ExSilent Q - Reader

This reader has been put together as a reference document for instructors of audiologists or dispensers who will be working with the ExSilent Q hearing aid. It can also be used as a reference document by the audiologists or dispensers in the shop. It contains a detailed explanation and information on how to use and fit the ExSilent Q hearing aid and the QFit software version 2.0. The reader also serves as the dispenser's manual.

Index

General

END USER PACKAGING CONTENTS

The packaging of the material to be delivered to the end user contains:

- 1 or 2 sealed bags containing the Q module (in accordance with the number of devices used by the consumer).
- 1 user manual.
- 1 storage box for the devices.
- 1 or 2 sealed bag containing 3 soft tips in 3 different sizes[1].
- 1 CD containing the user's manual and instruction animations for extra support.
- 1 sealed bag containing 2 protective caps**Fout! Bladwijzer niet gedefinieerd.** in 2 colours to identify left and right aid.

N.B.: The packaging of the module(s) containing the label with the product information is to be handed out together with the end user packaging. The end user needs to be in possession of the product information. Write down the serial numbers and the date of purchase on the appropriate page in the user manual.

REQUIRED MATERIALS TO CHECK FITTING SUITABILITY

- Q dummy
- Q soft tip (S, M, L and XL size)
- Cell battery type 10
- Insertion crème or gel

REQUIRED EQUIPMENT FOR FITTING PURPOSES

- QFit fitting software
- Noah software (preferably v.3.6 or newer).
  When using QFit as stand alone version, a proprietary local client database is included.
- 4 pin CS44 cable with straight connector to connect the device to the programming interface.
- Cell battery type 10
- Insertion crème or gel (if required)

[1] A fourth size soft tip, Extra Large (XL), is available but not present in the end user package.

Introduction

ExSilent Q is a modular CIC (Completely In the Canal) hearing aid that can be worn (almost) invisibly and does not require an ear impression.

Because of its modular design the hearing aid is the same for each person and each ear. It fits in the ear using a standard soft tip which is supplied in various sizes. By using the soft tip, no ear impression is necessary and the user can test a hearing aid and start using it on the spot.

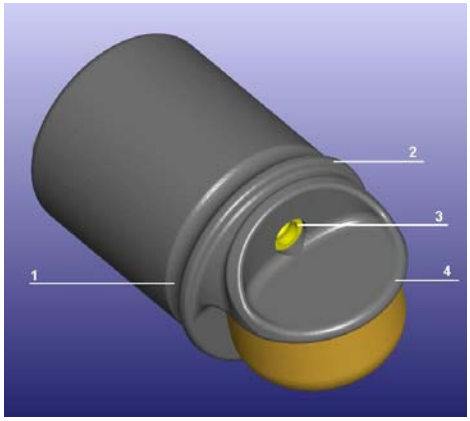
The innovative design of Q ensures that hardly any occlusion effect is experienced and that cerumen (earwax) penetration in the aid is almost impossible.

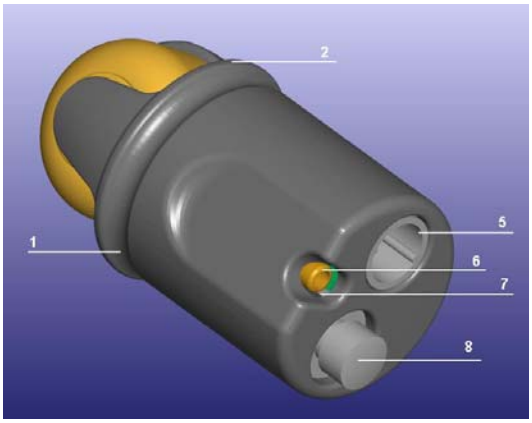
The advantages summarized:

- can be worn (almost) invisibly
- hardly any occlusion
- can be worn during exercise
- can be tested on the spot
- high sound quality
- fewer repairs due to protection against cerumen**Fout! Bladwijzer niet gedefinieerd.**

Chapter 1 - Structure of Q

THE MODULE:

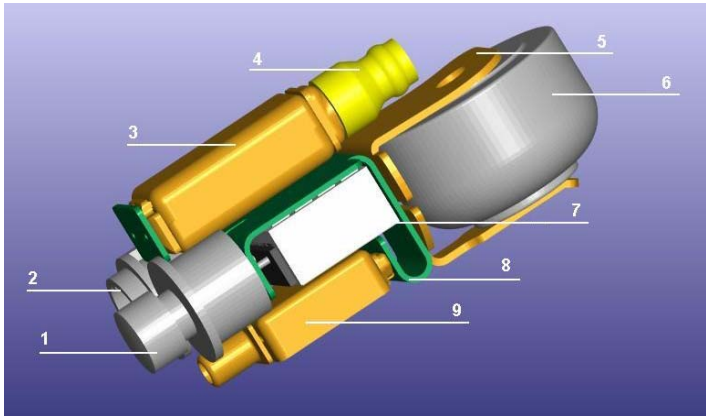




1. Seal groove
2. Seal rim
3. Receiver opening (sealing sleeve is visible)
4. Oval-shaped seal rim
5. Program contact (CS44 socket)
6. Microphone
7. Ventilation opening (provides air for battery)
8. Push button (to operate the memories)

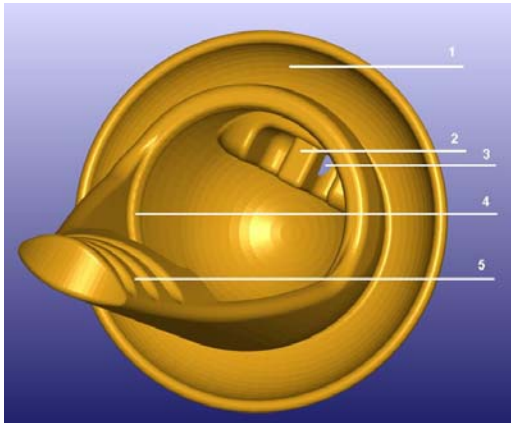
The oval-shaped seal rim fits into the soft tip to ensure that the receiver is acoustically sealed off from the rest of the hearing aid to prevent feedback.

Module - inner section:



1. Push button (to operate the memories)
2. Program contact (CS44 socket)
3. Receiver
4. Sealing sleeve
5. Battery contact
6. Battery
7. Microchip
8. Flexible PCB (Printed Circuit Board)
9. Microphone

THE SOFT TIP



1. Dome
2. Shield in front of receiver to prevent penetration of ear wax
3. Sound opening (ear drum side)
4. Seal edge on the inner side of the soft tip
5. Pull cord

The soft tip is made of strong, flexible plastic. The Q module is placed in the soft tip. The pull cord of the soft tip is located behind the Tragus so that it is hardly noticeable. Soft tips are supplied in various standard sizes. The Q soft tip has either one dome (size small) or two (all other sizes).
All soft tips have a **Cerumen Protection System** that prevents earwax from penetrating the module which could damage the receiver. The Cerumen Protection System is made up of a shield located in front of the receiver when the module is inserted in the soft tip. This shield, around which the sound is directed, prevents ear wax from penetrating directly into the receiver.

N.B.:

- It is **not possible** to use the Q module without the soft tip, even if the ear canal is very small! It is the Q module **combined** with the Q soft tip that constitutes the Q hearing aid.

- **Never** insert the module in the soft tip without a battery fitted. Without the battery, the round end of the soft tip can become indented when in the ear which can cause fitting problems. When connected to the programmer, this can also cause unpredictable sound quality issues.

Chapter 2 - Installation of QFit v.2.0

Required hardware:

- Computer with Windows XP or Vista (32-bits) operating system. QFit2.0 is not suitable for Windows 7, Windows 2000 and Windows Vista 64-bits platforms.
- QFit v.2.0 fitting software (on CD or via download)

The QFit v.2.0 fitting software can be used for 'stand-alone' installation and for installation in Noah. The stand-alone installation software has its own customer database. QFit2.0 is Noah-Link compatible.

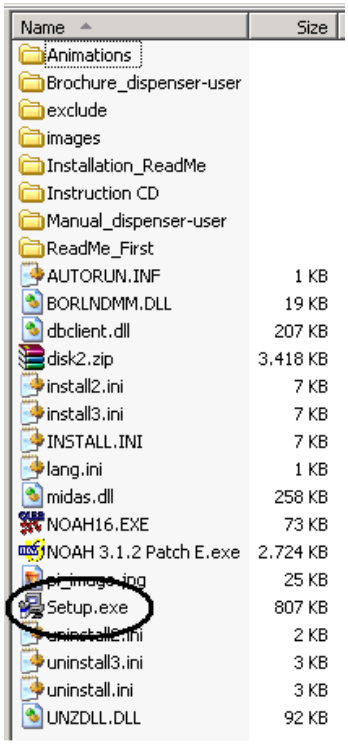
STAND-ALONE INSTALLATION

Installation from the CD

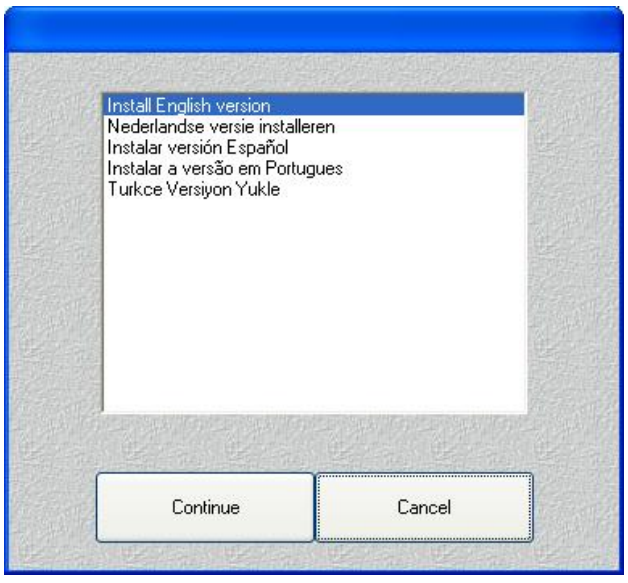
If the CD is used for installation, it will normally start automatically. If the CD does not start automatically, or if the installation is done using a downloaded version of QFit, select the file 'Setup.exe' on the QFit CD and start the installation by double clicking on this file (see image below on the left – the exact composition of the file list and the file size can differ from the version used).

Installation via a download link

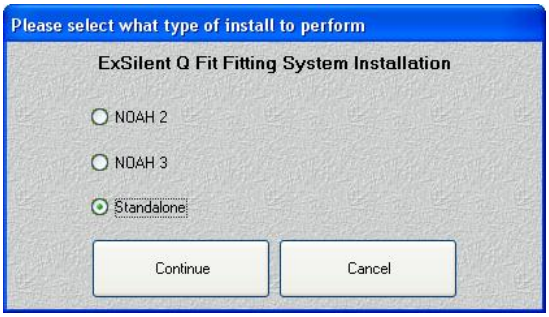
Open the downloaded *.zip file in a new (temporary) folder on the pc where you can install the QFit stand-alone software. Then follow the instructions above (‘Installation from the CD’).



The language option screen is then displayed (the appearance can differ from the version used):



In the next step, select stand-alone installation:

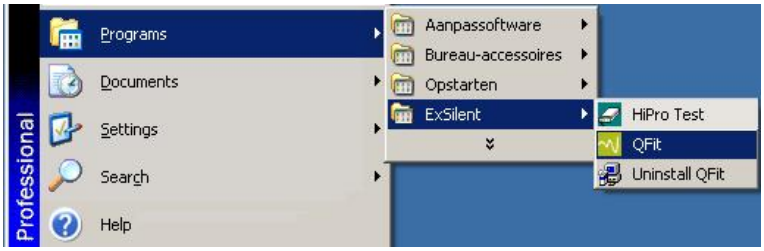


During stand alone installation of QFit v.2.0, depending on language versions, the following window will appear:

If it is not possible to install QFit in non-English Window versions, replace the text of the path 'C:\Program Files\ExSilent' by the path name of the according Windows version. E.g.: in Spanish Windows versions: 'C:\Archivos de Programa\ExSilent'.

