VAMISOUND

THE SOUND
IS YOURS

Schoeps electret

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 SCHOEPS ELECTRET BUILDING INSTRUCTIONS

WE SOUND BETTER

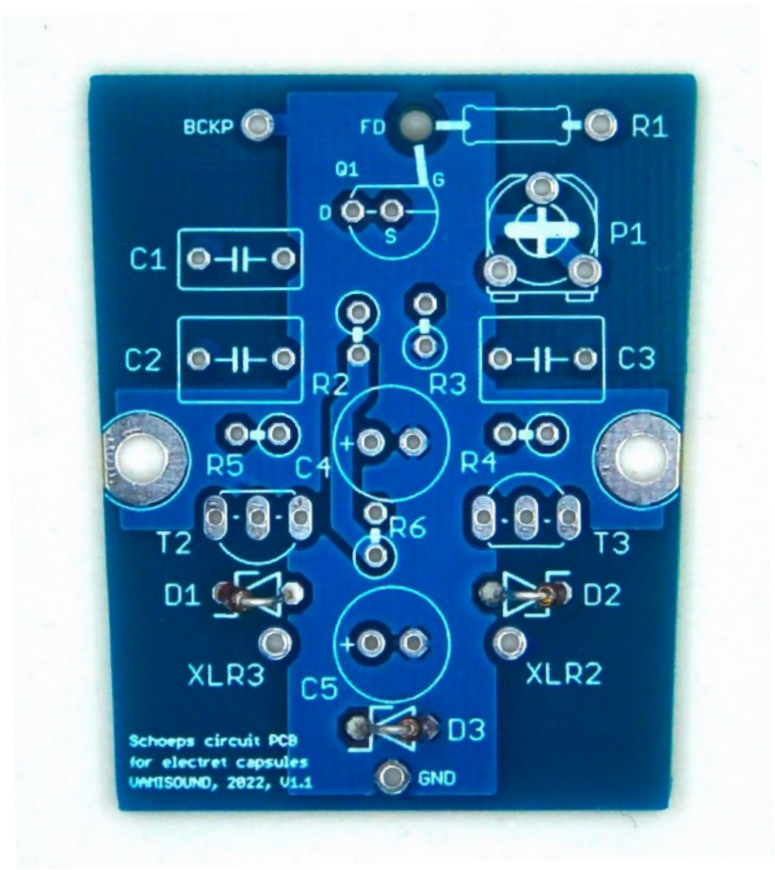
Before you start building your new microphone please carefully read this building instructions.

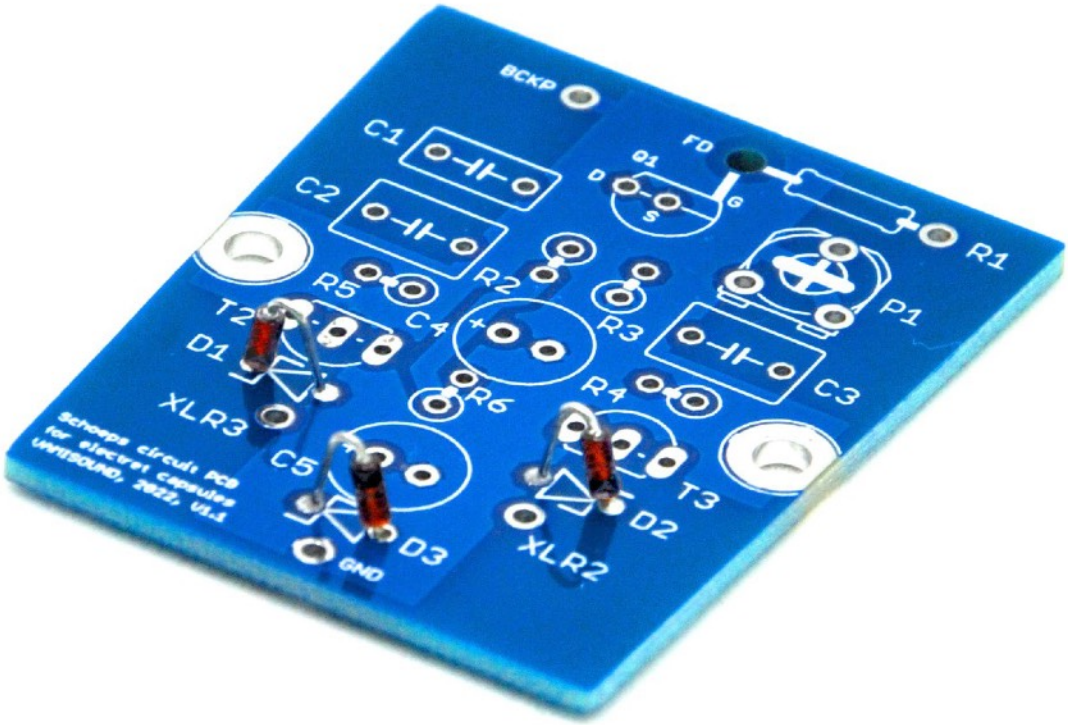
Attention: Schoeps electret is a quite easy project. The circuit is made up of only a few components. However, it should be borne in mind that certain manual skills will be required or the successful completion of the mic construction. Good soldering experience and soldering stations with fine soldering 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	Schoeps electret building instructions
Document revision	1.1
PCB revision	1.1
Date	December 2023
Project difficulty	★★★☆☆
Complexity of soldering	★★★☆☆
Risk of electrick shock	★☆☆☆☆
Changes and notes	07.12.2025 – D5 changed to D3

