

Total solder points: 53

Difficulty level: *beginner* 1  2  3  4  5  *advanced*

## OSCILLATOR



# *K1771*

Great for baby monitoring, family  
broadcasts, security, ...



## Features

- ☑ Use it as a test oscillator for FM tuners
- ☑ For family broadcasts
- ☑ As part of a wireless microphone
- ☑ For security applications
- ☑ Nice gadget
- ☑ Your own unique application

\*The use of this device as a transmitter might be illegal in your area. Please check with the local authorities. Eavesdropping into private conversations might be considered a crime in your area.

## Specifications :

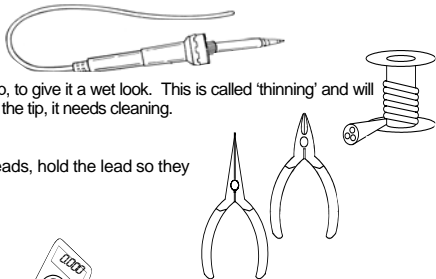
- High-quality varicap modulation
- Ultra stable FET oscillator
- Frequency range from 100 to 108 MHz
- FET input amplifier with high sensitivity (10mV max.)
- Easy microphone hook-up
- No coils to wind
- Reception with any FM radio\*
- Miniature size, yet very sensitive
- Power supply : 9-12VDC (use battery for best results)
- Dimensions : 45 x 70 mm (1.8" x 2.7")

**1. Assembly (Skipping this can lead to troubles !)**

Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

**1.1 Make sure you have the right tools:**

- A good quality soldering iron (25-40W) with a small tip.
- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.
- Thin raisin-core solder. Do not use any flux or grease.
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes.
- Needle nose pliers, for bending leads, or to hold components in place.
- Small blade and Phillips screwdrivers. A basic range is fine.



**For some projects, a basic multi-meter is required, or might be handy**

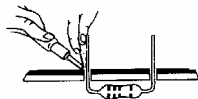


**1.2 Assembly Hints :**

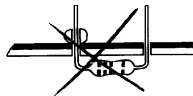
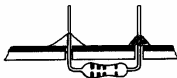
- ⇒ Make sure the skill level matches your experience, to avoid disappointments.
  - ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
  - ⇒ Perform the assembly in the correct order as stated in this manual
  - ⇒ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
  - ⇒ Values on the circuit diagram are subject to changes.
  - ⇒ Values in this assembly guide are correct\*
  - ⇒ Use the check-boxes to mark your progress.
  - ⇒ Please read the included information on safety and customer service
- \* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

### 1.3 Soldering Hints :

1- Mount the component against the PCB surface and carefully solder the leads



2- Make sure the solder joints are cone-shaped and shiny

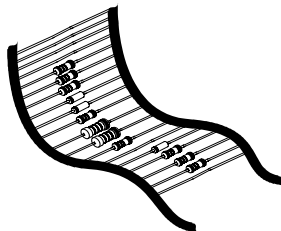


3- Trim excess leads as close as possible to the solder joint

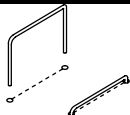
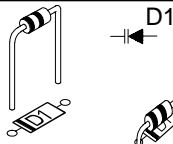


**AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !**

**REMOVE THEM FROM THE TAPE ONE AT A TIME !**



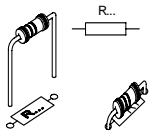
 You will find the colour code for the resistances and the LEDs in the HALG (general manual) and on our website: <http://www.velleman.be/common/service.aspx>

**1. Jumper wire****2. Varicap diode. Watch the polarity !**

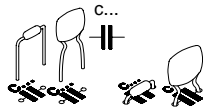
- D1 : BB909A or equivalent

**3. Diode. Watch the polarity !**

- D2 : 1N4148

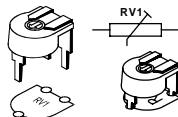
**4. Resistors**

- R1 : 100K (1 - 0 - 4 - B)  
 R2 : 220K (2 - 2 - 4 - B)  
 R3 : 22E (2 - 2 - 0 - B)  
 R5 : 1K (1 - 0 - 2 - B)  
 R6 : 56K (5 - 6 - 3 - B)  
 R7 : 1M (1 - 0 - 5 - B)  
 R8 : 1K2 (1 - 2 - 2 - B)