At the end of the installation procedure click on 'OK' and the installation will be finalized.

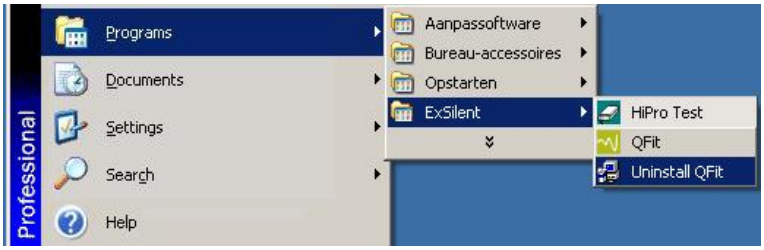
During installation, a shortcut: is placed on the desktop and a folder called 'ExSilent' is added to the list of programs in Windows.



N.b.: In new updates of the stand-alone version, all customer data remain unchanged.

Removing the stand-alone version

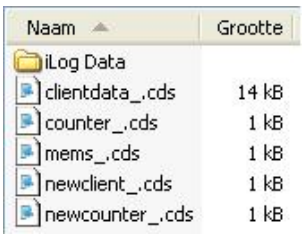
Remove QFit by using the uninstall option in the menu list:
N.b.: This deletes all customer data!



Also remove the (empty) folder: c:\Program Files\ExSilent.

Making a back up of customer data

Go to the folder: C:\Documents and Settings\<*user*>\Application Data\ExSilent , copy the files: 'clientdata_.cds', 'counter_.cds', 'mems_.cds', 'newclient_.cds', and 'newcounter_.cds' and the 'iLog Data' folder (file size can differ):

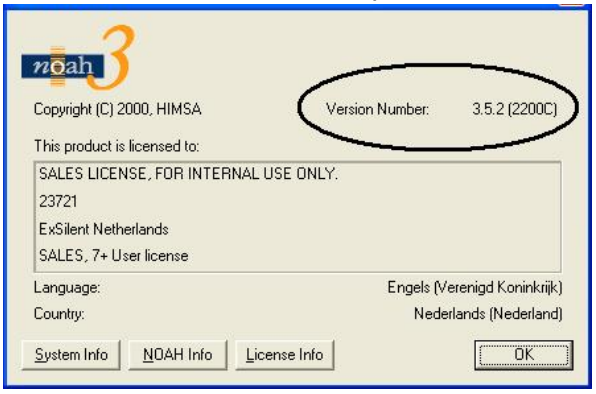


NOAH INSTALLATION

Determine the version number of Noah

Because QFit in Noah version 3.6 and higher is installed differently to older versions, it is important to know what the correct version number is. The Noah version number can be found here (the names below can differ in other language versions):

- Start Noah
- Go to the 'Help' menu.
- Select menu option 'About NOAH'. In the example below, the version number is 3.5.2.

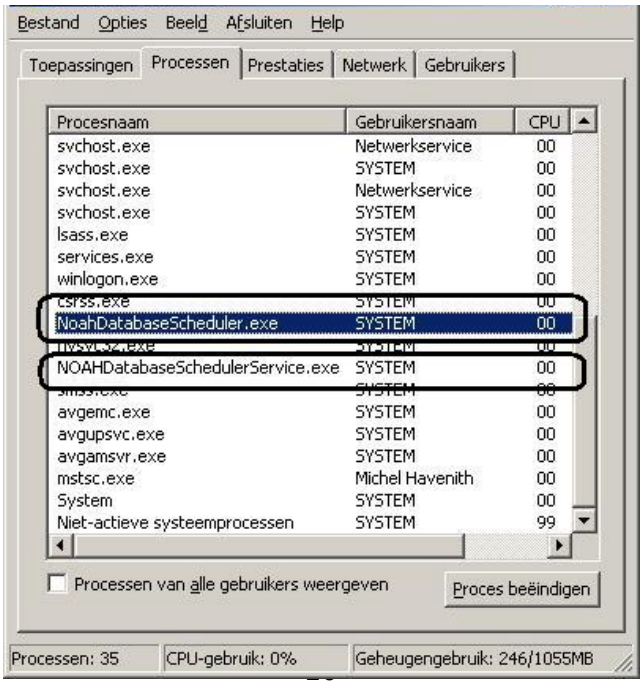


QFit installation in Noah version 3.5.2 and older

(Also refer to the file 'Noah Upgrader Tool_ReadMe.pdf' in the folder 'Installation_ReadMe' on the QFit CD). QFit can be installed directly in Noah 3.6 (see below). For installation in Noah versions 3.5.2 and older, the Himsa 'Upgrader Tool' ('NoahServerGlobobUpdater.exe') has to be used first. This tool updates the Globob.stg file automatically.

Note: This step is only necessary for the **first** QFit installation. If a QFit installation has already been carried out, **no** update needs to be done. For the Noah stand-alone version: use the Upgrader Tool on the stand-alone pc (the client).

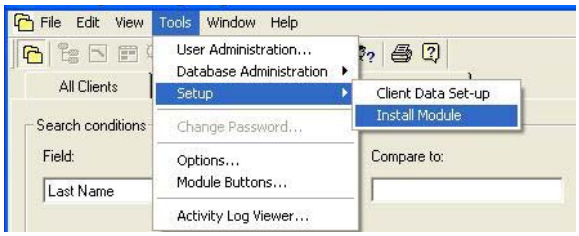
- For the Noah network version: use the Noah Upgrader Tool **only** on the server.
- Close all active Noah programs.
- Check after closing Noah if any background processes are active by going to the Windows Task Manager (press Ctr+Alt+Del).



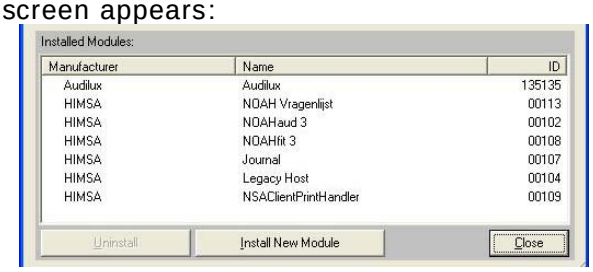
- Select the tab option 'Processes' and shut down ***all*** processes related to Noah (Process Name starting with Noah* or NOAH*).
- After all Noah processes have been shut down, copy the file 'NoahServerGlobobUpdater.exe' to the computer's hard drive and activate the program by either double clicking on it or selecting 'Run' and 'Browse...' in the Windows Start Menu, searching for 'NoahServerGlobobUpdater.exe' and clicking on Ok.
- Continue with the installation of QFit as normal (see paragraph: *'QFit installation in Noah version 3.6'* below).
- N.B.: the background processes that were shut down (incl. back up processes) will be reactivated when you restart your computer.

QFit installation in Noah version 3.6

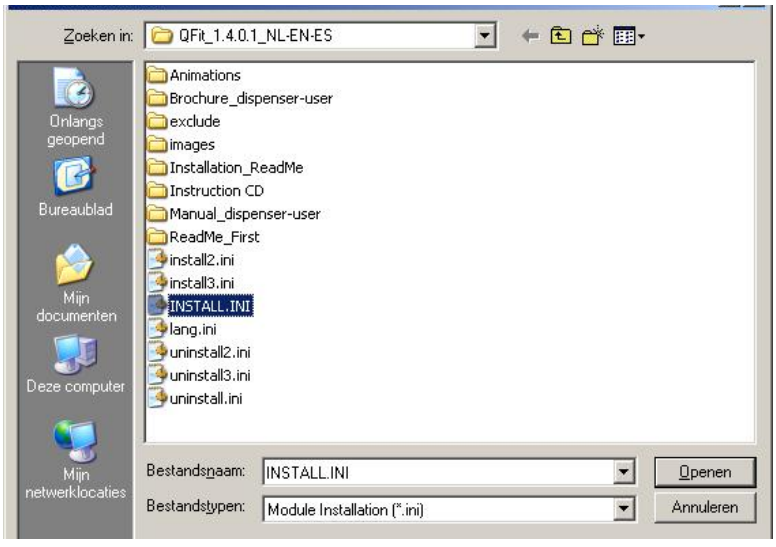
Installation of the QFit software in Noah is carried out us usual in Noah. Insert the CD-rom in the CD drive of your pc. In the Noah 'Customer register' select the tab option 'Tools', 'Setup' and 'Install module'.



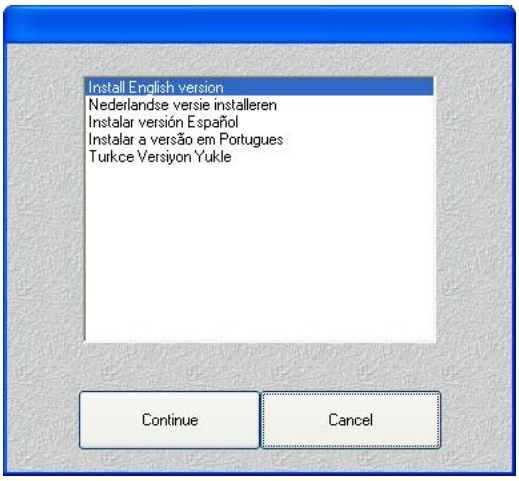
The 'Installation module' screen appears:



Click on 'Install new module'. Then search for the location of the QFit CD, select the file 'INSTALL.INI' (N.B.: if present, select the version in capital letters) and follow the instructions:



The language option screen is then displayed (these options can differ from the version used):



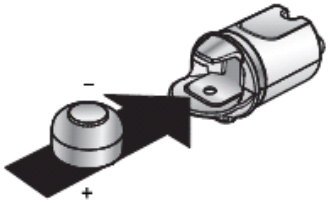
Follow the instructions on the screen to complete the installation.

Chapter 4 - Handling Q

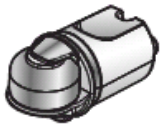
INSERTING THE BATTERY

Necessary hardware:

- Q module
- Q soft tip
- Battery - type 10 (yellow sticker). Remove the sticker first.



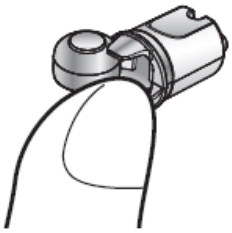
- Hold the module in a horizontal position: the small battery contact should point upwards and the large battery contact should point downwards.
- Take the battery in the other hand: the large flat side of the battery (+ pole) should point downwards.



- Insert the battery between the module battery contacts: The flat battery side should touch the large battery contact.

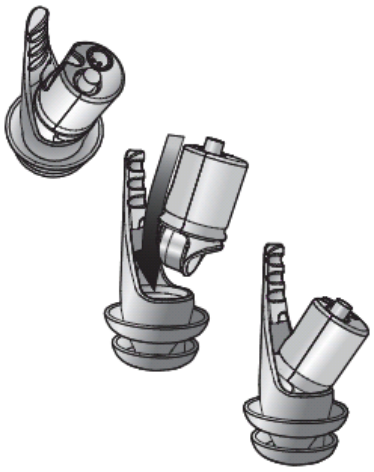
N.b.: Also refer to the animations on the instruction mini-CD. See Chapter Installation of the animations: '[Instruction animations for using Q]'.

REMOVING THE BATTERY



- Hold the module in a horizontal position and remove the battery with your finger.

INSERTING THE MODULE IN THE SOFT TIP



- Hold the soft tip with the pull cord pointing upwards.
- Take the module in the other hand: the module should point downwards, the small battery contact should point towards the pull cord. The flat side of the module (with the serial number on it) should also face the pull cord.
- Insert the module by tilting it into the soft tip.

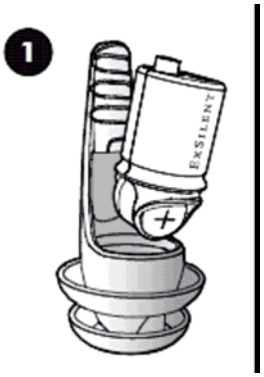
- Holding on to the module, pull the cord upwards to make sure that the module is inserted deep enough into the soft tip.

