



Tips and Tricks

*Proper fitting and cleaning of digital
bone conducted hearing spectacles*

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1. Introduction

The purpose of this brochure is to provide hearing aid acousticians with useful information on how to properly adjust BHM digital bone-conduction hearing spectacles. It is also meant to introduce acousticians with little or no experience to the subject of BHM bone-conduction hearing spectacles and how to fit them.

In addition it should be noted that the fitting of hearing aids must be carried out exclusively by authorized professionals. Improper adjustment by non-authorized persons can lead to significant hearing impairment!

Bone-conduction hearing-aid devices have attained a special status among currently-available hearing aids. As opposed to air conduction hearing devices, bone-conduction hearing aids generate sound by a vibrator and then transmit it to the mastoid bone in the form of mechanical vibrations. From there, it is conducted via the skull bones to the inner ear as structure-borne sound, where it is converted directly into nerve stimulation.

The list below shows the most frequent areas of application of bone-conduction hearing devices. These always need to be adjusted whenever the inner ear of the patient is completely or partially intact in cases where the condition of middle ear or auditory canal does not permit the use of an air conduction hearing device. For example, in case of:

- severe otosclerosis
- post radical middle ear surgery
- chronic otitis media (discharge)
- eczema in the auditory canal

In all these cases an acoustic bone-conduction transfer hearing aid generally makes it possible to very successfully correct hearing impairment, because the sound-perceiving apparatus of the hearing-impaired person (inner ear) is functioning correctly and only the loss in sound conduction of the middle ear requires compensation with an hearing aid.

While some of the above-mentioned cases might also be corrected with the aid of an air-conduction hearing device, bone conduction offers many additional advantages:

- No fitted earpiece or acoustic tube required
- No sealing problems (occlusion)
- No auditory canal irritation

Consequently, for cosmetic reasons many people with middle ear hearing impairment (conductive hearing loss) prefer bone-conduction spectacles.

The ENT doctor will routinely determine whether or not a hearing device is advisable or even possible in the specific case, or whether the diseased middle ear first needs to be treated or perhaps even undergo surgery. This is particularly true for diseases of the middle ear.

2. How can middle ear deafness be identified with an audiogram?

This first step in providing hearing impaired persons with the help they need is carried out by a hearing-aid acoustician who compiles an initial sound threshold audiogram. This test serves to determine the severity and type of deafness. In the case of middle ear deafness, a specific pattern emerges that is typical for the particular condition. The distance between the air-conduction curve and the bone-conduction curve displayed in the audiogram is generally very large and amounts to between approx. 30 and 50 dB.

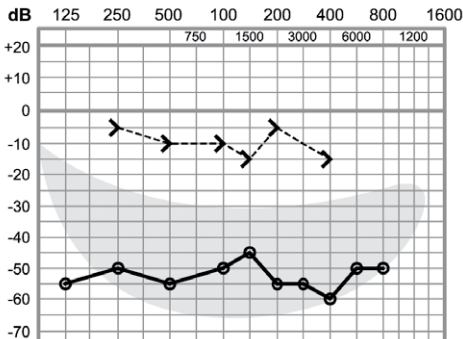


Figure 2.0.1 displays a typical example of an audiogram for conductive hearing loss in the right ear. The air-conduction curve amounts to -50 to -60 dB, whereas the bone conduction curve shows a nearly normal course.

Fig. 2.0.1

In this connection it should be pointed out that bone-conduction hearing spectacles can also be worn in cases of poor bone conduction. However – depending on the patient's individual hearing needs and the chosen device – any pre-existing bone-conduction hearing loss should not exceed 20 – 30 dB in the range between 250 to 4000 Hz for at least half the points measured in the context of the test.

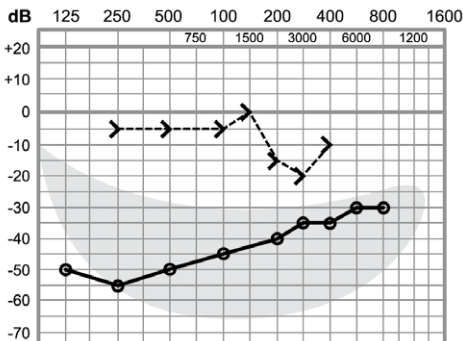
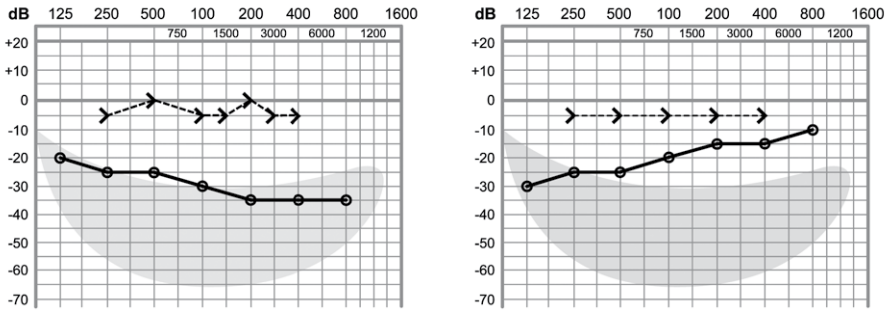


