NEPTUNE™

by Advanced Bionics

User Guide

AB Advanced Bionics

User Guide
for the NEPTUNE™ Sound Processor

Advanced Bionics

Labeling

Labeling symbols and their meanings

CE 0123	European Community Mark of Conformity Authorized to affix the CE Mark in 2011		
REF	Model Number	👁	See Instructions for Use
SN	Serial Number	🏭 XXXX-XX-XX	Date of Manufacture
🏭	Manufacturer	-20C / +55C	Store at temperatures between -20° C (-4°F) and +55° C (131°F)
♻	Dispose of in accordance with applicable national and local regulations		
⚠	Warning. For a full list of warnings, see pages 29 and 37-38		
130.8 k / 69.6 kPa	Pressure tolerance is between 69.6 kPa and 130.8 kPa. Suitable for exposures equivalent to 10,000 ft. (3048m) altitude and 3m (9ft. 10in.) depth.		
% 95 / 0	Suitable for exposure to relative humidity between 0-95%		
R	Refurbished*		
	Ingress Protection (IP) Rating: Rating used to specify strength of an enclosure against ingress of solid particulate matter and moisture.		

*Only applicable if 'refurbished' is noted on the shipping label

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Introduction

Purpose of the Instructions for Use

The Instructions for Use is designed to help recipients, parents, and caregivers understand the use and care of the Neptune™ sound processor — the world's first swimmable sound processor! In addition to being waterproof, the Neptune sound processor does not require you to wear anything on the ear, making it the most comfortable and discreet sound processor in the market today.

The Neptune sound processor provides access to the latest sound processing innovations by Advanced Bionics, the market leader in performance. This Instructions for Use will provide all of the information needed to use and care for the Neptune sound processor and its accessories. In addition, this Instructions for Use provides information for troubleshooting basic issues related to the Neptune sound processor as well as important safety information. Please read the entire manual prior to using the Neptune sound processor. Information on the cochlear implant system as a whole, including intended use and contraindications, can be found in the package insert located in the reference materials.

About the Neptune Sound Processor

The Neptune sound processor is one part of a complete cochlear implant system designed to enable hearing. The other necessary parts of the system are the Implantable Cochlear Stimulator (ICS), headpiece, and headpiece cable.

The processor consists of three parts: the sound processor, the battery cover, and the removable Neptune Connect control module. The sound processor and battery cover connect to provide the smallest possible wearable configuration and are fully submergible, enabling use in bath water and swimming pools. The sound processor includes an 'on/off' button, a programmable multi-color light indicator, and programmable audible alarms for easy status updates and troubleshooting information.

The Neptune Connect is an easy-to-use module allowing the user to make adjustments to the program, volume, and sensitivity settings or to easily verify settings of these controls. It also enables use of wireless FM systems and the ability to connect to battery-operated consumer electronics devices. The Neptune Connect is not needed for daily operation and can therefore be removed from the processor to enable submersion and prevent tampering by very young children.

The Neptune System

This Section Will Familiarize You With Your Neptune System

1. Sound Processor
2. Processor LED
3. On/Off Button
4. Auxiliary Connector
5. Battery Cover
6. Color Cover
7. Neptune Connect
8. Neptune Connect Sync Light
9. Program Switch

10. Volume Control
11. Sensitivity Control
12. Euro Port Connector
13. Headpiece
14. Microphone
15. Headpiece Cable
16. AAA Battery
17. Headpiece Cable Connector
18. Neptune Connect Release Latch
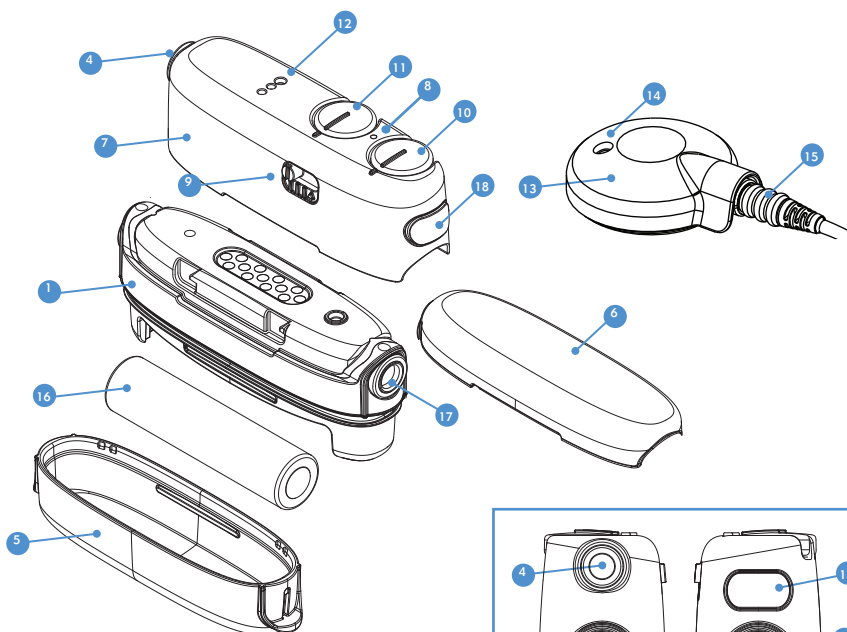
SIDE VIEW
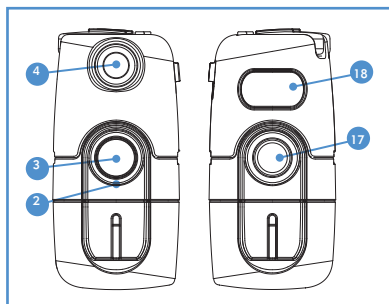
The System Overview

The Neptune sound processor is the newest and most advanced cochlear implant sound processor available and has the advantage of not requiring you to wear anything on your ear. In addition, Neptune is the world's first waterproof cochlear implant system, providing the ability to swim and bathe while hearing the world around you.

As evidence of Advanced Bionics' dedication to providing the best hearing possible, the Neptune system provides access to AutoSound™ technology which dynamically adapts to every listening environment automatically, adjusting volume levels to optimize your hearing, and all approved sound processing options offered by Advanced Bionics. Depending on the country in which you live, this may include: HiRes-S, HiRes-P, HiRes Fidelity 120™, ClearVoice™, CIS, and MPS.

The Sound Processor
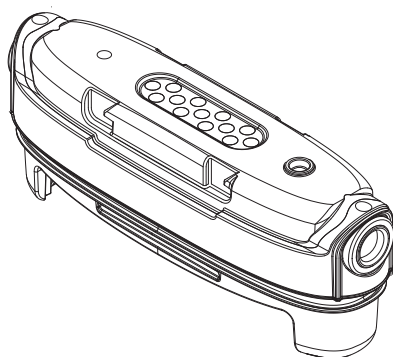
The sound processor is a miniature computer that converts sound picked up by the microphone into electrical signals that are used by your cochlear implant to enable hearing. It is able to store up to three (3) user-selectable programs for optimal hearing across all listening environments. The sound processor is designed for use in all types of water and carries an ingress protection rating of IP68 for water and particulate matter resistance, meaning that the Neptune processor is dust-tight and can withstand continuous submersion in water at depths up to three meters (9 feet, 10 inches). For more information, refer to the 'IP Rating Information' section of the Instructions for Use and your Neptune Sound Processor System Limited Warranty.

The sound processor includes an 'on/off' button and diagnostic indicators, such as light-emitting diodes (LEDs) and audible alarms. The sound processor LEDs provide important information about system status, battery life, program position, audio input, and sound processor error conditions. Like LEDs, audible alarms are an important pediatric feature providing information about system status, battery life, and error conditions . For more information, refer to the 'Understanding Neptune LEDs' and 'Understanding Audible Alarms' sections of the Instructions for Use.

Your Neptune sound processor can be programmed using IntelliLink™ to prevent use by a cochlear implant other than the one for which it has been programmed. IntelliLink is another important safety feature for very young children and bilateral implant recipients.

The Neptune Connect
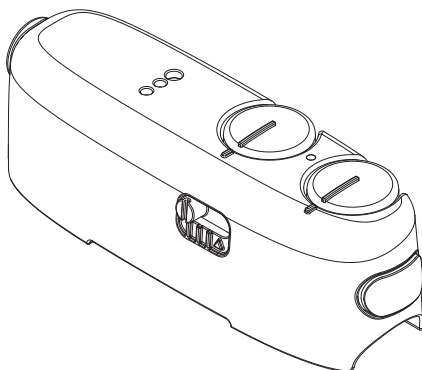
When attached to the sound processor, the Neptune Connect provides access to easy-to-use controls for adjusting volume, microphone sensitivity, and program position. You can also connect to an FM receiver or a battery-operated consumer electronics device (e.g., MP3 player) by plugging these devices directly into the Neptune Connect. For more information, refer to the 'Using the Neptune Connect' section of the Instructions for Use or the product 'Instructions for Use.'

The Headpiece

Included in the headpiece is a coil that transmits sound signals and power to your implant. The headpiece also includes a magnet well, housing the necessary number of magnets to ensure your headpiece stays on throughout the day, and is covered by a Color Cap which snaps securely in place. The headpiece microphone picks up sound from your environment and transfers it to the sound processor via a detachable cable. Once the sound processor has converted the sound into electric signals, it sends the information to the implant via the cable and headpiece. The cables come in a variety of colors and lengths to suit your needs.

The Universal Headpiece
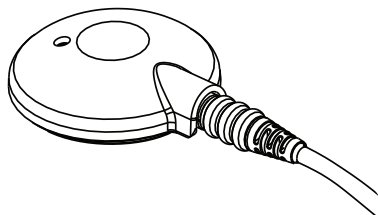
The Neptune sound processor works with two different headpieces: the Universal Headpiece and the AquaMic. The Universal Headpiece (UHP), which works with all Advanced Bionics' sound processors, is intended for use with the Neptune processor outside of water environments.

For more information, refer to the 'Replacing Headpiece Cables' section of the Instructions for Use or the UHP and/or Cable 'Instructions for Use.'

