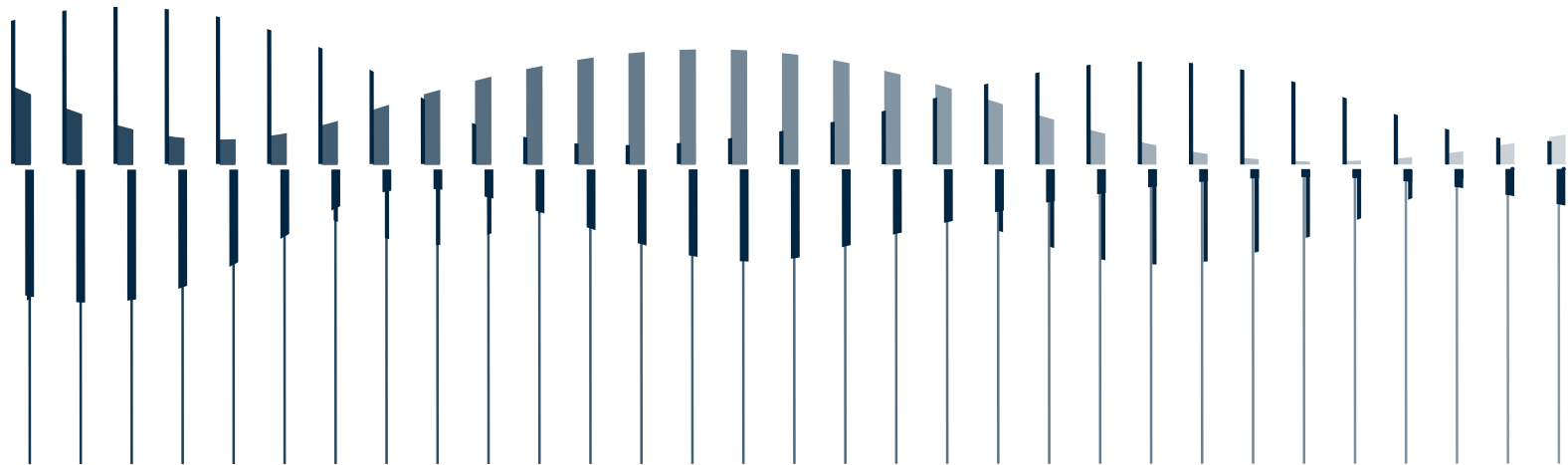




Instruction Manual

GRAS 48LX-4 and 48LX-8 UTP Line Arrays

Level and Frequency Calibration



Revision History

Any feedback or questions about this document are welcome at gras@gras.dk.

Revision	Date	Description
1	2020-11-16	First edition
2	2024-09-10	Update: Warning against use of double sided tape



Do not touch the diaphragm



Never use double-sided adhesive tape

Copyright Notice

© 2024 GRAS Sound & Vibration

<http://www.grasacoustics.com>

Any technical documentation that is made available by GRAS is the copyrighted work of GRAS and is owned by GRAS.

The content in this document is subject to change without notice. GRAS Sound & Vibration is not liable or responsible for any errors or inaccuracies that may appear in this document.

Trademarks

Any product names mentioned in this document may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Contents

- Introduction 4
- RA4803 Sensitivity and Frequency Calibration Kit for 48LX-4 and 48LX-8 4
 - Adapter for Calibration of UTP Line Arrays 4
 - Pistonphone Calibration Adapter and Electrostatic Actuator 4
- Mounting the Line Array Calibration Adapter 5
- Frequency Calibration..... 8
- Accessories..... 9
- Warranty, Service and Repair 9
 - Warranty9
 - Service and Repairs9

Introduction

Proper calibration of the line array requires that each microphone is calibrated separately in a controlled environment. For this purpose, the RA4803 calibration kit must be used. The contents of this kit are described below.