Figure 2.0.2 shows the curve pattern for otosclerosis (fixing of the stapes footplate). The air and bone conduction curves are at closer proximity to each other at higher frequencies, while a drop in bone-conduction is detectable in the 2000 and 4000 Hz range.

Fig. 2.0.2

An (pseudo) conductive hearing loss can also be evoked due to earwax or occluded tubes. Figures 2.0.3 and 2.0.4 show typical audiograms of this condition. Such types of “hearing impairment” must



be treated by an ear specialist.

Fig. 2.0.3 and Fig. 2.0.4

Bone-conduction hearing spectacles are the solution of choice in most cases where middle ear deafness requires a hearing device. BHM supplies the corresponding products for such applications.

3. General product information

Detailed information on BHM bone-conduction hearing spectacles is provided in the data sheets, sales brochures and operating instructions of the respective products.

4. Adjusting and assembling the spectacles

The adjusting of bone-conduction hearing spectacles is a simple task for hearing-aid acousticians. In case of bilateral hearing loss, the ‚better‘ ear is generally fitted provided that bilateral devices are not required – the same approach used for air-conduction hearing aids.

First, suitable fronts (front part of the spectacles) are selected as follows:

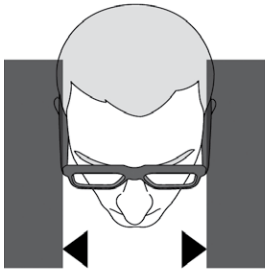


Fig. 4.0.1

- The front should extend the entire width of the head to include the ears in such a way that the position of the temple is more or less at a right angle to the front (Fig. 4.0.1)
- The nose bridge of the front should rest entirely on the nose, but without any substantial pressure.
- Because the front of the spectacles must exert the necessary contact pressure, it is recommended that BHM fronts and BHM extensions be used because of the excellent stability they provide.
- When determining the correct temple length and also when trying on the spectacles for the first time we recommend that the BHM-MA1 fitting tool be used (Fig. 4.1.1).

4.1 Using the BHM-MA1 fitting tool

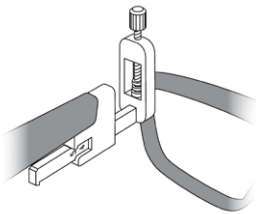


Fig. 4.1.1

Place the opening of the fitting tool over the hinge pieces on the front of the spectacles and secure it with the screw. Then slide [push] the hearing temple onto the metal part of the fitting tool as far as it will go and adjust the tabs of the fitting tool on both sides until the warming zone of the temple (cf. "Proper bending" in Fig. 4.3.1) is situated above the apex of the ear. The number now visible on the fitting tool corresponds to the size and length of the extension tip (Fig. 4.1.1).

In addition to the provided metal extensions, BHM also supplies custom-tailored, extra-long plastic extensions without hinges that fit nearly all commercially-available hinges.

4.2 Extension tips

The length of the temples from BHM can be individually adjusted in just a few simple steps by way of exchangeable extension tips. Locking springs hold the extension tips in the temple way; these can be easily removed and replaced with the desired tip.

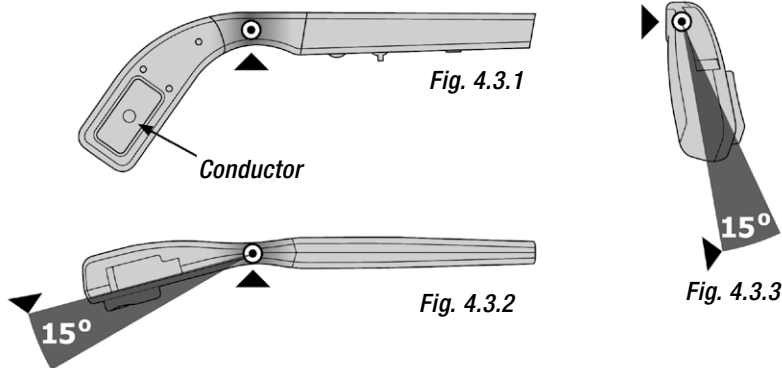
For further details please see the data sheets “Fronts” and “Extension Tips” from BHM.

