

prosthetic technique manual



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INTRODUCTION

BioHorizons Internal and Tapered Internal implant systems share identical prosthetic platforms with a secure internal hex connection to allow complete cross-compatibility between the two systems. Both implants offer the flexibility of either two-stage, single-stage or immediate load treatment plans.

Each Internal and Tapered Internal implant comes with a free, gold-hued esthetic *3inOne™* Abutment. This multi-purpose abutment may be used:

- at placement as a surgical mount
- as an impression coping when coupled with the Ball-top Screw
- as a final/temporary abutment for a cemented restoration

The beveled restorative platform provides an excellent biomechanical seal at the implant/abutment interface and aids in distributing lateral load away from the Abutment Screw. These features, combined with the use of Spirallock® screw technology, virtually eliminate unwanted screw loosening.



This manual serves as reference for BioHorizons Internal and Tapered Internal implants and prosthetic components. It is intended solely to provide instructions on the use of BioHorizons products. It is not intended to describe the methods or procedures for diagnosis, treatment planning, placement or restoration of implants; nor does it replace clinical training or a clinician's best judgment regarding the needs of each patient. BioHorizons strongly recommends appropriate training as a prerequisite for the placement/restoration of implants and associated treatment.

The procedures illustrated and described within this manual reflect idealized patient presentations with conditions adequate for commencement of the restorative phase of treatment. No attempt has been made to cover the wide range of actual patient conditions which may adversely affect prosthetic outcomes. **Clinician judgment as related to any specific case must always supersede any recommendations made in this or any BioHorizons literature.**

For ideal results in implant dentistry, the treatment team should be in agreement and in communication throughout all stages of therapy. The patient, the restorative and surgical doctors, as well as the dental laboratory should understand and agree upon the treatment plan. The treatment plan chosen will determine the design, number and position of the implants.

Diagnostic Casts

Mounted study casts and a diagnostic wax-up are the foundation for determining implant location.

Surgical Guide Templates

Once the diagnostic wax-up is finalized, the restorative doctor or dental laboratory fabricates the surgical guide template. This guide dictates to the surgeon the implant location that offers the best support for the prosthesis, as well as optimal esthetics and hygiene requirements. The surgical guide also provides information about the tooth and supporting structures that have been lost.

Restoration Matrix

A matrix of the diagnostic wax-up may also be utilized by the laboratory when developing the final prosthesis. The matrix acts as a guide for position and contour of the prosthesis.

Fabricating a Surgical Guide

Several methods of fabrication for the surgical template are available. One method is described below.

1. Utilizing the diagnostic wax-up, create a duplicate stone model and then fabricate a clear acrylic thermoform guide over the waxed-up area and adjacent teeth. Extend the template to include several teeth on each side of the implant site for template stability.
2. The surgical guide is marked while on the study model in the area where the center of the implant should be located. Implants are designed for axial load to the implant body. The marks on the surgical guide should reflect the optimal long-axis load location. For posterior teeth this would be through the occlusal table. For cement-retained anterior teeth, the ideal location would be through the incisal edge.
3. Drill holes through the template where the marks have been made from the study model. Dependent on implant location, the facial or lingual walls of the surgical guide may need to be removed for easier surgical access.
4. For the totally edentulous arch, the template should extend onto unreflected soft tissue regions, i.e., the palate and tuberosities in the maxilla or the retromolar pads in the mandible. This assures the template will be stable after the soft tissues have been reflected from the bone during surgery.





Two-stage Surgical Protocols

The original protocol for placing modern dental implants was two-stage (submerged) surgery, and it is still widely used today. The implant is placed below the soft tissue and protected from occlusal function and other forces during osseointegration. A low-profile Cover Cap is placed on the implant to protect it from the ingress of soft tissue.

Following osseointegration, a second surgery exposes the implant and a transmucosal Healing Abutment is placed to allow for soft tissue healing and development of a sulcus. Prosthetic restoration begins after soft tissue healing.



Single-stage Surgical Protocols

Single-stage surgery leaves the implant/abutment connection exposed to the oral cavity via an integrated transmucosal element (e.g. BioHorizons Single-stage), or a removable Healing Abutment (e.g. BioHorizons Internal). This eliminates the need for a second surgery to expose the implant. Although the implant is not in occlusal function, some forces can be transmitted to it through the exposed transmucosal element.

Prosthetic restoration begins following osseointegration of the implant and soft tissue healing.



Non-functional Immediate Restorations

Single-stage surgery with non-functional immediate restoration provides patients a non-occlusal provisional prosthesis early in the treatment plan. An abutment may be placed on the implant at or shortly after surgery, and a provisional restoration secured to it with temporary cement. Alternatively, a screw-retained prosthesis may be fabricated. The provisional can help contour the soft tissue profile during healing.



Immediate Function Restorations

Single-stage surgery with Immediate Function is possible in good quality bone where multiple implants exhibiting excellent initial stability can be splinted together. Splinting implants together can offer a significant biomechanical advantage over individual, unsplinted crowns.

Temporary Prosthesis

Temporary restorations are dependent on the treatment plan, the requirements of the patient and the final restoration planned.

Temporization Prior to Second-stage Surgery

Totally edentulous patient

1. The existing denture is relieved over the implant sites and relined with a soft material.
2. Transitional implants may be placed in between the permanent implants. A provisional restoration can be fabricated or the existing denture may be modified to be supported by the transitional implants.

Partially edentulous patient

1. A removable appliance can be made which is relieved to protect the implant from function.
2. A “Maryland bridge” can be fabricated.
3. In non-esthetic zones a temporary may not be necessary.

Temporization After Second-stage Surgery

Cement-retained crown & bridge

1. A provisional crown or bridge restoration can be fabricated on a titanium or PEEK plastic temporary abutment. Techniques used for traditional temporaries on natural teeth are used.

Screw-retained crown & bridge

1. Screw-retained provisional restorations can be fabricated using PEEK plastic or titanium temporary abutments.

Occlusion

The occlusal philosophy for dental implants is highly variable and dependent upon several parameters. Implant and natural tooth position, number, size and prosthesis design produce a myriad of possible combinations. The restoring dentist has the responsibility to minimize overload to the bone-to-implant interface.

For partially edentulous patients, occlusal forces between implants and teeth should be harmonized. A heavy bite-force occlusal adjustment is used to depress the natural teeth, positioning them closer to the implant position and equally sharing the load. Every effort should be made to direct the occlusal forces down the long axis of the implant.

For totally edentulous patients with fixed restorations, balanced centric occlusion with anterior guidance and posterior disclusion in all excursions, is suggested. Every effort should be made to direct the occlusal forces down the long axis of the implant.

A totally edentulous patient with a full-arch removable prosthesis should have bilateral balanced occlusion.

Patients with parafunctional habits should be provided with occlusal night guards, which will minimize destructive forces.

Maintenance

Ongoing hygiene for the implant patient is vital. Three-month hygiene recall is suggested. Instruments designed for implant scaling, such as Implacare® instruments from Hu-Friedy® should be utilized. The stainless steel handles may be fitted with assorted tip designs used for hygiene on natural teeth. The Implacare® scalers will not damage implant abutments and contain no glass or graphite fillers that can scratch titanium implant abutments.

TREATMENT PLANNING

Delivery of Torque

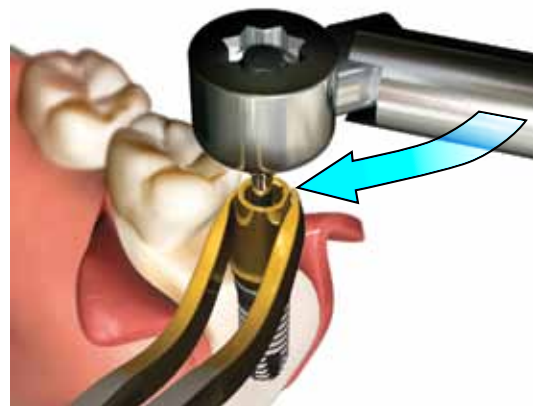
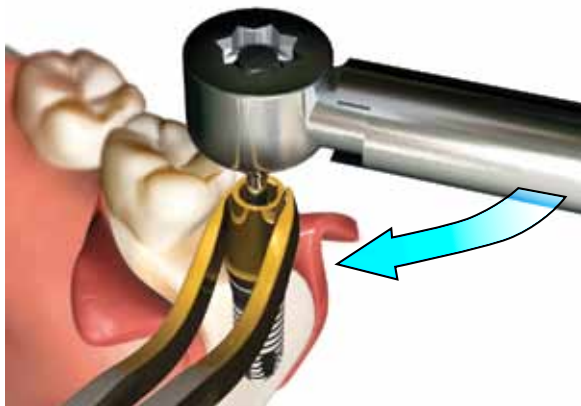
The measurement of torque output is important in implant restorative procedures. The tightening of abutments and screws to recommended torque specifications will, in effect, control screw-joint integrity during patient function.

The 30 Ncm Torque Wrench can be used to torque all BioHorizons Internal one-piece abutments and screws. After hand-tightening the screw or abutment into place, insert the required driver into the Torque Wrench (in the closed position). Engage the component with the driver and apply firm apical pressure to ensure proper seating of the tool. Failure to do so may result in stripping of either the driver or the component. Turn the wrench slowly in a clockwise direction until the hinge “breaks”, which indicates that the proper torque value has been delivered.

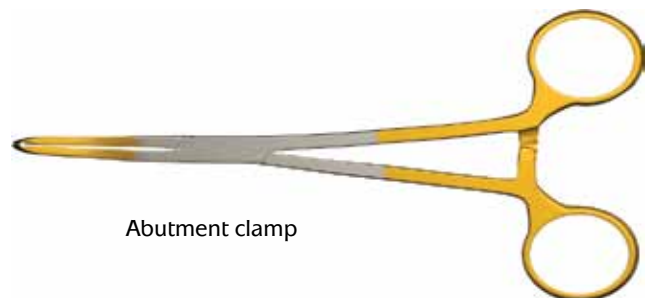
The following items only require hand-tightening (approximately 10Ncm): Surgical Cover Caps, Healing Abutments, Cover Caps for the Abutment for Screw and all impression coping screws.

Helpful Hint

Manually verify the wrench's hinge mechanism is properly functioning prior to clinical application of torque. Please refer to the Instructions for Use accompanying Torque Wrenches for additional information.



Use of an abutment clamp is recommended during torque delivery to the screws of two-piece abutments, especially in softer bone. To use, grasp the outside of the abutment, and hold it steady while the torque is being applied. This prevents the rotational force of the Torque Wrench from being transmitted to the bone.



Implant-level Cement-retained Restorations

Cement-retained implant restorations are very similar to crown & bridge restorations. A prepared implant abutment is screwed onto the implant. The crown or restoration is cemented to the prepared abutment, much like a prepared tooth.



Indications

- Single or multiple-unit implant restorations
- Totally edentulous or partially edentulous arch

Limitations

- Ease of retrievability

Advantages

- Conventional crown & bridge procedures
- Maximum control of occlusion
- More esthetic than screw-retained



RESTORATIVE OPTIONS

Implant-level Screw-retained Restorations (Custom Castable)

Implant-level, screw-retained restorations are indicated when inter-arch space is limited and/or a screw-retained restoration is planned. The restoration is retained by a screw that enters through the occlusal surface of the prosthesis and threads into the implant.

Indications

- Single or multiple-unit restorations
- Screw-retained restorations at the implant-level
- Fixed-detachable (hybrid-type) restorations
- Totally edentulous or partially edentulous arch
- Minimal inter-arch space
- Laboratory fabricated custom abutments
- Implant-level bar overdenture fabrication
- Increased ease of retrievability

Limitations

- Splinted restorations on implants with divergent angles greater than 10°
- May restrict optimal occlusion when used for crown & bridge

Advantages

- Easier to retrieve prosthesis for servicing, revisions and hygiene maintenance
- Greater control of esthetics
- Minimal inter-arch space required



Abutment-level Screw-retained Restorations

Abutment-level, screw-retained restorations are used for a bar-retained and/or supported overdenture case when the treatment plan indicates the cast bar be 1-2mm supra-gingival. The denture is retained by the bar with attachments, i.e. clips or ball attachments. Typically, four to six implants are recommended in the mandible for an implant-supported/implant-retained prosthesis. Six to ten implants are recommended in the maxilla for an implant-supported/implant-retained prosthesis. An implant-retained, tissue-supported prosthesis is indicated when there are fewer than four implants in the mandible and fewer than six in the maxilla.

Indications

- Multiple-unit restorations
- Abutment-level bar overdenture
- Fixed-detachable (hybrid type) restorations
- Extensive bone loss
- Thick tissue

Limitations

- Limited inter-arch space to accommodate abutments, bar and overdenture

Advantages

- Bar overdenture removable by patient for hygiene
- Fixed-detachable removable by dentist for hygiene



Ball Abutment Overdenture Restorations

The Ball Abutment retained overdenture is a tissue-supported prosthesis. The abutments screw directly into the implant, providing a choice of female retention devices.

Indications

- Transitional prosthesis
- Totally edentulous arch

Limitations

- Minimum of two implants

Advantages

- Removable prosthesis for oral hygiene access
- Existing denture may be used
- Low financial investment by the patient



There are three types of impression techniques utilized in implant dentistry:

Prepared Abutment – An intra-oral impression is made of prepared abutment(s), similar to a standard crown & bridge impression.

Implant-level – An intra-oral impression is made transferring the emergence of the implant. The implant's location and angle are recorded, with or without the orientation of the internal hex.

Abutment-level – An intra-oral impression is made of Abutments for Screw that have been placed onto the implants. Abutments for Screw location and angle are recorded for screw-retained prosthesis.



Prepared Abutment

Impression Technique Options

Implant-level and abutment-level impressions can be made by either of the following techniques:

- Closed Tray (Indirect) Transfer Technique***
- or***
- Open Tray (Direct) Pick-up Technique***

Prepared Abutment impressions are always made using the Closed Tray technique.

The option chosen is dependent on the treatment plan and the degree of accuracy needed to fabricate the final restoration. The Open Tray Technique is more accurate than the Closed Tray Technique and is recommended in multiple-unit restorations.

See the facing page for details on the two options.



Implant-level



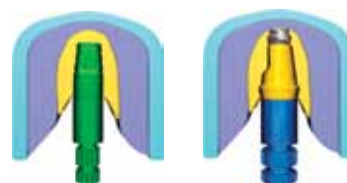
Abutment-level

IMPRESSION TECHNIQUES

Closed Tray - Indirect Transfer Impression Technique

This technique records the soft tissue profile as well as the implant's location. The implant's internal hex orientation is transferred when using the *3inOne* Abutment with a Ball Transfer Screw or any of the Indirect, Hexed (Closed Tray) Copings. If the hex location is not needed for the prosthesis fabrication, the Direct Pick-up, Non-hexed (Open Tray) Copings may be used (see below).

