

Hearing-Protector Test Fixture Type 45CA

Product Data

Applications

- Test of hearing protection devices such as ear-muffs and ear-plugs
- Test of sound sources such as headphones and headsets (both supra-aural and circum-aural types) and earphones (both concha and insert types)
- Test of hearing aids (all common types)

Special Features

The Test Fixture Type 45CA provides for reliable and exact measurements and has been designed with the following features:

- The test fixture is mounted on a resilient base that reduces the noise floor to minimum in a typical test situation.
- The test fixture head was made for optimizing its acoustic isolation.
- The delivery includes an acoustic cup and a plug for testing the acoustic isolation (Fig. 1).
- A range of moulded-rubber KEMAR pinnae, e.g. for testing ear plugs, can be fitted.

Description

The G.R.A.S. Hearing-Protector Test Fixture Type 45CA (Fig. 1) is intended for testing the performance of hearing-protection devices such as ear plugs and ear muffs (supra-aural and circum-aural).

Type 45CA can also be used for testing sound sources such as earphones and headphones.

It is fitted with either microphones or ear simulators, depending on the device to test and the standard to comply with.

Type 45CA is designed according to ISO 4869-3 and meets the requirements of the standard.



Fig. 1 Hearing-protector Test Fixture Type 45CA. On the right: Blind Plug GR1079 and Cup GR0974.

For checking the minimum acoustic isolation of Type 45CA, the Cup GR0974 and Blind Plug GR1079 (Fig. 1) are included. For sealing the sound leakage due to the cabling, 2 x Foam Plug GR1281 and a tube of silicone grease MI0016 are also supplied.

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Which Configuration to Use

The Hearing-Protector Test Fixture Type 45CA is very flexible and can be configured to test

- Ear-muffs
- Ear-plugs
- Headphones
- Earphones
- Hearing-aids

according to one of the following three standards:

- ISO 4869-3
- IEC 60318 (IEC 60318-1)
- IEC60711 (IEC 60318-4)

ISO 4869-3

The ISO 4869-3 configuration is for

- Measuring the insertion loss of ear-muffs
- Testing the sound quality of headphones

The configuration of Type 45CA according to this standard is based on a 1" measurement microphone or a ½" microphone with a suitable microphone preamplifier*.

A completed configuration is shown in Fig. 2.

ISO 60318

The ISO 60318 configuration is for

- Measuring the insertion loss of ear-muffs
- Testing the sound quality of headphones

The configuration of Type 45CA according to this standard is based on an ISO 60318 ear simulator mounted with a ½" pressure-field microphone. The IEC 60318 ear simulator measures the sound pressure level at the ear entrance point (EEP).

A completed configuration is shown in Fig. 3.

IEC 60711

The IEC 60711 configuration is for

- Measuring the insertion loss of ear-muffs and ear-plugs
- Testing the sound quality of headphones

The configuration of Type 45CA according to this standard is based on an IEC 60711 ear coupler and pinna for measuring the sound pressure level at the eardrum (DRP).

A completed configuration is shown in Fig. 4.






Standard		ISO 4869-3 *	IEC 60318	IEC 60711
Device to test	 Ear-muffs	+	+	+
	 Ear-plugs	-	-	+
	 Headphones	+	+	+
	 Earphones	-	-	+
	 Hearing-aids	-	-	+

Table 1 Providing an overview: Which configuration to use

* The configuration will be in conformity with ISO 4869-3 only if 1" Microphone Type 40EN is used.

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Fig. 2 ISO 4869-3 configuration



Fig. 3 IEC 60318 configuration



Fig. 4 IEC 60711 configuration

Technical Specifications

Built in accordance with:

ISO 4869-3

(can also be used with two microphones for binaural testing)

Weight:

11.6kg

Dimensions (in millimeters and inches):