The AquaMic
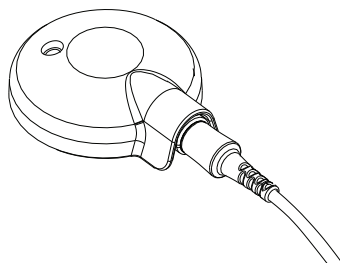
The AquaMic headpiece is designed for use during swimming, bathing, and showering and carries an IP68 rating for water and particulate matter (e.g. dust, sand) resistance. For more information, refer to the 'IP Rating Information' section of the Instructions for Use. Advanced Bionics has taken special care to ensure that the sound quality provided by the microphone is similar to that of the Universal Headpiece when using the AquaMic in open air. As with typical hearing, sound quality will be altered when listening underwater.

To ensure optimal sound quality, it is advisable, after leaving the water environment, to remove the headpiece Color Cap and gently shake your AquaMic after submersion to remove any water that may have settled in the microphone opening. Take care when shaking. Place your finger over the magnet well so as not to dislodge and potentially lose the magnets. Further, you should wipe or blot the AquaMic surface with a soft cloth to absorb any additional moisture. When no longer in a water environment, it is recommended that you remove the AquaMic from your Neptune sound processor and place it in your Zephyr by Dry & Store® or a similar desiccant device to allow it to dry completely.

For more information, refer to the 'Replacing Headpiece Cables' section of the Instructions for Use or the AquaMic and/or Cable 'Instructions for Use.'

⚠ *If any loud or uncomfortable sounds occur while the AquaMic is under water, immediately remove your headpiece. Remove any excess water from the AquaMic microphone or, once out of the water, attach a dry headpiece before re-placing on your head.*

Neptune Covers

Color Cover
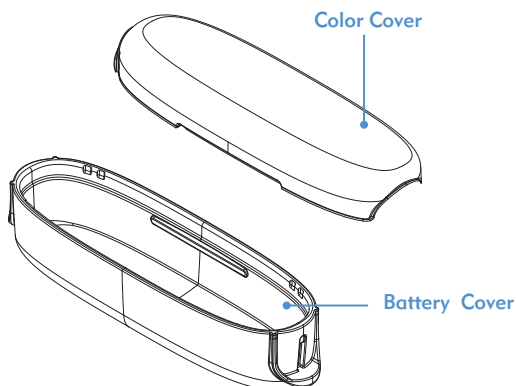
Battery Cover

The Neptune sound processor uses a disposable or rechargeable AAA battery as its power source. The Battery Cover attaches snugly to the bottom of your Neptune sound processor to create a water-tight seal enabling use of the Neptune system while swimming and bathing. To prevent very young children from gaining access to the battery, the Battery Cover is tamper-resistant by design. The Neptune Color Cover attaches to the top of your sound processor and is recommended for use whenever the Neptune Connect is not in place.

Neptune Covers also allow you to customize the look of your sound processor to suit your personal style. Neptune Color and Battery Covers are offered in a variety of colors to mix and match.

⚠ *If damage to the Battery Cover is noted or suspected, replace prior to resuming water-related use of the Neptune System.*

For more information, refer to the 'Color Customization' section of the Instructions for Use or the 'Instructions for Use' Included with your Neptune Covers.

Water Use

Your Neptune sound processor is designed to allow you to hear the vibrant sounds around you and connect more closely with your family and friends during all types of water activites. The Neptune system, when using the sound processor with AquaMic headpiece, has been designed for submersion in all types of water. Following submersion or heavy water spray, parts should be rinsed in clean water. The Neptune Connect and Universal Headpiece (UHP) are not intended for water use and should be removed from your sound processor prior to swimming or bathing.

For additional information, refer to the 'Care of your Neptune System,' 'The AquaMic,' or 'IP Rating Information' sections of the Instructions for Use.

Wearing your Sound Processor

Your sound processor has been designed so you do not have to wear anything on your ear. This design ensures the most comfortable, secure, and discreet wearing options possible. Neptune cables come in a variety of lengths and colors to allow you to customize your wearing preference. This section describes a variety of wearing options for your Neptune sound processor.

Wearing the Neptune Sound Processor

The Neptune processor can be worn in a variety of locations using any one of a variety of clips and/or pouches to suit your style. Use of some Neptune accessories may obscure the sound processor LED; therefore, audible alarms may be desirable for use with very young children to ensure caregiver notification of loss of lock or low battery status. The audible alarm can be activated by your clinician.

Using the Clip

The Neptune Clip is intended to attach directly to clothing in your preferred wearing location. The clip can be placed on the sound processor with the Neptune Connect attached or detached. However, the Neptune Connect should always be removed prior to exposure to water.
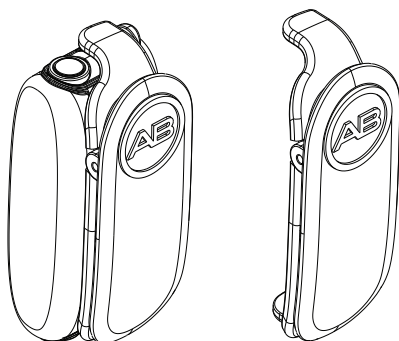
To use the clip:

1. Ensure the headpiece cable is attached to the sound processor on one end and the appropriate headpiece on the other end.

2. Hold the sound processor in one hand with the headpiece cable connector in the desired orientation relative to the clip.

3. Place the tongue of the clip in one of the grooves on the side of the Battery Cover.

4. Place the tongue on the other side of the clip in the groove on the opposite side of the Battery Cover. You should feel the clip snap in place.

5. Depress the spring end of the clip to open and secure the sound processor to the desired location on the clothing.

6. To disengage the Neptune processor from the clip, gently pull the tongue back and slightly upward out of the groove on one side of the Battery Cover. Then lift the Neptune processor out of the clip.

Using the Pouch
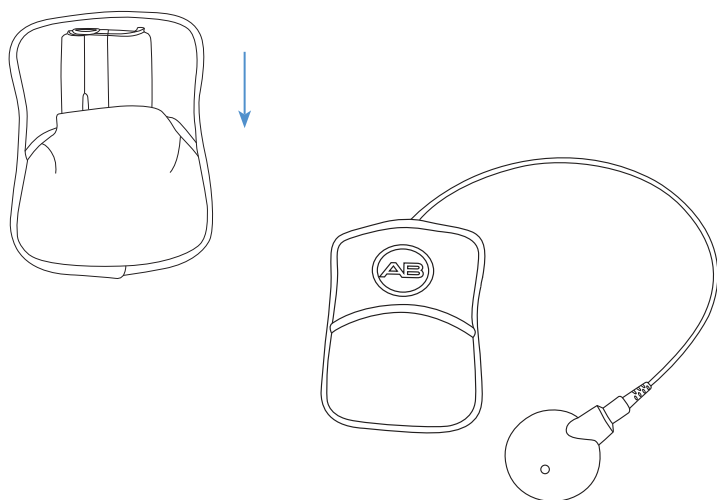
The pouch is intended to allow for multiple wearing options. The pouch attaches to a lanyard, an armband, a belt, or a harness. Neptune pouches are available in a variety of colors and sizes and will accommodate the sound processor with or without the Neptune Connect. However, the Neptune Connect should always be removed prior to exposure to water.

To use the pouch:

1. Lift pouch flap.

2. Slide the sound processor into the pouch in the desired orientation.

3. Ensure the headpiece cable is attached to the sound processor through the cable slit in the pouch on one end and the appropriate headpiece on the other end.

4. Secure the pouch to the desired location on the body or into your preferred fastening mechanism (e.g., harness, armband, lanyard). If using a fastening mechanism, refer to the 'Instructions for Use' included with the product for directions on how to wear the device.

Using the Armband
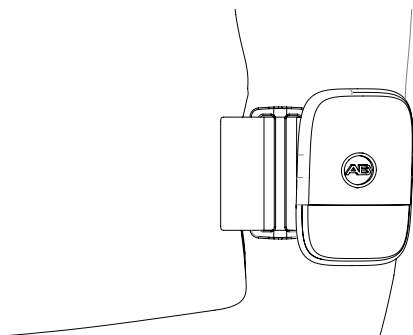
The armband is intended to attach to your upper arm, typically on the same side as your implant. The Neptune processor can be placed on the armband with or without the Neptune Connect. However, the Neptune Connect should always be removed prior to exposure to water.

To use the armband:

1. Ensure the headpiece cable is attached to the sound processor on one end and the appropriate headpiece on the other end.

2. Attach the sound processor to the armband using your preferred retention device (i.e., clip or pouch).

3. Secure the armband to your upper arm using the VELCRO® brand fasteners. For further instructions on how to secure the armband, refer to the 'Instructions for Use' included with the product.

Using the Lanyard
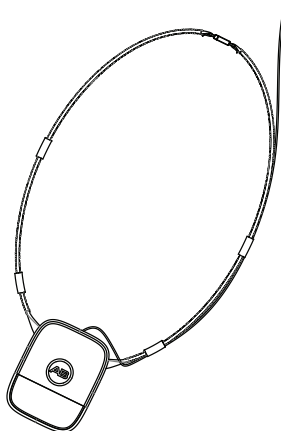
The lanyard is intended to be worn around your neck with the sound processor in the pouch in the front of your body. The sound processor can be placed on the lanyard with or without the Neptune Connect. However, the Neptune Connect should always be removed prior to exposure to water.

To use the lanyard:

1. Ensure the headpiece cable is attached to the sound processor on one end and the appropriate headpiece on the other end. Thread your headpiece cable through the adjustable loops on the lanyard to help manage the placement of your cable.

2. Attach the sound processor to the lanyard using your preferred retention device (i.e., clip or pouch).

3. Place the lanyard around your neck with the processor hanging in the front of your body. For further information, refer to the 'Instructions for Use' included with the product.

