

## Glasshouse Elma A47 Jumbo Stepped Attenuator, Shunt Stereo version, 47 steps – kit instructions

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### Contents of kit

1. Elma A47 switch fitted with Jumbo PCB
2. Series input, load resistor in marked bag
3. step 2 to step 46 resistors in marked bags
4. Mundorf silver gold solder (3.8% silver content)

### Construction notes for Mono version.



To carry out the build you will need a vice to hold the switch while you work. Snipe nose pliers, cutters and a soldering iron.

A straight forward build as the switch does not need to be disassembled to fit the resistors. You will see from the picture which way the resistors are attached to the PCB.

The PCB is screen printed so that the steps are clearly marked. Fit the resistor in the bag marked STEP 2 in the position marked R2 on the PCB, fit the resistors in the bag marked STEP 3 in the position marked R3 on the PCB and so on....Note well, the body of the resistor fits into the circle.

Make sure that the lead out furthest from the PCB is bent reasonably close to the body of the resistors. You do not want the lead out to be touching the front panel once the switch is fitted.

Please note that it is vital that you look at the numbers on the PCB. DO NOT assume they follow a set sequence as they do NOT. Once you have soldered in a resistor you

will find it almost impossible to remove the resistor so DO NOT MAKE A MISTAKE.

The series, load resistors fits into the position “Rin”.

The PCB is a “put through hole” type meaning that each hole is connected to both sides of the PCB, so you only need to solder one side of the PCB.

The external connections are marked with the following

“GND” – earth

“IN” - signal input

“OUT” – signal output

To test the stepped attenuator you need a multimeter set to resistance. Turn the switch all the way anti-clockwise. Put the black lead on GND and the red lead on OUT. The reading should read 0R. With each step clockwise the resistance will increase gradually as you go through all the resistors. The very last step will read infinity.

Once you are happy you are ready to fit into your equipment. Make sure the switch is fully turned anticlockwise.

### **Construction notes for Stereo version.**



To carry out the build you will need a vice to hold the switch while you work. Snipe nose pliers, cutters a soldering iron and a flathead screw driver to remove the 2<sup>nd</sup> layer.

To solder in all the resistors it is necessary to disassemble the 2<sup>nd</sup> layer of the switch. The 2<sup>nd</sup> layer is that which is furthest from the main switch. We have made a youtube video to follow. It is essential you pay careful attention to this video.

The link is <https://www.youtube.com/watch?v=nGKYaATDi1k>

**Starting with the 2<sup>nd</sup> layer.** You will now have the PCB separated from the switch.

Place the PCB on the vice so the ELMA logo is visible, the resistors are fitted this side. All the soldering joins are done on the other side which does not have the ELMA logo on.

The PCB is screen printed so that the steps are clearly marked. Fit the resistor in the bag marked STEP 2 in the position marked R2 on the PCB, fit the resistors in the bag marked STEP 3 in the position marked R3 on the PCB and so on....Note well, the body of the resistor fits into the circle.

Make sure that the lead out furthest from the PCB is bent reasonably close to the body of the resistors. This is very important especially for the 1<sup>st</sup> layer as you don't want these lead outs to be touching the front panel once you fit the switch.

Please note that it is vital that you look at the numbers on the PCB. DO NOT assume they follow a set sequence as they do NOT. Once you have soldered in a resistor you will find it almost impossible to remove the resistor so DO NOT MAKE A MISTAKE.

The series, load resistors fits into the position "Rin".

The PCB is a "put through hole" type meaning that each hole is connected to both sides of the PCB, so you only need solder one side of the PCB.

Put the 2<sup>nd</sup> layer PCB to one side.

Now repeat the process for the PCB that is attached to the switch. Make sure you fit the resistors the correct way round as shown in the picture other wise you won't be able to fit the 2<sup>nd</sup> layer back on properly. Make the solder joins for the 1<sup>st</sup> layer on the side that has the ELMA logo on it.

Once the 1<sup>st</sup> layer is completed you need to test it before you fit the 2<sup>nd</sup> layer back in place.

The external connections are marked with the following

"GND" – earth

"IN" - signal input

"OUT" – signal output

To test the stepped attenuator you need a multimeter set to resistance. Turn the switch all the way anti-clockwise. Put the black lead on GND and the red lead on OUT. The reading should 0R, with each step clockwise turn the resistance will increase gradually as you go through all the resistors. The very last step will read infinity.

Once you are happy you are ready to fit the 2<sup>nd</sup> layer. Make sure the switch is fully turned anticlockwise.

Refer to the youtube video again to put the switch back together. See <https://www.youtube.com/watch?v=nGKYaATDi1k>

Follow the same test procedure to test the 2<sup>nd</sup> layer.  
Once you are happy you are ready to fit into your equipment. Make sure the switch is fully turned anticlockwise.

ENJOY