# The Signaller Key

When starting to learn how to send Morse code you first need a key. A key on its own is not a lot of help, you need an oscillator too. Then you need a cable to connect the two. All these things add up and if you're not sure you're going to stick with it then it's a considerable investment. You may be looking for something to stir an interest in a fellow ham but don't want to spend a fortune. Well we here at Phoenix Kits have a solution, The Signaller Key.

The signaller is based around our well know Flat Pack Key but with a few major differences, there is a built in sounder and Morse LED. Also the battery holder is built onto the keys base. This way, once assembled you don't need anything else to practice your Morse, just tap away! Would be a great way of practicing your sending in a class room or over a microphone on your local 2m FM net.

The signaller is a very simple arrangement and a low cost way to start on the Path of sending Morse Code.
Also due to it needing some basic soldering and some mechanical assembly it could be a good little project for the Novice or foundation course too.

Before building check you have all the parts:-

1 x Base Panel
1 x Key Top Panel
1 x Round Flange Panel
1 x Key Knob
4 x 14m Black M3 Steel Screws
1 x 6mm M3 Steel Screw
1 x 14mm M3 Steel Screw
4 x M3 Black Nuts
2 x M3 Steel Nuts
4 x 8mm Brass Threaded Spacer
1 x White Flange insert Spacer
1 x large steel washer
4 x Red Gap washer
1 x 3mm White spacer
1 x AAA Battery holder
1 x 3mm LED
1 x 1K ohm resistor
1 x 2 pin sounder
4 x Rubber Stick on feet & 1 x Phoenix Sticker.
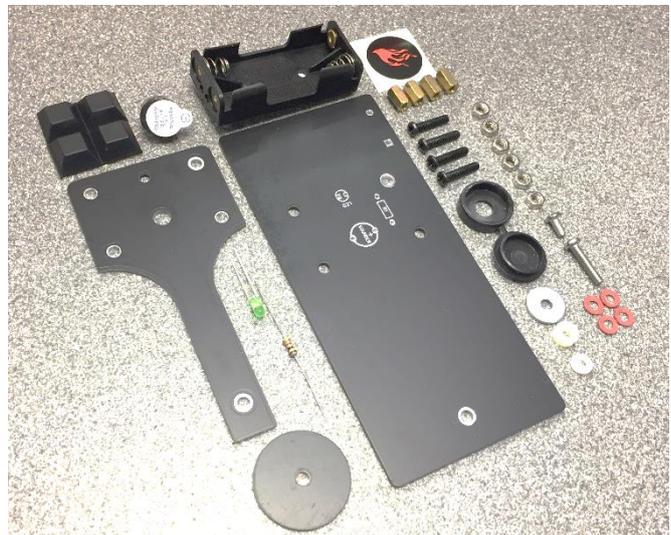


If any parts are missing contact me right away.
parts@phoenixkitsonline.co.uk

## Construction of the key

Please take care to fit the right length screws into the correct places.



Step One:-  Fit the bottom contact screw. Find the 6mm Screw (The shortest in the kit, note as shown here, yours will may a flat slot head) and BEFORE putting it on the bottom board put one of the fibre washers onto the screw (you may be removing it or add one later to adjust the gap to your liking). Put the screw through the single hole at the one end of the base panel. The screw head is the bottom key contact. This screw is then fasten to the board by putting a M3 steel nut under the board. Tighten the screw so it's secure.

Next find the plastic folder over knob, the large M3 washer, the two small plastic spacers, the 14mm steel screw, and the round flange disk.

First push the small white T shape spacer into the hole on the large washer, its nice tight fit.

Now put the washer with the spacer inserted into the top of the knob.
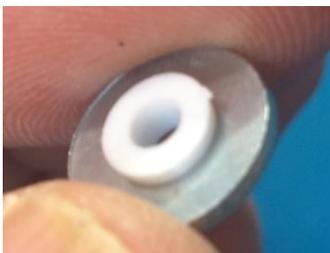


This will click into place, this makes sure the knob is fitted in the centre of the flange.

Now find the steel 14mm screw and push that through the hole so the head is on top of the washer.



Find the flange, the 3mm white space, the Key top panel and a M3 steel nut.

