

Human-like Testing?

KEMAR is the Answer



GRAS Sound
& Vibration

KEMAR

- the Versatile Specialist



45BB KEMAR

Hearing Aids

- ✓ Standard Hearing Aids
- ✓ Binaural Hearing Aids

Sound Quality

Head- and Earphones

- ✓ Standard Testing
- ✓ Low-noise Testing
- ✓ High-frequency Testing
- ✓ Hi-Res Testing



45BC KEMAR w. Mouth Simulator

Headsets, Head- and Earphones

- ✓ Standard Testing
- ✓ Low-noise Testing
- ✓ High-frequency Testing
- ✓ Hi-Res Testing

Smartspeakers

Smartphones and Telephones (with Handset Positioner)





KEMAR

Configurations

45BB Head and Torso

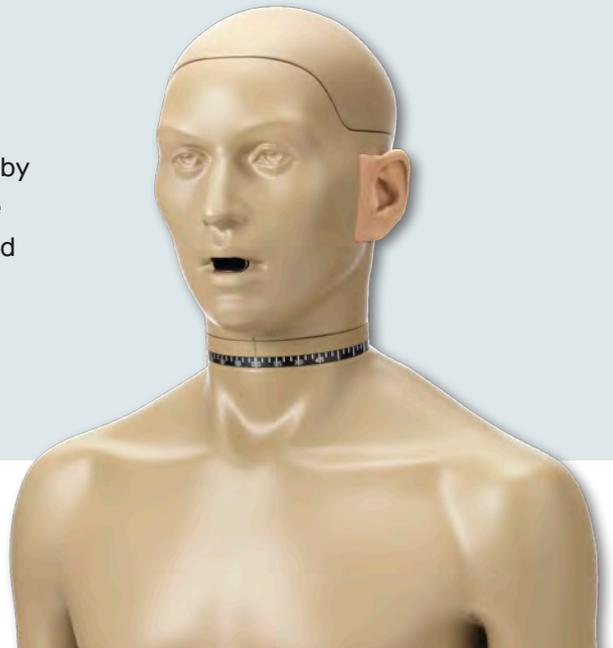
TEST PURPOSE		CONFIGURATION		
		Ear Simulator/ Microphone	Pinnae	Channels & Connection
45BB-1	Test of Hearing Aids	RA0045	KB0065/0066	1-Ch LEMO
45BB-2	Test of Hearing Aids	RA0045-S1	KB0065/0066	1-Ch CCP
45BB-3	Sound Quality Recording	40AG	KB0090/0091	2-Ch LEMO
45BB-4	Sound Quality Recording	40AO	KB0090/0091	2-Ch CCP
45BB-5	Test of Head- and Earphones	RA0045	KB0065/0066	2-Ch LEMO
45BB-6	Test of Head- and Earphones	RA0045-S1	KB0065/0066	2-Ch CCP
45BB-7	Test of Binaural Hearing Aids	RA0045	KB0065/0066	2-Ch LEMO
45BB-8	Test of Binaural Hearing Aids	RA0045-S1	KB0065/0066	2-Ch CCP
45BB-9	Test of Head- and Earphones	RA0045	KB5000/5001	2-Ch LEMO
45BB-10	Test of Head- and Earphones	RA0045-S1	KB5000/5001	2-Ch CCP
45BB-11	Low-noise Test of Head- and Earphones	43BB	KB5000/5001	1-Ch LEMO
45BB-12	Low-noise Test of Head- and Earphones	43BB	KB5000/5001	2-Ch LEMO
45BB-13	High-Frequency Test of Head- and Earphones	RA0401	KB5000/5001	2-Ch LEMO
45BB-14	High-Frequency Test of Head- and Earphones	RA0402	KB5000/5001	2-Ch CCP
45BB-15	Hi-Res Test of Head- and Earphones	RA0403	KB5000/5001	2-Ch LEMO
45BB-16	Hi-Res Test of Head- and Earphones	RA0404	KB5000/5001	2-Ch CCP

All KEMARs are available for external polarization (LEMO) or as prepolarized (CCP*), except for the low-noise versions which all are LEMO.

*CCP (Constant Current Power) is the same as IEPE (Integrated Electronic Piezo-Electric) and CCLD (Constant Current Line Drive). It is compatible with other constant current driven products such as Deltatron® (Brüel & Kjær), Isotron® (Endevco Corp.), and ICP® (PCB Group, Inc.).

We offer KEMAR in a number of pre-assembled configurations for specific test purposes.