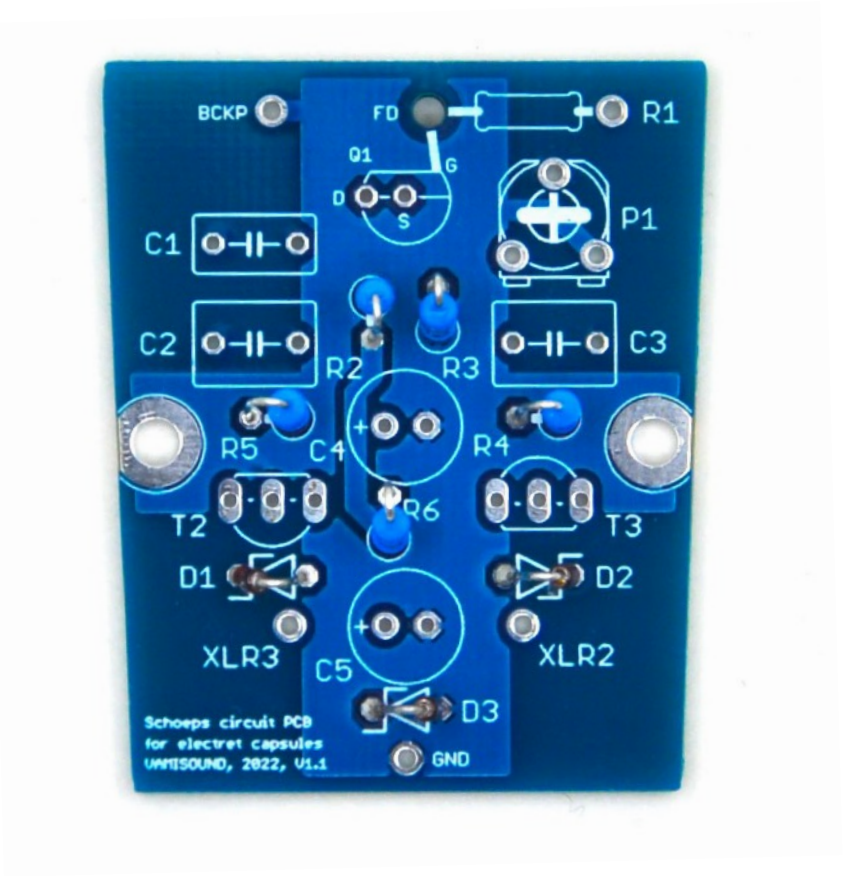
The Schoeps electret board allows you to build a microphone that is based on the circuitry from the legendary Schoeps small diaphragm microphone. However, thanks to a small modification of the circuit, it can use a electret capsule. The circuit is frequency flat, with no internal equalizer.

