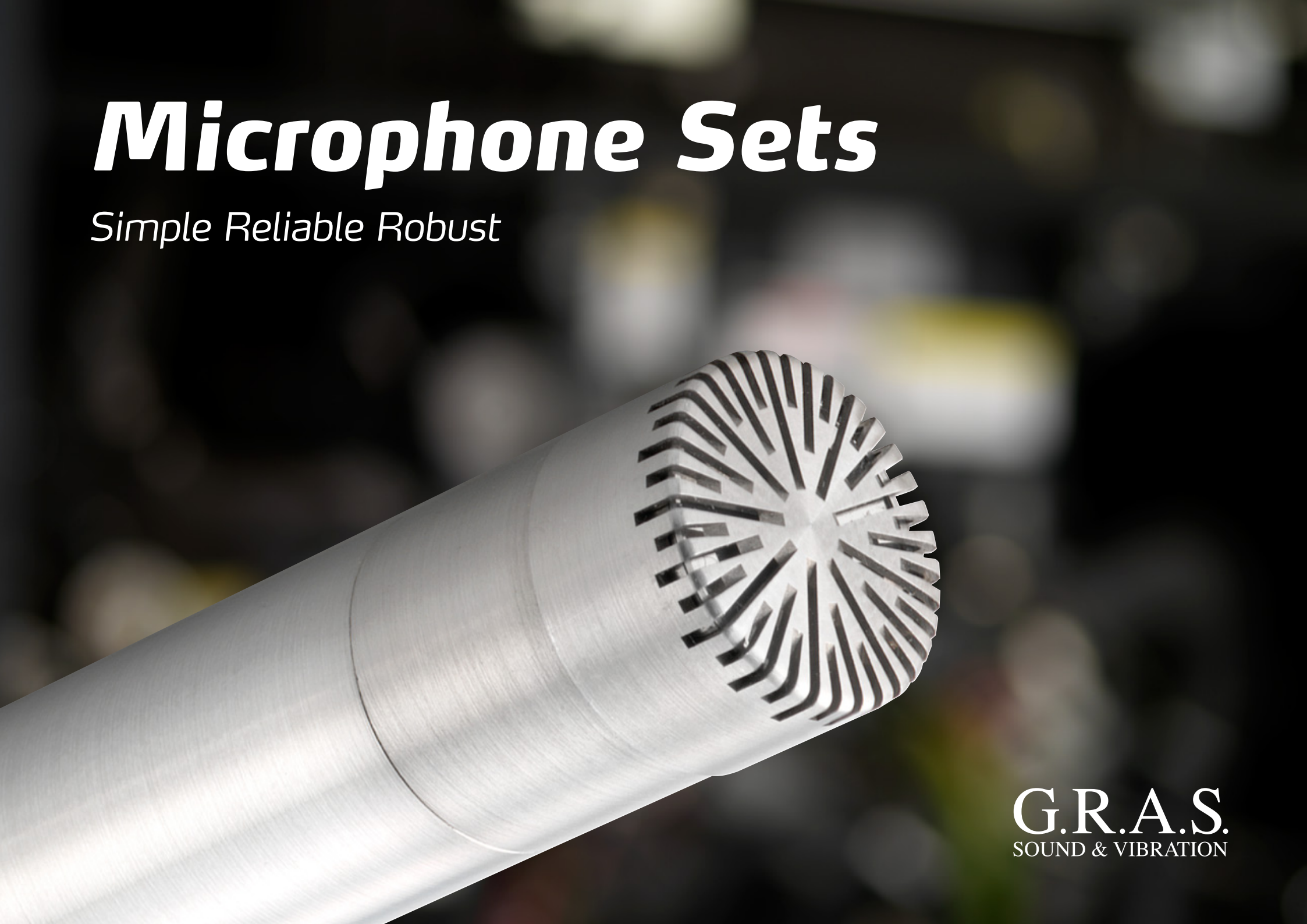
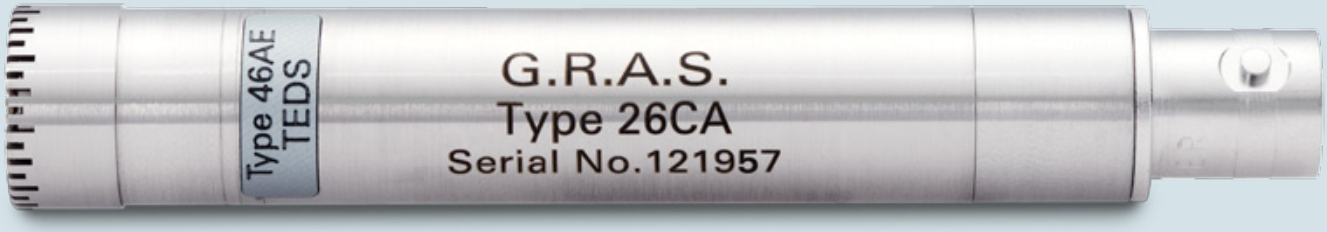
Microphone Sets

