Adjustable, custom made hearing protector

A lot of attention is paid to the attenuation curves featured on the packaging or the instruction leaflet when making a good choice of a proper hearing protector. Vital for the performance efficiency is that this factor is dependent on the frequency of wearing and the attenuation when worn. A good fit is very important for wearer comfort and the frequency of wearing and it is for these reasons that the Variphone® hearing protector is fully custom made.

The unique 2-canal design of the Variphone® allows tuning of the attenuation quality controls fast and efficiently including regular check ups. The adjustable valve allows the attenuation to be set to reduce the noise load to a safe level.

The fine tuning of the attenuation, with accuracy of 1 dB results in retaining the best ability to communicate.

M_f / 90 M_f / 100 M_f / 110 M_f / 120

Process flow
A team of technicians are available to arrange visits at a location convenient for you. After an ear inspection an ear impression can be made which is sent to our laboratories for the manufacturing of an individual Variphone® hearing protector. A second visit by a technician is necessary for the fitting procedure and fulfilling the standard quality controls.

Before the Variphone® can be used it will be tested on functionality (leaktight test) followed by a very precise adjustment for a calibrated amount of attenuation. These quality controls, which will take only a few minutes per person, are part of the standard procedure and will be done on location.

Attenuation according DIN ISO 4869 (1993)							
Frequency (hz)	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*
M_f / dB (adjustment 90)	16.3	18.6	21.7	25.5	30.2	31.0	37.5
M_f / dB (adjustment 100)	21.4	22.9	26.4	28.8	32.7	34.2	38.7
M_f / dB (adjustment 110)	22.7	24.4	26.0	30.4	33.1	37.7	41.8
M_f / dB (adjustment 120)	28.8	28.8	30.5	34.2	33.6	37.7	42.4
S_f / dB (adjustment 90)	4.6	3.4	3.1	3.6	3.1	4.5	3.3
S_f / dB (adjustment 100)	4.6	2.7	3.5	4.3	3.9	2.4	5.5
S_f / dB (adjustment 110)	5.5	4.1	3.3	3.7	3.6	2.4	5.2
S_f / dB (adjustment 120)	3.6	2.8	4.1	5.2	4.6	4.0	3.7
APV_f / dB (adjustment 90)	11.7	15.2	18.6	21.9	27.1	26.5	34.2
APV_f / dB (adjustment 100)	16.8	20.2	22.9	24.5	28.8	31.8	33.2
APV_f / dB (adjustment 110)	17.2	20.3	23.5	26.7	29.5	25.3	36.6
APV_f / dB (adjustment 120)	25.2	26.0	26.4	29.0	29.0	33.7	38.7

M_f / dB = mean attenuation S_f / dB = standard deviation APV_f / dB = assumed protection value

Adjustment	*90*	*100*	*110*	*120*
SNR-value / dB	25	28	29	31
H-value / dB	27	29	31	31
M-value / dB	21	25	26	29
L-value / dB	17	22	22	27

SNR = single noise rating
H-value= mean attenuation in mainly high-frequent noise (>2000 Hz)
M-value= mean attenuation in mid-frequent noise (500 < x <2000 Hz)
L-value= mean attenuation in low-frequent noise (x < 500 Hz)

BIA, 9305564 St. Augustin (1993)

Accessories

Every Variphone® hearing protector will be delivered in a durable storage pouch together with a detailed instruction leaflet, cleaning cloth and earwax remover.

Options

– Various colours
– Cord
– Ball bearing
– Soft canal tip

Specifications

Classification: 2 canal design with adjustable attenuation
Design: Standard IC (in canal) design
Material: Hypoallergenic acrylic
Weight: ± 4 gr
Identification: unique numbering
Special parts: Adjustable valve, leaktest canal, red and blue caps (L-R coding)

Approvals

DIN ISO 4869 (1993)
DIN EN 352-2
0121 CE 93
89/686/EWG
SABS (South Africa)
NAL (Australia)

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VARIPHONE

Authorised dealer

Selective custom made hearing protection

For several decades and still developing, a varied range of safety products are available in the battle against noise overexposure. It is not just because legislation demands it but also because more and more people are concerned about the consequences of harmful noise to the human ear.