RA4803 Sensitivity and Frequency Calibration Kit for 48LX-4 and 48LX-8

The RA403 Calibration Kit consists of the following items:

Adapter for Calibration of UTP Line Arrays

This adapter is used both for level and frequency calibration. It is mounted on the UTP line array and serves as a receiver for the adapter for level calibration and the actuator for frequency calibration. It can easily be released and glided from one microphone to the next. When mounted over a microphone and its rubber fairing, a well-defined volume for the calibration is created.

Pistonphone Calibration Adapter and Electrostatic Actuator

The pistonphone calibration adapter consists of two pieces, the upper piece fits in the pistonphone while the lower piece has an inner thread for securing the assembly on the pistonphone and an outer bayonet-type flange which screws into the receptor flange of the line array adapter, see Fig. 1, Fig. 4, and Fig. 5. The electrostatic actuator is designed to simply rest on the line array adapter. A stop and three distance legs make proper alignment easy.

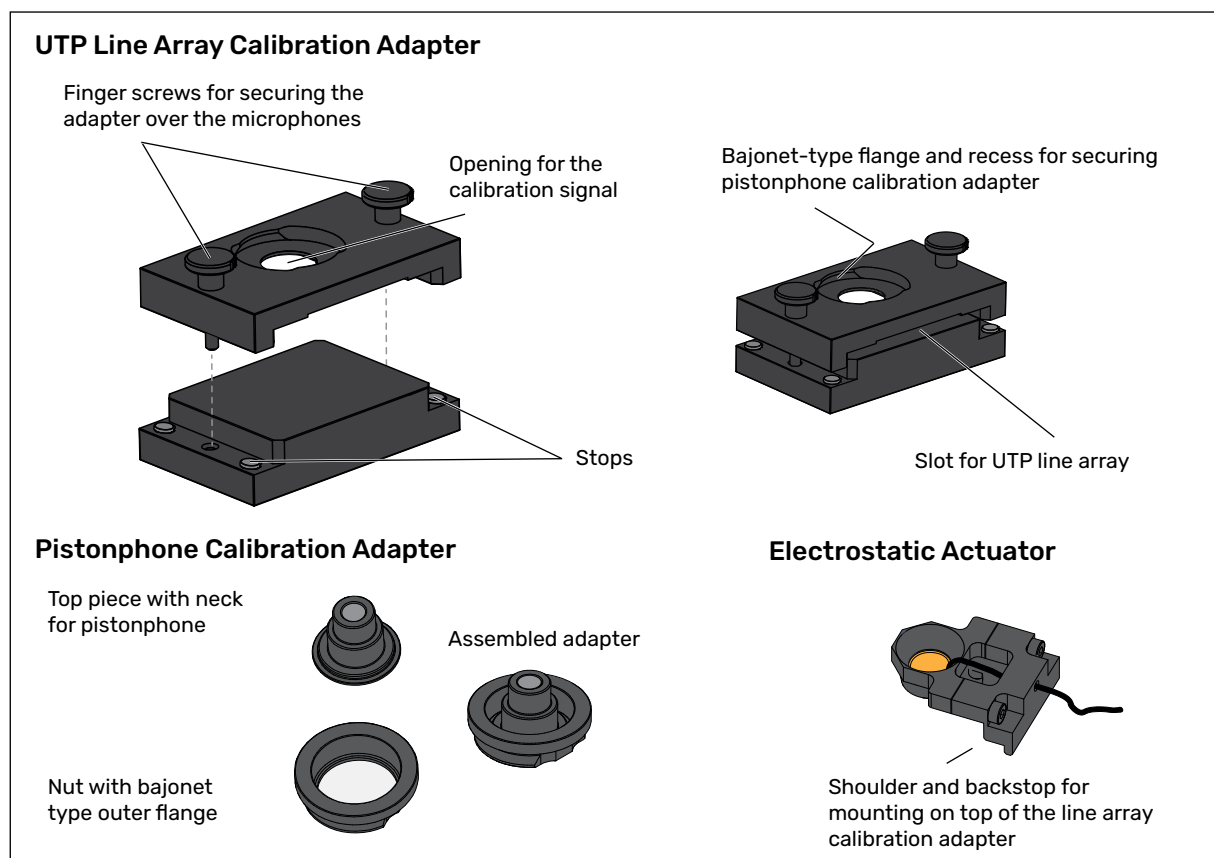


Fig. 1. The RA4803 Sensitivity and Frequency calibration kit for 48LX-4/48LX-8.