In the Closed Tray Transfer technique, the Indirect Transfer Copings remain in the mouth when the impression is removed from the mouth. The copings are then removed from the mouth and connected with the appropriate Implant Analog. The coping with analog is then indexed (transferred) into its corresponding position in the impression. A working model is poured in minimal expansion, high hardness die stone, providing a replica of the implant's location in the patient's mouth.



Closed Tray – Indirect Transfer Technique

Open Tray - Direct Pick-up Impression Technique

This technique records the soft tissue profile as well as the implant's location. The implant's internal hex orientation is transferred when using the Direct Pick-up Hexed (Open Tray) Copings. If the hex orientation is not needed for the prosthesis fabrication, the Direct Pick-up Non-hexed (Open Tray) Copings are used.

In the Open Tray Transfer technique, the Direct Pick-up Copings remain in the impression when removed from the mouth. For this pick-up technique a custom tray or modified stock tray with screw access holes in the areas above the implants is required. The Direct Coping Screw that holds the Direct Pick-up Copings in place while the impression is made are removed through the access holes after the material sets. The impression is removed with the Direct Pick-up Copings imbedded within the impression. The Implant Analog is connected to the imbedded copings and a working model is poured in minimal expansion, high hardness die stone, providing a replica of the implant in the patient's mouth.



Open Tray – Direct Pick-up Technique

3.5mm Prosthetic Platform

Healing abutments, impression copings and abutments for the 3.5mm prosthetic platform are available in three different emergence profiles: **narrow, regular or wide**. It is important to use components with the same emergence throughout the treatment plan to ensure easy seating of prosthetic components without potential problems from soft tissue impingement.

Custom Cast Abutments do not specify an emergence since the emergence will be determined by the contour of the final restoration.

The chart below shows representative components of each of the three different emergences.

| Narrow Emergence | Regular Emergence | Wide Emergence |
|-----------------------|-------------------|----------------|
| Abutments | | |
| | | |
| Impression Components | | |
| | | |
| Healing Abutments | | |
| | | |
| Implant & Analog | | |
| | | |

EMERGENCE PROFILE CHARTS

4.5mm Prosthetic Platform

Healing abutments, impression copings and abutments for the 4.5mm prosthetic platform are available in three different emergence profiles: **narrow, regular or wide**. It is important to use components with the same emergence throughout the treatment plan to ensure easy seating of prosthetic components without potential problems from soft tissue impingement.

Custom Cast Abutments do not specify an emergence since the emergence will be determined by the contour of the final restoration.

The chart below shows representative components of each of the three different emergences.

| Narrow Emergence | Regular Emergence | Wide Emergence |
|-----------------------|-------------------|----------------|
| Abutments | | |
| | | |
| Impression Components | | |
| | | |
| Healing Abutments | | |
| | | |
| Implant & Analog | | |
| | | |

5.7mm Prosthetic Platform

Healing abutments, impression copings and abutments for the 5.7mm prosthetic platform are available in two different emergence profiles: **narrow** or **regular**. It is important to use components with the same emergence throughout the treatment plan to ensure easy seating of prosthetic components without potential problems from soft tissue impingement.

Custom Cast Abutments do not specify an emergence since the emergence will be determined by the contour of the final restoration.

The chart below shows representative components of each of the two different emergences.

Narrow Emergence

Regular Emergence

Abutments



Impression Components



Healing Abutments

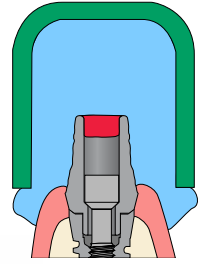


Implant & Analog



PREPARED ABUTMENT IMPRESSION

CLOSED TRAY, CROWN & BRIDGE TECHNIQUE



3inOne Abutment



Angled Abutment



Narrow Abutment



Angled Esthetic Abutment



Straight Esthetic Abutment (3mm buccal)



Straight Esthetic Abutment



Abutment Screw
Packaged with all two-piece abutments

Tools needed



.050" (1.25mm) Hex Driver



.050" Hex Driver (long)



30 Ncm Torque Wrench



Hand Wrench



.050" Hex Driver (regular)



Implant Analog Handle



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

PREPARED ABUTMENT IMPRESSION

Clinical 1 - Remove provisional

If the patient presents to you with the abutment in place, simply remove the temporary, if present, and proceed with the clinical step 2.

Remove the Healing Abutment from the implant with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue. Place the prepared abutment onto the implant and hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver. Take a radiograph along the long axis of the implant to ensure that the abutment is seated completely in the hex of the implant.



Clinical 2 - Impression preparation

Torque the Abutment Screw to 30 Ncm using a calibrated Torque Wrench and the .050" (1.25mm) Hex Driver. Counter-torque may be applied by grasping the abutment with an abutment clamp or hemostat. Block out the screw access hole on the top of the abutment with material of choice.

The use of retraction cord or impression medium may be necessary to ensure the transfer of the margins on the modified abutment.



Clinical 3 - Make impression

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 crown fabrication. For chair-side provisional fabrication, lightly lubricate the modified abutment and use the technique and material of choice.



 Send to Lab

- Impression
- Bite registration
- Opposing model or impression
- Shade

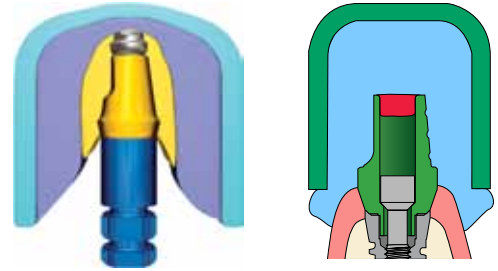
Lab 4 - Fabricate stone model

Pour the standard crown & bridge impression in die stone. A reinforced die may be helpful if the preparation is extremely thin. Articulate and prepare according to standard laboratory procedures.



IMPLANT-LEVEL IMPRESSION

CLOSED TRAY - INDIRECT TRANSFER TECHNIQUE



Narrow Indirect Coping



Regular Indirect Coping



Abutment Screw
Packaged with all two-piece abutments



Wide Indirect Coping



3inOne Abutment



Ball-top Screw



Implant Analog

Tools needed



.050" (1.25mm) Hex Driver



Hand Wrench



.050" Hex Driver (regular)



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Clinical 1 - Remove healing abutments

Remove the Healing Abutment with the .050" (1.25mm) Hex Driver. Make sure that the implant prosthetic platform is free of bone and soft tissue.

The emergence of the impression coping selected should match the emergence of the Healing Abutment and the intended final abutment (either narrow, regular or wide). Custom Cast emergence will be determined by the lab prescription.



Helpful Hint

When placing impression copings on multiple implants, remove one Healing Abutment at a time, replacing it immediately with the impression coping. This reduces the likelihood of soft tissue collapsing onto the implant. Work from the posterior to the anterior.



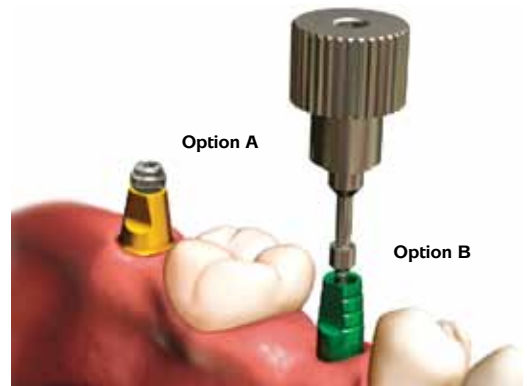
Clinical 2 - Place impression coping

Option A - Seat the 3inOne Abutment and secure it with a Ball-top Screw (hand-tighten).

Option B - Seat the Indirect Transfer Coping and secure it with the included screw (hand-tighten).

If practical, orient the flat side of the abutment/coping to the facial for easier indexing.

Take a radiograph along the long axis of the implant to ensure the coping is fully seated.



Clinical 3 - Block out screw hole

Block out the hex hole on top of the Ball-top Screw (**Option A**); or the screw access hole of the Indirect Transfer Coping (**Option B**) with a material of choice.




IMPLANT-LEVEL IMPRESSION

Clinical 4 - Apply impression material

Record a full arch impression by syringing and completely covering the coping assembly with medium or heavy body impression material.

Remove the coping assembly after the tray has been removed. Replace the Healing Abutment immediately to prevent soft tissue collapse.



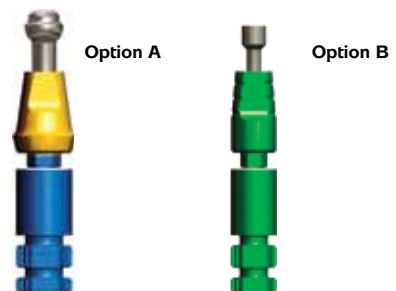
 **Send to Lab**

- **Impression**
- **Impression coping, either:**
 - **3inOne/Ball-top Screw Combo, or**
 - **Indirect Transfer Coping**
- **Abutment Screw** (comes with 3inOne)
- **Implant Analog**
- **Bite registration**
- **Opposing model or impression**
- **Shade**

Lab 5 - Assemble analog

Option A - Assemble the 3inOne Abutment with the appropriate diameter Implant Analog using the Ball-top Screw.

Option B - Assemble the Indirect Transfer Coping with the appropriate diameter Implant Analog using the included screw with the .050" (1.25mm) Hex Driver.

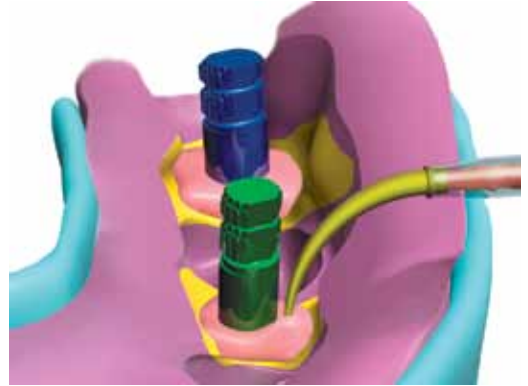


Insert the coping assembly into the corresponding location in the impression, ensuring that the flat of the coping aligns with the corresponding indice in the impression.



Lab 6 - Create soft tissue model

A soft tissue model material is recommended around the implant; verify analogs are seated properly and apply lubricant around the analogs where soft tissue needs to be added.



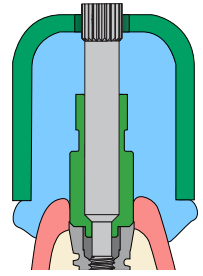
Lab 7 - Fabricate stone model

Fabricate a working cast. Articulate according to normal laboratory procedures.



IMPLANT-LEVEL IMPRESSION

OPEN TRAY - DIRECT PICK-UP TECHNIQUE



Narrow Direct Coping,
Hexed



Regular Direct Coping,
Hexed



Wide Direct Coping,
Hexed



Direct Coping,
Non-hexed



Implant
Analog



Direct Coping
Screw

Tools needed



.050" (1.25mm)
Hex Driver



Hand
Wrench



.050" Hex Driver
(regular)



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

OPEN TRAY - DIRECT PICK-UP TECHNIQUE

IMPORTANT

Open Tray Direct Pick-up Impression Technique

The Direct Pick-up impression technique requires the use of a custom tray or modified stock tray with screw access holes over the area of the implants. The holes allow the long screws to protrude through the top of the tray. See pages 36-37 for custom tray fabrication.

Clinical 1 - Remove healing abutment

Remove the Healing Abutment with the .050" (1.25mm) Hex Driver. Make sure that the implant prosthetic platform is free of bone and soft tissue.

The emergence of the impression coping selected should match the emergence of the Healing Abutment and the intended final abutment (either narrow, regular or wide). Custom Cast abutment emergence will be determined by laboratory prescription.



Helpful Hint

When placing impression copings on multiple implants, remove one Healing Abutment at a time, replacing it immediately with the selected impression coping. This reduces the likelihood of soft tissue collapsing onto the implant. Work from the posterior to the anterior.



Clinical 2 - Place impression coping

Place the appropriate diameter Direct Pick-up Coping (either Hexed or Non-hexed) on the implant body and retain with the included Direct Pick-up Coping Screw (hand-tighten).

These screws feature a knurled top to aid in manual insertion, as well as a .050" hex access hole for insertion with the (1.25mm) Hex Driver.

Take a radiograph along the long axis of the implant to ensure the coping is fully seated.



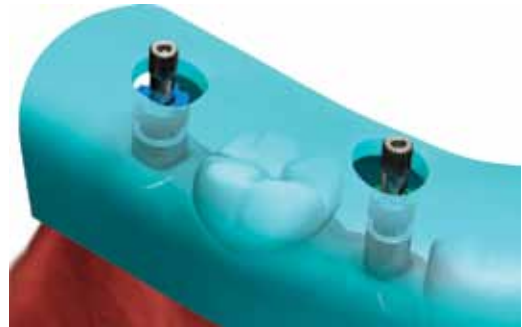
IMPLANT-LEVEL IMPRESSION

Clinical 3 - Try-in impression tray

Try in the impression tray to verify that the coping screw protrudes through the tray.

The custom tray is fabricated using a tray material of choice. A window is cut out of the tray over the area of the implant to allow clearance for the coping screw.

Alternatively, a stock impression tray may be modified to accommodate the coping screw which will protrude through the top of the tray.



Clinical 4 - Make an impression

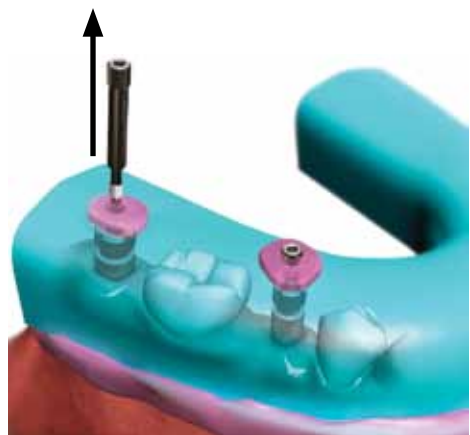
Syringe a medium or heavy-bodied impression material around the coping assembly. Load the full arch impression tray with a medium or heavy-bodied impression material and seat it in the mouth. Wipe excess impression material off the coping screw before it sets.



Clinical 5 - Remove coping screws

After the impression material has set, first remove the coping screw and then remove the tray from the mouth. Verify that the impression material is completely adapted around the pick-up copings.

