

# KEMAR<sup>®</sup> Manikin Type KB4004

## *Product Data and Specifications*

### *Features and applications*

- ***Binaural recording***
- ***Hearing-aid testing***
- ***Headphones testing***
- ***Sound-quality evaluation***
- ***ANSI S3.25/ASA80-1989***
- ***ANSI S3.36/ASA58-1985***

The KEMAR<sup>®</sup> Manikin Type KB4004 (Fig. 1), acquired from Knowles Electronics, is an acoustic research tool which permits reproducible measurements of hearing instrument performance on the head, and of stereophonic sound recordings as heard by human listeners. This head and torso simulator (HATS) is based on worldwide average human male and female head and torso dimensions and meets the requirements of ANSI S3.36/ASA58-1985.

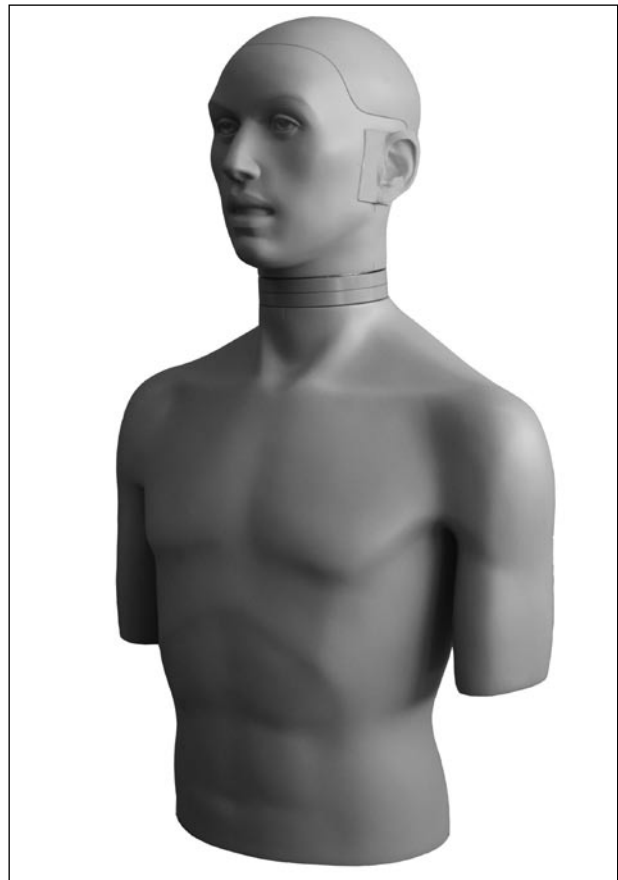
The KEMAR manikin is the recognised industry-standard for *in-situ* anthropomorphic testing in the fields of:

- Telecommunications
- Hearing conservation
- Noise abatement

As well as for sound recording and sound-quality evaluation.

The manikin simulates the changes that occur to sound waves as they pass a human head and torso such as the diffraction and reflection around each ear.

<sup>®</sup> KEMAR is a registered trademark of G.R.A.S. Sound & Vibration



*Fig. 1 Full torso KEMAR<sup>®</sup> Manikin Type KB4004*

G.R.A.S. offers three different types of ears for the KEMAR Manikin.

- KB0060/61 are small and are typical of American and European females as well as Japanese males and females.
- KB0065/66 are more typical of American and European male pinna sizes

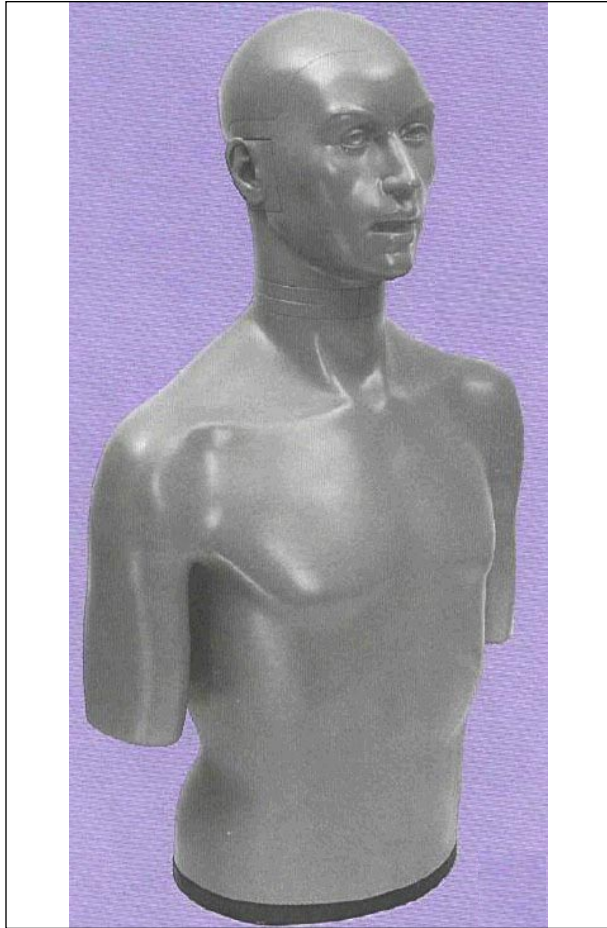
KB0060/61 and KB0065/66 have been used extensively for testing BTE hearing aids and for sound recording. Their ear-canal openings are relatively small, which makes them less suitable for use with ITE and ITC hearing aids

