

Z-7K Coil Adapter Instructions

Thank you for purchasing an X-Coil, the first and best aftermarket coils available for the Z-7K. With our great range of shapes and size coils available for the Z-7K you can bring your detector back to life on previously hunted out ground or get your coil into places the standard OEM coils weren't suitable for. Other Z7K coils are available at our webpage www.x-coils.com, we also have a large range of coils for the PI and QED metal detectors.

Before you can get started using your new Z-7K X-Coil an adapter needs made to connect the coil to the metal detector. This is because the original coil has a chip inside the coil cable that prevents any other coils being connected to the detector. The Adapter cable uses the chip out of your existing coil to allow other coils to be used on the detector, once you've made this adapter, you'll be able to use the full range of Z-7K X-coils along with the original 14" and 19" coils. This adapter is only required for the Z-7K.

X-Coils made for the PI Detectors work without an adapter on the PI and QED detectors.

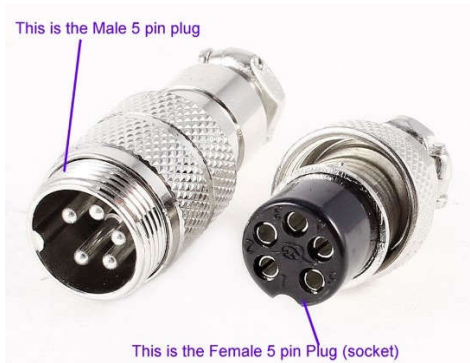
The adapter does require some soldering skills and careful construction, if you're not comfortable doing this yourself it's highly recommended you contact a local electronics repairs store who should be able to make this adapter for you for a small fee. We cannot be held liable for an incorrectly made or poorly made adapter or any damage you cause doing this, however when made to specifications your adapter will give you many years of enjoyable detecting.

The inventory of items you will require to construct your Adapter cable:

Side cutters to cut the wire, wire stripper, a small length of fine copper wire 32 gauge or similar, a small screw driver, a soldering station with temperature control, flux core solder, heat shrink tube that fits over the plug and some smaller heat shrink for the wires, preferably dual wall heat shrink for the added adhesive, lighter or hot air gun for the heatshink, a hot glue gun with non-conductive glue sticks and one set of male and female inline microphone plugs. These can be sourced at many electronics stores however if you're having trouble finding the plugs they're readily available on Ebay or at Altronics in Australia with a typical cost of around ten Australian Dollars at the following web addresses

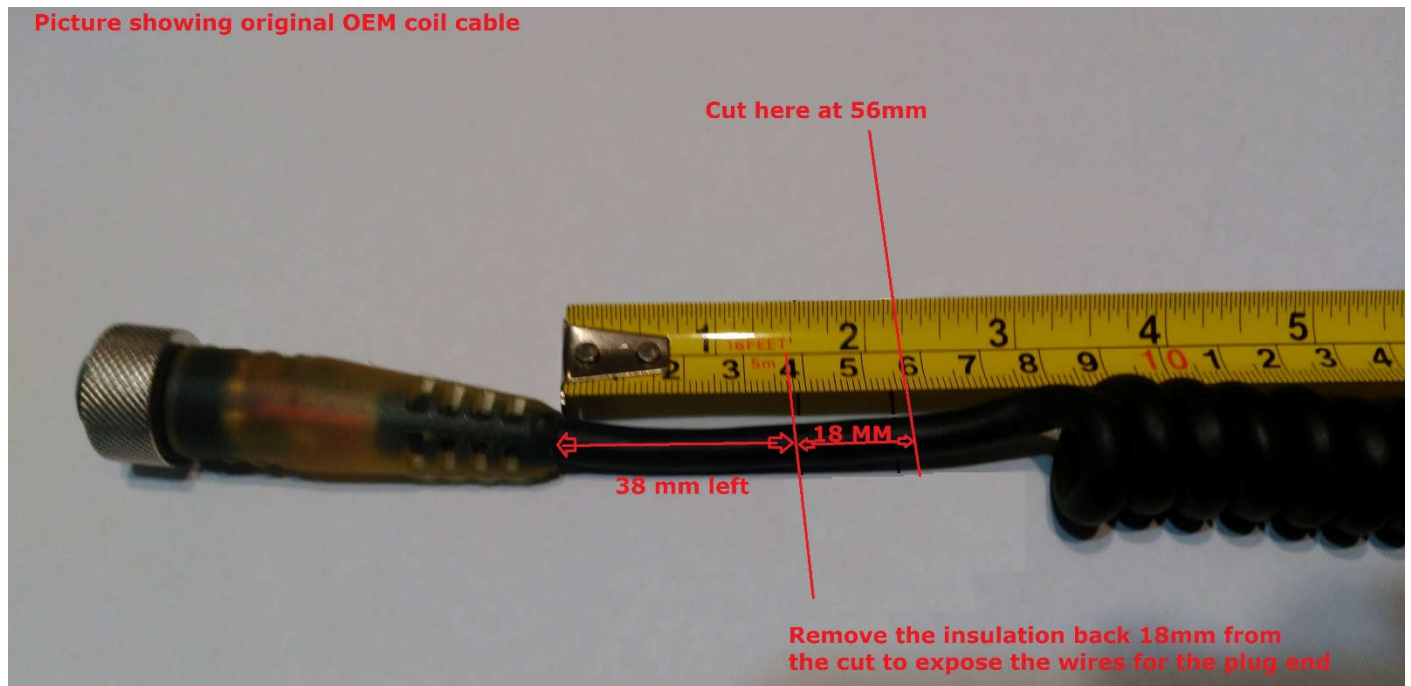
<https://www.altronics.com.au/p/p0951-5-pin-female-line-microphone-connector/>