Replace the Healing Abutment immediately to prevent soft tissue collapse.



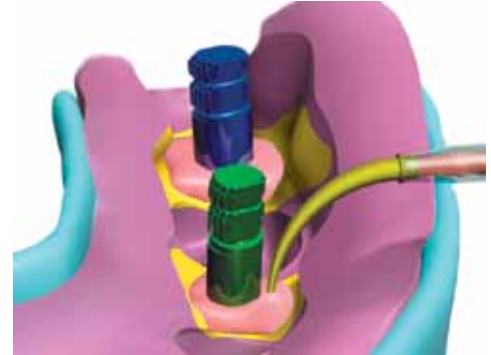
Send to Lab

- Impression with coping inside
- Coping screw
- Implant Analog
- Abutment and screw (if chosen)
- Bite registration
- Opposing model or impression
- Shade

Lab 6 - Assemble analog

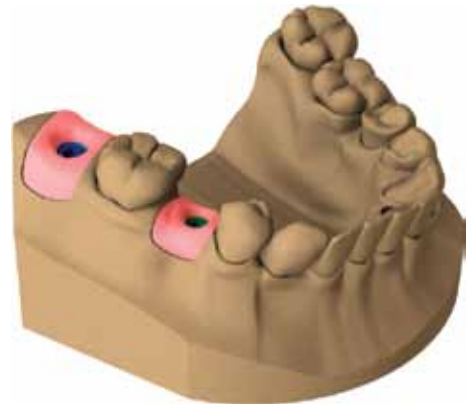
Mate the Analog with the Direct Pick-up Coping by holding the Analog in place while inserting the long screws through the access holes in the impression tray. Hand-tighten the screws.

A soft tissue model material is recommended around the implant; verify analogs are seated properly and apply lubricant around the analogs where soft tissue needs to be added.

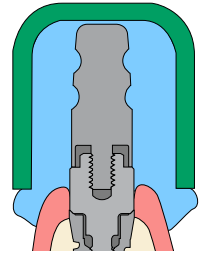


Lab 7 - Fabricate stone model

Pour a working cast in minimal expansion, high hardness die stone.
Articulate according to normal laboratory procedures.



ABUTMENT-LEVEL IMPRESSION



CLOSED TRAY - INDIRECT TRANSFER TECHNIQUE



Cover Cap,
Abutment for Screw



Indirect Transfer Coping,
Abutment for Screw



Analog,
Abutment for Screw



Abutments for Screw



Angled Abutments for Screw

Tools needed



Hand
Wrench



30 Ncm
Torque Wrench



.050" Hex Driver
(regular)



Hex Adapter,
Abutment for Screw



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (LO603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Clinical 1 - Remove healing abutments

Remove the Healing Abutments from the implants with a .050" (1.25mm) Hex Driver.

Make sure the implant prosthetic platform is free of bone and soft tissue. Irrigate the internal thread connection of the implant and dry.



Helpful Hint

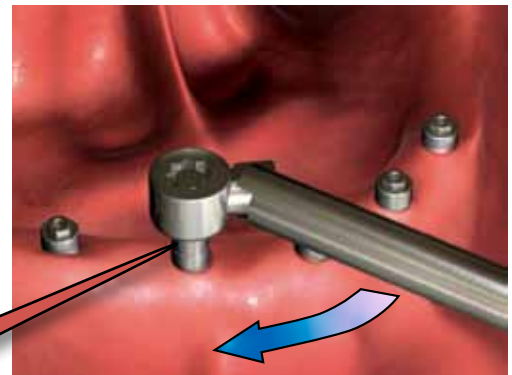
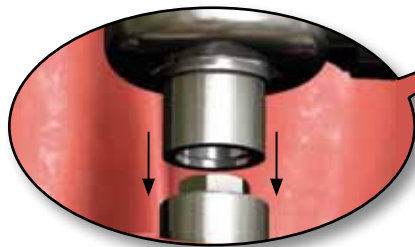
When working with multiple implants, remove one Healing Abutment at a time, replacing it immediately with an Abutment for Screw. This reduces the likelihood of soft tissue collapsing onto the implant. Work from the posterior to the anterior.



Clinical 2 - Seat abutments for screw

Place the appropriate Abutments for Screw on the implant bodies with the Hex Adapter. Take a radiograph along the long axis of the implants to ensure the Abutments for Screw are fully seated. Torque the Abutments for Screw to 30 Ncm using the Hex Adapter and a calibrated Torque Wrench. The abutments will remain in the mouth from this point forward.

The female hex of the Hex Adapter engages the male hex of the Abutment for Screw during seating.



Clinical 3 - Seat indirect transfer copings

Place Indirect Transfer Copings onto the Abutments for Screw. Hand-tighten.



ABUTMENT-LEVEL IMPRESSION

Clinical 4 - Make an impression

Syringe medium or heavy-bodied impression material around the coping assemblies.



Clinical 5 - Make an impression

Load the impression tray with a medium or heavy-bodied impression material and seat it in the mouth.



Clinical 6 - Place cover caps

Remove the impression tray after the material has set. Verify that the impression material is completely adapted around the impression copings. Remove the Indirect Transfer Copings from the Abutments for Screw.

Place the Cover Caps on the Abutments for Screw with the .050" (1.25mm) Hex Driver and hand-tighten.



Send to Lab

- Impression
- Impression copings
- Abutment for Screw Analogs
- Bite registration
- Opposing model or impression

ABUTMENT-LEVEL IMPRESSION

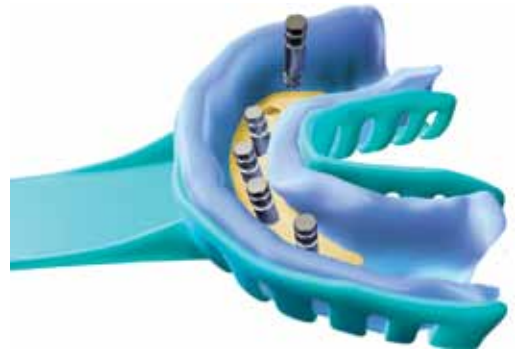
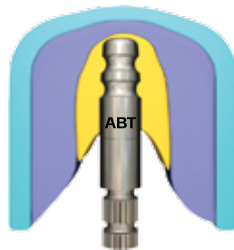
Clinical 7 - Modify temporary prosthesis

Modify the temporary prosthesis to accommodate the height of the Abutments for Screw and Cover Caps. A soft relined material may be placed in the relieved areas to provide moderate retention while the final prosthesis is being fabricated.



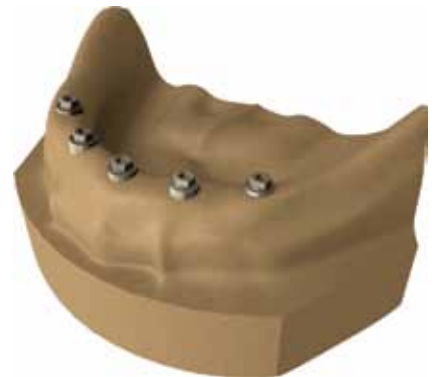
Lab 8 - Assemble copings and analogs

Assemble the Indirect Transfer Copings to the Abutment for Screw Analogs. Insert the assemblies into the corresponding locations in the impression.



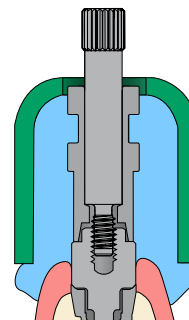
Lab 9 - Fabricate stone model

Fabricate a working cast.
Articulate according to normal laboratory procedures.



ABUTMENT-LEVEL IMPRESSION

OPEN TRAY - DIRECT PICK-UP TECHNIQUE



Direct Pick-up Coping.
Abutment for Screw



Screw (regular)
Abutment for Screw



Screw (long)
Abutment for Screw



Cover Cap,
Abutment for Screw



Abutments for Screw



Angled Abutments for Screw



Analog,
Abutment for Screw

Tools needed



.050" (1.25mm)
Hex Driver



Hand
Wrench



30 Ncm
Torque Wrench



.050" Hex Driver
(regular)



Hex Adapter,
Abutment for Screw



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

OPEN TRAY - DIRECT PICK-UP TECHNIQUE

IMPORTANT

Open Tray Direct Pick-up Impression Technique

The Direct Pick-up impression technique requires the use of a custom tray or modified stock tray with screw access holes over the area of the implants. The holes allow the long screws to protrude through the top of the tray. See pages 36-37 for custom tray fabrication.

Clinical 1 - Remove healing abutment

Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver.

Make sure the implant prosthetic platform is free of bone and soft tissue. Irrigate the internal thread connection of the implant and dry.



Helpful Hint

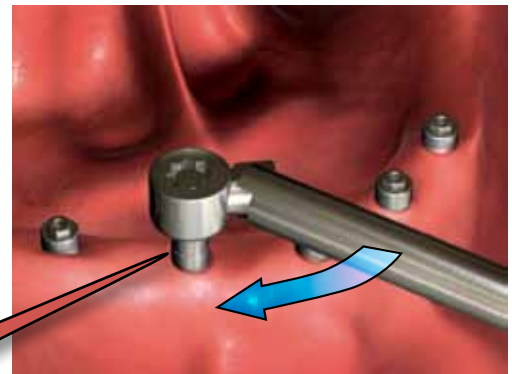
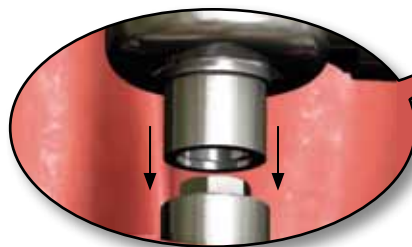
When working with multiple implants, remove one Healing Abutment at a time, replacing it immediately with the Abutments for Screw of choice. This reduces the likelihood of soft tissue collapsing onto the implant. Work from the posterior to the anterior.



Clinical 2 - Seat abutments for screw

Place the appropriate Abutments for Screw on the implant with the Hex Adapter. Take a radiograph along the long axis of the implants to ensure the Abutments for Screw are fully seated. Torque the Abutments for Screw to 30 Ncm using the Hex Adapter and a calibrated Torque Wrench. The abutments will remain in the mouth from this point forward.

The female hex of the Hex Adapter engages the male hex of the Abutment for Screw during seating.



ABUTMENT-LEVEL IMPRESSION

Clinical 3 - Seat direct pick-up copings

Place Abutment for Screw Direct Pick-up Copings onto the Abutments for Screw. Hand-tighten.

Try in the impression tray to verify that the screws protrude through the openings without interference.



Clinical 4 - Make an impression

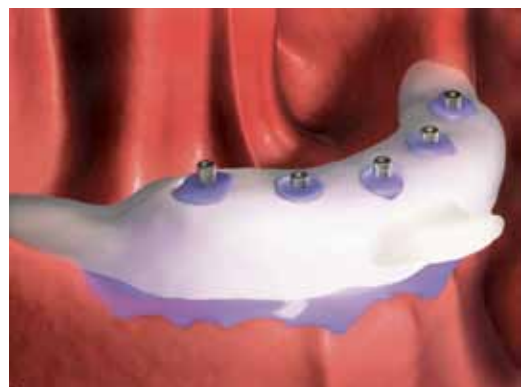
Syringe a medium or heavy-bodied impression material around the entire Direct Pick-up Impression Copings.



Clinical 5 - Make an impression

Load the custom impression tray with a medium or heavy-bodied impression material and seat in the mouth.

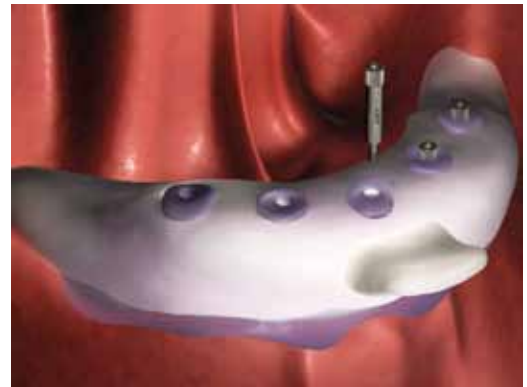
Wipe impression material off the top of the screws before it sets. Allow the impression material to set.



Clinical 6 - Remove coping screws

After the impression material has set, remove the long screws. Remove the impression from the mouth. Verify that the impression material is completely adapted around the copings. Place the Cover Caps on the Abutments for Screw and hand-tighten.

Modify the temporary prosthesis (as shown on page 28) to accommodate the height of the Abutments for Screw and Cover Caps.



Send to Lab

- **Impression**
- **Direct Impression components**
- **Abutment for Screw Analogs**
- **Bite registration**
- **Opposing model or impression**

Lab 7 - Assemble analog

Place Abutment for Screw Analogs onto the Direct Pick-up copings by holding the analog in place while inserting the long screws through the access holes in the impression tray. Hand-tighten the screws.



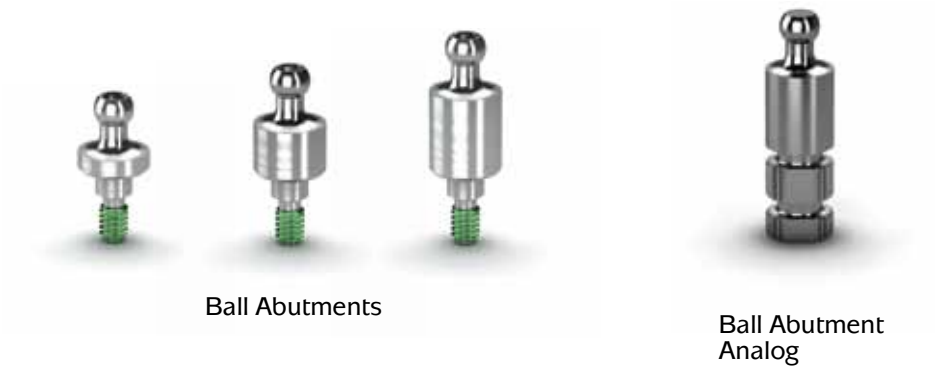
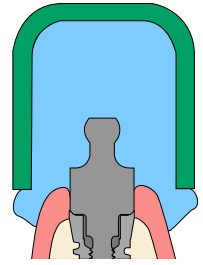
Lab 8 - Fabricate stone model

Fabricate a working cast. Articulate according to normal laboratory procedures.



