



Hearology®

For the Love of Sound

# Hearing Technology at Hearology



# Hearing Loss

The World Health Organization estimates that hearing loss affects more than 250 million people worldwide. Which isn't surprising, as the human organ of hearing shares the same properties as our other organs in that it is miraculous in its functioning, yet also prone to natural deterioration with age, and at risk from extreme, external impact. In the case of hearing, this kind of external impact normally comes in the form of prolonged exposure to excessive noise levels, which is the aural equivalent of looking directly at the sun.

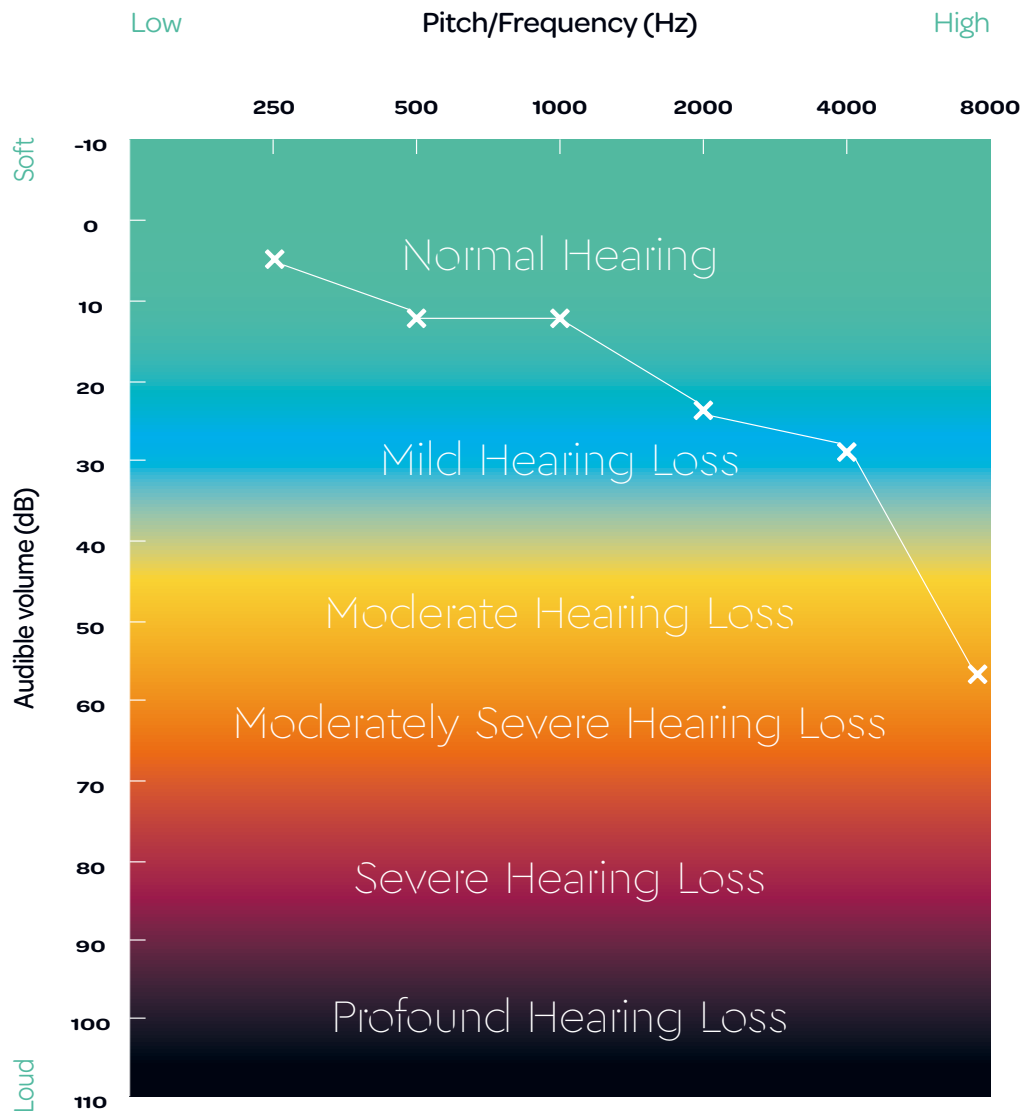
Early signs of hearing loss may be subtle – a friend or partner may have to repeat themselves; or the TV volume may be up a few more notches compared to others in the house; or you may realise that you've started having difficulty engaging in social situations; or find that you have to switch the radio off when reversing your car. The last example is interesting because it reveals how your brain, deprived of the auditory stimulation it was accustomed to, becomes, over time, less able to process several tasks at once.