<https://www.altronics.com.au/p/p0946-mic-connector-5-pin-line-plug/>

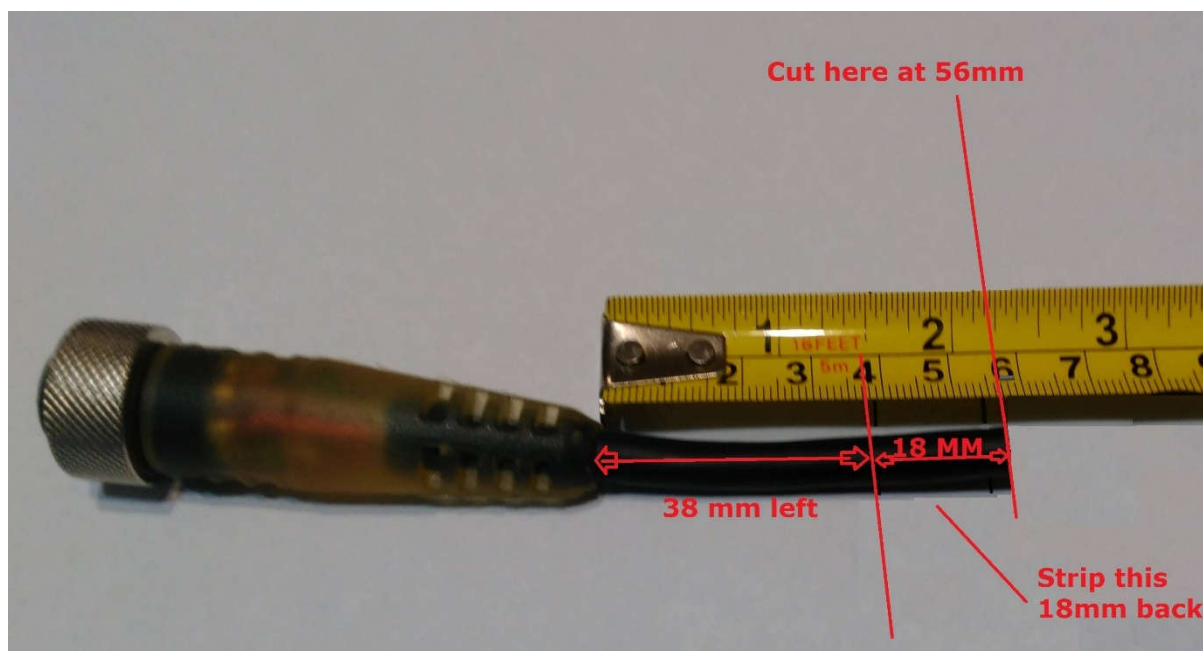


Step 1:

The first step involves cutting your original OEM coils cable at a precise location. Below is a diagram showing where to perform the cut, at exactly the 56-millimetre mark from where the end of the larger plug cable connects to the wire.



You then need to strip the insulation back from where you've performed the cut 18mm. Very carefully remove 18mm of insulation (shielding) from the end of the cable. Be extra careful when stripping the insulation from the individual wires at exactly the amount shown in the images.