BALL ABUTMENT IMPRESSION

CLOSED TRAY - INDIRECT TRANSFER TECHNIQUE



Tools needed



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

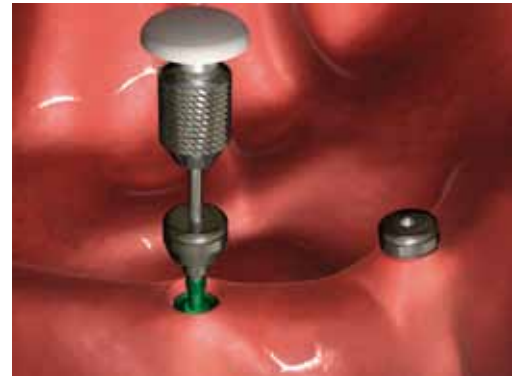
Clinical 1 - Remove healing abutments

Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue. Irrigate the internal thread connection of the implant and dry.



Helpful Hint

When working with multiple implants, remove one Healing Abutment at a time, replacing it immediately with a Ball Abutment. This reduces the likelihood of soft tissue collapsing onto the implant.



Clinical 2 - Seat ball abutments

Place the selected Ball Abutments onto the implants using the .050" (1.25mm) Hex Driver.

Take a radiograph along the long axis of the implants to ensure the abutments are seated completely on the implants.

Tighten the Ball Abutments to 30 Ncm with the .050" (1.25mm) Hex Driver and a calibrated Torque Wrench.



Clinical 3 - Block hex holes

Block out the hex hole on top of the Ball Abutment with material of choice.



BALL ABUTMENT IMPRESSION


Clinical 4 - Make an impression

Syringe medium or heavy-bodied impression material around ball abutments. Fill impression tray with medium or heavy-bodied material and seat tray. A full arch impression is suggested.



Clinical 5 - Modify denture

Relieve the patient's existing denture to allow for the Ball Abutments. A soft liner may be used to reline the denture and provide a transitional degree of retention prior to the processing of the final attachments

 **Send to Lab**

- **Impression**
- **Ball Abutment Analogs**
- **Bite registration**
- **Opposing model or impression**



Lab 6 - Seat analogs

Insert the Ball Abutment Analogs in the corresponding location in the impression.



Lab 7 - Fabricate stone model

Fabricate a working cast. Articulate according to normal laboratory procedures.



CUSTOM TRAY FABRICATION

IN PREPARATION FOR OPEN TRAY, DIRECT PICK-UP TECHNIQUES



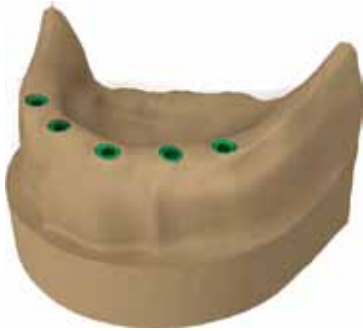
Implant-level
Direct Pick-up
Coping



Abutment-level
Direct Pick-up Coping,
Abutment for Screw

- either / or -

Tools / materials needed



Implant-level



Abutment-level

- Stone model with analogs made via Indirect Transfer Technique. It will be either an Implant-level model or an Abutment-level model depending on the case (see page 10).

- Baseplate wax of choice
- Custom tray material of choice



.050" (1.25mm)
Hex Driver



Hand
Wrench



.050" Hex Driver
(regular)



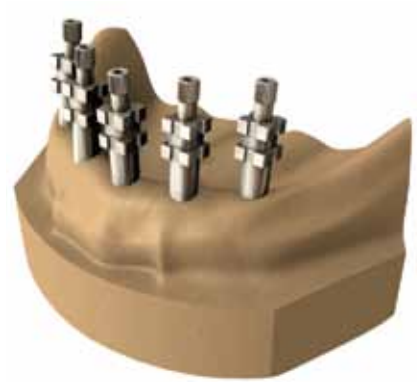
Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Lab 1 - Master cast

Place direct copings on the analogs of a stone model that was made via the appropriate Indirect Transfer Technique.
For Implant-level see pages 17-20.
For Abutment-level see pages 25-28.

Helpful Hint

Custom trays better approximate the morphology of the arch than stock trays, allowing less impression material to be used. This results in a more accurate impression and subsequent stone model, making it easier to create a passive fitting restoration.



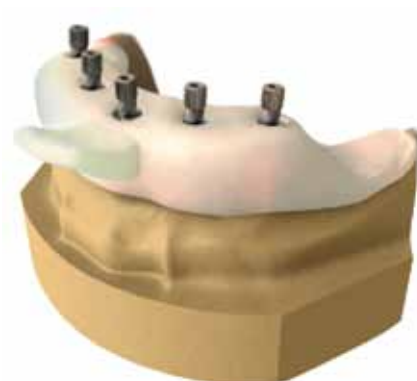
Lab 2 - Place wax spacer

Apply baseplate wax material around copings extending far enough to the distal on each side to ensure an accurate intraoral seating along the retromolar pad.

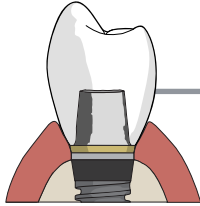


Lab 3 - Apply custom tray material

Apply custom tray material around baseplate wax and cure per the manufacturer's instructions. Remove the coping screws and separate the tray from the model. Remove the wax and copings from the hardened tray. It may be necessary to slightly enlarge the screw access holes prior to clinical use. Use a trimming bur to remove only enough material to allow the tray to passively fit over the *in situ* coping screws.



ABUTMENT SELECTION FLOW CHART

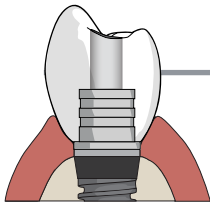


Lab Modified Cement-retained

May also be modified chair-side.



Internal Abutments

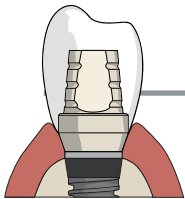


Custom Cast (UCLA) Screw-retained

Gold-base with burn-out plastic sleeve. Non-hex-engaging abutments are only for multiple-unit prostheses.



Internal Custom Castable Abutments



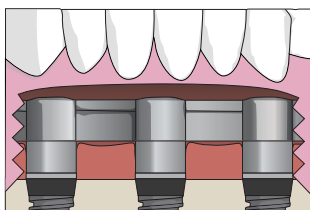
Provisional Restorations



Internal PEEK or
Titanium Temporary Abutments
May be cement- or screw-retained

ABUTMENT SELECTION FLOW CHART

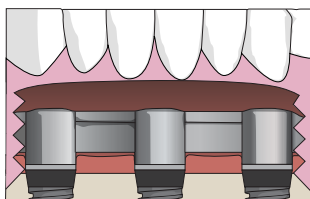
The Abutment Selection Flow Chart is provided to aid in the proper selection of the abutment(s) based on the final prosthetic option desired. Simply determine if the case is for a single-tooth, multiple-unit or overdenture restoration. Next, select the desired abutment based on cement-retained or screw-retained fixation. In the case of overdenture prosthesis, select the desired abutment based on a bar-retained or abutment-retained denture.



Implant-level Cast Bar or Hybrid (Fixed-detachable)



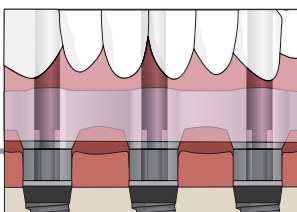
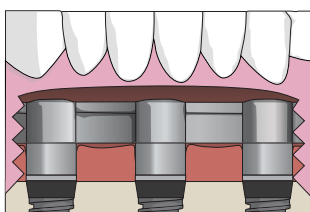
Internal Custom Castable Abutments, Non-hexed



Implant-level Laser Weld



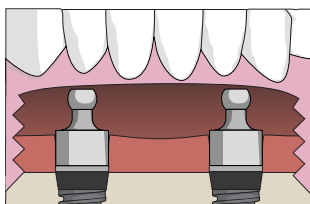
Internal Direct Pick-up Coping, Non-hexed



Abutment for Screw-level Cast Bar or Hybrid (Fixed-detachable)



Abutments for Screw



Abutment-retained Overdenture, Tissue-supported



Ball Abutments

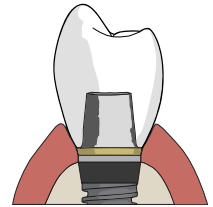
Restorative Techniques

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CEMENT-RETAINED SINGLE / MULTIPLE UNIT

CHAIRSIDE ABUTMENT MODIFICATION



3inOne Abutment



Angled Abutment



Ceramic Abutment



PEEK Temporary Abutment



Narrow Abutment



Angled Esthetic Abutment



Straight Esthetic Abutment (3mm buccal)



Straight Esthetic Abutment



Abutment Screw
Packaged with all two-piece abutments

Tools needed



.050" (1.25mm) Hex Driver



.050" Hex Driver (long)

.050" Hex Driver (regular)



30 Ncm Torque Wrench



Hand Wrench



Implant Analog Handle



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Clinical 1 - Remove healing abutment and seat selected abutment

Remove the Healing Abutment from the implant with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue.

Place the selected abutment onto the implant and hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver.

Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant.



Helpful Hint

When placing multiple abutments on implants, remove one Healing Abutment at a time, replacing it immediately with an abutment. This reduces the likelihood of soft tissue collapsing onto the implant. Work from the posterior to the anterior.



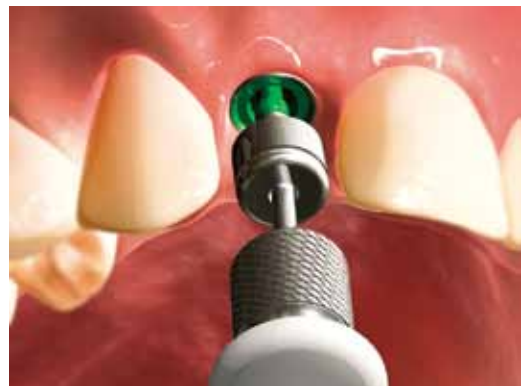
Clinical 2 - Mark required adjustments

Check for inter-occlusal dimension and angulations. Mark required modifications for vertical clearance and gingival contours.



Clinical 3 - Replace healing abutment

Remove the abutment and immediately replace the Healing Abutment onto the implant to prevent soft tissue migration over the implant.



CEMENT-RETAINED SINGLE / MULTIPLE UNIT

Clinical 4 - Modify abutment

Place the abutment onto the appropriate Analog Handle. Modify the abutment using carbide burs, cut-off disks or heatless stone wheels. A diamond bur may be used to define the margins.

Create an axial groove to indicate the buccal surface to assist re-indexing the abutment in the mouth. If the flat of the abutment is removed during the preparation, a new anti-rotational feature must be defined on the abutment.



IMPORTANT

*When preparing a margin on an abutment for cement retention it is important to respect the soft tissue contours rather than the pre-defined margin of the abutment. In some cases the pre-defined margin on the abutment will be too far below the soft tissue to allow easy seating of the crown and removal of excess cement from the sulcus. In these instances the abutment must be modified so that the margin is 0.5mm to 1mm subgingival in the esthetic zone and at the level of the gingiva in non-esthetic areas. Below are three examples of margin placement on a 4.5mm platform **3inOne** Abutment.*



Clinical 5 - Replace abutment

Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue. Irrigate the internal thread connection of the implant and dry. Replace the modified abutment in the patient's mouth. Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant. Retighten the Abutment Screw to 30 Ncm torque. Use counter-torque by grasping the abutment with the Abutment Clamp. A carbide bur in a high-speed handpiece can be used to make minor intra-oral modifications. A diamond bur may be used to define the margins. Copious irrigation should be used.



CEMENT-RETAINED SINGLE / MULTIPLE UNIT

Clinical 6 - Make an impression

Fill the access hole in the abutment with a resilient material of choice. This allows easy access to the Abutment Screw in the future.

Syringe light or medium-bodied impression material around abutment. Use medium or heavy-bodied impression material in the tray. Make a full arch standard crown & bridge impression.

Retraction cord or injectable retraction medium may be necessary to record the margins prepared on the abutment.



Clinical 7 - Place provisional crown

Prepare and cement provisional crown with technique and material of choice.

 Send to Lab

- Impression
- Bite registration
- Opposing model or impression



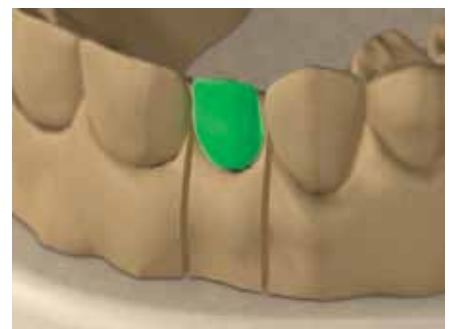
Lab 8 - Pour working cast

Pour a working model in minimal expansion, high hardness die stone and articulate according to standard laboratory procedures.



Lab 9 - Wax on model

Create a wax coping/framework for the crown following conventional laboratory procedures.



CEMENT-RETAINED SINGLE / MULTIPLE UNIT

Lab 10 - Sprue, invest and cast

Sprue, invest and cast the coping/framework according to routine laboratory procedures. A noble or high noble alloy is required.



Lab 11 - Divest, fit and finish

Divest, fit and finish the cast coping/framework following conventional lab techniques.

Seat the finished coping/framework onto the working model and adjust as necessary.

The coping/framework may now be returned to the dentist for metal try-in.



 Send to Clinician

- Metal coping
- Working model

Clinical 12 - Metal coping try-in

Sanitize coping (per standard clinical procedure). Remove provisional prosthesis from the prepared abutment. Make sure the abutment and margins are free of all temporary cement. Re-torque the Abutment Screw to 30 Ncm using a calibrated Torque Wrench and the .050" (1.25mm) Hex Driver.

Try in the metal coping/framework. Verify fit and margins. Adjust as necessary. Return to lab. Reseat provisional prosthesis.



 Send to Lab

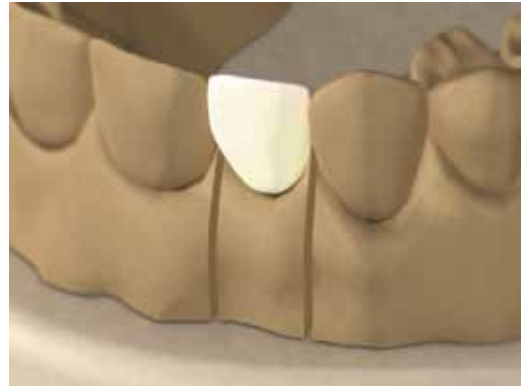
- Metal coping
- Shade
- Working model

Lab 13 - Fabricate crown

Prepare coping/framework to receive the opaque layer according to routine lab procedures. Apply veneer material and finish. Polish metal margins as routine. Return to clinician for patient delivery.

