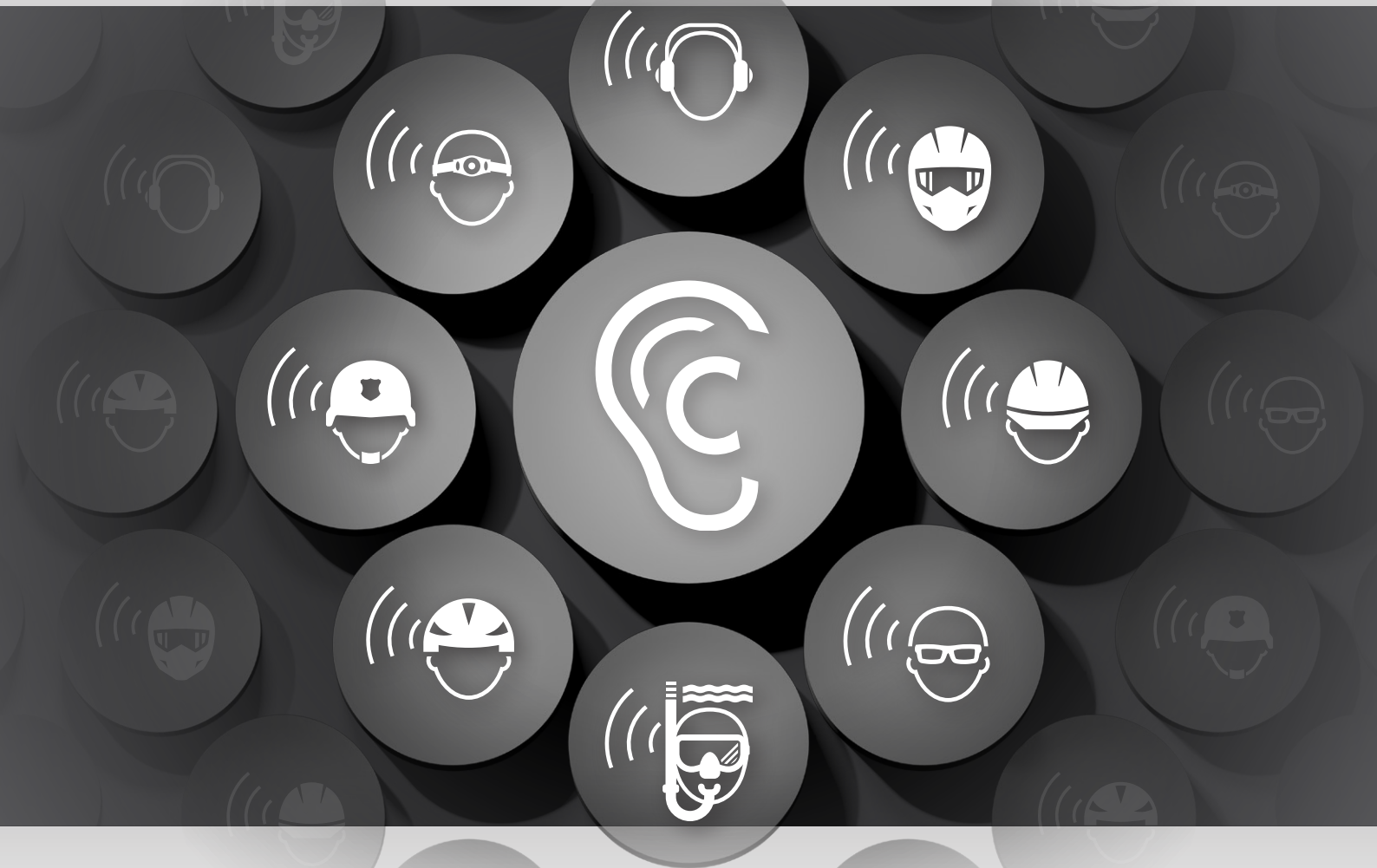


ortofon
bone conductor



Feel the sound

Enhance your hearing

The Ortofon Bone Conductor expands your sense register, allowing you to feel sound and its versatility in different environments and within a wide range of applications, e.g. hearing aids, communication, entertainment, outdoor activities, wearables and gadgets.