Mounting the Line Array Calibration Adapter

The calibration adapter for the line array consists of two parts held together with two finger screws. When assembled, but not fully tightened, the line array can be pushed into the slot, and can easily be moved and fixated over the microphone to be calibrated.

When the finger screws are loosened about one full turn, the opening for the array is wide enough for this. The cavity for the calibration must be centered over the diaphragm of the microphone. This need not be very accurate, a visual estimate of correct centering is sufficient.

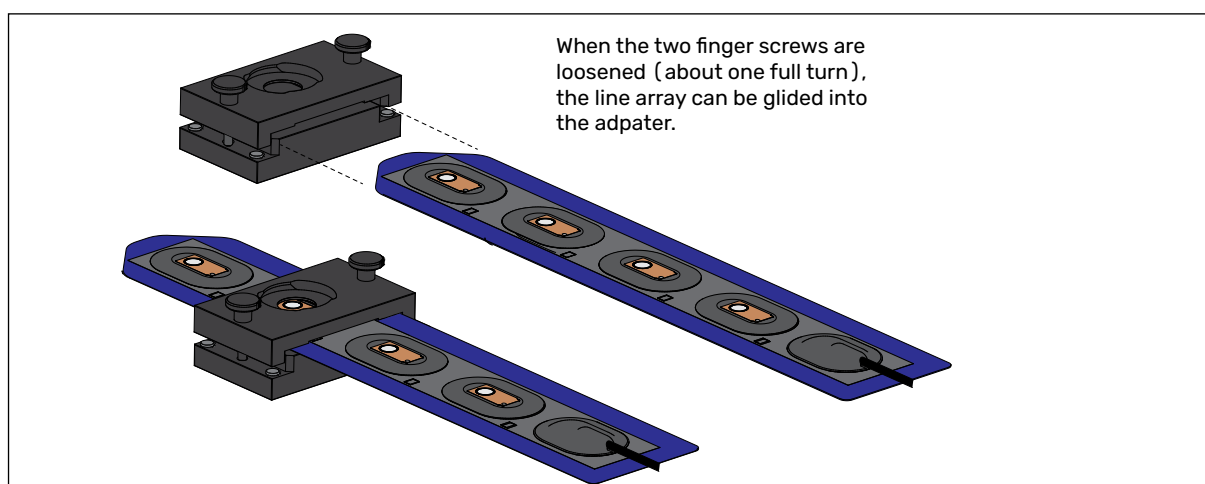


Fig. 2. Showing how the line array slides into the line array calibration adapter.

When mounting the adapter, it is important that it seals evenly on the rubber fairing to ensure a closed cavity for the calibration. In the figure below the orange dotted lines indicate where the adapter must establish a seal. Therefore you should push down the adapter in the middle while tightening the screws to avoid that more pressure is applied to one side than the other. The adapter has four stops that help to obtain an even seal.

