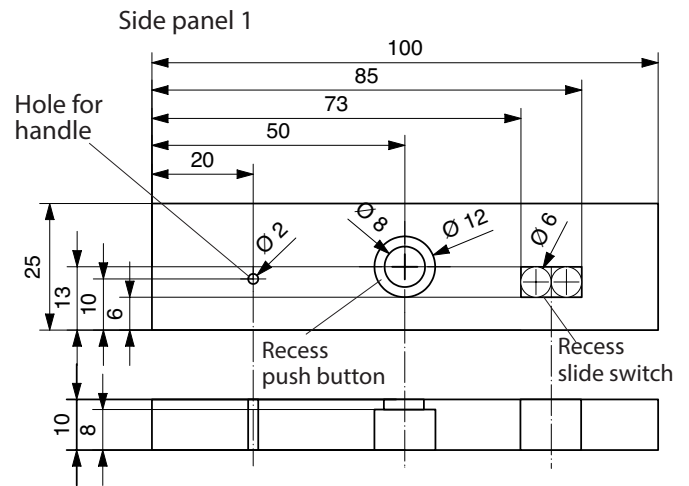
# Construction Manual

## Step 1:

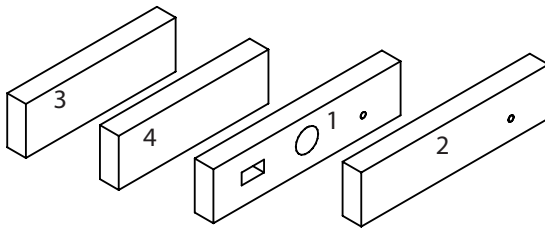
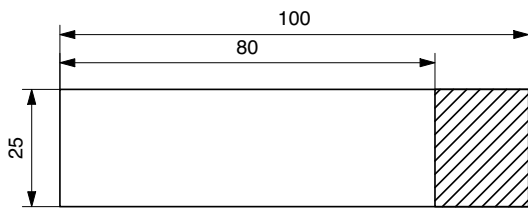
Saw and drill the side panels as illustrated by the templates on page 5/7. First, use the fretsaw to cut two wooden strips (2) down to 80 mm (side panel 3+4). Then take one of the remaining 100x25mm wooden strips (side panel 1) and drill two holes next to each other ( $\varnothing 6$ mm) for the micro-sliding switch (8). Subsequently, carve out the elongated hole using a key file. Drill through a  $\varnothing 8$ mm hole for the push button and drill an approx. 8mm deep blind hole with  $\varnothing 12$ mm on top.

### Please note:

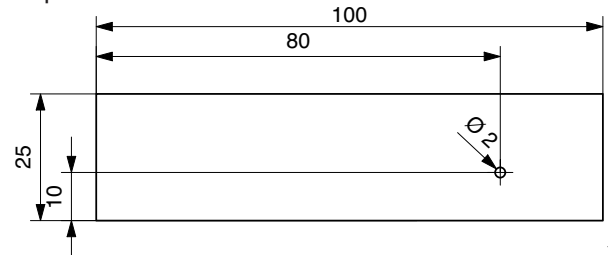
Ensure that at least 2mm of wooden strip are left over. Drill a  $\varnothing 2$ mm hole for the handle. Then drill another  $\varnothing 2$ mm hole also for the handle into the last panel.



