



**VAMISOUND**

THE SOUND  
IS YOURS

**VM55**

BUILDING  
INSTRUCTIONS



## VAMISOUND VM55 BUILDING INSTRUCTIONS

WE SOUND BETTER

# Dear **DIY** friend,

first of all thank you for your support and choice of the VAMISOUND product.  
We wish you a happy DIY and the joy of a new microphone in your arsenal!!

Jan and Milan





## VAMISOUND VM55 BUILDING INSTRUCTIONS

WE SOUND BETTER

Before you start building your new microphone please carefully read this building instructions.

**Attention: VM55 is a medium-heavy project. The circuit is made up of only a few components. However, it should be borne in mind that certain manual skills will be required or the successful completion of the mic construction. Good soldering experience and soldering stations with fine soldering tip are recommended. If you do not have this, please delegate the construction to a more experienced technician with proper equipment. We are not responsible for malfunctioning construction or injuries associated with improper assembly of our kits.**

Document info	
Document name	VM55 building instructions
Document revision	1.0
PCB revision	1.1
Date	October 2023
Project difficulty	★★★★★
Complexity of soldering	★★★★★
Risk of electrick shock	★★★★★
Changes and notes	

**VAMISOUND VM55 full kit includes a microphone body consisting of several parts, printed circuit board, transformer, capsule, capacitors, resistors and one teflon pin. You also received a paper microphone box with foam filling. Under the top foam filler you will find the capsule and transformer.**

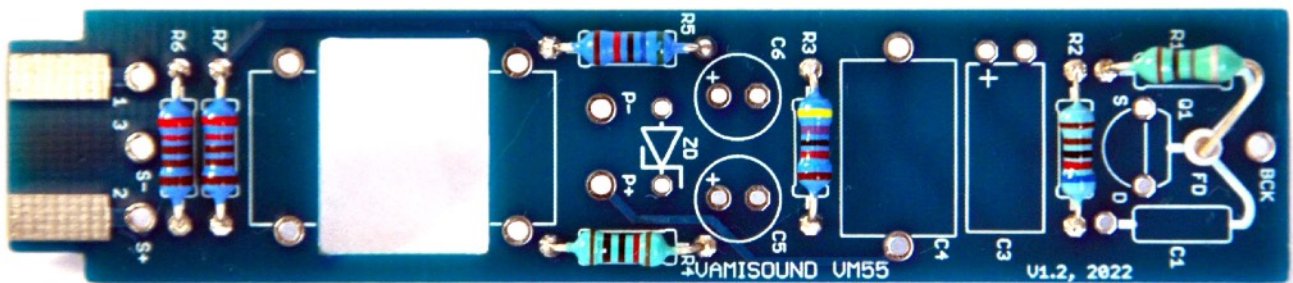


As mentioned the VM-14 transformer and capsule can be found in the second layer under the microphone. Just remove the top layers of foam.



Now that you know what to find where we can get to building.

Start fitting the pcb with resistors. On the right notice that the R1 resistor is placed in the air and one of its legs is on the teflon pin.





Continue by fitting the output capacitor (the yellow one), the zener diode (ZD) and capacitor C1 one leg of which is also on the teflon pin.



In next sequence install electrolytic capacitor C3. Also pair of caps C5 and C6. Place fet transistor Q1 in place and solder its pin to the teflon pin.