However, KEMAR can easily be reconfigured for a new purpose by substitution of a few key application-specific components. The items listed next to a given configuration tell you what you need to replace to change a configuration.



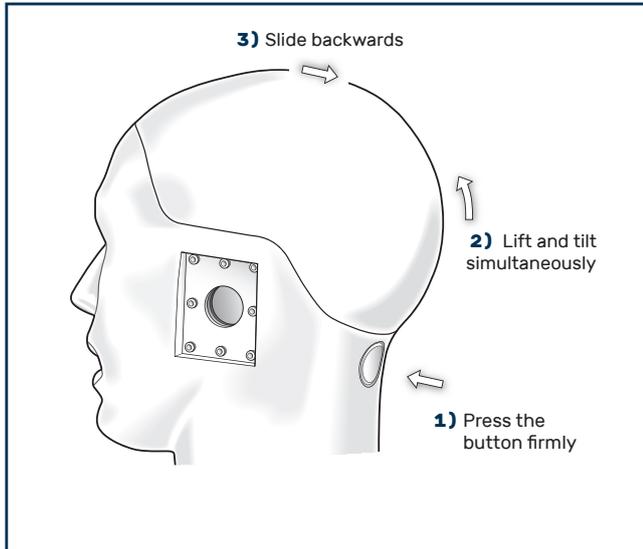
45BC Head and Torso w. Mouth Simulator

TEST PURPOSE		CONFIGURATION		
		Ear Simulator	Pinnae	Channels & Connection
45BC-1	Test of Headsets	RA0045	KB0065/0066	2-Ch LEMO
45BC-2	Test of Headsets	RA0045-S1	KB0065/0066	2-Ch CCP
45BC-3	Telephone Test (with 45EA Handset Positioner)	RA0045	KB1065/1066	1-Ch LEMO
45BC-4	Telephone Test (with 45EA Handset Positioner)	RA0045-S1	KB1065/1066	1-Ch CCP
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-				
-				
-				
45BC-9	Test of Headsets, Head- and Earphones	RA0045	KB5000/5001	2-Ch LEMO
45BC-10	Test of Headsets, Head- and Earphones	RA0045-S1	KB5000/5001	2-Ch CCP
45BC-11	Low-noise Test of Headsets, Head- and Earphones	43BB	KB5000/5001	1-Ch LEMO
45BC-12	Low-noise Test of Headsets, Head- and Earphones	43BB	KB5000/5001	2-Ch LEMO
45BC-13	High-Frequency Test of Headsets, Head- and Earphones	RA0401	KB5000/5001	2-Ch LEMO
45BC-14	High-Frequency Test of Headsets, Head- and Earphones	RA0402	KB5000/5001	2-Ch CCP
45BC-15	Hi-Res Test of Headsets, Head- and Earphones	RA0403	KB5000/5001	2-Ch LEMO
45BC-16	Hi-Res Test of Headsets, Head- and Earphones	RA0404	KB5000/5001	2-Ch CCP

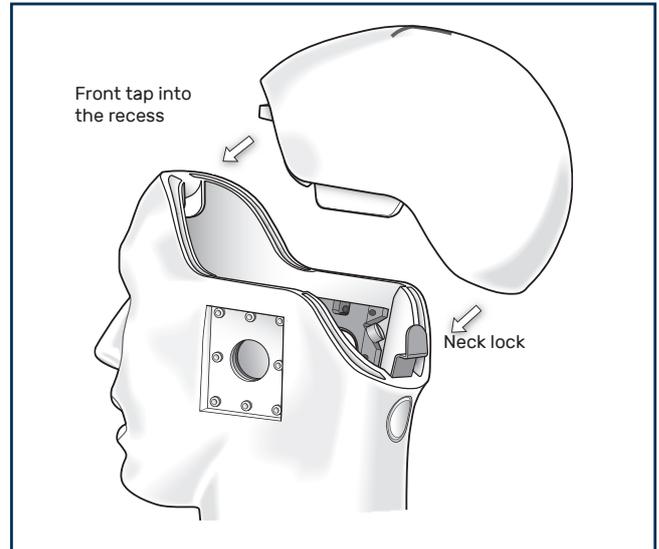
All KEMARs are available for external polarization (LEMO) or as prepolarized (CCP*), except for the low-noise versions which all are LEMO. *CCP (Constant Current Power) is the same as IEPE (Integrated Electronic Piezo-Electric) and CCLD (Constant Current Line Drive). It is compatible with other constant current driven products such as Deltatron® (Brüel & Kjaer), Isotron® (Endevco Corp.), and ICP® (PCB Group, Inc.).