⚠️ *Due to the possibility of neck injury, use of the lanyard is not recommended during rough play or around moving machinery.*

Using the Headband
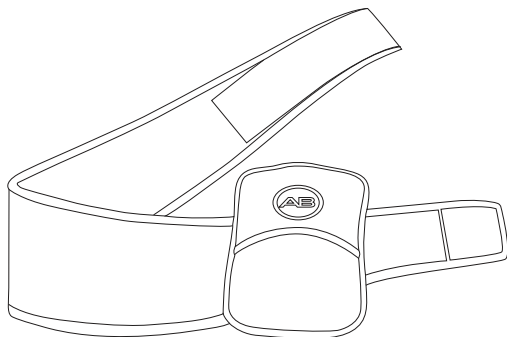
The headband is intended to wrap across your forehead and attach at the back of your head. The Neptune processor can be placed on the headband with or without the Neptune Connect. However, the Neptune Connect should always be removed prior to exposure to water.

To use the headband:

1. Ensure the headpiece cable is attached to the sound processor on one end and the appropriate headpiece on the other end.

2. Attach the sound processor to the headband using your preferred retention device (e.g., clip or pouch).

3. Secure the headband using the VELCRO® brand fasteners. For further instructions on how to secure and position the headband, refer to the 'Instructions for Use' included with the product.

Note: Some degradation in sound quality may be perceived if the headband is placed over the headpiece microphone.

Using the Harness
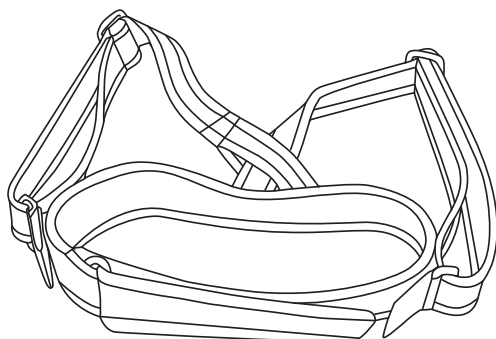
The harness is a pediatric accessory which accommodates placement of one or two Neptune processors at a preferred wearing location. The Neptune processor may be attached to the harness on the child's side, front, back, or shoulder and may be worn with or without the Neptune Connect. However, the Neptune Connect should always be removed prior to exposure to water. The harness is adjustable to optimally fit young children and is available in different colors. For further information, refer to the 'Instructions for Use' included with the product.

⚠️ *Follow all directions for attachment to avoid possible strangulation due to misuse.*

No Securing Mechanism Used
Some individuals may prefer to wear the Neptune sound processor in a shirt pocket or other locations which do not require the use of a securing mechanism. For maximum comfort, you may wish to remove any previously-attached clip or pouch prior to placing the Neptune processor in the desired location.

Using the Neptune Sound Processor

⚠️ *The Neptune System contains small parts that may cause choking if swallowed.*

⚠️ *If the sound processor becomes unusually hot or warm, discontinue use immediately and contact Advanced Bionics or your clinician.*

Powering the Neptune sound processor

The 'on/off' button is located on the side of the Neptune sound processor. To power on the device, press and hold the 'on/off' button for 1-2 seconds. You should notice the orange LED within the button flash to indicate battery charge.

If you begin use of the sound processor with the Neptune Connect detached, the sound processor will always activate the most recently-used program, volume, and sensitivity settings. To reset program settings without attaching the Neptune Connect, upon start-up press and hold the 'on/off' button for 3-5 seconds. The processor will start up in program position 1 and reset the volume and sensitivity settings to their default levels.

To power down the Neptune sound processor, depress the 'on/off' button for 1-2 seconds. The orange LED will fade out to indicate that the processor is powering down.

Understanding Neptune LEDs

The LED is a programmable feature providing visual information about system status, battery life, program position, and sound processor error conditions.

Table 1: Neptune sound processor LED indications

Color	Behavior	Programmable	Indication
Orange	Blinks at start-up	No	• 4 quick blinks indicate that battery is fully charged • 2–3 quick blinks indicate that the battery is sufficiently charged to power the system • 1 quick blink indicates that the battery is nearly depleted • No blinking indicates depleted battery. Replace with charged or new battery
	Solid	Yes	The battery is almost depleted
	Blinks twice every three seconds	Yes	The battery is depleted and cannot support stimulation
	Fades out	No	The sound processor is powering down
Red	Blinks once per second	Yes	Loss of lock with the implant
	Blinks rapidly (more than once per second)	No	Wrong implant connected
	Solid	No	Sound processor error condition. Fully remove and re-insert battery to reset processor
Green	Flickers in response to loud inputs	Yes	The sound processor and microphone are responding to sound
	Solid green	No	Indicates an empty program slot or monitor (Δ) position
	Blinks at start-up after battery status and upon program change	No	• 1 blink indicates program one • 2 blinks indicate program two • 3 blinks indicate program three

Note: Use of some Neptune accessories may obscure the processor LED; therefore, audible alarms may be desirable for use with very young children to ensure caregiver notification of loss of lock or low battery status.

Understanding Audible Alarms

Audible alarms are a programmable feature that can be used independently or in conjunction with the Neptune LEDs to provide important information about system status and battery life.

Table 2: Neptune Audible Alarms

Behavior	Programmable	Indication
Beeps once per second	Yes	Loss of lock with the implant
Beeps rapidly (more than once per second)	Yes	Wrong implant connected
Beeps slowly (once every five seconds)	Yes	Low battery
Two beeps every three seconds	Yes	Battery is depleted and cannot support stimulation
Continuous beep	No	Sound processor error condition. Fully remove and re-insert battery to reset processor.

Note: If the Neptune processor is placed within a retention device (e.g., pouch) or worn beneath clothing, the processor audible alarms may be dampened and more difficult for caregivers to detect.

Using AAA Batteries

The sound processor is powered by a single, off-the-shelf alkaline or lithium disposable or nickel-metal hydride (NiMH) rechargeable AAA battery so you never have to worry about power when traveling away from home or in an emergency. The Neptune Battery Cover creates an airtight seal for swimming and bathing as well as to prevent easy removal by young children.

⚠️ *Do not remove or replace the AAA battery while under water.*

Removing the Battery Cover
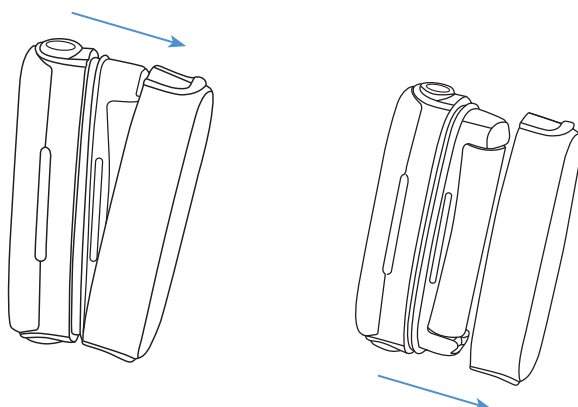
1. Hold the sound processor in one hand.
2. Firmly grip the ends of the Battery Cover and, starting at one end, pull it away from the sound processor.

⚠️ *Never insert your fingernail or any type of tool into the Battery Cover to try to pry it off the processor as this may damage the battery seal allowing water and debris to enter into the Neptune battery compartment.*

Removing the Battery

1. Hold the sound processor in one hand.
2. Grasp the AAA battery at one end and pull it away from the sound processor to remove.

Replacing the Battery

1. Hold the sound processor in one hand.
2. Position the positive end (+) of the AAA battery into the appropriate contact as marked inside the processor housing.
3. Push the negative end (-) of the battery into the opposite contact in the processor housing.

Note: If the AAA battery is inserted in the wrong orientation, the Neptune sound processor will not turn on.

⚠️ *Insert battery only as shown to prevent loss of function*

Attaching the Battery Cover
1. Hold the sound processor in one hand, with AAA battery installed.

2. Align the edges of the battery cover with one end of the sound processor housing. Note that the battery cover is not 'sided.'

3. Push the battery cover onto one end of the sound processor then push firmly onto the other end to attach.

Using Neptune Headpieces

Two headpieces are available for use with your Neptune sound processor.
1. The Universal Headpiece (UHP)
2. The AquaMic

The Universal Headpiece
The UHP is designed for use with the Neptune processor during daily activities with the exception of swimming and bathing.

The AquaMic
The AquaMic is designed for use during swimming and bathing and carries an IP68 rating for water and particulate matter (e.g., dust, sand) resistance. The AquaMic is not intended for use during diving or repeated submersion at depths greater than three meters (9 feet, 10 inches).

When using the AquaMic underwater, sound may be distorted; however, following submersion or heavy water spray, sound quality should return to acceptable levels after fully drying the headpiece. For this reason, it is recommended that you replace your AquaMic after water use with a dry headpiece to ensure restoration of typical system sound quality. For more information, refer to 'The AquaMic' section of the Instructions for Use or the AquaMic 'Instructions for Use.'

Replacing Headpiece Cables
Headpiece cables are available in a variety of colors and lengths to suit your personal wearing preferences. Before you can use your Neptune sound processor, you must attach the cable to the headpiece and sound processor. You should inspect your cable on a regular basis to ensure it is in good condition. If it appears damaged, you should replace it with a new cable.

⚠️ *Cables are not intended to be removed or replaced while the sound processor is under water. If the cable accidentally detaches during water use, remove the sound processor from the water and shake excess water from the sound processor prior to re-connecting the cable.*

Place the sound processor and headpiece with cable detached in the Zephyr by Dry & Store® overnight to ensure proper drying of the Neptune system components.

⚠️ *Due to increased risk of strangulation and/or underwater entanglement, do not use cables longer than 81cm (32 inches) with young children.*

To attach the cable to the headpiece
1. Hold the headpiece in one hand and the cable connector in the other hand.

2. Push the cable connector firmly into the headpiece connector.
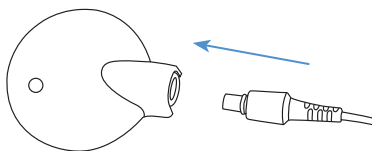
To attach the cable to the sound processor
1. Hold the sound processor in one hand and the cable connector in the other hand.

2. Push the cable connector firmly into the sound processor connector.
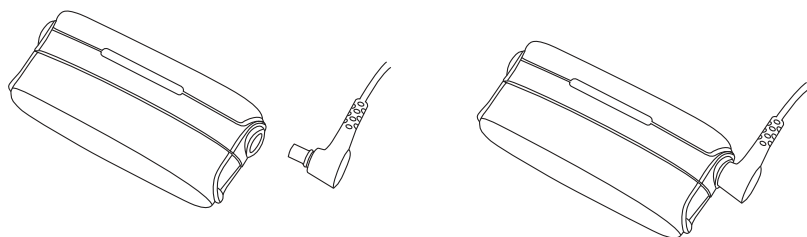
For assistance in troubleshooting headpiece cables, please refer to the 'Troubleshooting' section of the Instructions for Use.

