

Importance of Earmold Impressions

Characteristics and Considerations



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Disclosures

- **Kailen Berry, Au.D.**
- Kailen Berry is an audiologist and Clinical Trainer with Phonak LLC. Dr. Berry started with Phonak in September 2012 and is based in Vancouver, Washington. She received her BS from the University of Washington in 2006, and her AuD from the University of Washington in 2011. Her clinical experience included providing diagnostic hearing and electrophysiologic assessments to the adult and pediatric populations. She also has experience with hearing aid evaluations and fittings for both adult and pediatric populations.
- *Financial-Phonak employee who receives a salary for employment*
- *Nonfinancial-No relevant nonfinancial relationships exists*

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Learner Objectives

- Participants will be able to gain a higher understanding of the custom production process..
- Participants will be able to understand how information and earmold impressions given by the provider are utilized throughout the custom production process.
- Participants will be able to explain improvements in the impression taking process that will affect the overall outcome of a Virto V fitting.

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Custom product ordering process overview

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Order Entry



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Order Entry and Mail Room teams

- 44 people
- 5,000 orders entered daily
 - Each order takes 2 minutes to enter
 - Entered by hand
 - Importance of most up to date order form



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Virto V order form

- **NEW Virto V order form**
 - Simplified layout
 - Easy to read options
 - Downloadable and editable electronically

[illegible]

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Virto V order form

- What's new?
 - Push button available on *all* models
 - Vent size
 - AOV – chosen over 60% of the time
 - Default if no venting is specified
 - Specify other
 - Wax System
 - No charge Cerustop option

Phonak Venture Custom Order Form

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Step 1: Customer Information

Step 1a: Account

Name _____
 Address _____
 City _____ State _____ Zip _____

Bill To Account

Send Every Month Number _____
 Date _____
 Purchase Order Number _____
 Customer Name _____
 Phone Number _____
 Email Address _____

Step 2: Patient Information

Step 2a: Patient

Last Name _____
 First Name _____
 Age _____ Gender _____

Step 2b: Audiogram (Required for A&B)

Left:	HC	20	30	40	50	60	70	80	90	100
Right:	HC	20	30	40	50	60	70	80	90	100

Step 3: Warranty/Flush Options

☐ 2YR ☐ 3YR ☐ 4YR ☐ 5YR ☐ 6YR ☐ 7YR ☐ 8YR ☐ 9YR ☐ 10YR

☐ 24-Hour Service (Available for \$450.00)

Step 4: Hearing Instrument Selection

Model	Style	Shell	Instrument Type	Warranty	CR105 Compatible	Power Level	Max P	Max M	Max L	Max H	Max V	Max B	Max C	Max T	Max I	Max O	Max N	Max J	Max K	Max L	Max M	Max P	Max Q	Max R	Max S	Max T	Max U	Max V	Max W	Max X	Max Y	Max Z	Max AA	Max AB	Max AC	Max AD	Max AE	Max AF	Max AG	Max AH	Max AI	Max AJ	Max AK	Max AL	Max AM	Max AN	Max AO	Max AP	Max AQ	Max AR	Max AS	Max AT	Max AU	Max AV	Max AW	Max AX	Max AY	Max AZ	Max BA	Max BB	Max BC	Max BD	Max BE	Max BF	Max BG	Max BH	Max BI	Max BJ	Max BK	Max BL	Max BM	Max BN	Max BO	Max BP	Max BQ	Max BR	Max BS	Max BT	Max BU	Max BV	Max BW	Max BX	Max BY	Max BZ	Max CA	Max CB	Max CC	Max CD	Max CE	Max CF	Max CG	Max CH	Max CI	Max CJ	Max CK	Max CL	Max CM	Max CN	Max CO	Max CP	Max CQ	Max CR	Max CS	Max CT	Max CU	Max CV	Max CW	Max CX	Max CY	Max CZ	Max DA	Max DB	Max DC	Max DD	Max DE	Max DF	Max DG	Max DH	Max DI	Max DJ	Max DK	Max DL	Max DM	Max DN	Max DO	Max DP	Max DQ	Max DR	Max DS	Max DT	Max DU	Max DV	Max DW	Max DX	Max DY	Max DZ	Max EA	Max EB	Max EC	Max ED	Max EE	Max EF	Max EG	Max EH	Max EI	Max EJ	Max EK	Max EL	Max EM	Max EN	Max EO	Max EP	Max EQ	Max ER	Max ES	Max ET	Max EU	Max EV	Max EW	Max EX	Max EY	Max EZ	Max FA	Max FB	Max FC	Max FD	Max FE	Max FF	Max FG	Max FH	Max FI	Max FJ	Max FK	Max FL	Max FM	Max FN	Max FO	Max FP	Max FQ	Max FR	Max FS	Max FT	Max FU	Max FV	Max FW	Max FX	Max FY	Max FZ	Max GA	Max GB	Max GC	Max GD	Max GE	Max GF	Max GG	Max GH	Max GI	Max GJ	Max GK	Max GL	Max GM	Max GN	Max GO	Max GP	Max GQ	Max GR	Max GS	Max GT	Max GU	Max GV	Max GW	Max GX	Max GY	Max GZ	Max HA	Max HB	Max HC	Max HD	Max HE	Max HF	Max HG	Max HH	Max HI	Max HJ	Max HK	Max HL	Max HM	Max HN	Max HO	Max HP	Max HQ	Max HR	Max HS	Max HT	Max HU	Max HV	Max HW	Max HX	Max HY	Max HZ	Max IA	Max IB	Max IC	Max ID	Max IE	Max IF	Max IG	Max IH	Max II	Max IJ	Max IK	Max IL	Max IM	Max IN	Max IO	Max IP	Max IQ	Max IR	Max IS	Max IT	Max IU	Max IV	Max IW	Max IX	Max IY	Max IZ	Max JA	Max JB	Max JC	Max JD	Max JE	Max JF	Max JG	Max JH	Max JI	Max JJ	Max JK	Max JL	Max JM	Max JN	Max JO	Max JP	Max JQ	Max JR	Max JS	Max JT	Max JU	Max JV	Max JW	Max JX	Max JY	Max JZ	Max KA	Max KB	Max KC	Max KD	Max KE	Max KF	Max KG	Max KH	Max KI	Max KJ	Max KL	Max KM	Max KN	Max KO	Max KP	Max KQ	Max KR	Max KS	Max KT	Max KU	Max KV	Max KW	Max KX	Max KY	Max KZ	Max LA	Max LB	Max LC	Max LD	Max LE	Max LF	Max LG	Max LH	Max LI	Max LJ	Max LK	Max LL	Max LM	Max LN	Max LO	Max LP	Max LQ	Max LR	Max LS	Max LT	Max LU	Max LV	Max LW	Max LX	Max LY	Max LZ	Max MA	Max MB	Max MC	Max MD	Max ME	Max MF	Max MG	Max MH	Max MI	Max MJ	Max MK	Max ML	Max MM	Max MN	Max MO	Max MP	Max MQ	Max MR	Max MS	Max MT	Max MU	Max MV	Max MW	Max MX	Max MY	Max MZ	Max NA	Max NB	Max NC	Max ND	Max NE	Max NF	Max NG	Max NH	Max NI	Max NJ	Max NK	Max NL	Max NM	Max NO	Max NP	Max NQ	Max NR	Max NS	Max NT	Max NU	Max NV	Max NW	Max NX	Max NY	Max NZ	Max OA	Max OB	Max OC	Max OD	Max OE	Max OF	Max OG	Max OH	Max OI	Max OJ	Max OK	Max OL	Max OM	Max ON	Max OO	Max OP	Max OQ	Max OR	Max OS	Max OT	Max OU	Max OV	Max OW	Max OX	Max OY	Max OZ	Max PA	Max PB
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What makes an ideal impression?

- Include 2nd bend of ear canal
 - How?
 - » Use cotton blocks
 - » Place 3-4mm medial to second bend
- Fill concha bowl
- Full helix
- No air bubbles or gaps
 - How?
 - » Remove *all* debris from ear prior to taking impression
 - » Use electric impression gun

Expert tip: If you are using a syringe injector, keep the tip of the syringe embedded in the impression material allowing the material to push the tip of the syringe out as the ear canal is filled.

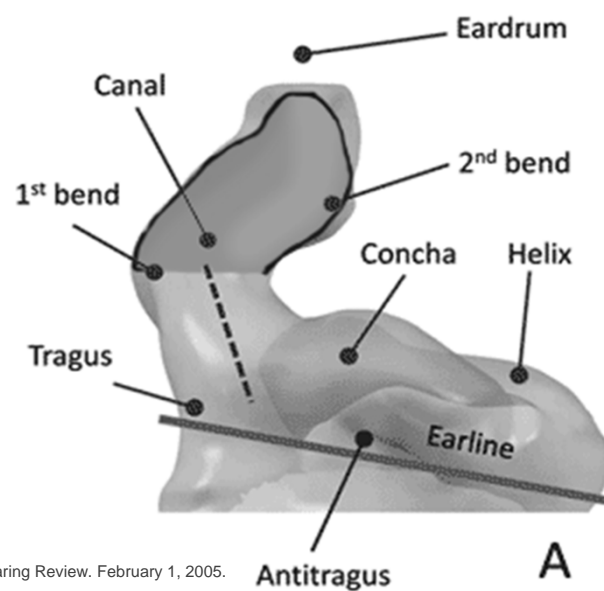
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What's happening in the ear canal?

- Most movement at cartilaginous and bony junction
 - Longer impression allows for:
 - More deeply seated device
 - Less opportunity for feedback
 - Accurate representation of this junction with open mouth
 - Represent changes in EAC with movement*
 - Reduce remakes**



*Oliveira, Ph.D., Robert, et. Al. "The Dynamic Ear Canal and Its Implications." The Hearing Review. February 1, 2005.

**Pirzanski, BSc, Chester, et. Al. "Ear Impressions: Art or Science?" Audiology Online. March 18, 2002.

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Impression taking considerations

- Impression material
 - Debate over low vs. high viscosity material
 - Low viscosity – can better represent EAC change with jaw movement*
 - Examples: 48ml cartridge (e.g. Silhouette, Silhouette Plus, Siliclone)
 - High viscosity – combined with open jaw impression can lead to decrease in remakes**
 - Examples: One-To-One (e.g. Silicone Singles, Silhouette Tub, SiliCast)
 - Shore value of at least 22 (S50 cartridges have shore value of 40)
- Injector
 - Infection control
 - Quality control
 - S50 cartridges medium viscosity

*Oliveira, Ph.D., Robert, et. Al. "The Dynamic Ear Canal and Its Implications." The Hearing Review. February 1, 2005.

**Pirzanski, BSc, Chester, et. Al. "Ear Impressions: Art or Science?" Audiology Online. March 18, 2002.

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Impression taking considerations

- Give a full picture of the ear regardless of device size
 - Most common calls made to customers:
 - Canal too narrow/short
 - Concha bowl too shallow
- Remove *all* debris from the ear canal
 - Debris attached to the impression will be removed prior to scanning, leaving a gap in material
 - When gaps need to be filled this can lead to remakes
 - Multiple impressions can help determine whether "flaw" is truly a flaw or anatomical in nature

Expert tip: Providing a complete picture of the ear via the impression can help proactively address common issues. This leads to a better end result and cuts down on outbound calls which reduces production time.

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What does this mean for your patients?

- Detailed order form
 - Every detail completed in initial order process without having to contact provider
 - Patient is fit ASAP
- Thorough impression
 - Correct receiver placement on the first build
 - Information on file for future additions
 - Patient spends less time in the office for remake impressions
 - Patient adapts to instruments with ease

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Custom product modeling and design

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Impression Scanning



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Shell Lab, Rapid Shell Modeling (RSM), and Post Processing teams

- » 59 people comprise these teams
- » Over 2,000 impressions modeled each day
- » Rapid Shell Modeling technicians receive ongoing training
- » Over 3,000 orders are picked each day
- » Responsible for Digital Cover Customization
 - » Allowing exact remakes when needed



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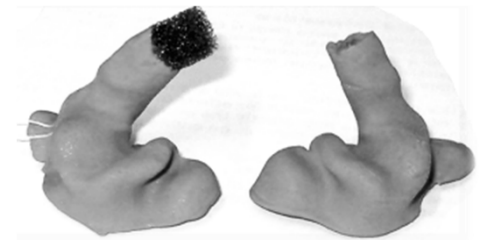
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Every impression scanned

- First step in the modeling process
 - Impression provides overall picture of ear
 - Ear anatomy in entirety helps model even smallest devices
- Oto-block removed from the impression before scanning
- Multiple impressions for single patient can be stored



