

Simple Solutions Abutments

with Laser-Lok[®] technology



*For use with
BioHorizons & Zimmer[®]
dental implants*

BIOHORIZONS[®]
SCIENCE • INNOVATION • SERVICE



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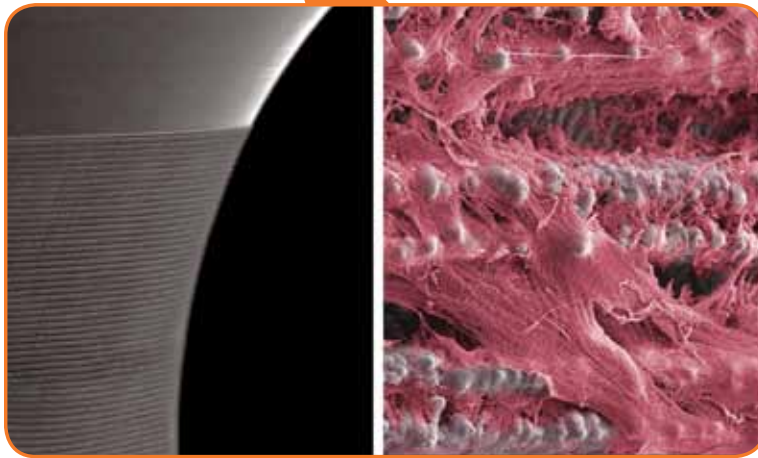
Simple Solutions abutments with Laser-Lok[®]

With the success of BioHorizons Laser-Lok technology on implants, BioHorizons breaks new ground by applying this innovative technology to abutments. The Simple Solutions abutment with Laser-Lok is designed to be seated at the time of implant placement or uncover and remain in place through final restoration^{2,3}. This establishes and maintains the connective tissue attachment while eliminating the second stage surgery.



Laser-Lok has been shown to:

- Inhibit epithelial downgrowth^{1,4}
- Attract a physical connective tissue attachment^{1,4} (unlike Sharpey fiber attachment)
- Preserve the coronal level of bone^{1,4}

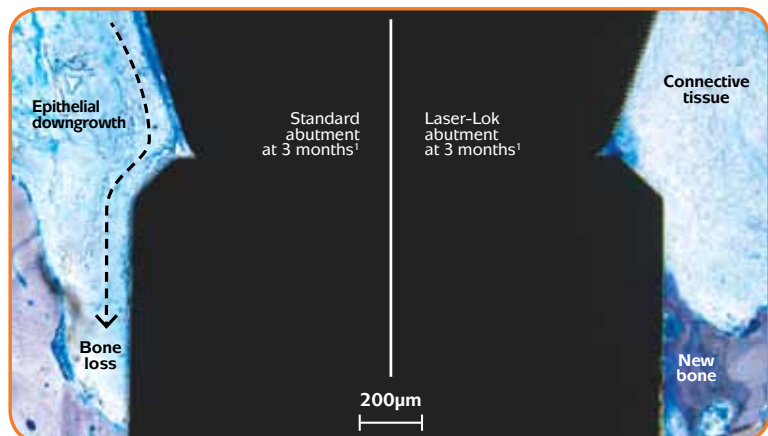


Laser-Lok microchannels

Laser-Lok microchannels with soft tissue attachment

In a recent study, Laser-Lok abutments and standard abutments were randomly placed on implants with a grit-blasted surface to evaluate the differences. In this proof-of-principle study, a small band of Laser-Lok microchannels was shown to inhibit epithelial downgrowth and establish a connective tissue attachment (unlike Sharpey fibers) similar to Laser-Lok implants.¹

This time, however, the attachment was established above the dental implant-abutment connection and even on implants with a machined collar.¹ The resulting crestal bone levels were higher than what was seen with standard abutments and provides some insight into the role soft tissue stability may play in maintaining crestal bone health.