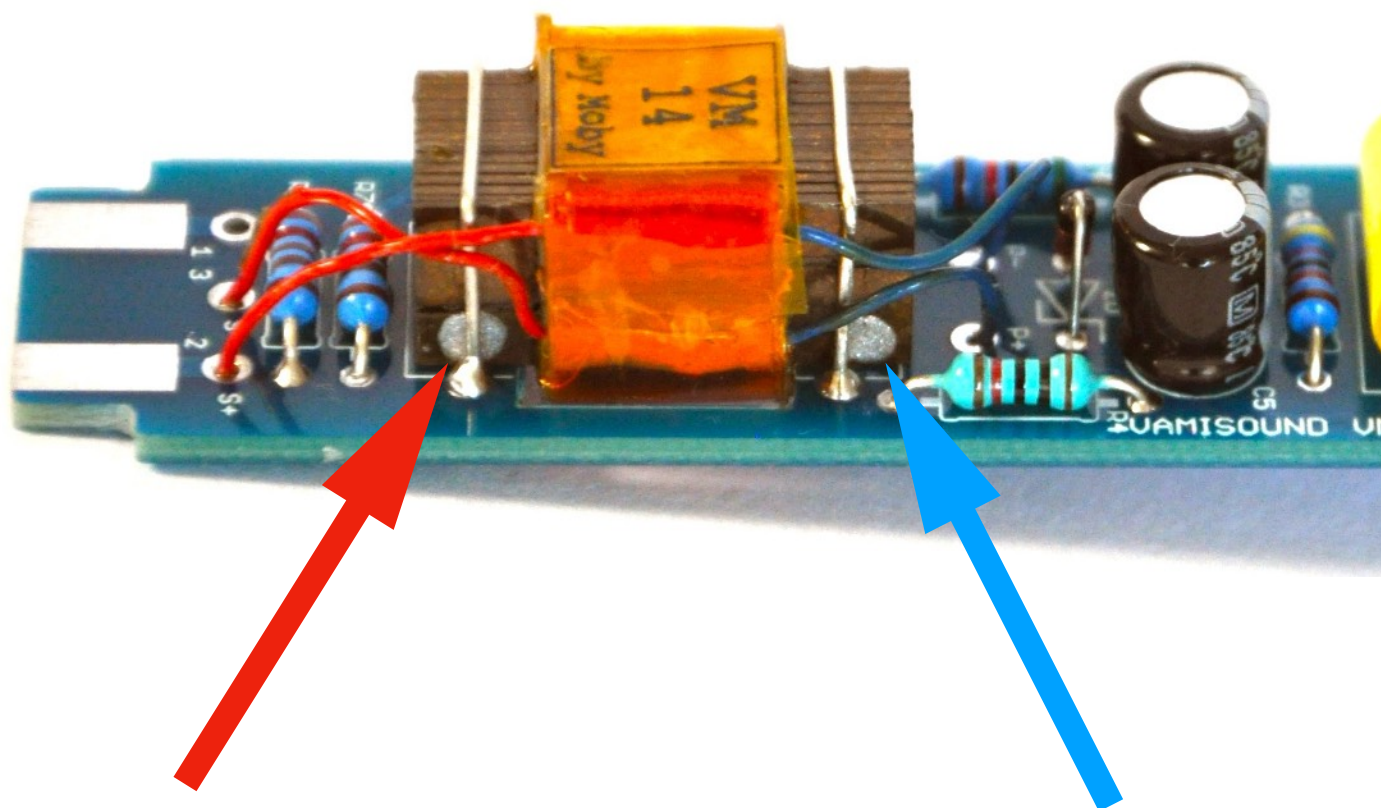
Install output transformer VM14. Attach the transformer using the two cutted legs from the resistors to the board. Make sure the transformer does not wobble on the board.

The two primary cables on the VM14 transformer are blue. Secondary cables are red. Insert the primary cables into the pads on the board that are marked P+ and P-. Insert the secondary cables into the S+ and S- pads on the board.



Notice the two white dots (or black on some pieces) on the transformer near the bottom edge of the circuit board. They mark the beginning of the transformer windings and will help you solder the wires into the correct holes.

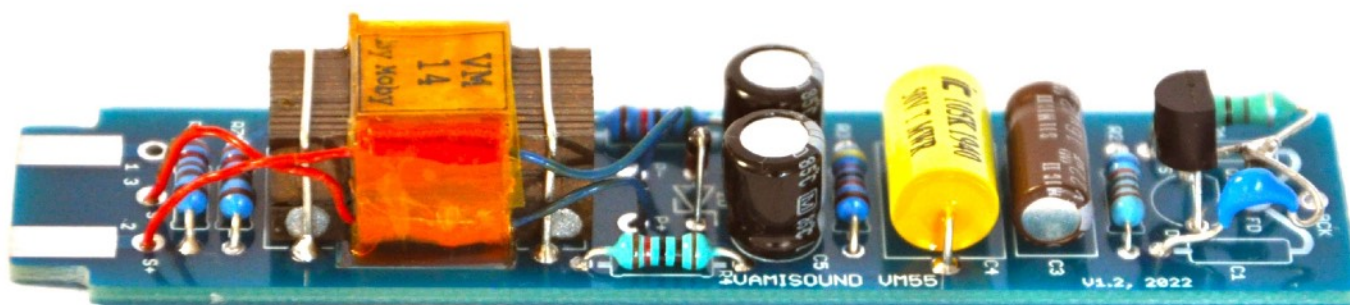
Solder the blue primary wire, which is marked with a dot, to the pad on the board that is marked as P+. Solder the red wire of the secondary winding, which is marked with a dot, to the pad that is marked as S-.



Wire secondary cable marked with dot to „S-“ pad on the pcb in same way as you can see on this photo.

Wire primary cable marked with dot to „P+“ pad on the pcb in same way as you can see on this photo.

Be sure to check the phase against other commercial microphone after finishing the microphone and swap the wires if necessary. So leave a margin in the cable length in case you need to swap the S+ and S- cable. We're only human and although we have carefully measured all transformers the human factor can play a role here.