Hearology®  
Hearing Tech

Independent Expertise  
High Street Prices  
Hearology Care

# Audible Volume at Different Levels of Hearing

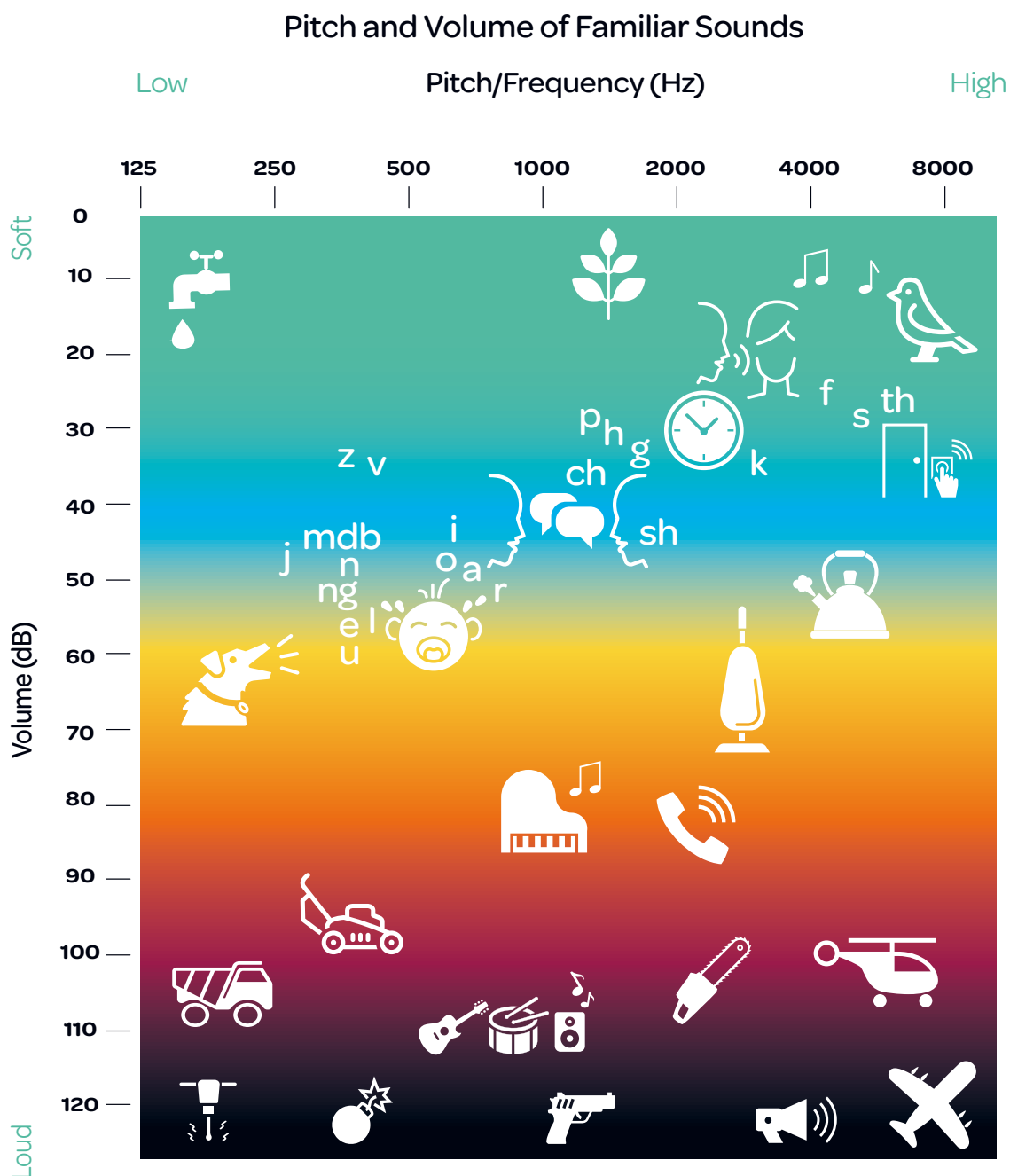


You can see precisely how an Audiologist defines and classifies hearing from the *Audible Volume at Different Levels of Hearing* diagram. For example, the ability to hear the softest sounds constitutes normal hearing, whereas the inability to hear sounds below the 40dB level is defined as 'moderate hearing loss'. Normal hearing is defined as the ability to hear sounds quieter than 20dB, which is, for reference, the volume of a quiet whisper.

Hearing loss rarely occurs across all frequencies equally, which is why hearing test results pinpoint hearing strength at different frequencies. The results of the hearing test depicted by the white line and crosses in the diagram indicate low frequency hearing ability within the normal range, with hearing loss present at the higher frequencies. This particular hearing test result would be classified as 'mild-moderate high frequency hearing loss' by an Audiologist.

# Hearing loss rarely occurs across all frequencies.

The *Pitch and Volume of Familiar Sounds* infographic illustrates the frequency levels of everyday sounds – you can see that the different sounds of human speech operate at different frequencies. So, for example, high frequency hearing loss will result in difficulty hearing the sounds ‘f’ and ‘th’, but the sounds ‘z’ and ‘v’ will be audible. A loss of sound clarity is an early indicator of high frequency hearing loss, e.g. difficulty hearing a woman’s or child’s voice, or the door bell, or a whistling kettle, whereas a dog barking or a rumble of thunder will be heard just fine.



# Hearing Tech at Hearology

Hearing Tech refers to small devices that fit in or behind your ear and can help you to hear again as you used to – clearly, and without any extra effort. They are battery-operated and have microphones that pick up the sounds around you. These sounds are processed and amplified electronically, and then passed on to a receiver which converts the electrical signal into the amplified sounds that you can hear directly in your ear.

Hearology's range of digital Hearing Tech uses the latest technology to help you make perfect sense of the sounds around you. We'll be able to provide you with the right type of Hearing Tech whether you have a mild, moderate or severe hearing loss. Our Clinical Audiologists will recommend the optimal Hearing Tech for you, given the type and extent of the hearing loss, and the kind of lifestyle you wish to lead.

The Hearing Tech will be perfectly calibrated to meet your needs, making sure, amongst other things, that it amplifies sound at the precise frequencies for the environments where your ears are experiencing difficulty.

We will always offer you the most affordable Hearing Tech to meet your needs. If price is a concern, then we will also offer you help with financing, so that you can get the Hearing Tech that will work best for both your lifestyle requirements and the specific profile of your hearing loss.



At Hearology we offer a wide range of different Hearing Tech brands, form factors and price points

We divide our Hearing Tech into four different levels, which correspond to increments in technology content and price:

**Advanced**

**Premium**

**High Tech**

**Flagship**

Each level of technology delivers different benefits in different sound situations.



# Advanced Level

Effectively the entry level for Hearing Tech, the Advanced Level already features advanced technology, but with fewer applications than higher level Hearing Tech. It is also cheaper than higher level technology, and if you have a relatively sedate lifestyle and your requirements are mainly to hear the TV and radio more clearly, and have easier telephone and one-to-one conversations, then advanced level Hearing Tech is ideal. This level of technology will serve you well with small groups and relatively low levels of background noise, but not so well in more complex sound environments.

**Examples of Advanced level tech are the Widex Evoke Passion 110, typically\* at £795 per unit, and £1495 a pair.**



**Widex Evoke Passion 110**

*\*We price match daily with the High Street*

# Premium Level

The performance of the technology available at this level has increased dramatically in the last few years, and Premium Level models today probably represent the best value for money in terms of the performance you get relative to the price you pay for these devices. To give you an idea, the current Premium Level Hearing Tech would easily be as good as Flagship models from only five years ago.

This level of Hearing Tech isn't going to enable you to hear perfectly in a very noisy restaurant on a Saturday night, but it will register a significant improvement in hearing performance even in challenging acoustic scenarios such as this. It will certainly make an impressive difference however in most group

situations, meetings, and out and about scenarios, e.g. shopping, eating out and outside.

**Premium Level Hearing Tech models include the GN Resound LiNX 3D 5, and the Oticon OPN3, typically\* at £1095 per unit, and £1995 a pair.**

**GN Resound  
LiNX 3D 5**



**Oticon OPN3**



*\*We price match daily with the High Street*



# High Tech Level

This level of technology is ideal for very active people, delivering, as it does, excellent sound quality and speech clarity in most situations, including complex sound scenarios. Such complex sound scenarios include listening to music, all outdoor situations, and large, open plan spaces like a theatre or a canteen. There are some different performance aspects separating this level from the Flagship Level, but these two technology levels are generally on a par in terms of the number and quality of features they offer. High Tech Level devices have Bluetooth-enabled compatibility with all types of smartphones to allow you to benefit fully from the sophisticated apps that now come with these devices. Examples of the kind of features you will find on these apps include background noise management, graphic equalisation and adjustable speech enhancement.

