GRAS 45BB-8

Head & Torso for Test of Binaural Hearing Aid, 2-Ch CCP



Connection: Constant Current Power (0 V/CCP)
Channel(s): 2
ANSI: S3.36, S3.25
IEC: 60318-7, 60318-4
ITU-T Rec. P.57 Type 3.3 based on ITU-T Rec. P.58

The 45BB-8 KEMAR Head and Torso with TEDS for test of binaural HA, 2-Ch CCP is an acoustic research tool with built-in ear simulators that simulates the changes that occur to soundwaves as they pass a human head and torso. KEMAR fitted with pinna simulator, ear canal extension, and IEC 60318-4 Ear Simulator resembles the acoustic impedance of the human ear. This KEMAR configuration is suitable for hearing aids using RF communication by using non-metal (POM) ear canal extensions and ear holder plates. Its corresponding LEMO equivalent is GRAS 45BB-7 KEMAR Head & Torso for Test of Binaural Hearing Aid 2-Ch LEMO.

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Introduction

The KEMAR head and torso simulator was introduced by Knowles in 1972 and quickly became the industry standard for hearing-aid manufacturers and research audiologists (visit KEMAR.us to read the full story). It is based on worldwide average human male and female head and torso dimensions. It meets the requirements of ANSI S3.36/ASA58-2012 and IEC 60318-7:2011.

The GRAS 45BB-8 KEMAR Head and Torso has the same dimensions and acoustical properties as the original KEMAR, but has been developed further by GRAS to meet the industry's demand for realistic measurements of hearing aids, headphones and headsets. It provides acoustic diffraction similar to that encountered around the median human head and torso, both in the proximity and in the far-field.

As all the preconfigured 45BB KEMARs consist of the same basic 45BB KEMAR Non-configured, plus a set of application-specific accessories, the full information about a given KEMAR configuration is obtained by combining the information about the 45BB KEMAR Non-configured and the information for a given configured version as found in the present text. Read about the non-configured KEMAR here.

TEDS Compatibility

All CCP-based KEMAR configurations are IEEE 1451.4 TEDS v. 1.0 compliant. If your measurement platform supports Transducer Electronic Data Sheets (TEDS), you will be able to read and write data like properties and calibration data.

Design

The 45BB-8 is a KEMAR head and torso for binaural hearing aid test, with prepolarized ear simulators and large 55 Shore 00 pinnae. A special feature is that the ear holder plates, ear canal extensions, and accompanying screws are made of POM, Nylon, and Teflon to allow RF signals to pass inside KEMAR's head.

It is delivered fully configured, individually calibrated and ready for use. In addition to a system calibration certificate, a USB flash memory with simulation data is included.

Apart from the abovementioned use of plastic materials, the main configuration-specific components of the 45BB-8 are the GRAS RA0045-S1 Ear Simulator According to 60318-4 and the KB0066/KB50065 large pinnae.

The 60318-4 Ear Simulator

The acoustic input impedance of the RA0045-S1 Ear Simulator closely resembles that of the human ear and, as a result, loads a sound source in very much the same way.

It complies with IEC 60318-4 and is measured and calibrated according to ITU-T P.57. It embodies a number of carefully designed volumes connected via well-defined and precisely tuned resistive grooves. In an equivalent electrical circuit, capacitors would represent the volumes, and inductance and resistance would represent respectively air mass and air flow within the resistive groves.

Read more about RA0045-S1 here.

The KB0065/KB0066 Pinna

The KB0065 and KB0066 are large straight pinnae for use with a straight ear canal extension. The hardness is 55 Shore 00. They comply with the IEC and ITU-T recommendations.

Other accessories for this configuration are listed in

the Ordering Info tab.

Performance and warranty

KEMAR is made of components from our standard portfolio, all manufactured of high-quality material and branded parts chosen and processed to ensure life-long stability and robustness. This enables us to offer a two-year warranty against defective materials and workmanship.
Exceptions: Microphones included in KEMAR as for these our normal five-year warranty apply. The warranty period for cables is six months.

Connector type		BNC
Set sensitivity @ 250 Hz (±2 dB)	mV/Pa	12.5
Set sensitivity @ 250 Hz (±2 dB)	dB re 1V/Pa	-38.5
Theoretical dynamic range lower limit with GRAS preamplifier	dB(A)	25
Theoretical dynamic range upper limit with GRAS preamplifier @ +28 V / ±14 V power supply	dB	151
Theoretical dynamic range upper limit with GRAS CCP preamplifier	dB	146
Resonance frequency	kHz	13.5
Temperature range, operation	°C / °F	-30 to 60 / -22 to 140
Temperature range, storage	°C / °F	-40 to 65 / -40 to 149
Humidity range non condensing	% RH	0 to 95%
ANSI standard		S3.36, S3.25
IEC standard		60318-4 (former 60711), 60318-7 (former 60959)
ITU-T recommendations		P.380
Weight	g / oz	11.45 k / 404

GRAS Sound & Vibration reserves the right to change specifications and accessories without notice.

