

LYECO LY401F DOUBLE BASS REFLEX

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INTRODUCTION

This is my entry for the [Lyeco LY401F Full Range Contest](#). The LY401F is a low Q driver ($Q_{ts}=0.17$), so one would expect that it will work well in a horn enclosure. Seeing that I don't have any experience with back loaded horn enclosures, I thought I would keep things simple and try out a double bass reflex enclosure for the LY401F.

DOUBLE BASS REFLEX ENCLOSURE

I decided to try a double bass reflex enclosure as I suspected it would provide good low frequency extension in a medium sized enclosure. To model the enclosure, I used the [Quarter Wavelength Loudspeaker Design Worksheets](#) by Martin J. King. This is my first time trying worksheets and the version I have is from 2002. The worksheets have since been upgraded. If this design is to advance beyond a contest submission, I would upgrade to the newer worksheets and tweak the enclosure dimensions. The calculated frequency response from the worksheets is shown on Figure 01 below.

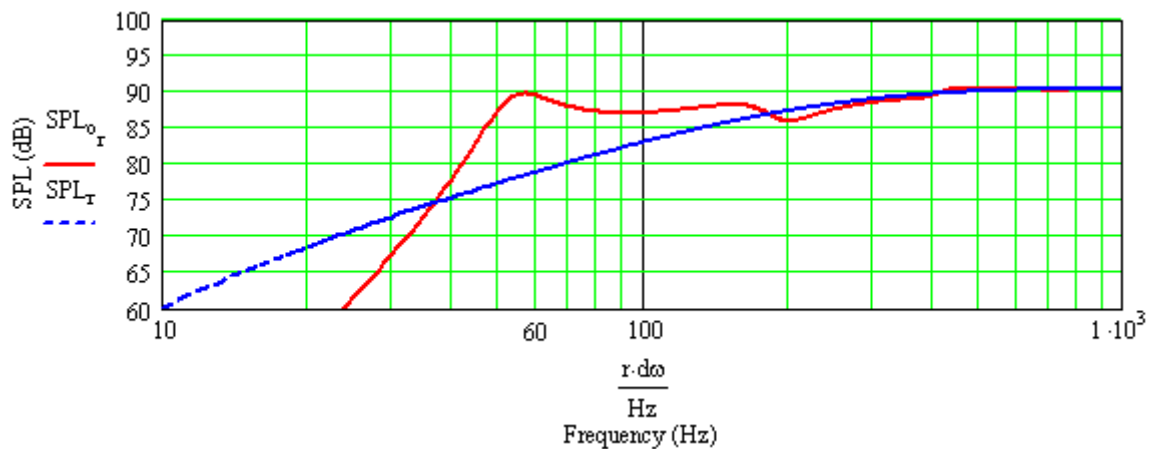


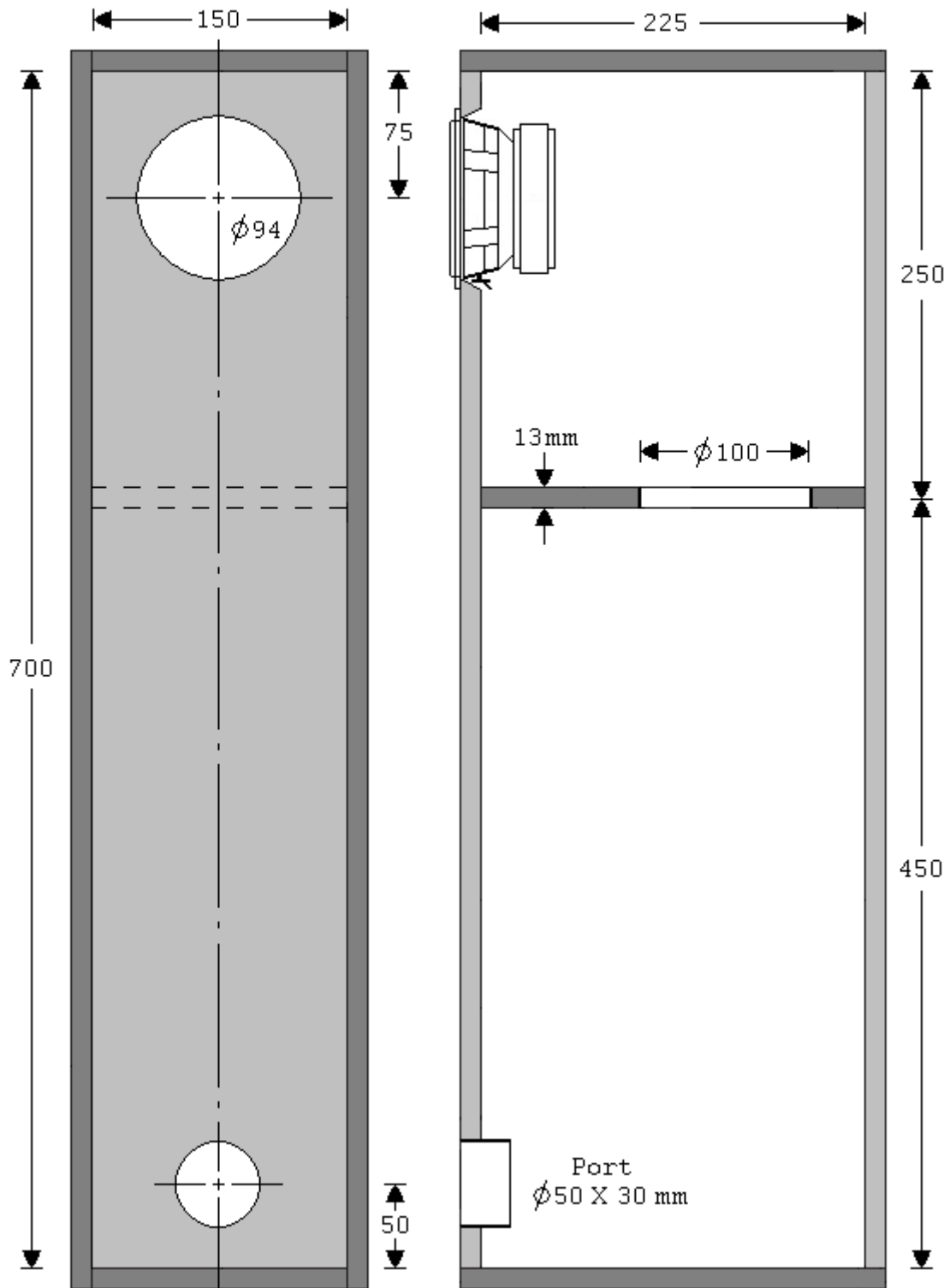
Figure 01: Calculated Frequency Response - Lyeco LY401F Double Bass Reflex

