

Fitting custom styles Oticon Optimal Fitting Series No. 3 - 2022 updates

ABSTRACT

Oticon now introduces a new custom line, Oticon Own™, and in this whitepaper, we dive into why choosing an Oticon custom style can be an excellent choice and how counselling is crucial for determining the needs, wishes and priorities of a client in order to find the best custom style. The foundation of an optimal fit in the ear, is taking a good impression. Here, helpful steps are provided to ensure that you get a good impression. Regarding the fitting itself, this whitepaper also covers some important aspects of fitting in Oticon Genie 2.

On a different note, and highly relevant for all fittings, we present an easy-to-understand, clear overview of verifying Oticon VAC+ gain targets with real-ear measurement equipment. You may be wondering if you can verify VAC+ targets with your clinical equipment and if this should be done conventionally or using REM AutoFit. Our simple graph gives you the answer to this clinical question related to optimal fittings.

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Introduction

With the launch of Oticon Own, Oticon now has a line of custom hearing aids on the Polaris™ platform. The custom hearing aid styles are, as the name implies, customized for the individual client's ear. This whitepaper covers several aspects worth considering when fitting a client with a(n Oticon) custom hearing aid. For more information on the clinical evidence for Oticon Own-, please see Rumley, Santurette, Eskelund, Wang, & Hofheinz (2022).

Why choose a custom hearing aid?

Many clients ask for a custom hearing aid for cosmetic reasons, but there are also multiple good clinical reasons for choosing this style of hearing aid, including:

- Lack of space behind the ear, e.g. when wearing glasses and face masks
- No pinna to place a behind-the-ear hearing aid on
- Benefits of placement of microphones in the ear, providing natural pinna cues, more natural sound localization, directional cues, increased high-frequency gain, and even a better protection from wind-noise (Ricketts, Bentler, & Mueller, 2019)
- More consistent experience of audiological performance due to more consistent microphone placement
- Dexterity issues may warrant a one-piece customized solution. However, when issues include problems with battery change a rechargeable solution may be preferable

Counselling is key

There are many things to consider when figuring out what ITE style is the right one for the client. A good match starts with good counselling.

Of course, there are physical aspects to consider as the size of the ear canal will determine what is possible, which is why otoscopy and ear inspection is an important first step for further counselling on options. The hearing loss of the client should also be taken into account when figuring out what would be suitable.

If discreetness, and thus the physical size of the hearing aid in the ear, is the most important aspect, then the smallest possible might be favorable. However, a smaller size may come with compromises in terms of functionality, e.g. connectivity options and available signal processing. For one person with large ears, they may be able to choose a smaller style, whereas another person with very small ear canals will need to choose a slightly larger style in order to get the same set of features. Based on an ear inspection you can give your client the most realistic and accurate picture of what to expect.

"Based on an ear inspection you can give your client the most realistic and accurate picture of what to expect."



The smaller styles, IIC and CIC, are single-microphone, while the larger styles, ITC and ITE, has dual-microphones and therefore enables the processing based on this dual-microphone input. Furthermore, the significance of functionalities such as Bluetooth®, telecoil and Near-Field Magnetic Induction (NFMI) should be considered. During counselling it is therefore important to cover the needs of the client's daily life.

Determining the importance of maximum discreetness or maximum functionality is fundamental, and it's often the hearing care professional's job to strike a reasonable balance between these two.

The dialogue will help uncover the needs, wishes and the priorities of the client. This, in addition to hearing loss and ear canal considerations, will help in finding the optimal solution for each client.

To summarize key points for counselling on what the optimal solution could be make sure to:

1. Look in the ear before you counsel
2. Ask client about needs, wishes, and priorities
3. Set client expectations

Taking a good impression - tips and tricks

Taking a good impression is key to ensuring a satisfying product for the hearing aid user. But taking an impression is a skill that requires practice. There are multiple options when it comes to the choice of material, injection tool, jaw movement etc. In the following section, we present some tips and tricks that you as a clinician can consider when taking an ear impression.