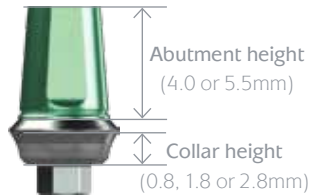


Images courtesy of Myron Nevins, DDS

SIMPLE SOLUTIONS COMPONENTS

The Simple Solutions abutment system is FDA-cleared (K100985) for use with BioHorizons Internal and Tapered Internal implants as well as Zimmer ScrewVent and Tapered ScrewVent implants.

Laser-Lok Abutment Packs



Prosthetic platform / Abutment height	0.8mm collar	1.8mm collar	2.8mm collar
3.5mm Abutment, 4.0mm	PY4008L	PY4018L	PY4028L
3.5mm Abutment, 5.5mm	PY5508L	PY5518L	PY5528L
4.5mm Abutment, 4.0mm	PG4008L	PG4018L	PG4028L
4.5mm Abutment, 5.5mm	PG5508L	PG5518L	PG5528L
5.7mm Abutment, 4.0mm	PB4008L	PB4018L	PB4028L
5.7mm Abutment, 5.5mm	PB5508L	PB5518L	PB5528L

Simple Solutions crowns finish on the restorative shoulder of the abutment. There are three options for transmucosal collar height: 0.8mm / 1.8mm / 2.8mm. Select the collar height that positions the restorative shoulder as close as possible to the desired position of the crown margin. Packaged with Abutment Screw (PXAS) and Healing Cap. Titanium Alloy [Ti-6Al-4V]. Final torque: 30Ncm.

Restorative Packs



SYRP40	3.5mm Restorative Pack, 4.0mm Height
SYRP55	3.5mm Restorative Pack, 5.5mm Height
SGRP40	4.5mm Restorative Pack, 4.0mm Height
SGRP55	4.5mm Restorative Pack, 5.5mm Height
SBRP40	5.7mm Restorative Pack, 4.0mm Height
SBRP55	5.7mm Restorative Pack, 5.5mm Height

Each restorative pack contains an impression cap, waxing sleeve and replica.

SIMPLE SOLUTIONS INDIVIDUAL COMPONENTS

Simple Solutions components are also sold individually. Visit www.biohorizons.com or contact your BioHorizons representative for more detail.

SIMPLE SOLUTIONS LAB TOOLS

Abutment Clamp

IMPAH **Abutment Clamp**

Used to hold two-piece abutments during delivery and tightening of the Abutment Screw.



SIMPLE SOLUTIONS LAB TOOLS

Lab Casting Reamers

SYCR **3.5mm Casting Reamer**

SGCR **4.5mm Casting Reamer**

SBCR **5.7mm Casting Reamer**

Used by lab to remove the snap feature from metal castings fabricated with Simple Solutions Waxing Sleeves. **Do not use on non-precious alloys.** Order by platform diameter.



Replica Lab Tools

SYRLT **3.5mm Replica Lab Tool**

SGRLT **4.5mm Replica Lab Tool**

SBRLT **5.7mm Replica Lab Tool**

Used by lab to create burn-out copings without use of the Waxing Sleeves. The double-ended tools (4.0mm / 5.5mm abutment height) mimic the geometry of Simple Solutions Replicas including the anti-rotation flats, but WITHOUT the retentive snap feature. Castings made from copings fabricated on the Replica Lab Tools do not require use of the Casting Reamers.



SIMPLE SOLUTIONS ABUTMENTS CAN BE RESTORED
IN 3 EASY VISITS

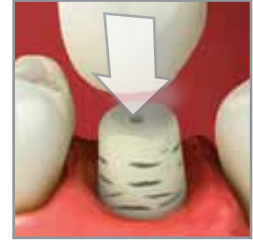
Surgical Visit



1. Seat abutment at
implant placement or
uncovery



2. Seat Healing Cap



3. Place temporary
crown on Healing Cap

First Restorative Visit



1. Remove temporary
crown and Healing Cap



2. Make closed-tray
pick-up impression



3. Replace temporary
crown and Healing Cap

Second Restorative Visit



1. Remove temporary
crown and Healing Cap



2. Seat final restoration



3. Release patient

ABUTMENT SELECTION

The abutment height (either 4.0mm or 5.5mm) should be selected to ensure a minimum of 1.5mm of clearance on the occlusal aspect. This allows adequate space for the precious metal framework and veneer of a porcelain-fused-to-metal (PFM) prosthesis; or the required thickness of an all-ceramic restoration.