 Send to Clinician

- Final crown
- Working model



Clinical 14 - Remove temporary

Sanitize the final prosthesis (per standard clinical procedure). Remove the provisional prosthesis. Make sure the abutment and margins are free of all temporary cement.



Clinical 15 - Final crown delivery

Seat the crown and/or bridge on the modified abutment. Confirm fit and contour. Check and modify occlusion if necessary.

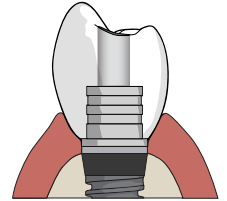
Place a small amount of cement of choice around the inside margin of the crown or bridge. Soft-access cement may be used for future retrievability. Seat the crown or bridge. Remove **all** excess cement from sulcus area.

Take an x-ray for final prosthesis delivery records. The patient should receive oral hygiene instructions prior to release.



SINGLE-TOOTH SCREW RETAINED

CUSTOM CAST ABUTMENT (HEXED)



Abutment Screw
Packaged with all two-piece abutments



Custom Cast Abutment, Hexed



Helpful Hint

Custom Castable Gold Alloy Specifications

- Melting range 1400-1490 °C (2552-2714 ° F)
- Coefficient of thermal expansion 12.45 x 10⁻⁶ in/in °C measured between 25 °C and 500 °C
- Vickers Hardness HV5 205
- Yield Strength (.2% offset) 83K psi minimum
- Ultimate Tensile Strength 92K psi minimum
- Composition: 60% Gold, 19% Platinum, 20% Palladium, 1% Iridium

Tools needed



.050" (1.25mm) Hex Driver



30 Ncm Torque Wrench



Hand Wrench



.050" Hex Driver (long)

.050" Hex Driver (regular)



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

SINGLE-TOOTH SCREW RETAINED

Lab 1 - Pour working cast

Follow the steps for creating an Implant-level Stone Model (Hexed) using either the Indirect Transfer method (pages 17-20) or the Direct Pick-up method (pages 21-24).

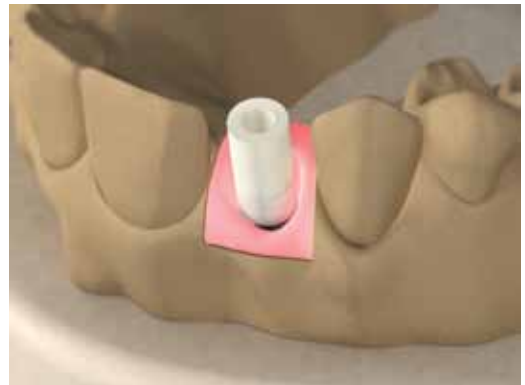


Lab 2 - Seat the custom cast abutment

Seat the Custom Cast Abutment (Hexed) onto the Implant Analog in the working cast.

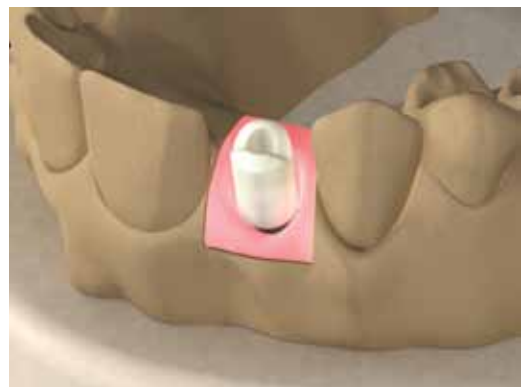
Hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver, Long.

Mark required modification needed to provide adequate room for desired prosthesis.



Lab 3 - Modify custom cast abutment

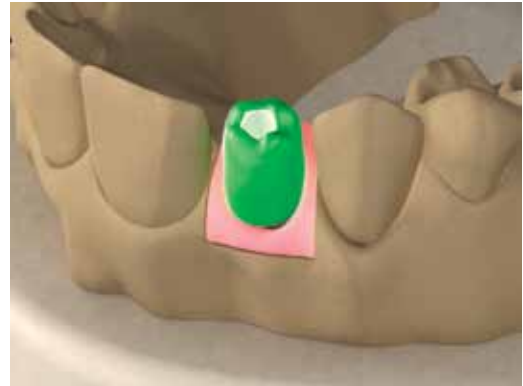
Modify the plastic sleeve of the abutment with a cutting disk for correct vertical and interproximal clearances.



SINGLE-TOOTH SCREW RETAINED

Lab 4 - Fabricate pattern

Use wax and/or acrylic burnout resin to incorporate the modified Custom Cast Abutment into the pattern. Final contours of the pattern may be built up with crown & bridge wax.



Lab 5 - Prepare and sprue the framework

Sprue according to normal laboratory procedures.

Apply a thin layer of wax or burnout resin at the junction of the pre-machined gold portion of the abutment and the plastic sleeve to ensure a smooth casting.



Lab 6 - Investing and casting

Invest and cast the coping pattern in noble or high noble alloy according to manufacturer's instructions.

Divest, fit and finish the casting following conventional laboratory techniques. Redefine the screw access hole within the casting with a reamer as needed.




IMPORTANT

When divesting and casting, it is important not to sandblast the implant / abutment interface. Doing so could result in a poor fit between the abutment and implant.

Mounting the custom abutment onto the appropriate Analog Handle during this step can prevent distortion of the implant / abutment interface.

Lab 7 - Finish coping

Confirm the fit of the coping to the implant on the working model. Return the coping and the Abutment Screw to the clinician for patient try-in.

 Send to Clinician

- Metal coping
- Abutment Screw
- Working model




Clinical 8 - Remove healing abutment

Sanitize the coping (per standard clinical procedure). Remove the Healing Abutment from the implant with the .050" (1.25mm) Hex Driver. Make sure the prosthetic platform is free of bone and soft tissue.



Clinical 9 - Coping try-in

Place the custom coping onto the implant and hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver (**Regular or Long, as needed**). Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant. Confirm fit and contour, assuring there is adequate space for the veneer material. Adjust as necessary. Remove the coping from the implant and replace the Healing Abutment with the .050" (1.25mm) Hex Driver. Return the coping to the lab.

 Send to Lab

- Metal coping
- Abutment Screw
- Working model
- Shade



SINGLE-TOOTH SCREW-RETAINED

Lab 10 - Finish custom crown

Prepare the custom coping to receive the opaque layer according to routine laboratory procedures. Apply veneer material and finish according to manufacturer's specification. Polish any metal margins as is routine. Return to clinician.



Send to Clinician

- Final prosthesis
- Abutment Screw
- Working model



Clinical 11 - Deliver final crown

Sanitize the crown and Abutment Screw (per standard clinical procedure). Remove the Healing Abutment with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue. Place the custom screw-retained crown onto the implant with the Abutment Screw using the .050" (1.25mm) Hex Driver (**Regular or Long, as needed**). Hand-tighten. Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant. Confirm fit, contour and occlusion of the crown and make any adjustments necessary. Torque the Abutment Screw to 30 Ncm with a calibrated torque wrench and the .050" (1.25mm) Hex Driver. Use counter-torque by grasping the crown with the Abutment Clamp.



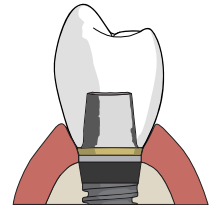
Clinical 12 - Fill the access hole

Place resilient material of choice into the screw access channel. This allows easy access to the Abutment Screw in the future. Fill the remainder of the channel with composite resin material of choice. Take an x-ray for final prosthesis delivery records. The patient should receive oral hygiene instructions prior to release.



SINGLE-TOOTH CEMENT-RETAINED

LABORATORY PREPARED ABUTMENT



3inOne Abutment



Angled Abutment



Ceramic Abutment



PEEK Temporary Abutment



Narrow Abutment



Angled Esthetic Abutment



Straight Esthetic Abutment (3mm buccal)



Straight Esthetic Abutment



Abutment Screw
Packaged with all two-piece abutments

Tools needed



.050" (1.25mm) Hex Driver



.050" Hex Driver (long)



.050" Hex Driver (regular)



30 Ncm Torque Wrench



Hand Wrench



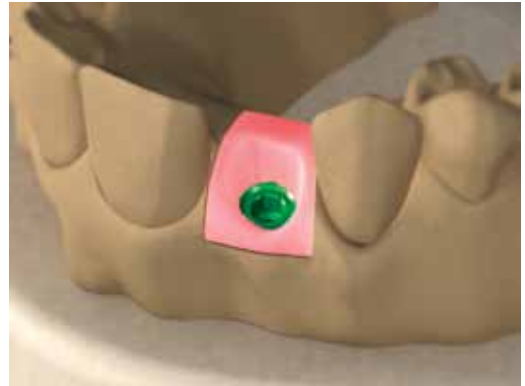
Implant Analog Handle



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

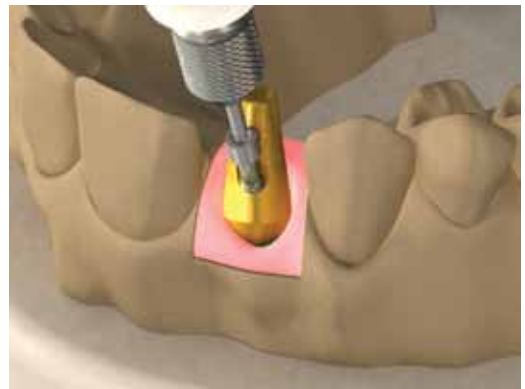
Lab 1 - Working cast

Follow the steps for creating an Implant-level Stone Model (Hexed) using either the Indirect Transfer method (pages 17-20) or the Direct Pick-up method (pages 21-24).



Lab 2 - Abutment modification

Seat the selected abutment, engaging the hex of the Implant Analog on the mounted working cast. Hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver. Evaluate inter-occlusal dimensions and angulations. Mark the abutment for the required vertical reduction and gingival contour.

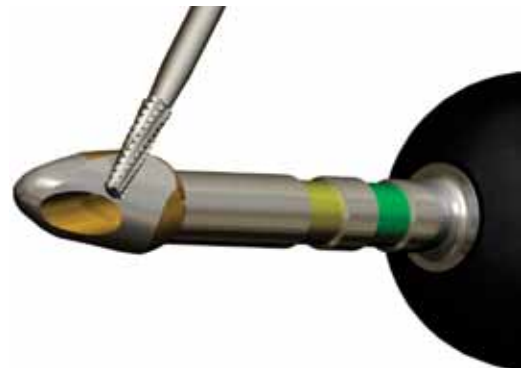


Lab 3 - Finish coping

Remove the marked abutment from the working cast and mount on the appropriate Analog Handle using the Abutment Screw. Modify the abutment using carbide burs, cut-off disks or heatless stone wheels. A diamond bur may be used to define the margins.

Create an axial groove to indicate the buccal surface to assist re-indexing abutment on the working model and in the mouth.

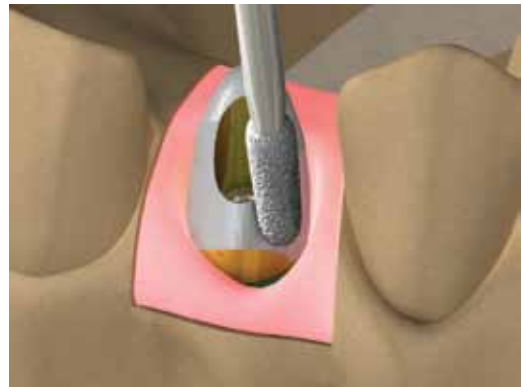
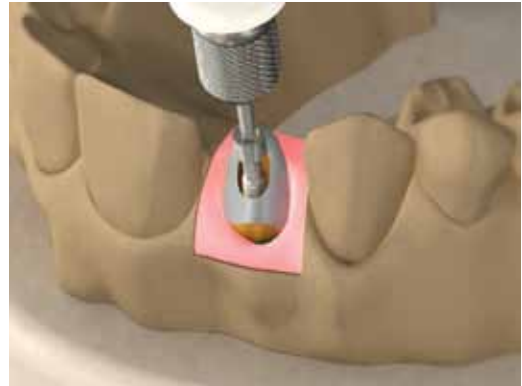
An anti-rotational feature must be defined on the abutment.



SINGLE-TOOTH CEMENT-RETAINED

Lab 4 - Abutment modification

Return the modified abutment to the mounted working cast and make final adjustments. A diamond bur may be used to modify and finesse margins.



IMPORTANT

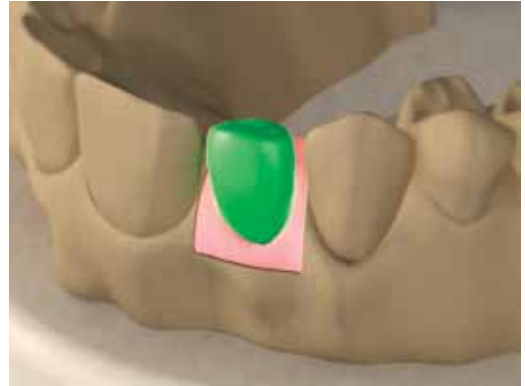
*When preparing a margin on an abutment for cement retention it is important to respect the soft tissue contours rather than the pre-defined margin of the abutment. In some cases the pre-defined margin on the abutment will be too far below the soft tissue to allow easy seating of the crown and removal of excess cement from the sulcus. In these instances the abutment must be modified so that the margin is 0.5mm to 1mm subgingival in the esthetic zone and at the level of the gingiva in non-esthetic areas. Below are three examples of margin placement on a 4.5mm platform **3inOne** Abutment.*



SINGLE-TOOTH CEMENT-RETAINED

Lab 5 - Waxing

Create a wax coping for the crown on the modified abutment following routine crown & bridge procedures.



Lab 6 - Sprue, invest and cast

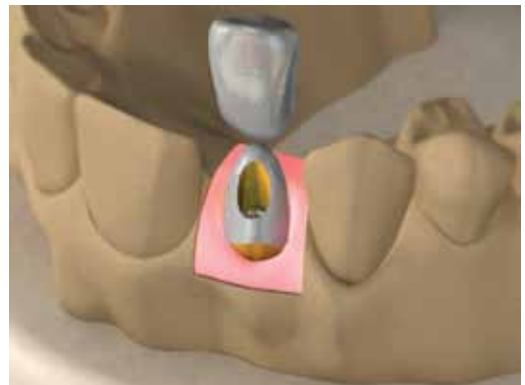
Sprue, invest and cast the coping pattern in high noble alloy according to manufacturer's instructions.