Take the microphone body and the small screwdriver included in the kit and unscrew the bottom of the microphone with the XLR insert.



**ATTENTION!!!** Screw the three screws in the bottom of the microphone inwards (clockwise - tighten)!!!! Do not try to unscrew them outwards through the microphone tube.



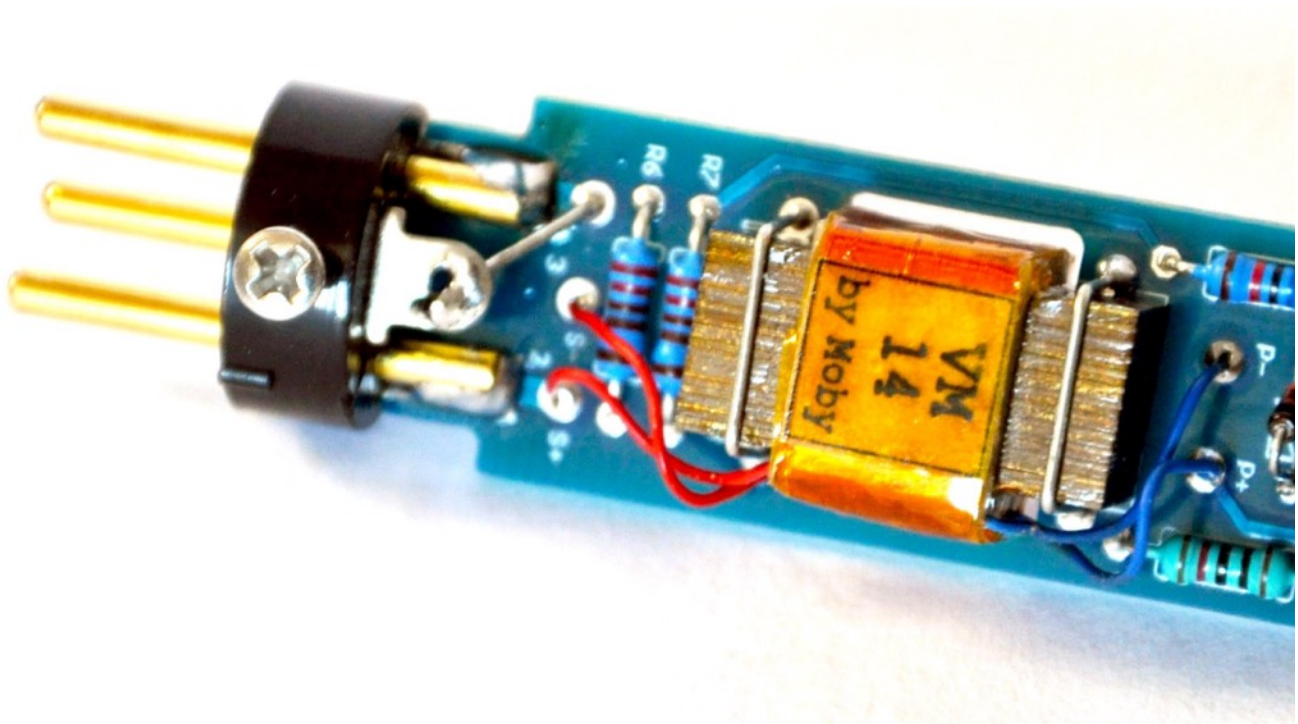


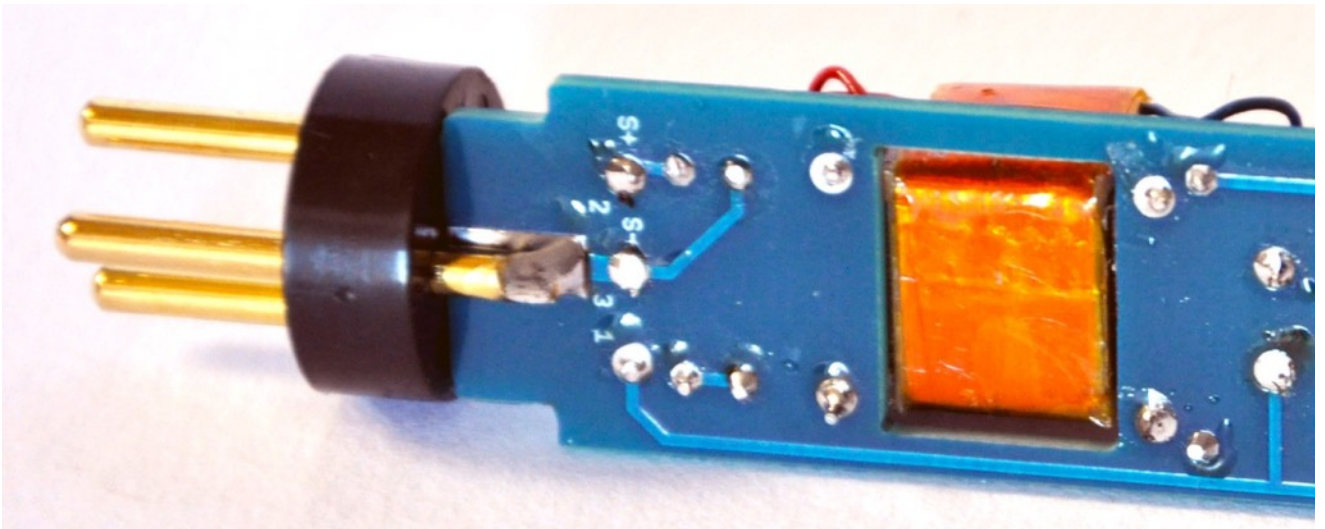
**Unscrew the XLR insert out of the bottom part of the microphone.**



