

# GRAS 40BE-FV

1/4" Prepolarized Free-field Microphone, Front Vented



Freq range: 4 Hz to 80 kHz  
Dyn range: 30 dB(A) to 168 dB  
Sensitivity: 4 mV/Pa

The 40BE-FV is an IEC 61094 WS3F 1/4" prepolarized free-field microphone with front venting.

**NOTE:** Optimized for use without protection grid—remove grid before measuring.

## Introduction

It is a high-precision condenser microphone made according to IEC 61094-4 requirements. Its dynamic range makes it suitable for high-frequency or high-level measurements, as well as acoustic transient measurements. It is extremely robust and reliable and can measure sound pressure levels up to 168 dB in the range of 4 Hz to 100 kHz.

40BE-FV is individually factory-calibrated and delivered with a calibration chart stating its specific open-circuit sensitivity and pressure frequency response.

**NOTE:** At low frequencies, protection grids are acoustically transparent; however, around 20 kHz and above, protection grids can act as resonators and influence the frequency response. So for higher frequency measurements, ¼" and ⅛" microphones have been optimized for use without the protection grid. Please remove the protection grid when measuring.

## Typical applications and use

The 40BE-FV is ideal for sound measurements at very high frequencies and levels, as well as acoustic transient measurements. It is suitable for general purpose measurements in open acoustic fields.

## Compatibility

The 40BE-FV requires a standardized 1/2" or 1/4" CCP preamplifier and an input module that supports this technology with a BNC, SMB, or Microdot connector.

## System verification

For daily verification and check of your measurement setup, we recommend using a calibrator like [GRAS 42AG](#) Sound Level Calibrator.

For proper sensitivity calibration, we recommend

using a pistonphone like [GRAS 42AP](#) Intelligent Pistonphone.

## Quality and warranty

All GRAS microphones are made of high-quality materials that will ensure life-long stability and robustness. The microphones are all assembled in verified clean-room environments by skilled and dedicated operators with many years of expertise in this field.

The microphone diaphragm, body, and improved protection grid are made of high-grade stainless steel, which makes the microphone resistant to physical damage, as well as corrosion caused by aggressive air or gasses.

This, combined with the reinforced gold-plated microphone terminal which guarantees a highly reliable connection, enables GRAS to offer 5 years warranty against defective materials and workmanship.

## Service

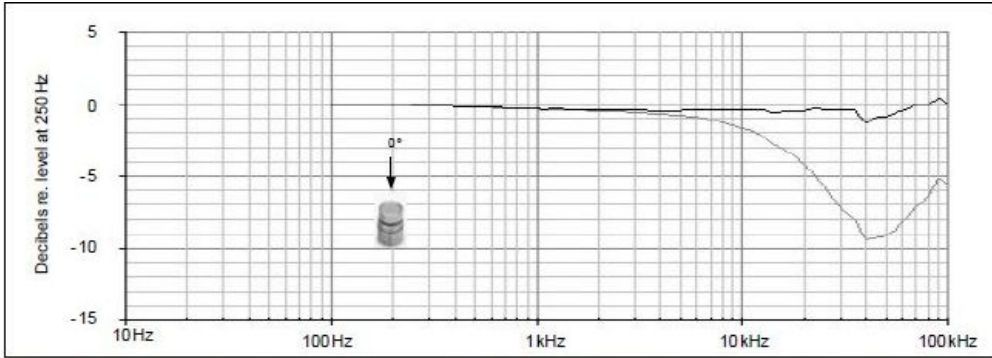
If you accidentally damage the diaphragm on a GRAS microphone, we can—in most cases—replace it at a very reasonable cost and with a short turn-around time. This not only protects your investment, but also pleases your quality assurance department because you don't have to worry about new serial numbers, etc.

## Calibration

Before leaving the factory, all GRAS microphones are calibrated in a controlled laboratory environment using traceable calibration equipment.

Depending on the use, measurement environment, and internal quality control programs, we recommend recalibrating the microphone at least once a year.

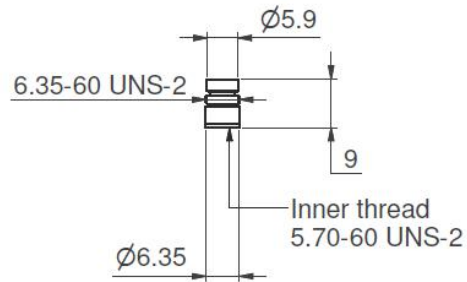
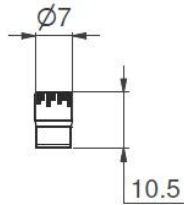
|   |   |                         |
|---|---|-------------------------|
| Polarization/Connection   |   | 0 V / CCP               |
| Frequency range ( $\pm 1$ dB)   | Hz  | 10 to 40 k              |
| Frequency range ( $\pm 2$ dB)   | Hz  | 4 to 80 k               |
| Frequency range ( $\pm 3$ dB)   | Hz  | 4 to 100 k              |
| Dynamic range lower limit (microphone thermal noise)                                | dB(A)   | 30                      |
| Dynamic range lower limit with GRAS preamplifier                                    | dB(A)   | 35                      |
| Dynamic range upper limit   | dB  | 168                     |
| Dynamic range upper limit with GRAS preamplifier @ +28 V / $\pm 14$ V power supply  | dB  | 164                     |
| Dynamic range upper limit with GRAS preamplifier @ +120 V / $\pm 60$ V power supply | dB  | 168                     |
| Dynamic range upper limit with GRAS CCP preamplifier                                | dB  | 160                     |
| Open-circuit sensitivity @ 250 Hz ( $\pm 3$ dB)                                     | mV/Pa   | 4                       |
| Open-circuit sensitivity @ 250 Hz ( $\pm 3$ dB)                                     | dB re 1V/Pa                                     | -48                     |
| Resonance frequency   | kHz   | 100                     |
| Microphone cartridge capacitance, typ.  | pF  | 5                       |
| Microphone venting  |   | Front                   |
| IEC 61094-4 Designation   |   | WS2F                    |
| Temperature range, operation  | $^{\circ}\text{C}$ / $^{\circ}\text{F}$         | -40 to 120 / -40 to 248 |
| Temperature range, storage  | $^{\circ}\text{C}$ / $^{\circ}\text{F}$         | -40 to 85 / -40 to 185  |
| Temperature coefficient @250 Hz   | dB/ $^{\circ}\text{C}$ / dB/ $^{\circ}\text{F}$ | -0.01 / -0.006          |
| Static pressure coefficient @250 Hz   | dB/kPa  | -0.013                  |
| Humidity range non condensing   | % RH  | 0 to 90                 |
| Humidity coefficient @250 Hz  | dB/% RH   | -0.001                  |
| Influence of axial vibration @1 m/s <sup>2</sup>                                    | dB re 20 $\mu\text{Pa}$                         | 60                      |
| CE/RoHS compliant/WEEE registered   |   | Yes / Yes, Yes          |
| Weight  | g / oz  | 6 / 0.21                |



Typical frequency response (without protection grid). Upper curve shows free-field response for 0°, lower curve shows pressure response.

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

Dimensions in mm



# GRAS Worldwide

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than 40 countries

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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](http://www.grasacoustics.com)

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**GRAS** Sound  
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