ALTERNATIVE TECHNIQUE: When 1.5mm of clearance cannot be obtained using the shortest (4.0mm high) Simple Solutions Abutment, a custom cast screw-retained or laboratory-modified cement-retained restoration may be indicated. These alternative protocols require an implant-level impression and a working stone cast with soft tissue material.

Abutment Height Selection



Simple Solutions Color-coding

Simple Solutions restorative components are designed to be intuitive and user-friendly. Each implant prosthetic platform and its corresponding components have a highly-visible matching color-code. The Abutments and Replicas are laser-marked either 4.0 or 5.5, reflecting their height in millimeters. Healing Abutments are also encoded with the platform information to aid in component selection before being removed.



3.5mm Prosthetic Platform



4.5mm Prosthetic Platform



5.7mm Prosthetic Platform

RESTORATIVE COMPONENT FEATURES

Simple Solutions Abutments



Use: with BioHorizons Internal and Tapered Internal implants as well as Zimmer ScrewVent and Tapered ScrewVent implants

- Match by prosthetic platform: 3.5mm / 4.5mm / 5.7mm
- Select transmucosal collar height: 0.8mm / 1.8mm / 2.8mm
- Select abutment height: 4.0mm / 5.5mm
- Restore without modification
- Standard .050" (1.25mm) Hex Driver / 30 Ncm Torque Wrench
- Titanium Alloy (Ti-6Al-4V)

PEEK Healing Caps



Use: for provisionalization of Simple Solutions Abutments

- Match platform and height of the Simple Solutions Abutment
- PEEK (PolyEtherEtherKetone) material
- Used as is, or with acrylic added for enhanced esthetics
- Secure with temporary cement

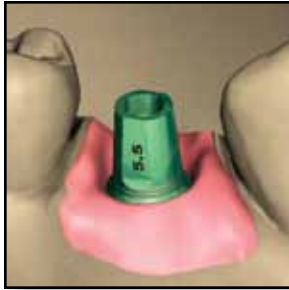
Impression Caps



Use: to make a closed-tray pick-up impression

- Match platform and height of the abutment
- Retracts soft tissue away from the restorative shoulder
- Provides positive seat for indexing Replica in the impression
- Single-use only. Do not reuse or sterilize

Replicas



Represents: the implant and abutment in the working cast

- Match platform and height of the Simple Solutions Abutment
- Titanium Alloy (Ti-6Al-4V)

Waxing Sleeves



For Crown

Purpose: burn-out coping to facilitate waxing of framework

- Match platform of the Simple Solutions Abutment
- One height (7.0mm) for each prosthetic platform. Trim as necessary
- Waxing Sleeve for crown has internal anti-rotational features
- See page 14 for an alternative method for coping fabrication



For Bridge

Deliver Abutment



Seat the Simple Solutions Abutment and Abutment Screw using the .050" (1.25mm) Hex Driver. Aligning one of the anti-rotation flats to the facial/buccal will aid component indexing and leave more room for porcelain on the facial of the prosthesis.

If the implant/abutment connection is obscured by tissue, radiographically verify complete abutment seating prior to torquing the Abutment Screw to 30Ncm using the .050" (1.25mm) Hex Driver and a calibrated Torque Wrench.

An Abutment Clamp may be used to apply counter-torque during the tightening procedure. Grasp the exterior of the abutment with the Clamp and hold it against the rotation of the wrench to shield the bone from excess stress.

ALTERNATIVE TECHNIQUE: An intra-oral scan may be taken of the seated abutment if a Computer-assisted Design/Computer-assisted Machined (CAD/CAM) restoration is desired. See page 11 for more information.

Seat Healing Cap



Fill the screw access channel in the abutment with a resilient material of choice to prevent the ingress of cement into the screw hole.