Step 2:



This is how your cable will look after stripping back 18mm. Remove a small amount of insulation from each wire very carefully, don't remove too much insulation, just enough to do the job. Once the insulation is removed, you'll see most of the wires have a red varnish which needs to be removed for the solder to stick to the copper wires. Do this with the tip of your soldering iron, it will melt away at about 320 degrees. If the varnish is left on the wires will be very difficult to solder and may not bond well so it's essential you remove the varnish off the wires.



You'll see in this photo the red varnish on the wires once they're stripped back ready for soldering, it's essential this varnish is burnt off the wires prior to tinning so ensure good solder adhesion. Use the soldering iron tip to burn the varnish off the red coloured wires. It is essential all varnish is removed prior to soldering to prevent solder adhesion failure.

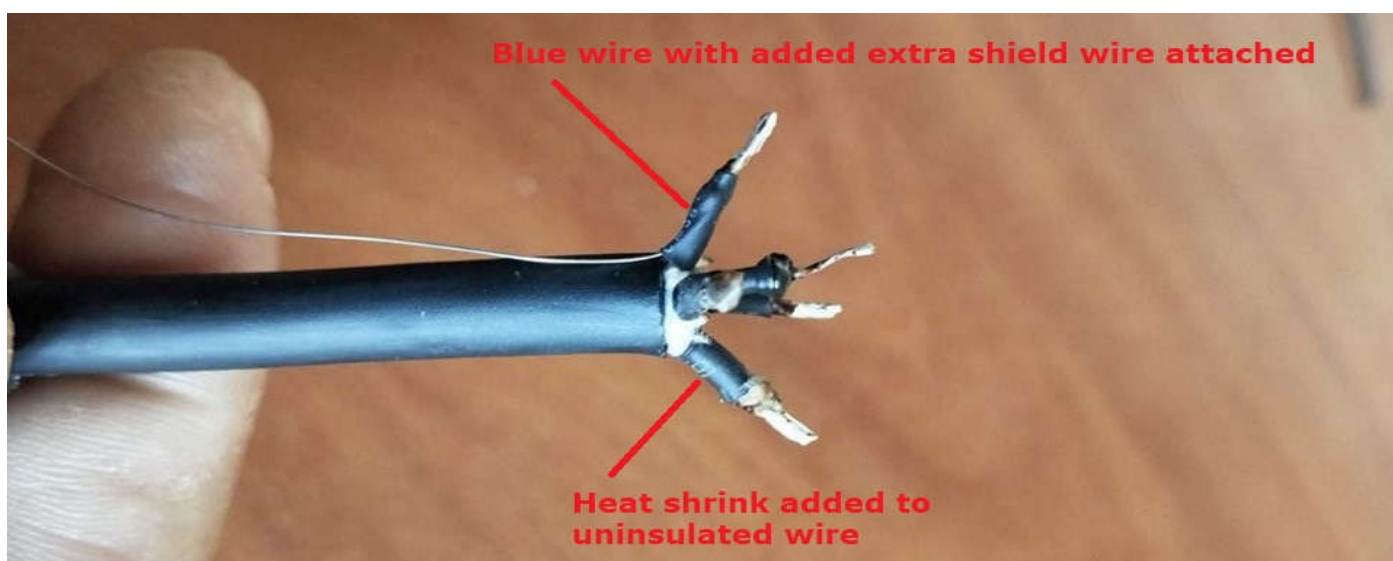


You should also 'tin' both contacts before you attempt to solder them. This will coat the wires or connector contacts with solder so you can easily melt them together. Make sure there are no loose strands of wire during this process.

To tin a wire, apply the tip of your iron to the wire for a second or two, then apply the solder to the wire. The solder should flow freely onto the wire and coat it (if it's stranded wire the solder should flow into it, and fill the wire). Be careful not to overheat the wire, as the insulation will start to melt and can shrink back if heated too much and expose more wire than you intended.

At this point we it's recommended that you add some small thin heat shrink to the wires that are uninsulated to prevent them from touching anything they shouldn't.

This image below displays the wires ready to be soldered to the microphone male plug after tinning with the heat shrink added to them to help prevent any shorting.



You can watch a YouTube video on this process with this link:

<https://www.youtube.com/watch?v=921OAMLpaWc&feature=youtu.be>

You also need to use a spare piece of stripped wire to make up the shield wire that extends out from the adapter into the metal external housing of the microphone adapter to shield the adapter plug. You'll note we have attached it to the blue wire located at the top in the photo above and fed it down under the heat shrink.