**In the next step solder the XLR connector insert to the board. Carefully align the connector to the board so that the pins are directly on the rectangular soldering pads on the board. Be especially careful not to overheat the connector pins and melt the plastic part.**

**Connect the connectors ground lug using the resistor foot to the pad marked number 1 on the board. This is used to connect the metal chassis of the microphone body to the 0V on the board and PIN 1 of the XLR connector.**





**Unscrew the front metal ring of the microphone and remove both grilles and the inner plastic separation ring.**



Take the capsule and the insulating tape (strip) that was included in the parts. Carefully peel off the yellow covering film from the tape and stick it without much pulling around the whole capsule. Trim the overhanging piece of tape.



Then insert the taped capsule into the microphone head as shown. It's just to test that capsule sitting there. Don't put it all the way in yet.





Now take the two included teflon insulated wires and solder them carefully to the capsule. The red wire to the central terminal and the white wire to the side terminal as in the picture. Make sure both wires measure exactly 60mm including the exposed soldering section. No less.



Take the microphone head and insert the rear grille, then the grey spacer ring with the circular cutout as you see in the picture. Finally insert the capsule, put the front grille on top of it and then screw everything together.

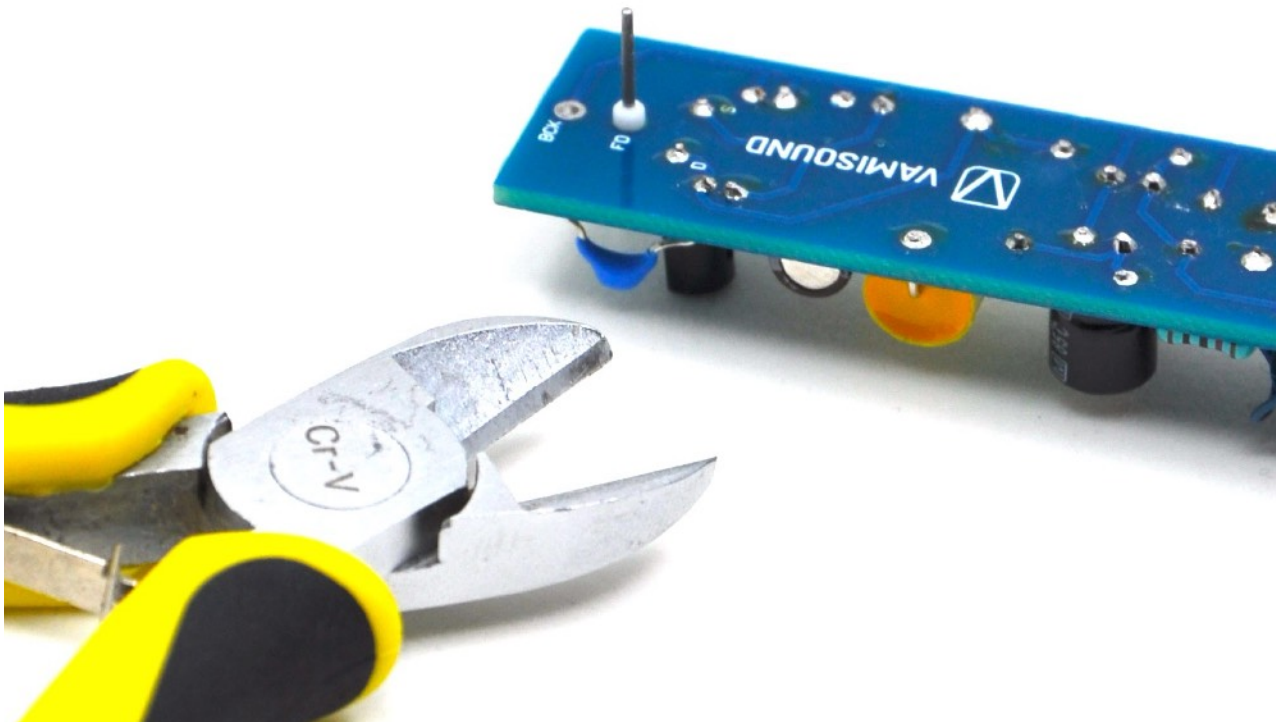
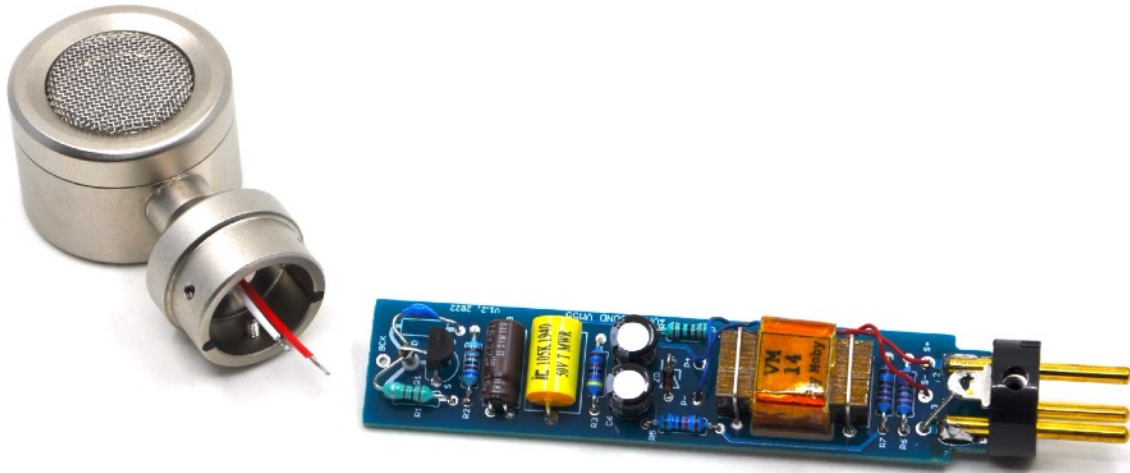




