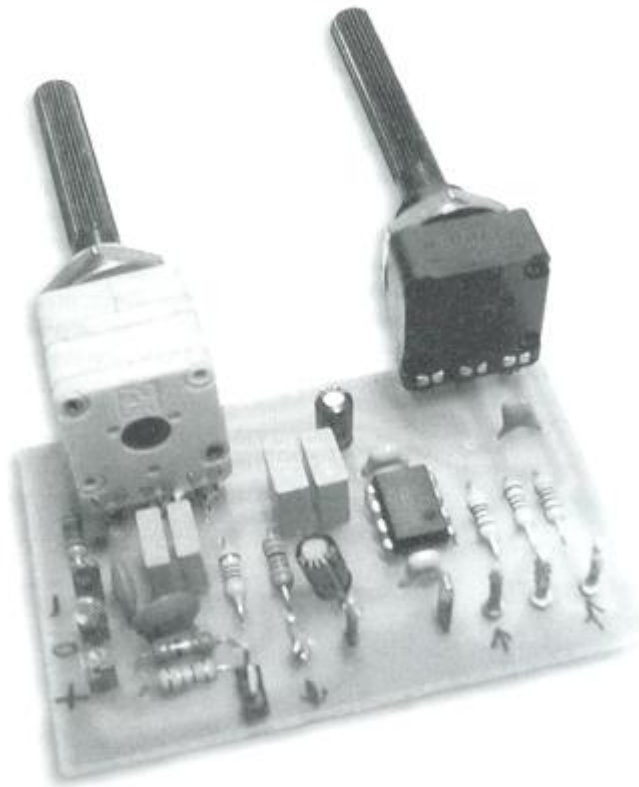


Low pass filter - Subwoofer

source: [Technical Election](#)

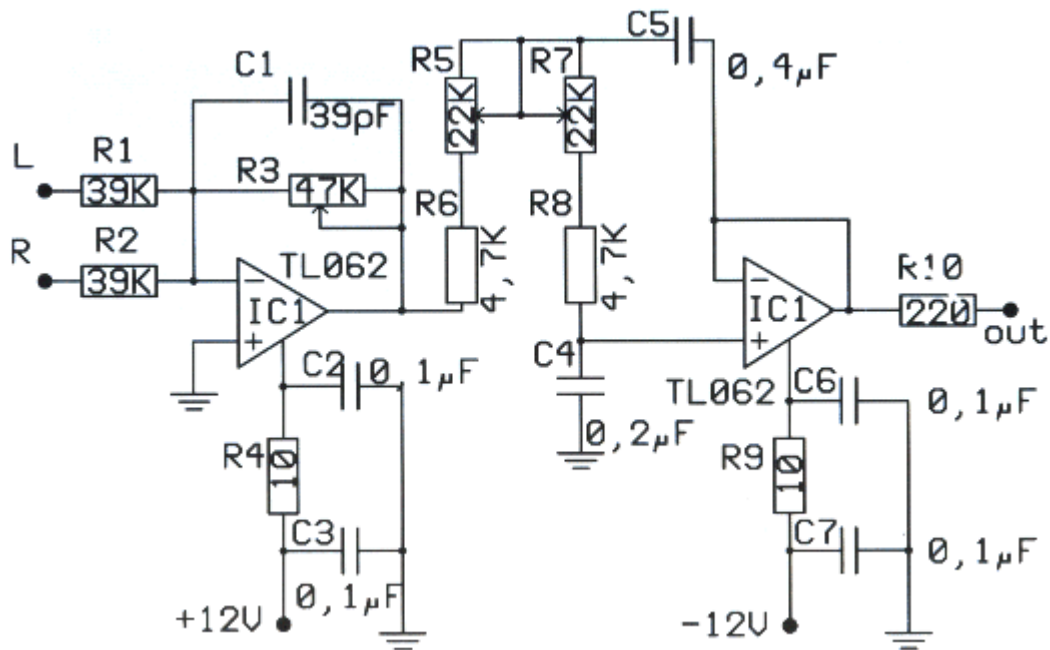


Note: The text is **AUTO** translated from [Greek version](#)

The acoustic spectrum is extended by very low frequencies 20Hz and reaches as the 20000Hz in high frequencies. In the low frequencies is degraded the sense of direction. This reason us leads to the utilization speaker for the attribution of very low frequencies. The manufacture that to you we propose distinguishes these frequencies, in order to him we lead to the corresponding amplifier. The acoustic filters are met in various points in the sound systems. The knownest application they are the filters baxandal for regulating tone low and high frequencies and filters crossover where the acoustic region is separated in subareas, in order to it leads the corresponding loudspeakers. The application that to you we propose is a simple filter of region that limits the acoustic region (20-20000Hz) in the region **20-100Hz**.

With the manufacture that to you we propose you can make a active filter in order to you lead a loudspeaker of very low frequencies. With this you will place one bigger speaker between the HIFI speakers of you. In order to you have a complete picture of sound you will need also the corresponding amplifier. In the entry of circuit you will connect the two exits of preamplifier or the exit of line of some preamplifier. The circuit of manufacture allocates a exit in order to is led means of circuit of force subwoofer. If for some reason you do not have space in order to you place the third speaker in space of hearing, then you can select smaller speaker. The output will depend from the type of music that you hear. If in deed you have space, then after you make a filter and remain thanked, you can him recommend in your friends or still make other same for your friends.

