# Acoustic Enclosure User Guide

*Relevant to the AEK-2002, NanoVault, Crypt, AEK-2011, and Custom Workstation Acoustic Enclosures*

Affordable Acoustic Isolation Helping You

Achieve More from your Research

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# Overview

Herzan acoustic enclosures have become the chosen solution for hundreds of sensitive research instruments worldwide, providing exceptional acoustic isolation in the nosiest environments. Whenever a high-precision microscope is bombarded with disruptive acoustic noise, researchers and instrument manufacturers can rely on Herzan's range of acoustic enclosures to help maximize their data quality through carefully selected and highly engineered acoustic control techniques.

Herzan acoustic enclosures come in many standard form factors and designs to meet the varying formats of laboratories across the world. This manual serves to inform Herzan acoustic enclosure users on how to best uncrate, install, and use their new Herzan acoustic enclosure.

# Item(s) Checklist

This checklist ensures all necessary items are included in the acoustic enclosure shipment. Please mark YES if an item listed below has been included in your shipment. Please mark NO or N/A if any items listed below have not been included. If there are items listed below not included in your shipment, please contact Herzan directly (949-363-2905 or support@herzan.com) to receive replacement parts.

| Item | Description/Notes | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| **Acoustic Enclosure** | Refer to your purchase order/quotation to confirm the enclosure model number received matches the model number found in the quotation/purchase order. If the model number provided in your shipment does not match the model number listed in the quotation/purchase order, contact Herzan directly (949-363-2905 or sales@herzan.com) for further instructions. | | | |
| **Cable Clamp(s)** | Acoustic enclosures tend to include at minimum one cable clamp, unless modified to include more. Ensure one is provided and attached to the acoustic enclosure prior to installation. | | | |
| **Modifications and Upgrades** | Herzan often customizes standard acoustic enclosures or builds entirely unique acoustic enclosures to meet research requirements. If you have customized your enclosure, ensure the features ordered are represented in the acoustic enclosure delivered. If there are features missing, please contact Herzan directly (949-363-2905 or sales@herzan.com) for further instructions. | | | |

| | | | | |
|---|---|---|---|---|
| Hex Wrench | A 3/16" hex wrench is provided to help install cables into the provided cable clamp(s) by removing one or both pieces of the cable clamp off the enclosure. | | | |
| Installation Manual | If a printed installation manual was not provided in the acoustic enclosure shipment, please reference the following online resource for further download/print instructions: http://www.herzan.com/resources/manuals-downloads.html | | | |

# Pre-Installation Checklist

The pre-installation checklist reviews all preliminary items needing to be considered prior to installation, ensuring an optimal user experience. Please mark YES if an item listed below has been confirmed to be true. Please mark NO or N/A if items listed below are incorrect or have not been confirmed to be true. If there are items listed below marked No or N/A, please contact Herzan directly (949-363-2905 or support@herzan.com) for further instructions.

| Item | Description/Notes | Yes | No | N/A |
|---|---|---|---|---|
| Internal Dimensions | Are the internal dimensions of the acoustic enclosure sufficient to include all equipment being installed? | | | |
| External Dimensions | Do the external dimensions of the acoustic enclosure fit within the room of the building where it will be used? | | | |
| Cable Access Inside Enclosure | Are the cable clamps provided capable of allowing access to all cables needing to enter the acoustic enclosure? | | | |
| Ambient Acoustic Noise Levels | Are the ambient acoustic noise levels known (i.e. have they been measured) and has that information been shared with Herzan? | | | |
| Instrument/Application Acoustic Noise Specifications | Are there instrument manufacturer specifications for acoustic noise levels known and has that information been shared with Herzan? | | | |
| Specifications Versus Performance | Will the performance of the acoustic enclosure bring the instrument or application within manufacturer-defined specification for acoustic noise? | | | |

# Optional Accessories & Upgrades

**Retrofit (R):** *Eligible for Enclosure Retrofit*
**Non-Retrofit (NR):** *Ineligible for Enclosure Retrofit, Only Available for New, Undelivered Enclosures*

| Item | Description/Notes | R | NR |
|---|---|:---:|:---:|
| **Performance Boost** | Additional layers of sound damping material | | ✓ |
| **NanoDamp Frame** | Damping material lining enclosure frame for greater vibration reduction | | ✓ |
| **EMI Shielding** | Converts acoustic enclosure to fully conductive, EMI shielding enclosure | | ✓ |
| **Temperature Stability** | Raises, regulates, and monitors internal enclosure temperature to slightly above ambient. Stability:  +- 0.10 Celsius | | ✓ |
| **Active/Passive Vibration Control Platform** | Herzan offers a collection of active and passive vibration control solutions for a variety of research applications | ✓ | ✓ |
| **Additional Cable Clamp** | Additional cable clamp to install in the place of the available cable port plug | ✓ | ✓ |
| **External Base Shelving** | External base shelving for easy management of lab equipment with a Herzan acoustic enclosure | ✓ | ✓ |
| **Custom Accessory/Upgrade** | We customize our enclosures entirely, so feel free to share your requirements and we will be happy to review your needs | ✓ | ✓ |

# Crating/Uncrating the Acoustic Enclosure

**Step 1:**   Remove the panel labeled 'Front' by removing the screws circled in red marker.



**NOTE:** All screws used on the crate are Philips head and will require a compatible screw driver or power drill bit.

**Step 2:**   Remove the screws attached to the roof of the crate and remove the roof of the crate.

**Step 3:**   Detach the cross braces from the crate side panels by removing the marked screws (also circled in red).

**Step 4:**   Detach cross braces from one another by loosening the attachment bolts and remove the cross braces from restricting the enclosure.