Side panel 3+4



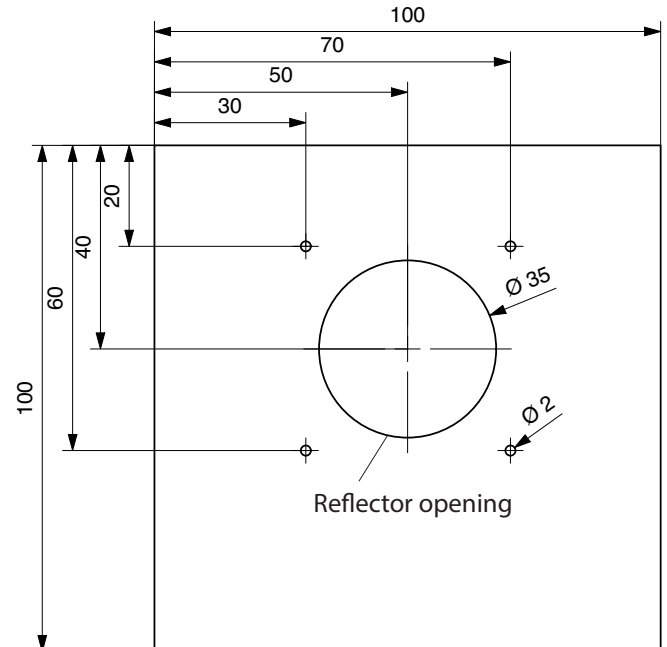
Side panel 2



## Step 2:

Mark the position of the reflector opening by using the template on page 5. Drill a  $\varnothing 2$ mm hole to insert the saw blade. After having insert the saw blade, clamp it and saw out the reflector opening ( $\varnothing 35$ mm).

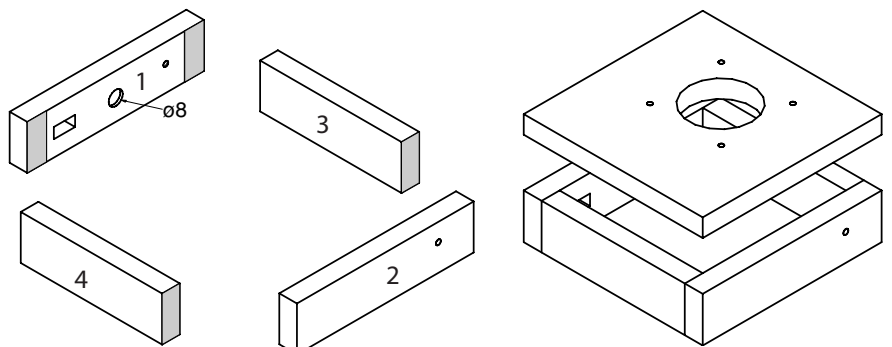
Drill 4 holes with  $\varnothing 2$ mm as per template for the protection glass.



## Step 3:

Glue the finished side panels as illustrated. Make sure that the  $\varnothing 12$ mm hole for the push button points outwards. Let the glue set thoroughly.

Glue the cover plate as shown on top of the constructed frame.

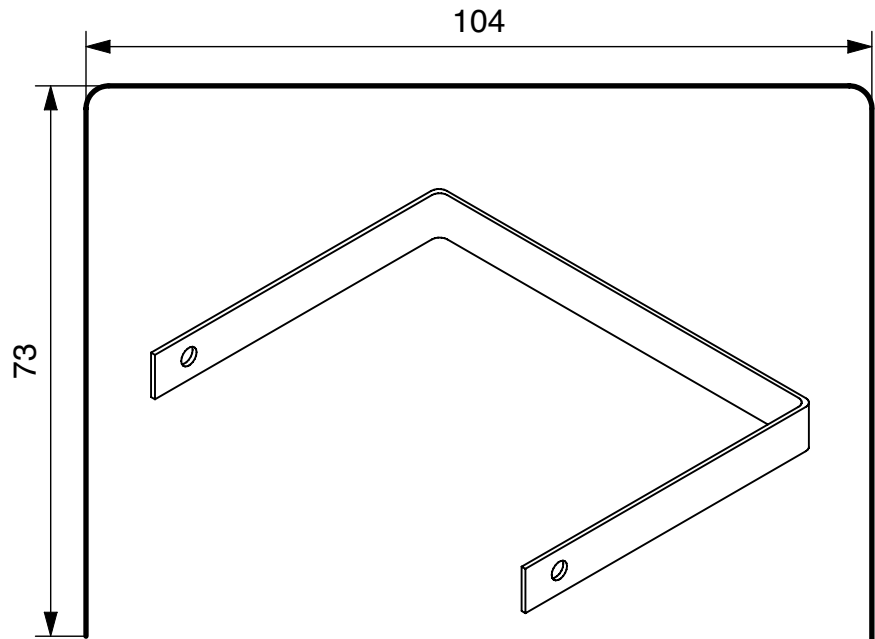


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## Step 4:

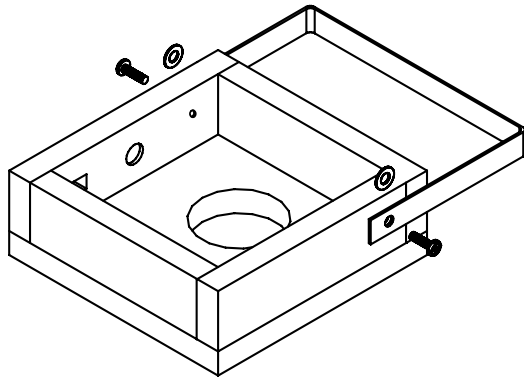
Deburr the aluminium strips (5) properly and drill the  $\varnothing 3\text{mm}$  hole as per template on page 5. Bend the aluminium strips using the bending tamplat (see below)

**Bending template Handle**  
S 1:1



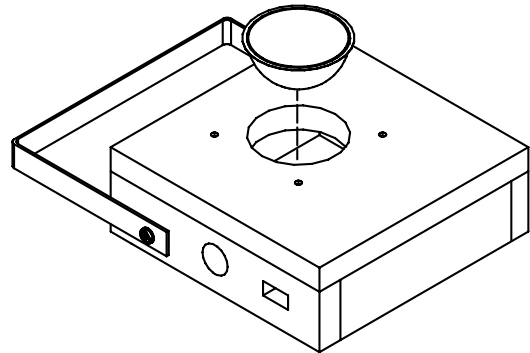
## Step 5:

Place the handle as shown and tighten it with washer (14) and bolt (12) on each side.



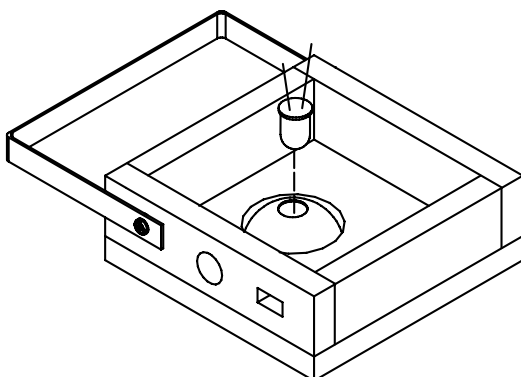
## Step 6:

Insert the reflector (10) into the appropriate  $\varnothing 35\text{mm}$  opening as illustrated (use glue if needed).



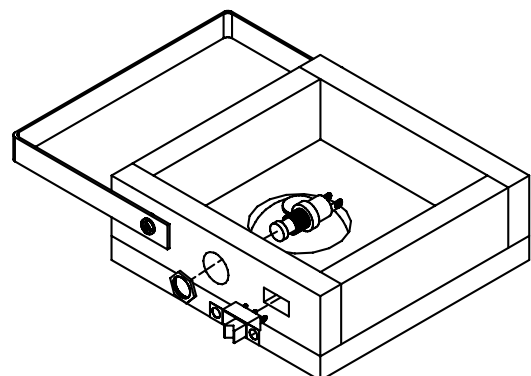
## Step 7:

Insert the LED (7) into the opening of the reflector (10).



## Step 8:

Insert the push button (9) into the previously drilled blind hole and tighten it with the corresponding nuts. Glue the sliding switch (8) from outside into the appropriate opening.



# Construction Manual

## Step 9- Wiring:

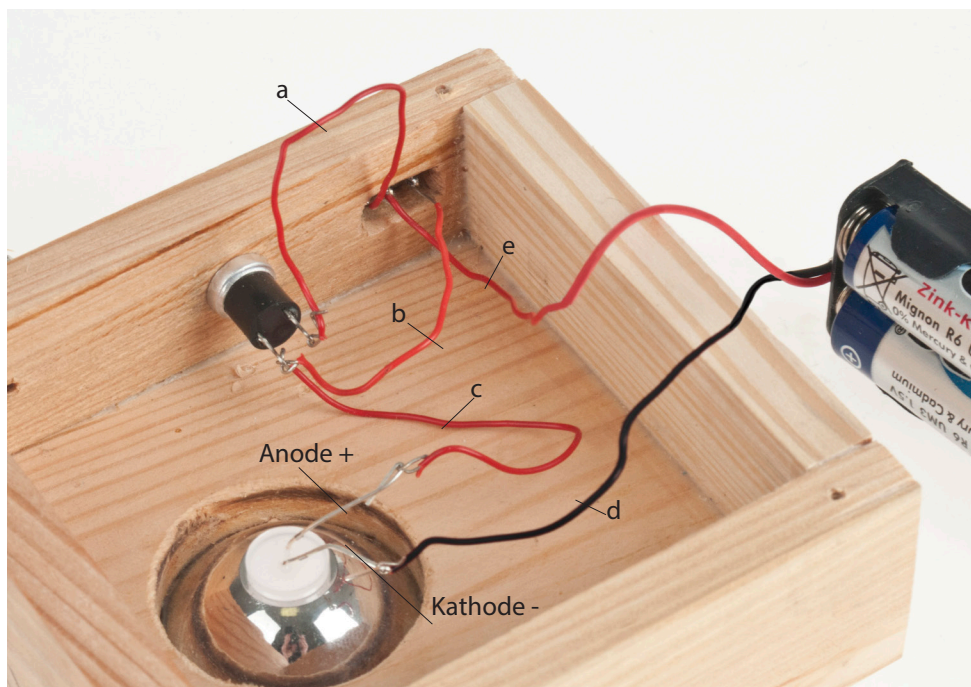
### Please note:

