







Single sided deafness option



The instrument's response is shown on the functioning cochlea



Soft band option



BC In-situ



Advantages of BC in-situ testing

- No vibrator placement variability
- Direct input (no skin/subcutaneous tissue) when on abutment
- Threshold can be measured for the entire frequency range (0.25 to 8kHz) as opposed to just 0.500 to 4kHz
- Recommend use of BC in-situ including 6 and 8K for all fittings



BC In-situ at 6 and 8K

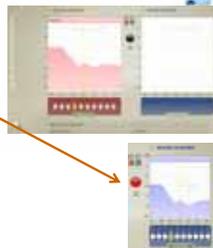
- If you don't do BC in-situ at 6 and 8K?
- The missing values are always extrapolated
- i.e. if 4K is measured at 40 dB HL, then 6 and 8K will also be 40 dB HL



What to be aware off when measuring BC In-situ?

- Background noise

'Noise level' button is red
=> background noise might be a problem (interfere with the measured BC threshold)

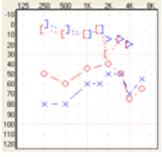


What to be aware of when measuring BC In-situ?

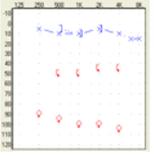
- Background noise



Red 'Noise level' button



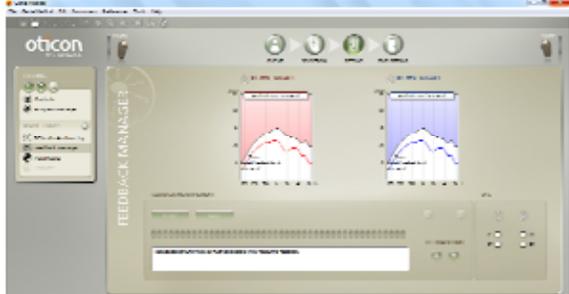
... is not a problem, because AC is high



...can be a problem because AC is near 0 dB HL

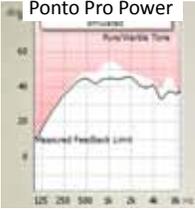


Feedback Manager



Feedback Manager

- When to use Feedback Manager



Ponto Pro Power



Ponto Pro & Ponto

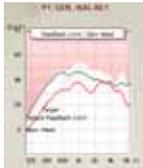
All Ponto Pro Power Fittings

Ponto Pro & Ponto: If there is feedback

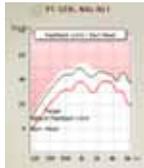


Advantage of running FB with Power

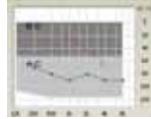
- FB is more likely to occur with hearing loss that requires Ponto Pro power instrument
- In some circumstances can actually gain additional headroom by running FB manager



Default FB limit w/ Ponto Pro Power



Individualized FB limit w/ Ponto Pro Power



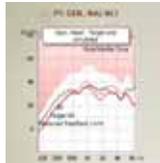
Feedback

When to consider changing to longer abutment?

- If feedback limit is measured and feedback remains a big problem (when turning head, moving around etc.).
- If the measured feedback limit is low and reduces gain - then consider to change to a longer or angled abutment.



12mm Abutment Angled Abutment



Black line - measured feedback limit
Red dotted line - prescribed gain
Red full line - actual gain



Specific Fitting Considerations



Specific fitting considerations

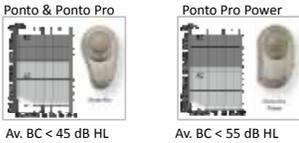
- Ponto Pro vs. Ponto Pro Power
- Bilateral Fittings
- BC in situ vs. Conventional measurement
- Considerations for Additional Programs
- Fine Tuning
- Replacement Processors
- Firmware Upgrade



