

## Cat's Eye Tubes and some fun Applications

8 Sept 2016



Who has not marveled at their first sight of a cat's eye tube on a classic old console radio? These have alternately been called tuning eye tubes, cat's eye tubes or properly, electron ray tubes but either way they are magic to behold.

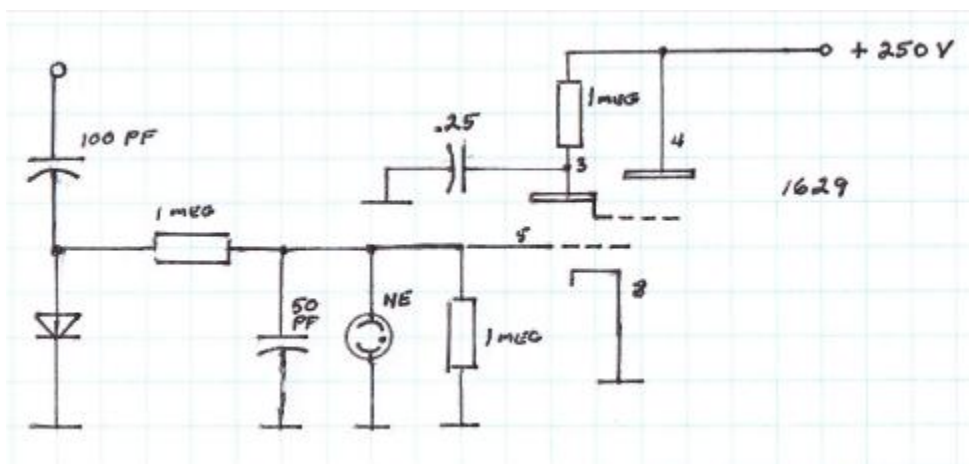
Have you ever wished you could add one of these to a project radio or some other application? I enjoy using my 'boat anchor' ham radios for morning sessions on AM, otherwise known as antique modulation. One of the things you must never, ever do is over modulate. There are several ways to monitor this including a meter or an oscilloscope but nothing compares to the bright green, cheery glow of the Cat's Eye tube. In my quest I ran across an article in a 1955 edition of CQ magazine, a popular Ham Radio publication of its day. Low and behold, there was just what I was looking for, a very easy way to add a Cat's Eye tube to my rig.

The parts count is low and the parts were still easy and cheap to obtain (two critical requirements) so off I went and built this little beauty. It works great and I have included a schematic and wiring diagram below if you should wish to duplicate it.

But "wait" you say. I collect antique radios and not old Ham gear. Perfect! Even easier! You can add a Cat's eye tube with only the tube, a socket and one resistor. How easy is that?

I used a 1629 which is a 'modern' version of these old tubes and is easier and cheaper to obtain than a 6U5 or 6G5 for example. The major difference is that the old tubes were 6.3 volts for the heater and the 1629 uses 12.6 volts on the heater. Outside of that, they are identical.

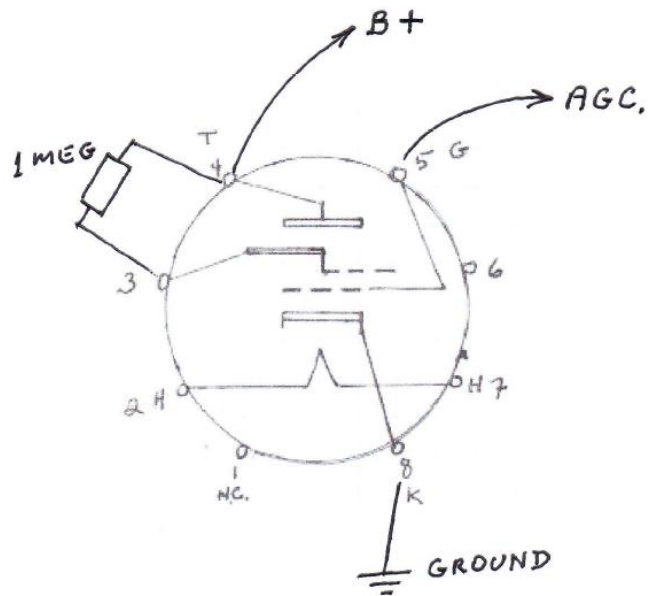
Here then is the schematic, wiring diagram and some other information on these little marvels.



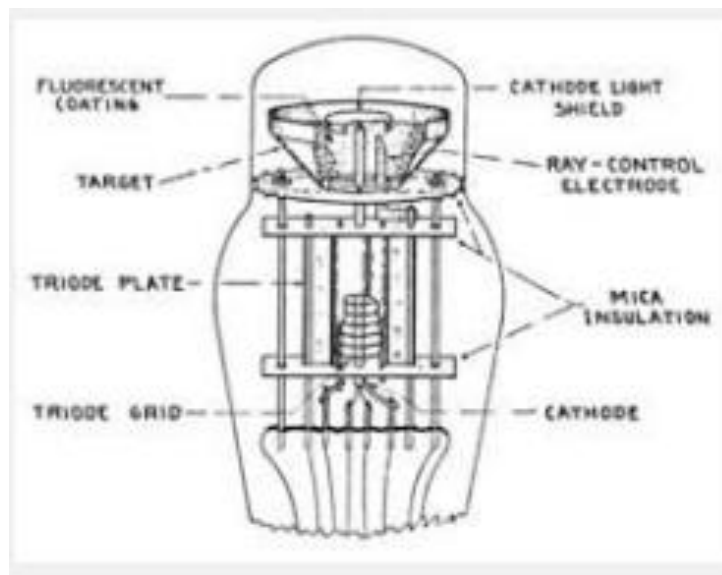
This is the RF negative peak detector. If you are a ham you need only connect the 100 pF capacitor to RF.