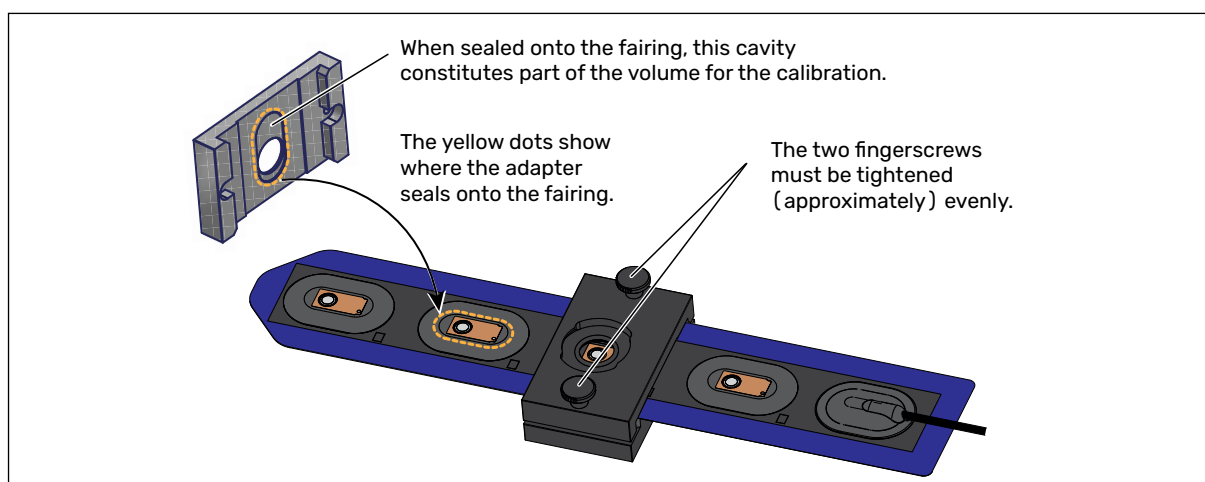


Fig. 3. Showing how the adapter seals over the rubber fairings.

Procedure

1. Ensure that the two finger screws are sufficiently loose for the strip to move smoothly in the slot. If the adapter is closed, about one full turn will suffice.
2. Push the strip into the slot until the diaphragm of the microphone to be calibrated is located in the center of the calibration opening.
3. Place one or two fingers close to the center of the upper part and press it downwards.
4. While doing this, tighten the two screws until you feel the upper part hitting the stops.

It is important that the screws are tightened fairly evenly so that the upper part does not tilt, as this could mean that the volume will not be tight. The four stops shown in Fig. 1 prevent that you damage the rubber fairing by overtightening the screws. Finger force is sufficient, but do tighten enough to obtain a proper sealing of the calibration volume.

Level Calibration

For level calibration with a pistonphone, a two-piece pistonphone adapter is used. This adapter is push-fitted in the pistonphone and secured with a nut that fits into the line array calibration adapter.

Procedure

1. Unscrew and remove the collar and first o-ring.
2. Push the top piece of the adapter into the pistonphone as far as it will go.
3. Screw on the nut and tighten it.

