



Instruction Manual

GRAS 67AX and 67AD Ground Array Microphone Systems



Revision History

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

Revision	Date	Description
1	27 May 2011	First publication
2	25 June 2012	Added calibration and verification information
3	4 December 2018	In situ-calibration added

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Contents

Introduction	4
Delivered Items	4
Optional Items	4
Assembling the 67 Series System	5
Calibration	6
In-situ Level Calibration	6
On-site Frequency Calibration	7
Seperate Level Calibration after Dismantling	7
Technical Specifications	8
Dimensions and Data for 67AX	8
Dimensions and Data for 67AD	9
Ordering Information	10
Accessories	10
Warranty and Repair	10
Calibration	10
Warranty	10
Service and Repairs	10

Introduction

This manual describes how to assemble and calibrate the 67 series ground array sets:

- 67AX ½" CCP flush-mounted microphone, low sensitivity
- 67AD ½" CCP flush-mounted microphone, high sensitivity

Delivered Items

The following table lists the items included with the 67series package.

Set	Item	Part Number
67AX	½" CCP flush-mounted microphone, with 3 m cable	47AX-S1
67AD	½" CCP flush-mounted microphone, with with 3 m cable	47AD-S1
	O-ring, Ø13.5 mm	OR0137
	O-ring, Ø55 mm	OR1512
	Cover plate, with 8 screws (SK2015 M2.00 × 4.00)	GR1426
	Cable safety clip, with 2 screws (SK2008 M3.00 × 8.00)	GR1427
	Mounting plate	GR1425
	Windscreen	AM0375

Optional Items

Set	Item	Part Number
	Calibration Adapter Holder Kit for sensitivity calibration	RA0216
	Electrostatic Actuator Connector Kit for frequency calibration	RA0310

Assembling the 67 Series System

The 67AX /67AD is delivered fully assembled.

If you have disassembled it (e.g. for inspection or similar) you can assemble it as described below:

1. Place the small O-ring in the ridge in the center hole.
2. Place the assembled microphone, grid-side down, in the center hole on top of the small O-ring. Arrange the cable attached to the microphone in the cavity surrounding the mounted microphone and fit the cable in the ridge that leads to the outer edge of the plate.
3. Place the large O-ring in the ridge near the edge of the cavity. The large O-ring must lie on top of the cable.
4. Fit the cover plate on top of the microphone and O-ring assembly and fasten in place with 8 screws.
5. Fasten the safety clip over the cable with 2 screws.

These steps are shown in Fig. 1.