Custom made safety products do have a number of advantages against universal products. The NoiseBan© provides a good fit for optimum wearer comfort. The attenuation can be set by selecting a filter which can be inserted in the specifically designed faceplate which also functions as a hand grip.

M_f / DL-20 M_f / DL-30

Due to its robust design and simplicity the NoiseBan© is very user friendly. Available in various colours and it can be supplied with an optional cord and clip to prevent loss. These hearing protectors will be delivered as standard with a durable pouch, cleaning cloth and earwax remover.

Process flow
Technicians are available for meeting at a location convenient for you. After an ear inspection, ear impressions can be made which are used in our laboratories for the manufacturing of individual hearing protectors. A second visit by a technician is necessary for the fitting and check-up

Attenuation according DIN EN 352-2 (1993)							
Frequency (hz)	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*
M_f / dB NoiseBan© with DL-20	11.5	13.8	17.5	25.4	29.4	36.1	27.3
S_f / dB NoiseBan© with DL-20	5.0	3.6	4.0	4.3	4.6	3.7	6.0
APV_f / dB NoiseBan© with DL-20	6.5	10.2	13.5	21.1	24.8	32.4	21.3
SNR: 21 dB(A) H: 25 dB(A) M: 18 dB(A) L: 12 dB (A)							
M_f / dB NoiseBan© with DL-30	18.4	18.1	20.5	22.9	31.0	34.8	30.9
S_f / dB NoiseBan© with DL-30	5.4	4.4	4.1	5.7	4.3	4.4	6.8
APV_f / dB NoiseBan© with DL-30	13.0	13.7	16.4	17.2	26.7	30.4	24.1
SNR: 22 dB(A) H: 24 dB(A) M: 18 dB(A) L: 16 dB (A)							

M_f / dB = mean attenuation S_f / dB = standard deviation APV_f / dB = assumed protection value
SNR = single noise rating

BIA, 53754 St. Augustin, 0121

Specifications

Classification: 1 canal design with selective attenuation filter
Design: Full concha
Material: Hypoallergenic acrylic
Weight: ± 5gr
Special parts: Faceplate for filter mounting

Options

– Various colours
– Cord
– Ball bearing
– Soft canal tip
– Soft silicon material

Approvals

– DIN ISO 4869-1
– DIN EN 352-2 (1993)
– 0121 CE 93
– 89/686/EWG

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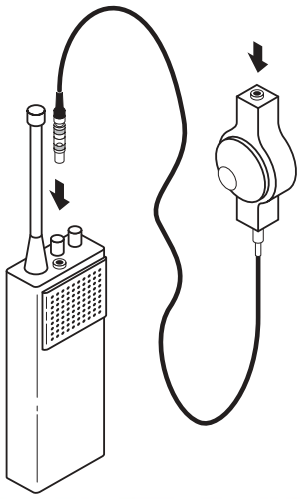
2-way communication + hearing protection

Activities done in noisy environments generally face a lot of problems with speech communication. Normal hearing protection can block out speech recognition and when the communication must be done over a wide range, it can be impractical. The use of 2-way radios can be useful but is often insufficient. The Varicom© can provide a solution.

The Varicom© consists of a custom made earpiece with a built-in high profile miniature microphone and speaker. All the electronic parts are imbedded in the earpiece and thereby insulated against the environmental noise. This leads in an exceptional speech intelligibility. The Varicom© proves to be not only a good communication system but also an excellent hearing protector.

How does it work?