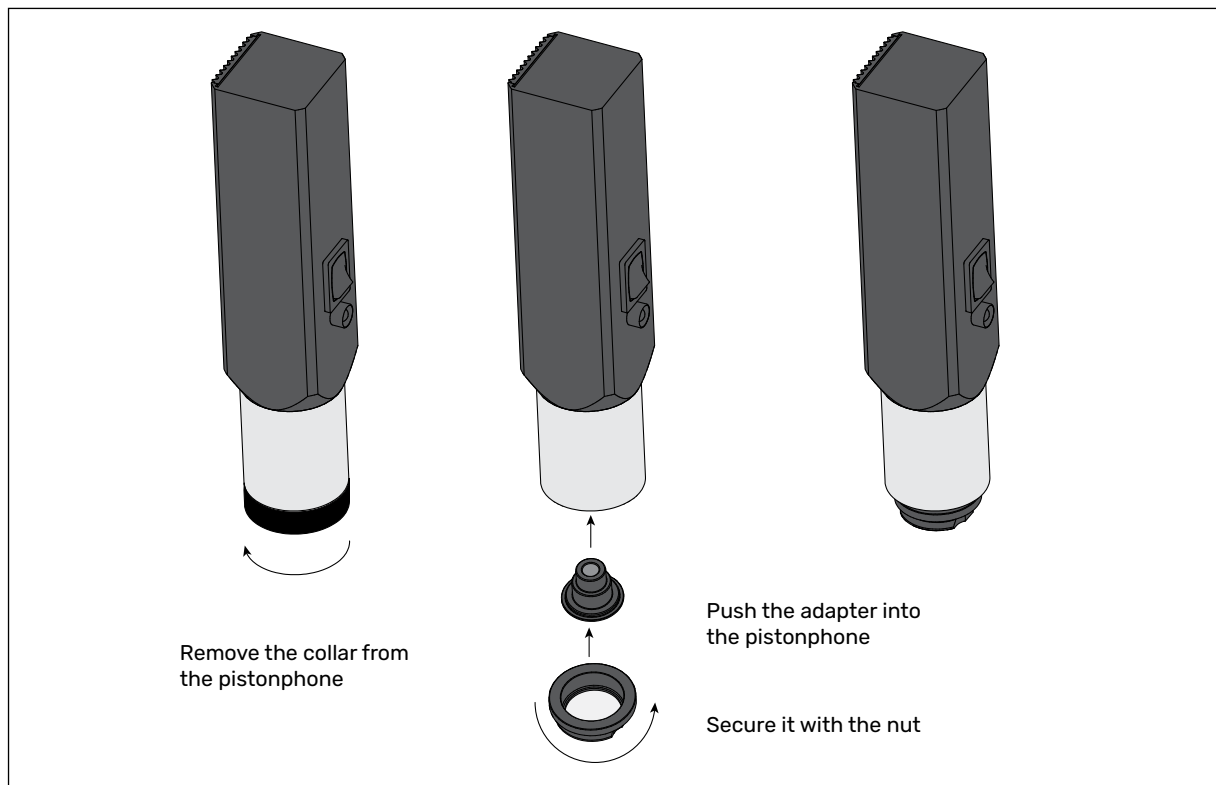


Fig. 4. Inserting the pistonphone adapter into the pistonphone.

4. Push the pistonphone down into the line array adapter.
5. Turn the pistonphone about 1/8 to 1/4 turn until the bayonet mechanism takes hold of the pistonphone.

When this is done, the pistonphone will be kept upright by the grip exerted by the bayonet mechanism, and you are now ready to calibrate.