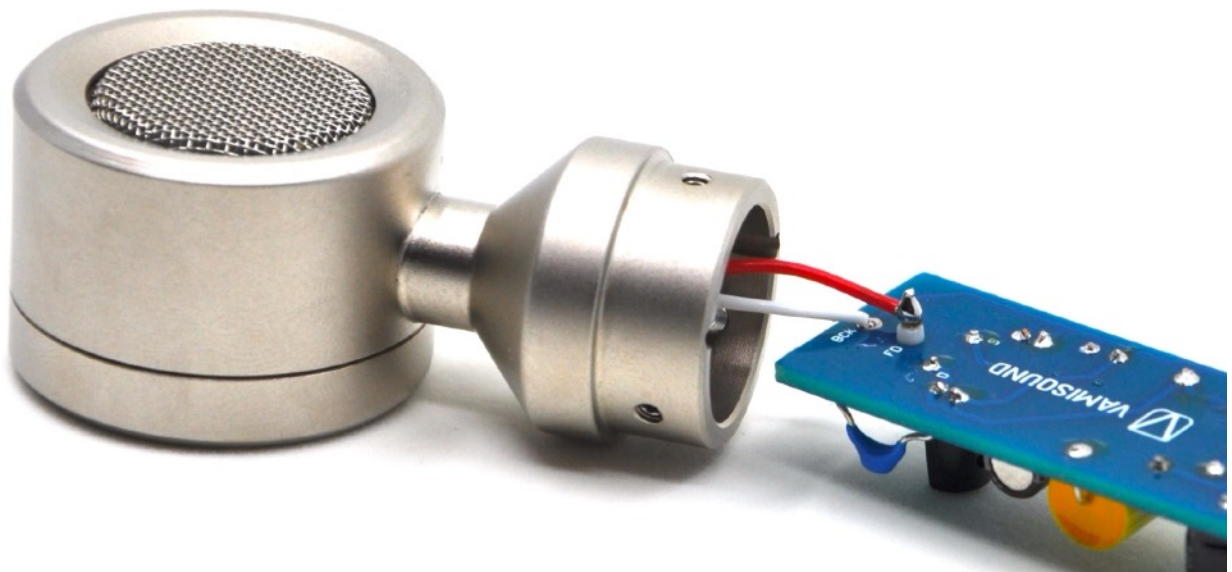


**Now you can clearly see where the front of the microphone is located and where the capsule diaphragm goes.**

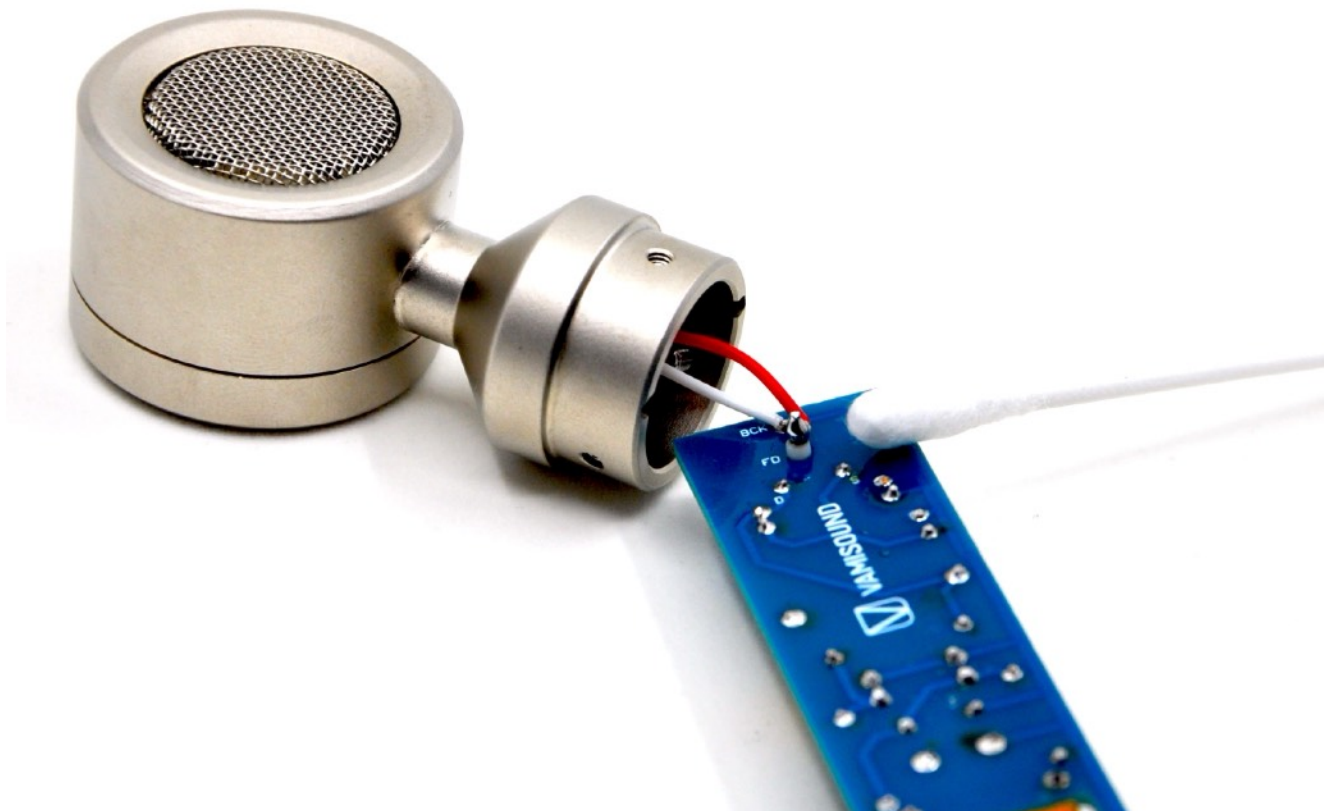
Now it's time to solder the cables leading from the capsule to the circuit. Before that, however, do not forget to shorten the Teflon pin so that its metal part is 3mm long.



**Solder the red cable directly to the teflon pin from the bottom side of the circuit board. The white one to the pad marked BCK on the circuit board. Notice that the microphone head is now with the diaphragm facing downwards.**



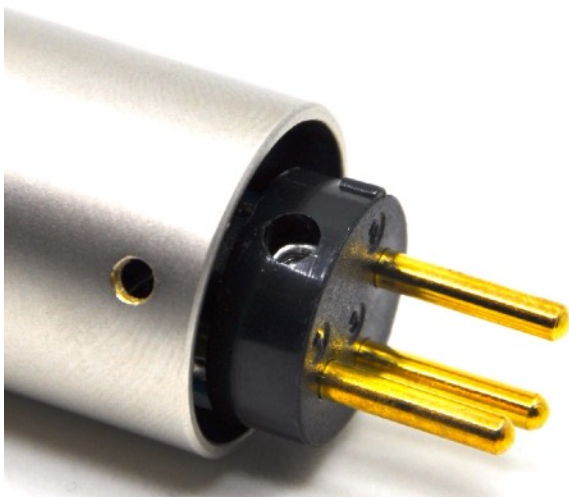
**Carefully clean the capsule connections with isopropyl alcohol.**