Step 3:

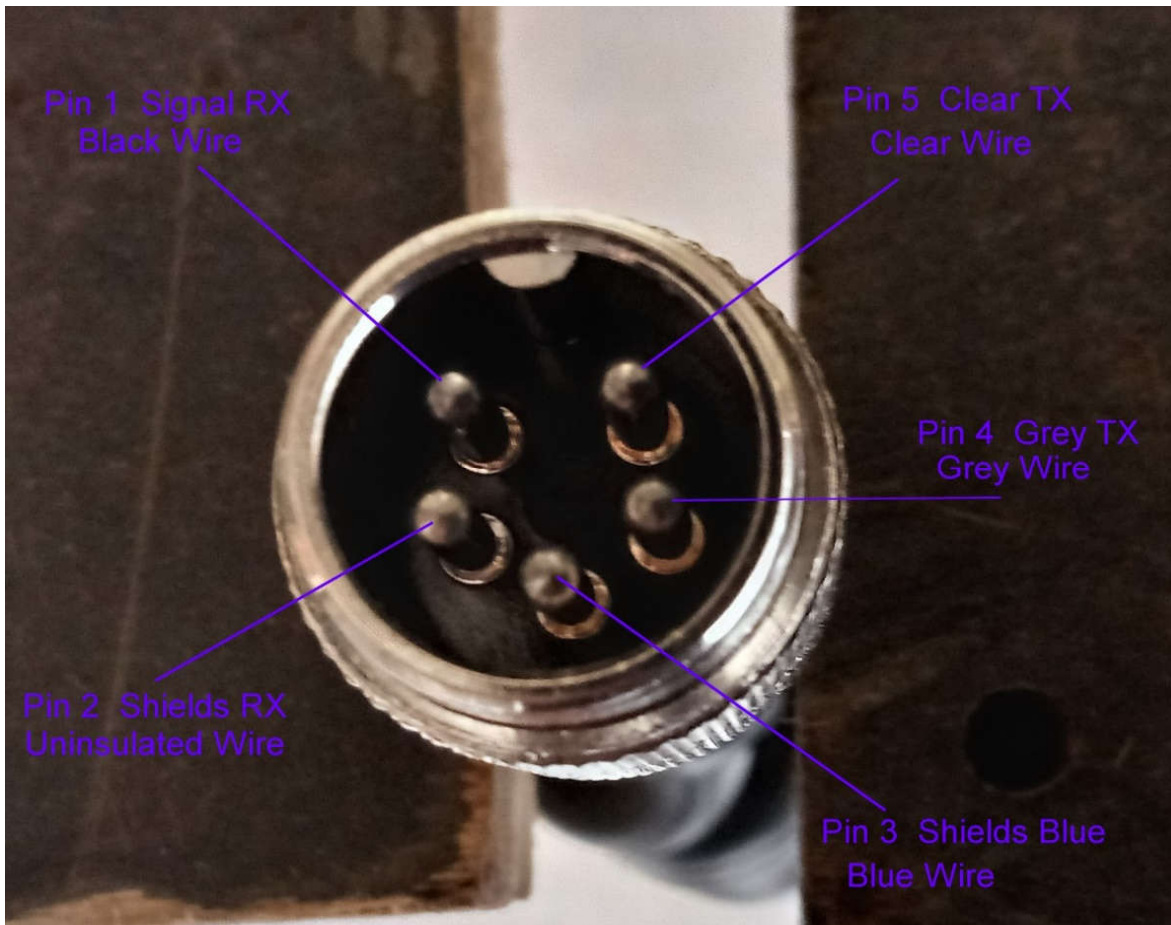
The next step involves soldering the pre tinned wires onto the correct pin locations on the male inline microphone plug. It is vital you solder the correct wires to the correct pins. Also included with the microphone plug maybe some clear plastic tubing to prevent shorting on the metal housing of the plug, this isn't required and is replaced with heat shrink.