A good start would be to place your client in a comfortable seated position and ask them to close their mouth without clenching the jaw. Then, once you have examined the ear and eardrum and used a light pen to gently position the cotton or foam otoblock in place, put the string of the otoblock over and around the ear to minimize the creation of tracks in the impression.

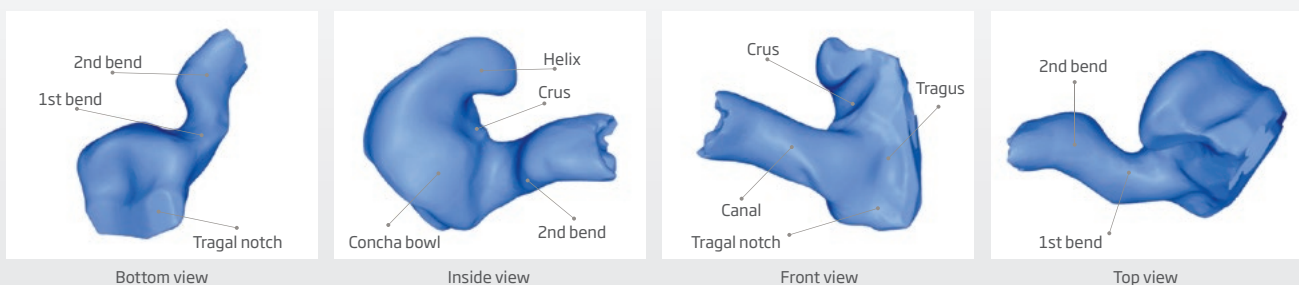
If you are using a mixing compound, when mixing your materials, press the material out across your palm and make sure that the surface is large, before sampling it in your hand and again then pressing it out in your palm. We recommend that you mix using this motion for about 30 seconds or until the color is even. It is imperative that you work quickly while mixing the material and loading the syringes, as the curing process starts as soon as the components come into contact. Now, it is time to fill the ear completely and into all corners - optimally in one movement and without pausing. The tip of the syringe should be embedded in the material throughout the entire injection, until all material has been used, as this prevents air bubbles. After this, wait for 5 minutes to allow for the material to harden. If any material is left over after filling the ear, you may roll this into a ball and keep it in your hand as it will give an indication as to how the hardening process is progressing.

When you have taken the impression out of the ear, inspect it for any flaws. It is recommended to look at the sides of the impression and ensure that it is full-bodied and without shiny holes, as they indicate insufficient contact between the material and the skin tissue. Inspect the depth of the impression. Have you captured both the first and second bends of the ear canal? Optimally, the depth should be around 15 mm. Sometimes it is difficult to reach this depth, but for an IIC it is necessary to capture this depth, or even slightly deeper. See below for examples showing important landmarks for the impression.

The abovementioned points can be summarized as ensuring the following:

1. Comfortably seated client
2. Correctly and deeply placed otoblock
3. Thorough and swift mixing of material
4. Complete single-motion filling of both ear canal and outer ear key points
5. Careful inspection of impression

Impression landmarks



Avoid having the impression rejected

The impression may contain some imperfections that will influence the quality of the fit of the custom hearing aid (or mold) or not make it possible for the manufacturer to produce the hearing aid. Common pitfalls include:

- **Manual mixing:** not mixing material well enough, meaning uneven hardening and a poor-quality impression
- **Speed:** not injecting material, once mixed, fast enough. Material started hardening.
- **Injection failure:** The material did not fill up the ear canal sufficiently, creating a shorter tip of the impression.
- **Insufficient seal:** Material passed by the cotton/foam otoblock, evident as a small lump at the end of the impression. Impression length must not be misinterpreted as potentially longer than it is. Furthermore, an insufficient seal can potentially harm the client.
- **Otoblock string track:** The impression has a large track/dent from the cotton/foam otoblock string.

