



Weapon Bay & Ordnance Acoustics

Axiometrix Solutions

APPLICATION NOTE // By Lars Winberg

Advanced Solutions for Weapon Bay & Ordnance Acoustics

Understanding the acoustic environment inside weapons storage bays is critical for ensuring the safety, reliability, and performance of stored munitions and electronic components. GRAS Sound & Vibration provides high-precision acoustic measurement solutions for characterizing acoustic loading, assessing acoustic fatigue effects, and ensuring the integrity of ordnance and fuelling systems. Our solutions are trusted by defense organizations worldwide to meet the rigorous demands of weapon bay and ordnance acoustics testing.

Specialized Acoustic Measurement Solutions

GRAS offers robust and accurate tools designed to address the unique challenges of weapon bay and ordnance acoustics:

- **High-Precision Measurement Microphones:** Designed to capture detailed acoustic data in enclosed and high-pressure environments, ensuring accurate characterization of the acoustic environment in weapons storage bays.
- **Acoustic Fatigue Analysis Tools:** Measure and analyze acoustic fatigue effects on munitions, electronic components, and structural elements.
- **High-Frequency Acoustic Sensors:** Capture high-frequency acoustic phenomena that impact sensitive electronic systems and ordnance.
- **Environmental Testing Solutions:** Tools for assessing the impact of environmental factors, such as temperature and humidity, on the acoustic behaviour of weapon bays and stored ordnance.
- **Customizable Test Systems:** Tailored solutions designed to simulate real-world acoustic conditions in weapon bays for comprehensive testing.

Applications in Weapon Bay & Ordnance Acoustics

GRAS solutions are utilized by defense organizations and aerospace manufacturers to address critical challenges in weapon bay and ordnance acoustics:

- **Acoustic Environment Monitoring:** Measure and characterize the acoustic environment inside weapons storage bays to ensure safe and reliable operations.
- **Acoustic Loading on Munitions:** Analyze the effects of acoustic loading on stored ordnance and ensure compliance with safety and performance standards.
- **Acoustic Fatigue on Electronic Components:** Assess the impact of prolonged acoustic exposure on sensitive electronics and ensure their durability and functionality.
- **Weapon System Integrity:** Evaluate the effects of acoustic and vibration stresses on fuelling systems and other critical weapon bay components.
- **High-Frequency Noise Analysis:** Characterize high-frequency noise that may affect advanced electronic systems and guidance mechanisms.

Why Choose GRAS for Weapon Bay & Ordnance Acoustics?

- **Industry-Leading Accuracy:** GRAS microphones and systems deliver precise and reliable data for detailed acoustic analysis in complex environments.
- **Proven Expertise:** With decades of experience in acoustic measurement, GRAS is a trusted partner for defense and aerospace organizations worldwide.
- **Durable and Reliable:** Our products are designed to perform in challenging environments, including confined spaces and high-pressure conditions.
- **Tailored Solutions:** GRAS offers customized systems to meet the specific requirements of weapon bay and ordnance acoustic testing.
- **Compliance with Standards:** Our solutions support testing in accordance with international safety and defense standards, ensuring compliance and reliability.

Advancing Safety and Performance in Weapon Bay Environments

GRAS Sound & Vibration is committed to supporting the development and testing of safe, reliable, and high-performing weapon storage and ordnance systems. Our advanced acoustic measurement solutions provide the precision and reliability needed to assess acoustic loading, fatigue, and environmental impacts on critical defense assets.



GRAS 48LA UTP - Ultra-Thin Precision microphones - 1 mm



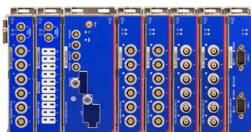
GRAS 46BG



GRAS 48LA



GRAS 47BX



imc ARGUSfit



imc FAMOS

Recommended Solution Configuration

Based on the application requirements and environmental conditions, Axiometrix recommends a tailored measurement solution combining high-precision microphones, signal conditioning, and analysis systems to ensure reliable, repeatable, and standards-compliant results in demanding defense environments.

Typical Measurement Setup

The Sound Pressure Level is normal measured simultaneously in several critical positions in the weapon bay.

The Microphone used for these measurements are high pressure pressure microphone.

In cases in which the microphones must be mounted on the surface of the weapon or critical electronics must the microphone be as light in weight as possible to ensure that the microphone aren't loading the structure on which it is mounted.

Typical recommended solutions may include:

Microphones:

- **GRAS 46BG** 1/4" CCP Pressure Standard Microphone Set, High Pressure
- or
- **GRAS 48LA** UTP Microphone, High Pressure
- or
- **GRAS 47BX**

DAQ and software

- **imc ARGUSfit** for onboard and mobile acquisition
- **imc Studio**
- **imc FAMOS**

For more information or application-specific recommendations, please contact our team of specialists.

About Axiometrix Solutions

Axiometrix Solutions is a global leader in advanced test and measurement solutions, supporting customers across aerospace, automotive, defense, audio, and electronics industries. With a strong focus on precision, reliability, and innovation, Axiometrix delivers technologies that enable accurate measurement and analysis in even the most demanding environments.

Axiometrix Solutions brings together three world-class brands:

- **GRAS Acoustics** – Specialists in high-precision measurement microphones and acoustic solutions, trusted for their accuracy, durability, and repeatability.
- **imc Test & Measurement** – Experts in intelligent data acquisition systems and real-time analysis for mechanical and mechatronic testing.
- **Audio Precision** – The industry standard in audio analyzers and electroacoustic test solutions.

Together, these brands provide a comprehensive portfolio of solutions that empower engineers and researchers worldwide to measure, analyze, and improve performance across a wide range of applications. Axiometrix Solutions operates globally through subsidiaries and distributors in more than 40 countries. Learn more at www.axiometrixsolutions.com