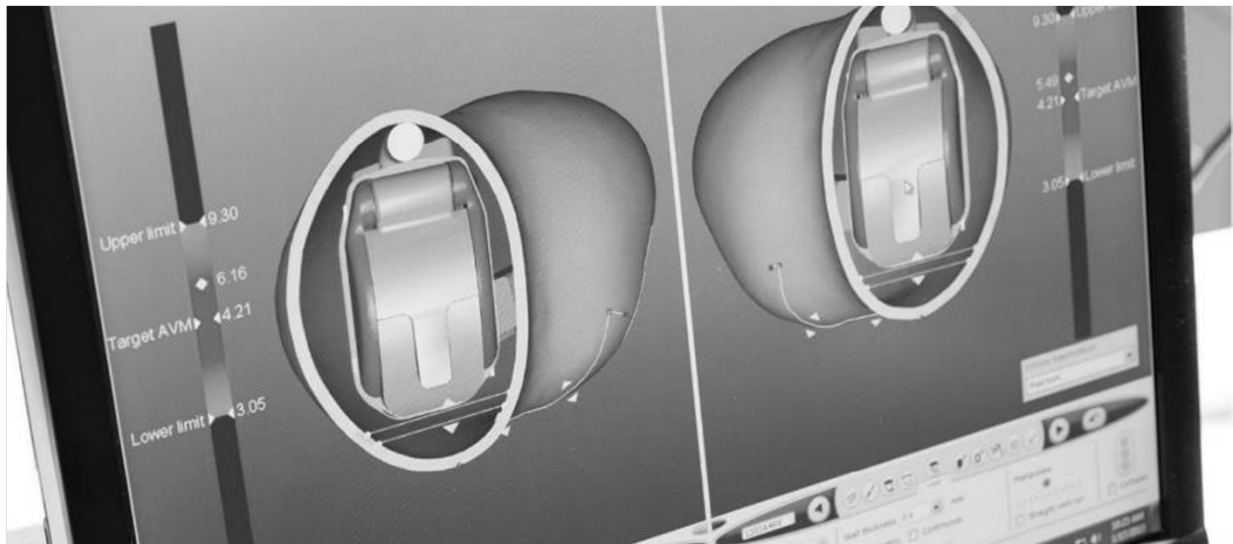
Expert tip: Include two impressions when possible. Open mouth and closed mouth impressions can be blended for a better end result.



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Device Design



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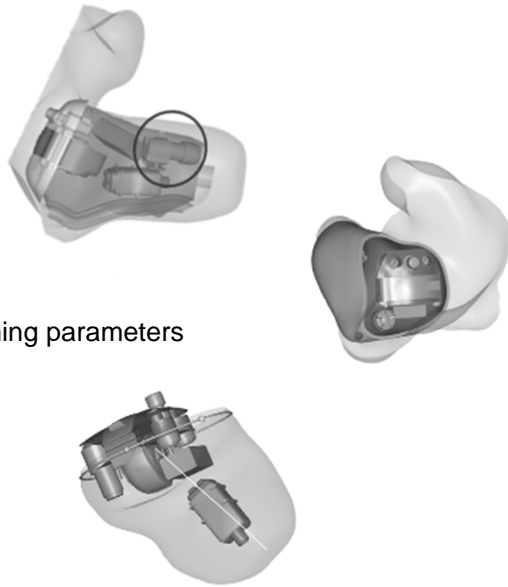
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RSM

- Impression is sent to modeling after being scanned
- Creates a digital view of the custom product in the ear
 - Positioning of components
- More than a simple model
 - Vent calculation is derived
 - Calculations are made that affect fitting and programming parameters

» What does this mean for your patients?