The cables do not have to be soldered.

Cut the connecting wire (11) into 3 x 80mm pieces and strip their insulation at both ends. Connect one piece (80mm) to the right connector of the push button (9) and its other end to the connector of the sliding switch (8) (cf. picture). Connect the red cable (8) of the battery holder to the mid-connector of the sliding switch (8). Connect another wire (80mm/b) to the right (still free) connector of the sliding switch and its other end to the left connector of the push button. Connect the third cable (80mm/c) from the left connector of the push button to the anode (+) – long leg – of the LED (7) (see cable c). Finally, connect the black cable to the cathode (-) – short leg – of the LED.

### Function check:

Insert 2x AA battery into battery holder. The sliding switch is in the left (upper) position. Press the push button and the LED illuminates. This position of the slide switch is supposed to be used for Morse signals (see Morse alphabet page 9). If you slide the switch to the right (low) position, the LED shines steadily and can thus be used as a lamp.

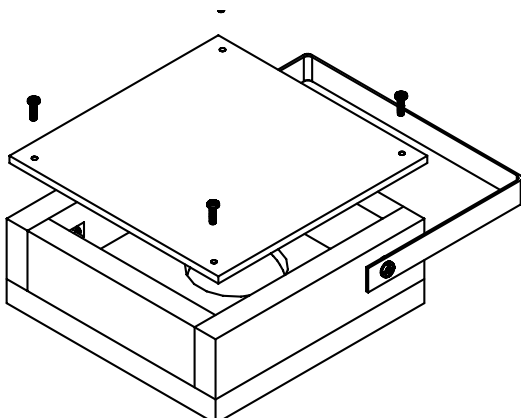


## Step 10:

Put the battery holder (4) and all cables inside the box and fix the backside with 4 screws.

### Please note:

The battery holder can also be glued inside

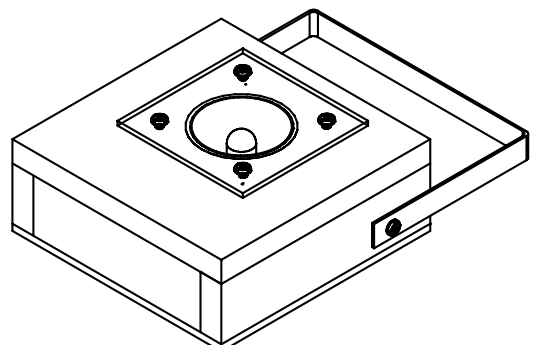


## Step 11:

Fasten the cover plate (6) with screws (13) on top of the reflector.