The Varicom© will be connected via a PTT (push to talk) interface to the most common 2-way radios.
This PTT interface contains all the electronics for signal conditioning and gives the command for transmit and receive mode. When a call comes in the user will hear the message directly in the ear. When a talk back is required a push on the PTT switch will activate the microphone inside the earpiece, which takes up the vibrations from the voice in the ear canal, and sends it via the radio to the receiving destination.
This way of communicating is called 'earspeech'



Advantages

– Wearer comfort
– User friendly
– Optimal speech intelligibility
– Easy to use
– Easy to combine with protective clothes and/or gas suites with breathing apparatus
– Compatible with a large range of 2-way radios
– Hands free use

Specifications

Classification: Half duplex communication system based on ear speech principle
Design: Standard full concha
Material: Hypoallergenic acrylic
Weight: ± 15gr
Identification: unique numbering
Special parts:
– Leaktest canal
– Red and blue caps (L-R coding)
– Miniature microphone and speaker
– Kevlar reinforced cable
– Durable Lemo connector for connection to PTT interface
– Ear gear (ear holder and strain relief)

Attenuation:
– Average amount of attenuation: 27 dB (1 Khz)
– Adjustable attenuation optional

Electronic specifications:
– DC-resistance: 1490 Ohm
– Impedance: 6300 Ohm (at 1 Khz)
– Total Harmonic distortion: 1,4 % (at 800 Hz)

Options

– Various colours
– Soft canal tip

Approvals

– Intrinsically safe:
– EEx ia II C T6
– EEX ib IIB/IIC T4 (Tüv 01 Atex 1680)

Production procedure

The Varicom© can be made based on an ear impression made by our technicians. These ear impressions are used in our laboratories for the manufacturing of an individual (left or right at your choice) communication earpiece with built-in electronics and a cable supplied with a durable Lemo connector for connection to the PTT interface. A second visit by our technicians will take place for the fitting and the necessary checks on comfort and leaktightness.

Budget solution

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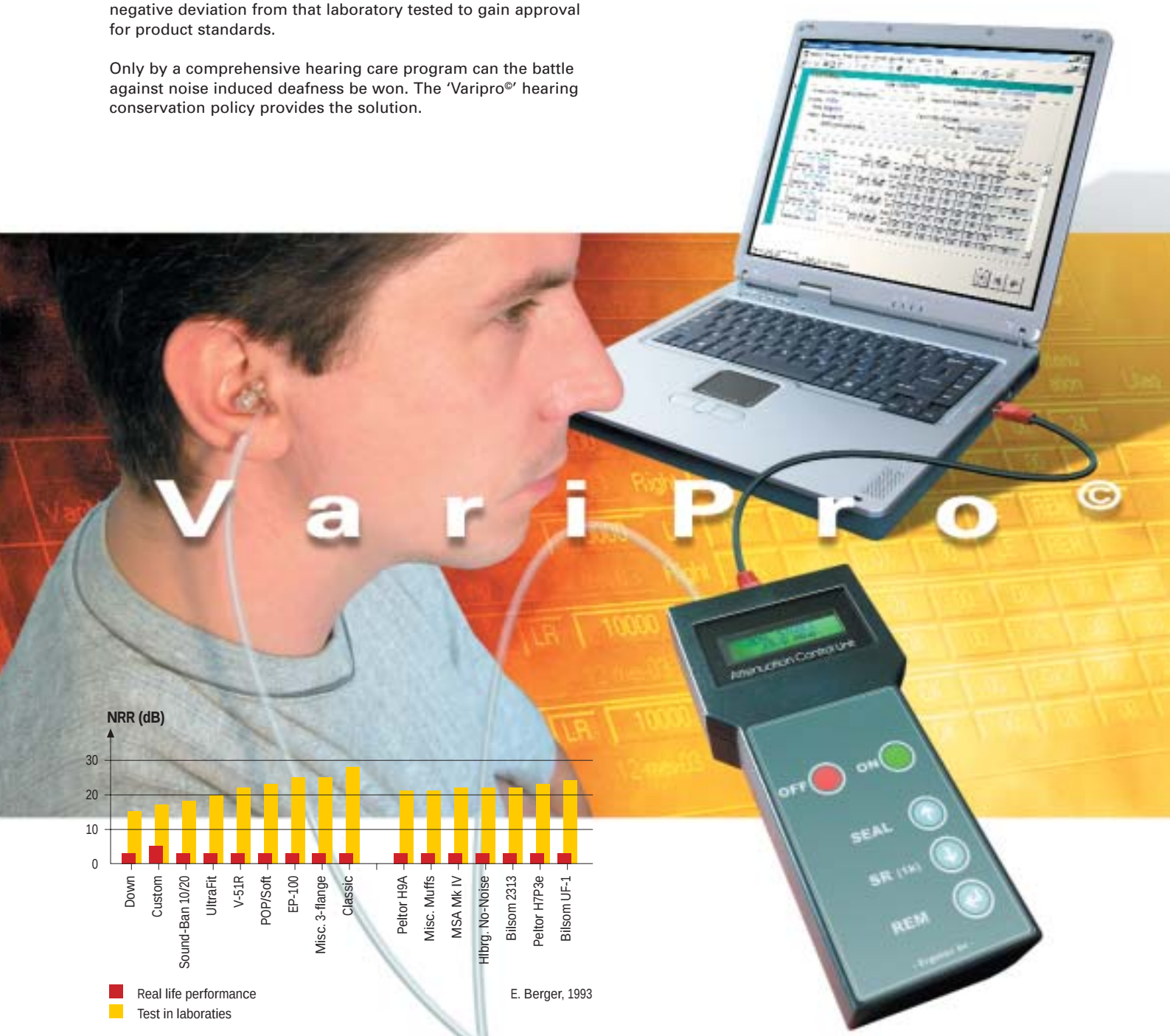
Hearing conservation program