EASY TO RECONFIGURE

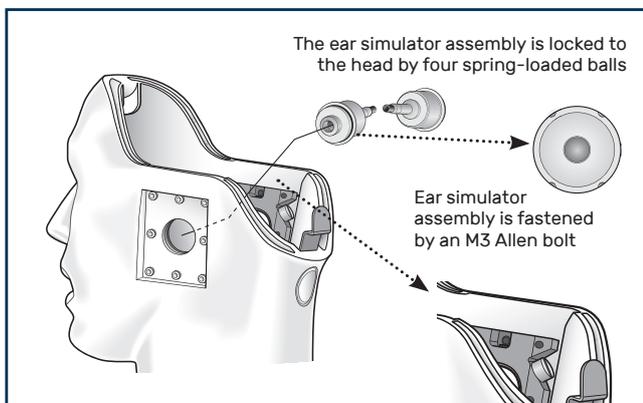
By substituting the configuration-specific items with items from the inventory shown below, a preconfigured KEMAR can easily be reconfigured for a new test purpose.



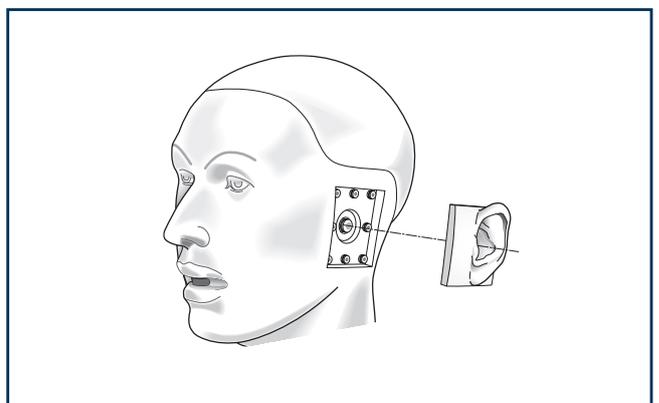
The top of the head is released by the push of a button



The top of the head is mounted without tools



Ear simulators are easy to install and remove



Most pinnae are push-mounted on eight studs. Anthropometric pinnae are secured with two screws

Refer to the KEMAR Instruction Manual for complete information about the items needed – and not shown here – for the configuration you want to build: Cables, accessories, etc.

Ear Simulators



Standard

RA0045	Externally Polarized Ear Simulator
RA0045-S1	Prepolarized Ear Simulator
Standards	IEC 60318-4 (former 60711) ITU-T Rec. P.57 (08/96)

Low-Noise – from 10.5 dB(A)

43BB	Low-Noise Ear Simulator System
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High-Frequency (20 kHz)

RA0401	Ext. Pol. High-Frequency Ear Simulator
RA0402	Prepol. High-Frequency Ear Simulator
Standards	IEC 60318-4 (former 60711) (Compliant) ITU-T Rec. P.57 (08/96)

Hi-Res (50 kHz)

RA0403	Externally Polarized Hi-Res Ear Simulator
RA0404	Prepolarized Hi-Res Ear Simulator
Standards	IEC 60318-4 (former 60711) (Compatible) ITU-T Rec. P.57 (08/96)

Microphones

Sound Quality

40AG	Ext. polarized 1/2" Pressure Microphone
40AO	Prepolarized 1/2" Pressure Microphone

Upgrade Kits

RA0251	Plastic parts for binaural hearing aids
RA0143	For mounting ear simulators on old KEMAR (before 2005)

Pinna Simulators



Standard Pinnae

STANDARD, SOFT

KB1060	Small Right Pinna, 35 Shore 00
KB1061	Small Left Pinna, 35 Shore 00
KB1065	Large Right Pinna, 35 Shore 00
KB1066	Large Left Pinna, 35 Shore 00

STANDARD, HARD

KB0060	Small Right Pinna, 55 Shore 00
KB0061	Small Left Pinna, 55 Shore 00
KB0065	Large Right Pinna, 55 Shore 00
KB0066	Large Left Pinna, 55 Shore 00

Anthropometric Pinnae

KB5000	Large Right Anthro. Pinna, 35 Shore 00
KB5001	Large Left Anthro. Pinna, 35 Shore 00
KB5002	Large Right (mirrored left) Anthro. Pinna, 35 Shore 00