Simple Reliable Robust



G.R.A.S.
SOUND & VIBRATION



Microphone Sets for industrial acoustic applications

New approach
With the unique transducer combinations G.R.A.S. is introducing a new approach to measurement microphones and to measurement data safety.
By analyzing the feedback from our multi- as well as single-channel users we realized that there was a need for a different philosophy when choosing and using acoustic sensors.
Daily situations where you mix up externally polarized and prepolarized microphones and preamplifiers or use wrong calibration data in the system setup are time consuming and often undiscovered until a whole set of measurement data is analyzed and consequently discarded.

Pre-assembled sets
The Type 46 sets of pre-assembled G.R.A.S. microphones and preamplifiers solves these situations and is a combination carefully selected to obtain the best possible properties and reliability, thus optimizing the workflow for the user and minimizing typical handling errors.
The sets are assembled in a dust-free environment to avoid contamination of the interface between the microphone and preamplifier and have been sealed with a label. The label can be removed and the set dismantled, if desired by the user.

Easy selection
The measurement microphone sets have been combined so they fulfill our users' typical measurement needs. Independently of your measurement system and application you should be able to find a set that suits your needs. Use the table on the right to initially identify the input type you have and then choose the appropriate properties for your specific application.

Plug & Play
The microphone sets can be connected directly to all professional measurement systems and as indicated they are available for both CCP and 7-pin LEMO inputs*.
If your measurement platform supports intelligent transducers according to IEEE 1451.4 (TEDS) you can simply plug in the microphones and they will identify themselves with their specific properties, types and calibration data. A feature especially appreciated by multi-channel users.

Cables
The CCP sets use high-quality coaxial cables whereas the LEMO sets use a special, soft type of multi-core shielded cable.
Some sets have a 3 m cable included and others have cables as accessories – see the table on the right.
It should be noted that longer cables will influence the upper frequency and dynamic ranges. More information about this can be found on gras.dk.

Calibration data
All microphone sets are delivered as a unit and are calibrated accordingly. The sets are delivered with calibration charts including sensitivity values and frequency response curves for the complete set. The sensitivity value can therefore be used directly in your system setup.

Verification and annual calibration
For frequent verification of the measurement chain a sound source will be required. G.R.A.S. supplies a 114 dB sound calibrator for this purpose.
Depending on the use and your internal quality control requirements we recommend that the sets are re-calibrated at least every second year.

Warranty
G.R.A.S. offer a 5 year warranty on Type 46 sets.

Service
If you by mistake should damage the diaphragm, integrated cable or connector they can all be exchanged, which is also the case for the microphone capsule and preamplifier unit.