There are three techniques which may be used to temporize a Simple Solutions Abutment:

- 1) Use the Temporary Healing Cap alone. This may be used where esthetics are not critical.
- 2) For a more esthetic provisional restoration, score the exterior surface of the Cap to help create undercuts for a mechanical bond and then add temporary acrylic directly to the Healing Cap.
- 3) Utilize a temporary shell crown and do a reline directly over the Healing Cap. Score the exterior surface of the Cap to help create undercuts for a mechanical bond.



Place a small amount of temporary cement around the inside margin of the Healing Cap and seat over the Abutment. Remove all excess cement from sulcus area while being careful to protect the Laser-Lok zone from contamination. Check and modify occlusion to eliminate contacts.



FIRST RESTORATIVE VISIT

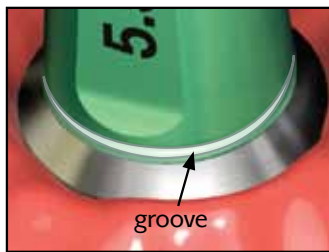
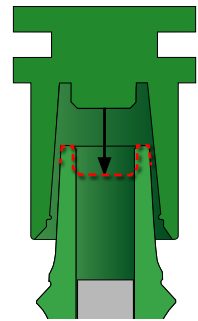
Remove the Healing Cap and provisional prosthesis. Make sure the restorative shoulder and Abutment are free of all temporary cement. Select an Impression Cap corresponding to the prosthetic platform and abutment height. See page 12 for information on differentiating Impression Cap height.

Verify the abutment and restorative shoulder are dry and free of all debris. The Impression Cap will not seat properly unless all impediments are removed.

Seat the Plastic Impression Cap on the Abutment aligning the internal flats of the Cap with the two flats on the abutment. The exterior ridges on the Cap are used as visual guides to help alignment. An internal ring snaps into the groove at the base of the abutment, holding it securely in place. A core pin within the Cap seats into the abutment screw access channel for stability.

Seat Impression Cap

Core pin within the Cap engages the screw access channel for added stability



Impression Cap snaps into circumferential groove



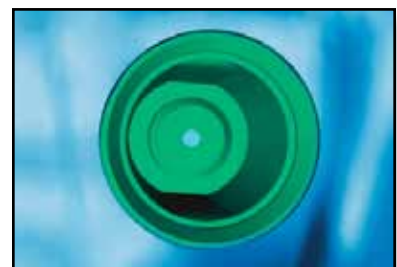
Ridges on the Cap align with the Abutment flats



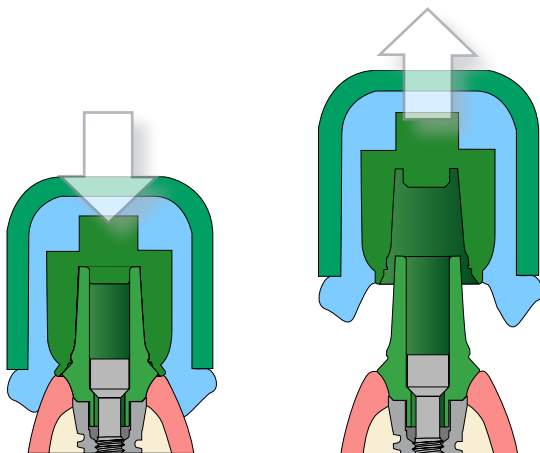
A perceptible snap will be felt as the Cap becomes fully seated

Make Impression

Syringe a medium- or heavy-bodied elastomeric impression material around the Impression Cap. Record the full arch impression with the tray loaded with the same or heavier-bodied impression material. After the impression material has set, remove the tray with the incorporated Cap from the patient's mouth. Verify complete adaptation of the impression material around the Cap. Verify that impression material has not contaminated the Laser-Lok zone. Re-seat healing cap and temporary crown.



Verify complete adaptation of the impression material around cap



Final Prosthesis Delivery



Sanitize the final restoration. Remove the Healing Cap and provisional prosthesis. Make sure the restorative shoulder and Abutment are free of all temporary cement. Re-torque the Abutment Screw to 30Ncm using a calibrated Torque Wrench and the .050" (1.25mm) Hex Driver.