Included items

GRAS 45BB	KEMAR Head & Torso, Non-configured
GRAS KB0065	KEMAR Large Right Ear 55 Shore 00
GRAS KB0066	KEMAR Large Left Ear 55 Shore 00
GRAS RA0249	Straight Ear Canal Extension Kit (made of POM, 2 pcs)
GRAS RA0045-S1	IEC 60318-4 Ear Simulator (Prepol. version, 2 pcs)
GRAS 26CS	1/4" CCP Short Preamplifier (2 pcs)
GRAS RA0001	Right-angled Adapter for 1/2" Microphone and 1/4" Preamplifier (2 pcs)
GRAS GR0408	Exterior Ear Canal
GRAS GR0409	Union Nut
GRAS AA0018-S	Microdot- BNC Cable, 35 cm (2 pcs)
GRAS AA0035	BNC-BNC Cable, 3 m (2 pcs)

Optional items

Power Modules for Externally Polarized Ear Simulators and Microphones

GRAS 12AK	1-Channel Power Module with gain, filters and SysCheck generator
GRAS 12AD	1-Channel Power Module
GRAS 12AA	2-Channel Power Module with gain, filters and SysCheck generator
GRAS 12AR	2-Channel Power Module
GRAS 12AQ	2-Channel Universal Power Module with signal conditioning and PC interface

Power Modules for Pre-polarized Ear Simulators and Microphones

GRAS 12AL	1-Channel CCP Power Module with A-weighting filter
GRAS 12AQ	2-Channel Universal Power Module with signal conditioning and PC interface

For Ear Simulator Calibration

GRAS 42AP	Intelligent Pistonphone (250 Hz or 251.2 Hz, 114 dB +/- 0.05 dB)
GRAS 42AA	Pistonphone (250 Hz, 114 dB +/- 0.08 dB)
GRAS RA0157	1/2" Calibration Adapter for KEMAR Pinna

Pinna Simulators

GRAS KB0060	KEMAR Small Right Ear 55 Shore 00
GRAS KB0061	KEMAR Small Left Ear 55 Shore 00
GRAS KB0065	KEMAR Large Right Ear 55 Shore 00
GRAS KB0066	KEMAR Large Left Ear 55 Shore 00
GRAS KB1060	KEMAR Small Right Ear, 35 Shore 00
GRAS KB1061	KEMAR Small Left Ear 35 Shore 00
GRAS KB1065	KEMAR Large Right Ear 35 Shore 00
GRAS KB1066	KEMAR Large Left Ear 35 Shore 00
GRAS KB0090	KEMAR Large Right Ear (VA-Style/SQ) 55 Shore 00
GRAS KB0091	KEMAR Large Left Ear (VA-Style/SQ) 55 Shore 00
GRAS KB1090	KEMAR Large Right Ear (VA-Style) 35 Shore 00
GRAS KB1091	KEMAR Large Left Ear (VA-Style) 35 Shore 00
GRAS KB5000	KEMAR Large Right Anthropometric Pinna 35 Shore 00
GRAS KB5001	KEMAR Large Left Anthropometric Pinna 35 Shore 00

Ear Mould Simulators

GRAS KB0110	Ear Mould Simulator for 2 mm Inner diameter tubing
GRAS KB0111	Ear Mould Simulator for 3 mm Inner diameter tubing

Ear Canal Extension and Microphone Holder Kits (kits with 2 pcs and O-rings)

GRAS RA0237	Straight Ear Canal Extension Kit for KEMAR
GRAS RA0238	VA-tapered Ear Canal Extension Kit for KEMAR

GRAS RA0239	Ear canal Extension Kit w. silicone lining for KEMAR
GRAS RA0240	Holder for long 1/2" microphone Kit for KEMAR
GRAS RA0241	Holder for short 1/2" microphone Kit for KEMAR
GRAS RA0243	Holder for 1/2" microphone Kit for KEMAR
GRAS RA0244	O-ring kit for KEMAR, 2 pcs.
GRAS RA0249	Straight Ear Canal Extension Kit for KEMAR, made of POM, for binaural hearing aid test
GRAS RA0250	Tapered Ear Canal Extension Kit for KEMAR, made of POM, for binaural hearing aid test

KEMAR Retrofit Kit for Binaural Hearing Aid Test

GRAS RA0251	KEMAR Retrofit Kit for Binaural Hearing Aid Test: The Kit includes Ear Holder Plates, mounting bolts and the RA0249 and RA0250 Ear Canal Extension Kits. Included items are made of POM, Nylon and Teflon.

KEMAR Retrofit Kit for Anthropometric Concha and Canal Pinna

GRAS RA0311	KEMAR Retrofit Kit for Anthropometric Concha and Canal Pinna. The Kit includes Ear Simulator Holder, 2 finger screws and a 3 mm Allen Key.

Extension Cables

GRAS AA0034	BNC-BNC Cable, 2 m
GRAS AA0035	BNC-BNC Cable, 3 m
GRAS AA0036	BNC-BNC Cable, 5 m
GRAS AA0037	BNC-BNC Cable, 10 m

Flight Case

GRAS KM0094	PELI Case for KEMAR

Simulation Model of KEMAR

GRAS KB3000	Simulation Model of KEMAR with large pinnae
GRAS KB3001	Simulation Model of KEMAR with small pinnae

Stand for KEMAR

GRAS AL0026	Loudspeaker stand for KEMAR, Ø 35 mm

Miscellaneous

GRAS KB0000	KEMAR Handbook
GRAS KB0010	T-Shirt for KEMAR

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GRAS Worldwide

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About GRAS Sound & Vibration

GRAS is a worldwide leader in the sound and vibration industry. We develop and manufacture state-of-the-art measurement microphones and related equipment for industries where acoustic measuring accuracy and repeatability are of the utmost importance. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, consumer electronics and other highly demanding industries. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect, trust and require.
GRAS Sound & Vibration is represented through subsidiaries and distributors in more than 40 countries and is part of Axiometrix Solutions, a leading test solutions provider comprised of globally recognized measurement brands. Read more at www.grasacoustics.com

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