Start by fitting the smallest components which are the zener diodes D1, D2 and D3. Keep in mind that these are components that have polarity, so their correct placement matters. The black stripe on the zener diode indicates the cathode. The cathode points to the line on the footprint of the component.

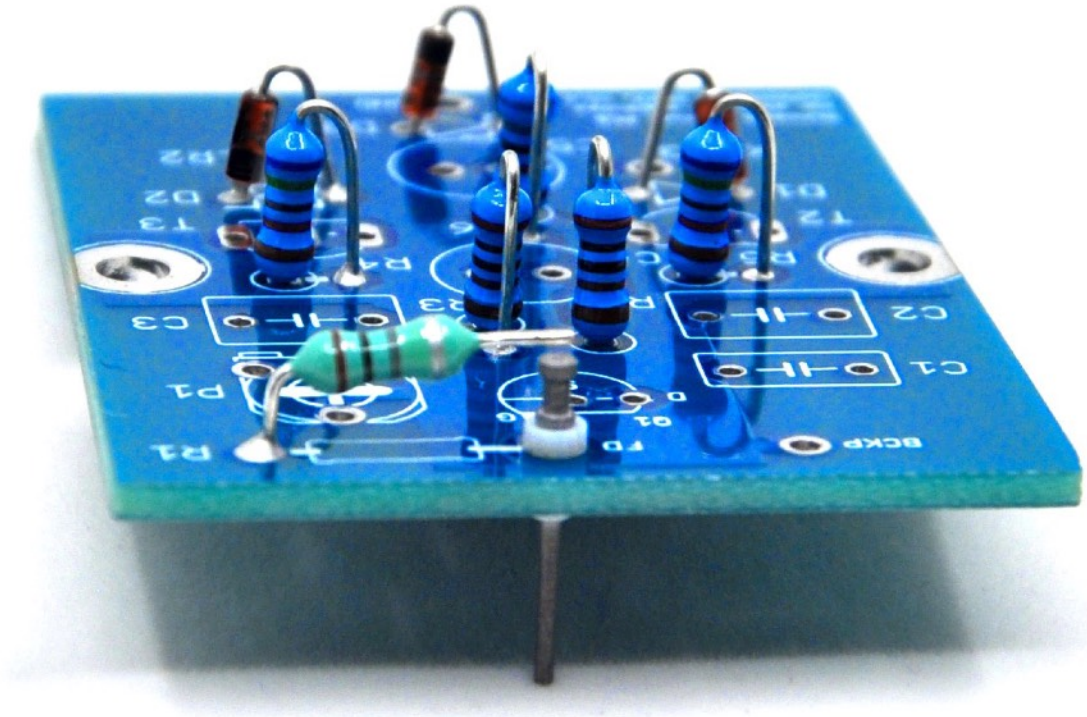




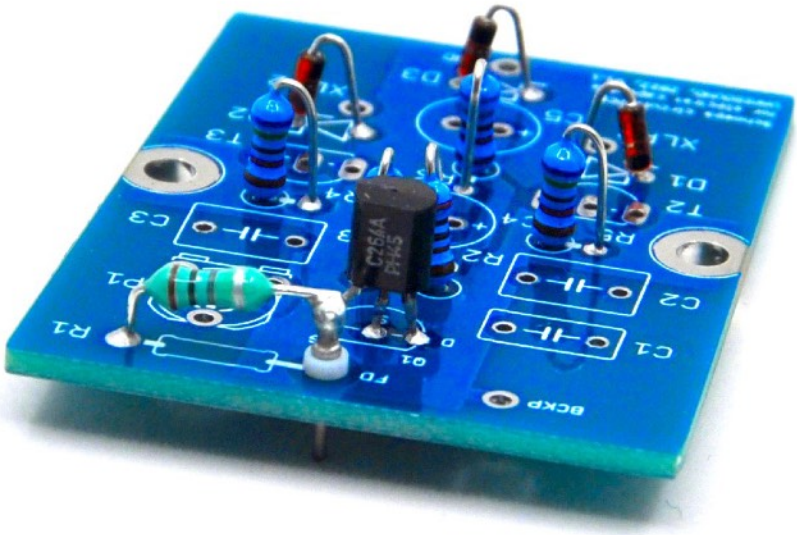
Continue by soldering resistors as in the picture. R2 and R3 form a matched pair, the same for R4 and R5.



