

SOUND DYNAMICS USER MANUAL

This document contains the most pertinent information gathered by the team during testing. This is to serve as a reference guide only and should be updated as findings are made with the full orchestra. Full testing documentation is provided in Section 3 of the Final Project Report. For any questions or concerns, please contact the group leader at: alove2@trinity.edu



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GENERAL FUNCTIONS & STAGE PLACEMENT

- ❖ Walls: used to increase projection of sound sources in front of the component
 - Stage Position:
 - Generally, place behind/around sections that are quieter than the surrounding ensemble
 - Frequency Dependence:
 - Most effective at mid frequencies,
 - Angle: angles are described between backstage and wall (ex. 0° indicates wall placement parallel with back of stage)
 - 0° provides most symmetry across audience & moderate increases to sound level
 - 60° angle provided the greatest overall sound level increase in audience, favors left side
- ❖ Mats: absorb vibrations at stage surface, reflects higher frequencies
 - Stage Position: placed under instruments with large contact area to the stage
 - Frequency Dependence:
 - Suited for lower ranges, provides some reflection of higher frequencies when used with the walls

COMPONENT STORAGE

- ❖ Both components stored behind stage, opposite of garage with chairs/music stand storage
- ❖ Walls should be stored flat against the wall, flush with each other, and with locked wheels
- ❖ Mats may be rolled up and transported by two people
 - Should be stored upright beside walls
- ❖ If any problems are encountered with the storage of these devices, please contact the current stage manager of Ruth Taylor Recital Hall

SAFETY CONSIDERATIONS

- ❖ The tilt angle of the walls is 20°
 - Please do not transport the walls in any way that exceeds this threshold
- ❖ Though all wheels are capable of locking, only two opposite wheels should be locked during use.
 - This reduces the likelihood of tipping in the event of an accident
 - Walls move with 20 lbs. (two wheels locked) or 32 lbs. (all wheels locked)
- ❖ Do not stack, lean, or otherwise support any objects using the walls.
- ❖ Walls should be used next to mats, not directly on top of them

KEY FIGURES

Table 1: Summarized results of wall angle testing with tone generator

Angle of Walls about Source in Center Stage Position	Combined Average Decibel Changes from Baseline	Maximum Volume Difference within Audience	Notes
No Component / Baseline	--	15.5 dB	Favors Center and Right sections at mid-high frequencies. Tends toward low volumes in Center section at low frequencies.
0°	+3.5 dB	6.8 dB	Most symmetrical. Favors the center of the audience with higher volumes.
30°	+4.2 dB	15.8 dB	Significantly increases volumes at mid-low frequencies in the Center and Left audience sections. Unevenness in the audience is quite large on average. Favors Center and Left sides.
45°	+4.2 dB	17.4 dB	Drastically increases volumes at mid frequencies. Reduces some of the unevenness in the audience at higher frequencies. Strangely low outlier at 250 Hz Right audience section.
60°	+5.5 dB	9.6 dB	Largest, consistent increases in volume in audience. Volume within audience is fairly evened out as well, though tends to favor Left section.
90°	+4.4 dB	8.9 dB	Fairly even increases. Generally favors Center and Right audience at mid-high frequencies.

Table 2: Summarized results of wall testing with woodwind instruments

Component Set-Up around Center Stage Position	Combined Average Decibel Changes from Baseline	Maximum Volume Difference within Audience	Notes
No Component/Baseline	--	9.1 dB	Heavily favors Right and Left sections at low pitches.
Walls 25°	+3.6 dB	4.2 dB	Best total volume gains for the oboes across all pitches and locations. Reduced sound "spread". Still slightly favors the Left and Right Audience sections at low pitches.
Walls 60°	+2.8 dB	5.0 dB	Decent volume increases but with significant spread/variation within the audience
Walls 75°	+2.1 dB	6.9 dB	Maintains the Baseline pattern of favoring Right and Left sections at low pitches. Shows large volume increases at mid-range pitches.
Mats	+2.3 dB	2.5 dB	Significantly reduced "spread" of volumes within the audience at the price of, overall, smaller increases in volumes.
Mats + Walls 60°	+2.7 dB	4.1 dB	Fairly significant volume gains across all pitches. Tends to favor Right audience section at low and high pitches (best balance at mid-range pitches).

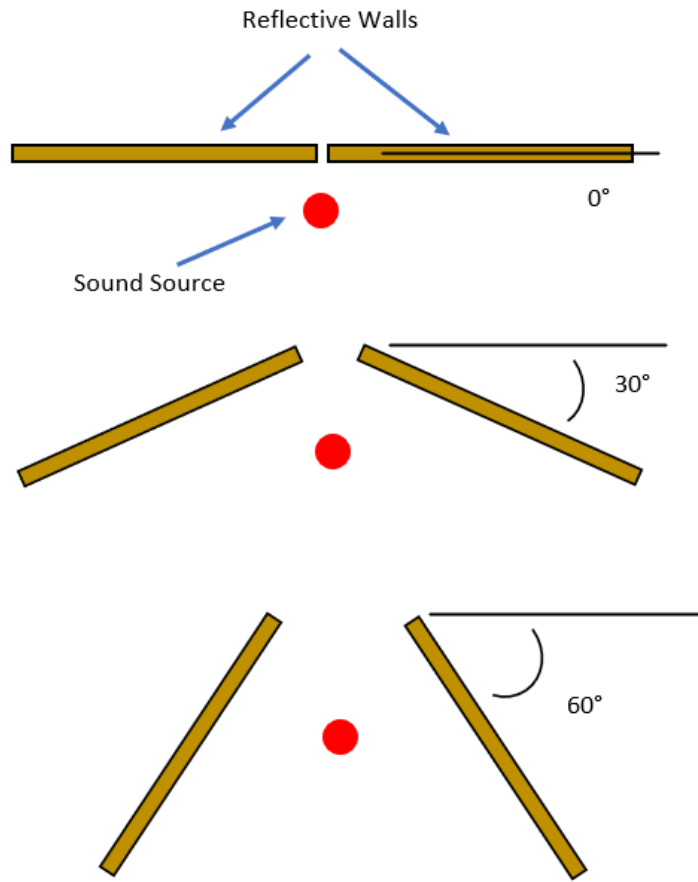


Figure 1: Wall angle testing explanation