

# 1/4-inch Prepolarized Free-field Microphone Type 40BE

## Product Data and Specifications

### Typical applications

- **High frequency measurements**
- **High level measurements**
- **Acoustic transient measurements**
- **Use with G.R.A.S. CCP preamplifiers (ICP®)**

The G.R.A.S. Microphone Type 40BE is a 1/4-inch precision condenser microphone for general purpose measurements in open acoustic fields. It is a prepolarized free-field microphone with a large dynamic range and a wide frequency response.

As a free-field microphone, the Type 40BE is for measuring the sound pressure which existed before it was placed in the sound field pointing towards the sound source.

The disturbing effects of its presence in the sound field are minimal for most of its frequency range because of its small dimensions (see Fig. 1 inset). At higher frequencies, the effects of reflections and diffractions generally lead to an increase in the measured sound pressure levels. Fig. 3 shows what these are in a free-field for various angles of incidence. The Type 40BE compensates for this to provide a flat frequency response at an angle of 0° incidence in a free field (see Fig. 2).



Fig. 1 1/4-inch Prepolarized Free-field Microphone Type 40BE

G.R.A.S. CCP preamplifiers (ICP®) are also available for use with the Type 40BE, these are:

- 1/4-inch Preamplifier Type 26CB
  - 1/2-inch Preamplifier Type 26CA with adaptor RA0019
- (see separate data sheets)

All G.R.A.S. microphones comply with the specifications of IEC 1094: *Measurement Microphones, Part 4: Specifications for working standard microphones.*

Non-corrosive, stainless materials are used in manufacturing these microphones to enable them to withstand rough handling and corrosive environments.

All G.R.A.S. microphones are guaranteed for 5 years and are individually checked and calibrated before leaving the factory. An individual calibration chart is supplied with each microphone.

® ICP is a registered trade mark of PCB Piezotronics.

## Specifications

<b>Frequency response:</b>		<b>Dynamic range:</b>	40 dB - 168 dB re. 20 µPa
10 Hz - 40 kHz: .....	± 1 dB	<b>Upper limit (3 % distortion):</b>	166 dB re. 20 µPa
4 Hz - 80 kHz: .....	± 2 dB	<b>Microphone thermal noise:</b>	30 dBA re. 20 µPa
4 Hz - 100 kHz: .....	± 3 dB	<b>Nominal cartridge capacitance:</b>	
<b>Nominal open circuit sensitivity:</b>		Polarized: .....	7 pF
at 250 Hz: .....	4 mV/Pa		...continued overleaf
<b>Polarization voltage:</b>	0V		

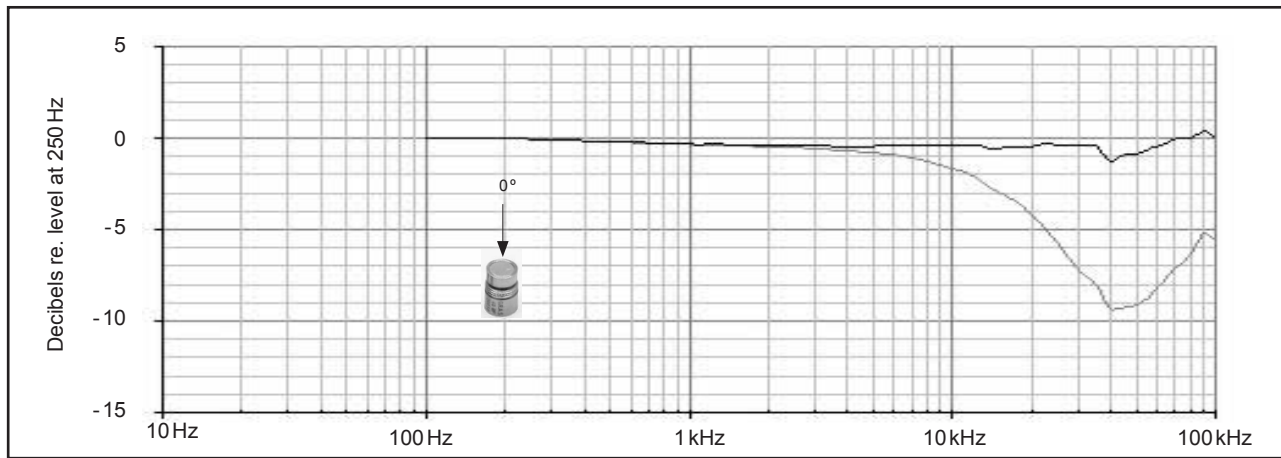


Fig. 2 Typical frequency response of Type 40BE (without protection grid). Upper curve shows free-field response for 0°, lower curve shows pressure response