**High Tech models include the Oticon OPN2, and the Widex Beyond Fusion 330, typically\* at £1395 per unit, and £2695 a pair.**

**Oticon OPN2**



**Widex Beyond Fusion 330**



*\*We price match daily with the High Street*

# Flagship Level

This is the level of technology at which the Hearing Tech manufacturers deliver all of their latest features. Flagship Level Hearing Tech is designed to deliver the best possible speech clarity and most natural sound even in the most complex of acoustic scenarios. The key difference with Flagship devices is that they make their hearing optimisation decisions in unison, as a pair, rather than as two separate units (operating independently from each other, one in each ear). This is important because the human auditory system uses information from both ears to identify its acoustic surroundings in a full, 360-degree circumference. The effect of both devices analysing these inputs, and applying certain changes based on all the information being received by both devices, is a sound quality that closely resembles perfect, unsupported hearing. The superior processing power of Flagship devices comes into play here too, of course.

The result is that Flagship Level Hearing Tech enables a level of focus on specific sound sources, e.g. speech, that is actually superior to perfect, unsupported hearing.

Flagship Hearing Tech is ideal for very active and/or busy people who need to hear well everywhere across a wide range of listening environments, and for certain professionals who, in order to fulfil their work duties properly, absolutely need to hear accurately and precisely what is going on around them.

Flagship Level devices obviously all come with Bluetooth-enabled smartphone compatibility, and apps that contain a wide range of features and controls.

**Flagship Level Hearing Tech models include the Widex Evoke Fusion2 440, and the Oticon OPN1, typically\* at £1695 per unit, and £3190 a pair.**

**Oticon OPN1**



**Widex Evoke Fusion2 440**

*\*We price match daily with the High Street*

# Hearing Tech Form Factors

Hearing Tech form factor is about personal preference and cosmetic appeal, but it's also about what's best for you given the hearing loss, the size and shape of your ear canals, and your lifestyle requirements.

Generally speaking, in-ear devices, which are sometimes referred to as 'invisible', work better when a hearing loss occurs across a wide range of frequencies, rather than for example, hearing loss which is limited to the higher frequencies only.

Some in-ear Hearing Tech provides impressive amplification given how tiny they are, but the larger size of the Behind-The-Ear devices gives them a distinct advantage when it comes to amplification, technology content and processing power.

At Hearology, the price of a particular Hearing Tech model is the same across all form factors, and we also custom mould all in-ear devices at no extra cost to ensure a perfect fit for you.



There are three different types of Hearing Tech form factor, all of which serve a slightly different purpose, as follows...

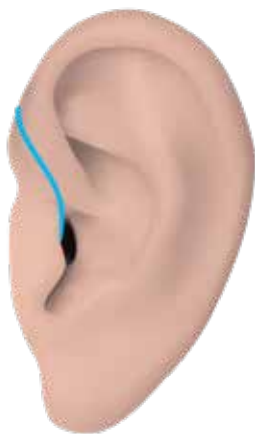
Behind-The-Ear  
(BTE)

In-The-Ear  
(ITE)

Completely-In-  
The-Canal  
(CIC)



# Behind-The-Ear (BTE)



- A small, thin, clear wire connects the main body of the device (sound processing unit) to the receiver that sits in your ear. This wire is visible, but very discreet.
- The sound processing unit fits snugly behind the ear.
- There is no 'blocked up' feeling with Behind-The-Ear devices, because the receiver is small and sits in your ear canal without blocking it. This allows the BTE device to provide a more natural sound than the various in-ear form factor devices.
- The receiver, that sits in the ear canal, is very easy to change on BTE form factor devices, but cannot be changed on any other form factors. This versatility can be very useful, e.g. it allows for easy maintenance, custom-made power variation between ears that have different levels of hearing loss, and even the ability to install a more powerful receiver if your hearing deteriorates during the lifetime of your Hearing Tech.
- The silicone tips – the small, dark grey, dome shape at the end of the wire in the image above – can also be changed to help with sound quality adjustment and comfort.
- Only Behind-The-Ear devices can support the Flagship Technology Level feature of making hearing optimisation decisions in unison, as a pair of Hearing Tech devices, rather than as two separate units operating independently, one in each ear. This feature does not extend to other form factors.
- BTE Hearing Tech has become more popular choice as of late based on the variety of colours and shapes available nowadays, and also the improved features over other form factors, such as Bluetooth connectivity and more processing power.
- BTE Hearing Tech is much easier to maintain than the other form factors – which are sealed units and therefore have to be sent back to the manufacturer for any alterations, modifications or repair.
- Because the receiver that sits in your ear canal is small enough not to create a full block, and because of their (generally speaking) superior acoustic profiling versatility, Behind-The-Ear devices are by far the best option for hearing loss that occurs at specific frequencies only.