Lab 7 - Finish casting

Divest, fit and finish the cast coping following conventional laboratory techniques.

Seat the finished coping onto the modified abutment on the working cast.



 Send to Clinician

- Metal coping
- Abutment and Abutment Screw
- Working model

SINGLE-TOOTH CEMENT-RETAINED

Clinical 8 - Patient try-in

Sanitize modified abutment and coping (per standard clinical procedure). Remove the provisional restoration or Healing Abutment from the patient's mouth with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue.

Place the modified abutment onto the implant and hand-tighten the Abutment Screw with the .050" (1.25mm) Hex Driver. Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant. Seat the finished casting on the abutment and verify fit and contour. Make adjustments as necessary. Return the casting to the lab for completion.



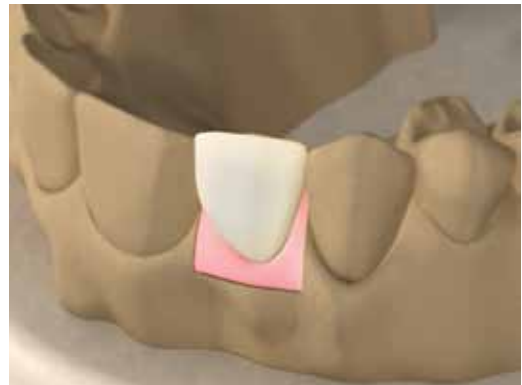
Send to Lab

- **Metal coping**
- **Abutment and Abutment Screw**
- **Working model**
- **Shade**

Lab 9 - Finish casting

Seat the finished coping onto the modified abutment on the working cast. Prepare the coping to receive the opaque layer according to routine laboratory procedures.

Apply the veneer material to the coping and finish according to routine laboratory procedures. Polish any metal margins as necessary. Seat the finished crown on the working cast and return to the clinician for patient delivery.



Send to Clinician

- **Finished crown**
- **Abutment and Abutment Screw**
- **Working model**

Clinical 10 - Seat the final abutment

Sanitize modified abutment and crown (per standard clinical procedure). Remove the Healing Abutment or provisional prosthesis from the implant with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue.

Irrigate the internal thread connection of the implant and dry.

Place the modified abutment and Abutment Screw onto the implant with the .050" (1.25mm) Hex Driver. Hand-tighten.

Take a radiograph along the long axis of the implant to ensure the abutment is seated completely on the implant. If the abutment is seated correctly, torque the Abutment Screw to 30 Ncm with a calibrated Torque Wrench and the .050" (1.25mm) Hex Driver. Apply counter-torque by grasping the abutment with the Abutment Clamp.



Clinical 11 - Cement the final crown

Fill the screw access hole in the abutment with a resilient material of choice. This allows for future access to the Abutment Screw if necessary.

Try in crown to confirm fit and contour. Check and modify occlusion if necessary.

Place a small amount of the cement of choice around the inside margin of the crown. Soft-access cement may be used for future retrievability. Seat the crown. Remove **all** excess cement from sulcus area.

Take an x-ray for final prosthesis delivery records. The patient should receive oral hygiene instructions prior to release.



MULTIPLE-UNIT SCREW-RETAINED

CUSTOM CAST ABUTMENTS (NON-HEXED)



Abutment Screw
Packaged with all two-piece abutments



Custom Cast Abutment, Non-hexed



Helpful Hint

Custom Castable Gold Alloy Specifications

- *Melting range 1400-1490 °C (2552-2714 ° F)*
- *Coefficient of thermal expansion 12.45 x 10⁻⁶ in/in °C measured between 25 °C and 500 °C*
- *Vickers Hardness HV5 205*
- *Yield Strength (.2% offset) 83K psi minimum*
- *Ultimate Tensile Strength 92K psi minimum*
- *Composition: 60% Gold, 19% Platinum, 20% Palladium, 1% Iridium*

Tools needed



.050" (1.25mm) Hex Driver



30 Ncm Torque Wrench



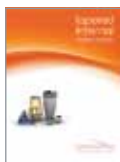
Hand Wrench



.050" Hex Driver (long)



.050" Hex Driver (regular)



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

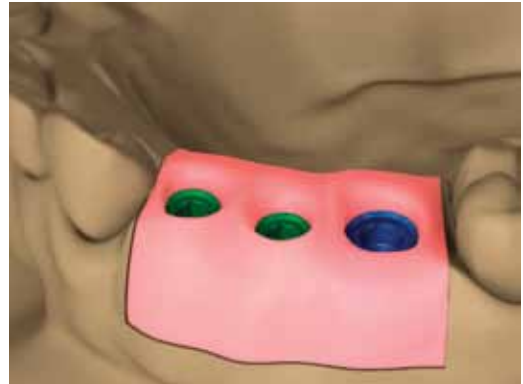
Lab 1 - Pour working cast

Follow the steps for creating an Implant-level Stone Model using either the Indirect Transfer method (pages 17-20) or the Direct Pick-up method (pages 21-24).



Helpful Hint

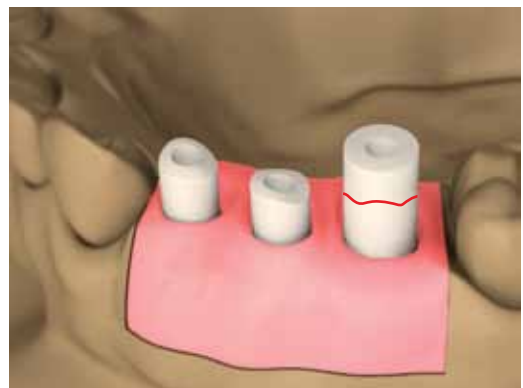
The use of the **Direct Pick-up Copings (Non-hexed)** is strongly recommended when there is significant divergence (angulation) of the implants. Failure to do so may make it difficult to remove the impression from the patient's mouth.



Lab 2 - Place abutments, mark and modify

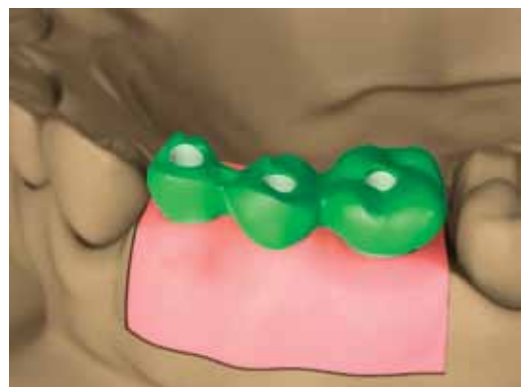
Seat the selected Custom Cast Abutments (Non-hexed) onto the Implant Analogs in the working cast. Hand-tighten the Abutment Screws with the **.050" (1.25mm) Hex Driver, Long**.

Determine modifications needed to provide adequate room for the fabrication of bridge. Modify the plastic sleeves of the abutments with a cutting disk for correct vertical and interproximal clearances.



Lab 3 - Fabricate pattern

Use wax and/or acrylic burnout resin to incorporate the modified Custom Cast Abutments into the pattern. Final contours of the pattern may be built up with crown & bridge wax.



MULTIPLE-UNIT SCREW-RETAINED

Lab 4 - Sprue, invest and cast

Sprue according to normal laboratory procedures. Apply a thin layer of wax or burnout resin at the junction of the machined gold copings and the plastic sleeves to ensure a smooth casting.

Invest and cast the bridge pattern in noble or high noble alloy according to manufacturer's instructions.



IMPORTANT

*When divesting and casting, it is important not to sandblast the implant / abutment interfaces. Doing so could result in a poor fit between the framework and implants.
Mounting Implant Analogs on the bridge casting during this step can prevent distortion of the implant / framework interface.*

Lab 5 - Finish framework

Divest, fit and finish the casting following conventional laboratory techniques. Redefine the screw access holes within the casting with a reamer as necessary. Confirm the fit of the bridge framework to the implants in the working model.

 Send to Clinician

- Metal framework
- Abutment Screws
- Working model



Clinical 6 - Patient try-in

Sanitize the bridge framework (per standard clinical procedure). Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver (**Regular or Long, as needed**). Make sure the implant prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connection of the implants and dry.

Secure the custom bridge framework onto the implants with the Abutment Screws using the .050" (1.25mm) Hex Driver. Hand-tighten. Take a radiograph along the long axis of the implants to ensure the framework is seated completely on the implants.

Confirm a passive fit of the framework. Remove framework and return to laboratory for veneering.



 Send to Lab

- Metal framework
- Abutment Screws
- Working model
- Shade


Lab 7 - Apply porcelain

Prepare the bridge framework to receive the opaque layer according to routine laboratory procedures.

Apply veneer material to the framework and finish according to routine laboratory procedures. Polish any metal margins as is routine.

Seat the finished bridge onto the implants on the working cast and send to clinician for patient delivery.



 **Send to Clinician**

- **Bridge**
- **Abutment Screws**
- **Working model**

Lab 8 - Seat bridge

Sanitize the finished bridge (per standard clinical procedure).

Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver (**Regular or Long, as needed**). Make sure the implant prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connection of the implants and dry. Secure the bridge onto the implants with the Abutment Screws with the .050" (1.25mm) Hex Driver. Hand-tighten.



Clinical 9 - Deliver final bridge

Take a radiograph along the long axis of the implants to ensure the bridge is seated completely on the implants. Confirm a passive fit of the bridge.

Torque Abutment Screws to 30 Ncm with the .050" (1.25mm) Hex Driver and a calibrated Torque Wrench.

Place resilient material of choice into the screw access channel. This allows easy access to the Abutment Screws in the future. Fill the remainder of the channels with composite resin material of choice. Take an x-ray for final prosthesis delivery records. The patient should receive oral hygiene instructions prior to release.



MULTIPLE-UNIT CEMENT-RETAINED

LABORATORY PREPARED ABUTMENTS



3inOne Abutment



Angled Abutment



Ceramic Abutment



Narrow Abutment



Angled Esthetic Abutment



Straight Esthetic Abutment (3mm buccal)



Straight Esthetic Abutment



Abutment Screw
Packaged with all two-piece abutments

Tools needed



.050" (1.25mm) Hex Driver



.050" Hex Driver (long)



.050" Hex Driver (regular)



Hand Wrench



30 Ncm Torque Wrench



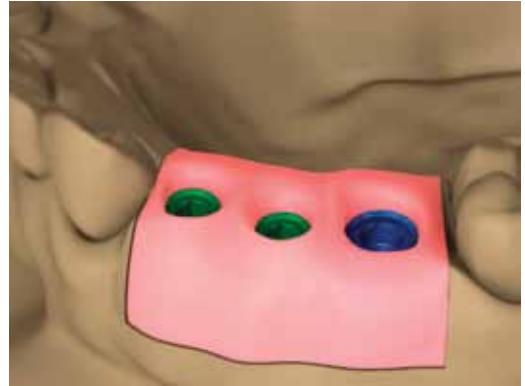
Implant Analog Handle



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Lab 1 - working cast

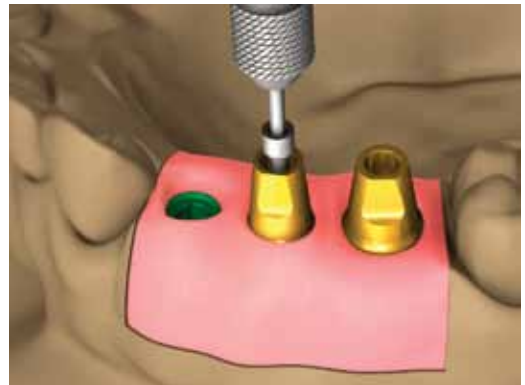
Follow the steps for creating an Implant-level Stone Model (Hexed) using either the Indirect Transfer method (pages 17-20) or the Direct Pick-up method (pages 21-24).



Lab 2 - Place appropriate abutments and mark

Seat the selected abutments, engaging the hex's of the Implant Analogs on the mounted working cast.

Hand-tighten the Abutment Screws with the .050" (1.25mm) Hex Driver. Evaluate inter-occlusal dimensions and angulations. Mark the abutments for required vertical reduction and gingival contour.



Lab 3 - Modify abutments

Remove the marked abutments and screws from the working cast and mount on the appropriate Analog Handle.

Modify the abutments using carbide burs, cut-off disks or heatless stone wheels.

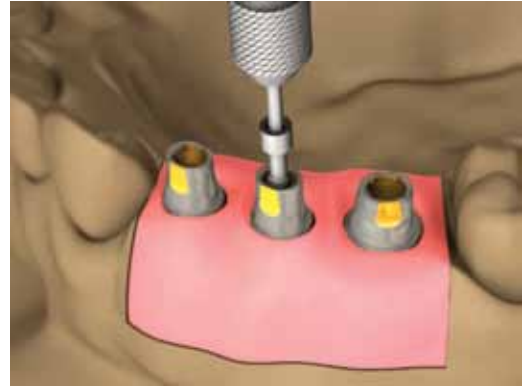
A diamond bur may be used to define the margins. Create an axial groove to indicate the buccal surface to assist re-indexing the abutment in the mouth.



MULTIPLE-UNIT CEMENT-RETAINED

Lab 4 - Abutment modification

Replace the modified abutments and screws on the mounted working cast and make final adjustments. A diamond bur may be used to define the margins.



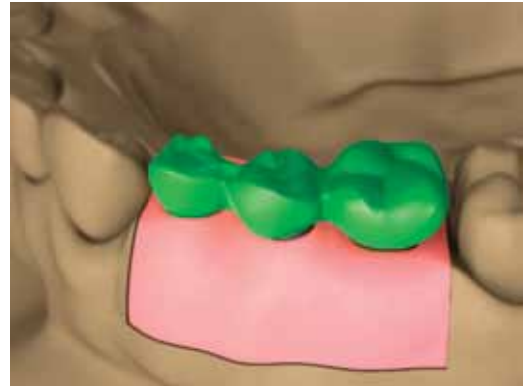
IMPORTANT

*When preparing a margin on an abutment for cement retention it is important to respect the soft tissue contours rather than the pre-defined margin of the abutment. In some cases the pre-defined margin on the abutment will be too far below the soft tissue to allow easy seating of the crown and removal of excess cement from the sulcus. In these instances the abutment must be modified so that the margin is 0.5mm to 1mm subgingival in the esthetic zone and at the level of the gingiva in non-esthetic areas. Below are three examples of margin placement on a 4.5mm platform **3inOne** Abutment.*



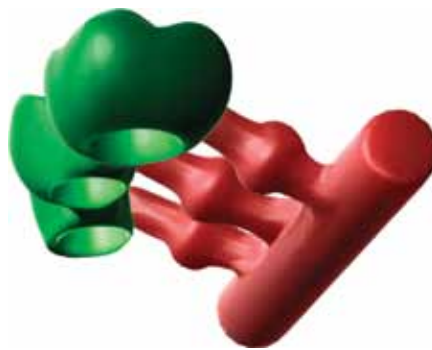
Lab 5 - Create wax framework

Create a wax framework for the bridge on the modified abutments following routine crown & bridge procedures.