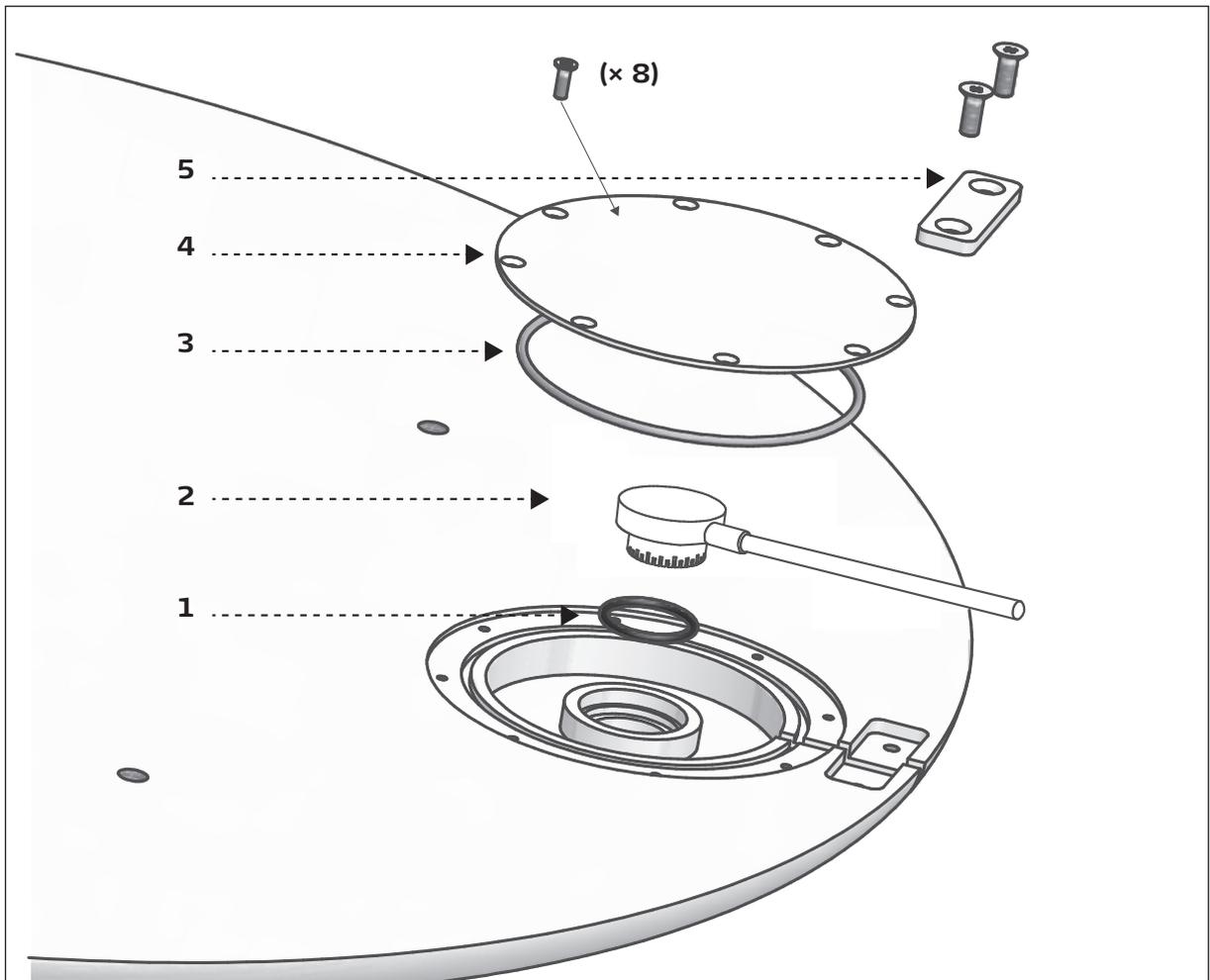


Fig. 1. A view of the order for assembling the parts of the 67AX/67AD.

Calibration

In-situ Level Calibration

For in-situ calibration, a pistonphone and a field verification adapter kit must be used. In addition to the adapter, the kit contains a holder with two finger screws for securing the adapter during the calibration procedure. When this adapter kit is used, the calibration result will be as reliable as what can be achieved with dismantling the microphone and calibrating it separately.

Items to use

- RA0216 Field Verification Adapter Kit
- GRAS Pistonphone, 42AP or 42AA.

Procedure

1. Mount the calibration adapter it as shown below
2. Hold the pistonphone steady while centering the opening in the adapter over the microphone.
3. Gently press the pistonphone over the adapter, ensuring that it is as far in the pistonphone as it will go. Also ensure that you hold the pistonphone upright.