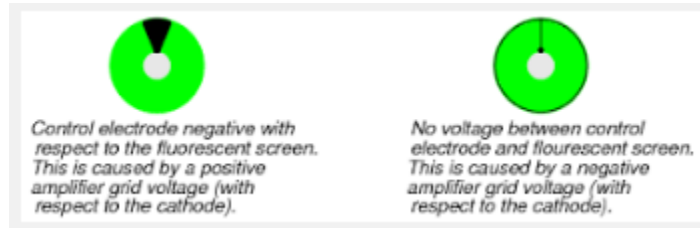
“OK, so how do I connect this to my home BC radio”? All you need do is to connect filament voltage to pins 2 and 7, connect a resistor of one Mega Ohm (One million Ohms. A ½ watt resistor is fine) from pin 3 to pin 4, connect B+ to pin 4 and finally, connect pin 5 to the radio’s AGC (AVC). You can locate this from the schematic of your radio you downloaded from the web. See examples at the end of this article.



How is the Cat’s eye constructed? Here’s an outline of its structure:

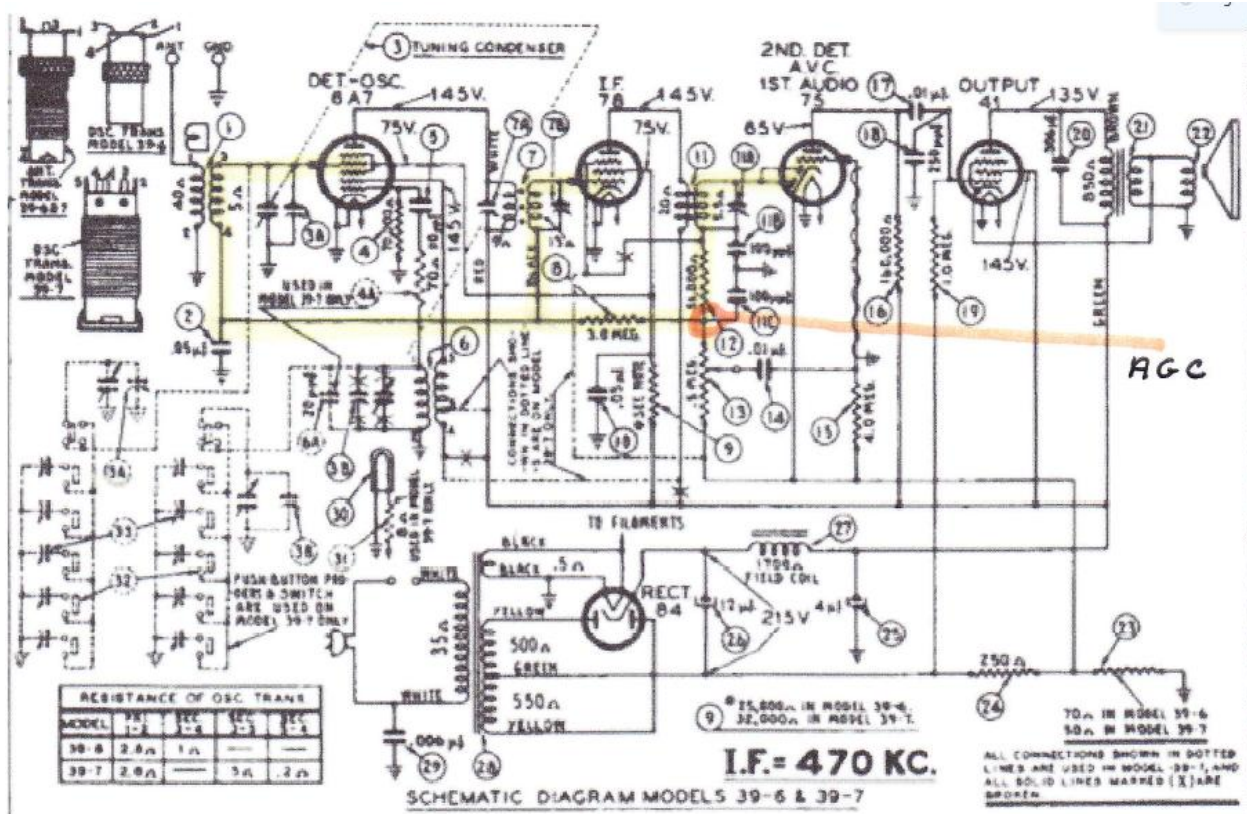


What will I see when I tune across a station? Here's a brief explanation of the deflection.



As the AGC swings negative when you tune in a strong station, the tube will appear to close up as shown on the right.

Here is a typical schematic of a 5 tube Philco from 1939. The arrows show the AGC (AVC) connection point. You will need the actual schematic for your radio to determine this point to connect for AGC.



And below is a detail of the detector/AGC where you would connect to the grid of the Cat's Eye.



