

GRAS 45CC

Headphone Test Fixture



Precise support for all headphone sizes
High quality 1/2" and 1/4" measurement
microphones
IEC 60318-1 ear simulators
ITU-T Rec. P51 mouth simulator
Easy in-situ calibration

The 45CC is a flexible platform for dual-channel testing of headphones and headsets. It can be configured with microphones, IEC 60318-1 ear simulators and ITU-T P.51 mouth simulator. It can be adjusted very precisely to support different headphone/headset designs and sizes for high accuracy and repeatability. It is well suited for Research and Development, Quality Control and Production Line testing.

Introduction

The 45CC Headphone Test Fixture is for dual-channel testing of headphones and headsets, and it is built on our vast experience in the field. With a focus on multiple configuration options and accurate and repeatable test results, the test fixture can easily be adapted to many different headphone/headset designs and sizes.

Main features

- Dual-channel testing of headphones and headsets
- Multiple configuration options: microphones or IEC 60318-1 ear simulators - with or without a mouth simulator
- Distance between ears adjustable from 130 to 170 mm
- Headband holder height adjustable from 75 to 135 mm
- Reproducible positioning of DUT using 45CC's unique positioning guides
- High-quality measurement microphones
- IEC 60318-1 ear simulators
- ITU-T Rec. P51 mouth simulator with built-in power amplifier
- The microphones are mounted with snap fittings for easy calibration

All adjustments to headband position and height, as well as the distance between the ear plates, can be done quickly and very accurately. Precise scales make it easy to document all settings accurately, be it the headband position, the width between ears, or the position of the positioning guide. Therefore it is easy to set up other 45CCs to mirror the original setup.

Once the test fixture has been adjusted to fit a

certain headphone, the design of headband holder, ear plates and the unique positioning system ensure that when testing identical headphones you will get the same positioning and fit from one test to the next. Therefore repeatability in a production line testing environment will be second to none with the 45CC. This makes the 45CC the unrivaled choice for demanding Quality Control and Production Line applications, but can also be used for Research and Development.

The Configurations

For your convenience, we have made 45CC available in a number of pre-configurations to suit specific testing needs. These are:

1/2" Microphones

- 45CC-1 with Externally Polarized 1/2" Microphones*
- 45CC-2 with Prepolarized 1/2" Microphones*

GRAS 45CC Headphone Test Fixture configured with 1/2" externally polarized or prepolarized microphones is primarily intended as a tool for Quality Control and Production Line testing of headphones.

Ear Simulators and 1/2" Microphones

- 45CC-3 with IEC 60318-1 Ear Simulators and Ext. Polarized 1/2" Microphones*
- 45CC-4 with IEC 60318-1 Ear Simulators and Prepolarized 1/2" Microphones*

GRAS 45CC Headphone Test Fixture configured with IEC60318-1 ear simulators and 1/2" externally polarized or prepolarized microphones is primarily intended as a tool for Quality Control and Production Line testing of headphones. Where the acoustical load from an ear simulator is required, the use of the ear simulators also means that testing according to IEC 60318-1, IEC60268-7 and ITU-T Rec. P.57 is

possible.

Mouth Simulator and 1/2" Microphones

45CC-5 with Mouth Simulator and Ext. Polarized 1/2" Microphones

45CC-6 with Mouth Simulator and Prepolarized 1/2" Microphones

GRAS 45CC Headphone Test Fixture configured with 1/2" externally polarized or prepolarized microphones and the GRAS 44AA Mouth Simulator is primarily intended as a tool for Quality Control and Production Line testing of communication headsets.

Mouth Simulator and Ear Simulators

45CC-7 with Mouth Simulator, IEC 60318-1 Ear Simulators, and Ext. Polarized 1/2" Microphones

45CC-8 with Mouth Simulator, IEC 60318-1 Ear Simulators, and Prepolarized 1/2" Microphones

GRAS 45CC Headphone Test Fixture configured with IEC60318-1 ear simulators, 1/2" externally polarized or prepolarized microphones and the GRAS 44AA Mouth Simulator is primarily intended as a tool for Quality Control in R&D and Production Line testing of communication headsets.

1/4" Microphones

45CC-9 with Externally Polarized 1/4" Microphones

45CC-10 with Prepolarized 1/4" Microphones

GRAS 45CC Headphone Test Fixture configured with 1/4" externally polarized or prepolarized microphones extends the frequency range to 70 kHz for high-frequency testing.

Mouth Simulator and 1/4" Microphones

45CC-11 with Mouth Simulator and Ext. Polarized 1/4" Microphones

45CC-12 with Mouth Simulator and Prepolarized

1/4" Microphones

GRAS 45CC Headphone Test Fixture configured with 1/4" externally polarized or prepolarized microphones and the GRAS 44AA Mouth Simulator is for testing of communication headsets. The microphones extends the frequency range to 70 kHz while the mouth simulator has a frequency range of 100 Hz to 16 kHz.

