
Subject: Mystery Drivers & Plans for the Pi 6 Theater

Posted by [Vello](#) on Sun, 02 Dec 2001 00:51:58 GMT

[View Forum Message](#) <> [Reply to Message](#)

Wayne-Thanks very much for the Pi 7 plans. I came across (and purchased) a set of drivers from a late 60s Curtis Mathis stereo console unit. The woofers are a stamped basket 12" with paper cone and cloth surround, no markings other than "29B49-1" which I presume is the model number. The tweeters are a 2x6 metal horn tweeter, no markings other than "V/60". The crossover consists only of a single capacitor (4.7 uf 25VDC), no coil or anything else. The drivers are in pristine condition and I would really like to incorporate them into a Pi 6 (Theater) design. Can you offer any suggestions on determining the specs on these speakers ? Also- please email the plans for the Pi 6.Thanks !-Vello

Subject: Measurement equipment and software

Posted by [Wayne Parham](#) on Sun, 02 Dec 2001 01:59:16 GMT

[View Forum Message](#) <> [Reply to Message](#)

I suggest using the Woofer Tester from Parts Express or Speaker Workshop from Audia. You can also measure them yourself using the following technique and formulas: You'll need a signal generator and meter or scope. Put a test resistor in series, something between 10 and 1000 ohms. Find R_e . It is the DC resistance of the voice coil. Find F_s . It is the frequency where impedance is highest. To find mechanical and electrical Q values, the following formulas are used: $Q_{ms} = F_s * (Z_{max}/R_e)^{0.5} / (F_h - F_l)$ $Q_{es} = Q_{ms} / (Z_{max}/(R_e - 1))$ $Q_{ts} = Q_{ms} * Q_{es} / (Q_{ms} + Q_{es})$ where F_s is the resonant frequency of the speaker in free air (Hz) Z_{max} is the impedance of the speaker at resonance in free air (ohms) R_e is the DC resistance of the voice coil (ohms) F_h is the frequency above F_s where speaker impedance is $(Z_{max} * R_e)^{0.5}$ F_l is the frequency below F_s where speaker impedance is $(Z_{max} * R_e)^{0.5}$ Note: F_l and F_h can also be found at the points where voltage across the test resistor is equal to V_q in the following formula: $V_q = (V_{max} * V_{min})^{0.5}$ where V_{min} is the voltage across the resistor at the speaker's resonant frequency V_{max} is the voltage across the resistor at a frequency far from resonance To find V_{as} using the sealed box method, the following formula is used: $V_{as} = V_b * ((F_b / F_s)^2 - 1)$ where V_b is volume of the sealed cabinet (ft³, m³ or liters) F_b is the resonant frequency of the speaker in the box (Hz) F_s is the free-air resonance of the speaker (Hz)