- » Impression scans saved
- » Saves you and your patients time in the future



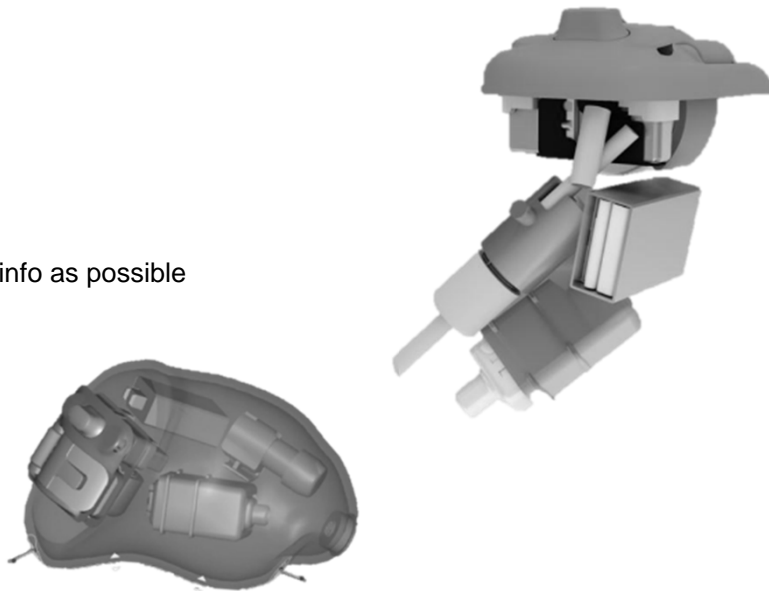
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Virto V – 25% smaller

- Floating Antenna™
- Faceplate redesign
- Fewer fixed components
- RSM process more flexible
- More reason to provide as much info as possible



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Virto V: Built to perform. Customized for discretion.

Discreetness:

- Floating Antenna™
- Smaller faceplate
- Smaller battery
- New push button design
- New volume control design



Performance:

- Directional Microphones
- Binaural VoiceStream Technology™
- Venture Technology
- Wireless Accessoires
- Tinnitus Balance Portfolio
- AOV

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What does this mean to your patients?

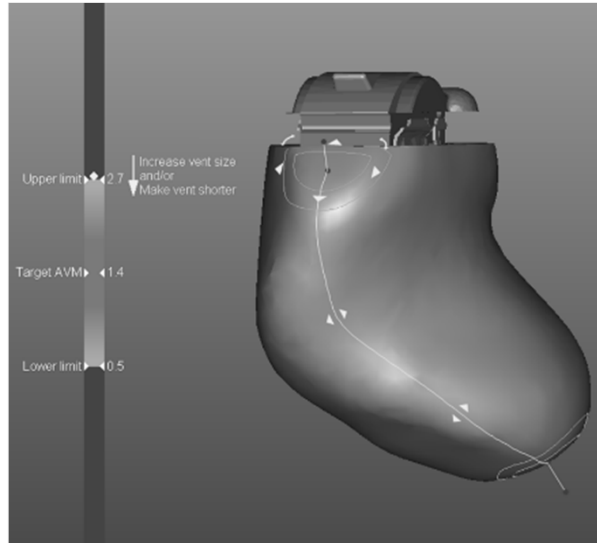
- » Fully directional, wireless mini canal
 - » Patients can have the small instrument they're looking for without sacrificing performance
- » Improved battery life
 - » Patients changing batteries less often
 - » Saves time and money

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Acoustically Optimized Venting (AOV)

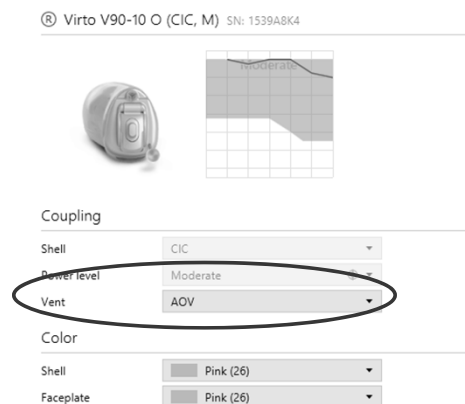
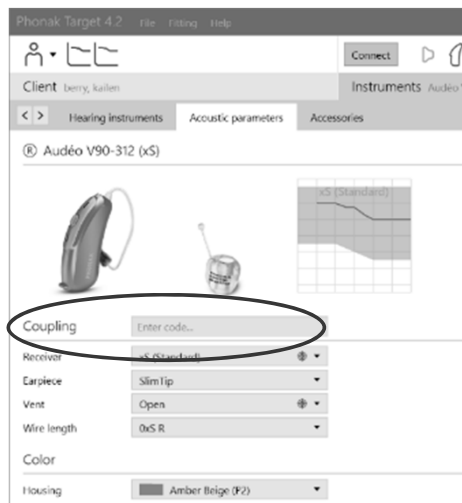


- Acoustically Optimized Venting
 - Individualized venting based upon shell size and audiogram thresholds
 - Integration of AOV into Target 4.2
 - AOV directly affects fitting outcomes
 - Sound quality may be affected due to missing AOV information

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AOV automatically populates in Target 4.2!