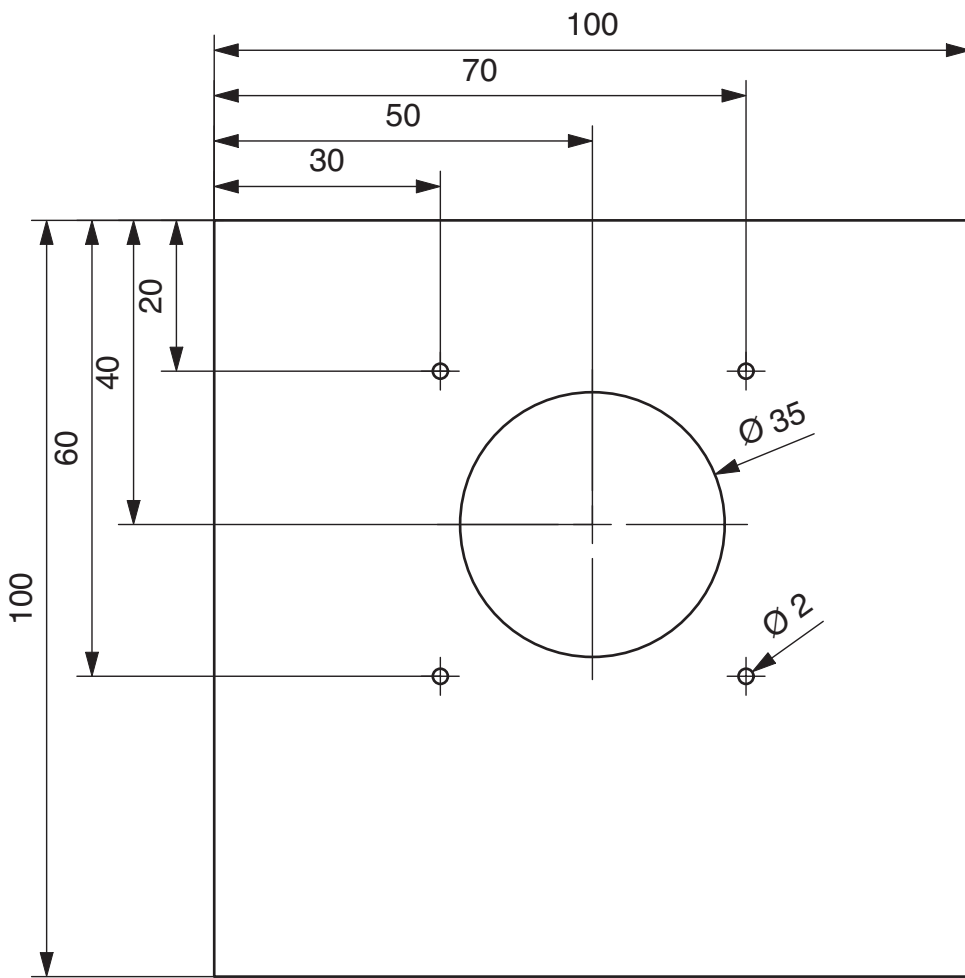
### Please note:

Do not tighten too much or the acrylic glass might break!

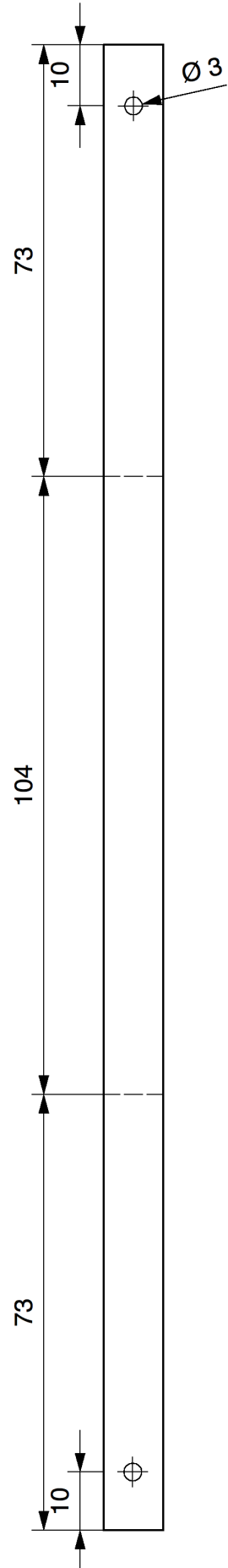


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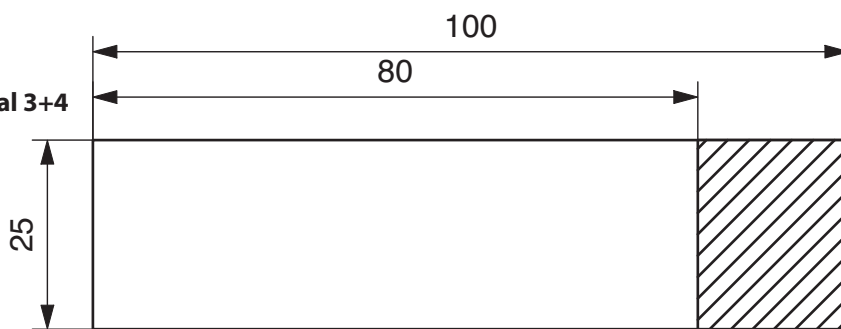
Template upper part  
S1:1