**G.R.A.S.**  
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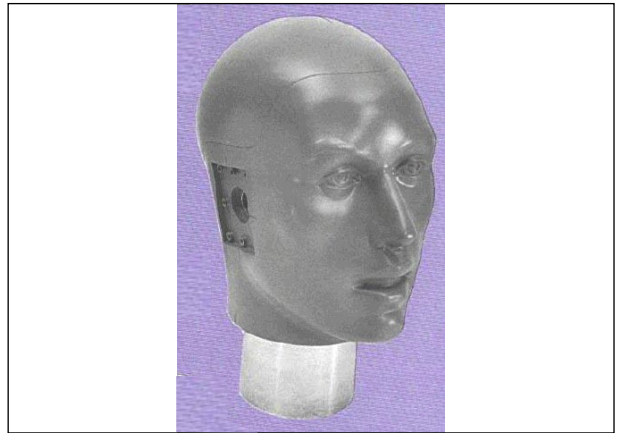
***HATS / KEMAR Manikin Components***

- KB4004 KEMAR Assembly (Fig. 2).  
Includes head, torso, and mounting base.  
IEC-711 coupler with test microphone (G.R.A.S. RA0045), ears, canal extensions, adaptors, and accessories sold separately.



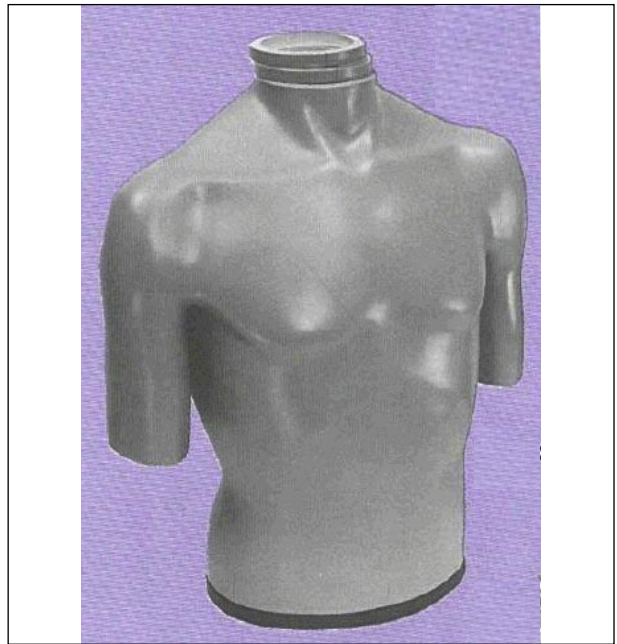
*Fig. 2 KB4004: KEMAR Assembly*

- KB0062 KEMAR Head (Fig. 3).  
IEC-711 coupler with test microphone (G.R.A.S. RA0045), ears, canal extensions, adaptors, and accessories sold separately.



*Fig. 3 KB0062: KEMAR Head*

- KB0127 KEMAR Torso (Fig. 4).  
Includes torso and mounting base.



*Fig. 4 KB0127: KEMAR Torso*

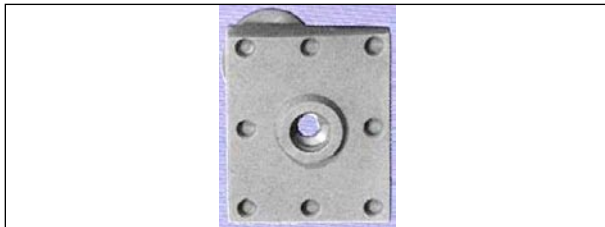
**KEMAR Ears**

- KB0060 Small Right Ear (Fig. 5).  
For use with KB0166 Cylindrical Canal Extension and Mounting Plate. Use with BTE or Full Concha ITE hearing aids.



*Fig. 5 KB0060: Small Right Ear*

- KB0061 Small Left Ear (Fig. 6).  
For use with KB0166 Cylindrical Canal Extension and Mounting Plate. Use with BTE or Full Concha ITE hearing aids.



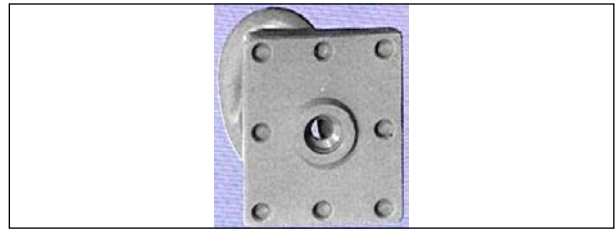
*Fig. 6 KB0061: Small Left Ear*

- KB0065 Large Right Ear (Fig. 7).  
For use with KB0166 Cylindrical Canal Extension and Mounting Plate. Use with BTE or Full Concha ITE hearing aids.