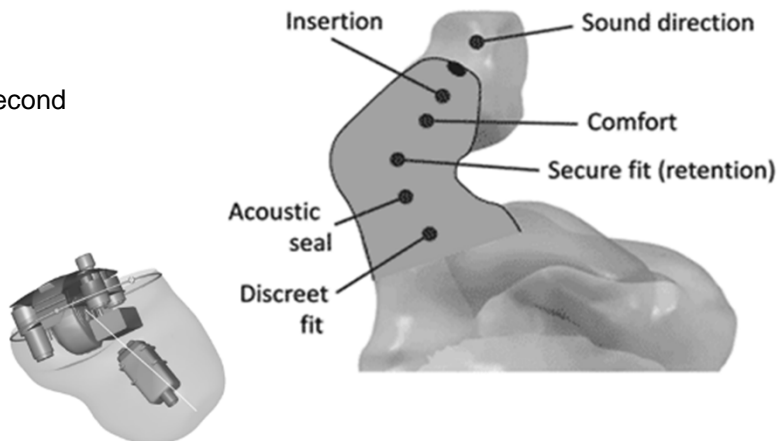


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Receiver placement

- Consider length of instrument
- Consider direction of second bend
 - Sound quality poorly affected if second bend is not accounted for



Expert tip: If your patient hears better with instrument pulled slightly out of the ear, this is a clue the direction of the sound bore may need to be changed.

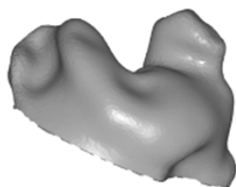
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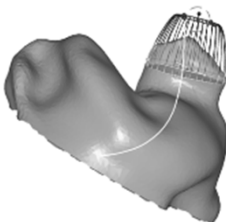
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RSM allows us to build up the canal, but...

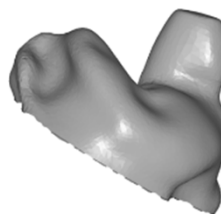
1. Impression scanned – Note short canal



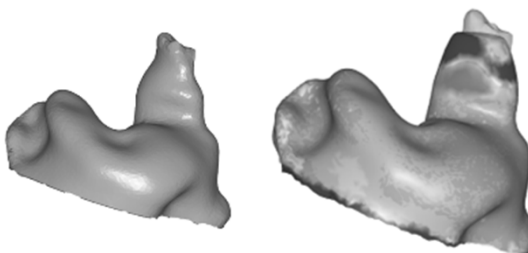
2. Build up needed to accommodate device



3. Build up extends canal based on original impression



...we still cannot know exactly what the ear canal shape may be.



4. Actual ear canal narrows, red spots show excessive material on built up device

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Production Customer Response (PCR) Team

- 11 people
 - 133 years of audiology experience combined
- Handle 275 orders per day
 - Work directly with customers
- Experts in difficult ears, new orders, remakes, and repairs



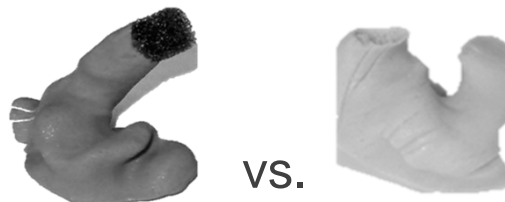
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PCR

- Why might our team need to call on an order before it is built?
 - Model not selected
 - Technology level not selected
 - Incompatible items selected
- Why might our team need to call on an order that can't be built as directed?
 - Collision of components
 - Large tragus/antitragus
 - Device will protrude
 - Impression does not allow for good build



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What about retention with challenging ears?

- Individualized solutions
 - Open mouth vs. closed mouth impressions
 - Blending
 - Canal lock
 - Rim of concha bowl
 - Soft coat
 - Retention ring/Barber pole



Expert tip: Fill entire concha bowl and include outer ear anatomy (i.e. intertragal notch, top of tragus, helix, etc.) even when ordering smaller devices. A full picture of the ear will help create a better product and a happier patient.

