

# 1/4-inch Free-field Microphone Type 40BF

## Product Data and Specifications

### Typical applications

- **Sound pressure measurements**
- **High frequency measurements**
- **High level measurements**
- **Acoustic transient measurements**

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

As a free-field microphone, the Type 40BF 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 40BF 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 Free-field Microphone Type 40BF (inset shows true size)

G.R.A.S. 1/4-inch preamplifiers (see data sheet for Types 26AA, 26AB, 26AC and 26AL) are also available for use with the Type 40BF. The mounting thread (5.7 mm - 60 UNS-2) is compatible with other available makes of similar microphone preamplifiers.

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.

### Specifications

<b>Frequency response:</b>		<b>Microphone thermal noise:</b>	
4 Hz - 100 kHz .....	±2.0 dB		30 dBA re. 20 µ Pa
10 Hz - 40 kHz .....	±1.0 dB	<b>Capacitance:</b>	7 pF
<b>Nominal sensitivity:</b>	4 mV/Pa	<b>Effective front volume:</b>	Nominal at 250 Hz:..... 0.6 mm <sup>3</sup>
<b>Polarization voltage:</b>	200 V	<b>Temperature:</b>	Range:..... -40 °C to +150 °C
<b>Upper limit (3 % distortion):</b>	166 dB re. 20 µ Pa		...continued overleaf

**G.R.A.S.**  
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# ¼-inch Free-field Microphone Type 40BF

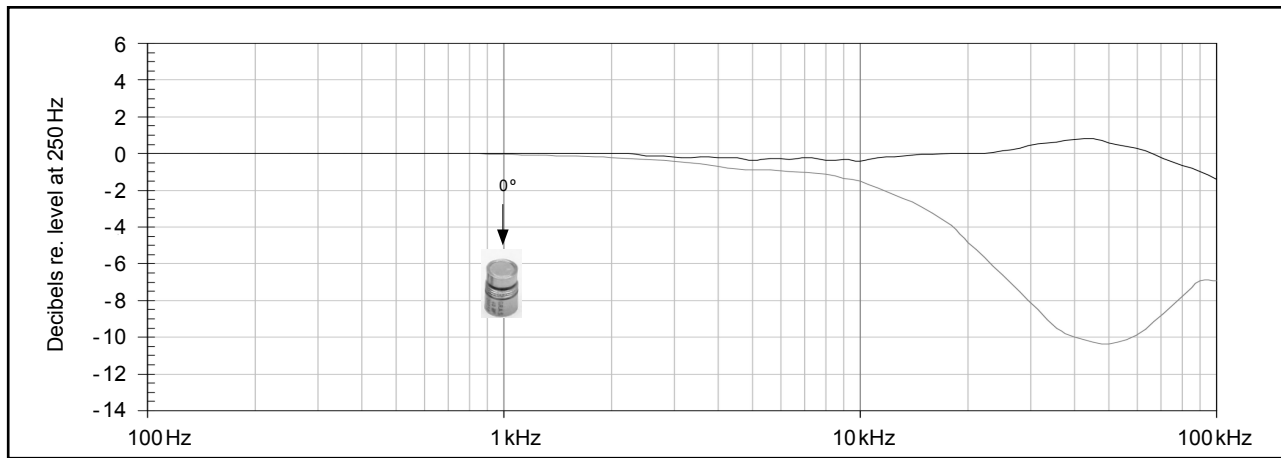


Fig. 2 Typical frequency response of Type 40BF (without protection grid). Upper curve shows free-field response for 0°, lower curve shows pressure response

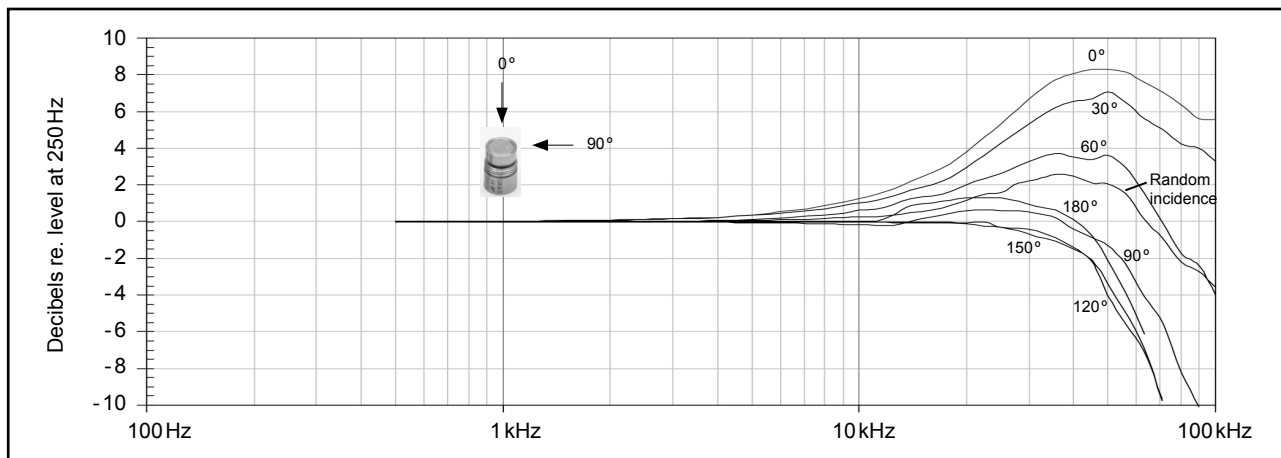


Fig. 3 Free-field corrections for various angles of incidence (without protection grid)

## Specifications (continued)

Coeff. (250 Hz): . . . . . -0.01dB/°C	<b>IEC 1094-4 designation:</b>	WS3F
<b>Static-pressure coefficient:</b>		
<b>Humidity range:</b>	<b>Dimensions (with protection grid):</b>	
	Length/Diameter: . . . . . 10.5 mm/6.9 mm	
	<b>(without protection grid):</b>	
	Length/Diameter: . . . . . 9.1 mm/6.3 mm	
<b>Influence of humidity (250 Hz):</b>	<b>Diameter (diaphragm ring):</b>	6.0 mm
<b>Influence of axial vibration, 1 m/s<sup>2</sup>:</b>	<b>Threads:</b>	
	Protection Grid: . . . . . 6.35 mm - 60 UNS	
	Preamplifier Mounting: . . . . . 5.7 mm - 60 UNS	
<b>Venting:</b>	<b>Weight:</b>	1.75 g
Note: for most applications, rear venting is more advantageous particularly where phase response is critical. If front venting is preferred, please add "front venting" to the Type number of the microphone when ordering.		

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

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