Despite the fact that noise induced deafness ranks in the top 3 of the occupational illnesses research has proven that most personal hearing protection products fail to protect as expected.

The 'real life' performance of these hearing protectors show a negative deviation from that laboratory tested to gain approval for product standards.

Only by a comprehensive hearing care program can the battle against noise induced deafness be won. The 'Varipro©' hearing conservation policy provides the solution.



How does the Varipro© program function?

The Varipro© hearing conservation program is a preventive hearing care policy with focusing on the assumption that the chance of noise induced deafness for an individual can be reduced to an absolute minimum. It is primarily an active hearing care policy with regular monitoring and service checks of all the factors that can influence the efficiency of personal hearing protection.

As a bonus there is a status report to the employer continually updating data that has been entered in our central database during the period of care. These reports keep you informed and in a sound position to audit the status of hearing protection of your workforce. Every year the company will receive a certificate awarded for their innovation in the battle against noise induced deafness.

Workflow
Every participant will be supplied with a pair of comfortable Variphone® hearing protectors. The unique 2-canal design of this custom made hearing protector allows for regular quality controls and check ups speedily and efficiently.

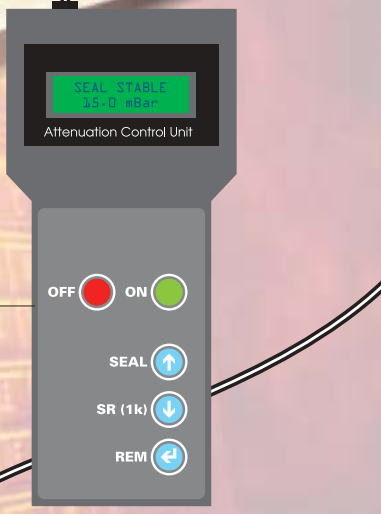
Motivation
Every participant will be well informed on the harmful effects of noise. They will receive the instructions on the correct use of their custom made hearing protectors and will be educated about their own responsibilities.

