

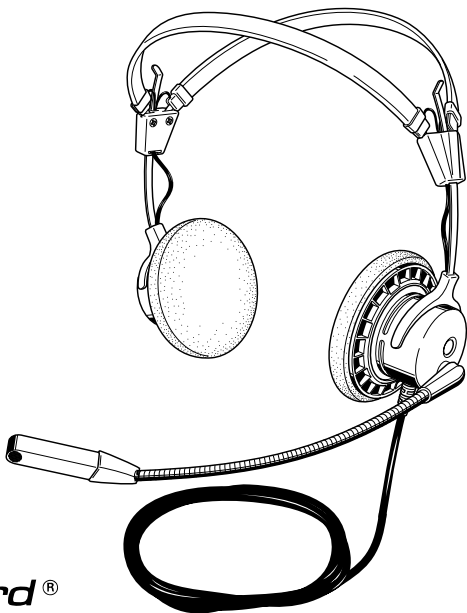
GEBRAUCHSANLEITUNG
INSTRUCTIONS FOR USE
NOTICE D'EMPLOI
ISTRUZIONI PER L'USO
INSTRUCCIONES PARA EL USO
GEBRUIKSAANWIJZING

HMEC 45-CA

P/N 045-230-125

HMEC 45-KA

P/N 045-230-115



NoiseGard®

The problem of noise

The negative effects of noise pollution have been proven by studies, and everybody will have experienced them:

- ▶ Nervousness
- ▶ Lack of concentration
- ▶ Irritability

And these are only the most obvious effects on the human body. Noise also affects the autonomic nervous system and can lead to permanent hearing damage.

There are a multitude of noise sources, and the individual very often has no influence over them. The only solution when being in a noisy place is protecting oneself against ambient noise. These noise problems are particularly prevalent in an aircraft cockpit where a pilot often has to have the communications headset so loud as to risk permanent hearing damage.

With the **NoiseGard®** system, Sennheiser has come up with an effective solution. These operating instructions explain the **NoiseGard®** principle and show you how to use the **NoiseGard®** headset.

Noise levels

loud

140 dB	Jet engine (at a distance of 25 m)
130 dB	Aircraft engine (This is the threshold of pain)
120 dB	Pneumatic drill
110 dB	Blacksmith's Hammer, concrete works
100 dB	Die-cast machine
90 dB	Metal workshop
80 dB	Tractor
70 dB	Office
60 dB	Conversation
50 dB	Ambient noise
40 dB	Living room
30 dB	Library
20 dB	Bedroom
10 dB	Forest, no wind

quiet

The unit of sound levels is the decibel (dB). A noise reduction of 10 dB is generally perceived as halving of the loudness, another 10 dB decrease corresponds to a loudness reduction of 75 %, and so on.

HMEC 45-KA / HMEC 45-CA

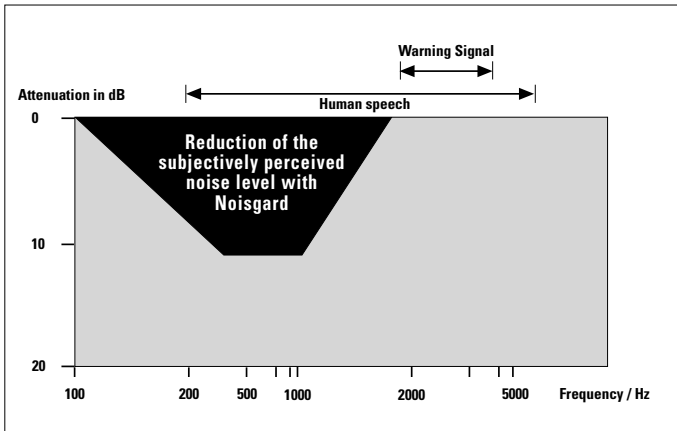
A headset comprises two units, a headphone and a microphone. The HMEC 45-KA/-CA headset is mostly used for communication in aircraft cockpits.

- ▶ The microphone is a high quality back-electret condenser microphone. As per TSO / ARINC it receives its operating voltage via a connector from the aircraft's internal power supply.
- ▶ The headphone is a Sennheiser **NoiseGard®** system. This is a dynamic headphone system which, in addition to reproducing the original audio signal, electronically cancels the low frequencies of the ambient noise. This active noise compensation operates on the principle that sound and „anti-sound“ (in phase opposition) cancel each other out. The **NoiseGard®** compensation circuitry in the headphone requires an extra power supply, so a battery compartment has been integrated into the headset cable (see illustration on the right).

Clearly intelligible communication is ensured, and the pilot no longer has to turn the volume up to overcome ambient noise.