Warranty

GRAS offers 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 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

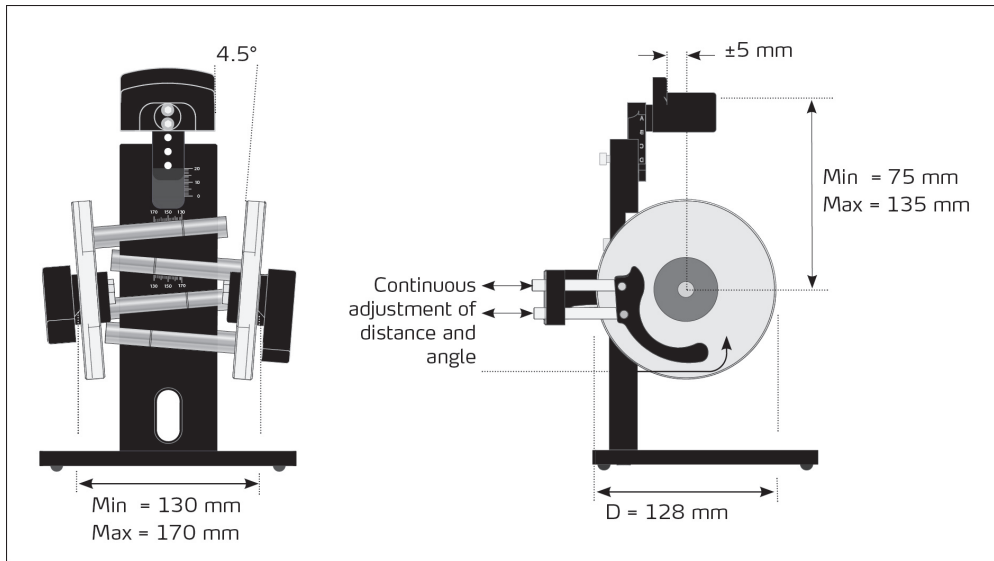
Before leaving the factory, all GRAS microphones are calibrated in a controlled laboratory environment using traceable calibration equipment.

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

CE/RoHS compliant/WEEE registered		yes/yes/yes
1/2" MICROPHONES		
Sensitivity	mV/Pa	12.5
Frequency Response (± 2 dB)	Hz	3.15 Hz - 20 k
Dynamic range - 40AG (with 26AC preamp)	dB	25 dB(A) - 164
Dynamic range - 40AO (with 26CK preamp)	dB	25 dB(A) - 150
Standard		WS2P
1/4" MICROPHONES		
Sensitivity	mV/Pa	1.6
Frequency Response (± 2 dB)	Hz	4 - 70 k
Dynamic range - 40BP (with 26AC preamp)	dB	39 dB(A) - 169
Dynamic range - 40BD (with 26CS preamp)	dB	44 dB(A) - 166
Standard		WS3P
GRAS RA0039 EAR SIMULATOR		
Standards		ANSI S3.7 IEC 60318-1 ITU-T Rec. P.57
GRAS 44AA MOUTH SIMULATOR		
Frequency response @ maximum output level	Hz	100 to 16 k
Maximum output	dB	100
Maximum power, continuous	W	20
Amplifier gain	dB	10
Input impedance	Ω	20 k
Output impedance	Ω	8
Power supply	V DC	24
Standards		ITU-T Rec. P51 IEEE 269-2010
TEST FIXTURE		
Width between ears	mm	Adjustable from 130 to 170

Height of headband holder	mm	Adjustable from 75 to 135
Horizontal position of headband holder	mm	Adjustable +/- 5
Ear plate angle	°	4.5 (ISO 4869-3)
Diameter of ear plate	mm	128
Positioning guides		Continuous adjustment of horizontal and vertical position. Two-point support for all headphone sizes
Weight	kg	3

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



Included items

45CC-1 - with Externally Polarized Microphones

45CC	Test fixture
GRAS 69CC-1	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AG	1/2" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard Preamplifier with 3 m Integrated Cable
GRAS GR0010	Adapter for 1/4" preamplifier and 1/2" microphone

45CC-2 - with Prepolarized Microphones

45CC	Test fixture
GRAS 69CC-2	Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AO	1/2" Prepolarized Pressure Microphone
GRAS 26CK	1/2" CCP Preamplifier with Microdot Connector, Very Short
GRAS AA0070	3 m Microdot-BNC Cable, 2 pcs