Install the teflon pin and the remaining R1 that feeds into it as if in air.

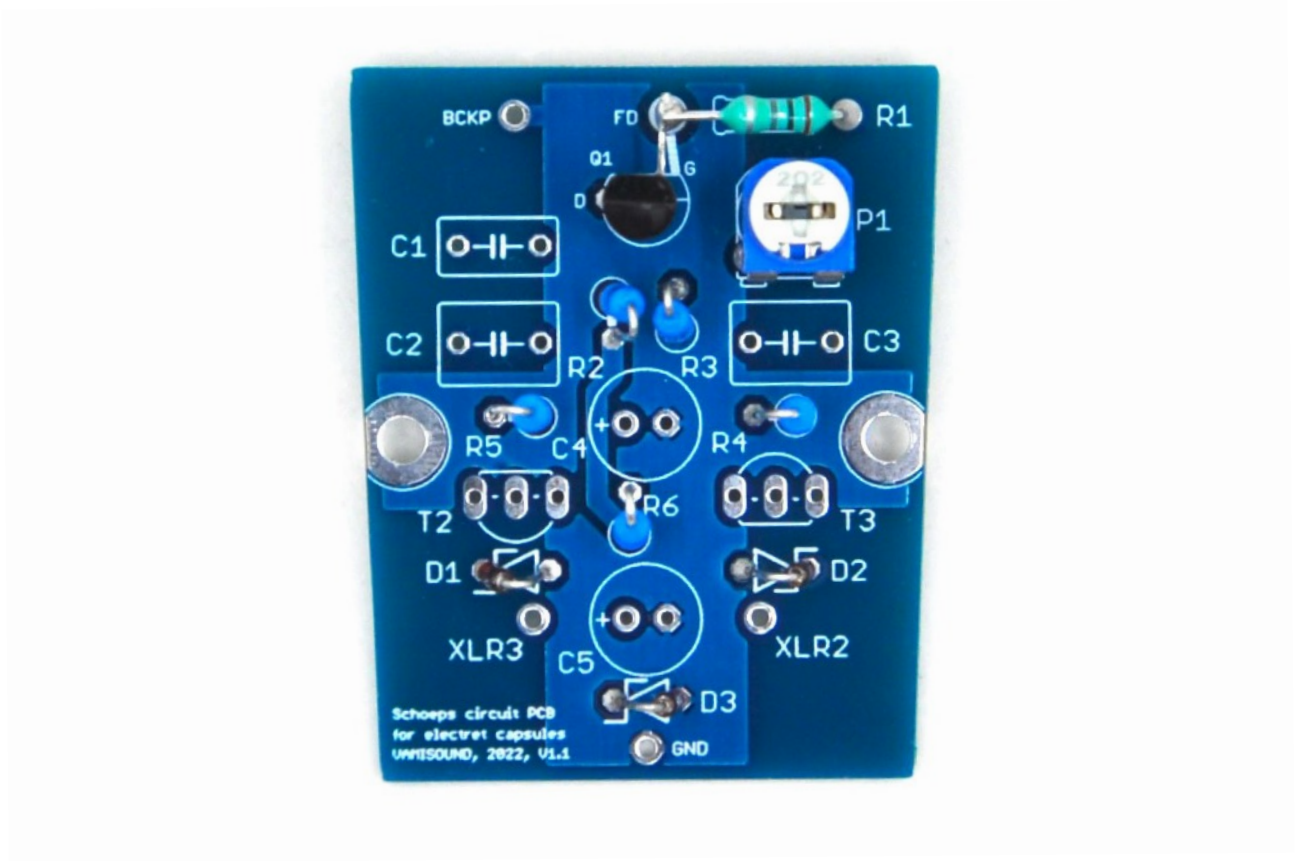


Continue by installing the FET transistor. I chose the original BC264, whose GATE leg is on its edge. If you choose another FET, keep in mind that the GATE leg may be elsewhere. Always check this against the data sheet of the particular FET transistor. Note that the GATE leg is also soldered in the air to the teflon pin.