Fill the access hole in the abutment with a resilient material of choice. This allows access to the Abutment Screw in the future if needed. Seat the prosthesis and confirm fit and contour. Check and modify occlusion if necessary.



Place a small amount of cement around the inside margin of the prosthesis. Soft-access cement may be used for future retrievability. Seat the prosthesis ensuring cement does not contaminate the Laser-Lok zone.. Remove all excess cement from sulcus area.

Roughing the Abutment surface will facilitate retention of the restoration when using soft cements, or where short abutment height requires additional surface area for permanent cementation.

Following seating of the restoration, take a radiograph for final prosthesis delivery records. The patient should be given complete oral hygiene instructions prior to release.



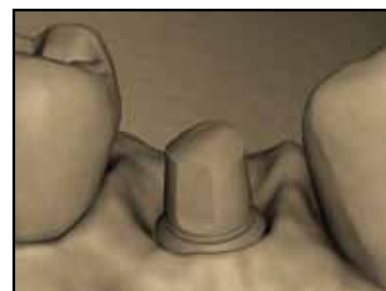
APPENDIX - ABUTMENT MODIFICATION

Modifying the Abutments (*alternative technique*)

If a Simple Solutions Abutment requires modification, ultrasonic cleaning and resterilization should be performed in accordance with the Simple Solutions with Laser-Lok IFU (ref#L02002). A standard crown & bridge-type impression can then be taken. Simple Solutions Impression Components cannot be used in these cases.

Block out the screw access hole of the abutment with a resilient material of choice. The use of retraction cord may be necessary to ensure the transfer of the margin of the restorative shoulder. Syringe light or medium-bodied impression material around abutment. Use medium or heavy-bodied impression material in the tray. Make a full-arch crown & bridge impression with the elastomeric impression material of choice.

Send the impression, an opposing model or impression and a bite registration to the laboratory for prosthesis fabrication. For chair-side provisional fabrication, lightly lubricate the modified abutments and use the technique and material of choice.



CAD/CAM Ceramic Restorations (*alternative technique*)

The following is a brief description of how Simple Solutions Abutments may be used in Computer-assisted Design/Computer-assisted Machined (CAD/CAM) restorations. Please consult a dental laboratory technician or other qualified source for detailed information.

The process is initiated by either an intraoral scan of the seated Abutment with a small handheld infrared camera, or by an optical or physical touch-device of the Replica in a stone cast at the laboratory. Follow procedures discussed earlier in this manual to seat the abutment in the patient and/or create the stone cast as required.

Information from the scan of either the Abutment or Replica will be entered into a computer program where it will be used by the clinician or technician to design a custom prosthesis. The retentive groove and the screw access channel on the Abutment or Replica must either be physically blocked-out before the scan or removed via the computer design program, to prevent these features from being replicated in the custom-milled prosthesis.

The design is then entered into an automated milling machine which mills a prosthetic framework out of solid ceramic. The framework can receive a layer of veneering material after milling, per standard laboratory procedures. Following processing, the fit and occlusion are verified and the prosthesis is bonded into place.



Seat Replica

Seat the Replica in the impression, being certain to index the flats of the Replica to the flats of the Impression Cap. The Replica has a circumferential groove to engage the snap ring of the Impression Cap and hold it securely in place.

A soft tissue model material is always recommended around the Replica, and is essential whenever the crown margin will be subgingival. Verify proper Replica seating and apply lubricant where soft tissue model material is to be applied.

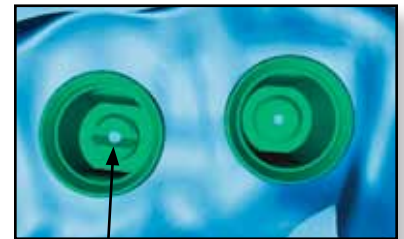


Impression Cap Height Differentiation

When Impression Caps of the same color (prosthetic platform) but different heights are present, visually inspect for the V-groove before seating Replicas. Presence of the groove on the inside of the cap indicates 4.0mm Cap height; absence of the groove indicates 5.5mm height.