N.b.: Also refer to the animations on the instruction mini-CD. See Chapter 2: 'Installing the animations', '[Instruction animations for using Q]'.

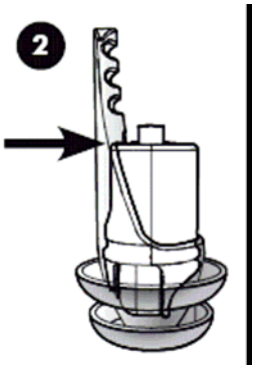
CHECKS

Check the following points to ensure that the module has been inserted in the soft tip correctly:

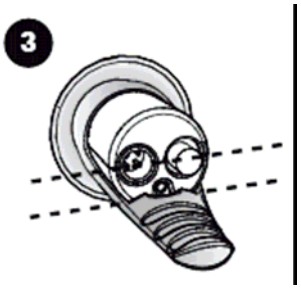
1 The module is orientated correctly if inserted as in the image: The flat side with the serial number and the battery facing towards the pull cord, the ExSilent brand name facing away from the pull cord:



2 The top of the flat side of the module should fall just under the last ridge of the pull cord:



3 An imaginary line running between the connector and the push button should be parallel to the pull cord:



4 The edge of the soft tip should fit over the groove around the module. If they both fit together, a dark contact stripe will be visible around the module:

If one or more of these points are not carried out correctly, the sound quality or the fit in the ear may not be optimal and the aid can whistle (give feedback). If this happens, hold the soft tip and turn and/or push the module into the correct position or remove the module and reinsert it in the soft tip.

REMOVING THE MODULE FROM THE SOFT TIP

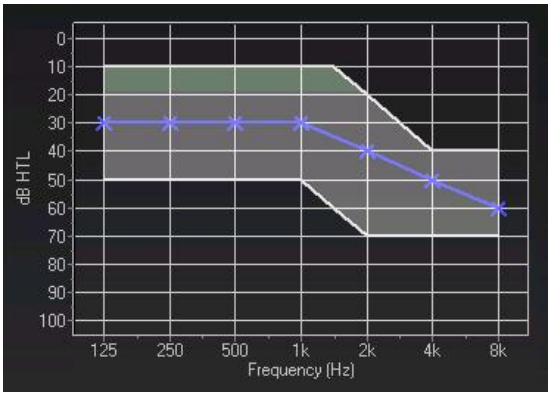
- Grasp the module firmly in one hand and pull the cord downwards using the other hand.

N.b.: Also refer to the animations on the instruction mini-CD. See Chapter 2: 'Installing the animations', '[Instruction animations for using Q]'.

Chapter 5 - Preparing for fitting - Hardware

SELECTION CRITERIA FOR POTENTIAL CUSTOMERS (PREVIOUS TO FIRST FITTING)

- Check if the audiogram of the patient is within the fitting range of the Q:



- Check with the dummy and smallest size soft tip if the minimum physical ear canal size is being met.
- Check the dexterity and the eyesight of the patient to see if he/she can handle:
    - Exchange of the 10-battery.
    - Exchange of the disposable soft tip.
    - Correct placement of the Q in the ear canal.

CHOICE OF SOFT TIP

Before fitting a Q, the dispenser must verify if a physical fitting of Q is possible for the end user. For this it is necessary to establish the correct soft tip size. The choice of soft tip can be carried out by using either a Q module or a Q dummy module (Note: **always use a battery!**). If no battery is used, the inner ear end of the soft tip might deform in the ear canal which could lead to whistling or blocking of the sound.

Unless it is obvious that the user will require a large or small soft tip, it is best to try a **medium soft tip** first. The majority of customers use a medium soft tip. When selecting the soft tip, use a Q dummy or a Q **without** the HiPro cable connected.

Should the Q often produce whistling (feedback) during initial fitting, please check the sealing and whether a larger type soft tip should be considered. If the device is annoyingly squeezing the ear or has a very shallow fit, a smaller type soft tip should be considered (allow the device for slightly protruding from the ear). Please take into consideration that after being worn for some days, the device causes the ear canal to slightly 'stretch', as a result of which a soft tip fitting precisely at the beginning might prove too small after all.

Soft tip too big

If the hearing aid is too tight or doesn't fit deep enough into the ear canal (see: 'Position of Q in the ear', below), a smaller size is perhaps needed, though it is acceptable for the aid to protrude out of the ear a little. Bare in mind that after a few days the ear canal will 'stretch' slightly so that a soft tip that seemed to just fit, may later appear to be too small!

Soft tip too small

If a soft tip can be inserted and removed from the ear canal very easily, consider a larger size soft tip, even when the fit feels ok during a first try. Should the Q often produce whistling (feedback) during initial fitting, this could mean the sealing is insufficient and a larger type soft

tip is required. Always make sure that the soft tip is **completely seals off** the ear canal because otherwise the chance of feedback will be greater.

If you are in any doubt after the first fitting, always provide the end user with another soft tip in a different size (available in the user package) so that if the user is not happy with the first one after a few days, he or she can try the other soft tip if necessary.

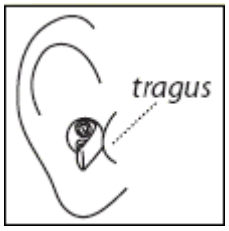
Inserting Q in the ear

Stand **behind the customer** and using your forefinger, press on the flat side of the aid (the side with the push button). Left aid with the left hand, right aid with the right hand.

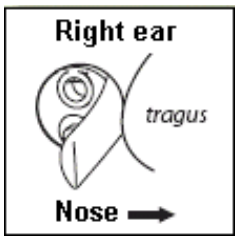
Because some ears may be somewhat 'dry', new soft tips can give a little friction when inserted for the first time. Also, when choosing the correct size of soft tip, the Q or dummy Q sometimes might be inserted a number of times in the ear. For these reasons it can help to use a little **lubricant** crème or gel.
N.B: Take care that the lubricant does not block the sound opening if a fitting is made later on using this soft tip.

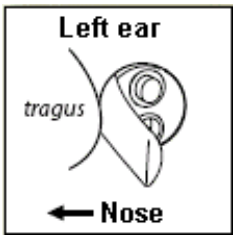
Warning message:
It is not possible to use the Q module without the soft tip, even if the ear canal is very small! It is the Q module combined with the Q soft tip that constitutes the Q hearing aid.

Position of the pull cord



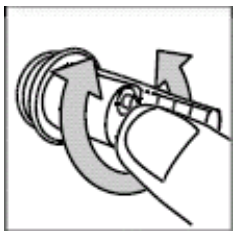
- Place the aid and the soft tip quite loosely in the ear to begin with. The end with the groove (or star) inwards…





- … and the pull cord **behind the Tragus.**

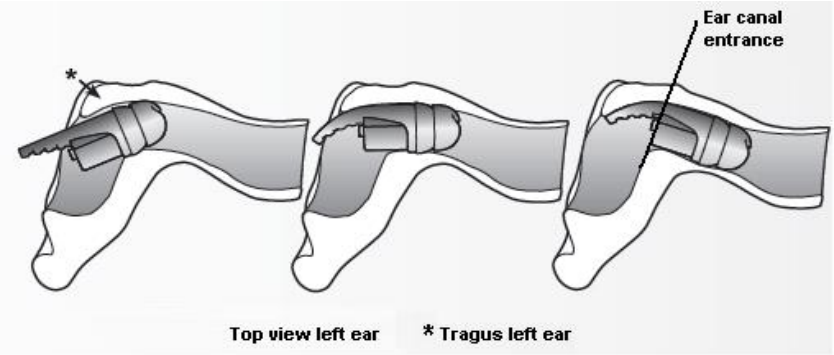
Inserting the Q



- Now insert the hearing aid deep into the ear by pressing down on the flat end of the aid (with the push button) using a small circular movement. 'Massage' the aid gently into the ear.
- Asking the user to open his or her mouth wide open can make the procedure easier. Pulling the auricle up and back can also help.

Bend in the ear canal

Sometimes there is a **bend** in the ear canal and the aid needs to be tilted over this during insertion: in that case the Q should be inserted with the battery side directed towards the nose first, subsequently changing direction of the battery side during the insertion towards the back of the head. In this way, the Q will follow the shape of the ear canal.



N.b.: Also refer to the animation on the instruction mini-CD. See Chapter 2: 'Installing the animations', '[Instruction animations for using Q](#)'.

Position of Q in the ear

In the **ideal position** after insertion, the flat side of the module (where the push button is) should be level with the entrance of the ear canal (see picture above). If the ear canal is smaller it is possible that the aid will protrude slightly. However, this should not be a problem as long as it remains well inserted in the ear. The domes of the soft tip will provide a firm grip in the ear, even during sporting activities. After inserting Q in the ear, the pull cord is situated behind the tragus, where it will be invisible or almost invisible.

To achieve the best results and the best fit, it is important that Q is inserted **as far as possible** in the ear. It is impossible to insert Q 'too deeply'.

Pull cord sticks out

A cord that sticks out can be cut to the right length. Leave at least one rib to grasp the cord.

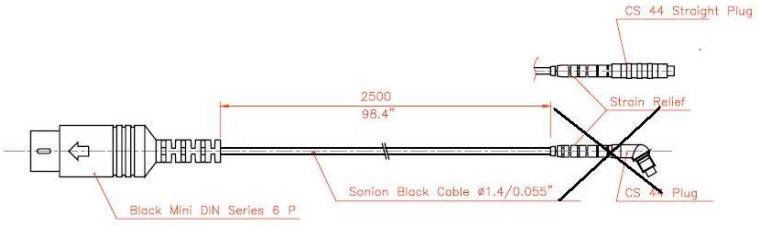
Removing Q from the ear

Grasp the pull cord and pull the aid – slowly at all times – out of the ear.

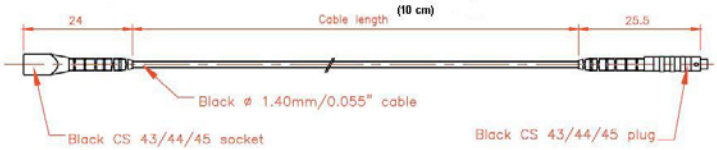
CONNECTING THE Q MODULE

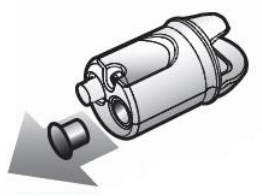
Necessary extra hardware:

- HiPro cable CS44 with straight plug, ...

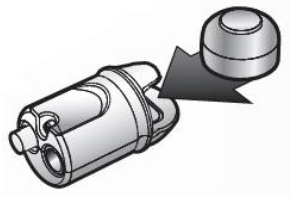


- or a CS44 CIC adaptor cable with **straight** plug, for use on CS44 HiPro cables with angled connectors, such as 'Connexx'.





- Only necessary for aids that have already been programmed: Remove the plug from the program contact.



- Place the battery in the module. The battery is not needed as a power supply, but it must be used to retain the shape of the soft tip.

- Insert the CS44 cable (with the **straight** plug!) in the program contact of the module.