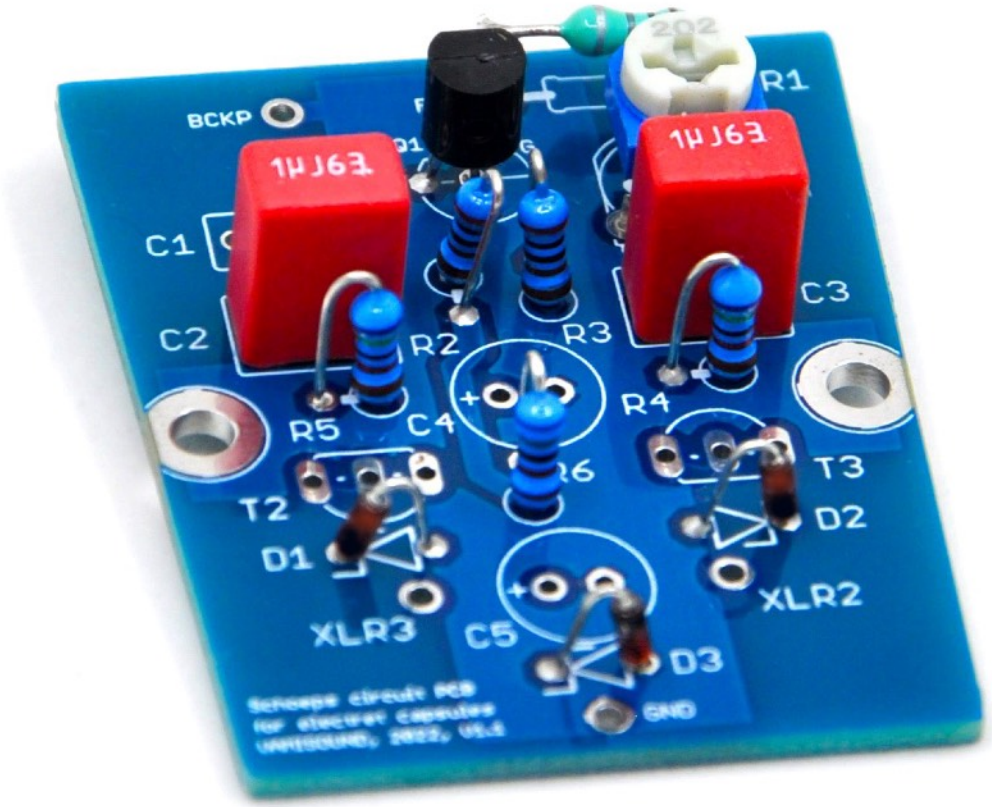


Notice that on the board around the footprint of the FET transistor there are small marks D, S and G (= drain, source and gate). Make sure that the selected FET transistor uses the same footprints. If necessary, adjust according to the markings on the board. Gate leg of FET transistor solder to teflon pin as if in air. Q1 pcb footprint on the board match BC264 (original Schoeps FET) pin out. If you plan, for example, to use 2N3819 FET tranzistor keep in mind that the GATE pin is the middle one (always check it against the FET transistor datasheet).

Next up is P1 trimmer resistor near the FET transistor.



