

INEXPENSIVE HIGH QUALITY DESK MICROPHONE

by VE3NH

I admit to being a bit of a scrounger and to having an aversion to spending big bucks on items which I can build myself. So, for those of you who might be similarly inclined, here is a high quality desk microphone which can be constructed for less than \$25 in most cases. It uses an electret condenser cartridge whose only drawback is that it requires 3V DC, obtainable from batteries (a bit cumbersome) or from your transceiver (most of which today have a pin on the mic jack for this purpose).

I have built several microphones using the same basic format, and each one has received excellent audio reports on the air. Currently, I use two of these with my K3 radios but I have built them for ICOM and Yaesu radios as well.

Here is the parts breakdown:

Electret condenser cartridge-new from Mouser from \$2.25 (but all that I have used were recycled from such things as voice-actuated switches, kids' toys and intercoms)

Gooseneck: lengths from 6" to 10", e-Bay China from \$6.95

Microphone base: fleamarket buy for \$3 but new from suppliers for about \$10

PTT momentary switch: Mouser from \$1.29 or junkbox find

Mic cable: recycled from an old CB microphone

Mic plug of your choice-about \$3 for an 8 pin which fits most modern transceivers

Wind screen: eBay China, \$2.29 for 10 pieces

The circuit shown is one of many which will work well; you can experiment with its components without causing performance issues. Electret cartridges come in two flavours: two wire, where you feed the audio via a capacitor and apply 3V to the + terminal (as shown in the accompanying schematic), and three wire where the audio feed is "direct" and the 3V is applied to the third terminal.

Start by drilling the base (usually cast iron) to accept the PTT switch; when drilling cast, run the drill at SLOW speed. Using a rat-tail file, notch out the base so that the cable will fit snugly into the opening you have carved. Turn the base over and, using Goop or another similar product, install a 4 or 5 terminal strip to the base and, at the same time, use the Goop to secure the mic cable to the base.

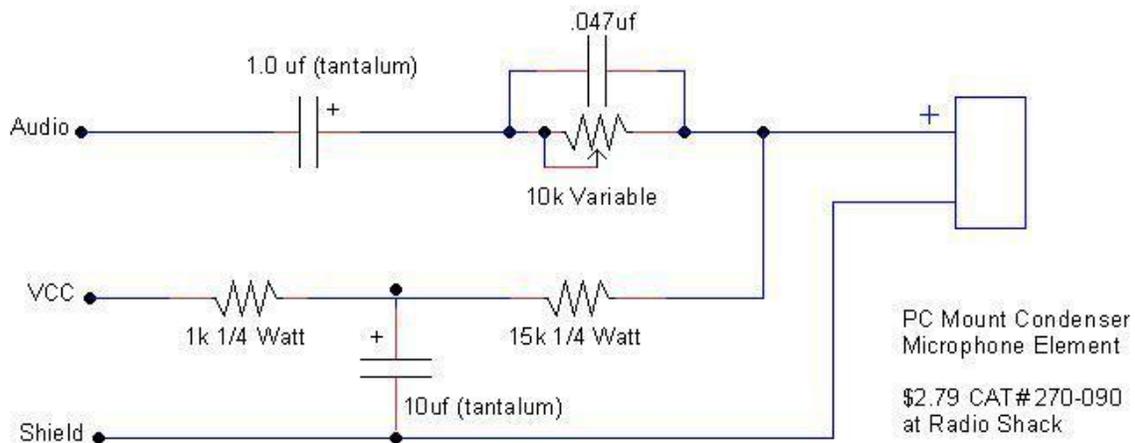
If the gooseneck you use is of North American manufacture then the mic cartridge will fit inside with no further work except to use a bit of Styrofoam to force fit it in the opening. If your gooseneck is an offshore type (the opening will be considerably smaller) use a drill and bore out the opening to 9/16" which will give you room to pad around the outside of the cartridge with Styrofoam cushion. Solder a pair of wires to the cartridge (the negative is attached to the case) and feed them down through the gooseneck to the terminal strip inside the base. Wire the microphone as per the schematic, wire the plug for your favourite radio and enjoy the fine comments you will receive on your audio, knowing that you have saved yourself at least \$100!

If you build this microphone inside an existing base station microphone (which I have done several times) then how much base response your cartridge produces is partially dependent on how far back inside the microphone head you place the cartridge. In the gooseneck version described above, the shape and length of the windscreen will affect the base response to some extent. The farther back inside the microphone head you place the cartridge the greater will be the bass response.

Electret condenser cartridges are low impedance devices, somewhere between 500 and 2,000 ohms. With no shaping, they tend to have a fair bit of "built in" bass response which can be modified by inserting an R/C filter in series with the mic cartridge positive lead as shown in the schematic. They also have lots of gain, thus eliminating the need for any kind of preamp. If your radio has adjustable equalization then forget the filter and set the response curve via the radio. For rag chewing you would probably wish to omit any filtering; for DX work you might wish to experiment with the filter shown (a 10K miniature pot across a .047 mfd disc cap). You can vary the pot to minimize or maximize the high frequency response. Once the correct position of the pot is found, a 1/4W resistor can be permanently installed.

Electret Condenser Circuit

by W1AEX



The .047 uf cap across the 10k variable creates an adjustable pre-emphasis network that effectively flattens the heavy low frequency response exhibited by these electret elements. The 1.0 uf cap blocks the VCC from getting into the mic input of rigs that do not employ a DC block in their circuit. The 1k and 15k series resistors along with the 10uf tantalum are necessary to decouple audio from the VCC supplied by the rig. Modern rigs provide DC at the front panel mic connector that ranges from +5 to +9 volts. This is more than enough to power one of these elements.