# In-The-Ear (ITE)



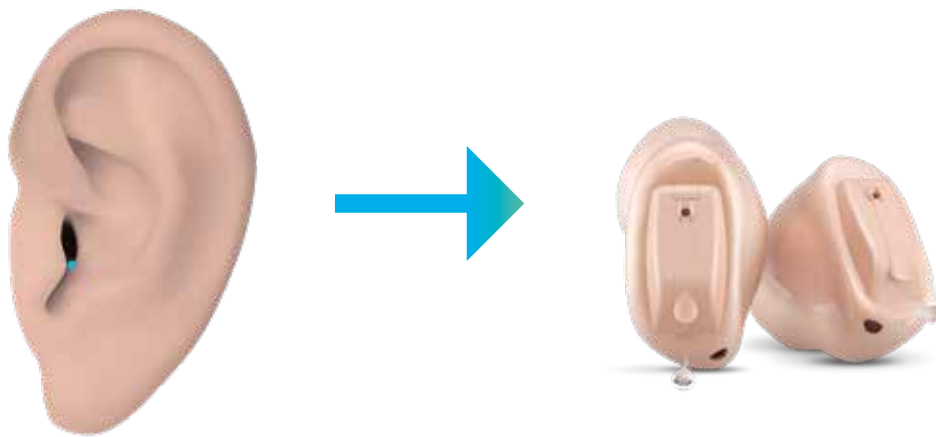
- ITE devices are much more compact than the Behind-The-Ear style, contain the same, sophisticated micro-technology, and come at the same price.
- ITE Hearing Tech is matched to skin colour, and visible at the ear canal opening.
- These devices need to be custom-made for your ears to ensure a good fit – at Hearology, we do this at no extra cost.
- Putting a Behind-The-Ear device on for use can be described as fiddly, since there are actually two stages to it – the receiver that goes into your ear canal, and the processing unit that goes behind your ear. ITE devices are, by comparison, much easier to put on for use, as you literally just slot them into your ear – where they will fit snugly due to the custom-moulded fit.
- In-The-Ear devices are more difficult to maintain than the Behind-The-Ear form factor because they are sealed units, and therefore have to be sent back to the manufacturer for any alterations, modifications or repair.
- ITE devices are less versatile than Behind-The-Ear

form factors – with BTE Hearing Tech, you can easily modify or change the receiver or the silicone tips in order to optimise comfort and/or performance. With ITE devices, you cannot change the receiver or the silicone tips. The ability to change the receiver can significantly increase the useful lifespan of your Hearing Tech, e.g. if your hearing loss continues to deteriorate, then you can replace your existing receivers with more powerful ones, rather than having to get entirely new devices.

- In-ear Hearing Tech can cause a ‘blocked-up’ sensation, because its form factor naturally fills more of the ear canal. The way that ITE devices get around this potential issue is by amplifying as much sound as possible. This is why they are best suited for hearing loss that occurs across a wide range of frequencies, but are not so well suited for hearing loss that requires amplification at specific frequencies only, e.g. high frequency hearing loss. Behind-The-Ear devices are by far the best option for hearing loss that occurs at specific frequencies only.
- In-The-Ear devices can be very powerful, but cannot match the extended amplification thresholds limits of higher end Behind-The-Ear devices.