6. Turn on the pistonphone.

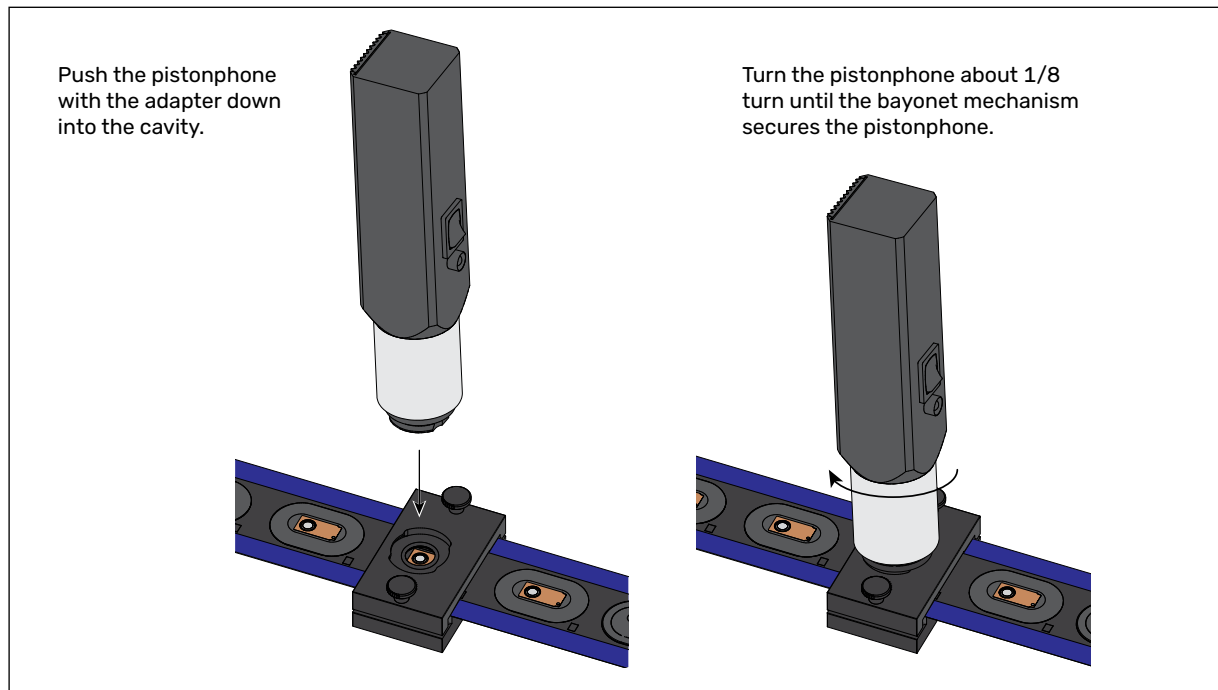


Fig. 5. Inserting the pistonphone with its adapter into the line array adapter.

Correction factor

Frequency	Correction Factor	Accuracy
250 Hz	0 dB	± 0.2 dB

Frequency Calibration

For frequency calibration, a setup like the one shown in Fig. 6 is needed. We recommend a complete microphone calibration system like the GRAS 90CA Microphone Calibration System.

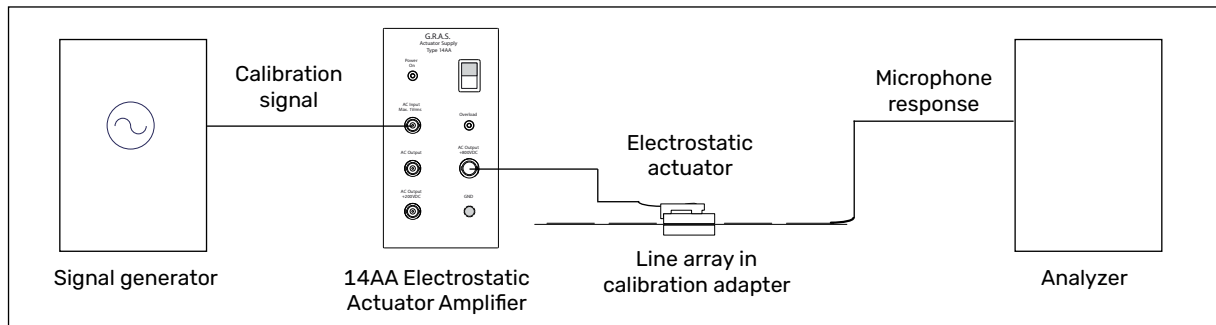


Fig. 6. Connection diagram for frequency calibration.

The electrostatic actuator is easy to mount, you simply place it on top of the adapter as shown in Fig. 7 below. It must be placed in the middle between the two finger screws. When this is the case and the backstop rests against the adapter, the actuator will be located over the center of the hole. Three distance legs at the front ensure that the actuator will rest on the sensor and that the distance to the diaphragm is correct.