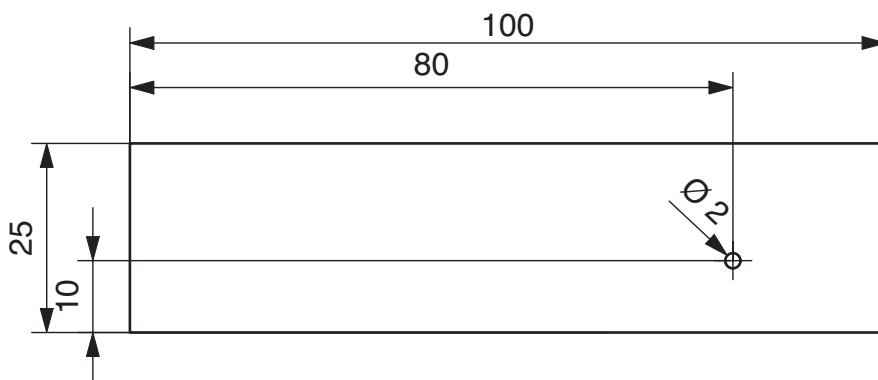
Handle  
S1:1



Side panel 3+4  
S1:1



Side panel 2  
S1:1

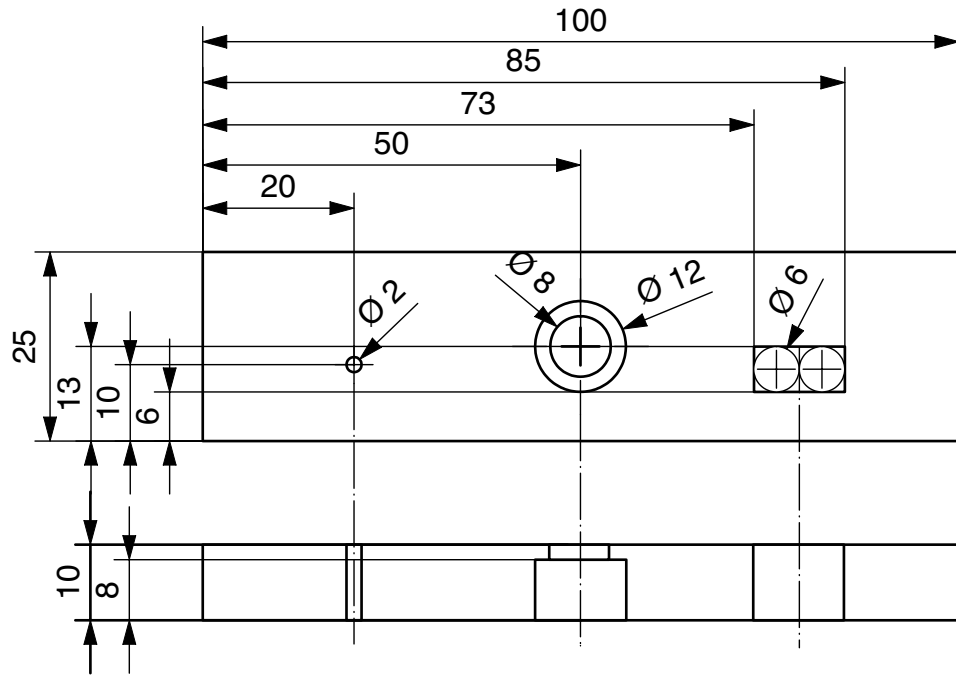




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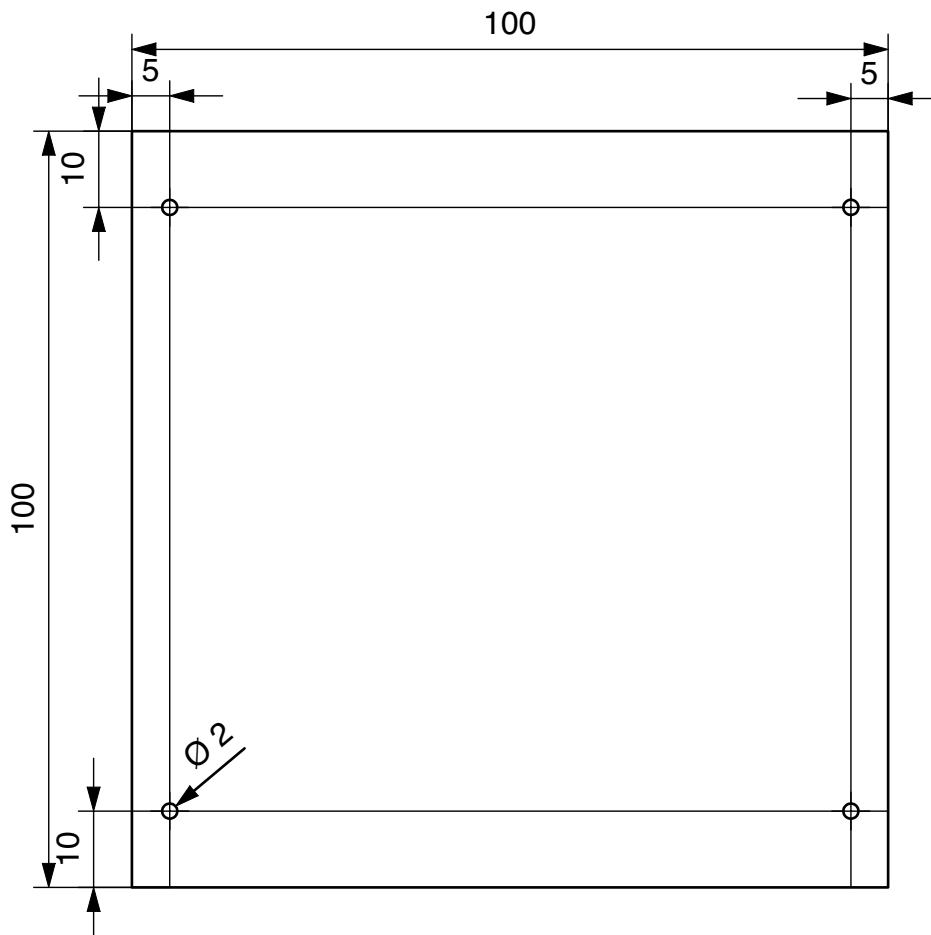
## Template Side panel 1

S1:1



## Template base plate

S1:1







# The Morsealphabet

□ ■	A	Alfa	■ ■ ■ ■ ■	0
■ □ □ □	B	Bravo	□ ■ ■ ■ ■	1
■ □ ■ □	C	Charlie	□ □ ■ ■ ■	2
■ □ □	D	Delta	□ □ □ ■ ■	3
□	E	Echo	□ □ □ □ ■	4
□ □ ■ □	F	Foxtrott	□ □ □ □ □	5
■ ■ □	G	Golf	■ □ □ □ □	6
□ □ □ □	H	Hotel	■ ■ □ □ □	7