# Completely-In-The-Canal (CIC)



- Very discreet and cosmetically appealing.
- Small, clear, plastic line for device retrieval hidden in the fold of the ear.
- These are the smallest Hearing Tech form factors, the main benefit of which is that they are almost invisible in use, but obviously there is a performance compromise that comes with such miniaturisation. This performance compromise includes lower sound amplification power and a reduced number of features.
- These devices need to be custom-made for your ears to ensure a good fit – at Hearology, we do this at no extra cost. Some of the CIC models however are so small that they are only available off the shelf.
- CIC devices are very easy to put on for use.
- All the limitations that apply to In-The-Ear Hearing Tech also apply to Completely-In-The-Canal devices, but even more so, as the CIC devices are even smaller. These limitations include:
  - ▶ Being sealed units, CIC devices have to be sent back to the manufacturer for any alterations, modifications or repair.
  - ▶ It is not possible to change the receiver or silicone tips as you can with Behind-The-Ear devices.
  - ▶ A 'blocked-up' sensation and the non-suitability of CIC devices for hearing loss that requires amplification at certain specific frequencies only.

# Hearing Tech Brands



## Widex

Danish. Widex has a reputation for providing the best sound quality, because their technology captures the widest range of frequencies of all the Hearing Tech brands. Recent Widex innovations include the *Soundscape* feature which uses machine learning to allow the Hearing Tech to adjust itself automatically to different sound situations based on your preferences.



## Phonak

Swiss. They are one of the most innovative of all the Hearing Tech brands, always bringing out new models and features, such as the Phonak B90 made from titanium. Often reported to have a more tinny sound quality than other manufacturers – however, this ‘tinniness’ is a characteristic to which your ears acclimatise. Phonak also have a well-deserved reputation for making high quality Hearing Tech for children.



## Oticon

Danish. The NHS often uses Oticon products – so you might have heard of this brand. Oticon are also known for inventing the world’s very first digital hearing device, and today are seen as the leader in connectivity and wireless streaming. Their recent focus has been on developing technology that’s fast and precise enough to interpret fully the dynamics of complex background noise, in order to facilitate the understanding of speech in noisy environments – which is one of the main benefits of Hearing Tech.

# Hearing Tech Brands



## GN Resound

Danish. GN Resound, like Phonak, have a reputation for innovation. They were, for example, the first to market with made-for-iPhone Hearing Tech. Like Oticon, a lot of their R&D has focused on hearing directionality and the improvement of listening accuracy in complex sound situations.



## Starkey

American. Starkey have always been known for making the smallest Hearing Tech. Their use of nanotechnology also enabled them to develop the world's first-ever waterproof Hearing Tech. The Starkey Hearing Foundation is a charity that works across the globe to provide hearing technology to those in need.



## Siemens

German. Siemens, which now uses the brand name Signia, was among the first hearing aid manufacturers back in 1913. And today, one in every four devices sold worldwide is made by Siemens. Their work in related medical fields has been applied to their recent Hearing Tech development to make improvements in fitting and comfort.

# Hearing Tech Is Amazing

Your hearing is a precious and complex sense, so Hearing Tech is sophisticated, containing various features and technologies that eliminate background noise and convert signals to sound. These features are the result of specialised research and technology development from multiple sources and different fields of science.

What is more amazing, however, is the positive impact that the right Hearing Tech, correctly calibrated by a hearing expert, can have on your entire physical health and quality of life.



- 1  
Microphone
- 2  
Microchip
- 3  
Amplifier
- 4  
Battery holder
- 5  
Receiver
- 6  
Silicone tip



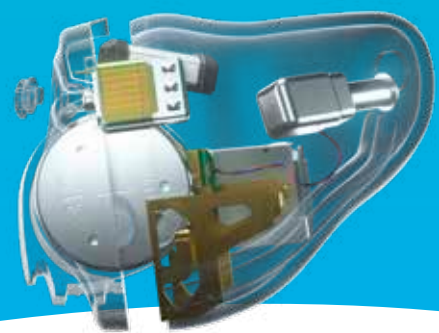


# Why buy Hearing Tech at all, and why from Hearology?

Because a life only partially heard, is a life only partially lived. And secondly, because Hearing Tech needs to be serviced at least twice a year and maintained on a weekly basis, aftercare should be an important part of your decision. At Hearology, we offer a level of ear care and Hearing Tech aftercare that you will simply not find anywhere else.

Hearing is one of our five senses. Using Hearing Tech to restore your hearing really is as vital to your enjoyment of life as having glasses or contact lenses to restore your eyesight. And it

does not stop there: if you are hearing well, you are engaging with life, and if you are engaging with life, then you will also experience improved sleep, superior cognition, better relationships and improved productivity.



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Hearing Tech

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High Street Prices  
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# At Hearology, Ears Are All We Do

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