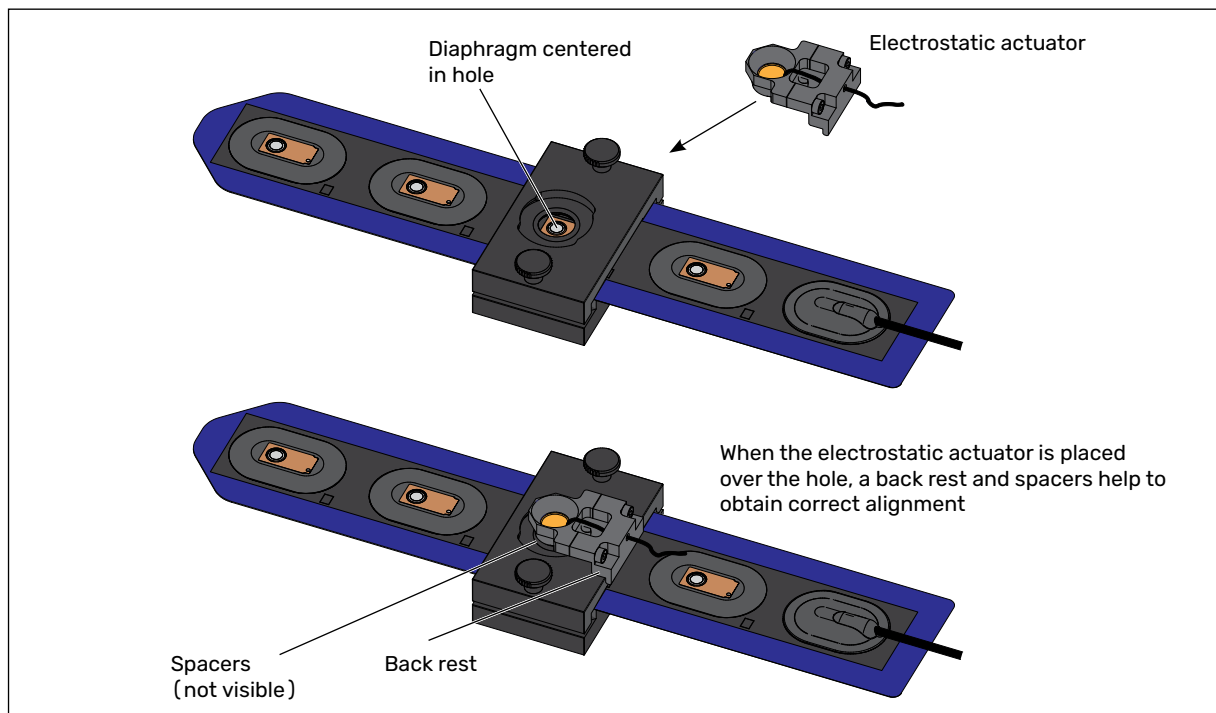


Fig. 7. Placing the electrostatic actuator onto the line array calibration adapter.

Procedure

1. Place the electrostatic actuator over the hole in the line array adapter.
2. Ensure that it is centered between the finger screws and that the backstop rests against the adapter as shown in Fig. 7 above.

You are now ready to calibrate.

Accessories

42AP	Intelligent Pistonphone
42AA	Pistonphone
14AA	Electrostatic Actuator Amplifier

Warranty, Service and Repair

Warranty

GRAS products are made of components from our proven standard portfolio and are all manufactured of high-quality material and branded parts that were chosen and processed to ensure life-long stability and robustness. The warranty does not cover products that are damaged due to negligent use, an incorrect power supply, or an incorrect connection to the equipment.

The length of the warranty period can be found at grasacoustics.com/repair-center/warranty.

Service and Repairs

All repairs are made at GRAS International Service Center located in Denmark. Our Service Center is equipped with the newest test equipment and staffed with dedicated and highly skilled engineers. Upon request, we make cost estimates based on fixed repair categories. If a product covered by warranty is sent for service, it is repaired free of charge, unless the damage is the result of negligent use or other violations of the warranty. All repairs are delivered with a service report, as well as an updated calibration chart.

Manufactured to conform with:

CE marking directive:
93/68/EEC



WEEE directive:
2002/96/EC



RoHS directive:
2002/95/EC



GRAS Sound & Vibration continually strives to improve the quality of our products for our customers; therefore, the specifications and accessories are subject to change.