Sound Quality Pinnae

SOUND QUALITY/WIDE APERTURE, SOFT

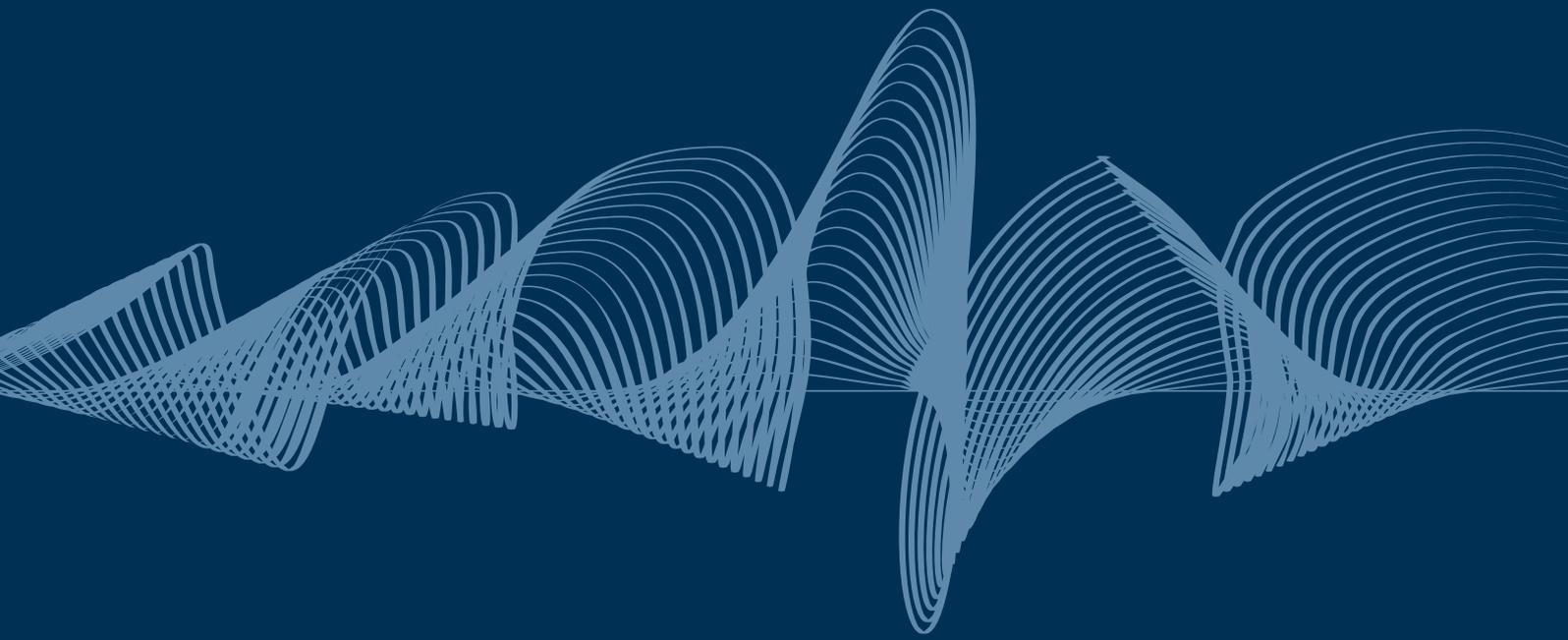
KB1068	Small Right Pinna, 35 Shore 00
KB1069	Small Left Pinna, 35 Shore 00
KB1090	Large Right Pinna, 35 Shore 00
KB1091	Large Left Pinna, 35 Shore 00

SOUND QUALITY/WIDE APERTURE, HARD

KB0068	Small Right Pinna, 55 Shore 00
KB0069	Small Left Pinna, 55 Shore 00
KB0090	Large Right Pinna, 55 Shore 00
KB0091	Large Left Pinna, 55 Shore 00

Handset Positioning

45EA	Handset Positioning System
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KEMAR – The Anthropometric Head and Torso

- ✓ Anthropometric shape
- ✓ Realistic head and torso-related diffraction
- ✓ Changeable ear-to-shoulder ratio

The major difference between KEMAR and the standard commercially available head and torso simulators (HATS) is that KEMAR is built on large statistical research of the average human body – meaning that the KEMAR has the same acoustical properties as an average human, including distinct facial features. Therefore, it provides acoustic diffraction similar to that encountered around the median human head and torso, both in the proximity and in the farfield. Because of its anthropometric shape, it simulates this diffraction more realistically than any other manikin. KEMAR is the only manikin with a changeable ear-to-shoulder ratio simulating both male and female median values.