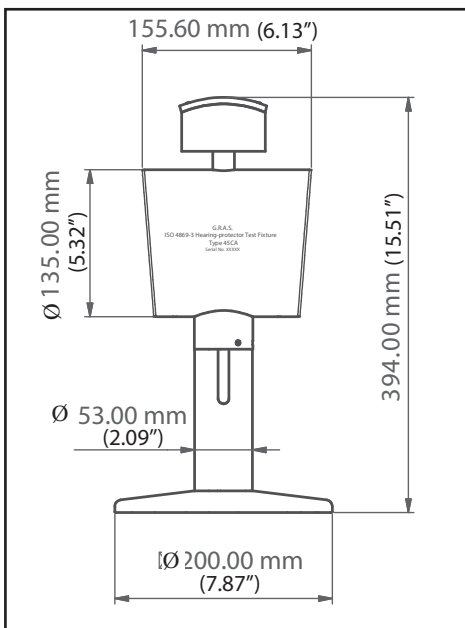


Fig. 5 Dimensions of Type 45CA

Hearing-protector Test Fixture Type 45CA

What to Order

<p>TheType 45CA Package</p> <ul style="list-style-type: none">• Hearing-protector Test Fixture Type 45CA• Blind plug GR1079• Cup GR0974• 2 x Foam Plug for acoustic isolation . . GR1281• Silicone grease for leakage sealing . . . MI0016 <p>Configuration-Specific Parts</p> <p>ISO 4869-3 Configuration</p> <p>Externally-polarized Configuration*:</p> <ul style="list-style-type: none">• 1" Pressure-field Microphone Type 40EN• 1"-to-1/2" Adapter RA0017• 1/2"-to-1/4" Adapter RA0003• 1/4" Preamplifier, Short Type 26AS** <p>Configuration with 1/2" Microphone</p> <p>Externally-polarized Configuration*:</p> <ul style="list-style-type: none">• 1" Microphone Protection Grid GR0490• 1"-to-1/2" Microphone Adapter RA0058• 1/2" Pressure Microphone Type 40AP• 1/4" Preamplifier, Short Type 26AS** <p>Prepolarized Configuration*:</p> <ul style="list-style-type: none">• 1" Microphone Protection Grid GR0490• 1"-to-1/2" Microphone Adapter RA0058• 1/2" Microphone (prepol.) Type 40AD• 1/4" Preamplifier, Short (prepol.) Type 26CS** <p>IEC 60318 Configuration</p> <p>Externally-polarized Configuration*:</p> <ul style="list-style-type: none">• IEC 60318 Ear Simulator RA0039• Externally-polarized microphone Type 40AG• Adapter RA0176• 1/4" Preamplifier Type 26AS** <p>Prepolarized Configuration*:</p> <ul style="list-style-type: none">• IEC 60318 Ear Simulator RA0039• 1/2" Prepolarized microphone Type 40AO• Adapter RA0176• 1/4" Preamplifier, Short (prepol.) Type 26CS**	<p>IEC 60711 Configuration</p> <p>Externally-polarized Configuration*:</p> <ul style="list-style-type: none">• Ear-canal extension GR1069• IEC 60711 Ear Simulator RA0045• 1/4" Preamplifier, short Type 26AS** <p>Prepolarized Configuration*:</p> <ul style="list-style-type: none">• Ear-canal extension GR1069• IEC 60711 Ear Simulator, prepol. RA0045-S1• 1/4" Preamplifier, short Type 26CS** <p>Pinnae, 55 Shore 00 (hard) and related accessories:</p> <ul style="list-style-type: none">• Cover plate, screws and ear canal extension (required for holding pinna) RA0172• Large Pinna right KB0070• Large Pinna left KB0071• Small Pinna right KB0072• Small Pinna left KB0073 <p>Accessories</p> <p>Power Supply & Signal Conditioning</p> <p>For both externally and pre-polarized configurations:</p> <ul style="list-style-type: none">• Power Module, dual-channel Type 12AQ <p>For externally polarized configurations only:</p> <ul style="list-style-type: none">• Power Module, single-channel Type 12AK• Power Module, two-channel Type 12AA• Power Module with built-in power amplifier Type 12AP <p>Calibration Equipment</p> <ul style="list-style-type: none">• Pistonphone, built-in precision barometer (250 Hz or 251.2 Hz, 114 dB +/- 0,05 dB): (recommended) Type 42AP <p>or</p> <ul style="list-style-type: none">• Pistonphone (250 Hz, 114 dB +/- 0,08 dB): Type 42AA <p>Required for the IEC 60711 Configuration:</p> <ul style="list-style-type: none">• 1/2" Calibration Adapter for KEMAR pinnae RA0157
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* For binaural measurements, you need 2 of each of the items listed for the specific configuration.

** For reasons of space, the short 1/4" preamplifiers are required for binaural measurements, that is,

- Type 26AS for externally-polarized configurations
- Type 26CS for prepolarized configurations.

For monaural measurements, you can also use

- Type 26AC for externally-polarized configuration
- Type 26CB for prepolarized configuration.

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



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