

Instruction Manual

Actuator Calibration Stand
Type AL0010



G.R.A.S.
Sound & Vibration

Actuator Calibration Stand Type AL0010

Revision 02 11 2004

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Introduction

The Actuator Calibration Stand Type AL0010 (Fig. 1) provides a convenient platform for testing condenser microphones. It has a fixture with a grub screw for holding a ½-inch preamplifier securely in place as well as recesses and a column for safely parking electro-static actuators and microphone protection grids when not in use (see Fig. 2).

Microphone Set-ups

Fig. 2 and Fig. 3 show respectively the set-ups for ½-inch and 1-inch microphones. Note the adapter in Fig. 3 for mounting a 1-inch microphone on a ½-inch preamplifier.

Additional Equipment

Fig. 5 shows what additional equipment can be supplied by G.R.A.S. Sound & Vibration and Fig 6 shows a block diagram of a possible set up with all additional equipment.

The following is a list of all required additional equipment:

- 1) Power supply for the ½ inch preamplifier,
e.g. the G.R.A.S. Power Module Type 12AK shown in Fig. 5
- 2) Actuator supply for electro-static actuators
e.g. the G.R.A.S. Actuator Supply Type 14AA shown in Fig. 5

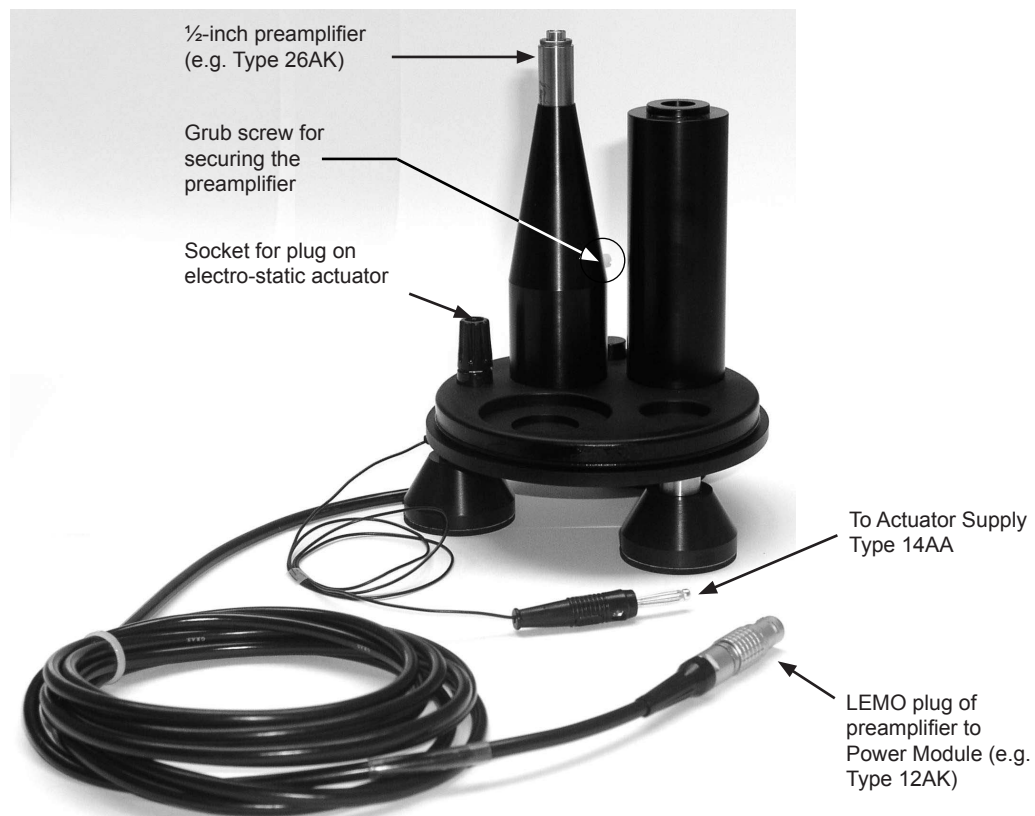


Fig. 1 Actuator Calibration Stand Type
AL0010

- 3) Signal generator capable of generating logarithmically swept tones within the frequency range of interest. This signal is fed to the actuator supply.
- 4) Measurement amplifier.
This receives, via the Type 12AK, the signal picked up by the microphone and measures the response of the microphone to the swept tone.