Ponto/Ponto Pro vs Ponto Pro Power

The Ponto Family – Fitting range

- **Conductive and mixed hearing losses**



Ponto & Ponto Pro
Av. BC < 45 dB HL

Ponto Pro Power
Av. BC < 55 dB HL

- **Single-sided deafness**

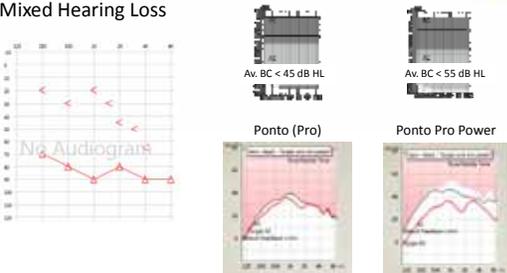


Ponto, Ponto Pro and Ponto Pro Power
Av. AC < 20 dB HL



Ponto/Ponto Pro vs Ponto Pro Power

- **Mixed Hearing Loss**



No Audiograms

Ponto (Pro)
Av. BC < 45 dB HL

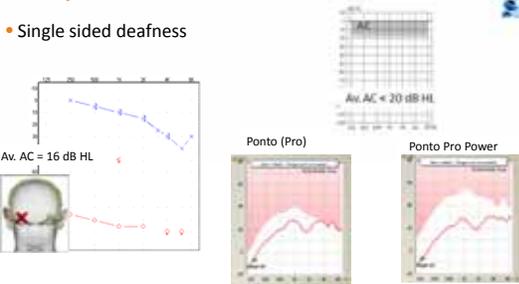
Ponto Pro Power
Av. BC < 55 dB HL

- Consider Headroom when selecting which Ponto family processor



Ponto/Ponto Pro vs Ponto Pro Power

- Single sided deafness



- Select Ponto Pro Power if an AC value is below 20 dB HL

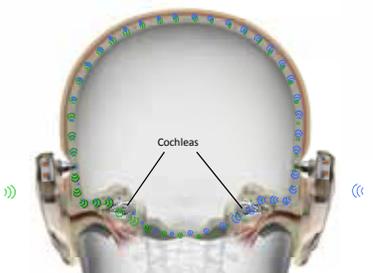
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Bilateral Fittings-Candidacy

- The difference between the left and right side bone conduction thresholds should be less than 10 dB on average (measured at 0.5, 1, 2 and 4 kHz), or less than 15 dB at individual frequencies
- Bilateral implantation provides binaural hearing with improved sound localization in noise

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Bilateral Candidacy

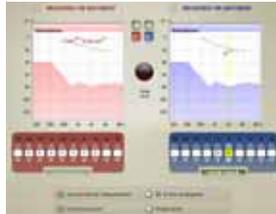


Average BC HL difference < 10, (single frequency < 15 dB)

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BC In-situ, bilateral fitting

- In case of a bilateral fitting, both devices need to be connected to Genie Medical to conduct the BC In-situ.



The fitting is either based on BC In-situ or 'Conventional BC'; never a mix of the two.



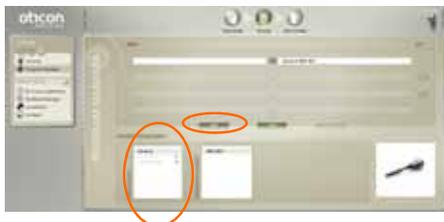
Considerations for Additional Programs

- T/DAI/FM (workaround for restricting use of program push button)
- Music
- Fixed Directionality (Full or Surround)



Adding additional programs

- In Fitting Step
 - Program Manager



T/DAI/FM or T/DAI/FM+M Program

- Ponto system requires additional program to use
 - Audio Adapter
 - Telecoil Adapter
 - FM receiver



Audio Adapter

- The Audio adapter from Oticon Medical has a 3 pin connector and can be connected to Ponto Pro Power, Ponto Pro and Ponto sound processors
- The Baha® audio adapter (90065) has a 3 pin connector and can be connected to the Ponto Pro and Ponto sound processors



The Oticon Medical Audio Adapter



Telecoil Adapter

- The Telecoil from Oticon Medical has a 3 pin connector and can be connected to Ponto Pro Power, Ponto Pro and Ponto sound processors. There is no switch on the telecoil.
- Baha® telecoil unit (90185) has a 3 pin connector and can be connected to Ponto Pro Power, Ponto Pro and Ponto sound processors. The Telecoil has a 3 position switch, it should be set in position T.



The Oticon Medical Telecoil



FM Receivers

- The audiologist must define a FM/FM+M program in Ponto
 - In the Program Manager in Genie Medical, add the program FM or/and FM+M.
- The patient should:
 - connect the FM receiver to the Ponto sound processor
 - turn On the receiver switch (see table below for instructions)
 - press the push button on Ponto to change between programs

The Ponto system with ear level FM receivers			
Receivers	Oticon Amigo R2 BA	Phonak MLXS BAHA	Phonak MLxi BAHA
			
Switch on Receiver	3 positions On  On  On  Off	3 positions  Off/On  Off/On  Off/On	2 positions  Off/On

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T/DAI/FM+M Program

- P1 is always a General program, so must designate P2 as default if FM+M only is wanted



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Specific FM considerations

- Be aware that FM receivers can cause considerable power drain (particularly with the Phonak MLxi BAHA)
- May require a higher performance battery (1.45 volt vs 1.40 volt) if problems with function of FM receiver
- Be aware that the MLxi BAHA will go into a "sleep mode" when there is no speech input for 40 sec to save power. This may be interpreted as the receiver not working

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Fixed directionality programs

- User may prefer to have ability select program that has fixed directionality (i.e. surround, split dir, or full dir)
- In Fitting Screen, create General program and change directionality setting in Automatics



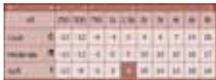
Full and split directionality

- Note that HF gain is increased in Full and Split Directionality Mode and in certain circumstances may result in FB when in that program



Troubleshooting FB manually

- Identify the part of the HF frequency region that causes the feedback
 - Expand the controls so the 10 bands are available

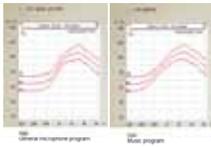


- Reduce Soft gain at 1.5 kHz, 1 dB at a time, until you've reduced 5-6 dB; if feedback does not disappear, then increase gain at 1.5 kHz back to its' starting level (= the gain values will be red / blue, if the starting point was at prescribed setting)
- Repeat this procedure in the next band, one band at a time (at 2.0; 3.0; 4.0; .. kHz).
- When feedback disappears by reducing Soft gain in one of the bands, then leave the Soft gain in that one band reduced



Music program

- In traditional HA, the Music program differs from P1 by having:
 - more linear gain (more MF gain)
 - DFC (fast detection is Off)
- In Ponto the gain is almost linear (as we deal with small BC HL); one can turn off DFC for a Music program, but many patients do fine with the P1 as it is for listening to music, or when playing music
- Leave Noise Reduction On, and Dir. in the auto-mode.