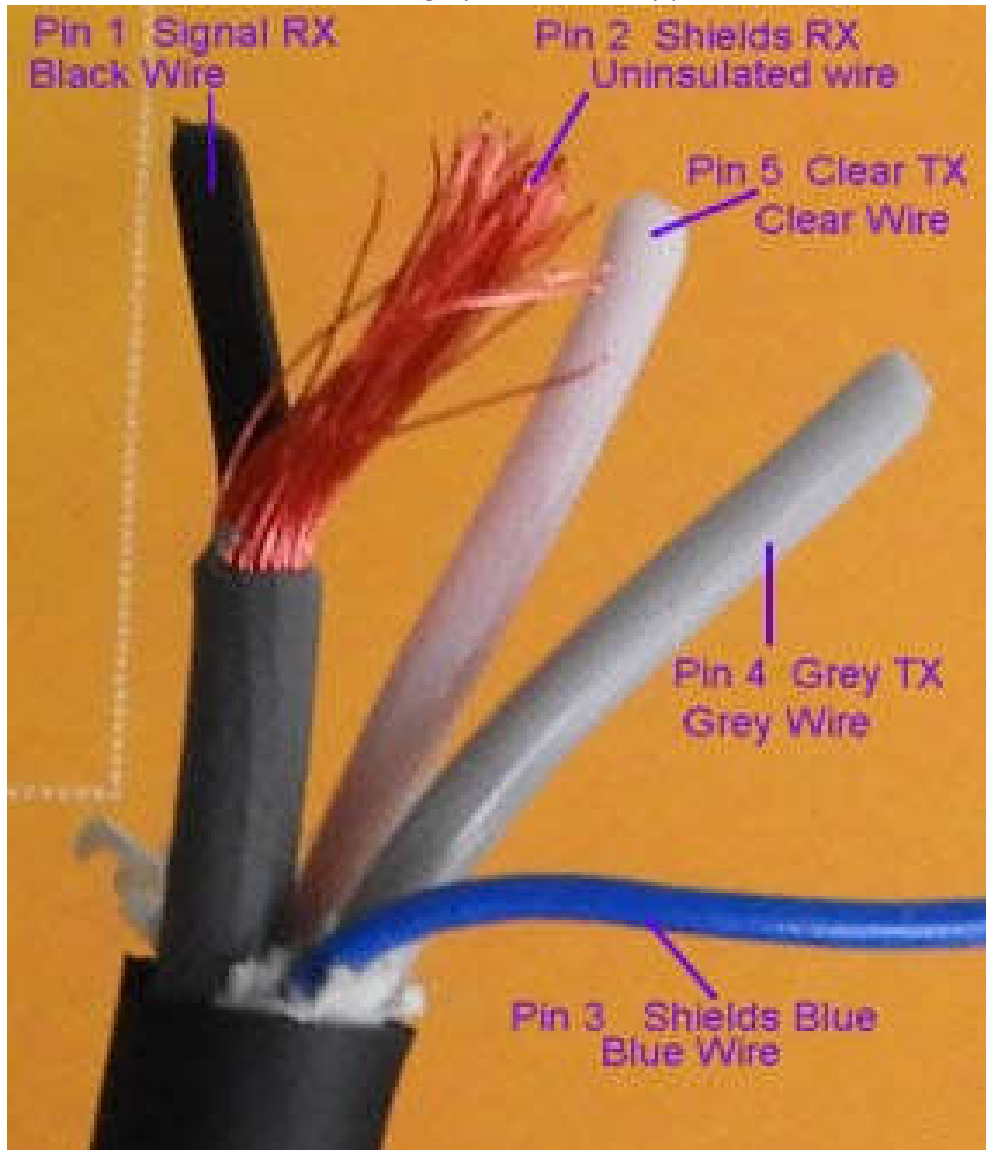
Ensure you've placed the required heat shrink and plug housing over the wire before soldering.

You need to be neat with your soldering as there is not a lot of room between the wires and the exterior housing of the plug especially the thicker wires so you can't have big blobs of solder, however because you tinned both the wire and the connectors on the plug end you should get a neat connection quite easily.

Also, it's important you have the screw end cover of the microphone plug on the wire before you start soldering the wires or else you will have to start all over again as you can't put it on once soldering has begun.



Follow the image to solder the wires into their correct locations. Pin 1 needs the black wire, Pin 2 the uninsulated wire, Pin 3 the blue wire, Pin 4 the grey wire and finally pin 5 is the clear wire as display in the following image



The above image gives you a clear descriptive instruction of each wire and corresponding pin.