Items 3 and 4 could be combined in the same unit, e.g. a computer fitted with suitable hardware and software for A/D and D/A conversions in order to simulate both a signal generator and measurement amplifier.

Test Procedure

General

The basic stages in the test procedure are:

- 1) Setting up the microphone on the AL0010, see Fig. 3 or Fig. 4.
- 2) Applying a signal via the actuator supply to the electro-static actuator and measuring the output from the microphone.

The following deals in more detail with each stage of the test procedure.

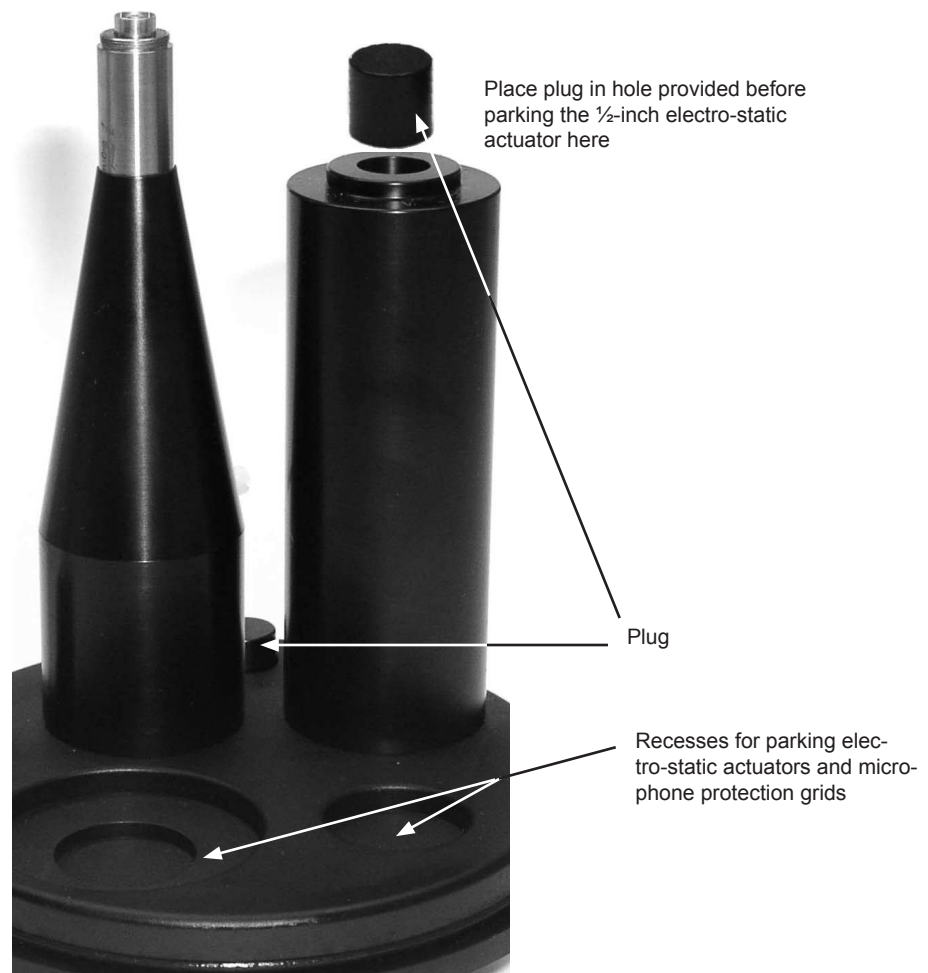


Fig. 2 Showing places for parking electro-static actuators and microphone protection grids and the grub screw for securing the preamplifier

Setting up

Note: the terms generator and measurement amplifier refer to a set up which simultaneously provides the test signal to the electro-static actuator and measures the signal picked up by the microphone.

Proceed as follows:

- 1) Power Module Type 12AK
 - Connect the free end of the preamplifier cable to the LEMO **Input** socket.
 - Connect, via a suitable cable, the BNC **Output** to the input of the measuring amplifier.
 - Select **Lin.** or **Direct**.
- 2) Actuator Supply Type 14AA
 - Connect the thin lead (with banana plug) from the AL0010 to the socket marked **+800V DC**.
 - Connect the output from the signal generator to the BNC socket marked **AC Input**.
- 3) Adjust the signal output level as required.

Applying a Swept Signal and Measuring the Output from the Microphone

The following describes a typical procedure for applying the swept signal.