Fine Tuning Considerations

- Fitting step
- Loudness control
 - The Loudness control is designed to manage initial complaints
 - Decrease the Loudness control setting if sound is too loud, own voice is too boomy; low frequency gain is reduced
 - Increase the setting if the instrument sounds too soft; high frequency gain is increased
- The control setting is by default '0'
- Adjustments of the Loudness control will influence all programs




Place the mouse over the Loudness setting to display the control adjustments.



Fine Tuning Considerations

- Fitting step
- Gain control
 - The control values (dB) are defined relative to the gain prescribed for a bilateral fitting with a symmetrical 0 dB HL (BC) hearing loss
 - consider using the Loudness Control before adjusting individual controls.
 - when adjusting the gain control, make the same change for loud, moderate and soft sounds




Replacement Processor Considerations

- Doing the BC In-situ takes into account the variability between processors (sound processors can vary +/-3 dB coming from factory)
- Ideally, the BC in situ should be performed whenever an instrument is replaced
- The FB limits curve are kept so they don't need to be repeated



Firmware Upgrade

- Firmware upgrade
 - Previously fitted Ponto sound processors can have their firmware (software) upgraded



Example of Fitting Screen in GM 2011.1 if a Ponto Pro device hasn't been upgraded.



Firmware Upgrade

- Optional tool – don't necessarily want to upgrade every eligible processor
- It is not possible to reverse upgrade once completed
- When to consider firmware upgrade
 - Feedback Issues → Feedback Manager and/or DFC
 - Lots of fine tuning/still issues → BC in situ
 - Difficulty w/ speech in background noise → Speech Guard
- When not to consider firmware upgrade
 - If it ain't broke, don't fix it



Firmware Upgrade

- Firmware upgrade tool
 - Access from 'Upgrade Firmware Instrument' menu in Selection step
 - The existing settings are retained while data logging and learning VC data are cleared



Verification with Bone Anchored Systems



Listening Check



Test Rod



Head Band



Listening Check



BAHA Listener 22 for BAHA or Ponto



Verification of bone anchored fitting in general

Objective measurements

- Speech in noise test
- Aided free field measurement

Subjective outcome

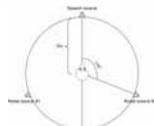
- APHAB
- SSQ
- GHABP (Glasgow Hearing aid Benefit Profile)

There is no standardized verification method for bone anchored devices (like e.g. REM)



Speech in noise measurements

- Use standardized national test (e.g. HINT, Quicksin,)
- The tests can be run in same manner as when fitting traditional hearing aids.



Often used loudspeaker set-up



Speech in noise measurements and Unilateral hearing losses

- Test with best ear..
 - Unblocked (~ simulates real life condition; expect to see correlation to subjective evaluation)
 - blocked (~ focus on effect of the device; is not reflecting patient benefit in real life)
- Loudspeaker set-up

Patient needs HA.
So HA should improve speech understanding.

Patient does not need a HA.
So HA must not ruin the speech understanding.

■ This is the same as for measurements with traditional hearing aids.

Aided free field measurements

- Typical outcome

black = aided free field

■ The aided free field threshold is most often similar to BC in the MF area up to 3-4 kHz

Free field measurements

- One loudspeaker in the front
- Signal: Warble tone

- OBS: Warble tone can trigger the DFC, so gain for that frequency will be decreased (leading to higher aided threshold).

If DFC is turned off, be aware that the gain in the device might change.

Subjective evaluation

- APHAB
 - evaluate subjective performance
- SSQ - Speech Spatial and Quality questionnaire
 - evaluate subjective performance
- GHABP (Glasgow Hearing aid Benefit Profile)
 - quality of life measure
- Note: None of the questionnaires above addresses handling issues or e.g. feedback of the device



Future of bone anchored verification

- Bill Hodgetts, PhD, University of Alberta has investigated verification for bone conduction hearing
- Accelerometers on the abutment will be able to provide the logical equivalent of RECD using dB Force Level
 - Real Head to Skull Simulator Difference (RHCD)
- Likely will be available as a module on commercially available real ear system in next few years



Future of bone anchored verification

- In March 2012, AAA approved the creation of a task force to be headed up by Dr. Michael Valente to create a Best Practice Guideline for Bone Anchored Solutions.
- Dr. Valente has estimated that it will be approximately 3 years from start to completion