**Step 5:**   Remove the side panels of the crate.



**Step 6:**   Place the ramp of the crate in its correct position to allow the enclosure to be wheeled onto the ground. The correct position is at the floor of the front of the crate, where additional support beams are available to span the ramp from the crate to the ground.

**NOTE:** Not all acoustic enclosures will come with a ramp, which is determined by how top heavy the enclosure is (for safety purposes). If your crate does not include a ramp, a forklift or pallet jack will be required to lift the enclosure off the crate pallet and onto the ground.

**NOTE:** Retain all crate parts (panels, screws, and cross braces) for future use.

**Step 7:**   Raise the leveling feet of the enclosure by adjusting the 1 1/8" jam nut. All four leveling feet must be raised for the enclosure to be supported by its caster wheels.

**Step 8:**   Once the enclosure is on its caster wheels, carefully transport the enclosure down the ramp onto the ground.

**NOTE:** It is advised that multiple people are used for this step. If there are not sufficient people available to transport the enclosure down the ramp, a lifting company or lifting equipment will be required. Herzan is not responsible for any damage or bodily harm during the transport/installation of the enclosure.

# Positioning the Acoustic Enclosure

**Step 1:** Once the enclosure is firmly on the ground resting on its caster wheels, slowly roll the enclosure to its destination.

**NOTE:** The enclosure may be very heavy and it can be difficult to transport across great distances. At least two to three people should perform this step slowly and carefully.

**Step 2:** Once the enclosure has been transported to its destination, use a wrench to lower the leveling feet until the enclosure is resting on the leveling feet and all four feet are level.

**Step 3:** Install instrument inside enclosure, using one of the door(s) or access point(s) available.

**Step 4:** Install the cables into the provided cable clamp, using the instructions listed below.

# Cable Management

**Step 1:** Remove the top cable clamp piece using the provided 3/16" hex wrench.

**Step 2:** Feed all cables into the enclosure through the cable clamp opening.

**Step 3:** Connect all cables to the equipment being used inside the enclosure.

**NOTE:** It is important to leave enough cable length for slack inside and outside the enclosure to prevent damage to the cable or unwanted tension on the equipment.

**Step 4:** Re-attach the top cable clamp piece to the remaining cable clamp by using the provided 3/16" hex wrench. Make sure to tighten the cable clamps well so the enclosure remains air-tight.

**NOTE:** Cables should remain slack inside and outside of the enclosure at all times. If cables are pulled tight, they will transmit parasitic vibrations into the enclosure. If cables are connected to noise-generating equipment (ie. fans, CPUs), the cable should be weighted outside of the enclosure to minimize the vibrations being transferred.

# Troubleshooting

## Issue: A part on my enclosure seems to be defective.

- Contact us right away and we'll arrange for a replacement. Please have the serial number for the enclosure and a description of the issue ready when you speak to our support team.

## Issue: I'm having trouble getting the enclosure through a door.

- Most enclosures have detachable doors and other removable parts which can allow the system to pass through a door. Please contact Herzan to get details on this procedure.

## Issue: I'm having trouble un-crating the enclosure.

- Refer to the un-crating procedure guide on the Manuals page. If that doesn't answer your questions, contact Herzan.

## Issue: The door on my enclosure doesn't open and close properly.

- The gas springs, which assist in the door opening and closing, sometimes need to be replaced. Please contact Herzan to order replacement springs. If your enclosure is covered under warranty, there will be no charge for replacement springs.

- Please have the enclosure and gas spring serial number ready when contacting the Herzan support team.

## Issue: The instrument is still experiencing acoustic noise.

- If acoustic noise is still causing issues after the acoustic enclosure has been installed, the most likely culprit is a poor seal on the enclosure. Check that the door is being closed and latched properly when taking measurements. Check that all cables are installed in the cable clamp correctly, ensuring there are no air gaps in the cable clamp. Also, ensure that the cable clamp is attached to the enclosure securely.

- Check that unused cable ports are sealed with a cable port cover. Make sure that no other ports, such as gas purge attachments or feedthroughs, are left open. If the enclosure has lifting handles, ensure that the attachment points have been filled with fill screws.

- If the enclosure is sealed properly and acoustic noise is still present, make sure that there are no extraordinary noise sources, such as voices, amplified sound, or traffic, present at the time of measurement.