Adjusting Headpiece Magnet Strength
It is important to have the correct magnet strength so you do not experience discomfort or retention issues. If an insufficient number of magnets is used in your headpiece, it may fall off more often than you find acceptable. If too many magnets are used in your headpiece, you may experience irritation or discomfort. You should consult your clinician if you have any concerns regarding magnet strength. If deemed appropriate, your audiologist may insert additional magnets or remove magnets from your headpiece. You should not place additional magnets in your headpiece unless under the direction of a cochlear implant professional. See the headpiece 'Instructions for Use' for additional information regarding adjustment of headpiece magnet strength.

⚠ *If you experience any redness, irritation, or discomfort, discontinue use of your headpiece immediately and contact your cochlear implant center.*

⚠ *If headpiece magnets are swallowed, seek immediate medical attention.*

Removing Headpiece Color Caps

The UHP and AquaMic Color Caps are available in a variety of colors to match or coordinate with your Neptune sound processor. A Color Cap must be in place at all times when using your headpiece. You may need to remove your headpiece Color Cap to change the look and style of your headpiece, as part of routine troubleshooting, or, in the case of the AquaMic, to fully dry following submersion. To remove your headpiece Color Cap, only use the tool provided by Advanced Bionics. See the Color Cap, UHP, or AquaMic 'Instructions for Use' for additional information regarding removal and replacement of headpiece Color Caps.

Using the Neptune Connect
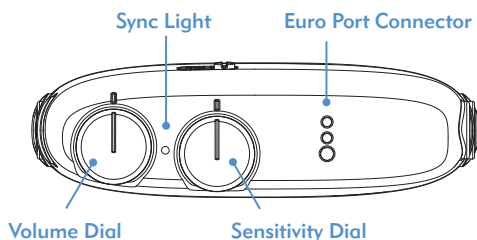
The Neptune Connect enables adjustment of volume, sensitivity, and program settings. It also provides access to wireless FM and other battery-powered audio devices for Neptune sound processor users. Additionally, a listening check of the headpiece microphone and FM connection can be conducted with the Neptune Connect attached.

By design, the Neptune Connect is removable, providing the ultimate in tamper-proof controls for very young children. Removing the controls also enables the smallest possible wearing configuration and the ability to use your sound processor while swimming and bathing.

Note: The Neptune Connect is not intended for water use, and should be removed from the sound processor prior to swimming or bathing. Additionally, you should ensure that the processor is completely dry following water use before attaching the Neptune Connect.

Attaching and Removing the Neptune Connect

Release Latch
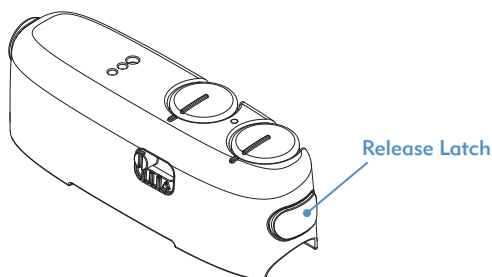
If you wish to change programs or adjust your volume and/or sensitivity setting, you will need to attach the Neptune Connect. The sound processor does not need to be turned off prior to attaching the Neptune Connect. Once the desired changes have been made, you may remove the Neptune Connect by pressing the release latch, and the sound processor will maintain the new settings. Attach your Neptune Color Cover when the Neptune Connect is not in use. If you choose to leave the Neptune Connect attached during use, any changes to volume and sensitivity take effect immediately.

Sync Light

The Sync Light, located between the volume and sensitivity dials, is a safety feature designed to ensure the Neptune Connect is using the same settings as the sound processor. If you remove and re-attach the Neptune Connect and the program switch and control dial positions have not changed, the Sync Light will flash green once when you re-attach the Neptune Connect to indicate that the sound processor and Neptune Connect settings match and the parts are "synced." If the program switch or control dial positions have been changed on the Neptune Connect before re-attaching to the sound processor, the Sync Light will flash red once per second until the settings have been synced.

The sound processor will not use any new program or control dial settings until it has been synced with the Neptune Connect. To sync the Neptune Connect and sound processor, first turn the volume all the way down by moving the dial in a counter-clockwise direction . The Sync Light will flash green once to indicate the Neptune Connect and sound processor are synced and ready to apply setting changes. This is an important safety feature preventing any sudden change in loudness or sound quality if settings on the Neptune Connect have been altered prior to re-attaching to the sound processor. After successfully syncing the sound processor and Neptune Connect, return the volume dial to your preferred use setting.

Table 3: Neptune Connect Sync Light indicator

Behavior	Indication
One green flash	Neptune Connect and processor settings are synced. Any change will take effect on the processor.
Flashes red once per second	A mismatch exists between Neptune processor settings and Neptune Connect settings. In order to sync settings, turn volume dial all the way down (counter-clockwise); verify green light flashes once; then adjust the controls to desired position(s).
Solid red light	Error condition. If this occurs, remove and re-attach Neptune Connect.

To attach the Neptune Connect:

Align here
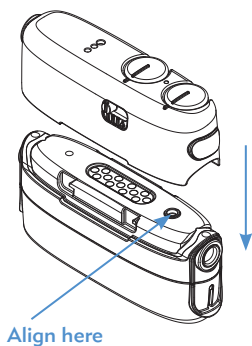
1. Remove your Neptune Color Cover.

2. Align the circle on the top of the Neptune sound processor with the corresponding marking on the underside of the Neptune Connect for correct orientation.

3. Push the Neptune Connect snugly onto the sound processor.

To remove the Neptune Connect:
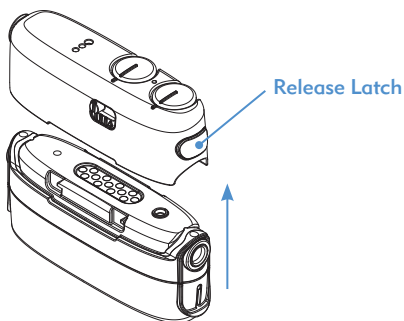
Release Latch

1. Hold the sound processor in one hand.

2. Press the release latch located on the end of the Neptune Connect until you feel it disconnect from the sound processor. Store in a safe place, such as your Neptune Connect Wallet or Neptune Carrying Case, when not in use.

3. Attach your Neptune Color Cover whenever the Neptune Connect is not in place on the sound processor.

For additional information, refer to the Neptune Connect 'Instructions for Use.' For instructions regarding attaching or removing your Neptune Color Cover, refer to the 'Color Customization' section of the Instructions for Use.

Changing Programs
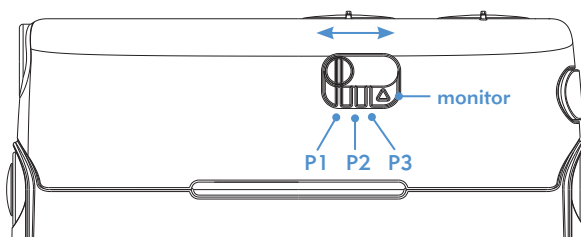
The program switch is located on your Neptune Connect to allow you to easily change your program position prior to, or during, use. The sound processor can store up to three programs for optimal listening in a variety of situations. These programs can be updated and changed by your clinician during fitting.

To change programs:
1. Slide the program switch located on the front face of the Neptune Connect to the desired program position.

2. You may need to sync the Neptune Connect with the sound processor prior to changing the program. For more information, refer to the 'Sync Light' section of the Instructions for Use.

3. For instructions on use of the monitor (Δ) switch position, refer to the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

Changing Volume
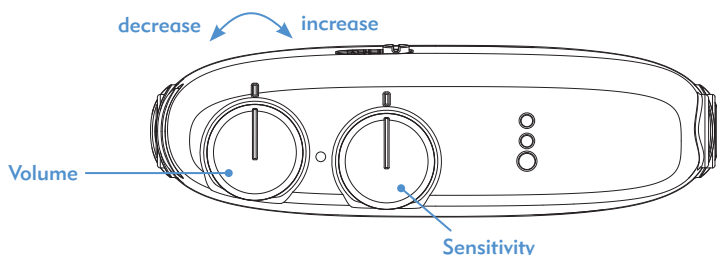
Volume changes are managed differently depending on whether the Neptune Connect has remained on the sound processor or has been disconnected during use.

If the Neptune Connect has remained attached to the sound processor during use, changes take effect immediately. If the Neptune Connect has been removed and the settings changed, the processor and Neptune Connect should be synced before volume changes will take effect. For more information, refer to the 'Sync Light' section of the Instructions for Use.

To change volume:

1. Place your finger on the volume control dial or adjust from the edge of the Neptune Connect

2. Turn the dial to the desired setting. Turn the dial in a clockwise direction to increase or a counter-clockwise direction to decrease the volume

Note: You may need to sync the Neptune Connect with the sound processor prior to changing the volume.

The volume range available within a program can be changed or disabled by your implant professional in the SoundWave™ fitting software. If you have any questions about your specific volume range setting, please contact your implant center.

Changing Sensitivity
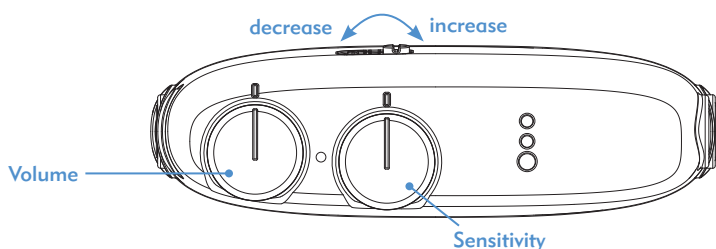
The sensitivity control adjusts the softest sound that can be picked up by your microphone. Sensitivity dial adjustments are managed differently depending on whether the Neptune Connect has remained on the sound processor or has been disconnected during use.

