

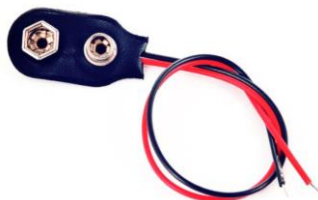
## How to build a Morse key

Transmit in Morse code from anywhere, with few simple materials...in perfect scout/guide style!

**Learning targets:** Acquire basic manual skills in making electrical circuits - getting started with Morse code.

### Material:

- A solid base for the Morse key: wood, thick cardboard or a plastic box.
- A clothespin and an upholstery nail (round headed nail). Alternatively, thick cardboard and thin aluminum/copper foil.
- 4.5 V/9V active buzzer; it MUST NOT be indicated as passive. Alternatively, a 9 V led can be used for light signalling.
- Battery, according to the buzzer's voltage range. If a 9 V battery is used, please get a suitable connector, as in the following example image



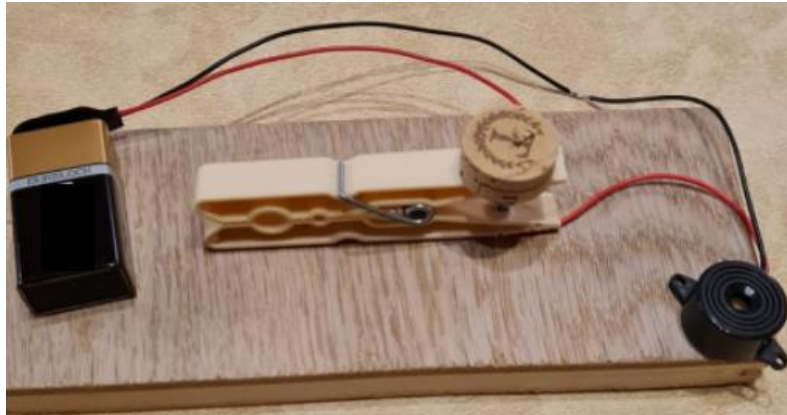
- Soldering iron and solder wire. If leaders prefer not to let scouts/guides use a soldering iron, 1 mammuth connector should be provided for each Morse key.
- Cork
- Nipper and (small) hammer
- Glue

**Time and preferred place:** 30 min. If a soldering iron is used, the activity should take place on a robust heat resistant table, close to a 110/220 V socket.

**Description:** The Morse key can be built as shown in the following pictures. First, the clothespin is disassembled. One of the two main parts is glued to the Morse key base. An upholstery nail is driven in the side of the clothespin which is normally held by hands. Before completely fastening the nail, the metal tip of the buzzer's red wire should be placed under the nail's head or twisted around the nail. A similar thing is done using the other piece of the clothespin, the cork (that will be fastened to the clothespin by nail) and the battery's red wire. The ends of the two black wires should then be soldered together; finally, the

clothespin must be reassembled, and the Morse key is ready to be used! Be sure that the heads of the nails are not touching each other when the key is not pressed.

Note: red and black wires can be swapped; in this case, the key nails should be connected to the black battery wire and to the black buzzer wire; while the red wires should be soldered together.



A simpler model can be built as shown in the following photo. In this case, the mammut connectors should be connected to the two red wires or to the two black wires.



On the internet it's possible to find lots of similar projects. For more ideas and information, please consult the **JOTA-JOTI Ham Radio Handbook**.

At last, the Morse code is here reported. The reader is also encouraged to use encoding/decoding charts, as the one reported in [https://en.wikipedia.org/wiki/Morse\\_code#/media/File:Morse\\_code\\_tree3.png](https://en.wikipedia.org/wiki/Morse_code#/media/File:Morse_code_tree3.png)

A	· —	B	— · · ·
C	— · — ·	D	— · ·
E	·	F	· · — ·
G	— — ·	H	· · · ·
I	· ·	J	· — — —
K	— · —	L	· — · ·
M	— —	N	— ·
O	— — —	P	· — — ·
Q	— — · —	R	· — ·
S	· · ·	T	—
U	· · —	V	· · · —
W	· — —	X	— · · —
Y	— · — —	Z	— — · ·

## JOTA-JOTI basic activities

### How to build a Morse key

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3	··· — —	4	···· —
5	·····	6	— ·····
7	— — ···	8	— — — ··
9	— — — — ·	0	— — — — —
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