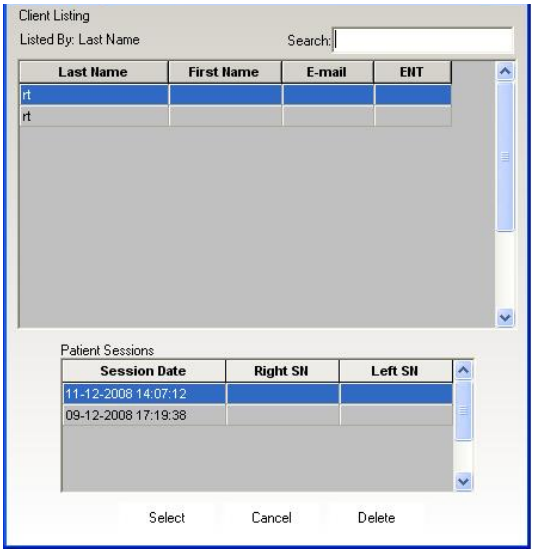
Chapter 6 - Preparing for fitting - Software

STARTING QFIT 2.0

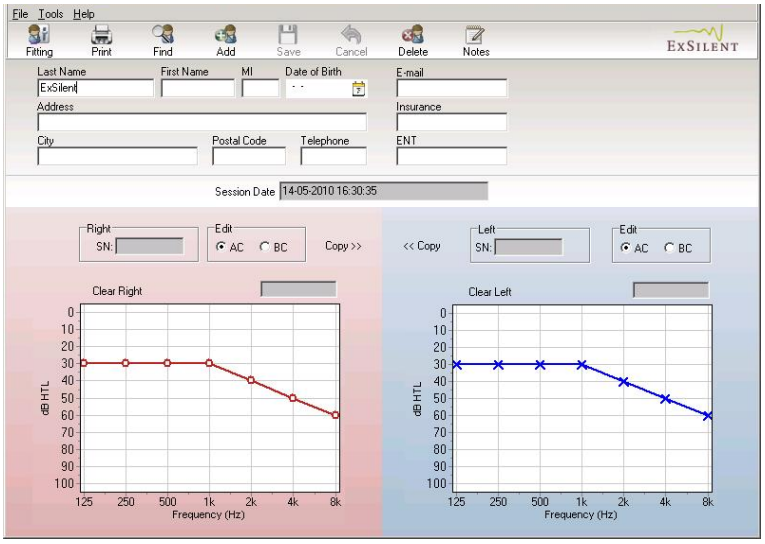
The QFit software can be installed stand alone, or in Noah. Both options are outlined below. QFit 2.0 is suitable for Noah Link.

Start QFit stand-alone

When opening QFit by activating the desktop icon after one client has been entered, the **Client Listing** will appear:

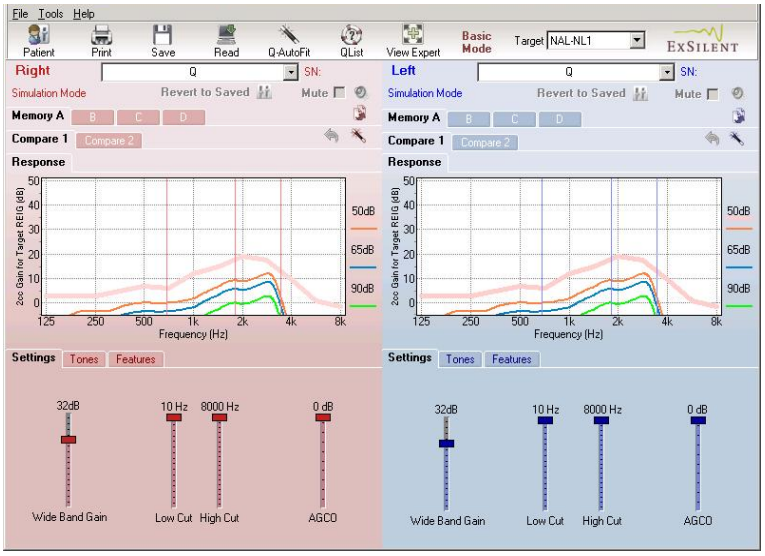


If the client has been selected, the **client screen** will be displayed:



After entering user data and audiogram values, click ‘Save’ and use the ‘Fitting’ button in the top left corner of the client screen (only visible in stand-alone install) to go to the Fitting screen. Any connected devices will be **detected and read automatically**.

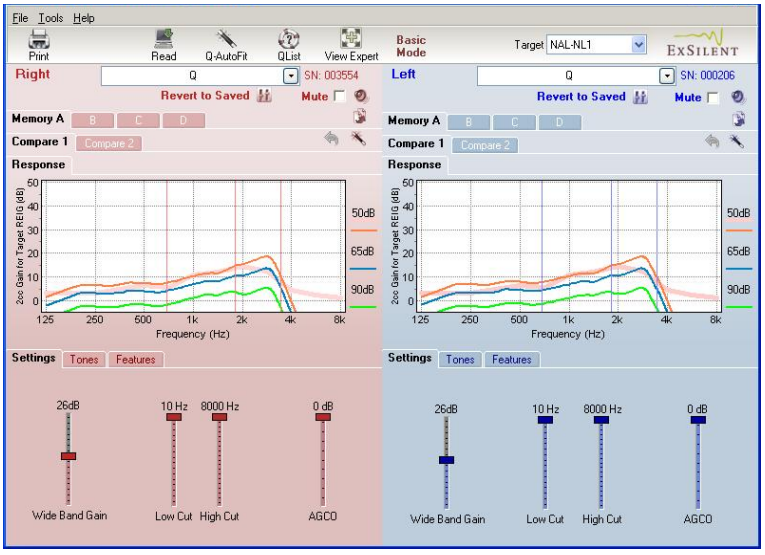
If **two devices** (left, right) are connected, QFit will detect, open and read the corresponding products in the **Fitting screen**:



The QFit **Fitting screen** opens in **Basic Mode** by default and is divided in a red (right ear) and blue (left ear) section. For details about the Fitting Screen, see chapter: **'The QFit software in detail'.** See chapter **'Device Selection'** in case only **one** or **no** devices ('Simulation Mode') are connected.

Start QFit in Noah

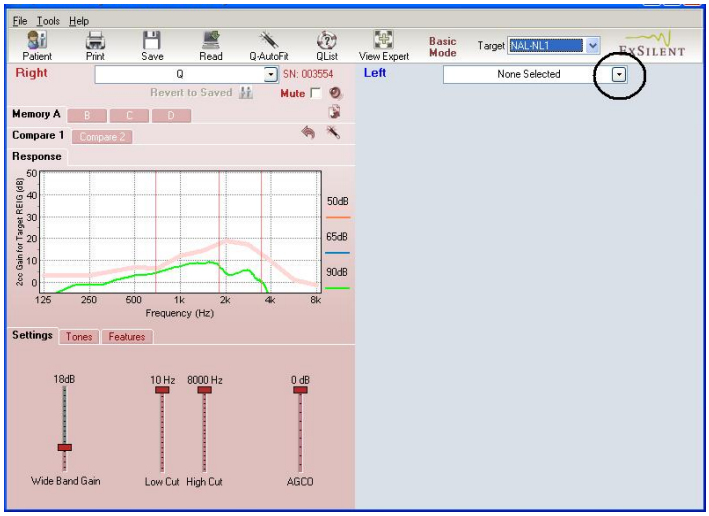
In the Noah 'Client Register' a new client session can be created or an existing client session can be opened. Start QFit by clicking the 'Open Module Selection' button:  and then double clicking on the ExSilent symbol:  N.B.: after saving one QFit session, you can go directly to QFit using the button 'Open Fitting Module'  . The QFit **Fitting screen** will be displayed:



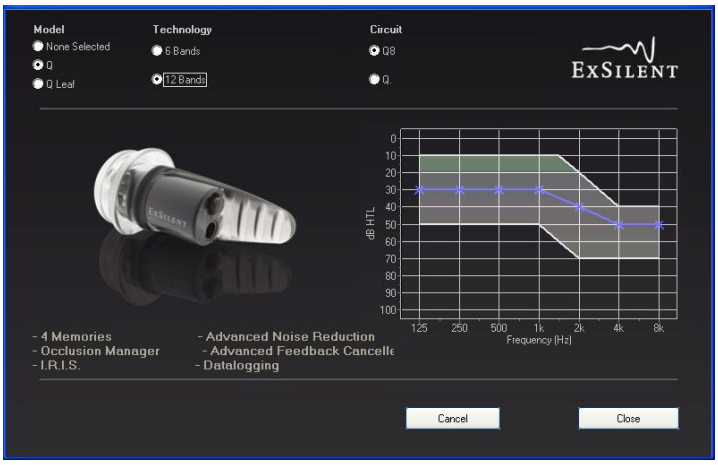
The QFit Fitting screen opens in **Basic Mode** by default and is divided in a red (right ear) and blue (left ear) section. When a client session is opened, any connected devices will **automatically be detected** and read. For details about the Fitting Screen, see chapter: **'The QFit software in detail'.** See chapter **'Device Selection'** below in case only **one** or **no** devices ('Simulation Mode') are connected.

Device selection

If **one device** is connected when going to the fitting screen, only the connected side will appear (the 'Patient' button  in the top left corner is only visible in a stand alone install). The opposite side will be blank. If necessary, use the arrow button next to the List Box to select the product for the other ear:

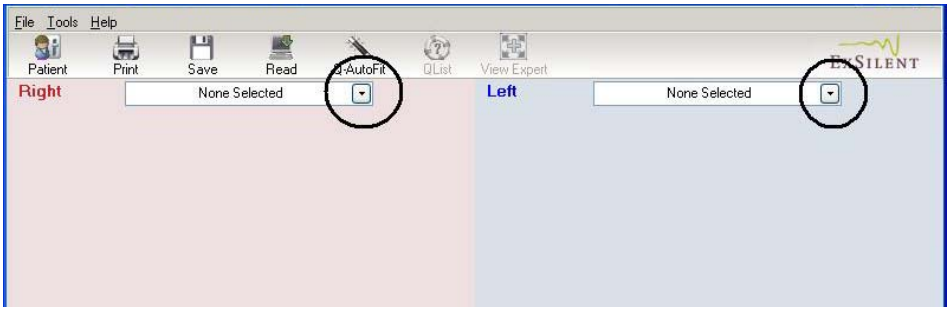


Using the arrow button will open the **Selection screen:**



Next, make a product selection (upper section) and activate 'Close'. This will bring you automatically back to the Fitting screen to continue the fitting process.

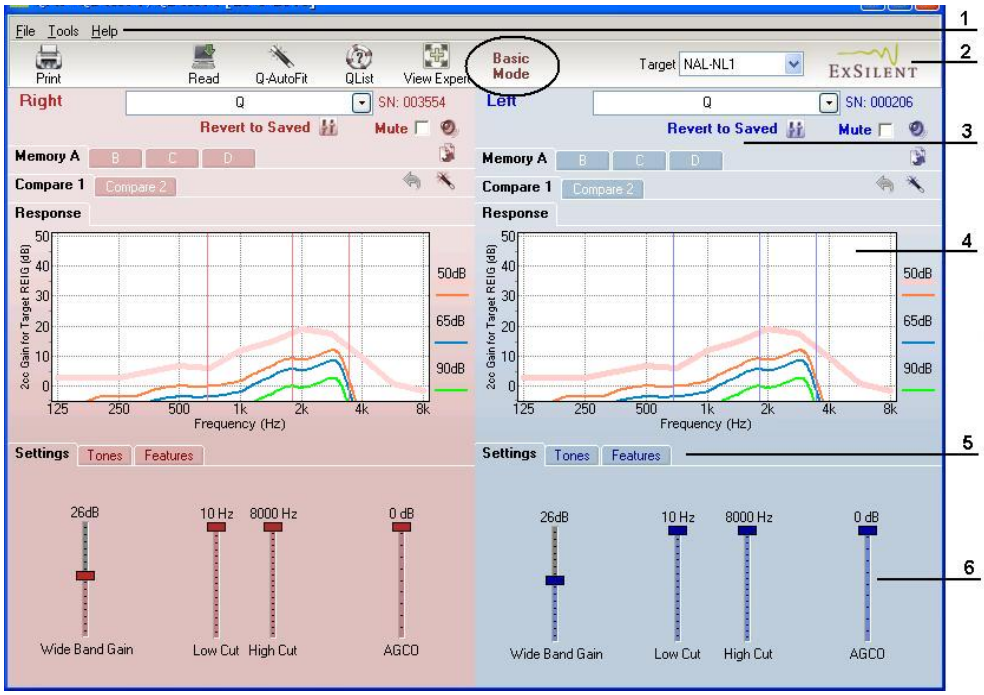
If **no devices** are connected when opening the Fitting screen and 'Simulation Mode' is chosen, the Fitting screen will appear **blank**. Use the **arrow button** next to the List Box to make a product selection:



Chapter 7 - The QFit software in detail

QFIT - BASIC MODE

If QFit starts, **Basic Mode** is the default mode. In Basic Mode a fitting can be created with a limited amount of parameters (sliders, buttons). Settings will be programmed automatically and directly into the connected aid. This prevents accidental loss of setting data.
N.b.: The following images show the Fitting Screen in a Noah environment. A stand alone install will show the 'Patient' button in the top left corner.