If the Neptune Connect has remained attached to the sound processor during use, changes take effect immediately. If the Neptune Connect has been removed and the settings changed, the processor and Neptune Connect should be synced before sensitivity dial changes will take effect. For more information refer to the 'Sync Light' section of the Instructions for Use.

To change sensitivity:

1. Place your finger on the sensitivity control dial or adjust from the edge of the Neptune Connect.

2. Turn the dial to the desired setting. Turn the dial in a clockwise direction to increase or a counter-clockwise direction to decrease the sensitivity setting.

Note: You may need to sync the Neptune Connect with the processor prior to changing sensitivity.

The sensitivity control can be enabled or disabled within a program by your implant professional in the SoundWave™ fitting software. If you have any questions about your specific sensitivity control setting, please contact your implant center.

Using FM

FM use is a critical feature for many cochlear implant users, particularly in school-aged children, to help overcome difficulties hearing in the presence of noise, reverberation, and distance from the speaker. The Neptune sound processor enables use of wireless FM systems by attaching the FM receiver directly to the Neptune Connect.

Note: To avoid any unpleasant sounds, ensure that your sound processor is turned off before attaching or removing an FM receiver. Read operating instructions provided with your FM system prior to using FM with your Neptune processor.

To attach an FM Receiver:
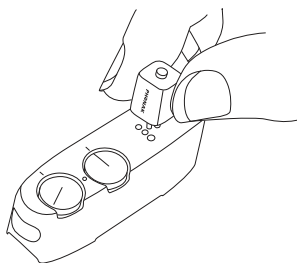
1. With the sound processor turned off, hold the sound processor with Neptune Connect attached in one hand.

2. With the other hand, align the three FM connector pins with the Euro connector on the top of the Neptune Connect. Take care to ensure that the FM receiver pins match the size and orientation of the holes on the Neptune Connect. Failure to do so may cause damage to the FM receiver and/or the Neptune Connect.

3. Firmly press the FM receiver into place on the Neptune Connect.

4. Adjust the program position to the desired location for FM use.

5. Reduce volume and sensitivity settings.

6. Turn on the sound processor.

7. Turn volume and sensitivity dials to desired positions for FM use.

To remove an FM receiver:

1. With the sound processor turned off, hold the sound processor with Neptune Connect attached in one hand.

2. With the other hand, gently pull the FM receiver straight out of the Euro connector.

3. Turn on the sound processor.

4. Adjust the program position, volume, and sensitivity to their desired settings.

5. Remove the Neptune Connect and re-attach the sound processor Color Cover.

For further information regarding FM use, refer to the 'Instructions for Use' included with your FM system.

Listening to the Microphone and FM Receiver

A convenient test mode is built in to all Neptune sound processors to enable someone with unaided hearing to listen to the following sound sources:

- Microphones
- FM receivers
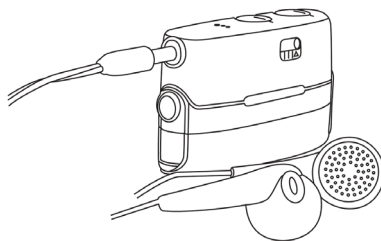
To listen to the desired input:

1. Ensure that the Neptune Connect is attached and synced to the sound processor.

2. Connect headphones to the 3.5mm auxiliary connector on the side of the Neptune Connect.

3. Place headphone/earbuds in ears. If listening to microphone input, proceed directly to step 5.

4. If listening to FM input is desired, connect your wireless FM receiver to the Euro connector located on the top surface of the Neptune Connect and synchronize it with the FM transmitter prior to proceeding to the next step.

5. Set the sound processor program switch to the monitor (Δ) position.

Using the Telephone

There are a variety of ways to use the telephone with your Neptune sound processor. Consult with your clinician for recommendations regarding telephone use and which of the following options are best for you:

1. Use the telephone receiver

You can use the telephone by placing the telephone receiver directly over your headpiece microphone. It is sometimes necessary to try different phones and providers, particularly when cellular phones are used, for the optimal telephone signal.

2. Use a telephone adapter

A telephone adapter is available for purchase from AB for use with your Neptune sound processor. The telephone adapter can be permanently connected to your home or work phone. The adapter connects directly into the auxiliary connector of your Neptune Connect, although you may require a special program for this purpose. Consult with your clinician or an AB representative for further information regarding this option.

3. Use a patch cable

A patch cable may be used to connect directly to your cellular or cordless telephone. The patch cable connects to the headset connector of your telephone on one end and the auxiliary connector of your Neptune Connect on the other. An Audio Interface Cable is available from AB, or you may require a custom-made patch cable from an independent vendor. Consult with your clinician or an AB representative for further information regarding this option.

4. Use a speaker phone

Use of a speaker phone eliminates the need for additional equipment when using the telephone. Simply turn on the speaker phone and communicate in your regular manner.

AAA Battery Information

Your Neptune sound processor can be used with off-the-shelf alkaline or lithium AAA batteries or rechargeable nickel-metal hydride (NiMH) batteries. For recharging instructions, see the manufacturer's 'Instructions for Use' included with the NiMH battery charger.

⚠ Warnings

- Do not recharge disposable batteries.

- Do not use rechargeable lithium-ion batteries.

- Do not place batteries in your mouth.

- Do not chew or swallow batteries. If this occurs, seek immediate medical attention.

- Remove batteries from your sound processor when they are empty to prevent damage from possible leaking.

- If a battery shows visible signs of leakage, dispose of it in accordance with local regulations.

- Do not allow leaking battery fluid to come into contact with skin, mouth, or eyes.

- Do not expose batteries to heat (e.g., do not store in direct sunlight or in a hot car).

- Do not dispose of batteries in fire.

- Carry batteries in the carrying case provided or in a sealed plastic bag. Batteries can short circuit if they come into contact with metallic objects such as coins or keys.

- Do not immerse batteries directly in water.

- Only charge batteries using the charger(s) recommended by the manufacturer.

- Do not allow children to play with or leave them unattended with batteries.

- Do not allow children to charge batteries unattended.

For additional information, refer to the 'Approved Power Sources' section of the Instructions for Use.

Using Neptune Accessories

Advanced Bionics supplies a range of accessories for use with the Neptune system, although not all accessories may be included in your sound processor kit. Discuss with your clinician which accessories are included with your Neptune sound processor.

For further information regarding the accessories listed below, refer to the 'Instructions for Use' included with the product or contact Advanced Bionics.

Headpieces
The Neptune sound processor is designed for use with two different headpieces.
1. The Universal Headpiece (UHP)
2. The AquaMic

The Universal Headpiece
The UHP is intended to be used with Neptune during daily activities outside of water environments (e.g., pools, bath, shower).

The AquaMic
The AquaMic is designed for use during swimming and bathing and carries an IP68 rating for water and dust resistance. The AquaMic is not intended for use during diving or repeated submersion at depths greater than three meters (9 feet, 10 inches).

When using the AquaMic underwater, sound may be distorted; however, following submersion or heavy water spray, sound quality should return to acceptable levels after fully drying the headpiece. For this reason, it is recommended you replace your AquaMic after water use with a dry headpiece to ensure restoration of typical system sound quality. For information regarding headpiece use, refer to the 'Using Neptune Headpieces' section of the Instructions for Use or the AquaMic 'Instructions for Use.'

Wireless FM
Neptune is compatible with the Phonak MLxi wireless FM receiver. For instructions on how to connect an FM receiver to the Neptune Connect, refer to the 'Using FM' section of the Instructions for Use or to the Neptune Connect 'Instructions for Use.'

Listening Check Earphones
A convenient monitor mode is built in to all Neptune sound processors to enable someone with unaided hearing to listen to the Neptune system microphone and/or an attached FM receiver. Listening Check earphones may be used for this purpose. For instructions on how to listen to inputs using the Listening Check earphones, refer to the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

Audio Accessories
The auxiliary connector on the side of the Neptune Connect allows you to plug directly into battery-operated consumer electronics devices, such as MP3 players, portable DVD players, or handheld gaming devices. When connecting to consumer devices, you may require attenuation to prevent sound from being too loud or

distorted. This attenuation can be applied by your clinician during programming so you can fully enjoy the sound from your audio device. Also, your clinician can create a program allowing you to hear both environmental and auxiliary device sounds. Talk to your implant professional about which programming options are right for you in this situation.

⚠️ *Do not connect to mains powered sound sources (e.g., TV, computer) unless using a mains isolation cable. For further information, contact your clinician or an Advanced Bionics representative.*

⚠️ *Do not swim or bathe with the Neptune Connect and audio accessories attached to the sound processor.*

Color Customization

Neptune Covers allow you to customize the look of your sound processor to suit your personal style. Neptune Color and Battery Covers are offered in a variety of colors to mix and match.

Neptune Color Cover

It is recommended that a Neptune Color Cover be used whenever the Neptune Connect is not attached to your processor.

To remove the Color Cover:
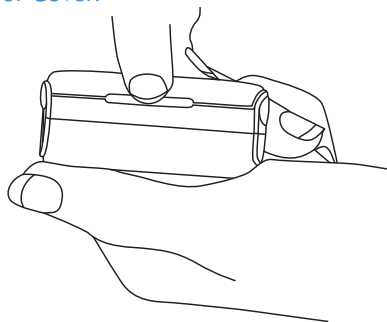
1. Hold the sound processor in one hand.

2. With the other hand, place one or two fingernails under the opening on the front or back face of the processor and pull the Color Cover away from the sound processor.

To attach the Color Cover:

1. Hold the sound processor in one hand.

2. Align the edges of the Color Cover with the top of the sound processor housing. Note that the Color Cover is not 'sided'.

3. Push the Cover firmly onto the Neptune processor until it snaps into place.

For additional information, refer to the 'Instructions for Use' included with your Neptune Covers.

Battery Cover

Battery Covers provide an airtight seal and allow use of your Neptune sound processor while swimming or bathing. A Battery Cover should be in place on your sound processor at all times during Neptune use.

To attach the Battery Cover:
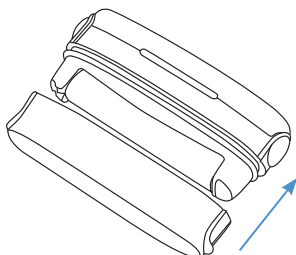
1. Hold the sound processor in one hand, with AAA battery installed.