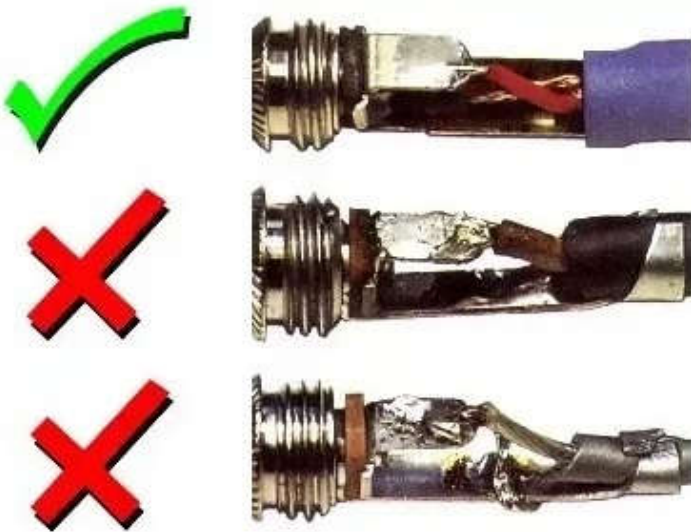
Once you're confident you've soldered all 5 wires correctly and you've got your shield wire that will run externally out of the microphone plug adapter to shield the external housing of the plug fitted and run under the heat shrink, you're ready to solder the wires to the microphone male plug.

You'll see in the photo below we added a ground wire for the adapter on the connection to Pin 3 with blue wire. It has an added length of small copper wire stripped of its insulation, make sure it's not going to short on any other wires and feed it directly out the back of the plug connector. Hold it in place with some hot glue now ready for the next step.

The photo below shows the stage you should be at now, All the wires are soldered to their associated pins, unshielded wires have heat shrink over them to keep them protected from touching any other wires and the blue wire on pin 3 has the extra added ground wire glued to it and has been fed out the rear of the microphone adapter.



You should now be able to check all the wires to ensure no stray wire is touching any other wire or pins causing any shorts, this is very important. Your solder should be smooth and shiny, not rough. The image below demonstrates what a good solder connection should look like.

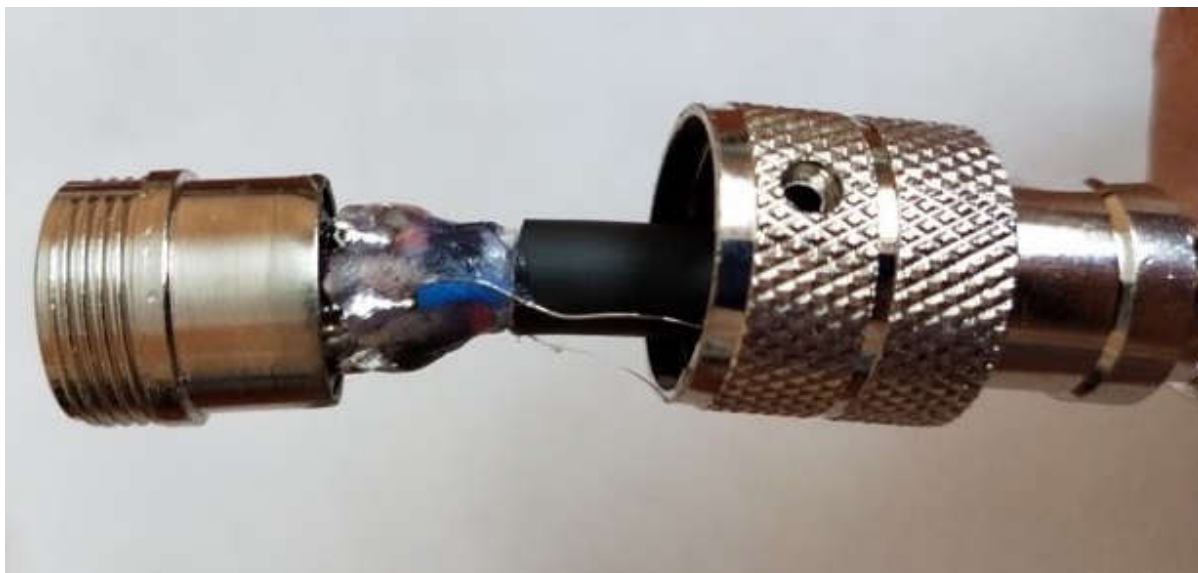


Step 4:

You're almost done, now double check everything to ensure all pins have the correct wires joining to them and there is no chance of shorting with stray bits of wire. Also ensure the solder has bonded well to each pin.

The hot glue gun is to place hot glue in amongst the wires after they are soldered into position to keep them stable and help with shielding. Heat up the glue gun and squeeze out some glue over the connectors solder joints and while the glue is still hot and malleable squeeze it in and mould it into shape around the wires with your fingers, the glue goes hard fairly quick so don't waste time doing this. You can reheat the glue with a heat gun carefully if it goes hard to soon and needs reshaping.

Once the hot glue is in position and heat shrink applied over it slide the screw end up over the solder joints of the plug and screw up the plug adapter together tightly. You should have a little shield wire you've added coming out of the plug end, now you can trim this off so it's not sticking out too far.