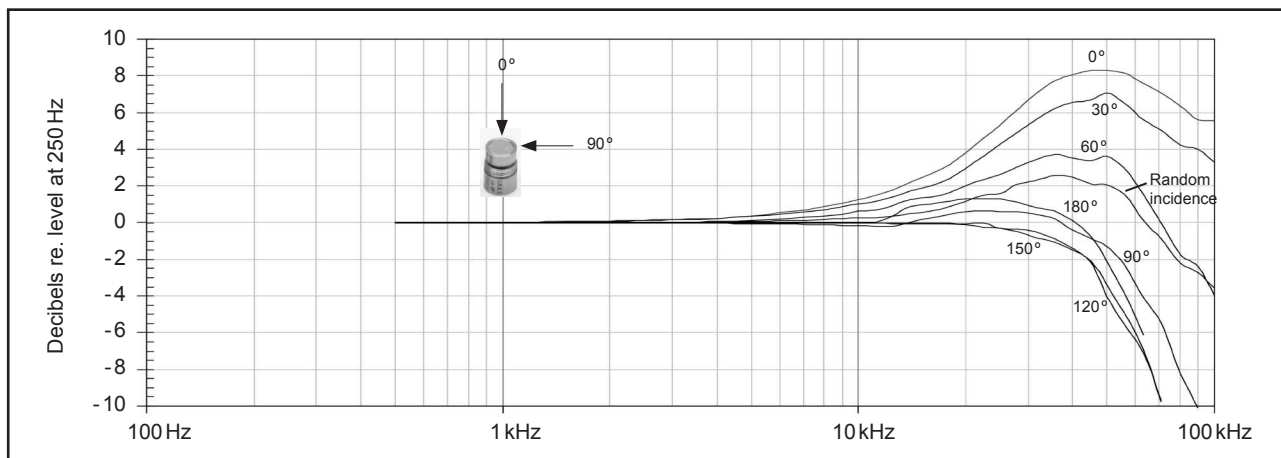


Fig. 3 Free-field corrections for various angles of incidence (without protection grid)

### Specifications (continued)

<p><b>Resonant frequency:</b> 90° Phase shift: ..... 100 kHz</p> <p><b>Effective front volume:</b> Nominal at 250 Hz: ..... 0.6 mm<sup>3</sup></p> <p><b>Static-pressure coefficient:</b> 250 Hz at 25 °C ..... -0.008 dB/kPa</p> <p><b>Influence of axial vibration, 1 m/s<sup>2</sup>:</b> 59 dB re. 20 µ Pa</p> <p><b>Temperature:</b> Range: ..... -40 °C to +120 °C Mean coeff. (-10 °C to +50 °C): 0.01 dB/°C</p> <p><b>Venting:</b> Rear vented</p> <p>Note: for most applications, rear venting is more advantageous particularly where phase response is critical. If front</p>	<p>venting is preferred, please add “front venting” to the Type number of the microphone when ordering.</p> <p><b>IEC 1094-4 Type Designation:</b> WS3F</p> <p><b>Dimensions (with protection grid):</b> Length/Diameter: ..... 10.5 mm/6.9 mm</p> <p><b>(without protection grid):</b> Length/Diameter: ..... 9.1 mm/6.3 mm</p> <p><b>Diameter (diaphragm ring):</b> 6.0 mm</p> <p><b>Threads:</b> Protection Grid: ..... 6.35 mm - 60 UNS Preamplifier Mounting: .... 5.7 mm - 60 UNS</p> <p><b>Weight:</b> 2 g</p>
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice