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MILIENIUM SUBWOOFER OF  
JURASSIC PARK

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## Abstract

The subwoofer circuit comprises of a few basic building blocks. Most of the electronic circuitry is built around a TL072 dual op amp IC, which functions as an input buffer and a variable low pass filter. The input circuitry consists of a mixer and voltage dividers formed by two pairs of 200 ohm and 10K ohm potentiometer / volume control connected to a unity gain op amp buffer. The input signals to the subwoofer circuitry are the same as those from the output of the power amplifier. A simple reason for doing so is to have the volume loudness of the subwoofer vary accordingly with the output level of the existing set of speakers.

The second TL 072 op amp is configured as a 12dB per octave low pass filter with the help of two 47K ohm resistors , a 100K ohm potentiometer and 0.012 $\mu$  F capacitor each . The cut off frequency to between 50 Hz and 150Hz . The frequency value is determined by the equation  $f_c = 1 / 2 \pi RC$ .

The low frequency signal is then sent to a power amplifier. In this design, we have opted for the use of an off the shelf power amplifier module available in the market, from either Farnell or R.S Components. This is a standard power amplifier with very robust characteristics and requires minimum additional external components. As quoted ‘ the HY series of power amplifier modules are a versatile range of building block for the construction of high quality audio amplifiers. ‘ The power amplifier modules can of course be replace by any other standard amplifier without problem, though for good performance , only an amplifier having an output power of no less than 30 watts is recommended .

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## INTRODUCTION

Many people have already started to experiment with home theatre by connecting a television set or DVD/VCD player to the auxiliary input of a compact stereo system . In most cases , this simple configuration provides a terrific improvement over the TV set's built in speakers . The reason for this is not too difficult to understand . Typical built in TV speaker are far from being able to handle volume levels beyond a specific limit .

Compact bookshelf – style stereo systems do better , but in most cases these usually don't have speakers that are capable of reproducing levels of anything below 40Hz that make up the deep bass that give home theatre sound its kick . Using large a large cabinet to give extended bass response can solve the problem , but this isn't a practical solution in many modern day houses , with their limited space very few of them can be described as palatial .

While it is possible to squeeze a few more hertz out of a small speaker box , it comes at the expense of efficiency and even musical integrity . Even a modest amount of bass boost will cause the rest of the audio spectrum to go 'soggy' and the result is that the bass becomes a boomy mess . So , what is the solution ?

One simple solution is to add a subwoofer to the existing system . A subwoofer provides clean deep bass in a compact enclosure , to the extent that you can actually feel it's effect both sonically and physically . The rumble of fighter jets blasting across the sky in TOP GUN and the thundering trampling of dinosaurs across the jungle in JURASSIC PARK are just a couple of examples of great movie moment that a subwoofer can inject life into .