**NoiseGard® increases your comfort,
but it is no medical hearing protection!**

Active noise compensation with NoiseGard®

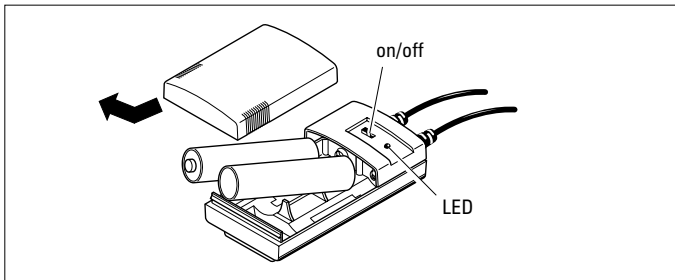


Switching the Active noise compensation on and off Inserting the batteries

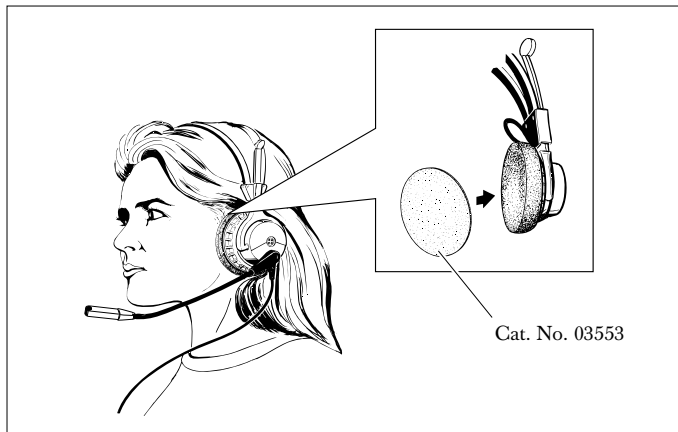
The ON/OFF switch for the power supply of the **NoiseGard®** circuitry is located on the battery compartment. When power is switched on, a green LED lights up.

When the power supply is switched off or when the batteries go flat the headphone works like an ordinary headphone **without noise compensation**.

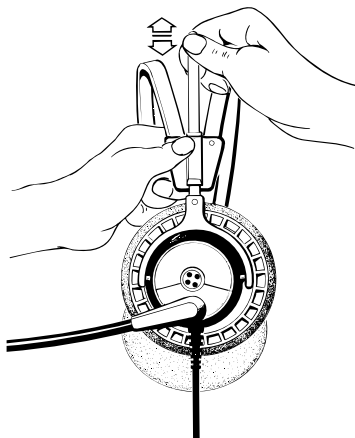
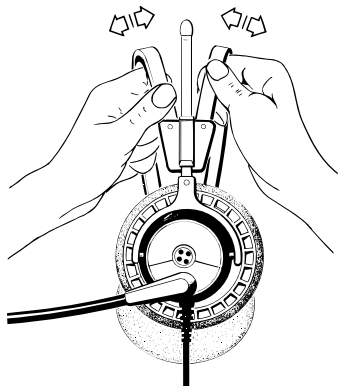
As the microphone is connected to the aircraft's internal power supply, it does not depend on the batteries and will remain in operation should the batteries fail.



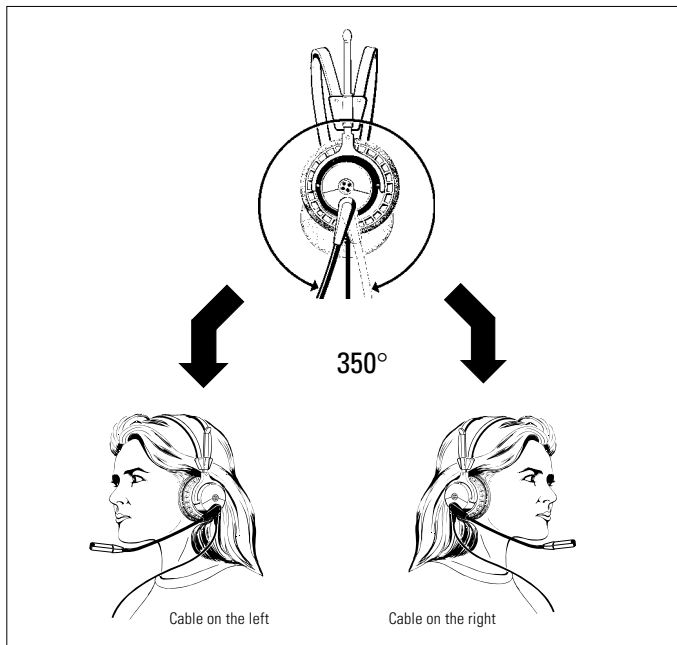
Hygiene pads (Accessories, not included in the scope of delivery)



Adjusting the headband



Cable (worn on left or right side)



N.B.:



NoiseGard® reduces noise and increases comfort.

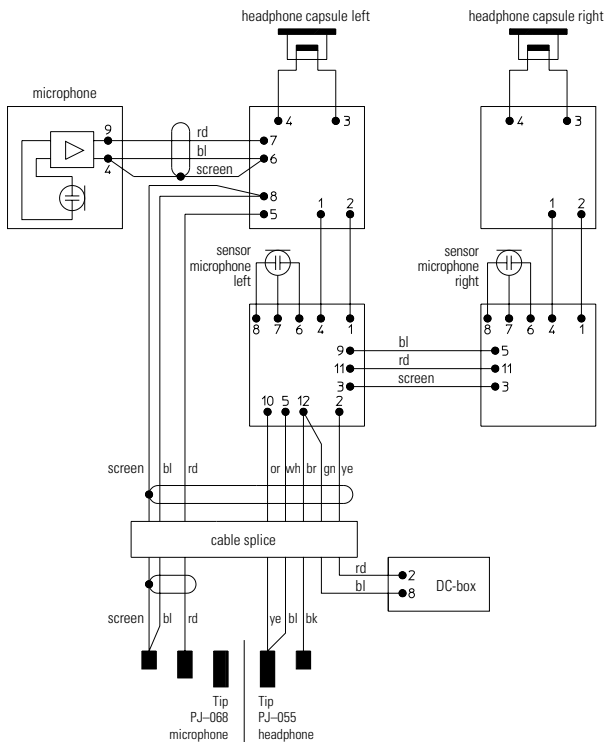
NoiseGard® is not a medical noise protection system!

NoiseGard® cannot replace an industrial ear defender system for use in noisy environments!

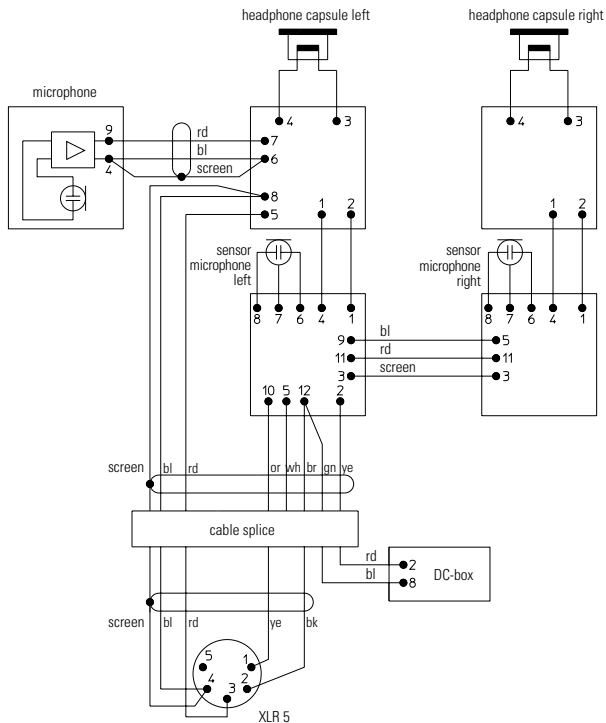
volume up? - No !

When people use headphones, they tend to choose a higher volume than with loudspeakers. Listening with high volume levels for a longer time can lead to permanent hearing defects. Because the **NoiseGard®** circuitry is reducing the ambient noise the headphones can be set at a correspondingly lower level leading to more comfortable hearing conditions so protecting your hearing.

Circuit diagram and pin connections HMEC 45-KA



Circuit diagram and pin connections HMEC 45-CA



Technical data NoiseGard® HMec 45-KA / -CA

Headphone

Transducer principle	dynamic, open
Frequency response	20 Hz - 18 kHz
Impedance	active 600 Ω (mono) 1.2 k Ω per side (stereo) passive 160 Ω (mono) 320 Ω per side (stereo) same volume for active and passive
THD	< 1 %
Active compensation	10 dB \pm 3 dB between 400 Hz and 1 kHz

Mikrophone incl. preamplifier

Transducer principle	Noise-cancelling back-electret condenser microphone capsule
Frequency response (2 cm distance between mic and corner of mouth)	300 Hz - 5 kHz
Max. sound pressure level	120 dB (THD 1 %)
Output voltage	400 mV \pm 3 dB at 114 dB SPL (as per RTCA/DO-214)
Terminating impedance	150 Ω
Operating voltage	8 - 16 V DC, 8 - 25 mA connections as per RTCA/DO-214

General Data

Contact pressure	approx. 1.6 N
Weight without cable	140 g
Cable	single-sided, total length 1.8 m
Connectors	HMEC45-KA headphone: PJ-055, 6.3 mm (1/4") microphone: PJ-068, 5.25 mm HMEC45-CA XLR-5
Power supply	2 x 1.5 V AA type alkaline-manganese batteries or 2 x 1.2 V AA type rechargeable batteries, 600 mAh
Operating time	batteries: approx. 80 hrs rechargeable batteries: approx. 20 hrs
Display	green LED for indicating battery and noise compensation status
Supply schedule	1 HMEC 45-KA or HMEC 45-CA

Subject to alterations.

Aktuelle Informationen zu Sennheiser-Produkten erhalten Sie auch im Internet unter „<http://www.sennheiser.com>“.

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También en Internet, bajo „<http://www.sennheiser.com>“ obtendrá Vd. informaciones actuales sobre los productos Sennheiser.

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