It is assumed that the generator and measuring amplifier work to produce constant-confidence results (i.e. maintaining a constant βT product) in real time throughout the frequency range of interest and make the measurement data available graphically and numerically.

With everything set up as described above, proceed as follows:

- a) set the generator to oscillator mode
- b) set the measuring amplifier to flat response
- c) initiate a constant-level logarithmic sweep on the generator.

The measuring amplifier will follow the response of the microphone throughout the sweep and record and display the results accordingly.

Curves showing the upper and lower tolerance levels for the frequency range of interest could be superimposed on the graphical display.



Fig. 3 Set-up for calibrating the frequency response of a 1/2-inch condenser microphone

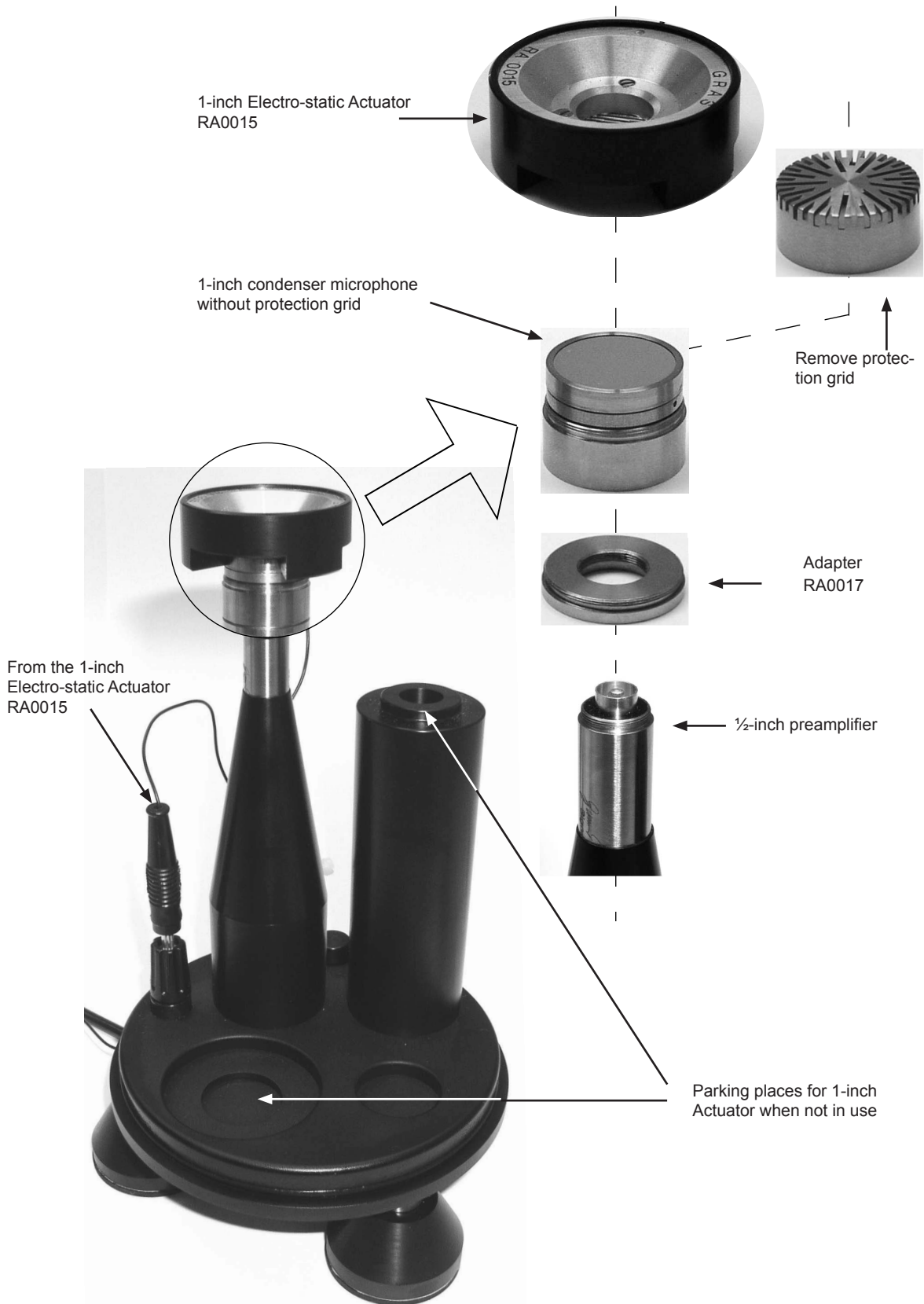


Fig. 4 Set-up for calibrating the frequency response of a 1-inch condenser microphone



