ZS6HVB
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SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

Last Quarter 2018

We're on

COMMUNICATION IS THE NAME OF THE GAME

The end-of-year Christmas do will take place at Rex's qth on Sunday 2 December. This will be a **Bring and Braai.** Start braaing at 13:00.

THE ELECTRET microphone

A capacitor microphone with a permanent electric charge built in has been developed as an experimental telephone transmitter by Northern Electric laboratories of Ottawa, Canada. In conventional capacitor microphones the charge is, of course, produced by some kind of voltage source, but in this new transducer it is provided by an electret that is a dielectric material to which a permanent electric charge has been applied during manufacture. (Electrets can be considered as . electrostatic analogues of permanent magnets.) Here the electret takes the form of a 7.6~um film of a granular polycarbonate material (the capacitor dielectric) metalized on one side with a 0.89~um layer of gold (one plate of the capacitor). In the microphone this rnetallized film is placed with its insulating side in contact with the roughened surface of a rigid perforated backplate, which forms the other plate of the capacitor. The film has just enough tension to prevent wrinkles: Thus, when the air pressure on this diaphragm is varied the capacitance is changed and, since the charge is constant and V = Q/C, there is a corresponding variation of voltage across the capacitor - the output signal.

The transducer is a high impedance device, so it's output is matched to the low impedance of the telephone line and at the same time amplified, by a 20 dB solid-state preamplifier built into the microphone. ,
One advantage of this technique, regarding its application to telephones is, of course, that no voltage generator is needed for the capacitor microphone. And, because electrets can be made from very thin dielectric films, a higher capacitance per unit area than with conventional capacitor microphones is possible. The rate of decay of the charge is very slow, and the developers say that measurements at temperatures ranging from 90°C to 170°C have indicated that an electret life in excess of 100 years can be expected at normal temperatures. As a competitor to the carbon microphone used in telephones, the experimental microphone has the advantage, according to Northern Electric, that the built-in pre-amplifier requires less current than a carbon transducer.

So, things have miniaturised quite a lot since then!

Picture on page 4

Some ideas on making LED Pilot Lamps

First of all, most of the ultra-bright LEDs have normal operating currents of about 20milliamps. Remember that LEDs are diodes, so they rectify the AC voltage and therefore LED polarity doesn't
matter (obviously polarity does matter if the LED is driven from a DC voltage source). The series resistors necessary to provide 20 milliamps from a 6.3VAC source for most ultra-bright LEDs is as shown below:

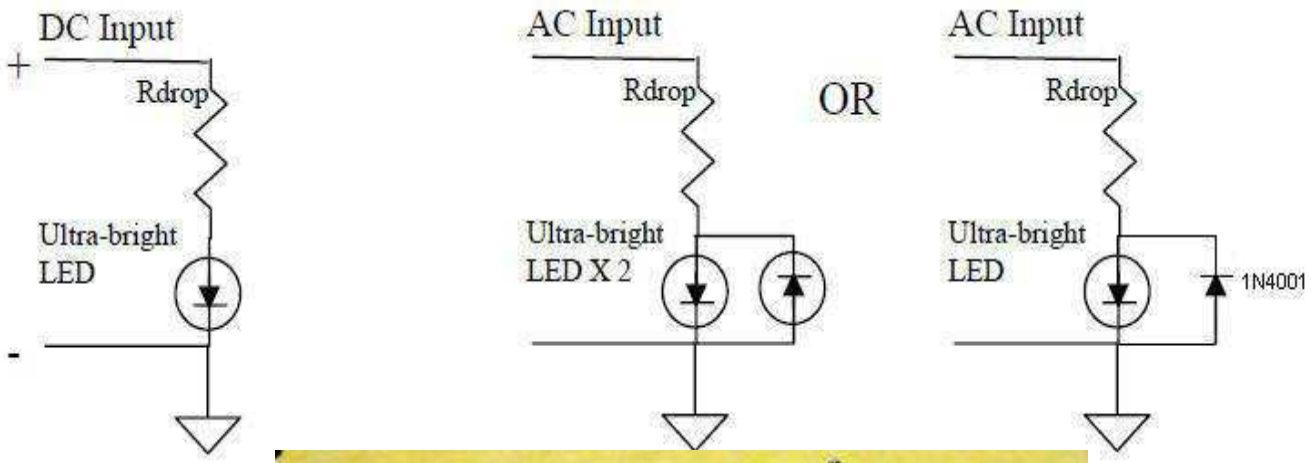
LED Fwd Voltage Series Resistor

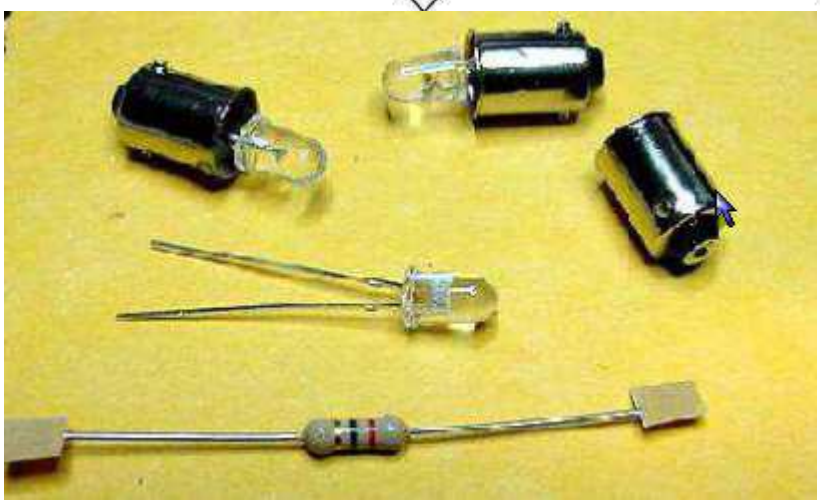
White 4V 82 ohms
Green 3V 100 ohms
Amber 3V 100 ohms
Blue 3V 100 ohms
Red 2V 120 ohms

When using AC sources, it is best to either put a second LED reversed across the first LED, or connect a diode across the LED as shown in the schematics. The reason is that the maximum reverse voltage is only around 5-6 volts, and most AC sources can exceed this. So a second LED (which will double the output) or a diode will restrict the reverse voltage applied to the LED to a safe
value.

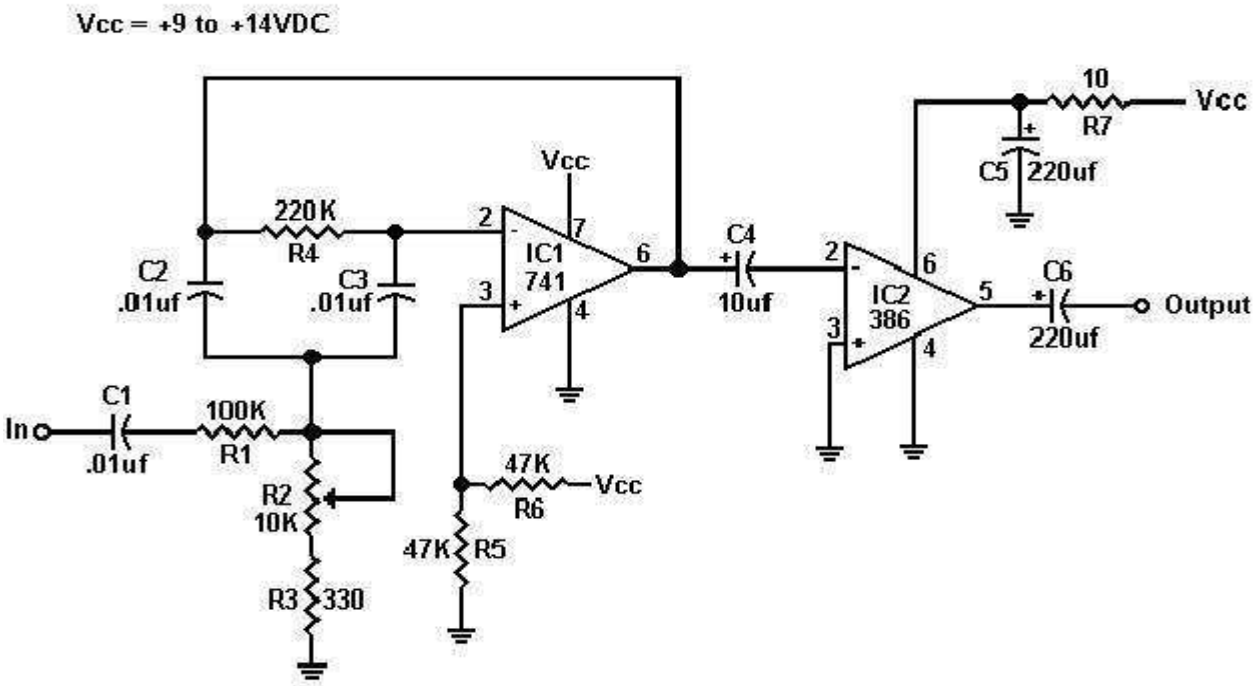
To prepare the LED-lamp base, do the following:

1) Put on safety glasses!
2) Wrap the pilot lamp in a small plastic sandwich bag and gently crush the glass part with pliers.
3) Using the pliers, gently squeeze and rotate the base. This should break up the remainder of the glass in the base. When through, ensure that the base is as round as possible.
4) Shake out the glass, and then use a solder-sucker to remove the solder from the tip of the base.
5) Using needle nose pliers, pull the remaining pieces of bulb and wiring out of the holder.





Variable CW filter (for those that still like cw)



If and when the sunspots return and DX propagation conditions to improve, the age old problem with QRM begins to show up on the amateur bands. Fortunately, help is at hand. The circuit is a variable bandwidth CW filter using two IC's. The first IC is a 741 op amp used as an active filter and the second IC is a 386 audio amp IC. This circuit connects to the headphone or speaker jack of your HF rig. The volume is controlled by the volume control of your rig and R2 controls the bandwidth.