Theoretical circuit



In the form it appears the theoretical circuit of filter. In first glance we see three different circuits that are mainly manufactured round two operational amplifiers. This circuits constitute mixed, amplifier with variable aid and a variable filter. The manufacture end needs a circuit of catering with operational tendency of catering equal with ± 12 . the operational amplifiers that constitute the active elements for this circuits of are double operational type as the **TL082** and **NE5532**. The operational these amplifiers belong in a family provided with transistor of effect of field IFET in their entries. Each member of family allocates in their circuit bipolar transistor and effect of field. This circuits can function in his high tendency, because that they use transistor of high tendency. Also they have high honor of rhythm of elevation (slew rate), low current of polarization for the entries and are influenced little by the temperature. The operational these amplifiers have breadth of area unity gain bandwidth **3MHz**. A other important element for their choice is the big reject of noise, when this exists in the line of catering.

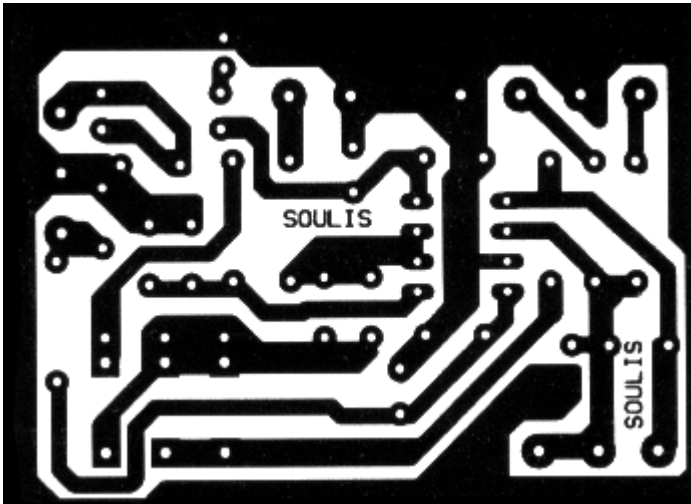
The price of reject is bigger than 80dB, their consumption is small, from 11 until 3 mA. They are internally sold in nutshell with eight pins and allocate two operational amplifiers, In the same line in nutshell 14 pins they incorporate four operational, In the trade they are sold with code TL074, TL084 and TL064, In nutshell with eight pins they are sold operational amplifiers TL061 TL071 kajTL081. In the manufacture we used the **TL082** that has two operational. First operational from the TL082 it works as amplifier and mixed for the two channels, In his negative entry he exists one small mixed with two resistances. A potentiometer in this rung determines the aid of circuit. In the point this left winger and the right channel of preamplifier they are added means of two resistances. En continuity the operational strengthens signal with aid made dependent from the price that has the potentiometer.

The place of runner is proportional with the aid of circuit. The second operational amplifier is the filter of manufacture. The filter of is acoustic frequency of second class and he is made with the materials that are round the operational amplifier. The filter of is low passage with variable frequency of cutting off. This frequency can be altered and take prices from very low frequency the **30Hz** or still exceed **150Hz**. The frequency of cutting off of filter depends from the prices that have the elements of circuit. Altering the values of elements we can have frequency of cutting off 150Hz, 130Hz, 100Hz, 7Hz, 6Hz even 3Hz, this prices they can be achieved with the simple rotation of double potentiometer. The circuit of filter has been made around one operational that it has completed TL082 that is double operational amplifier. In the exit of filter we will link the plug of expense where is connected the amplifier. In the exit of circuit is presented, the limited as for the breadth of frequencies, signal that we apply in the entry of circuit.

Manufacture

Parts

R1 = 39 Kohm	R2 = 39 Kohm
R3 = 47 Kohm	R4 = 10 Ohm
R5 = 22 Kohm	R6 = 4,7 Kohm
R7 = 22 Kohm	R8 = 4,7 Kohm
R9 = 10 Ohm	R10 = 220 Ohm
C1 = 39 pF	C2 = 0.1 uF
C3 = 0.1 uF	C4 = 0.2 uF
C5 = 0.4 uF	C6 = 0.1 uF
C7 = 0.1 uF	IC1 = TL064



In order to you make the manufacture you will need printed that appears in the form. In this you will place the materials according to the following form. The materials are enough also easy can become certain errors. With few attention however you can him avoid. If they are presented difference malfunctions, you check carefully the circuit. The circuit, as we said, is filter and it should they are used materially good precision and quality, particularly for the capacitors. The capacitors of filters will have tolerance 5%. Of course, the manufacture will also work with material of lower quality, the trial of manufacture can become with acoustic signal of generator We apply the generator in the entry of manufacture and we measure with a voltmeter the tendency in the exit of filter. If we alter the potentiometer and are altered the tendency, then all have well.