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Remakes are inevitable, how can we be proactive?

- Time is of the essence
 - Phone calls made only when requested
 - RSM model will be reviewed with you if you wish
- Getting to the root of the issue
 - Anticipate information needed
 - Where is soreness occurring?
 - Is shell too tight or too loose?
 - Is shell slipping with jaw movement?
 - What type of impression was taken?

Expert tip: If a custom instrument is “walking out” it is often thought to be too loose when, in actuality, it could be walking out due to changes in ear canal shape when the shell is built too tight.

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Device Assembly



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Cut/Trim/Lacquer & Wiring/Closing teams

- Together these teams are comprised of 101 individuals
 - Average of 7 years experience
- Components are positioned and faceplate is attached by hand
- Excess material is removed and lacquer is applied by hand



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Custom product assembly and inspection

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Device Inspection



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Quality Control

- With your great impressions – we ensure every device is checked before shipping
- Pre-Quality Control
 - Performed before shell is built to avoid any wasted time or material
 - Double check order
 - Special instructions
 - Color selection
 - Vent selection

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Quality Control Teams

- Total of 47 individuals
- Average of 7.5 years of experience
- Inspect over 5,000 devices everyday



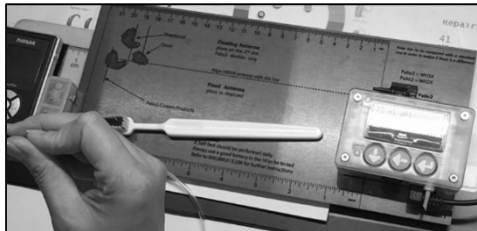
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Wireless Function Tests

- Tested at device closing AND before shipping
 - CROS function
 - Binaural Voice Stream Technology
 - Wireless accessory function
- Objective wireless text box
 - Performed with all Venture technology
 - Performed before shipping



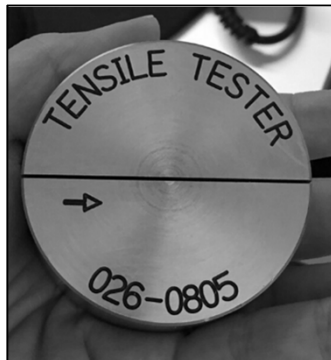
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Integrity checks

- Check vents
- Check removal cords



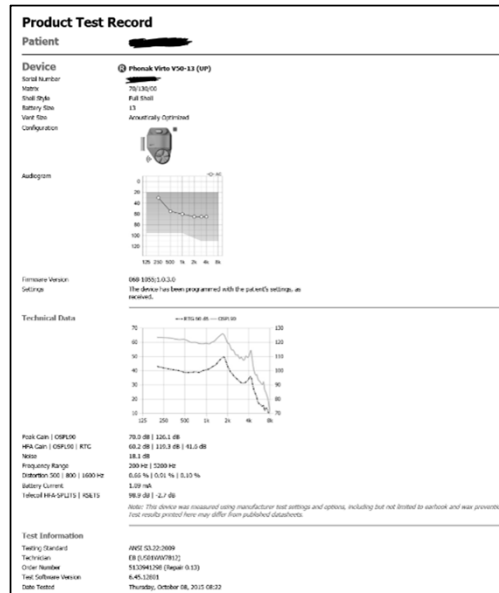
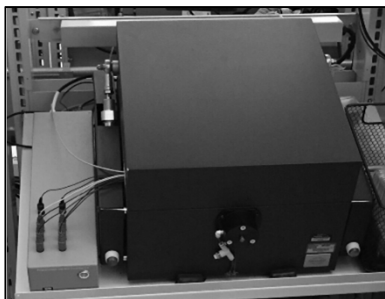
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Pro and Go

- Performed with new orders
- Devices tested to ANSI standards
 - Check T-coil
 - Check microphones
 - Load first fit if audiogram is provided



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What does this mean to your patients?

- Detailed modeling process
 - Utilizing all information to build your patient's device properly the first time
- Dedicated teams
 - Experts in their field
 - Many opportunities to check for mistakes and correct as necessary
- Quality control
 - Final verification of all devices

*Providing the greatest opportunity for good first physical fit

*Saving time for you and your patients

*Getting your patients hearing ASAP

*Ensuring a quality, functioning device on the first try

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Thank you!

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