Taking these considerations when doing an impression will create a better outcome. This means that when the body of the impression is complete and long, the manufacturer has the best possible starting point to build the most optimal custom hearing aid. There will be space to place the components correctly, so the desired performance can be achieved, and expectations can be met. This allows the final hearing aid to be fitted more precisely and comfortably in the client's ear.

Fitting in Oticon Genie 2

With the launch of Oticon Own, Genie 2 is updated for fitting these products. For custom hearing aids, there are some differences between styles that come into play during the fitting and some considerations to be made. As Oticon Own is built on the Polaris platform, it comes with already known features and as such the fitting screen may already be familiar to you. There is a difference, however, between single- and dual-microphone hearing aids in the fitting screen with regards to fitting MoreSound Intelligence™. For dual-microphone hearing aids, the fitting screen is as you already know it from previous hearing aids with this feature available.

For single-microphone hearing aids, Virtual Outer Ear and directional processing (Spatial Balancer) is not part of the fitting screen, since this is based on dual-microphone input. A single-microphone custom hearing aid is placed deep in the ear canal and the microphone, unlike a BTE style, is placed within the ear. This allows a person to utilize spatial cues, as provided by the pinna and concha. These natural spatial awareness cues mean that the feature, Virtual Outer Ear, is not needed and therefore is not present. Directional microphone processing, called Spatial Balancer, on the Polaris platform, also becomes irrelevant in a single-microphone hearing aid because directional processing requires input from two microphones.

With the tighter fit of the custom hearing aids, it may lead to more problems with occlusion (Ricketts et al., 2019). Although occlusion can be reduced by increasing the vent in the hearing aids, this may in turn increase the risk of feedback. Furthermore, the close proximity of the microphone and the receiver can increase the risk of creating a feedback loop for hearing aid users, especially for users with more severe hearing losses where the gain is higher. However, with feedback prevention technology, the feature, MoreSound Optimizer™ we can effectively prevent feedback before it occurs. MoreSound Optimizer in Oticon Own hearing aids is shown to be a clinically robust solution that hearing care professionals can feel very confident using as part of an optimal fitting (Rumley et al., 2022). Finding the right vent size should be considered prior to ordering the hearing aid and can be based on the vent suggestion in Genie 2.

There are two options for connecting to Genie 2; this varies between styles and depend on whether Bluetooth is available or not. The following table shows whether or not you need a wired connection. For a wireless connection, you can connect via Bluetooth, if this option was chosen as part of the custom solution

Wired connection	Wireless connection
IIC, CIC	ITC, ITE half shell and ITE full shell

Verifying to Oticon VAC+ gain targets

You may have done a fitting before using Oticon VAC+. In fact, around 90% of hearing care professionals who fit Oticon hearing aids use VAC+ as chosen fitting rationale. We want to give you the opportunity to provide optimal care.

“You can optimize your fitting by verifying to VAC+ gain targets”