- Lastly, make sure you are observing all Best Practices when using your acoustic enclosure.

## Issue: The instrument is still experiencing high levels of noise.

- If you are still seeing noise levels but have ruled out acoustic noise by taking the steps above, there may be a different source of noise affecting your instrument or application. Check that the enclosure is not exposed to high levels of air movement. If the enclosure is exposed to air movement, move the enclosure out of the direct path of any air vents or wind. If this is not an option, employ air baffles to divert air movement.

- Vibrations are another source of noise that can limit an instrument or application. Cables entering the enclosure can transmit vibrations directly into the instrument, causing a direct disturbance to the instrument itself. Make sure all cables entering the system are slack (not taut) and if necessary, weighted. Make sure the cables are tightly clamped in the cable clamp to further disperse parasitic vibration. Also, make sure there are no noise-generating equipment, such as pumps or computer CPUs, resting on the enclosure or support frame. It is important to also check there are no extraordinary sources of vibration present, such as nearby construction or machines operating.  If the above measures are not effective, you may need to employ a vibration isolation system or upgrading your current vibration isolation system.

- Other potential sources of noise include thermal fluctuation and electromagnetic interference. Consider these sources of noise as being detrimental to your measurements. If these noise sources are present, consider employing an EMI Shield or temperature stability feature.

For troubleshooting information please visit: http://herzan.com/support/troubleshooting/air-based-isolation.html

# Best Practices

The following suggestions are designed to minimize the effects of noise on sensitive measurements and maximize the performance of a Herzan acoustic enclosure. These are general tips; individual circumstances may vary.

- Avoid air vents which can cause interference from air movement. If necessary, create a baffle which will divert the flow of air.

- Avoid noisy hallways and rooms. Close the room door before beginning sensitive measurements. If necessary, institute quiet hours during which measurements can be taken with minimal interruption.

- Don't place noise-generating equipment such as CPUs or pumps on an acoustic enclosure or on the support frame. If possible, place noise-generating equipment in a separate room.

- Before beginning sensitive measurements, make sure the enclosure is totally sealed. Close and latch the enclosure door and make sure cable clamps are attached tightly.

# Dimensions and Weight



*AEK-2002*          *NanoVault*          *The Crypt*          *AEK-2011*

| Model | AEK-2002 | NanoVault | The Crypt | AEK-2011 |
|---|---|---|---|---|
| **Measurement Units** | **Imperial (Inches / in.)** | | | |
| Internal Dimensions (WxDxH) | 25.6 x 28.8 x 24 | 34.5 x 31 x 28.1 | 40 x 35.1 x 38 | 54.2 x 37 x 40 |
| External Dimensions (WxDxH) | 32.1 x 34.6 x 55.3 | 40 x 34.6 x 60.8 | 43.5 x 40.6 x 68 | 61.5 x 40 x 73 |
| Shipping Dimensions (WxDxH) | 40 x 43 x 67 | 41 x 46 x 63 | 46 x 47 x 70 | 69 x 48 x 81 |
| | | | | |
| **Measurement Units** | **Metric (Centimeters / cm)** | | | |
| Internal Dimensions (WxDxH) | 65 x 73.2 x 61 | 87.6 x 79 x 71.4 | 102 x 77 x 96.5 | 138 x 94 x 102 |
| External Dimensions (WxDxH) | 81.5 x 88 x 140.5 | 102 x 88 x 154 | 110 x 103 x 173 | 156 x 102 x 185 |
| Shipping Dimensions (WxDxH) | 102 x 109 x 170 | 104 x 117 x 160 | 117 x 119 x 178 | 175 x 122 x 206 |
| | | | | |
| **Measurement Units** | **Imperial (Pounds / lbs)** | | | |
| System Weight | 780 | 955 | 1,350 | 1,410 |
| Shipping Weight | 830 | 1,055 | 1,420 | 1,500 |
| | | | | |
| **Measurement Units** | **Metric (Kilograms / kg)** | | | |
| System Weight | 354.5 | 434.1 | 613.6 | 640.9 |
| Shipping Weight | 377.3 | 479.5 | 645.5 | 681.8 |
| **NOTE:** Values to be considered approximate for acoustic enclosure dimensions and weight. If you have a custom acoustic enclosure, please reference the quotation/purchase order for specific acoustic enclosure dimensions and weight. | | | | |

# Contact Us

If you have any questions about your acoustic enclosure or would like to speak to a Herzan sales representative about future applications, please don't hesitate to contact us at any time.

## Sales:

- Email: sales@herzan.com
- Phone: (949) 363-2905 Extn. 300

## Support:

- Email: support@herzan.com
- Phone: (949) 363-2905 Extn. 305

# Connect With Us

There are many ways in which you can connect with us and stay current on the latest developments at Herzan.

➤ Herzan.com/about/herzan-happenings.html

➤ Facebook.com/Herzanllc

➤ Twitter.com/Herzanllc

➤ Linkedin.com/company/Herzan

➤ Plus.google.com/+Herzan

➤ Youtube.com/Herzanvideopage