*Fig. 7 KB0065: Large Right Ear*

- KB0066 Large Left Ear (Fig. 8).  
For use with KB0166 Cylindrical Canal Extension and Mounting Plate. Use with BTE or Full Concha ITE hearing aids.



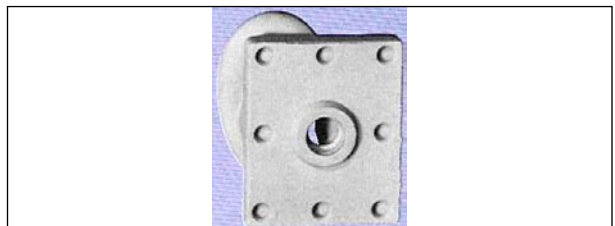
*Fig. 8 KB0066: Large Left Ear*

- KB0090 Large Right Ear (Fig. 9).  
For Tapered (VA-style) Canal.  
For use with KB0167 Tapered (VA-style with O-ring seal) Canal Extension and Mounting Plate. Requires KB0165 Tapered (VA-style) Ear-mould for proper use. Use with ITE, ITC, or CIC hearing aids.



*Fig. 9 KB0090: Large Right Ear*

- KB0091 Large Left Ear (Fig. 10).  
For Tapered (VA-style) Canal.  
For use with KB0167 Tapered (VA-style with O-ring seal) Canal Extension and Mounting Plate. Requires KB0165 Tapered (VA-style) Ear mould for proper use. Use with ITE, ITC, or CIC hearing aids.



*Fig. 10 KB0091: Large Left Ear*

### ***Canal Extensions***

- KB0166 Cylindrical Canal Extension and Mounting Plate. Includes KB0162 Cylindrical Extension permanently attached to KB0164 Mounting Plate (Ø22 mm hole).  
Allows KEMAR ears to be used with IEC-711 coupler (G.R.A.S. RA0045). For use with Small Right Ear, Small Left Ear, Large Right Ear.
- KB0167 Tapered (VA-style) Canal Extension and Mounting Plate. Includes KB0163 Tapered (VA-style) Canal Extension with KB0082 O-Ring (for proper acoustic sealing) permanently attached to KB0164 Mounting Plate (Ø22 mm hole).  
Allows KEMAR ears to be used with IEC-711 coupler (G.R.A.S. RA0045). For use with Large Right Ear or Large Left Ear. Requires KB0165 Tapered (VA-style) Ear-mould for proper use.

### ***Adaptors and Accessories***

- KB0110 Canal Extension Adaptor for 2 mm I.D. Tubing (Fig. 11). Allows 2 mm I.D. acoustic tubing to be used with KB0162 Cylindrical Canal Extension.  
For use with BTE ear hook tubing.



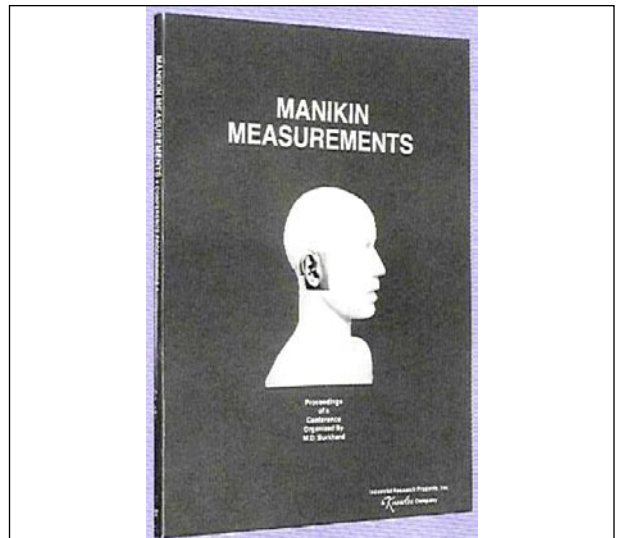
*Fig. 11 KB0110: Canal Extension Adaptor for 2 mm I.D. Tubing*

- KB0111 Canal Extension Adaptor for 3 mm I.D. Tubing (Fig. 12). Allows 3 mm I.D. acoustic tubing to be used with KB0162 Cylindrical Canal Extension.  
For use with BTE ear hook tubing.



*Fig. 12 KB0111: Canal Extension Adaptor for 3 mm I.D. Tubing*

- KB0165 Tapered (VA-style) Ear mould. Custom Ear mould for making tapered (VA-style) impressions for use with KB0163 Tapered (VA-style) Canal Extension.  
For use with KB0090 Large Right Ear or KB0091 Large Left Ear.
- KB0000 Manikin Measurement Book (Fig. 13) Articles and proceedings of conferences held on KEMAR manikin acoustic measurements.



*Fig. 13 KB0000: Manikin Measurements Book*

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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

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