

Pitsco
Harmonic
Highrise



User Guide

59738 V0207

INTRODUCTION

Give students a clear view of how buildings react to various shake frequencies with Pitsco’s Harmonic Highrise. This tool demonstrates resonant frequency without breaking a wooden tower into pieces. And its polycarbonate sides won’t break – even at high frequencies.

MATERIALS INCLUDED

- Tower base block (with holes)
- 12 screws
- Foundation block
- 12 washers
- 2 polycarbonate side panels
- 2 floor pieces

Note: If any items are missing, please contact customer service at 800-358-4983.

REQUIRED FOR ASSEMBLY

- White glue (such as HD Bond)
- Pencil
- Small Phillips screwdriver

ASSEMBLING THE HARMONIC HIGHRISE

1. Center the foundation block over the tower base block. Make sure the predrilled holes on the sides of the foundation block face the long holes on the tower base block. Using the pencil, mark a line on both sides of the foundation block (Figure 1). Set aside the foundation block.



Figure 1

2. Apply a thin bead of glue back and forth between the two lines on the tower base block. Carefully, place the foundation block on top of the glue and press it down firmly. Let it dry at least an hour.

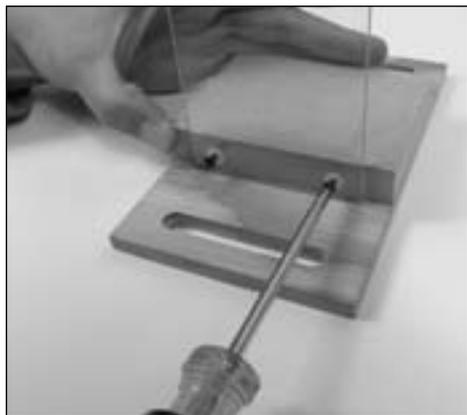


Figure 2

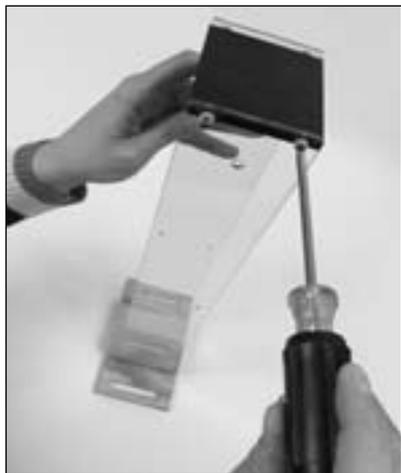


Figure 3

3. Collect one polycarbonate side panel, two screws, and two washers. Note that there is an extra hole on one end of the side panel. Align the end without the extra hole so the small holes in the side panel match up to the predrilled holes on the side of the foundation block. Place a washer over a screw and screw it into one of the holes (Figure 2). Repeat with the second washer and screw in the other hole.

4. Repeat Step 3 for the other side.

5. Place one of the floor pieces between the two side panels. Line up the predrilled holes in the floor piece to the holes at the top of the side panels. Secure the floor piece to the side panels with four screws and washers (Figure 3).

6. Repeat Step 5 for the other floor piece, except attach this floor piece to the holes in the middle of the side panels (Figure 4).

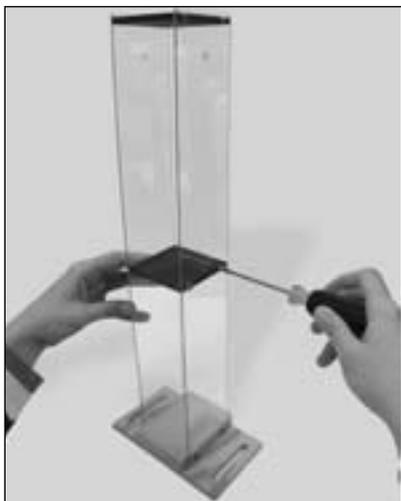


Figure 4

That completes the assembly of the Harmonic Highrise.

USING THE HARMONIC HIGHRISE

Note: The Harmonic Highrise is designed to be used with the EQ^s Programmable Tremor Table. The instructions below require the hardware that comes with the EQ^s.

1. Align the tower base block holes over the inside screw holes in the tabletop of the EQ^s Programmable Tremor Table.
2. Place the washers over the four holes, and thread the screws through the washers and into the tabletop holes until they are finger tight. Do not overtighten the screws.
3. Follow EQ^s User Guide directions to operate the tremor table.

UNDERSTANDING THE RESULTS

During an earthquake, the bottom of a building is moved sideways. Inertia – the resistance an object has to change in motion – causes that sway to work up the building. This means the top also sways but not in the same direction as the bottom. The result is the building sways back and forth with the top and bottom working against each other. At certain frequencies – or rates of swaying – there is the potential that the building will fall apart.

The Harmonic Highrise shows this sway – and even resonant frequency at some shake frequencies – in a safe and visible way.

Understanding resonant frequency is important even to those who do not work in engineering. For example, when army troops march across a bridge, they do it out of step. And the army vehicles are spaced unevenly. These practices avoid causing a vibration at the bridge's natural frequency. To do otherwise could cause a disaster.

MAINTAINING THE HARMONIC HIGHRISE

The screws in the Harmonic Highrise could loosen over time. Periodically, check and tighten the screws if needed.

PITSCO
LEADERS IN EDUCATION.

P.O. Box 1708 • Pittsburg, KS 66762
www.shop-pitsco.com
Toll-Free Orders 800-835-0686