**5. Capacitors**

- C1 : 5pF (4p7)  
 C2 : 6pF (5p6)

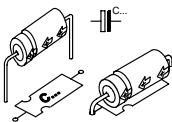
- C3 : 15pF (15)  
 C5 : 15pF (15)  
 C6 : 1nF (102)  
 C9 : 100pF (101)  
 C10 : 1nF (102)

**6. Trim potentiometer**

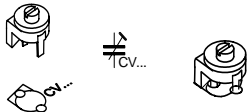
- R4 : 1K

**7. Electrolytic Capacitors. Watch the polarity !**

- C7 : 100µF  
 C8 : 4,7µF



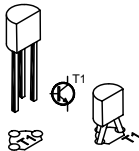
### 8. Trim capacitor



□ C4 : 22pF

### 9. Transistors

- T1 : BF245A
- T2 : 2N3819
- T3 : BC557B

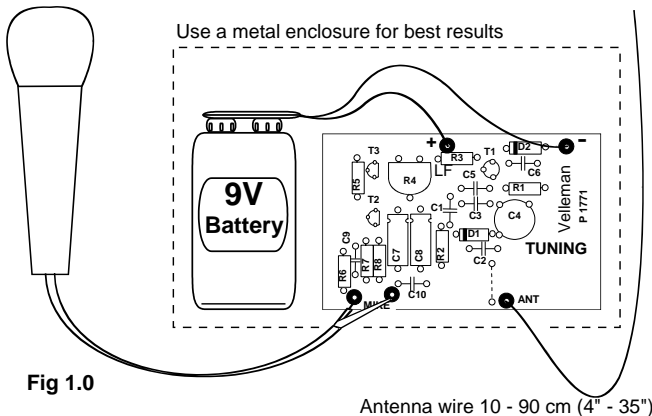


### 10. Connection example

#### Connecting a microphone

Adjust modulation with R4 until you hear that the signal received on your radio (tuned between 100MHz and 108MHz) is loud, clear and without distortion.

Dynamic microphone



**Connecting an electret microphone**

If you want to connect an electret microphone to the FM oscillator, connect the + of the power supply with the + connection of the electret microphone via an additional 27KΩ resistor.

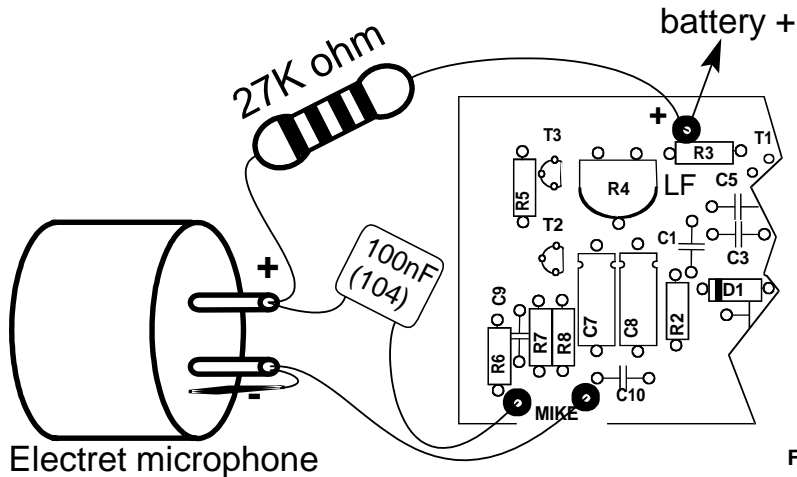


Fig 2.0



Connecting of an input level signal

If you want to use a signal from another audio source, you will have to attenuate the signal with a trim pot twice the output impedance value of your source. Trim R4 for the highest modulation and adjust your attenuator trim pot until you get a loud and clear signal as described in the procedure for microphone hook-up.

signal from CD player, radio, mixer, ...