4.3 Proper bending of hearing aid spectacles

The required contact pressure varies from person to person and can be easily determined by having the customer provide his/her direct input during the fitting process until the most comfortable solution can be obtained. It is important to ensure that the entire surface of the conductor button rests comfortably on the mastoid through careful bending the end part of the temple.

Bending is carried out by applying sufficient heat to the temple in the form of hot air to the point as shown in the Figure (Fig. 4.3.1) using a slit-nozzle air blower. If you have no experience in bending hearing aid spectacles you can practice the bending procedure on a dummy temple.

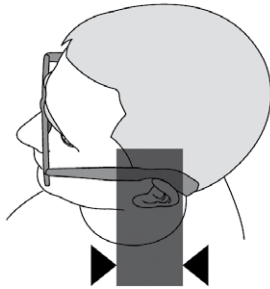
The hearing aid spectacles must be heated in a uniform manner using a slit-nozzle air blower and only within the specified zone (Fig. 4.3.1 and 4.3.2)



Attention! Heating with open flame can damage hearing aid spectacles!

Max. temperature: 60 ° C / max. 45 seconds

Perform the bending procedure within the specified zone only (Fig. 4.3.2 and 4.3.3). Please do not use tools such as pliers because they may damage the plastic material. Damage may be caused to the casing and electronic parts if the specified range is inadvertently exceeded.



Also ensure that the device's temple does not come into contact with the skull (Fig. 4.3.4), as this may impair both the sound quality and speech intelligibility, and mechanical feedback may occur. This can be avoided by further bending the spectacles.

Within the zone displayed here the distance between the temple and the head should not be less.

Fig. 4.3.4

Upon completion of the adjustment process we recommend that you note the distance between both spectacle temples for future reference (Fig. 4.3.5, distance 1 and 2).

This will make it easier to bend them into their original configuration using the noted distances at a later date, in case the bone-conduction hearing spectacles need to be replaced.

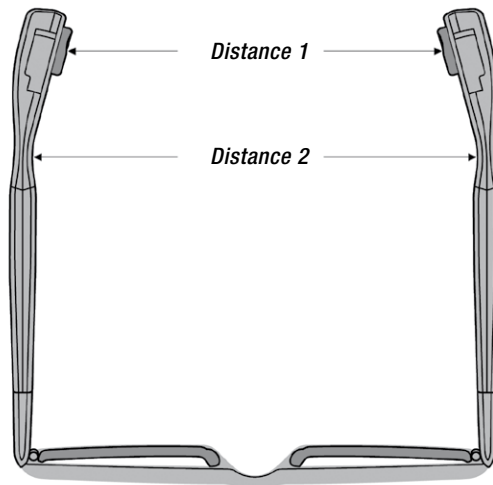


Fig. 4.3.5

4.4 Programming the hearing aid spectacles

The hearing spectacles come with a factory-equipped program, which has been developed on the basis of long years of experience. Nevertheless, acousticians still have the option of fine-tuning the bone-conduction hearing spectacles using dedicated software. The software also provides further options such as activating or deactivating the volume control and trimmer.

Further details on programming refer to “**BHM-Software**”.

5. Instructions for cleaning your BHM hearing system

In order to ensure the warranty and guarantee of your hearing system, please note that your hearing system must be cleaned thoroughly and properly at least once a day.

Wipe your hearing device with a clean, dry cloth: please make sure that your fingers are also clean and dry. This enables you to remove sweat and moisture from your hearing device.

Furthermore, it is necessary to remove the batteries from your hearing system at night after cleaning. Store overnight with the battery compartment open so that any moisture in the device can evaporate. Remove your hearing device before showering, bathing or using the sauna, and before you put on body care products, hairspray or make-up powder.

These deposits can soil the hearing device too, which may impair the flawless functioning of your hearing system.

6. Hotline – product support

If you have any further questions regarding BHM bone-conduction hearing spectacles that are not addressed in this brochure, please contact BHM using our dedicated e-mail hotline.

For any questions, concerns or feedback please go to office@bhm-tech.at and we would be happy to respond to you personally.



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CE according to the EU directive 93/42/EWG
0297 Qualitymanagementsystem according DIN EN ISO 13485

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