2. Align the edges of the battery cover with one end of the sound processor housing. Note that the battery cover is not 'sided.'

3. Push the battery cover onto one end of the sound processor then push firmly onto the other end to attach.

To remove the Battery Cover:
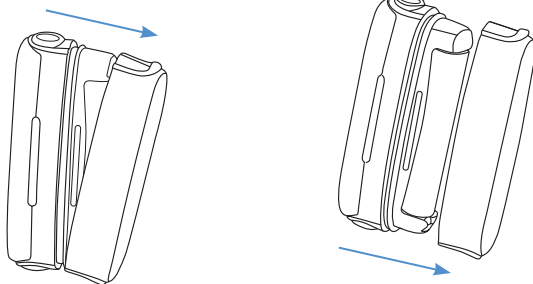
1. Hold the sound processor in one hand.

2. Firmly grip the ends of the Battery Cover and, starting at one end, pull it away from the sound processor.

⚠️ *Do not insert your fingernail or any tool into the Battery Cover in an attempt to remove it from the processor as this may damage the battery seal allowing water and debris to enter into the Neptune battery compartment.*

⚠️ *If damage to the Battery Cover is noted or suspected, replace prior to resuming water-related use of the Neptune System.*

For additional information, refer to the 'Instructions for Use' included with your Neptune Covers.

Neptune Carrying Case

A carrying case is provided with your Neptune system for use when traveling or for storage when your sound processor and accessories are not in use. If your Neptune system is exposed to moisture or high levels of humidity, you may choose to store components overnight in the Zephyr by Dry & Store® provided instead.
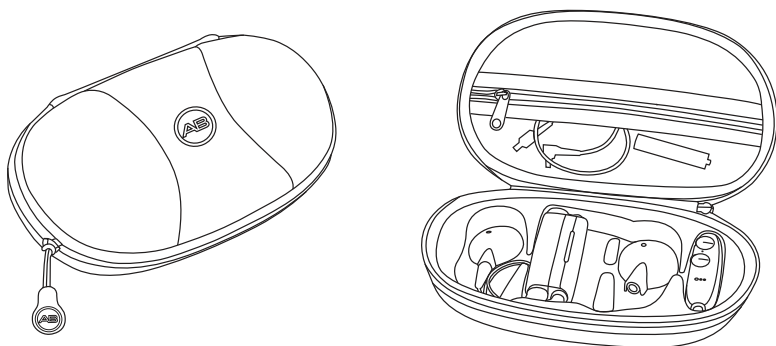
Neptune Connect Wallet

When the Neptune Connect is not in use, it is recommended that you store it in the Neptune Connect Wallet. The wallet is intended to protect the Neptune Connect and provide an easy means of transporting it wherever you go. The Neptune Connect wallet is suitable for storage on your key chain, in a purse, backpack, briefcase, or pocket. There is also space in the wallet for storage of an extra AAA battery and cable, for convenient replacement if the need arises when you are away from home.
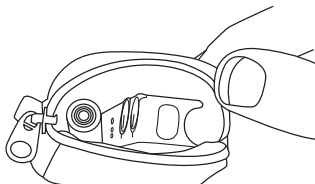
If your Neptune Connect has been exposed to water, or high levels of humidity, you may store it overnight in the Zephyr by Dry & Store provided with your Neptune processor kit instead.

Neptune Swim Cap

Advanced Bionics offers a swim cap which can be worn over your AquaMic and Neptune processor for use while swimming. Available in multiple colors and made of a lightweight LYCRA® brand fabric, the swim cap is comfortable to wear and allows sounds to pass through to your AquaMic so you may continue to hear noises around you at the pool.

Note: Some degradation in sound quality may be perceived while the swim cap is in place over the headpiece microphone.

Zephyr by Dry & Store®

A Zephyr by Dry & Store is included with your Neptune system. The Zephyr is designed to remove moisture from your equipment and is intended for daily use with your Neptune system components. For detailed instructions on how to use and care for the Zephyr, refer to the 'Operating Instructions' included in the package. It is important that you read and adhere to the 'Warnings and Cautions' prior to and during use.

⚠ *Do not allow children to play with or operate the Zephyr by Dry & Store or desiccant unattended.*

IP Rating Information

An ingress protection, or IP, rating is used to specify the strength of an enclosure surrounding electronic equipment. Each IP rating consists of two numbers. The first number indicates the level of protection an enclosure provides against intrusion by solid objects, materials, or dust. The second number indicates the level of protection against intrusion by water or liquids.

The Neptune Connect carries a rating of IP44. This rating indicates that the Neptune system when using the Neptune Connect is protected against the following conditions:
- Penetration of solid foreign objects equal to or greater than 1.0 mm in diameter
- Failure due to splashing water

The Neptune sound processor, AquaMic, and AquaMic headpiece cable carry a rating of IP68*. This rating indicates that the Neptune system when using these parts is protected against the following conditions:
- Complete protection against dust penetration
- Failure due to continuous immersion in water up to three meters (9 feet, 10 inches)

Neptune's industry-leading IP68 rating affords you peace-of-mind that your processor system will continue to operate to AB performance standards at all times-even while bathing and swimming.

* Test conditions are specified by the manufacturer. The Neptune system passed testing performed following immersion at 3m for 30 minutes.

Care of your Neptune System

It is important to properly care for your Neptune system to ensure optimal hearing at all times. If you wish to clean any part of your Neptune system, use only a damp cloth to wipe the part(s). Do not expose any part of the system to additional solvents (e.g., soap, bleach). No preventive maintenance or routine inspection is required. The components of the Neptune system are not serviceable.

Caring for your Neptune Sound Processor

Your Neptune sound processor has a dust and water protection rating of IP68. This means it is designed to:
• Protect against penetration of dust, sand, or other particles.

• Allow submersion in all types of water.

To prevent damage to the sound processor, it is important that you ensure the Battery Cover is correctly installed on the sound processor before swimming and bathing. Visually inspect the battery compartment after submersion in water. If moisture is detected, wipe the battery compartment, battery, and battery contacts with a dry cloth.

If damage to the battery cover or battery seal is suspected, contact Advanced Bionics for replacement prior to resuming water-related use.

Although it is not necessary, it is highly recommended that you place the sound processor and headpiece in your Zephyr by Dry & Store® for overnight drying. If you are concerned that the battery compartment has been exposed to water, remove the Battery Cover and battery from the sound processor prior to placement in the Zephyr to ensure proper drying.

You may clean battery contacts with a soft bristle brush (e.g., hearing aid brush or dry toothbrush) or wipe with a damp cloth as needed.

Caring for the Neptune Connect

Your Neptune Connect has a dust and water protection rating of IP44. This means it is designed to withstand:
• Penetration of foreign objects greater than 1.0 mm.

• Exposure to splashing water.

To prevent damage to the Neptune Connect, it is important that you remove it from the sound processor prior to swimming and bathing. Dry the Neptune sound processor fully before attaching the Neptune Connect. If the Neptune Connect is exposed to splashing water, wipe it with a dry cloth.

Although it is not necessary, you may place the Neptune Connect in your Zephyr by Dry & Store for overnight drying.

If damage to the Neptune Connect is suspected, contact Advanced Bionics for replacement.

Recommended Neptune System Operating and Storage Temperatures

Table 4: Operating and storage temperature ranges

Condition	Minimum	Maximum
Operating temperature	0°C (32°F)	45°C (115°F)
Storage temperature	-20°C (-4°F)	55°C (131°F)

Approved Power Sources

Advanced Bionics has verified Neptune function with the power sources listed below; behavior when using power sources other than those listed here cannot be guaranteed.

Table 5: Approved Neptune power sources by geographic region

Power Source	Manufacturer	Model Number
NORTH AMERICA		
AAA Battery	Energizer ®	E92 (Alkaline)
	Energizer	L92 (Lithium)
	Duracell ®	DC2400 (NiMH)
Programming Interface (used during fitting, only)	Advanced Bionics	AB-6500
EU		
AAA Battery	Energizer	Ultra Plus LR03 (Alkaline)
	Energizer	L92-FR03 (Lithium)
	Duracell	HR03 (NiMH)
Programming Interface (used during fitting, only)	Advanced Bionics	AB-6500

Table 6: Approved Neptune power supplies

Power Supply	Rated Voltage	Type	Rated Current
AAA Battery	1.0-5.0 V	DC	250mA
Programming Interface	3.1-5.0 V	DC	250mA

⚠️ *Warnings*

General Warnings

- Do not expose any part of the Neptune system to extreme heat, such as an oven, microwave, or hair dryer.

- Using your sound processor accessories and parts contradictory to their intended use (e.g., mouthing, chewing) may cause bodily harm

- Store additional headpieces away from items with magnetic strips (e.g., credit cards, hotel room key cards).

- Portable and mobile RF communications equipment, including radios and cellular phones, may affect sound quality of the Neptune system; however, there is no safety hazard associated with such equipment.

- The Neptune system should be used in accordance with the electromagnetic compatibility (EMC) information provided in the 'Guidance and Manufacturer's Declaration' section of the Instructions for Use.

- Due to increased risk of strangulation and/or underwater entanglement, do not use cables longer than 81cm (32 inches) with young children.

- The Neptune system contains small parts that may cause choking if swallowed.

- Due to the possibility of neck injury, use of the lanyard is not recommended during rough play or around moving machinery.

- Follow all directions for attachment of harness to avoid possible strangulation due to misuse.

- If headpiece magnets are swallowed, seek immediate medical attention.

- If the sound processor becomes unusually hot, or warm, discontinue use immediately and contact Advanced Bionics or your clinician.

- Do not allow children to play with or operate the Zephyr by Dry & Store® or desiccant unattended.

- Do not remove or replace the cable from the sound processor or AquaMic while under water. If the cable becomes accidentally detached during water use, remove the sound processor from the water and gently shake any excess water from the sound processor and cable connectors prior to re-connecting the cables. Dry the sound processor with the cable detached in the Zephyr or similar desiccant device overnight to ensure proper drying of the device.