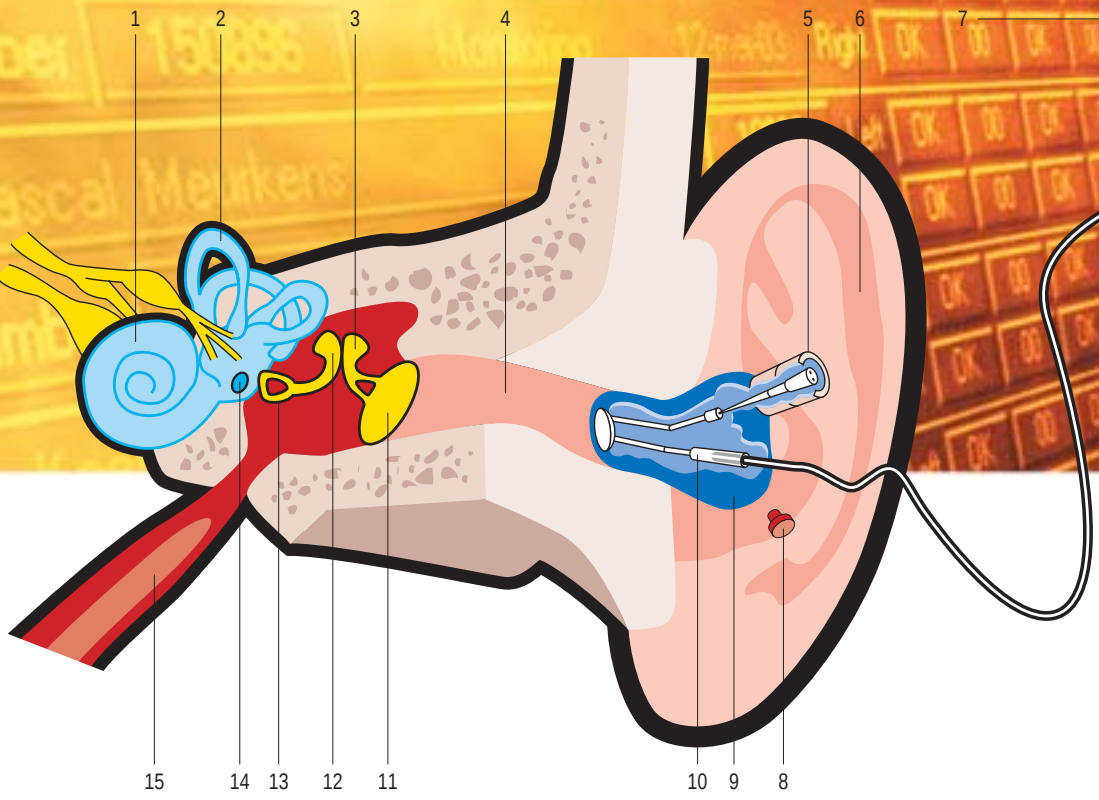
Monitoring
The Variphone® hearing protectors will be checked regularly (usually annual) on wearing comfort, leaktightness, attenuation and the frequency of wearing. All tests will be done with a calibrated digital measurement device (ACU - Attenuation Control Unit)

Maintenance
The Variphone® hearing protectors will be cleaned ultrasonically.

Central database
All relevant data concerning the Variphone® hearing protectors and their user will be gathered and stored in a central database. In this way a historic overview will be built up of the efficiency and effectiveness of the hearing protection. Regular status reports will keep you informed.

Warranty
The Variphone® hearing protectors have an unlimited warranty. Defective or non-functioning will be replaced for free. Plus the Varipro© program covers 50% of the cost for lost replacement.





1. Cochlea
2. Semi-circular canals
3. Malleus (Hammer)
4. Ear canal
5. Attenuation valve
6. Pinna
7. ACU measurement device
8. Test canal cap
9. Variphone® hearing protector
10. Test canal
11. Tympanic Membrane
12. Incus (Anvil)
13. Stapes (Stirrup)
14. Round window
15. Eustachian Tube

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