Fig. 5 Showing AL0010 in a set up with Power Module Type 12AK and Actuator Supply Type 14AA

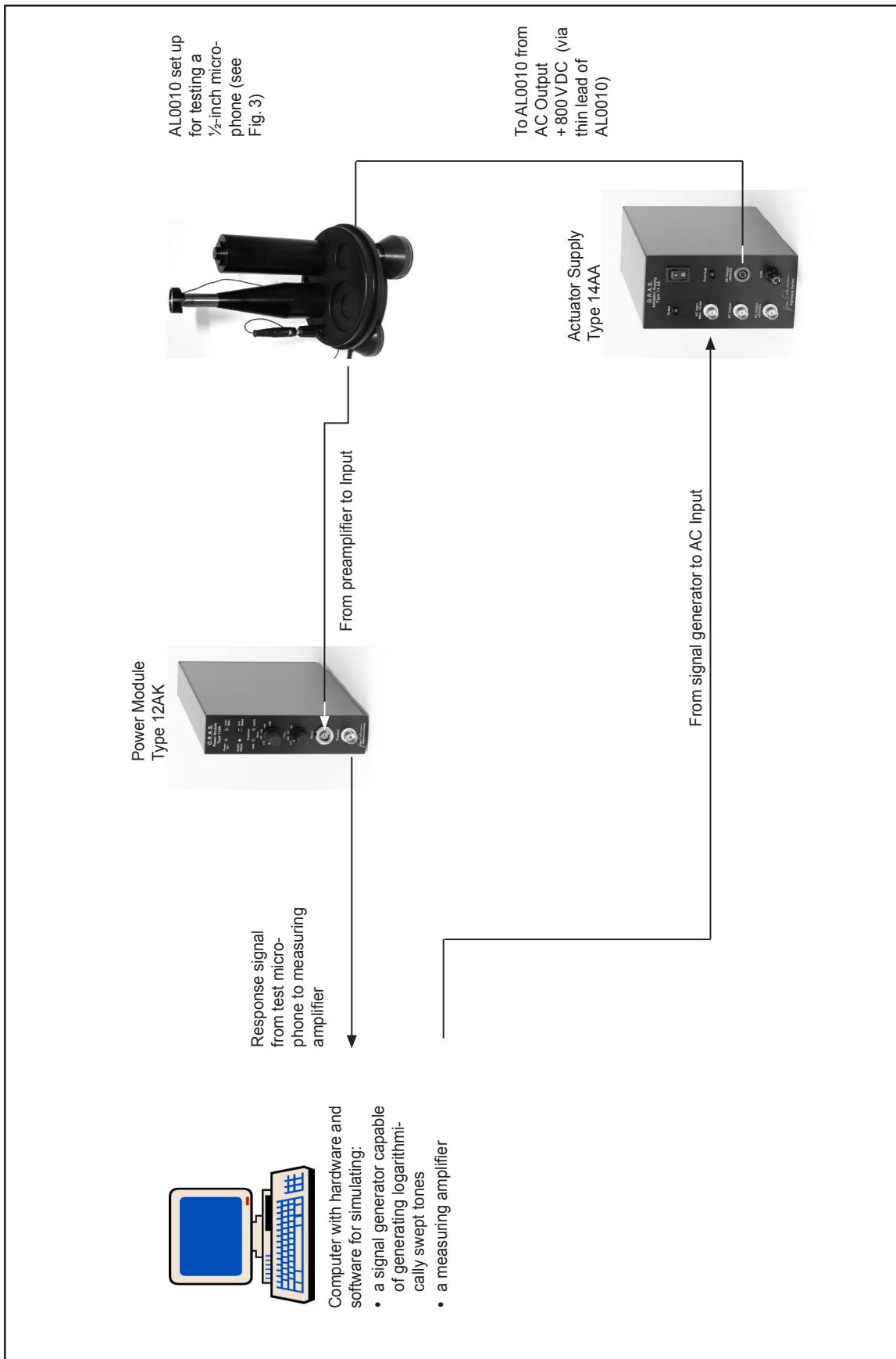


Fig. 6 Block diagram of a complete set-up for making tests