- If any loud or uncomfortable sounds occur while the AquaMic is under water, immediately remove your headpiece. Remove any excess water from the AquaMic microphone or, once out of the water, attach a dry headpiece before re-placing on your head.

- Do not remove/replace the AAA battery while under water.

- Do not insert your fingernail or any tool into the Battery Cover in an attempt to remove it from the processor as this may damage the battery seal allowing water and debris to enter into the Neptune battery compartment.

- If damage to the Battery Cover is noted or suspected, replace prior to resuming water-related use of the Neptune System.

- Do not connect to mains powered sound sources (eg. TV, computer) unless using a mains isolation cable.

- Do not swim or bathe with the Neptune Connect and audio accessories attached to the sound processor.

- Your processor or headpiece should be serviced only by AB. Do not attempt to open or repair the parts. Do not continue to use the processor or headpiece if any part of it is damaged. Unauthorized opening of the processor, headpiece, or other equipment, will void the warranty and may compromise system performance.

Electrostatic Discharge (ESD)

High levels of static electricity may damage electronic components of your sound processor or implant. Care should be taken to avoid exposure of the system to static electricity. ESD is present when you feel a spark jump from your body or your hair stands on-end.

The following are examples of situations where high levels of electrostatic charge may be created:

- Walking, crawling, or sliding on carpets.

- Sliding on plastic slides.

- Exiting an automobile.

- Pulling sweaters on and off.

- Touching TV or computer screens.

- Removing bedding materials.

To reduce the likelihood of ESD damage:

- Touch a person or object with your fingers prior to contacting your/your child's headpiece, cable, or sound processor.

- Touch metal surfaces with your hand prior to allowing equipment to contact the metal surface. This is particularly important on the playground where high levels of static electricity can be generated. It is important to discharge any static electricity by touching a metal surface with your hand prior to allowing the sound processor, cable, or headpiece contact with the metal surface.

- Take care to avoid contact between your cochlear implant equipment and metal surfaces when exiting a vehicle.

- Remove cochlear implant equipment prior to removing clothing that may contain electric charge (e.g., sweaters).

- Do not touch TV or computer screens. If screens are touched, be sure to touch an object other than your implant system to discharge any charge build-up prior to touching any part of your implant system.

- Use fabric softener on clothing and bedding.

Airport Security Metal Detectors

Metal detectors and security scanners, including full body scanners, will not damage your implant system; however, metal detectors may be activated as you pass through. To avoid hearing any unwanted sound when walking through metal detectors or security scanners, you should reduce the volume on the sound processor or remove your headpiece.

Ultrasonic Sensors

Ultrasonic sensors, sometimes used in lighting sensors and security systems, will not damage your implant system; however, they may be picked up by the headpiece microphone and lead to distorted sound quality when you operate your sound processor in the immediate vicinity of such a sensor. To avoid hearing any unwanted sound, you should reduce the volume on your sound processor or remove your headpiece when passing near an ultrasonic sensor (e.g., in entrances to libraries).

X-ray Machines

X-ray machines will not damage your sound processor or implant, but may damage your headpiece microphone. Avoid placing any system microphones in any checked or carry-on baggage that is screened with X-ray. During airport security screenings, the sound processor and microphone should be worn through the metal detector or examined by hand.

Troubleshooting your Neptune System

If no sound is heard or the red LED is flashing once per second on the Neptune processor LED when the headpiece is in place over the implant, try the following troubleshooting steps:

1. Check that the sound processor is "on" and that program, volume, and sensitivity controls are set in the desired positions.

2. Visually inspect the cable for any damage or breakage and verify it is firmly attached to the headpiece and sound processor.

3. Remove any materials (hat, scarf, headband, etc.) that may be covering your microphone.

4. Unaided listeners may perform a listening check of the headpiece microphone as described in the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

5. Replace the cable.

6. Replace the headpiece.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics immediately for further assistance.

If no sound is heard or a solid red LED is indicated on the Neptune processor LED, try the following troubleshooting steps:

1. Depress and hold the 'on/off' button for at least 1 second to power down the sound processor.

2. Power on the Neptune processor again by depressing the 'on/off' button for at least 1 second.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics immediately for further assistance.

If static or distorted sounds are heard, try the following troubleshooting steps:

1. Remove any materials (hat, scarf, headband, etc.) that may be covering your microphone.

2. Visually inspect the cable for any damage or breakage. If any problems are noted, replace cable.

3. Verify that the cable is firmly attached to the headpiece and sound processor and that the headpiece is positioned properly on your head.

4. Verify that program, volume, and sensitivity controls are set in the desired positions.

5. If static or distorted sounds persist, replace the headpiece cable.

6. Visually inspect the headpiece microphone for signs of debris or wear. If available, replace the headpiece and/or headpiece Color Cap.

7. Clean the battery contacts on your processor or AAA battery.

8. Unaided listeners may perform a listening check of the headpiece microphone as described in the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics immediately for further assistance.

If sounds are muffled or distorted:

1. Confirm that no clothing or material is obstructing the microphone opening.

2. Repeat the troubleshooting steps listed above for when static is heard.

If sounds are muffled or distorted following submersion in pool or bath water:

1. Confirm that no clothing or material is obstructing the AquaMic microphone opening.

2. In water environment, remove AquaMic from head and gently shake to remove any water that may have settled in the microphone opening.

3. Outside of water environment and with headpiece off, remove AquaMic Color Cap and gently shake headpiece to remove any water that may have settled in the microphone opening. Take care when shaking. Place your finger over the magnet well to avoid dislodging and potentially losing any magnets.

4. Wipe the AquaMic surface with a soft cloth to absorb any additional moisture.

5. Visually inspect the cable for any damage or breakage. If any problems are noted, replace cable.

6. Verify that the cable is firmly attached to the headpiece and sound processor and that the headpiece is positioned properly on your head.

7. If muffled or distorted sounds persist, replace AquaMic with a dry headpiece and cable.

8. Place AquaMic and cable in your Zephyr by Dry & Store® or a similar desiccant device and allow to dry completely.

9. Visually inspect the AquaMic microphone for signs of debris or wear. If available, replace the AquaMic and/or AquaMic Color Cap.

10. Unaided listeners may perform a listening check of the headpiece microphone as described in the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics immediately for further assistance.

If the Neptune and/or AquaMic are accidentally exposed to sea or lake water:

1. Rinse parts with clean water.
2. Follow typical AquaMic post-submersion care instructions.
3. Place Neptune processor and AquaMic in your Zephyr by Dry & Store® or similar desiccant device and allow to dry completely.
4. If any problem is noted following drying, contact your clinician or Advanced Bionics for further assistance.

If moisture is noted within the Neptune battery compartment following water use:

1. Remove the AAA battery and wipe the Neptune battery compartment with a soft cloth to absorb any moisture. Replace the AAA battery if any signs of rust appear on its contacts.
2. Place Neptune processor in your Zephyr by Dry & Store or a similar desiccant device and allow to dry completely.
3. Visually inspect the Battery Cover for any damage or breakage. If any problems are noted, replace the Battery Cover prior to resuming use of your Neptune processor in water.
4. Visually inspect the battery seal for any tears or damage. If damage to the battery seal is suspected, contact Advanced Bionics for replacement prior to resuming water-related use.
5. If the problem continues, contact your clinician or Advanced Bionics for further assistance.

If the Neptune processor battery contacts appear to have rust forming on them:

1. Clean the contacts with a hearing aid brush or damp cloth or cotton swab.
2. Visually inspect the Battery Cover for any damage or breakage. If any problems are noted, replace the Battery Cover prior to resuming use of your Neptune processor in water.
3. Visually inspect the battery seal for any tears or damage. If damage to the battery seal is suspected, contact Advanced Bionics for replacement prior to resuming water-related use.
4. If the problem continues, contact your clinician or Advanced Bionics for further assistance.

If the Neptune sound processor does not power up:

1. Depress and hold the 'on/off' button for at least 1 second.

2. Verify that a charged AAA battery is in place.

3. Verify that the AAA battery is inserted correctly.

4. Remove the AAA battery; wait five (5) seconds; then replace the battery.

5. If the problem continues, contact your clinician or Advanced Bionics for further assistance.

If the Neptune Connect Sync Light indicates a solid red light:

1. Remove and re-attach the Neptune Connect.

2. Verify proper orientation of the header by aligning the circle on the underside of the Neptune Connect with the corresponding marking atop the Neptune processor.

3. If the solid red light persists following re-attachment of the Neptune Connect, power cycle the Neptune processor (i.e., depress and hold the 'on/off' button until the processor powers down; then, power on again by depressing and holding the 'on/off' button for at least 1 second).

4. If the problem continues, contact your clinician or Advanced Bionics for further assistance.

If you change the Neptune Connect program switch or volume/sensitivity dial position, and no change in sound is heard:

1. Check the Neptune Connect Sync Light.

    i. If flashing red, verify program and sensitivity settings are in your desired use positions. Turn volume dial all the way down counter-clockwise to "sync" the Neptune Connect and sound processor. The Sync Light should flash green once to indicate successful "syncing," and you may then adjust the volume control to the desired position.

    ii. If solid red, remove and re-attach the Neptune Connect.

    iii. If the Sync Light is not flashing, verify program positions and settings with your implant clinician to determine whether access to the volume and sensitivity controls have been "locked" in your program(s).

If no sound is heard with an FM or auxiliary audio device attached to the Neptune Connect:

1. Verify that the FM receiver and/or auxiliary audio device is attached firmly to the Neptune Connect.

2. Verify you are using a program which allows for auxiliary, or Aux, input to your Neptune system.

3. Verify the FM transmitter and/or external audio device are powered.

4. Verify your FM receiver has been programmed for use with your processor. You may need to consult with your FM professional.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics for further assistance.

Troubleshooting Neptune Indicator Lights

The Neptune LED is a programmable feature which provides diagnostic information regarding battery life, program setting, microphone function, or processor system status. Refer to the 'Understanding Neptune LEDs' section of the Instructions for Use for an explanation of the expected LED behavior(s).

If no lights appear:

1. Check that the LED is not obscured by the user's clothing, hair, and/or processor wearing device (e.g., pouch, harness, clip).