The double bass reflex enclosure provides good low frequency extension, $F_3 \sim 50\text{Hz}$ and $F_{10} \sim 42\text{Hz}$. Not bad for a 4" driver. The enclosure design for the Lyeco LY401F Double Bass Reflex is shown in Drawing 01 and the design notes are shown in Drawing 02.

Lyec© LY401F Double Bass Reflex

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All dimensions are in mm.

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Drawing 01: Lyeco LY401F Double Bass Reflex Enclosure Plan

A single driver design will likely require some [baffle step correction / compensation \(BSC\)](#). The amount of attenuation required will be room and amplifier dependent. About 3 to 5 dB of attenuation is a good starting point. You can use the component values shown in Drawing 02 and tune the BSC to suit your room and amplifier.

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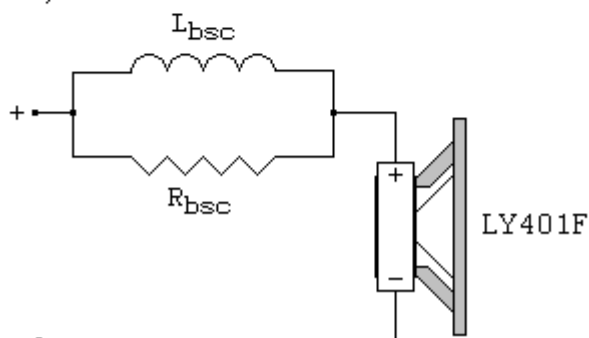
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NOTES:

1. Not for commercial use. DIY projects only!
2. Drawn using 1/2" material. 3/4" will also work.
3. 0.5 lbs/ft³ polyfill in top chamber.
4. 0.3 lbs/ft³ polyfill in bottom chamber.
5. Port may exit from front or back.

Baffle Step Correction (BSC)

dB	L _{bsc}	R _{bsc}
1	0.5 ohms	0.1 mH
2	1.2	0.3
3	1.9	0.5
4	2.6	0.6
5	3.5	0.9
6	4.5	1.1
7	5.6	1.4
8	6.8	1.7



Drawing 02: Lyeco LY401F Enclosure Design Notes