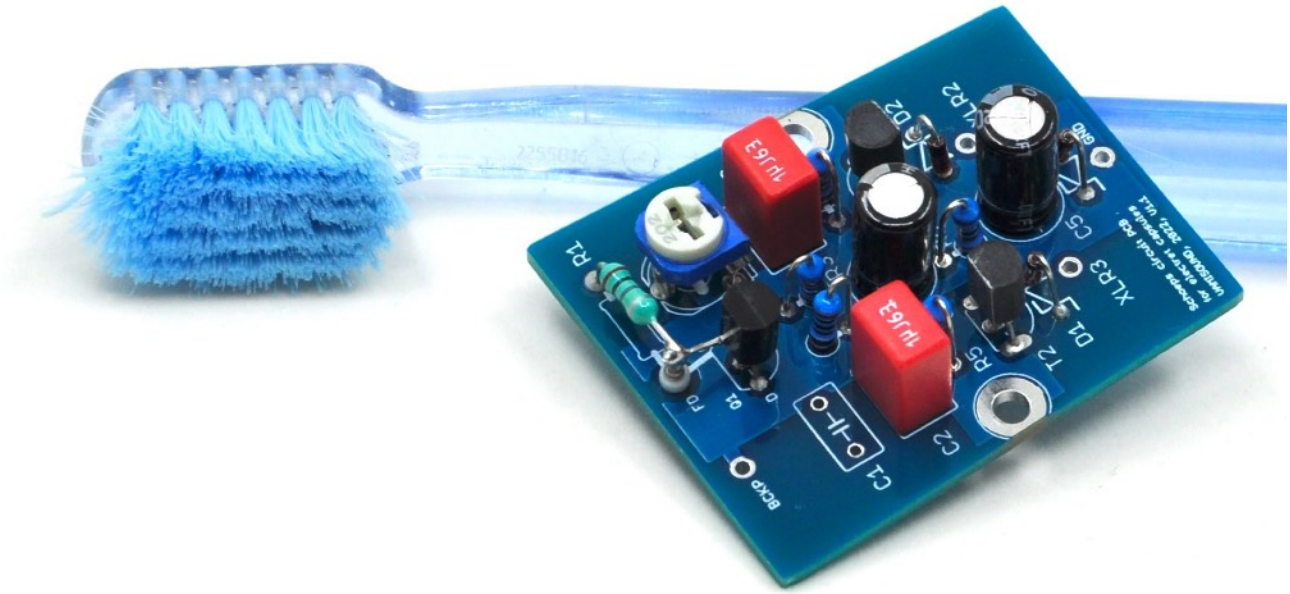
Now solder the two film capacitors. Note that the C1 position remains unoccupied. C1 forms the LPF for very bright capsules. You can experiment with values of round 22nF if needed.



Continue with the installation of two transistors T2 and T3. Before that, match the HFE parameter on these transistors. Most multimeters have a socket for the transistors and can therefore measure the base HFE parameter.

Two electrolytic capacitors remain to be installed.

Clean the back of the board thoroughly with a brush and isopropyl alcohol to keep it perfectly clean and free of soldering debris.



Now comes probably the most challenging stage of the build and that is installing the RF filter on the XLR connector insert. Take two 2.2nF ceramic capacitors. Solder the first one between pin 1 of the XLR connector insert and pin 2, and the second one between pin 1 and pin 3 of the XLR connector insert.

Then output two 47uH inductors from pin 2 and pin 3 of the XLR connector insert as seen in the photo.

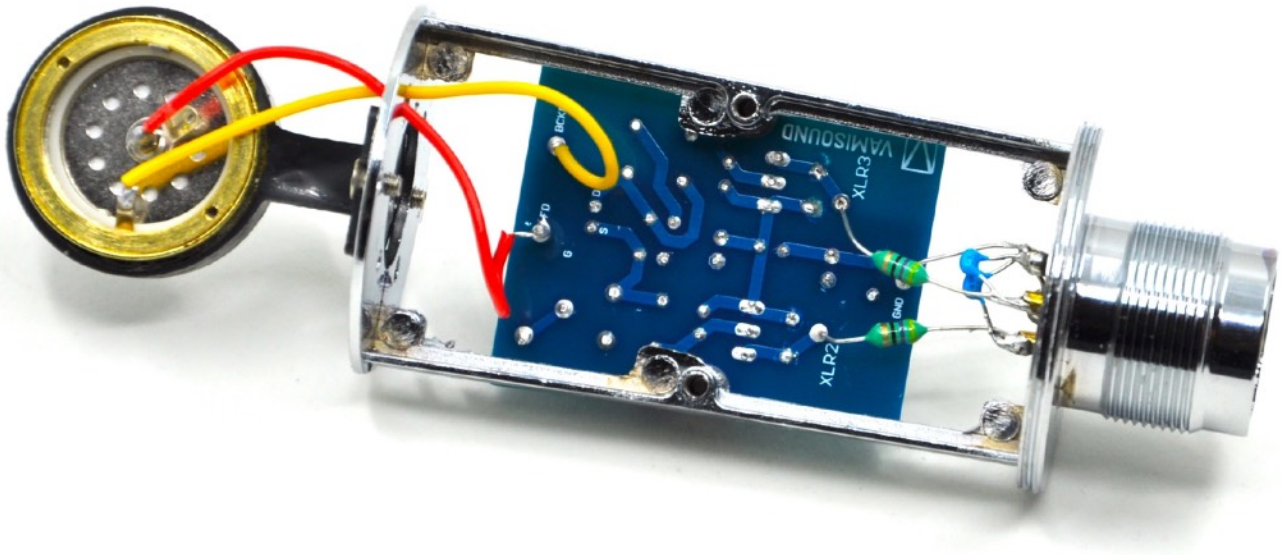
Do not forget to connect pin 1 of the XLR connector to the ground loop (also located on the connector insert).