Mismatching Impression Cap and Replica heights or color will result in an inaccurate, unusable working cast.



V-groove indicates
4.0mm Cap height

No groove indicates
5.5mm Cap height



APPENDIX - LAB PROCEDURE

Use standard laboratory technique to fabricate the working cast with extra hard low-expansion dental stone.



Soft tissue material (gingival mask) is always recommended, and is essential for subgingival crown margins.

Articulate according to standard laboratory procedures.

Pour Working Cast



Select Waxing Sleeve

Select the appropriate Plastic Waxing Sleeve: either Crown (single-unit) or Bridge (multiple-unit) and reduce the height as needed. The Waxing Sleeves snap on to the Replicas in the same manner as the Impression Caps.

Technicians may opt to reduce or remove the snap feature from the Waxing Sleeves with the Casting Reamers (see page 15) prior to beginning the wax-up. This will make it easier to remove the coping from the Replica. If the retentive snap is removed, take care to ensure the Waxing Sleeve sits properly on the Replica throughout the waxing procedure.

The Waxing Sleeves for Crown are visually differentiated by exterior ridges and have internal anti-rotation flats to engage the replica flats. The Waxing Sleeves for Bridge have no anti-rotational feature, and therefore must not be used for single-units.



Sleeves for single-units have ridges to index the internal anti-rotation features to Replica flats

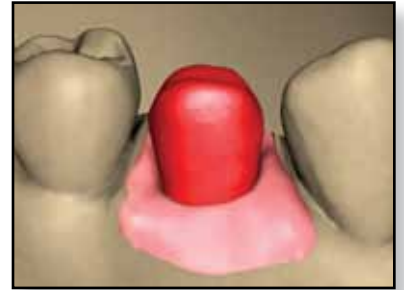


Sleeves for multiple-units have neither exterior ridges nor internal anti-rotation features

Create Wax Framework

Wax is added to the sleeve to give proper support for the veneering material. As with all plastics used for casting procedures, it is important to place a thin layer of wax over the entire outer surface of the coping because the plastic expands first before it starts to burn out. Failure to place the wax layer can result in fractures and/or breakdown of the investment yielding a poor casting.

Clean the interior portion of the coping with alcohol on a cotton swab to remove wax, dirt or oil residues.



Replica Lab Tools (*alternative technique*)

Technicians preferring to create copings without use of the Waxing Sleeves may wax directly to the Simple Solutions Replica Lab Tools. The double-ended tools (4.0mm platform / 5.5mm platform) precisely mimic the geometry of Simple Solutions Replicas including the anti-rotation flats, but WITHOUT the retentive snap feature. Castings made from copings fabricated on the Replica Lab Tools do not require use of the Casting Reamers as described on page 15. Available for each of the three prosthetic platforms.



Invest and Cast

Follow the alloy manufacturer's recommendations for spruing. Do not use debubblizers or surfactants as they may leave a residue which can cause a rough internal surface on the casting. Use a phosphate bonded investment and follow the manufacturer's recommendations for a two stage burn-out.



Rapid-fire burn-out techniques may cause fracturing in the investment during the process of burning out the plastic.

Cast the coping or framework from a high noble alloy, following the manufacturer's recommendations. After casting, remove as much of the investment as possible from the external surfaces of the casting with blasting media. Protect the internal aspect of the casting to prevent damage to the interface during divestment.

Remove the investment from the internal surfaces of the castings with a hydrofluoric acid substitute in an ultrasonic bath or a fiberglass brush. Glass beads may be used instead, but are not the preferred choice for accuracy.



Remove Snap Feature from Casting

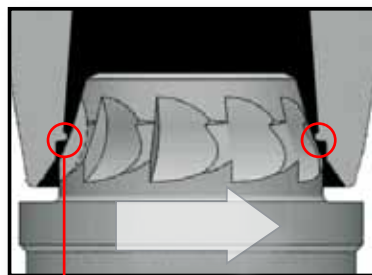
The Waxing Sleeve's snap ring is replicated in the casting, and must be removed prior to seating the casting on the model. Failure to do so will prevent proper seating of the casting. This step is not necessary if the snap feature was removed from the Waxing Sleeve prior to casting.