Lab 6 - Sprue, invest and cast

Sprue, invest and cast the bridge framework according to routine laboratory procedures. A noble or high noble alloy is recommended.



Lab 7 - Finish casting

Divest, fit and finish the cast framework following conventional laboratory techniques.

Care should be taken to insure a passive fit of the framework on the modified abutments. Send the working cast, the modified abutments and the framework to the clinician for a metal framework try-in. The dentist should confirm the passive fit of the framework prior to the application of the veneering material.



Send to Clinician

- **Metal framework**
- **Modified abutments and screws**
- **Working model**

MULTIPLE-UNIT CEMENT-RETAINED

Clinical 8 - Try in modified abutments and framework

Sanitize the modified abutments and the bridge framework (per standard clinical procedure). Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connection of the implant and dry.

Place the modified abutments and Abutment Screws onto the implants with the .050" (1.25mm) Hex Driver. Hand-tighten. Take a radiograph along the long axis of the implants to ensure the abutments are seated completely on the implants.

Try in bridge framework. Confirm passive fit and that no additional adjustments are necessary. Remove bridge framework. Remove the modified abutments with the .050" (1.25mm) Hex Driver, one at a time, replacing them with the Healing Abutments.



Send to Lab

- Metal framework
- Modified abutments and screws
- Working model
- Shade

Lab 9 - Final casting

Seat the finished framework onto the modified abutments on the working cast.

Prepare the framework to receive the opaque layer according to routine laboratory procedures.

Veneer material is applied to the framework and finished according to routine laboratory procedures.

Polish any metal margins as is routine.

Seat the finished bridge on the prepared abutments on the working cast and send to clinician for patient delivery.



Send to Clinician

- Finished prosthesis
- Modified abutments and screws
- Working model

Clinical 10 - Seat the modified abutments

Sanitize prepped abutments and bridge (per standard clinical procedure). Remove the Healing Abutments or provisional prosthesis from the implant with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connection of the implants and dry.

Place the modified abutments and Abutment Screws onto the implants with the .050" (1.25mm) Hex Driver. Hand-tighten. Take a radiograph along the long axis of the implants to ensure the abutments are seated completely on the implants.

If the abutments are seated correctly, torque the Abutment Screws with the 30 Ncm Torque Wrench and .050" (1.25mm) Hex Driver. Apply counter-torque by grasping the abutments with the Abutment Clamp.



Clinical 11 - Cement the final bridge

Fill the screw access holes in the abutment with a resilient material of choice. This allows for future access to the Abutment Screws if necessary.

Try in crown to confirm fit and contour. Check and modify occlusion if necessary.

Place a small amount of the cement of choice around the inside margin of the bridge. Soft-access cement may be used for future retrievability.

Seat the bridge. Remove **all** excess cement from sulcus area.

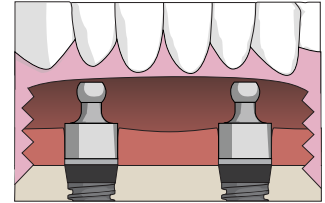
Take an x-ray for final prosthesis delivery records. The patient should receive oral hygiene instructions prior to release.



BALL ABUTMENT OVERDENTURE

EXISTING DENTURE, CHAIRSIDE PICK-UP

Two attachment options are available for securing dentures with Ball Abutments: the Ball Attachment System and the O-ring Attachment System. The Ball Attachment System offers the advantages of a greater degree of angulation correction and multiple options for insert retention. The O-Ring Attachment System offers a lower profile for cases with limited vertical height.



The case demonstrated in this section shows the Ball Attachment System. For procedures with the O-Ring Attachment system follow the same procedure, substituting the Encapsulators for the Attachment Housings and the O-Rings for the Nylon Inserts.

Ball Attachment Set

Attachment Housing Positioning Nylon Insert Directional Rings*
0°, 7° and 14°

Relative Retention →

Elastic Extra Soft Soft Standard (firmest) Clinical Nylon Inserts

O-Ring Attachment Set

Processing O-Ring
Clinical O-Ring
O-Ring Encapsulator

Tools needed



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

*Manufactured by Rhein83 (www.rhein83usa.com).

BALL ABUTMENT OVERDENTURE

Clinical 1 - Seat ball abutments

Remove the Healing Abutment with the .050" (1.25mm) Hex Driver. Make sure the implant prosthetic platform is free of bone and soft tissue. Irrigate the internal thread connection of the implants and dry.

Place the selected Ball Abutment onto the implants using the .050" (1.25mm) Hex Driver.

Take a radiograph along the long axis of the implants to ensure the abutments are seated completely on the implants.

Torque the Ball Abutments to 30 Ncm with the .050" (1.25mm) Hex Driver and a calibrated Torque Wrench.

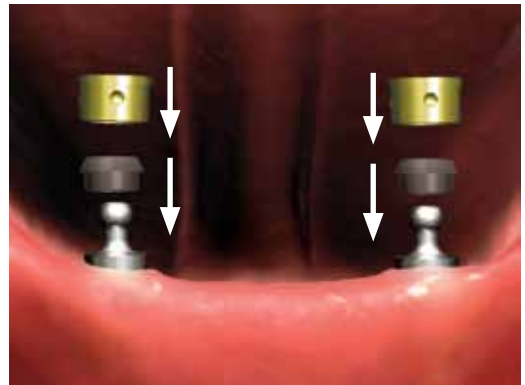


Clinical 2 - Place attachment housing assemblies

Seat the Black Positioning Insert into the Attachment Housing with the Insert Seating Tool*. Place the assembled housings onto the Ball Abutments. Rotate the housings to create a parallel path of draw and stabilize with wax. Directional Rings* are available (set of three - 0°, 7°, 14°) to aid in arranging and stabilizing the housings.



*Manufactured by Rhein83 (www.rhein83usa.com).



Clinical 3 - Block out undercuts

Block out all undercuts between the housings and the soft tissue with material of choice.

IMPORTANT

If undercuts are not blocked out, the risk of locking the denture onto the Ball Abutments during the pick-up process is extremely high.



BALL ABUTMENT OVERDENTURE

Clinical 4 - Mark and relieve denture

Place a transferable mark on top of each ball-top and seat the denture in the patient's mouth to determine the ideal location of the Attachment Housings in the denture. Relieve the denture to accommodate the housings without contact between them and the denture.

Small vent holes may be made in the lingual surface of the denture to allow excess acrylic to escape during the pick-up procedure.



Clinical 5 - Housing assembly pick-up

Place a small amount of autopolymerizing acrylic resin or light-curing composite resin on top of the dry Attachment Housings and in the relieved areas of the denture.

Position the denture in the mouth and have the patient close into light centric occlusion. Allow the acrylic resin to set per manufacturer's instructions.

Carefully remove the denture with the incorporated housings. Repair any voids around the housings and polish.



Clinical 6 - Place clinical inserts and seat final denture

Seat the denture with the Black Positioning Inserts still in place to gauge initial retention. If the retention is acceptable, the Black Positioning Inserts may be worn clinically for a period of time determined by the clinician.

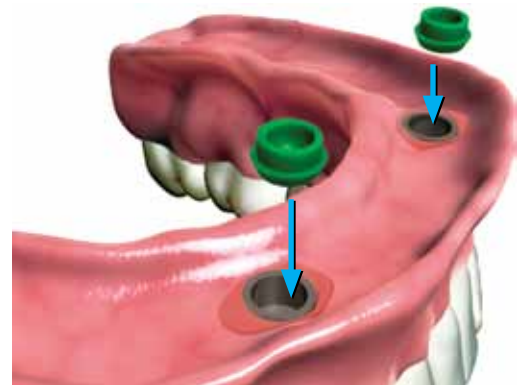
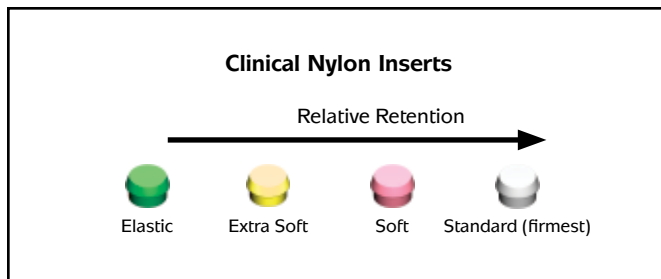
When patient is ready for greater retention, remove the Black Positioning Inserts. Place ONE Clinical Nylon Insert of choice into a positioned housing with the Insert Seating Tool*.

Seat the denture, engaging the Ball Abutment. Check retention by snapping the denture on and off the Ball Abutment in the patient's mouth.

Decrease the retention, if necessary, by inserting the Reamer* into the insert and turning clockwise. Care should be taken not to over-adjust. When the desired retention is achieved, proceed to the second insert using the same technique.

Insert the finished denture in the patient's mouth, engaging the Ball Abutments.

Make occlusal or tissue adjustments as necessary. Instruct the patient on insertion and removal of the prosthesis and oral hygiene maintenance.



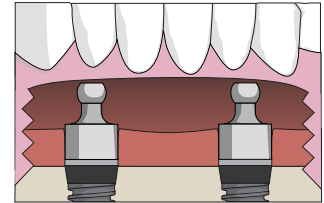
*Manufactured by Rhein83 (www.rhein83usa.com).

BALL ABUTMENT OVERDENTURE

NEW DENTURE

Two attachment options are available for securing dentures with Ball Abutments: the Ball Attachment System and the O-ring Attachment System. The Ball Attachment System offers the advantages of a greater degree of angulation correction and multiple options for insert retention. The O-Ring Attachment System offers a lower profile for cases with limited vertical height.

The case demonstrated in this section shows the Ball Attachment System. For procedures with the O-Ring Attachment system follow the same procedure, substituting the Encapsulators for the Attachment Housings and the O-Rings for the Nylon Inserts.



Ball Attachment Set

Attachment Housing Positioning Nylon Insert

Relative Retention →

Elastic Extra Soft Soft Standard (firmest)

Clinical Nylon Inserts

O-Ring Attachment Set

Processing O-Ring
Clinical O-Ring
O-Ring Encapsulator

Tools needed



Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (L0603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

*Manufactured by Rhein83 (www.rhein83usa.com).

BALL ABUTMENT OVERDENTURE

Lab 1 - Pour working cast

Follow the steps for the Ball Abutment impression technique and model fabrication on pages 36-38.



Lab 2 - Block out undercuts

Place the Black Positioning Insert in the Attachment Housing with the Insert Seating Tool*.

Seat the assembled housings onto the Ball Abutments. Rotate the housings to create a parallel path of draw. Stabilize the housings and block out the undercuts with material of choice.



**Manufactured by Rhein83 (www.rhein83usa.com).*



Lab 3 - Create stabilized baseplate

Place a sheet of light-curing baseplate material over the Cap Attachment Housings

Contour the material around the housings and the edentulous arch to fabricate a stabilized baseplate. Place a small amount of resin on the housing and incorporate the housings into the stabilized baseplate. Create a wax occlusal rim on the baseplate and send assembly to the clinician for occlusal records.

 Send to Clinician

- Baseplate with wax occlusal rim & incorporated housings/inserts
- Working model



BALL ABUTMENT OVERDENTURE

Clinical 4 - Bite registration

Remove the provisional prosthesis. Attach the baseplate and occlusal rim assembly to the Ball Abutments. Contour the occlusal rim and mark the midline and smile line. Record the vertical dimension of the occlusion with a bite registration.

Remove the baseplate and bite from the patient's mouth and replace on the working model.

Select teeth and return to laboratory for the fabrication of a stabilized denture wax try-in.



Send to Lab

- Bite registration
- Vertical dimension
- Selected denture teeth
- Working model

Lab 5 - Denture set-up

Mount the working and opposing model on an articulator. Set denture teeth on the stabilized baseplate and wax for try-in.



Send to Clinician

- Stabilized denture wax-up
- Working model



Clinical 6 - Wax try-in

Re-torque the Ball Abutments to 30 Ncm with a calibrated Torque Wrench and the .050" (1.25mm) Hex Driver. Seat the denture try-in on the Ball Abutments.

Verify occlusion, esthetics and phonetics. Make necessary adjustments. Remove the denture wax try-in.




Send to Lab

- Denture wax-up
- Working model



Lab 7 - Process denture

Process the denture using normal laboratory procedures. The Black Positioning Inserts should be used throughout the entire process.

 **Send to Clinician**

- **Finished denture**
- **Working model**



Clinical 8 - Deliver denture

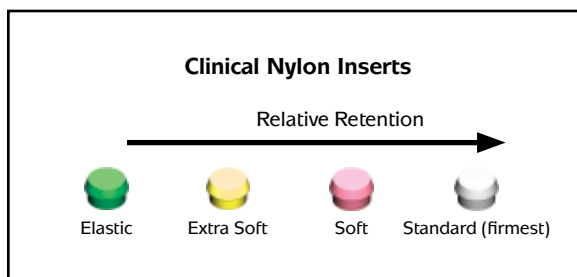
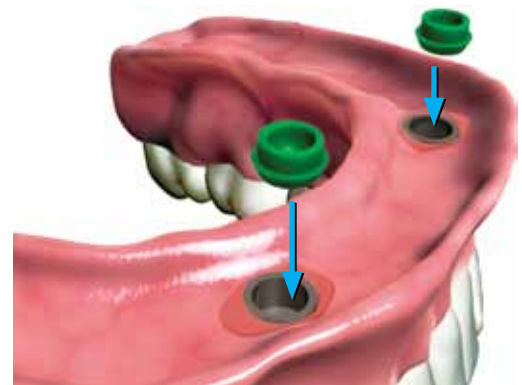
Seat the denture with the Black Positioning Inserts still in place to gauge initial retention. If the retention is acceptable, the Black Positioning Inserts may be worn clinically for a period of time determined by the clinician.

When patient is ready for greater retention, remove the Black Positioning Inserts. Place ONE Clinical Nylon Insert of choice into a positioned housing with the Insert Seating Tool*.

Seat the denture, engaging the Ball Abutment. Check retention by snapping the denture on and off the Ball Abutment in the patient's mouth.