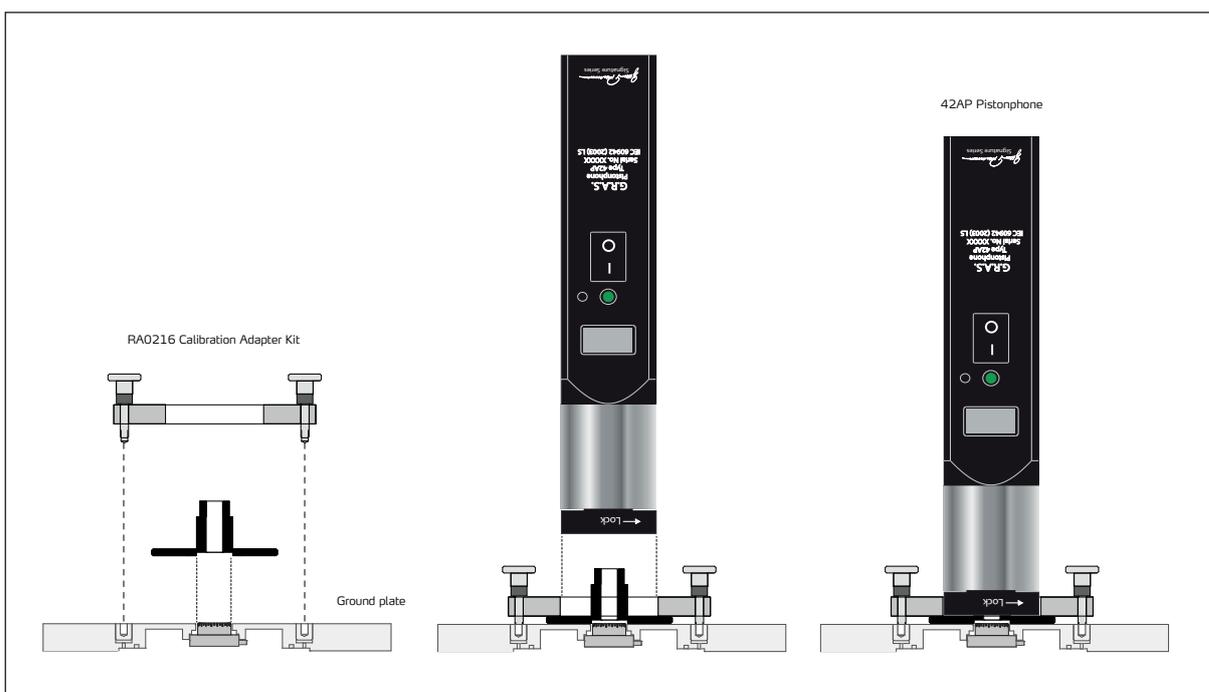


Fig. 2. How to mount and use the calibration adapter holder.

Consult the manual for your pistonphone on how to correct for the static pressure.

On-site Frequency Calibration

For on-site frequency calibration the RA0310 Actuator Connector is needed. It is an electrostatic actuator built into a plate that screws onto the ground plate with two finger screws, ensuring correct placement and stability during calibration. Also, a signal generator and an actuator supply are needed.

Items to use

- RA0310 Actuator Connector.
- GRAS 14AA Actuator Supply.
- A signal generator.

Procedure

1. Mount the RA0310 Actuator Connector over the microphone by use of finger screws.
2. Connect the 14AA Actuator Supply and signal generator as shown below. The RA0310 must be connected to the high-voltage output of the 14AA.
3. Perform the calibration .

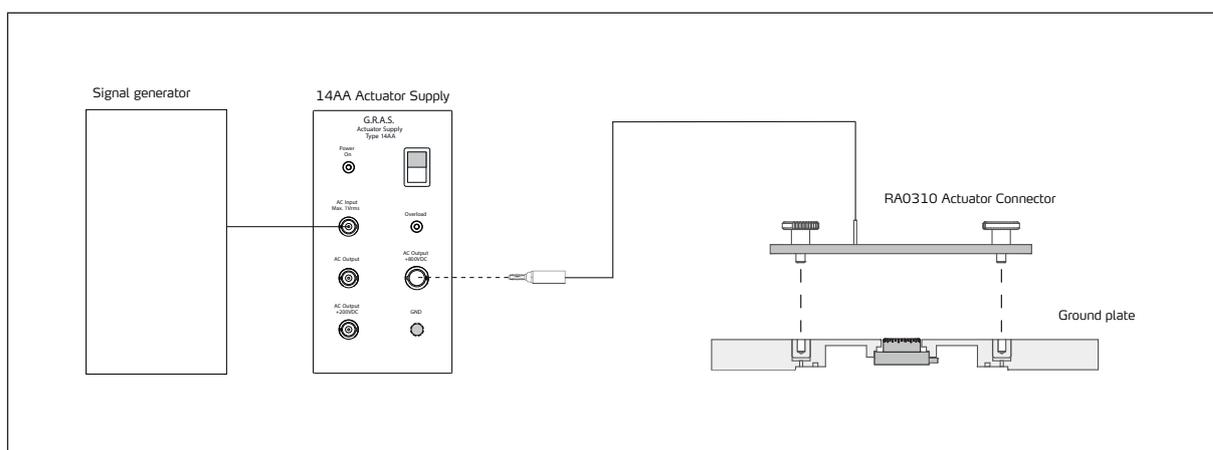


Fig. 3. Mounting and connecting the RA0310 Actuator Connector.

Separate Level Calibration after Dismantling

The microphone can be calibrated separately after dismantling from the ground plate. For complete calibration information, see the pistonphone instruction manual.

Remove the microphone from the mounting plate.