ortofon microtech

Customized solutions – development platforms

Conveying sound through bone vibration has a wide range of applications in private, public and industrial sectors

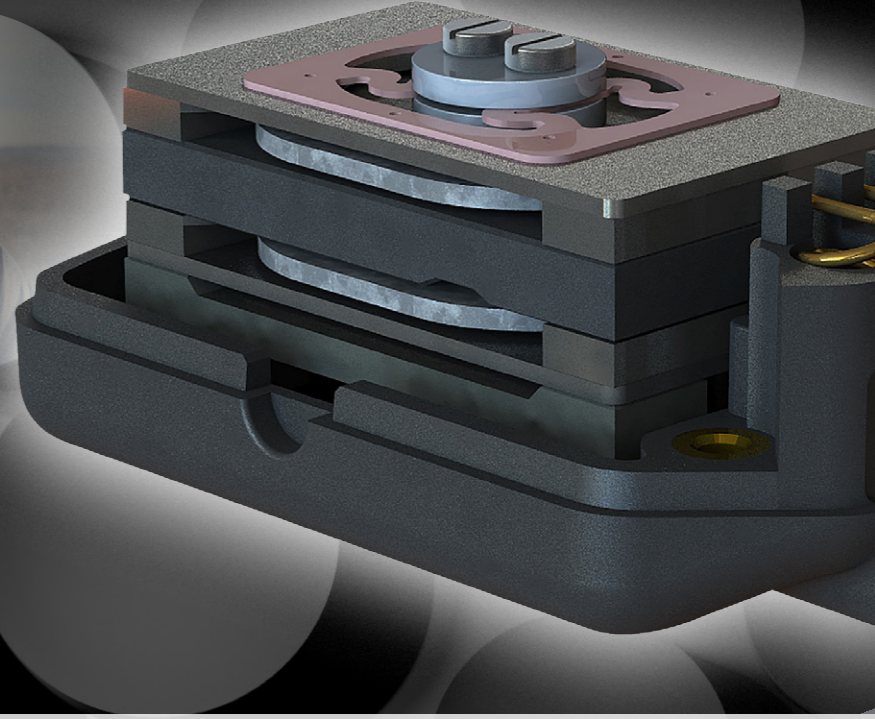
Hearing aids: implants, hearing aid headbands, hearing glasses devices.

Communication: Two-way communication, telecom, under water communication, high-noise environments

Entertainment: Virtual Reality (VR), gaming, headphones.

Wearables and gadgets: hands-free headsets or headphones, VR, eye-glasses, headlamps.

Helmets for sports, safety and work: bike, scooter, motorcycle, skiing, football, diving, outdoor, industrial, military, rescue etc.



The BEST Bone Conductor - Balanced Electromagnetic Separation Transducer (BEST)

Conventional bone conduction transducers, which are relatively large, suffer from poor performance at low frequencies. A new type of electro-dynamic transducer, the Balanced Electromagnetic Separation Transducer (BEST), were developed to improve the performance of the conventional transducers.

By using a balanced suspension principle, the quadratic distortion forces, as well as the static forces between the vibrating parts, are principally counterbalanced. Both the distortion and the size of the transducer can therefore be considerably reduced. Moreover, the static and dynamic magnetic fluxes are separated, except in the air gap regions, giving a more efficient transducer.

The BEST motor design allows for flexibility in a customized solution, with a number of parameters that can be customized.

The coil: Change of wire and or number of windings will affect the electrical impedance. For the low frequencies, the DC-resistance will dominate but at higher frequencies, the inductance of the coil will dominate. This means that the balance between low and high frequencies is adjustable within some limits. The vibrator needs current to vibrate, so lower impedance means higher vibration force level (VFL). A battery-driven device will therefore be limited in performance by the available current.