Casting Reamers are available for removing the snap feature of each of the three prosthetic platforms. Working under magnification, remove the snap feature with the cutting edge of the Reamer, taking care not to damage the margin of the casting. The Reamer features a built-in stop preventing removal of too much material.

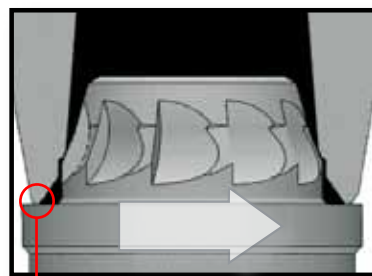


Biohorizons Casting Reamers are designed for use with noble or high-noble alloys; do not use with castings made of non-precious metals.

ALTERNATIVE TECHNIQUE: Castings fabricated on Replica Lab Tools do not require use of the Casting Reamers because the snap feature is not replicated in the wax-up (see page 14).



Snap feature must be removed for casting to seat properly.



Reamer will "bottom out" or stop when cutting is complete.



Insert appropriate diameter Reamer into the casting.



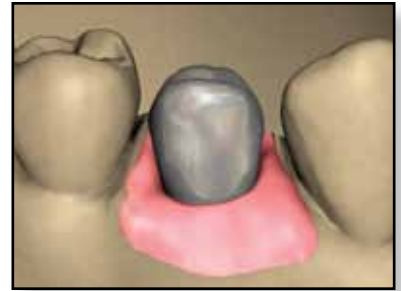
Apply firm pressure and rotate several complete turns in a clockwise direction. Built-in stop prevents excessive removal of material.



Remove Reamer and verify passive fit on the Replica in working cast.

Veneer the Framework

Verify the fit of the casting on the working cast and/or return to the clinician for patient try-in. Following verification of fit, prepare the casting to receive the opaque layer according to routine laboratory procedures. Apply veneering material and finish according to manufacturer's specification. Polish any metal margins as is routine. Return the finished prosthesis to clinician.



ORDERING & WARRANTY INFORMATION

Product Support Specialist: _____

Cell phone: _____

Fax: _____

BioHorizons No Exceptions Lifetime Warranty on Implants and Prosthetics: All BioHorizons implants and prosthetic components include a No Exceptions Lifetime Warranty. BioHorizons implant or prosthetic components will be replaced if removal of that product is due to failure (excluding normal wear to overdenture attachments).

Additional Warranties: BioHorizons warranties instruments, surgical drills, taps, torque wrenches and Virtual Implant Placement (VIP) treatment planning software.

(1) Surgical Drills and Taps: Surgical drills and taps include a warranty period of ninety (90) days from the date of initial invoice. Surgical instruments should be replaced when they become worn, dull, corroded or in any way compromised. Surgical drills should be replaced after 12 to 20 osteotomies.¹⁰

(2) Instruments: The BioHorizons manufactured instrument warranty extends for a period of one (1) year from the date of initial invoice. Instruments include drivers, sinus lift components, implant site dilators and BioHorizons tools used in the placement or restoration of BioHorizons implants.

(3) VIP treatment planning software: VIP treatment planning software warranty extends for a period of ninety (90) days from the date of initial invoice. The warranty requires that VIP be used according to the minimum system requirements.

(4) Compu-Guide surgical templates: Compu-Guide surgical templates are distributed without making any modifications to the submitted Compu-Guide Prescription Form and VIP treatment plan ("as is"). BioHorizons does not make any warranties expressed or implied as it relates to surgical templates.

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Treatment planning and clinical application of BioHorizons products are the responsibility of each individual clinician. BioHorizons strongly recommends completion of postgraduate dental implant education and adherence to the IFU that accompany each product. BioHorizons is not responsible for incidental or consequential damages or liability relating to use of our products alone or in combination with other products other than replacement or repair under our warranties.

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Distributed Products: For information on the manufacturer's warranty of distributed products, please refer to their product packaging. Distributed products are subject to price change without notice.

