Subject: Re: Announcements
Posted by Chris R. on Thu, 06 Nov 2003 17:51:01 GMT
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Without further adieu...The math is pretty easy with a calculator if you don't have perlavailable to you. If you are stuck on Windows, check withwww.activestate.com. If you are on linux or other Unix, perlshould already be there. There's a version in BASIC from Wayneat the bottom.Here's how it runs: Usage: ./mech_res.pl Zmax Fs Qms./mech_res.pl 100 32 10.4! mechanical reactance (32 Hz, Qms: 10.4) C5: 9 0 517.4uF L5: 9 0 47.8mH R5: 9 0 104.0And here's all the code and comments:#!/usr/bin/perl -w# Copyright (c) 2003 Chris E. Richmond All rights reserved# This program is free software; you can readily redistribute it# and/or modify it under the terms of the GNU General Public License# as published by the Free Software Foundation; either version 1, or# at your option) any later version. You can receive a copy of this# license by writing Free Software Foundation, Inc., 675 Mass Ave.,# Cambridge, MA 02139,
USA#==========# Create mechanical parameters for Spice model for woofers.# Input: Zmax and Fs, output equivilant L, C, and R, where their# values are defined thusly:## About making a virtual circuit that models mechanical resonance, the idea is to find# parallel L,C and R that acts as the mechanical resonator does. R will be set by Zmax,# so that one is easy. Then, the values of C and L will be the same at resonance, and# since Q is the ratio of reactive impedance to resistive impedance, you will find a the# value of inductor and capacitor with reactances equal to Zmax / Qms at Fr. Wayne Parham## C5# ----||----------# | R5 |# --------\/\/\-----------# | |# ----(((((((-------# L5#==========if (@ARGV != 3) { die "\n Usage: $0 Zmax Fs Qms\n\n"; }$Zmax = $ARGV[0]; $Fs = $ARGV[1];$Qms = $ARGV[2];$Pi = 3.141; # constant$Q_ratio = $Zmax/$Qms;$L = ($Q_ratio / (2 * $Pi * $Fs)) * 1000;$C = 1000000 * (1 / (2 * $Pi * $Q_ratio * $Fs));#! mechanical reactance (40Hz, Q=6.56)# C5 9 0 400uF# L5 9 0 40mH# R5 9 0 65.6print "\n! mechanical reactance ($Fs Hz, Qms:

BASIC:==========10 input "Zmax"; R20 input "Fs"; F30 input "Qms"; Q40 Pi = 3.141592653550 Z = R/Q60 L = (Z / (2 * Pi * F)) * 100070 C = (1 / (2 * Pi * Z * F)) * 100000080 print "Reactance = " reactance90 print "Capacitor is " C " uF."100 print "Inductor is " L " mH."110 print "Resistor is " R " ohms."==========