What must be added is that the microphone can function even without this filter. So there is nothing stopping you from trying the microphone without it. In this case, just connect pin 1 of the XLR connector to the GND pad on the board, pin 2 to the XLR 2 pad on the board and pin 3 to the XLR 3 pad on the board using a cable. If you have a problem with signal interference, you can finish the filter later.

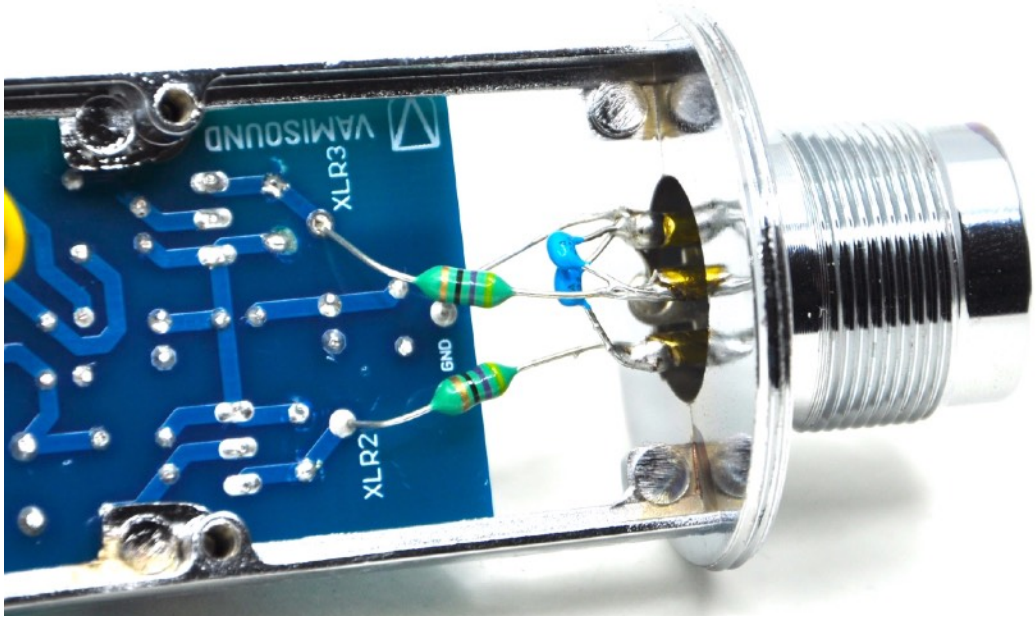
Now continue the build by screwing the XLR insert, electret capsule (without internal FET transistor), its stand and board to the microphone chassis.