Validity: Upon its release, this literature supersedes all previously published versions.

Availability: Not all products shown or described in this literature are available in all countries. BioHorizons continually strives to improve its products and therefore reserves the right to improve, modify, change specifications or discontinue products at any time.

Any images depicted in this literature are not to scale, nor are all products depicted.

1. Histologic evidence of a connective tissue attachment to laser microgrooved abutments: a canine study. M Nevins, DDS, DM Kim, DDS, DMSc, SH Jun, DDS, MS, K Guze, DMD, P Schupbach, PhD, ML Nevins, DMD, MMSc. Accepted for publication: JPRD, Vol 30, Number 3, 2010.
2. Adequate primary stability required.
3. Removing the abutment after initial placement may disrupt the connective tissue attachment.
4. Human Histologic Evidence of a Connective Tissue Attachment to a Dental Implant. M Nevins, ML Nevins, M Camelo, JL Boyesen, DM Kim. International Journal of Periodontics & Restorative Dentistry. Vol. 28, No. 2, 2008

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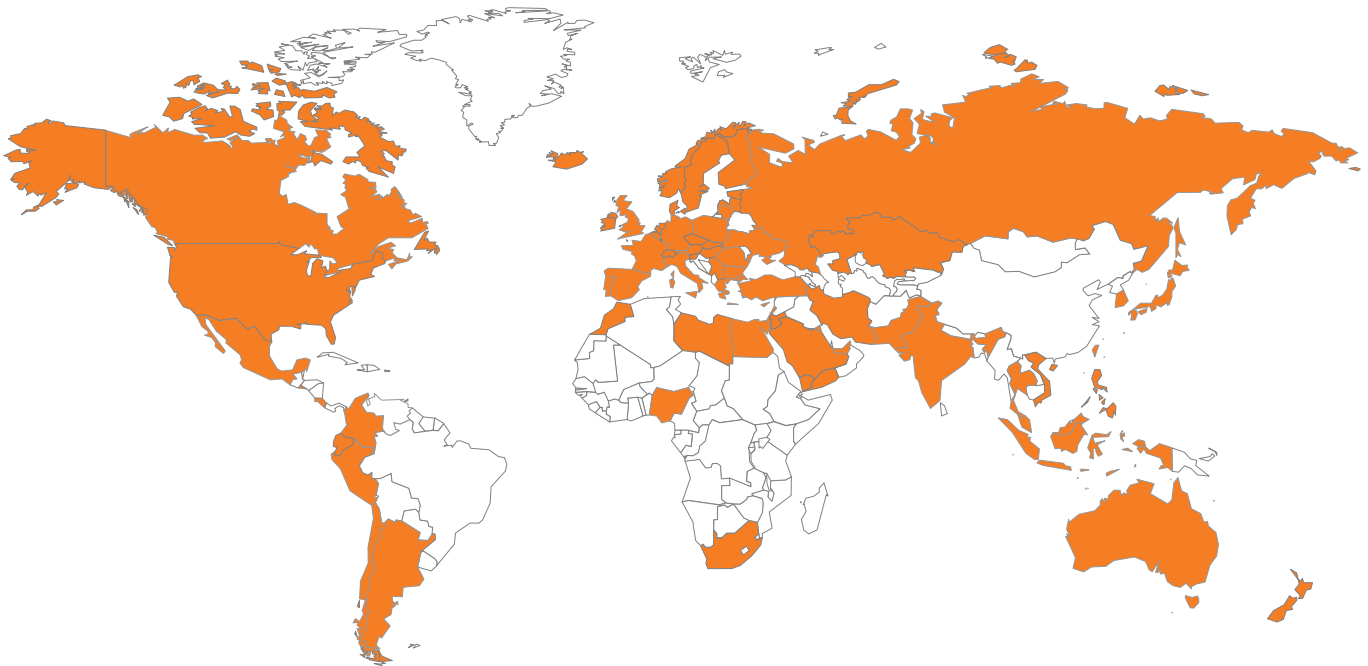
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