1. Set the pistonphone in an upright position, preferably using a calibration stand for stability.
2. Mount the pistonphone calibration adapter (RA0221) on the pistonphone.
3. Insert the microphone into the adapter on the pistonphone. Press gently to ensure that the microphone is inserted as far as it can go.
4. Turn on the pistonphone and calibrate as described in the instruction manual for the pistonphone.

Technical Specifications

Dimensions and Data for 67AX

Dimensions	
Microphone	Ø13.2 mm
Housing	Ø18.0 mm
Microphone set height	
Without grid	8 mm
With	9.20 mm
Weight	15 g
Mounting Plate	Ø400 mm
Frequency response for the set	
±2.0 dB	3.15 Hz – 20 kHz
±1.0 dB	5 Hz – 12.5 kHz
Nominal sensitivity for the set	
at 250 Hz	12.5 mV/Pa
Polarization voltage	0 V
Dynamic range for the set	
Upper limit (3 % distortion)	150 dB re. 20 µPa
Thermal noise	22 dB(A) re. 20 µPa
Temperature	
Operation	–30 °C to +70 °C / 22 °F to 158 °F
Storage	–40 °C to +85 °C / 40 °F to 185 °F
Temperature coefficient	–0.01 dB/ °C
Static-pressure coefficient	
250 Hz/25 °C	–0.008 dB / kPa
Humidity (non-condensing)	
Range	0 – 100 % RH
Influence (250 Hz)	<0.1 dB (0 – 100 % RH)
Influence of axial vibration equivalent to 1 m/s ²	66 dB re. 20µPa
Venting	Rear-vented

Data was collected in a temperature of 23 °C (±3 °C) and in a relative humidity of 60 % ±20 %.

Dimensions and Data for 67AD

Dimensions	
Microphone	Ø13.2 mm
Housing	Ø18.0 mm
Microphone set height	
Without grid	8 mm
With	9.20 mm
Weight	15 g
Mounting Plate	Ø400 mm
Frequency response for the set	
±2.0 dB	3.15 Hz – 10 kHz
±1.0 dB	12.5 Hz – 7 kHz
Nominal sensitivity for the set	
at 250 Hz	50 mV/Pa
Polarization voltage	
	0 V
Dynamic range for the set	
Upper limit (3 % distortion)	138 dB re. 20 µPa
Thermal noise	18 dB (A) re. 20 µPa
Temperature	
Operation	-30 °C to +70 °C / 22 °F to 158 °F
Storage	-40 °C to +85 °C / 40 °F to 185
Temperature coefficient	-0.01/-0.006 dB/ °C
Static-pressure coefficient	
250 Hz/25 °C	-0.008 dB / kPa
Humidity (non-condensing)	
Range	0 – 100 % RH
Influence (250 Hz)	<0.1 dB (0 – 100 % RH)
Influence of axial vibration equivalent to 1 m/s ²	66 dB re. 20µPa
Venting	Rear-vented

Data was collected in a temperature of 23 °C (±3 °C) and in a relative humidity of 60 % ±20 %.

Ordering Information

67AX – Included Items	Part Number
½" Ground array microphone kit (includes 47AX-S1 ½" Flush-mounted microphone set, Ø400 mm mounting plate with assembly parts and cable, and windscreen)	67AX
67AD – Included Items	Part Number
½" Ground array microphone kit (includes 47AD-S1 ½" Flush-mounted microphone set, Ø400 mm mounting plate with assembly parts and cable, and windscreen)	67AD

Accessories

For in-situ calibration, the following accessories must be ordered separately.

Item	Part Number
Calibration Adapter Holder Kit for sensitivity calibration	RA0216
Electrostatic Actuator Connector Kit for frequency calibration	RA0310

Warranty and Repair

Calibration

Before leaving the factory, all GRAS products are calibrated in a controlled laboratory environment using traceable calibration equipment. An individual test certificate is included with each product. The calibration information is also stored in the built-in TEDS.

Warranty

All GRAS products are made of high-quality materials that will ensure life-long stability and robustness. The 67AX is delivered with a 5-year warranty. Damaged diaphragms in microphones can be replaced. The warranty does not cover products that are damaged due to negligent use, an incorrect power supply, or an incorrect connection to the equipment.

Service and Repairs

All repairs are made at GRAS International Support Center located in Denmark. Our Support 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.

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

Manufactured to conform with:

CE marking directive:
93/68/EEC



WEEE directive:
2002/96/EC



RoHS directive:
2002/95/EC