45CC-3 with IEC 60318-1 Ear Simulators and Externally Polarized Microphones

45CC	Test fixture
GRAS RA0039	IEC 60318-1 Ear Simulator, 2 pcs
GRAS 69CC-1	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AG	1/2" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard Preamplifier with 3 m Integrated Cable
GRAS GR0010	Adapter for 1/4" preamplifier and 1/2" microphone

45CC-4 - with IEC 60318-1 Ear Simulators and Prepolarized Microphones

45CC	Test fixture
GRAS RA0039	IEC 60318-1 Ear Simulator, 2 pcs
GRAS 69CC-2	CCP Pressure Mic. Set for 45CC, 2 pcs, comprising:

GRAS 40AO	1/2" Prepolarized Pressure Microphone
GRAS 26CK	1/2" CCP Preamplifier with Microdot Connector, Very Short
GRAS AA0070	3 m Microdot-BNC Cable, 2 pcs

45CC-5 - with Mouth Simulator and Externally Polarized Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS 69CC-1	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AG	1/2" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard Preamplifier with 3 m Integrated Cable
GRAS GR0010	Adapter for 1/4" preamplifier and 1/2" microphone

45CC-6 - with Mouth Simulator and Prepolarized Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS 69CC-2	CCP Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AO	1/2" Prepolarized Pressure Microphone
GRAS 26CK	1/2" CCP Preamplifier with Microdot Connector, Very Short
GRAS AA0070	3 m Microdot-BNC Cable, 2 pcs

45CC-7 with Mouth Simulator, IEC 60318-1 Ear Simulators and Externally Polarized Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS RA0039	IEC 60318-1 Ear Simulator, 2 pcs

GRAS 69CC-1	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AG	1/2" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard Preamplifier with 3 m Integrated Cable
GRAS GR0010	Adapter for 1/4" preamplifier and 1/2" microphone

45CC-8 with Mouth Simulator, IEC 60318-1 Ear Simulators and Prepolarized Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS RA0039	IEC 60318-1 Ear Simulator, 2 pcs
GRAS 69CC-2	CCP Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40AO	1/2" Prepolarized Pressure Microphone
GRAS 26CK	1/2" CCP Preamplifier with Microdot Connector, Very Short
GRAS AA0070	3 m Microdot-BNC Cable, 2 pcs

45CC-9 - with Externally Polarized 1/4" Microphones

45CC	Test fixture
GRAS 69CC-3	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40BP	1/4" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard 1/4" Preamplifier with 3 m Integrated Cable
GRAS GR2039	1/4" Microphone Holder

45CC-10 - with Prepolarized 1/4 Microphones

45CC	Test fixture
GRAS 69CC-4	CCP Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40BD	1/4" Prepolarized Pressure Microphone
GRAS 26CS	1/4" CCP Preamplifier with Microdot Connector, Very Short

[GRAS AA0070](#) 3 m Microdot-BNC Cable, 2 pcs

45CC-11 - with Mouth Simulator and Externally 1/4" Polarized Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS 69CC-3	LEMO Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40BP	1/4" Ext. Polarized Pressure Microphone
GRAS 26AC-1	Standard Preamplifier with 3 m Integrated Cable
GRAS GR2039	1/2" Microphone Holder

45CC-12 - with Mouth Simulator and Prepolarized 1/4" Microphones

45CC	Test fixture
GRAS 44AA	Mouth Simulator according to ITU-T Rec. P51 with built-in power amplifier
GRAS AA0035	BNC-BNC Cable
GRAS 69CC-4	CCP Pressure Mic. Set for 45CC, 2 pcs, comprising:
GRAS 40BD	1/4" Prepolarized Pressure Microphone
GRAS 26CS	1/4" CCP Preamplifier with Microdot Connector, Very Short
GRAS AA0070	3 m Microdot-BNC Cable, 2 pcs

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

GRAS Worldwide

Subsidiaries and distributors in more
than 40 countries

HEAD OFFICE, DENMARK GRAS SOUND & VIBRATION

Skovlytoften 33
2840 Holte
Denmark
Tel: +45 4566 4046
www.grasacoustics.com
gras@grasacoustics.com

USA GRAS SOUND & VIBRATION

5750 S.W. Arctic Drive
Beaverton, OR 97005
Tel: 503-627-0832
Toll Free: 800-231-7350
www.grasacoustics.com
sales-usa@grasacoustics.com

CHINA GRAS SOUND & VIBRATION

Room 303, Building T6
Hongqiaohui, 990, Shenchang Road
Minhang District, Shanghai
China, 201106
Tel: +86 21 64203370
www.gras.com.cn
cnsales@grasacoustics.com



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 to industries where acoustic measuring accuracy and repeatability is of utmost importance in R&D, QA and production. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, and consumer electronics. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect and trust.

GRAS Sound & Vibration