There is plenty of audio to drive a small speaker or a pair of headphones.

This circuit is different from other active filter circuits because it provides an audio boost which more than compensates for any attenuation in the filter stage. Many active filter circuits do not have enough volume to make them useful for most operators. Capacitor C5 and R7 were added to prevent the LM386 IC from oscillating which is common with this family of IC's. Use good construction practices since this circuit contains a very large amount of gain at the selected bandwidth.

The circuit has been shown to be most effective for older radios and QRP sets which lack adequate filtering.

Parts List

R1 100K resistor
R2 10K potentiometer
R3 330 ohm resistor
R4 220K resistor
R5,R6 47K resistor
R7 10 ohm resistor
C1,C2,C3 .01 microfarad capacitor
IC1 LM741
IC2 LM386

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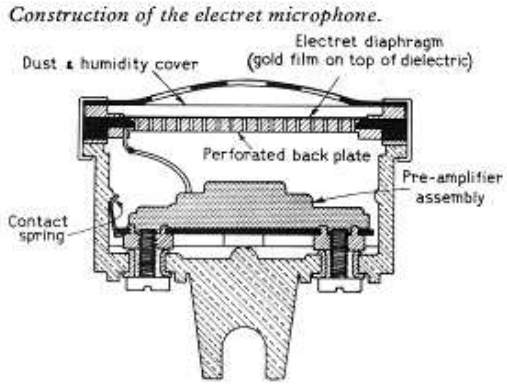
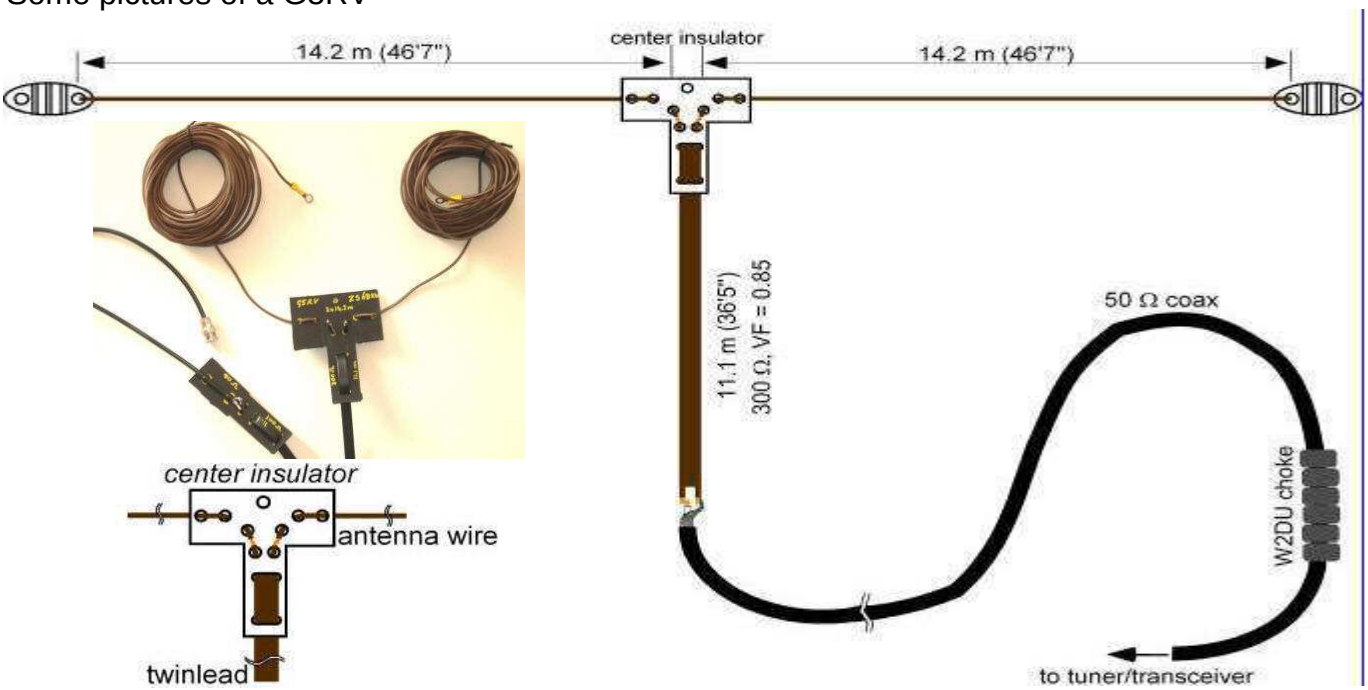


Some pictures of a G5RV



Club Information

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Back Issues of Shacknews available on the club website

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Repeater 145.1875 MHz input - 145.7875 MHZ output

Bulletins Sunday morning - 145.7875 MHz & 7162 KHz @ 08h45.

Monthly meeting venue

Every Third month
On the *3rd Saturday of the month*
at 14:30.

@ various venues

Committee

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