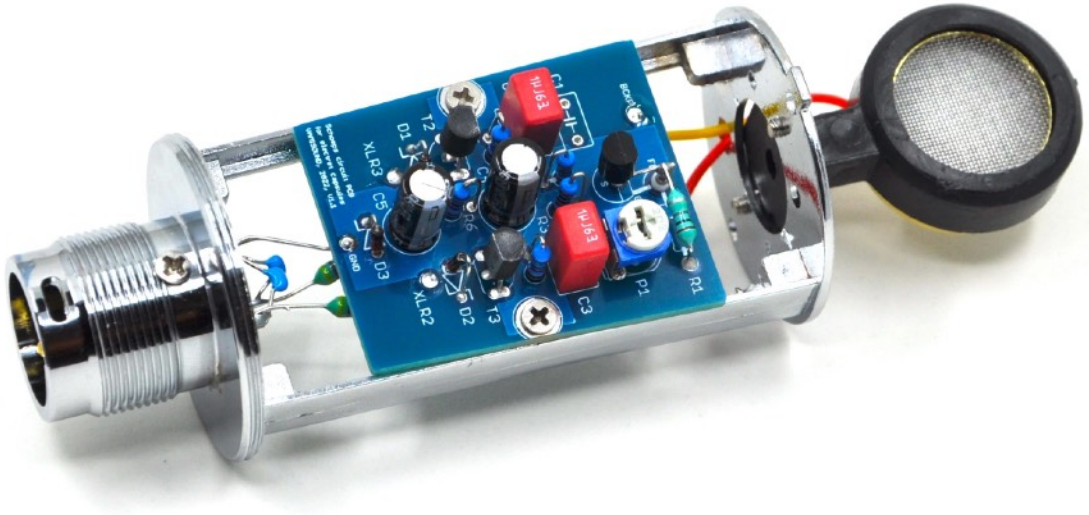
Solder the center terminal of the capsule to the teflon pin (red cable in the picture) and the remaining cable to the pad named as BCKP on the board.

Also solder the protruding leg of the inductor leading from the XLR2 pin to the pad marked XLR2 on the board, then do the same with the other inductor (from the XLR3 pin to the XLR3 pad on the board). Then solder the last cable from the XLR1 pin to the GND pad on the board.



Here a detail of the XLR insert and its .





Put the head basket on the microphone and you can proceed to the first test of the microphone. Connect the microphone via cable to the preamp and activate phantom power.

As for the P1 trimmer, set it so that you measure about 4.5V on the drain leg of the FET transistor and 6.1V and the D3/R2 point. Please check the original schematic (Schoeps CMC3) for more info about operating voltages.

Congratulations, your new microphone is now ready to serve in your studio!

WIRRING INFO

1) **Electret capsule wiring: Center terminal cable to teflon pin marked as FD from the bottom side of pcb. Cable from capsule backplate to BCKP pad on the mic pcb.**
2) **Its always great idea to check phase of DIY microphone against commercial microphone.**

ADDITIONAL INFO

Take you time when soldering the XLR insert. You don't want to burn the plastic of the XLR insert. Take a break while soldering the individual wires.

BILL OF MATERIAL

Part	Value	Tol.	Min.Volt.	Dimmensions	link 1	link 2	notes
Resistors							
R1	1G	10 %		6.5x2.5mm	mouser link		
R2	2K	1 %		6.3x2.4mm	mouser link		matched to R3
R3	2K	1 %			mouser link		matched to R2
R4	75K	1 %			mouser link		matched to R5
R5	75K	1 %			mouser link		matched to R4
R6	6K8	1 %			mouser link		
P1	1M	20 %			tayda link		trimmer

Part	Value	Tol.	Min.Volt.	Dimmensions	link	type	notes
Capacitors							
C1	22nF		50V		mouser link	film	forms LPF
C2	1uF		50V		mouser link	film	
C3	1uF		50V		mouser link	film	
C4	47uF		50V		mouser link	electrolytic	
C5	220uF		16V		mouser link	electrolytic	
C6	2.2nF		50V		mouser link	ceramic	filter on XLR
C7	2.2nF		50V		mouser link	ceramic	filter on XLR

Part	Value	Tol.	Min.Volt.	Dimmensions	link	type	notes
Diodes							
D1	6.2V				mouser link	zener	
D2	6.2V				mouser link	zener	
D3	6.2V				mouser link	zener	

Part	Value	Tol.	Min.Volt.	Dimmensions	link	type	notes
Inductors							
L1	47uH				mouser link		filter on XLR
L2	47uH				mouser link		filter on XLR
Tranzistors							
Q1	2N3819				mouser link		alternative BC264, PCB footprint match BC264 pin out
T2	BC559C				mouser link		alternatives: 2N5087, BC560 HFE matched to T3
T3	BC559C				mouser link		alternatives: 2N5087, BC560 HFE matched to T2
Other							
Capsule	electret capsule without internal FET – two wire electret capsule						
Teflon pin					mouser link		