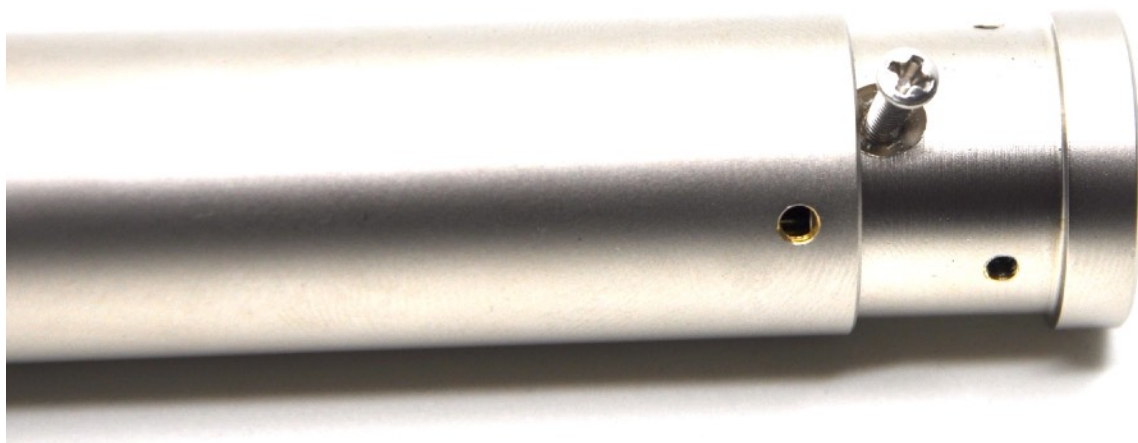
At this stage you can carefully connect the microphone to the preamp and measure the voltage on the XLR pins and on the different points of the circuit (on zener diode, on drain and source of FET).

Slide the microphone tube onto the microphone head part. Do not screw anything on. Note that the XLR insert sticks out because the cables from the capsule have enough slack (hence their min. 60mm length).





**Now screw the bottom of the microphone and the XLR insert together.**



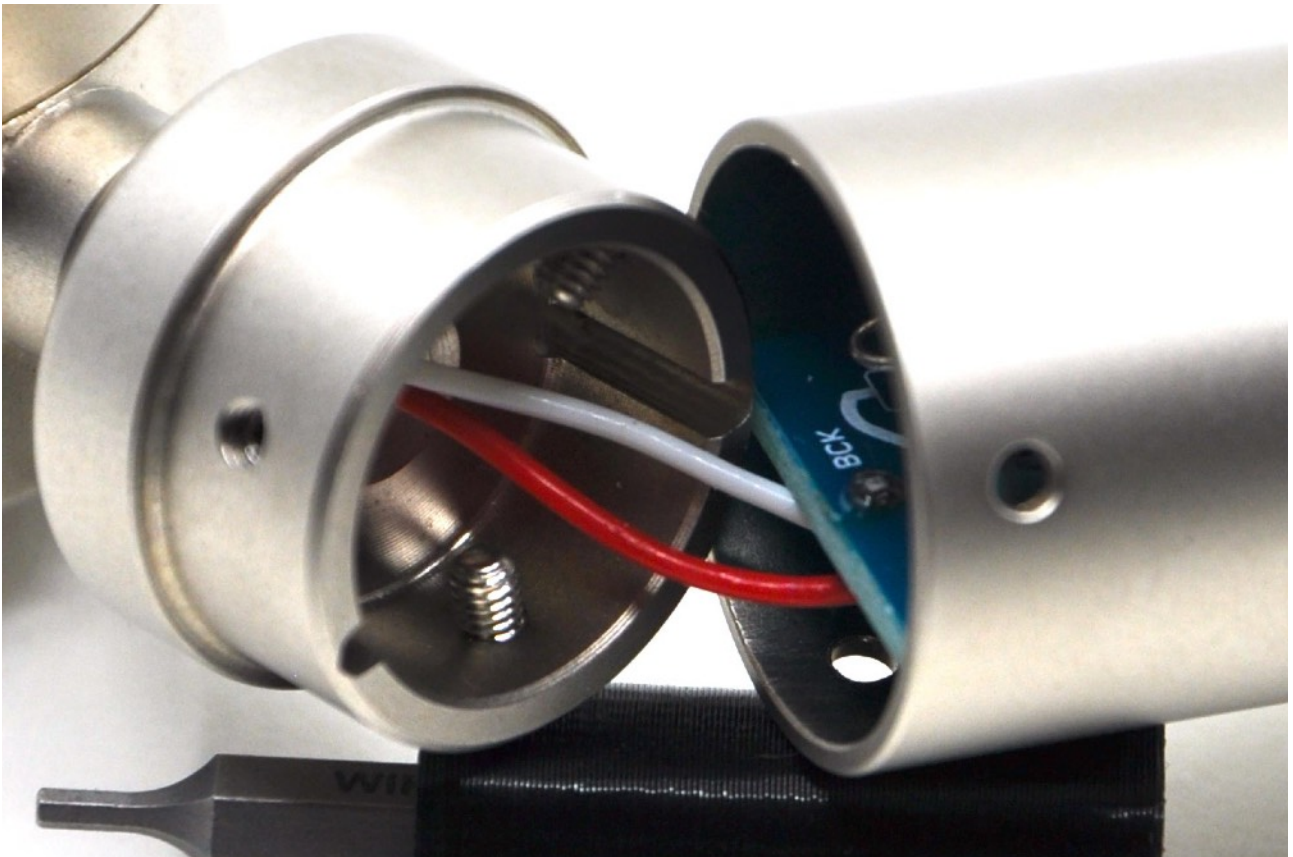
Carefully unscrew (= counterclockwise) the three hexagonal screws from the bottom out into the microphone tube. Again, be careful not to unscrew these screws all the way out of the tube. Screw them out only about to the edge of the microphone tube so that they do not protrude.