Put the disk onto the knob and screw, then a red fibre washer followed by the white 3mm spacer, place this assembly onto the Key top panel through the hole at the end of the arm, look carefully at both sides of the key top panel and you will see that one side has a wide track running to the hole at the end of the key arm, this should be on the underside of the top panel. Make sure that the hinge part of the knob is correctly aligned. Rotate the knob and flange to get this alignment right before nipping up the screw and nut securing the knob and flange. This screw also serves as the top 'contact' point for the key. You may need to remove or add a fibre washer as detailed here to set the gap to your liking, this is a good starting point for most people.
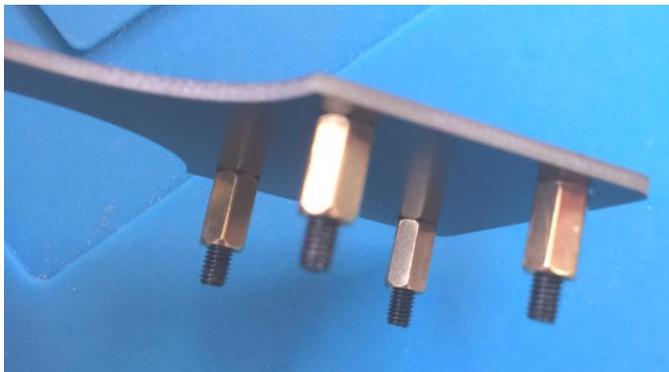


Find the four Brass 8mm spacers and the four black 14mm screws. Pass the screws through the top of the key panel and secure the spacers as shown.



That completes the top panel.

Now we need to work on the bottom panel. Find the Sounder, the 1K resistor and the battery holder.

The sounder as white sticker on top, there will be a '+' sign on one side. Make sure that the sounder is fitted to the board with the plus sign lining up with the '+' sign on the base panels silk screening.



Next fit the 1K resistor. It is the only resistor in the kit, it can be fitted either way around.

**Do not fit the LED at this time.**

Now the battery Holder. You will find it has a sticky pad fitted on its underside. Be warned, you will only get one go at mounting this holder or the foam pad will be ripped so do it with care. I suggest a 'dry' run first. Just drop the holder onto the base plate (without removing the film from the pad) and check you know where it needs to sit, then remove the film from the pad and refit. If you're lucky I may have already cut the pins of the battery holder down to an acceptable size, you can re-trim these if you feel the need but they are very hard pins and I recommend using old cutters as they can damage the low cost cutters blades and also wear eye protection if you can, these legs can fly off at speed when cut.

I Have not forgotten the LED, the LED is a 3mm LED and if you wish you can change it for any other colour you wish to personalise the key to your liking (or to identify it in a classroom)

If you look carefully you will see that one leg is longer than the other. Also on the board one hole for the LED is round and the other square. The long leg must go into the round hole.

DO NOT Solder the LED yet!!!!

Just put the LED in place and leave it there. If you haven't already done so remove the small sticker from the top of the sounder. Now fit the top panel,

Fix the top panel using the 4 nuts provided, the two extra washers can be stored for future use under the front two nuts. That way you will not lose them if you want to change the gap later.

Once the top panel is fixed push the LED up though to the top panel, now when the LED is protruding you can solder the legs to the bottom board and trim.

Now fit the stick on rubber feet.

That's it the key is built and ready to test, put two AAA batteries into the holder, When you do this I find that with a new holder the batteries are a snug fit and the little springs do not always manage to push the battery up against the Positive terminals so you may have to slide the batteries up against the positive terminal.

Now you can test the key, just tap away!

The sticker has not just be included for cosmetic reasons. Try this, hold the key down. Now place your finger tip over the hole in the top of the key panel, you will note that the tone changes. I feel it sounds better with the hole covered, the back pressure blocking the hole just above the sounder changes the pitch and tone qualities. If you agree then place the sticker over the hole.

The key's gap can be adjusted if you feel the need, you have the spare fibre washers. You will need to separate the two halves to make adjustment. The bottom screw currently has two fibre washers, if you need to you can add more washers or remove one (or both) of the two washers, this way the gap can be adjusted to your preference. You can also change the gap by adding/removing fibre washers between the flange and the 3mm thick white spacer if you wish.

The Signaller will not match the fine adjustment and smooth operation of a key costing hundreds of pounds connected to an quality oscillator (like the Phoenix

uCPO)  but it will work well as a no frills practice key and is ideal as introduction to Sending Morse . Good luck with learning the Code, I hope the signaller helps.

# The International Morse Code

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

Numbers

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|---|---|
| 1 ● ▬ ▬ ▬ ▬ |
| 2 ● ● ▬ ▬ ▬ |
| 3 ● ● ● ▬ ▬ |
| 4 ● ● ● ● ▬ |
| 5 ● ● ● ● ● |
| 6 ▬ ● ● ● ● |
| 7 ▬ ▬ ● ● ● |
| 8 ▬ ▬ ▬ ● ● |
| 9 ▬ ▬ ▬ ▬ ● |
| 0 ▬ ▬ ▬ ▬ ▬ |