□ □	I	India	■ ■ ■ □ □	8
□ ■ ■ ■	J	Juliett	■ ■ ■ ■ □	9
■ □ ■	K	Kilo	■ ■ □ □ ■ ■	.
□ ■ □ □	L	Lima	■ □ □ ■ □	/
■ ■	M	Mike	■ □ □ □ ■	=
■ □	N	November	□ ■ □ ■ □ ■	·
■ ■ ■	O	Oscar	□ □ ■ ■ □ □	?
□ ■ ■ □	P	Papa	■ □ □ □ □ ■	-
■ ■ □ ■	Q	Quebec	■ □ ■ ■ □	(
□ ■ □	R	Romeo	■ □ ■ ■ □ ■	)
□ □ □	S	Sierra	■ □ ■ ■ □ □	:
■	T	Tango	■ ■ ■ □ □ □	..
□ □ ■	U	Uniform	□ ■ □ □ ■ □	+
□ □ □ ■	V	Victor	□ □ □ □ □ □	irr
□ □ □ ■	W	Whiskey	■ □ ■ □ ■ ■	ct
■ □ □ ■	X	X-ray	□ ■ □ ■ □	-
■ □ ■ ■	Y	Yankee	□ □ □ ■ □ ■	sk
■ ■ □ □	Z	Zulu		

Pronounced: □ dot, short

■ dash, long

## Decoding