Now comes probably the most tricky part of the whole construction. Be patient and do it very carefully and slowly. You have to fit the circuit board into the two rails in the head section of the microphone and then fit the whole microphone tube.



**Before you close the microphone completely make sure that the circuit board fits snugly into the two cutouts (rails) in the head section of mic and that the microphone cables are not pinched anywhere.**



**Now that the microphone is completely closed, you can unscrew (= counterclockwise) the last three hexagonal screws. Again, make sure they don't come out through the microphone tube.**



**Congratulations. Your new microphone is now ready for sound tests.**







## WIRING INFO

- 1) Join pad 1 on the pcb via resistor leg to xlr "ground lug" (on connector insert) = its mic body to XLR1 pin (0V) connection.
- 2) Capsule wiring: Centre terminal wire (red) to teflon pin marked as FD from the bottom side of pcb. White cable from capsule to BCK pad on the mic pcb.
- 3) VM14 transformer wiring: Primary start cable (blue cable marked) to P+, primary end cable (blue cable) to P-, secondary start cable (red cable with mark) to S+, secondary end cable (red cable) to S-.
- 4) Its always great idea to check phase of DIY microphone against commercial microphone.

## ADDITIONAL INFO

- 1) Before starting to build the microphone, look carefully at the body and try to understand the whole system of how it is screwed together.
- 2) Be careful when screwing in the small screws that connect the internal parts of the microphone to the outer tube. Here is the opposite system than you are normally used to when screwing in the screws. When you want to remove the outer microphone tube, you need to screw the small screws inside the microphone. When you want to attach the tube you have to loosen the screws.
- 3) Take your time when soldering the xlr insert to pcb. You don't want to burn the plastic of the xlr insert. Take a break while soldering the individual pins.

# BILL OF MATERIAL

Part	Value	Tol.	Min. V olt.	Dimmensions	link 1	link 2	notes
<b>Resistors</b>							
R1	1G	10 %		6.5x2.5mm	<a href="#">mouser link</a>		
R2	1-25K	1 %			selected		* FET1 bias setup
R3	47K	1 %			<a href="#">mouser link</a>		
R4	10K	1 %			<a href="#">mouser link</a>		
R5	56K	1 %			<a href="#">mouser link</a>		
R6	2K21	1 %			<a href="#">mouser link</a>		matched to R7
R7	2K21	1 %			<a href="#">mouser link</a>		matched to R6

Part	Value	Tol.	Min. V olt.	Dimmensions	link	type	notes
<b>Capacitors</b>							
C1	10pF		50V		<a href="#">mouser link</a>	ceramic	feedback cap
C2	15pF		50V		<a href="#">mouser link</a>	ceramic	pad cap, not presented at pcb
C3	22uF		16V		<a href="#">mouser link</a>	electrolytic	
C4	1uF		50V		<a href="#">mouser link</a>	film	
C5	22uF		50V	6.3x5mm	<a href="#">mouser link</a>	electrolytic	No larger capacitor. 11mm long version won't fit.
C6	22uF		50V	6.3x5mm	<a href="#">mouser link</a>	electrolytic	

Part	Value			link 1	link 2
<b>Tranzistors</b>					
Q1	2N3819			<a href="#">mouser link</a>	
<b>Capsule</b>	TSB2555				
<b>Transformer</b>	VM14				
<b>Zener diode</b>	33V			<a href="#">mouser link</a>	
<b>Others</b>					
<b>Teflon pin</b>	1 stick included in kit			<a href="#">mouser link</a>	
<b>Cables</b>	2 pcs included in kit				