1/2" free-field

Type 46AE

CCP input

Frequency Range
3.15 Hz - 20 kHz

Dynamic Range
17 dBA - 135 dB

Sensitivity
50 mV / Pa

Type 46AF

LEMO input

Frequency Range
3.15 Hz - 20 kHz

Dynamic Range
17 dBA - 146 dB

Sensitivity
50 mV / Pa

1/4" free-field

Type 46BE

CCP input

Frequency Range
4 Hz - 80 kHz

Dynamic Range
36 dBA - 157 dB

Sensitivity
4 mV / Pa

Included
3 m Microdot-BNC cable

Type 46BF

LEMO input

Frequency Range
4 Hz - 100 kHz

Dynamic Range
36 dBA - 166 dB

Sensitivity
4 mV / Pa

Included
3 m integrated LEMO cable

1/2" pressure

Type 46AO

CCP input

Frequency Range
3.15 Hz - 20 kHz

Dynamic Range
27 dBA - 147 dB

Sensitivity
12.5 mV / Pa

Type 46AG

LEMO input

Frequency Range
3.15 Hz – 20 kHz

Dynamic Range
27 dBA – 160 dB

Sensitivity
12.5 mV / Pa

1/4" pressure

Type 46BD

CCP input

Frequency Range
4 Hz - 70 kHz

Dynamic Range
44 dBA - 165 dB

Sensitivity
1.6 mV / Pa

Included
3 m Microdot-BNC cable

Type 46BP

LEMO input

Frequency Range
4 Hz - 70 kHz

Dynamic Range
44 dBA - 174 dB

Sensitivity
1.6 mV / Pa

Included
3 m integrated LEMO cable

1/2" random

Type 46AQ

CCP input

Frequency Range
3.15 Hz - 16 kHz**

Dynamic Range
17 dBA - 135 dB

Sensitivity
50 mV / Pa

Type 46AR

LEMO input

Frequency Range
3.15 Hz - 16 kHz**

Dynamic Range
17 dBA - 146 dB

Sensitivity
50 mV / Pa

Accessories

Sound Source
Sound Calibrator Type 42AB

Cables for CCP* sets
3 m BNC-BNC Cable AA0035
10 m BNC-BNC Cable AA0037

Cables for LEMO* sets
3 m LEMO-LEMO Cable AA0008
10 m LEMO-LEMO Cable AA0009

Frequency range value is within ± 2 dB of nominal sensitivity value unless other is specified. Upper limit of dynamic range is specified at 3% distortion.

* CCP - Constant Current Power is the same as IEPE and CCLD and is compatible with ICP™, DeltaTron®, ISOTRON® etc.
7-pin LEMO – the classic measurement microphone input including a 200 V polarization voltage supply.
ICP™ is a registered trademark of PCB Group, Inc., DeltaTron® is a registered trademark of Brüel & Kjaer SVM A/S, ISOTRON® is a registered trademark of Endevco Corporation.

** 12.5 kHz to 16 kHz ± 3 dB

We Make Microphones

Since the company's beginning in 1994 we have been 100% dedicated to developing and manufacturing high-quality measurement microphones and related acoustic equipment.
G.R.A.S. Sound & Vibration is therefore capable of offering you the right acoustical solutions within the fields of aerospace, automotive, audiology, consumer electronics, noise monitoring, building acoustics, telecommunications and naturally; microphone calibration.

The company is located in Denmark and founded by the Danish acoustics pioneer, Gunnar Rasmussen who for more than half a century has contributed to the world of sound and vibration with his unique ideas and designs.
Mr. Rasmussen's special understanding of acoustics, electronics, metallurgy and physics has during the years lead to many innovations in acoustic instrumentation and measurement techniques.

From the first commercially available series of 1" measurement microphones to intensity probes and techniques, artificial ear simulators and hundreds of customized applications, focus has always been on the users' needs and on the highest possible product quality.

This tradition of aptitude and working excellence is spun off and worked into every solution from G.R.A.S. Sound & Vibration for the benefit and satisfaction of our users.
Our R&D Team is continuously improving our well-known solutions as well as developing new products to meet the industry's demands and the recommendations of various, international standardization boards.

The G.R.A.S. measurement microphone technology has of course been developed over time and we are proud to offer the best customer service available. All our microphones are solely produced in stainless steel and in a quality that allows for a 5 year warranty.

Should you by mistake damage the diaphragm on a G.R.A.S. microphone, our special technique enables repair at very reasonable price. A fact often valued not only by the users but also their purchase departments who are guaranteed a long term investment with equipment from G.R.A.S.

G.R.A.S. is represented worldwide in more than 40 countries by subsidiaries and distributors. Whether you are searching for a multi-channel solution or just a replacement microphone for your sound level meter your local G.R.A.S. distributor will in close corporation with us be able to help solve your measurement needs.

Please visit gras.dk for your local G.R.A.S. distributor.