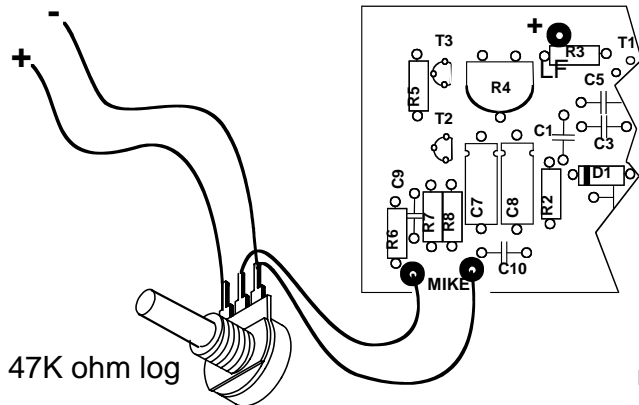
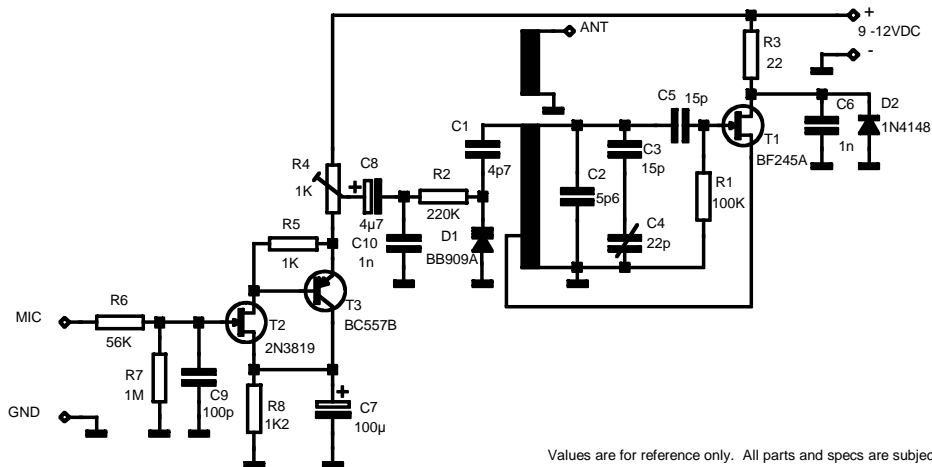
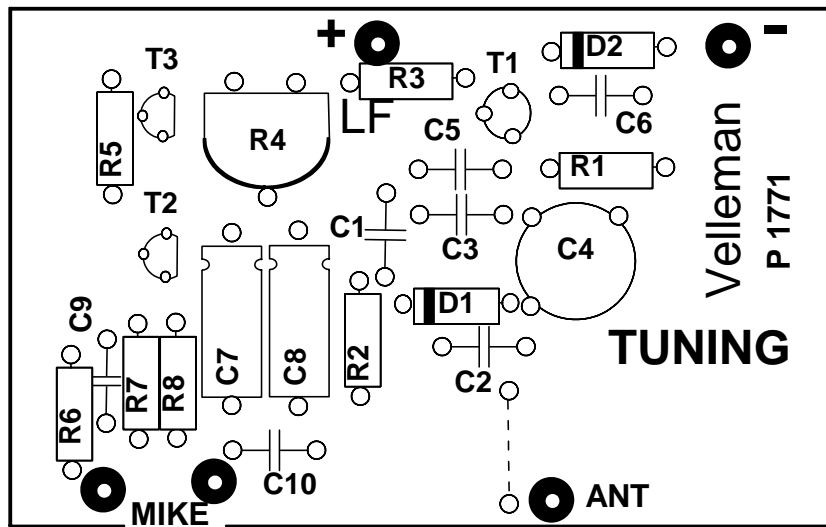


Fig 3.0

## 11. DIAGRAM



12. PCB





Modifications and typographical errors reserved  
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