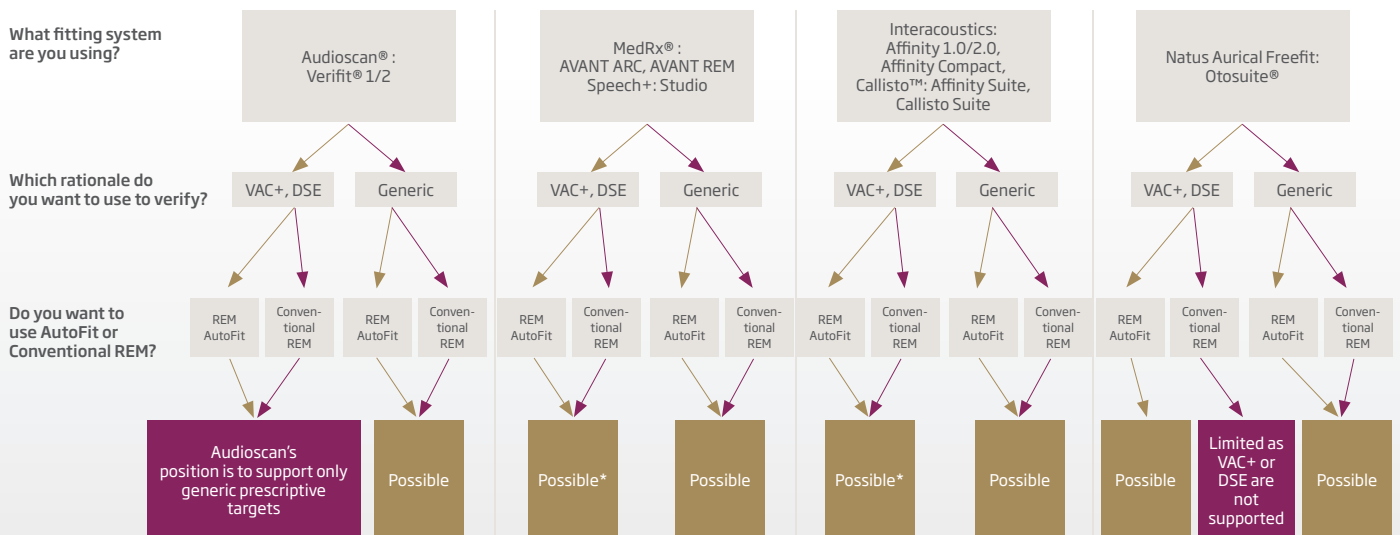
Choosing VAC+ as the fitting rationale means using a rationale that continuously improves, optimized and fine-tuned to the technological developments and advancement. We have made a verification overview so you as a clinician have a quick guide to see how you can optimize your fitting by verifying to VAC+ gain targets.

Verifying to gain targets using Real Ear Measurements (REM) is part of optimal care because it allows the clinician to take the individual’s ear acoustics into account. It also creates reassurance about what sound reaches the client’s eardrum. There are quite a few options available today in order to perform manual or automated REM. Manually, it can be done in standalone equipment and via software modules. Automatically, it can be done using Oticon REM AutoFit, as part of Genie 2. The following overview outlines the options on how to verify to both generic, e.g. DSL v5 and NAL NL2, and proprietary, VAC+ and DSE, rationales using either conventional REM or REM AutoFit as chosen method.

When it comes to verifying the Oticon VAC+ proprietary rationale, you may use different REM systems to do so, as both MedRX®, Interacoustics and Natus Aurical Freefit have equipment you can use for this purpose using REM AutoFit. For MedRX and Interacoustics compatible modules you can also verify to proprietary rationales by launching the REM module from the REM tool in Genie 2.

Summary

When considering a custom hearing aid for a client there could be both cosmetic and clinical aspects that weigh in. The needs, wishes and priorities of the client should be taken into consideration to determine the right balance between size, or discreetness versus functionality. When it comes to delivering a great hearing aid, a good impression is a necessary foundation. Many pitfalls can be avoided taking proper considerations during the impression taking and the following inspection of impression to ensure that it is of good quality. When fitting in Genie 2 there are innate difference based on the chosen custom style, including possibilities of wireless connection and the features available. Finally, verifying using REM can be done both manually and using REM AutoFit with different options for verifying to both generic and proprietary rationales using different REM systems. As the technology improves year by year, so does the VAC+ rationale and using the REM overview can guide you on how to optimize your fitting verifying to gain targets.



* To perform conventional REM with VAC+ or DSE, the latest version of the REM module needs to be launched from the REM tool in Oticon Genie 2

References

1. Rumley, J., Santurette, S., Eskelund, K., Wang, J.W., & Hofheinz, T. (2022). Oticon Own evidence. Oticon Whitepaper
2. Ricketts, T. A., Bentler, R., & Mueller, H. G. (2019). Essentials of Modern Hearing Aids: Selection, Fitting, and Verification (Vol. 1). Plural Publishing, Inc.