In the above photo the hot glue has been applied, all pins and wires were checked for shorting and the ground wire is coming off the blue wire out to the back of the microphone plug. We now need to shrink the heat shrink we've got waiting on the cable over the top of the hot glue.

We now slide the length of heat shrink tube we have over the glued area and gently shrink it onto the plug until tight using a lighter or the heat gun off your solder station, don't over heat the Z-7K plug end as this is where the chip is and you don't want it destroyed so don't hold excessive heat on the heat shrink, generally start at one end of it and work your way along with it shrinking as you go.

If you've used dual wall heat shrink the heat shrink acts as a glue giving the adapter even more strength.

Information on dual wall heat shrink can be found here <https://www.te.com/usa-en/products/heat-shrink-tubing/dual-wall-heat-shrinkable-tubing.html>



The heat shrink is now tightly down over the hot glued pins, the ground wire is coming out the rear of the heat shrink, it needs to make contact to the external metal housing of the microphone plug adapter to provide it shielding.

Now you just need to screw the rear cover over to seal up the plug and you've completed making the adapter.



The last step we take to add strength is to wrap the entire adapter in a tough tape, you can use any tape you prefer, electrical tape is an easy choice. There are plenty of good quality strong adhesive tapes you could use for the task, the other option is some large dual wall heat shrink that fits over the plugs to shrink down onto the adapter.



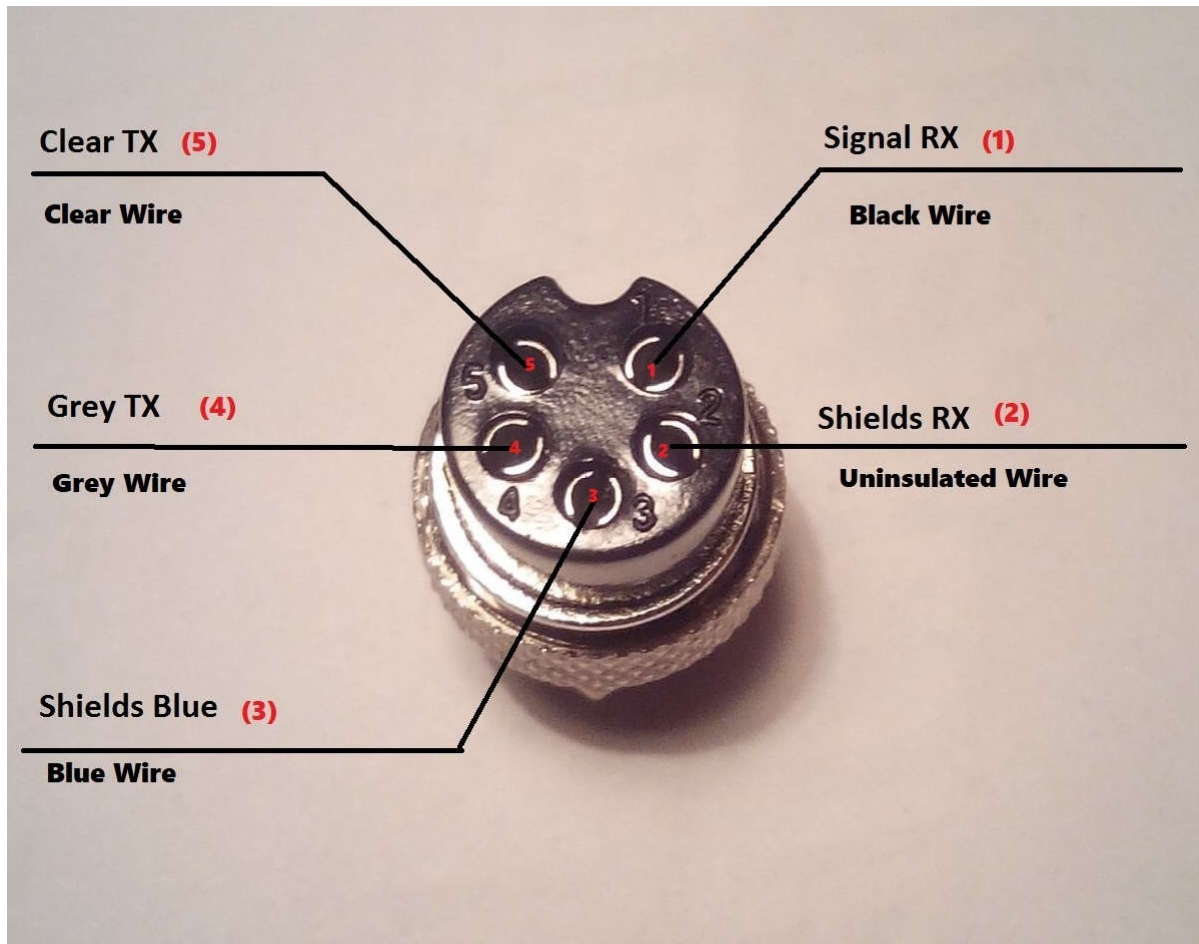
You're now ready to start using your X-coil, Well done.