The moving mass: The BEST vibrator is a recoil device, meaning that the moving part of the generator will cause a recoil force on the housing making it vibrate. The mass

of the moving part has direct influence on the low-lying main resonance peak and the frequency response in the region. The mass also has direct influence on the maximum VFL for low frequencies. Additional mass element adjust these properties. For a given vibrational level of force, the internal movement of the vibrator unit reduces when adding extra mass. Therefore, extra mass will also reduce distortion and the possibility for mechanical overload.

The spring: The spring force holding the moving mass into place and giving the main resonance peak is made out of two counteracting components namely the two blade springs plus the stationary magnetic field. The balance between these components is very critical in order to achieve the correct compliance and having a stable system.

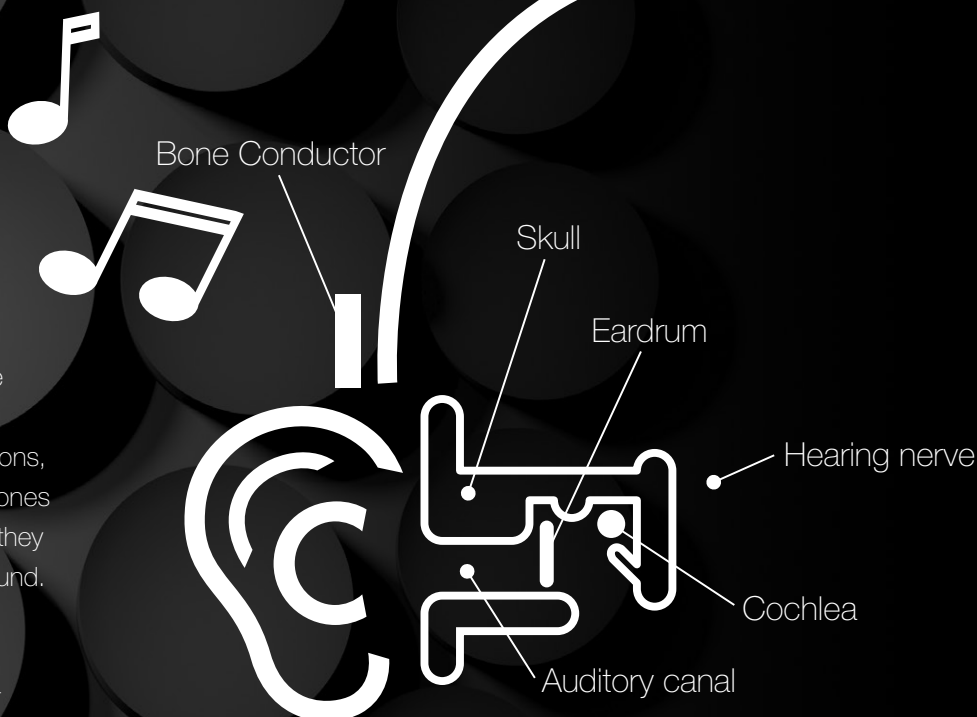
The magnets: Not only will the magnets affect the resonance behavior and the stability of the system, but they will also have a direct influence on the sensitivity of the vibrator. This means that a stronger magnetic field will give more VFL for a given current level.

The housing: Design of the housing can provide an extra resonance peak in the high frequency region thus raising the force level.



The Ortofon BC transducers are small vibrators developed on bone conduction principle. The BC transducer turns sound into vibrations, conducts vibrations through the bones of the skull to the inner ear where they are detected and perceived as sound.

Being an alternative source of sound, the Ortofon BC transducer generates sound without blocking out environment information, provides freedom of movement and safe work place.



Ortofon is the manufacturer of Bone Conductors

Ortofon's core competences in magnetics, acoustics, simulation, materials and micro mechanical assembly are ideally suited to the manufacture of bone conductors and have added value to the BEST design. Ortofon is a holder of the BEST license with commercial rights for most applications outside the diagnostic field of audiology.

Please feel free to contact Ortofon if you need any further information: btbsales@ortofon.dk