2. Verify that the battery is inserted properly within the processor.

3. Replace the battery.

4. Check that the processor is turned "on."

If green LED does not flash in response to loud sounds (programmable feature):

1. Confirm that this feature is enabled on your processor/program.

2. Verify that the battery is charged and is inserted properly within the processor.

3. Check sensitivity setting, or try increasing it slightly for assessment purposes only.

4. Try another program slot.

5. Unaided listeners may perform a listening check of the headpiece microphone as described in the 'Listening to the Microphone and FM Receiver' section of the Instructions for Use.

6. Try another audio source (such as an auxiliary microphone or MP3 player).

   a. You will need a program which accepts input from external audio sources.

   b. If the green LED flashes in response to input from an external audio device, place your processor and headpiece in your Zephyr by Dry & Store®. If the green LED still does not flash in response to loud sounds following a full drying cycle and when using your headpiece microphone and usual program settings, proceed to next step.

7. Replace the headpiece and/or cable.

During battery status check, no blink or only one orange blink is observed:

1. Verify that the battery is inserted properly within the processor.

2. Replace the AAA battery.

3. If there are no blinks after battery replacement, clean the contacts with a hearing aid brush or damp cloth or cotton swab.

4. If the problem continues, contact your clinician or Advanced Bionics for further assistance.

If the LED behaves differently following processor replacement or programming:

1. Verify with your implant clinician whether any program changes have been made which may affect LED behavior.

If these measures do not resolve the problem, contact your clinician or Advanced Bionics for further assistance.

Troubleshooting Neptune Audible Alarms
Audible alarms are a programmable feature which can be used independently or in conjunction with the Neptune LEDs to provide important information about system status and battery life. Refer to the 'Understanding Audible Alarms' section of the Instructions for Use for an explanation of the expected alarm behavior(s).

If no alarm is heard:

1. Remove the processor from beneath heavy clothing or any case or pouch in which it may be stored.

2. Verify that the battery is inserted properly within the processor.

3. Check that the processor is turned "on."

4. Replace the battery.

5. Verify with your implant clinician whether any program changes have been made which may affect alarm behavior.

⚠️ *Your processor or headpiece should be serviced only by AB. Do not attempt to open or repair the parts. Do not continue to use the processor or headpiece if any part of it is damaged. Unauthorized opening of the processor, headpiece, or other equipment, will void the warranty and may compromise system performance.*

Guidance and Manufacturer's Declaration

Per IEC 60601-1-2

Table 7: Guidance and Manufacturer's Declaration-Electromagnetic emissions

Guidance and manufacturer's declaration –electromagnetic emissions		
The Neptune system is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune system should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The Neptune system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The Neptune system is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

Guidance and manufacturer's declaration – electromagnetic immunity			
The Neptune system is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune system should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level[a]	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Power frequency (50/60 Hz) Magnetic Field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the Neptune system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1.2\sqrt{P}$ < 800 MHz $d = 2.3\sqrt{P}$ ≥ 800 MHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[b] should be less than the compliance level in each frequency range.[c] Interference may occur in the vicinity of equipment marked with the following symbol:

Note 1: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

a. Essential performance of the Neptune system per IEC 60601 requirements is defined as auditory stimulation within safe amplitudes.

b. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Neptune system is used exceeds the applicable RF compliance level above, the Neptune systems should be observed to verify normal operation.

c. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 9: Guidance and Manufacturer's Declaration- Separation distances between RF communications equipment and Neptune system

Recommended separation distances between portable and mobile RF communications equipment and the Neptune system		
The Neptune system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Neptune system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Neptune system as recommended below, according to the maximum output power of the communications equipment.		
Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)	
	$d = 1.2\sqrt{P}$ **< 800 MHz**	$d = 2.3\sqrt{P}$ **≥ 800 MHz**
0.01	0.12	0.23
0.1	0.38	0.73
1	1.2	2.3
10	3.8	7.3
100	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Table 10: Neptune External Equipment and Accessories

The following table details the Neptune processor and its compatible hardware parts with the corresponding Advanced Bionics model number. Advanced Bionics supplies a range of accessories for use with the Neptune processor, although not all accessories may be included in your sound processor kit or listed here. For additional information regarding the Neptune processor or its accessory parts, contact your clinician or Advanced Bionics.

Model Number	Description
CI-5240-00X	Neptune Sound Processor
CI-5241-XXX	Neptune Connect
CI-5305	Universal Headpiece (UHP)
CI-5306	AquaMic
CI-5413-XXX	Neptune Cable for UHP
CI-5414-XXX	Neptune Cable for AquaMic
CI-7125-XXX	UHP Color Cap
CI-7127-XXX	AquaMic Color Cap
CI-7126-XXX	Neptune Covers
CI-7314	Neptune Clip

Note: The *Xs* denote model number variants related to product color and/or length.

Performance Data

The HiRes 90K implant with HiFocus Electrode and Neptune Processor support the HiResolution family of sound processing strategies including HiRes, HiRes with Fidelity 120 (HiRes 120), and ClearVoice.

HiRes and HiRes 120 Sound Processing

A clinical study was conducted in 50 adults implanted with a CII/HiRes 90K device who used a Harmony processor to document the benefits of HiRes 120 and HiRes sound processing. Performance with HiRes was assessed at the baseline visit and compared with HiRes 120 performance after three months of listening experience. Subsequently, subjects were refit and retested with HiRes. Results showed equivalent mean CNC word recognition scores for the two strategies. The mean HINT sentence perception scores in quiet and noise were significantly higher for HiRes 120 compared to baseline with HiRes. For HINT sentences in noise, the mean scores for HiRes 120 were significantly higher than scores after subjects were refit with HiRes.

Table 1

Mean Speech Scores for HiRes and HiRes 120

	HiRes	HiRes 120	HiRes
	Baseline	3 Months	3 Months
CNC Words	63	65	63
HINT Sentences in Quiet	88	93*	91
Hint Sentences in Noise (+8 dB SNR)	64	70**	65

* HiRes 120 score significantly different from baseline HiRes score (p<.05)
** HiRes 120 score significantly different from baseline and 3-month HiRes scores (p<.05)

Forty-three of 50 subjects (86%) preferred HiRes 120 over HiRes. Subjects rated strength of preference for the two strategies on a scale from 1 (weak preference) to 10 (strong preference). The mean strength of preference for the 43 subjects who preferred HiRes 120 was 7.9 (range: 1-10). The strength of preference was rated as 8 or higher by 26 of the 43 subjects, and 16 of the 43 subjects rated their preference as 10 (strong preference). For the 7 subjects who preferred HiRes, the mean strength of preference was 4.4 (range: 1-9).

ClearVoice

A clinical study was conducted in 46 adults who had at least six months experience with HiRes 120 sound processing and at least moderate speech perception abilities to investigate the benefits of ClearVoice. ClearVoice has three adaptive gain settings that allow individuals to select the setting that provides the best hearing—Low, Medium, and High. A two-week randomized, crossover design was used to evaluate

ClearVoice-Medium and ClearVoice-High. ClearVoice-Low was evaluated acutely during an initial test session. Speech benefit was compared for ClearVoice vs. HiRes 120 without ClearVoice (Control) using the AzBio sentence test.

Speech understanding in speech-spectrum noise was significantly better with ClearVoice- Medium and ClearVoice-High compared to the Control (p < .0001). ClearVoice-Medium significantly improved speech understanding in multi-talker babble (p< .02). Speech understanding was no worse than the Control when listening in quiet for both ClearVoice Medium and ClearVoice High (p < .0001). Speech understanding with ClearVoice-Low was no worse than the Control in quiet, in speech-spectrum noise, and in multi-talker babble (p <.001).

Table 2

Mean AzBio Sentence Scores for HiRes 120 with and without ClearVoice

	Control	ClearVoice Low	Control	ClearVoice Medium	Control	ClearVoice High
Quiet	87.3	87.8	88.6	88.3	86.8	87.7
Speech-Spectrum Noise	48.0	55.6	49.5	58.2	47.7	58.3
Multi-Talker Babble	42.8	47.2	44.9	48.1	44.9	46.2

Preference ratings indicated that 42 out of 45 subjects (93%) preferred ClearVoice to the Control for everyday listening (one subject did not complete the questionnaire). The mean strength of preference for the 42 subjects who preferred ClearVoice was 7.9 (1 = weak preference, 10 = strong preference). Of the 42 subjects preferring ClearVoice, 22 indicated they would use it all of the time, 17 indicated they would use it most of the time, and 3 indicated they would use it some of the time. Of the 3 subjects preferring the Control, all indicated they would use ClearVoice some of the time.

ClearVoice is not approved for pediatric use in the United States.

ClearVoice is only available in markets where ClearVoice has received regulatory approval. Contact Advanced Bionics for more information.

Compatibility

The following tables display the compatibility between products in the HiResolution Bionic Ear System family and/or previous generation product.

Table 1

Processor Type	Implant Type			
		C1	CII	HiRes 90K
	Neptune	-	✓[1]	✓[1]
	Harmony	✓[2]	✓[3]	✓[3]
	Auria	-	✓	✓
	Platinum Sound Processor (PSP)	✓[4]	✓	✓

[1] Requires SoundWave 2.1 or later
[2] Requires SoundWave 2.0 or later
[3] Requires SoundWave 1.4 or later
[4] Requires SClin2000

Table 2

Software Type/Version	Implant Type			
		C1	CII	HiRes 90K
	SClin2000	✓	✓	-
	SoundWave (versions 1.x)	-	✓	✓
	SoundWave 2.0	✓[1]	✓	✓
	SoundWave 2.1	✓[1]	✓	✓

[1] Only on Harmony

Table 3

Headpiece Type	Processor Type			
		Neptune	Harmony	Auria	PSP
	Universal Headpiece (UHP)	✓	✓	✓	✓
	AquaMic	✓	-	-	-
	HR 90K Auria Headpiece	-	✓	✓	-
	Platinum Headpiece	-	✓	✓	✓

Contact Us

Advanced Bionics is committed to providing the highest quality products and service to our customers. We welcome your comments regarding the Neptune sound processor system or your suggestions to improve our products. Please feel free to contact AB or discuss your suggestions with your implant professional.

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