PLEASE NOTE: Z-7K X-coils only work on the Z-7K Metal Detector. The QED and PI X-coils will not work on the Z-7K, DO NOT attempt to plug a PI/QED X-Coil into the Z-7K as serious damage will occur. Do not attempt to plug Z-7K X-coils into the PI or QED Detectors either as this will also cause serious damage. The PI and QED use the same coils so can be interchanged.

Adding a plug end back onto the Z-7K OEM Coil so it can be used with the new adapter.

Now that you've made your adapter you may find on rare occasions you want to go back and use your OEM Z-7K coil but you've cut the end off it to make the adapter, this is no problem as you can add an end back onto it to allow it to connect to the adapter just like your X-coil does.

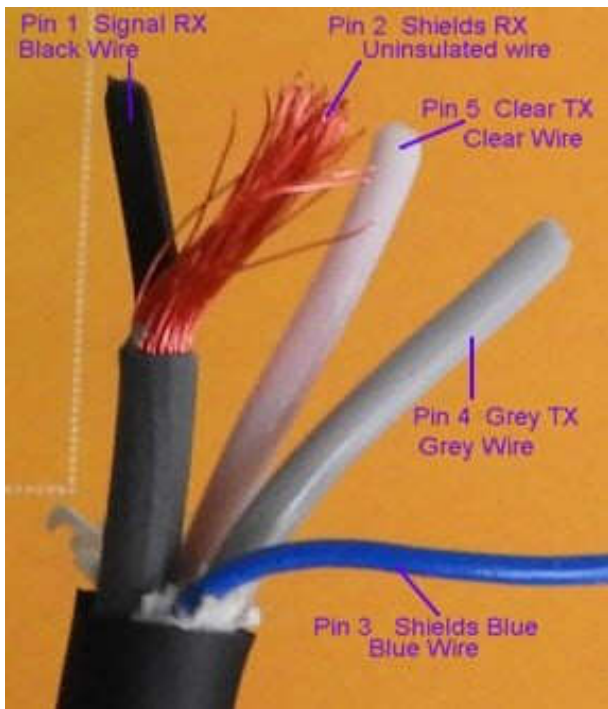
The wiring for this is basically a reverse of the other male plug you made for the adapter this time using a female inline microphone plug as demonstrated in the picture below.



We now need to make the opposite mirror image of the male plug you made on your adapter with the female microphone inline adapter plug end using the image above to associate pins to sockets.

When plugged in Pin 1 goes to Pin 1 and Pin 5 goes to Pin 5. Ensure you understand this step before adding the plug end back onto your coil.

Again, make sure you put the rear cover screw end of the plug over the wires before soldering along with the heat shrink tube to ensure no shorting of the wires.



The image above is a reminder of the wires associated with each pin number.

Solder all the wires from the cut coil cable onto the correct associated pins and once again apply hot glue and mold it over the connections to ensure a firm secure connection and then screw the adapter together.



You can now use your original Z-7K coil which you cut the end off by using the adapter for your X-coils. If you have another size OEM Z-7K coil without the end removed, you'll be able to use it as per normal without the adapter.

You're able to test that you've done this end correctly by using a multi-meter. Turn your multi-meter into Continuity Test mode, Pin 4 and 5 should provide continuity and make your multi meter respond, usually with a buzz noise. Pin 4 should not provide continuity to any other pin, nor should pin 5.

Now repeat the process with Pin 1, Pin 1 should only show continuity to Pin 2. Once checked you know your coil is safe to plug into the adapter and you have no shorting or bad wiring on those wires. A video on this process can be viewed at <https://youtu.be/vHj42WisrBo>

If you have any questions about making the adapter or about X-coils we can be contacted at <https://www.x-coils.com>



Thank you for purchasing an X-coil.



We wish you the best of luck in your pursuit of **gold** and now you've got the best tool for the job.



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