N.b.:

- If no aid is connected or Simulation Mode is active, some buttons will be inactive (grey).
- Above image shows Q, 4 channel version. Appearance for Q8 and for Qleaf is different.

To view QFit in Expert Mode, see chapter: **QFIT - EXPERT MODE**.

The main sections of the QFit Fitting Screen in Basic Mode:

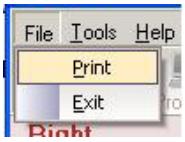
1. Menu Toolbar (grey background in Basic Mode)
2. Button Toolbar (grey background in Basic Mode)
3. Buttons, memory settings tabs and 'Compare' tabs (for each side separately)
4. Graph window
5. Control tabs and controls (in the above image, the 'Settings' tab with sliders controls is visible).
6. Control sliders

The main sections of the Fitting Screen in Basic Mode

Fitting screen - Menu toolbar

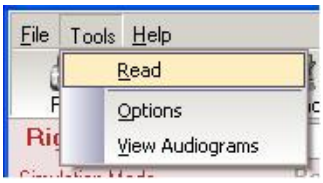
Menu options:

Menu 'File':



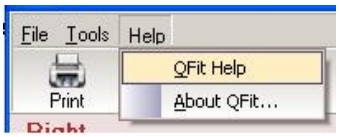
Print	- Print all fitting data
Exit	- Close QFit

Menu 'Tools':



Read	- Read the settings of all connected devices / Prepare devices for fitting
Options	- Choose the type of interface
View Audiograms	- View the Noah audiogram

Menu 'Help':



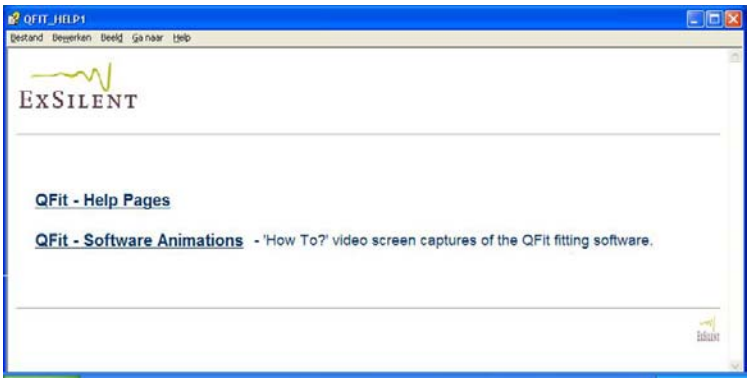
QFit Help	- Go to the Help pages
About QFit	- Information about version number

Help menu

N.b.: Since the QFit help pages are web based, you need an internet connection to access the help pages!

If you use the QFit Help option, you can find information and assistance via:

- The **QFit help pages**. Click on the 'Help' menu in the Toolbar, then 'QFit Help' and next on the 'QFit - Help Pages' weblink.



- The **software-animations**. Through the QFit Help option in the Help menu you can access a series of animations covering several functions in QFit.

Fitting screen - Button toolbar

The Button toolbar is located directly under the Menu toolbar and is used for main QFit functions. These apply to both left and right side.
N.b.: The image above depicts the Button toolbar in a stand alone environment. In a Noah install some buttons will not appear. See text below for details.

1. **Patient** - Toggles between Fitting Screen and Client (Patient) Screen.
   N.b.: not present in Noah installation.
2. **Print** - Prints an overview of all Patient settings.
3. **Save** - Saves all Patient settings (both sides).
   N.b.: not present in Noah installation.
4. **Read -** Reads **all** memories of **all** connected aids + initializes chip for fitting process.
5. **AutoFit -** Automatically fits **all** connected aids to the individual hearing impairment, on the basis of the chosen fitting formula (no.9).
6. **QList -** Opens a new window in which each side of the connected aid can be set according a problem oriented list:

The list with options can be expanded or collapsed per category by clicking on the plus signs to the left of the options. The 'Expand' button makes all list items visible. By using the option 'Reset all controls to factory setting', all parameters (controls) of the Q are reset to the default setting.
N.b.: If the QList window is visible, no other settings can be changed.

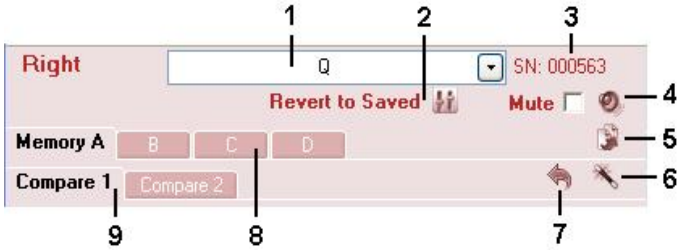
Description of QList functions:

Expand all	- Opens all sections.
Collaps all	- Closes all sections.
Apply	- Applies the selected items to the setting on this side. When the 'Apply' button is clicked more then once, the change in setting is intensified with each click.
Undo	- Cancels step by step the actions of the 'Apply' button.
Cancel all	- Cancels all actions and returns to the modification screen without changes.
Done	- Activated QList changes are accepted and program returns to
the	fitting screen with changes.
<< To QList Left Side	- Change to the opposite side instantly.

7. **View Expert - Basic** - Switches between Expert and Basic Mode. Basic Mode is default.
8. **Mode indication** - In Expert Mode the background of the Menu Bar and Toolbar is green. The caption of the mode indication changes into a capital font.
9. **Fitting Formula selection button** - Either **'Q-Linear' or 'NAL-NL1'** can be selected as fitting formula. NAL-NL1 is the default formula.

Selecting the fitting formula will generate a target curve in the Graph.

Fitting screen - Buttons, memory tabs and Compare tabs

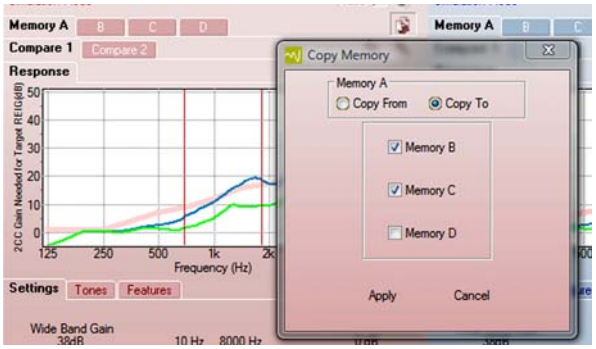


N.b.:

- If no aid is connected or Simulation Mode is active, some buttons will be inactive (grey).
- Above image shows Q, 4 channel version. Appearance for Q8 and for Qleaf is different.

The top left corner in this section of the **Fitting Screen** indicates the side (here: right side). Some of the buttons have the same function as the toolbar buttons. The difference is that all buttons mentioned below **only affect the side on which they are located** (in this example: right side [red]).

1. **Q-type indication.** The type of Q is automatically detected when the Fitting Screen is opened with a connected Q. Manual detection can be performed by using the 'Read' button. If no device is connected, a device can be selected in Simulation Mode by using the arrow buttons. See also chapter: 'Device selection'.
2. **'Revert to Saved'.** Transfers the settings of all memories of an existing Noah (or stand-alone) session to a new device in one go. This is particularly useful when the user receives a replacement aid or a new aid and the existing settings need to be transferred.
3. **SN.** The top right corner indicates the Serial Number, 'SN' (here: 000563, in red). The serial number is visible when a saved Noah session is opened or when connected Q's are read. Connected devices are read automatically. Reading can also be performed manually, using the 'Read' button.
4. **Mute ON-OFF.** Switches the sound of the connected aid on/off.
5. **Memory Copy button.** Copies the contents of the active (visible) memory/programs to one or more other memories ('Copy To') or the contents of another memory to the active memory ('Copy From').
   N.b.: When using Qleaf, the Memory button wil be inactive since Qleaf only uses 1 program.

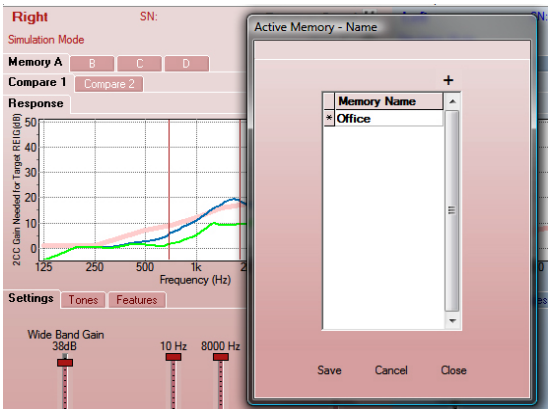


'Apply': copy the contents of the indicated memories/programs.

'Cancel': go back to the original situation without copying.

6. **AutoFit.** Performs an automatic fitting on the connected aid - only in the active side (in the example above the right side) and only in the active memory - on the basis of the selected fitting formula and the entered audiogram.
7. **'Undo' button.** Restores the previous action in the active (visible) memory and the 'Compare 1-2 window'.

8. **Memory (Program) Tabs (A to D).** Default program is Memory A. The name of the memory tabs can be edited by right-clicking on the tab and then entering a name. If at least one name has been entered, a new tab: 'New Name' becomes visible. Use the plus sign (+) in that case to enter a new name.
   N.b.: • Memory/Program names are only visible when the tab (memory) is active.
   • When using Qleaf, only one Memory (A) will be visible.



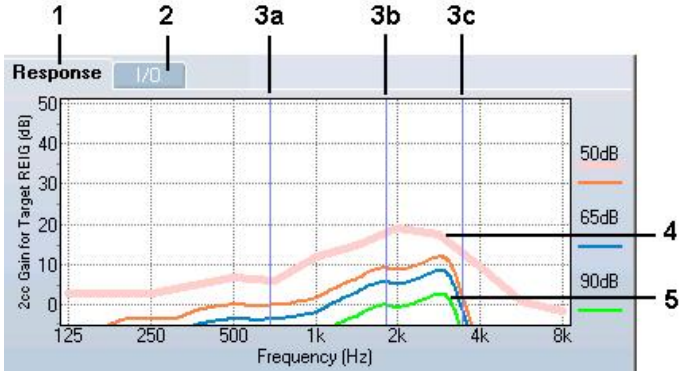
'Save': save the entered name. This is then displayed in the tab when active.

'Cancel': go back to the original situation without saving.

'Close': close input window.

9. **'Compare 1-2' Tab.** With the 'Compare 1-2' option, two different settings can be compared. During programming, the setting of the active (visible) screen is programmed in the aid.

Fitting screen - Graph

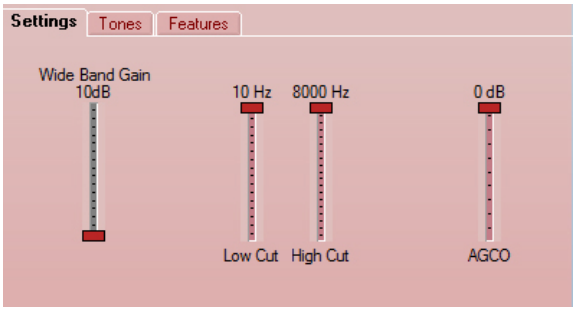


N.b.: The I/O tab in the upper left corner (Figure 2) is only visible in Expert Mode.

1. **'Response':** In the graph, the gain (values on the left side) is displayed against the frequency (values at the bottom) at a certain input value (values at the right - 50, 65 and 90dB input, which correspond with the bright colored curves).
2. **I/O** (not visible in the image) = Input/Output and displays the output against the input.
3. (3a, 3b, 3c) **Crossover frequencies** - these are displayed on the frequency graph as vertical red lines on the right side and as vertical blue lines on the left side. The crossover frequencies indicate the limits of the separate channels.
4. The thick pink curve in the graph is the **target curve.** If the NAL-NL1 formula is selected, this curve will show the target at 50dB input only. The target curve is in accordance with the audiogram entered (audiogram is not visible in the illustration).
5. The thin, bright colored curves (orange, blue or green) reflect the **gain curves** (insertion gain) at 50, 65 and 90dB input respectively. These are generated during 'AutoFit' and/or set during the fitting process. When selecting the 'QLinear' formula, less or only one color might be visible.

Fitting screen - Control tabs and controls (sliders) - BASIC MODE

'Settings' Tab:
According to the selected device, this tab has different appearances:
For Q, 4 channels - 6 bands:



For Q, Qleaf (4 channel - 12 band) and Q8, Qleaf8 (8 channel - 12 bands):

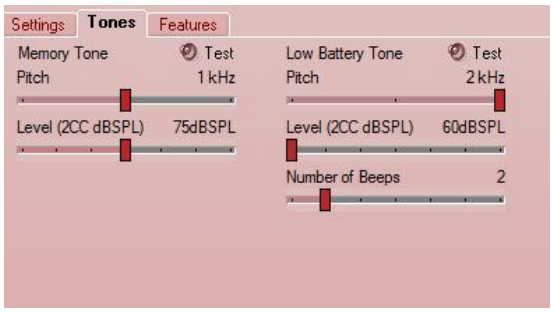
- **Wide Band Gain** - controls the overall gain in steps of 2dB. Use this slider to set the amplification (volume) for 'loud' sounds (approx. 90dB; **green gain curve** in the graph).

- **Low cut** - (Low cut filter) reduces the amount of low tones from the frequency that is set with the slider and below.

- **High cut** - (High cut filter) reduces the amount of high tones from the frequency that is set with the slider and above.

- **AGCO** - (Automatic Gain Control Output) prevents that the amplified sounds exceed a set maximum by limiting the level of the output. The value indicates the reduction in dB with which the maximum output is decreased. The changes are clearest in the I/O graph (only visible in Expert Mode). Default value is 0. AGCO is an **active circuit** which constantly monitors the sound environment and automatically adjusts Attack and Release times settings. Irritating noise effects can be avoided in this way.

'Tones' tab:
All hearing aid types:



Note: When using Qleaf or Qleaf8, the Memory Tones on the left will be inactive (grey).

- **Memory tones - Test** - The set memory tone becomes audible by clicking on the icon. By clicking again, the tone stops. **N.B.:** If no aid is connected or if a connected aid has not yet been read, the test button will be inactive (grey).

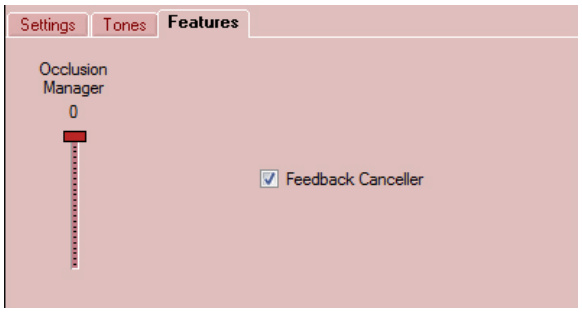
- **Memory tones** - adjusts the **pitch** and **level** of the memory tones that are heard when the active (visible) memory is switched to the next memory. This setting can be made for each memory separately. The audible tones are:
  Memory (Program) A: 1 tone (default program when battery is inserted).
  After pressing the push button once: Program B (2 tones).
  After pressing push button again: Program C (3 tones).
  After pressing push button again: Program D (4 tones).
  After pressing push button again: Returns to Program A (1 tone).

- **Low battery tones - Test** - The set low battery tone become audible by clicking on the icon. By clicking again, the tone stops. **N.B.:** If no aid is connected or if a connected aid has not yet been read, the test button will be inactive (grey).

- **Low Battery Tones** - the tones that are audible when the battery is almost dead. If the voltage of the battery drops below a certain threshold, a series of warning tones will be audible every five minutes. Set here the **pitch, volume level** and **number** of the battery tones. The settings for the low battery tones are independent from the memory (program) selected and apply as a **general setting** for all memories.

- **Power on delay** - The length of time in seconds that it takes after inserting the battery before Q is activated.

'Features' tab:
All hearing aid types:



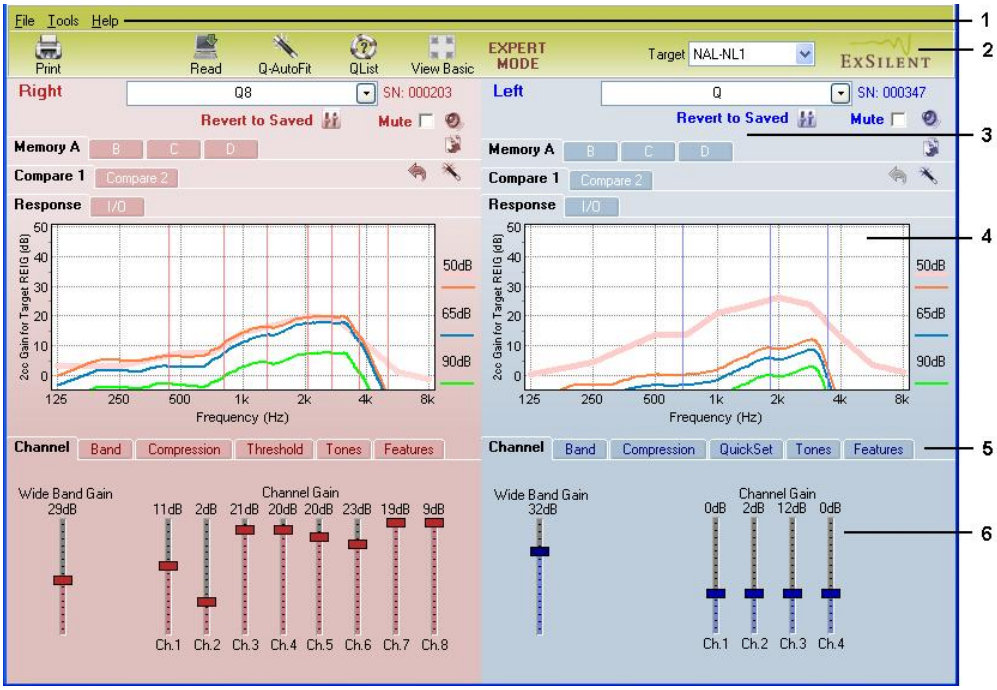
- **Occlusion Manager** - There might be a few cases (e.g. Ski Slope losses) in which more or less occlusion arises. Since occlusion only comprises the low frequency range, this control decreases low frequency gain to avoid over-amplification of low frequencies in these cases.

- **Feedback Canceller** - Feedback cancelling can be switched on and off separately for each memory here. Feedback cancelling is an **active circuit** which constantly monitors the sound environment and is not recommended for music environments. Default setting is on.

QFIT - EXPERT MODE

N.B.: In the following description, only the differences of the Expert Mode compared to the Basic Mode are outlined. For all other sections refer to Chapter 6, section 'QFIT BASIC MODE'.

If you want to adjust parameters that are not available in the Basic Mode, switch to the Expert Mode using the 'Expert' button.



Differences in appearance between Expert Mode and Basic Mode

- Green background colour of Menu toolbar and Button toolbar
- Indication 'EXPERT MODE'
- Extra tab for I/O (Input-Output, see description below)
- Extra tabs ('Channel' tab is active in the illustration)
- More adjustable parameters

The main sections of the QFit Fitting Screen in Expert Mode:

1. Menu Toolbar (green background in Expert Mode)
2. Button Toolbar (green background in Expert Mode)
3. Buttons, Memory settings and 'Compare' tabs (for each side separately)
4. Graph window
5. Control tabs and controls (in the above image, the 'Channel' tab with control sliders is visible).
6. Control sliders.

Menu toolbar

See description in Basic Mode: Chapter 7, QFit – Basic Mode - Menu toolbar .

Button toolbar

See description in Basic Mode: Chapter 7, QFit – Basic Mode – Button Toolbar.

Fitting screen - Buttons, Memory tabs and Graph

See description in Basic Mode:
Chapter 7, QFit – Basic Mode – Fitting window – Buttons, memory tabs and compare tabs

Extra tab in Expert Mode:

I/O graph (Input - Output):

In the I/O graph, the output (Y-axis, left - in dB SPL) is represented at 3 different frequencies at a certain input (X-axis, bottom).

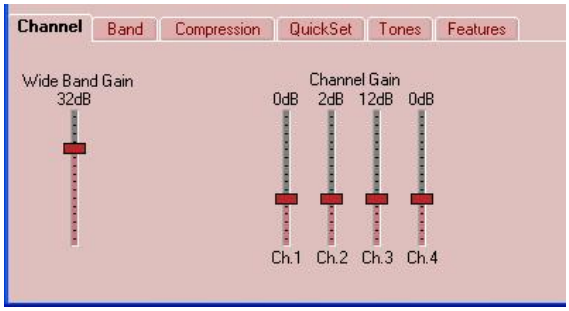
Fitting screen - Control tabs and controls (sliders) - EXPERT MODE

(In the illustrations below, only the screen section for the right hearing aid (red) is displayed).

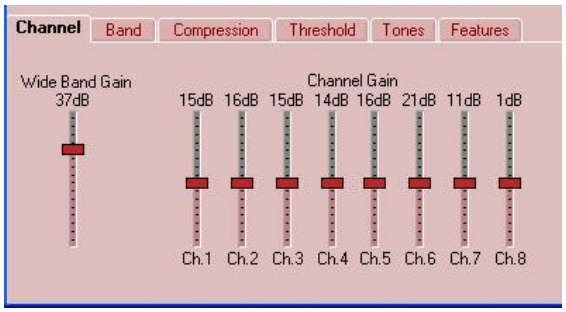
'Channel' Tab:

According to the selected device, this tab has different appearances:

For Q (4 channels - 6 bands) and Qleaf (4 channel - 12 bands):

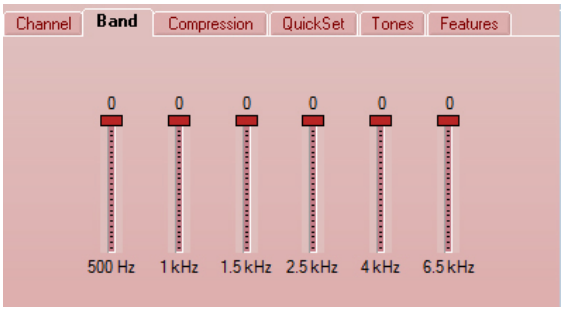


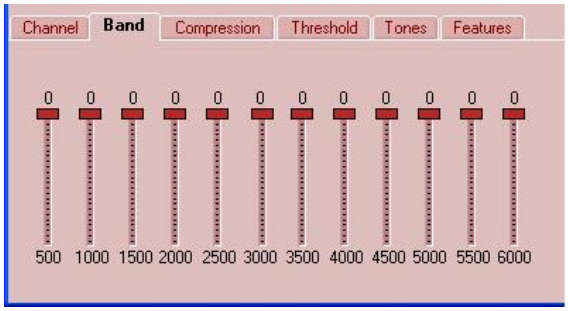
For Q8 and Qleaf8 (8 channel - 12 bands):



- **Wide Band Gain** - Controls the overall gain in 2dB steps. Use this slider to set the amplification (volume) for 'loud' sounds (approx. 90dB; **green gain curve** in the graph).
- **Channel Gain** - controls the gain per channel. The maximum value depends on the maximum Wide Band Gain setting.

‘Band’ tab:

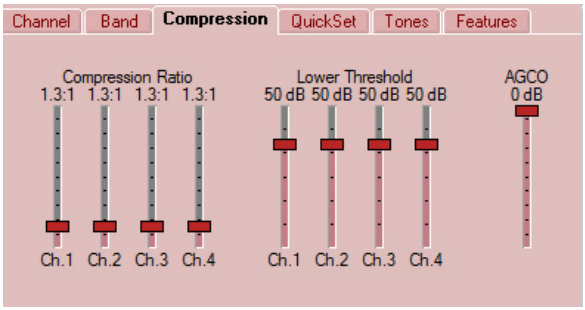




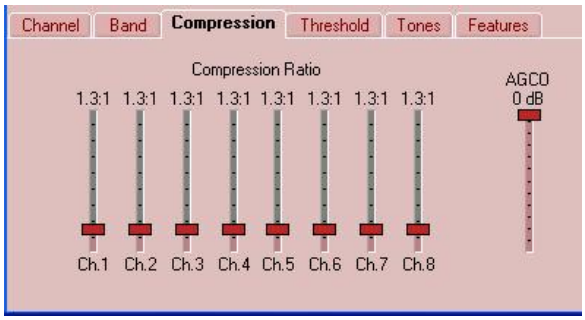
- Q and Qleaf are equipped with either a fixed 6 band or 12 band filter bank. Each filter can lower the gain at a certain frequency in 1dB steps. Use the filter bank to adjust the gain curve more precisely.

‘Compression’ tab:
According to the selected device, this tab has different appearances:

For Q (4 channels - 6 bands) and Qleaf (4 channel - 12 bands):



For Q8 and Qleaf8 (8 channel - 12 bands):

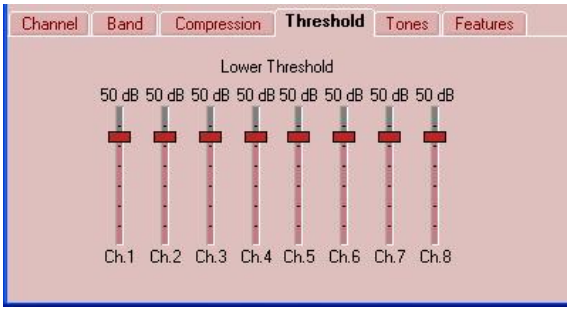


- **Compression ratio** - set the compression ratio (WDRC - Wide Dynamic Range Compression) here for each channel separately. By using compression, sounds of various volumes (various input) are amplified in various degrees. By increasing the compression, relatively soft sounds can for example be amplified more than relatively loud sounds.

- **Lower Threshold -** (knee point) sets for each channel separately the threshold from which compression will occur. Sounds with an input level below this threshold will have linear gain.

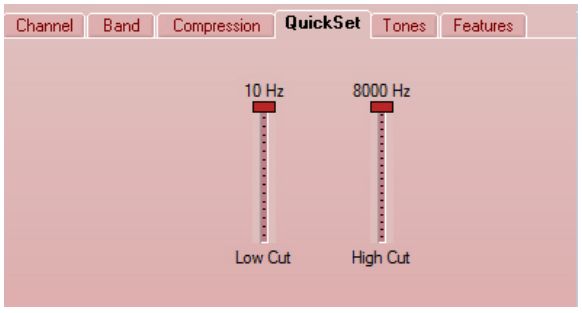
- **AGCO** - (Automatic Gain Control Output, also available in Basic Mode) prevents that the amplified sounds exceed a set maximum by limiting the level of the output. The value indicates the reduction in dB with which the maximum output is decreased. The changes are clearest in the I/O graph. Standard value is 0. AGCO is an **active circuit** which constantly monitors the sound environment and automatically adjusts Attack and Release times settings. Irritating noise effects can be avoided in this way.

'Threshold' tab: (only Q8 and Qleaf8):



- **Threshold -** (knee point) sets for each channel separately the threshold from which compression will occur. Sounds with an input level below this threshold will have linear gain.

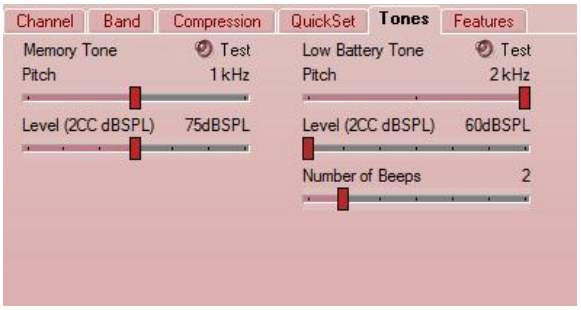
'QuickSet' tab: (only Q 4 channel - 6 bands):



- **Low cut** - (Low cut filter) reduces the amount of low tones from the frequency that is set with the control and below.

- **High cut** - (High cut filter) reduces the amount of high tones from the frequency that is set with the control and above.

'Tones' tab:
All hearing aid types:



Note: When using Qleaf or Qleaf8, the Memory Tones on the left will be inactive (grey).

- **Memory Tone - Test** - the set memory tone becomes audible by clicking on the button. By clicking again, the tone stops. **N.B.:** If no aid is connected or if the connected aid is in Simulation Mode, the test button will be inactive (grey).

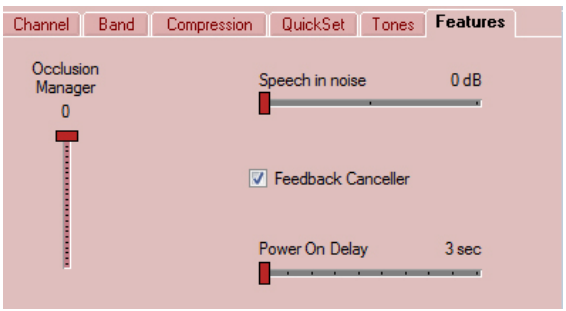
- **Memory Tone** - adjusts the **pitch** and **volume level** of the memory tones that are heard when the active (visible) memory is switched to the next memory. This setting can be done for **each memory separately**. The values displayed in the illustration are standard values. The audible tones are:
  Program A: 1 tone (standard program when battery is inserted).
  After pressing the push button once: Program B (2 tones).
  After pressing push button again: Program C (3 tones).
  After pressing push button again: Program D (4 tones).
  After pressing push button again: Returns to Program A (1 tone).

- **Low Battery Tones - Test** - The set low battery warning tone becomes audible by clicking on the icon . By clicking again, the tone stops. **N.B.:** If no aid is connected or if the connected aid is in Simulation Mode, the test button will be inactive (grey).

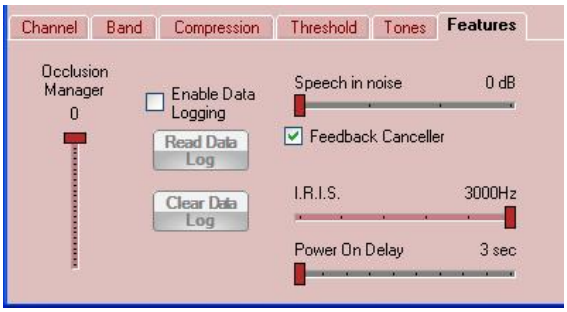
- **Low Battery Tones** - the tones that are audible when the battery is almost dead. If the voltage of the battery drops below a certain threshold, a series of warning tones will be audible every five minutes. Set here the **pitch, volume level** and **number** of the battery tones. The settings for the low battery tones are independent from the memory (program) selected and apply as a **general setting** for all memories.

'Features' Tab:

For Q and Qleaf 4 Channel devices:



For Q8 and Qleaf8 (8 Channel):



- **Occlusion Manager** - There might be a few cases in which more or less occlusion arises. Since occlusion only comprises the low frequency range, this control decreases low frequency gain to avoid over-amplification of low frequencies in this case.

- **Data logging** - Data logging can be used by the audiologist to obtain data about the use of the aid. The system stores information about ambient levels, memory use and battery use. These data are stored and can be read and used to evaluate settings.

- **Speech in noise** - Also referred to as Noise Reduction. By increasing the control value (0 to 9dB), the reduction of background noise will increase. This will improve intelligibility of speech. Speech in noise is an **active circuit** which constantly monitors the sound environment. At value 0dB, Noise Reduction is off. Speech in noise can be set for each memory separately. Speech in noise is not recommended for music environments.

- **Feedback Canceller** - Feedback cancelling can be switched on and off separately for each memory here. Feedback cancelling is an **active circuit** which constantly monitors the sound environment and is not recommended for music environments. Default setting is on.

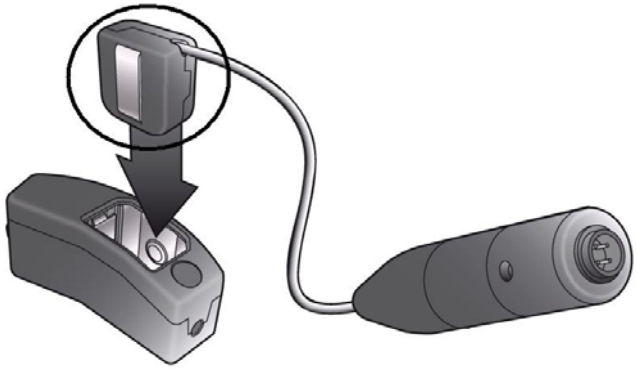
- **IRIS** - This stands for: Individual Resonance Improvement Shifter. With this circuit, the resonance peak can be shifted. The resonance peak of the ear is individual and differs from ear to ear. By shifting the peak, it can be customized to an optimal value

- **Power On Delay** - the elapsed time in seconds between insertion of the battery and the moment the device will switch on. To prevent undesired whistling during insertion, this interval can be adjusted from 3 to 12 seconds. The standard setting is 3 seconds (= minimum). The Power On Delay setting is independent of the selected memories and is a **general setting** for all memories.

Chapter 8 - Example of a fitting procedure

Preparing the fitting procedure

- Choose a correct type soft tip for the client (see also Chapter 5: Choice of soft tip).
- Insert the Q module in the selected soft tip.
  (see also Chapter 4: inserting the module in the soft tip).
- …. or insert the Qleaf module in the selected soft tip.
- Connect the Q module to the CS44 cable
  (see also Chapter 5: Connect the Q module to the CS44 cable).
- …. or insert the Qleaf programming adapter in the Qleaf module (see image below)



Fitting procedure

- Create a new Noah session and enter an audiogram (only if it is the first fitting or if the audiogram has been changed).
  In stand alone install: enter patient and audiogram data in the client screen.

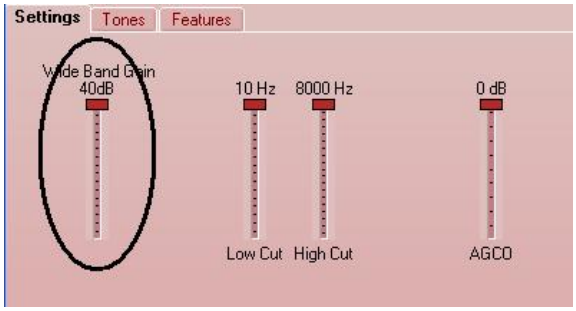
- Open QFit (QFit opens in Basic Mode) and connect the aids (these are read automatically).
  If the aids are connected after opening the fitting module, click 'Read'.

- Select the fitting formula (Q-Linear or NAL-NL1). This step can be skipped if the default fitting formula is selected:

- Select 'AutoFit':

- Switch off the sound (the illustration only shows the right side):

- With the Wide Band Gain Control, lower the volume by 4 to 6dB (the illustration shows only the right side):



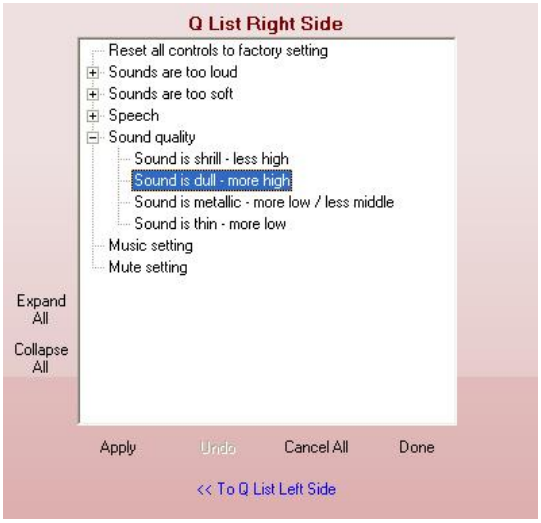
- Insert the aids in the ear.
  For a detailed description of how to insert Q in the ear, please refer to chapter 5, section: 'Choice of soft tip', from paragraph 'Inserting Q in the ear' to 'Position of Q in the ear'.

- Switch on the sound again and, if needed, turn up the volume again in steps.

In many cases the 'basic set up' above will be sufficient to start a test period for a user. If this is the case, proceed to the next page: "Copy the settings or create new settings …"). However, if the setting up is not yet satisfactory, or if an existing setting for a user needs to be modified, there are various ways to proceed:

1. By choosing a different **Fitting formula** (go back to: 'Select the fitting formula - no.9').
2. Use the problem oriented **Q List** (see below).
3. Manually, using the controls in **Basic Mode** and/or in **Expert Mode** (see below).
4. A **combination** of the above.

2. If needed, or instead of the previous step, adjust the setting with **QList:**

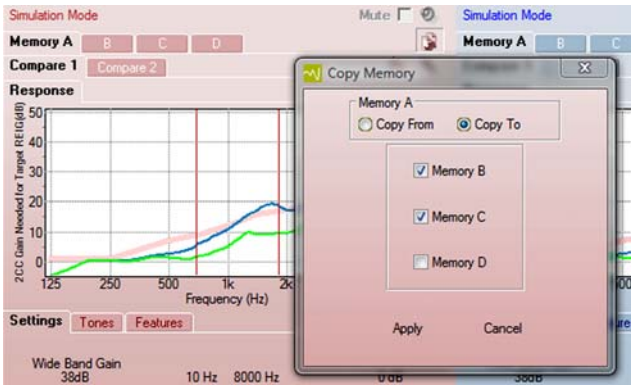


3. If needed, adjust the setting with the controls in **Basic or Expert Mode:**

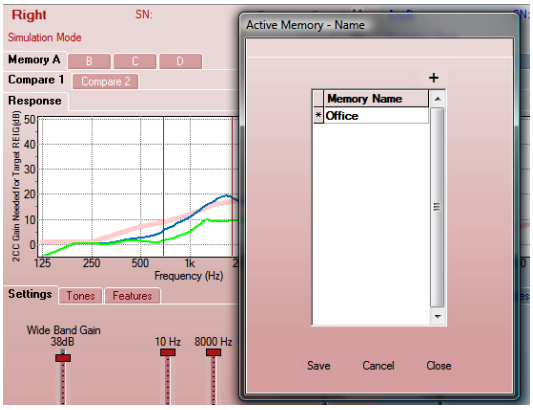
N.B.: only Memory A has been set now!

Only for Q devices:

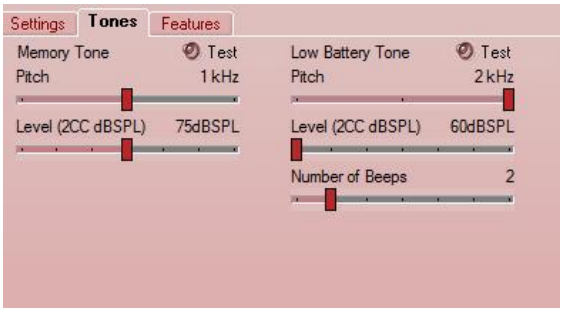
- Copy the settings or create new settings for the remaining memories:



- If desired, give the memories (programs) a name by right-clicking on the tab and then on the plus (+) sign:

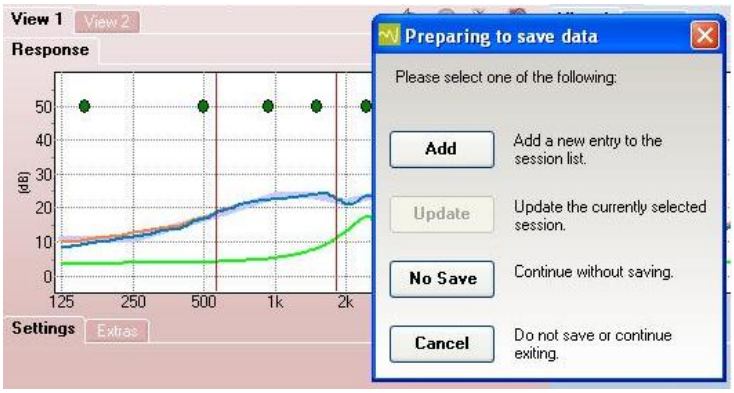


- If desired, adjust the Memory and Low Battery tones in the 'Tones' Tab (the image shows the tab in Basic Mode):



Any change in settings will be programmed automatically in the hearing aid. In this way you will lose no settings, even if the cable is disconnected.

- When exiting QFit in Noah: add the session to the Noah database or exit without saving:



After the fitting procedure

If during the fitting the Q tends to **whistle** (feedback), the sealing of the ear canal might not be optimal and a larger type soft tip might be necessary. Also check module insertion for correct insertion (Chapter 4, 'Checks for orrect insertion of the Q Module in the soft tip').

Make sure that at the end of the fitting procedure **all** memories of the Q have been programmed. See also Chapter 9, 'Using the memories (Programs)'.

If the **pull cord protrudes from the ear** but the Q feels comfortable in the ear and fits properly, the pull cord can be slightly trimmed. Use side cutters to do this. Always leave at least one ridge so that the Q can be removed correctly from the ear.

Place the **protective caps** for the program contact in the modules. N.B. each user package contains caps in two different colors to differentiate between left and right.

Battery: The Q is switched off by removing the battery. If the battery is inserted, Q automatically switches to Program 1 (Memory A).

Chapter 9 - Tips / trouble shooting

When not to use Q:

- The ear concerned has a medical history.
- Exostosis (cartilage growths) is present in the ear canal.
- Severe production of ear wax.

When using Q for the first time always advise the customer to begin with a continuous maximum wearing period of four about hours and to subsequently increase the wearing time with one hour a day. If any problems arise during the test period, the user should contact the shop. In case of persisting pain, remove the aid from the ear and contact the dispenser as soon as possible.

Insertion of Q

The use of lubricant crème or gel can be useful to the user in some cases. See chapter 5: 'Inserting Q in the ear'.

Using the memories (programs)

Make sure that at the end of the fitting procedure **all** memories of the Q have been programmed. When the fitting of the first memory has been completed and only one memory (program) is needed, there are a number of options for setting the other memories:

- If the customer does not require any alternative settings, it is advised to copy the first setting to all other memories by using the copy button  . Pressing the push button accidentally when inserting Q may result in a bleep and switching to a different memory, but the setting will remain the same in this case. To avoid the bleep sound, the sound of the memory tone can be set to the minimum position. This has to be performed for all memories.

- Alternatively, the sound settings for all memories can be kept the same (copy one to all other memories), but the volume of the second memory (B) could be set slightly softer and the volume of the third and fourth memory (C and D) could be set slightly louder. In this way step-volume regulation can be achieved. It is of course possible to deviate from this set up.

- A third alternative is to reserve one (or more) memories for a special setting, such as a mute setting or a music setting. Go to the memory where the special setting is required and use ‘QList’ or adjust the controls manually.

Lack of venting

Because Q **does not** use venting, the aid works like a muffler when it is switched off. Because of this, some extra gain is sometimes needed in the low frequencies. This can be necessary, in particular, for users with relatively high loss in the high frequency and little or no loss in the low frequency (less than 20dB to 1kHz). The user’s complaint in this case is often: 'a tin-like or hollow sound', or that their own voice sounds 'strange'.

Audiogram in hearing aid

With Q, the audiogram of the user is not only saved in the (Noah) database, but it is also saved **in the hearing aid** itself. If an audiogram is found in Noah when reading the aid, this audiogram will be read into the aid and saved during programming. If no audiogram is found in Noah, the audiogram in the hearing aid is read.

The great advantage of this is that the user is no longer dependent on a single shop branch. Anywhere in the world where QFit software is available, the user can be assisted with sound adjustments to their hearing aid.

If, for example, after being examined by an ENT specialist it appears that the audiogram has been changed, the user can visit his or her local hearing aid dispenser to have the new audiogram entered in Noah. When reading and programming the hearing aid, the old audiogram is replaced by the new one which is saved in the hearing aid. In this way the hearing aid is always equipped with the most recent audiogram.

Resetting the parameters

The Autofit function only uses **part** of the available parameters (controls) to create a setting. These are: Volume, Compression ratio, Knee point low, Crossover frequencies, Low off, High off and Filter bank. If one or more of the remaining controls is changed (manually or using QList), these will **not automatically** be reset to the manufacturer's settings (the standard setting) when a new AutoFit is performed. Changed parameters do, however, remain visible (some only in Expert mode). When you want to reset all parameters to the manufacturer's settings in one go, you should use the option **'Reset all controls to factory settings'** in QList.

Copying settings to another aid

By using the  button QFit can transfer in one go all settings of an existing Noah (or stand-alone) session to a new device. This is particularly useful when the user receives a replacement aid or a new aid and the existing settings need to be transferred.
See Chapter 6: *'Fitting screen – Buttons – Memory tabs and Compare tabs'*.

The hearing aid whistles (feedback)

Before adjusting any controls in QFit, you should **first** make sure that the correct size of soft tip has been used (not too small, see also Chapter 5: 'Choice of soft tip'), that the module has been inserted correctly in the soft tip (see Chapter 4: 'Checks') and that Q has been inserted correctly and deep enough in the ear (see Chapter 5: 'Position of Q in the ear'). If one or more of these points is not correct, feedback (whistling) can occur. It is possible that the sound will not be optimal and irritation could be experienced during use.

If after checking the above points Q still whistles, the parameters can be adjusted. In this case consider lowering gain in the high frequencies (High Cut, Filter Bank or QList) and/or lowering gain of the soft sounds (lower the orange amplification curve -50dB- with Low Threshold control).

External devices

External devices being connected to the hearing aid need to comply with the requirements in conformity with EN 60601-1-1. Connected computer equipment needs to comply with according safety requirements. If computer equipment with a metal casing is being used, extra precautionary measures such as shielded sockets or a mains isolating transformer have to be taken. For other cautionary notices, see the user's manual.

Chapter 10 - Maintenance

(text from User Manual)

-CLEANING

Module:

- Clean daily with a soft and dry tissue.
- In case of severe dirt, wipe with special (moist) cleaning tissues for hearing aids.

Soft tip:

- Clean daily with a soft and dry tissue.
- In case of severe dirt, you may clean it either with special (moist) cleaning tissues, with soluble cleaning tablets for hearing aid products or you may alternatively have it cleaned with an ultrasound cleaner.
- Clogged soft tips can be rinsed off under streaming tepid water. In case of severe or persistent dirt, if a change in the properties or damage of the material occurs, the soft tip should always be replaced.

N.b.: Never use aggressive cleaning products, abrasives or solvents! This can cause irrevocable damage to the soft tip or the module.

If the customer has different settings on the right and on the left:
Advise the customer to remove **one device at a time** from the ear, cleaning it or changing the battery, in order to avoid confusion. Alternatively, one may want to choose a different colour for (one of) the protective cap(s) of the programming contact.

STORAGE

At night:

We recommend that you remove the soft tip from the module during the night. Remove the battery from the device and store it in a secure place outside its box. In this way, you increase the operational life of the battery and also allow for the evaporation of moisture possibly present in the device.

Short term storage:

You may use the carrying box, when you want to remove the device from the ear temporarily. If the user removes the hearing aids from his or her ears only for a short period, it is not necessary to take out the battery.

Long term storage:

When the Q is not used over a longer period of time, clean the module and soft tip before storing them inside the carrying box. In this case, always remove the battery from the device.