Decrease the retention, if necessary, by inserting the Reamer* into the insert and turning clockwise. Care should be taken not to over-adjust. When the desired retention is achieved, proceed to the second insert using the same technique.

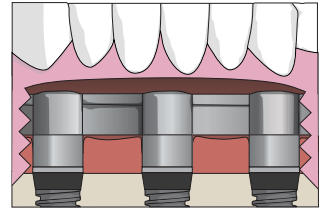
Insert the finished denture in the patient's mouth, engaging the Ball Abutments. Make occlusal or tissue adjustments as necessary. Instruct the patient on insertion and removal of the prosthesis and oral hygiene maintenance.



*Manufactured by Rhein83 (www.rhein83usa.com).

BAR OVERDENTURE SCREW-RETAINED

ABUTMENT-LEVEL CAST BAR



Screw (regular).
Abutment for Screw



Plastic Coping.
Abutment for Screw



Cover Cap,
Abutment for Screw



Direct Pick-up Coping.
Abutment for Screw



Abutments for Screw

IMPLANT-LEVEL CAST BAR



Direct Coping,
Non-hexed



Custom Cast
Abutment,
Non-hexed

Tools needed



.050" (1.25mm)
Hex Driver



Hand
Wrench



30 Ncm
Torque Wrench



.050" Hex Driver
(regular)



Hex Adapter,
Abutment for Screw



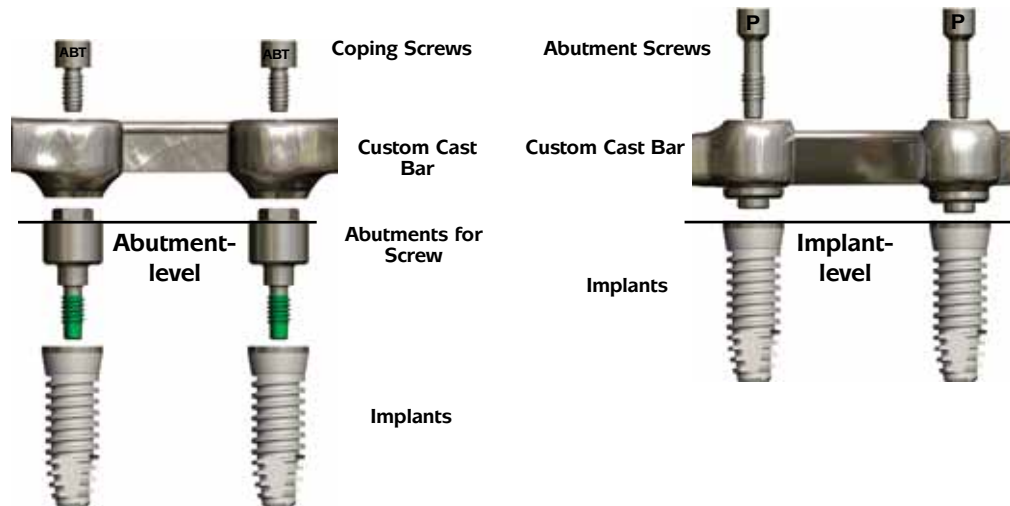
Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (LO603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

ABUTMENT OR IMPLANT-LEVEL CAST BAR

IMPORTANT

Custom cast bars may be made to attach at either the Abutment-level or Implant-level. Abutment-level bars are attached to Abutments for Screw that are inserted into the implants and serve as transmucosal elements. Implant-level bars are attached directly to the implants and secured with standard Abutment Screws.

It is essential to use the corresponding components for each of the two procedures. There is no cross-compatibility between the two families of parts.



Clinical 1 - Make impression for master cast

IMPORTANT

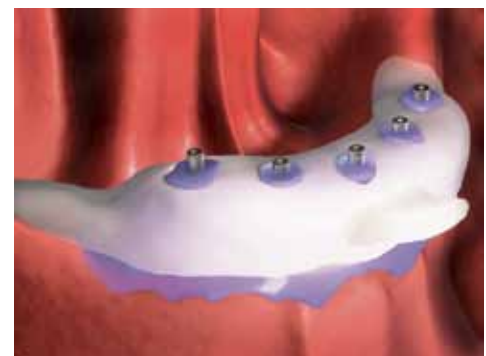
Using a custom tray will ensure a more accurate master model and subsequent passive casting. See pages 36-37 for detailed instructions.

Make a Direct Pick-up impression for creation of a master cast at the appropriate level as discussed above. See pages 21-24 (implant-level) or 29-32 (abutment-level) for detailed instructions.



Send to Lab

- Impression made with custom tray
- Direct Coping Screws
- Appropriate analogs
- Opposing model or impression



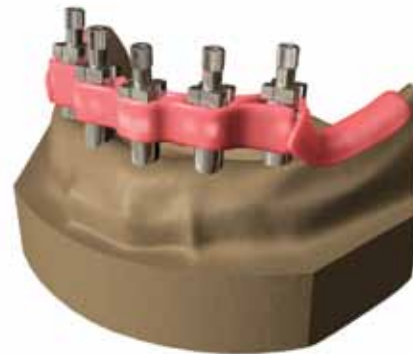
BAR OVERDENTURE SCREW-RETAINED


Lab 2 - Fabricating a stabilized baseplate / occlusal rim / verification jig

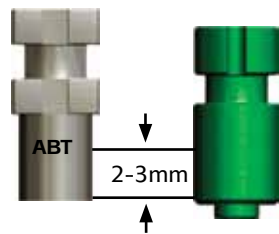
Assemble the appropriate diameter analog to the Direct Pick-up Coping with the coping screw. Pour stone model following conventional laboratory techniques.

Place the direct pick-up copings on the model with the long coping screws.

Place a sheet of light-curing baseplate material around the direct pick-up copings. Contour the material around the copings and posterior along the edentulous arch. This will be used to stabilize the wax rim later. Light-cure the material.




 **Helpful Hint**



Do not extend the acrylic base to the bottom of the coping. Keep clearance between 2-3mm from the bottom of the coping.

Create a wax occlusal rim on the stabilized baseplate with ridges to allow access to the screws. Only two screws in the first cuspid areas are needed to secure the assembly to the model.

Index the occlusal rim to stabilize bite registration material used in next step.

 **Send to Clinician**

- **Base plate/occlusal rim mounted on master cast**

Clinical 3 - Make the stabilized denture wax try-in

Remove the healing components from the implants/abutments with the .050" (1.25mm) Hex Driver.

Attach the baseplate and occlusal rim assembly to the implants/abutments with the short screws and finger-tighten with the .050" Hex Tool.

Contour the occlusal rim and mark the midline and smile line. Record the vertical dimension of the occlusion with a bite registration.

Remove the baseplate and bite from the patient's mouth and reassemble on the working model with the screws. Replace the healing components onto the implants/abutments. Select teeth and return everything to the laboratory for the fabrication of a stabilized denture wax try-in.



 Send to Lab

- Tooth selection
- Baseplate mounted on master cast
- Bite registration

Lab 4 - Mount working model on articulator

Mount the working and opposing model on an articulator. Set denture teeth on the stabilized baseplate and wax for try-in.

Access to the screws will be covered up by denture teeth. Create two access holes lingual to the anterior teeth for stabilization at the patient try-in.

Send the stabilized denture wax-up to the dentist for patient try-in.

 Send to Clinician

- Denture wax-up mounted on working cast



Clinical 5 - Denture try-in

Remove the healing components from the implants/abutments with the .050" (1.25mm) Hex Driver. Seat the denture try-in onto the implants/abutments and place the screws through the two access holes in the wax-up. Hand-tighten.

Verify occlusion, esthetics and phonetics. Make necessary adjustments, making new interocclusal records for a new set-up and try-in.

Remove the denture wax try-in and replace the healing components. Replace the denture wax-up to the working model and secure.



 Send to Lab

- Denture wax-up mounted on working cast

BAR OVERDENTURE SCREW-RETAINED

Lab 6 - Forming silicone putty matrix

Index the working model to allow for accurate repositioning of the lab matrix putty.

Make a labial/occlusal matrix of the denture teeth in silicone putty to record tooth position and labial borders of the prosthesis relative to the working model.



Lab 7 - Place abutments

Mount the desired burnout copings on the working model.

Remove the teeth from the denture wax-up and place them into their respective locations in the silicon putty matrix. Lute them into position with sticky wax.

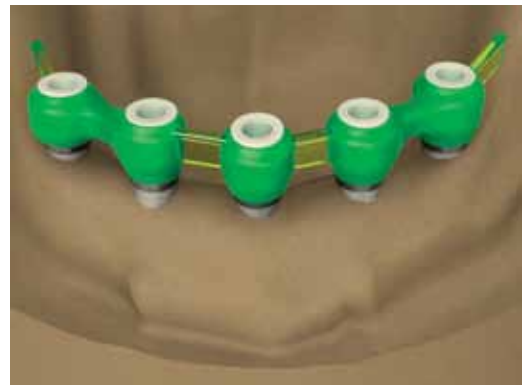
Place the matrix with attached teeth onto the working model and use as a guide for modifying the copings and designing the bar within the confines of the wax try-in.



Lab 8 - Wax up bar

Verify attachment position, bar height and functional requirements. Design the overdenture bar using bar wax and/or a preformed pattern of choice, incorporating the copings within the bar pattern.

Verify position of attachments with a surveyor and adjust as needed.



Lab 9 - Sprue, cast and invest

Sprue and invest the wax pattern per normal laboratory procedures.
Cast the bar in a high noble alloy.

Divest, finish and polish the bar. Refine the screw access holes within the casting with the reamer as needed.

Confirm a passive fit by placing the bar on the working model.

Send the bar on the model to the clinician for try-in.



Send to Clinician

- Cast bar on working model
- Short and long coping screws

IMPORTANT

When divesting and casting, it is important not to sandblast the bar / abutment or bar / implant interfaces. Doing so could result in a poor fit between the bar and the abutments or implants. Mounting the appropriate analogs on the bar casting during this step can prevent distortion of the interfaces.



Helpful Hint

Custom Castable Gold Alloy Specifications

- Melting range 1400-1490°C (2552-2714 ° F)
- Coefficient of thermal expansion 12.45 x 10⁻⁶ in/in °C measured between 25 °C and 500 °C
- Vickers Hardness HV5 205
- Yield Strength (.2% offset) 83K psi minimum
- Ultimate Tensile Strength 92K psi minimum
- Composition: 60% Gold, 19% Platinum, 20% Palladium, 1% Iridium



Clinical 10 - Optional - correct the master cast

Place the cast bar on the implants and ascertain the passivity of fit. If the bar is not fitting passively, cut the bar and place back in the mouth.



BAR OVERDENTURE SCREW-RETAINED

Clinical 11 - Make an impression

Use long impression screws to hold the sectioned bar in place. Modify a stock impression tray by creating screw access holes for the long impression screws. Syringe light or medium-bodied impression material around the bar. Load the modified tray with medium or heavy-bodied impression material and seat in the mouth. Wipe impression material off the tip of the screws before it sets. After the material sets, remove the long screws and remove the impression. The bar will be picked up in the impressions.

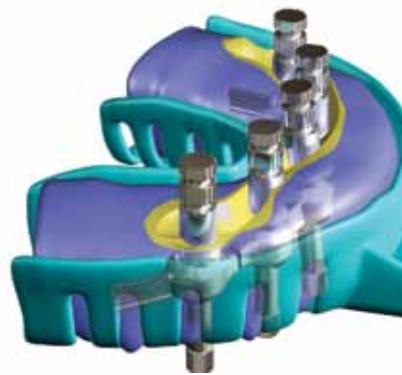


Clinical 12 - Assemble analog

Place analogs onto the bar in the impression by holding the analogs in place while inserting the screws through the access holes in the impression tray. Hand-tighten.

 Send to Lab

- Impression tray
- Modified cast bar
- Long screws



Lab 13 - Correct non-passive bar

After the analogs have been set in stone, solder bar together to obtain a passive fit.

Modify the denture as needed to fit the newly formed bar.



Lab 14 - Process denture

Process the denture with the appropriate attachments according to normal laboratory procedures. Return the denture and bar framework to the dentist for patient delivery.



Send to Clinician

- Finished denture
- Bar
- Short screws
- Working model



Clinical 15 - Seat final appliance

Remove the Healing Abutments or Cover Caps from the implants/abutments with the .050" (1.25mm) Hex Driver. Make sure the prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connections and dry. Place the final cast bar and secure with the appropriate screws using the .050" (1.25mm) Hex Driver. Hand-tighten. If the seating surface is subgingival, take an x-ray to insure the bar is seated completely. Torque the screws to 30 Ncm with the .050" (1.25mm) Hex Driver and a calibrated Torque Wrench.

Insert the finished denture in the patient's mouth, engaging the attachments. Make occlusal or tissue adjustments as necessary.

Instruct the patient on insertion and removal of the prosthesis and oral hygiene maintenance.



BAR OVERDENTURE SCREW-RETAINED

IMPLANT-LEVEL, LASER WELDED BAR



Abutment
Screw



Direct Coping,
Non-hexed



Direct Coping
Screw

Tools / materials needed



A working model fabricated via the Implant-level Impression, Open tray (Direct) Pick-up Technique (see pages 21-24).



.050" (1.25mm)
Hex Driver



.050" Hex Driver
(long)

.050" Hex Driver
(regular)



Hand Wrench



30 Ncm
Torque Wrench



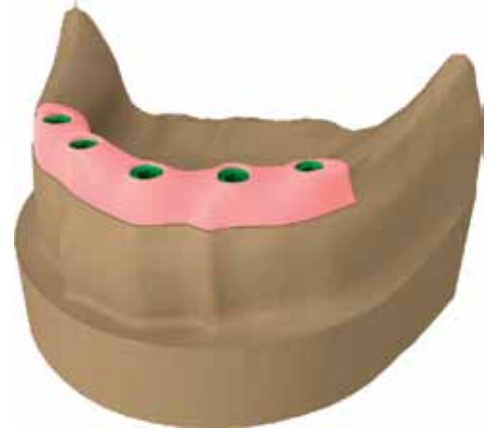
Parts shown are for the 4.5mm prosthetic platform (3.5mm and 5.7mm platforms are not shown). Please refer to the Tapered Internal Catalog & Surgical Manual (LO603) or the Internal / Single-stage Product Catalog (ML0115) for complete component ordering information including part dimensions.

Lab 1 - Working cast

Follow the steps for creating an Implant-level Impression and working model using the Open Tray (Direct) Pick-up Technique (Non-hexed), see pages 21-24.

IMPORTANT

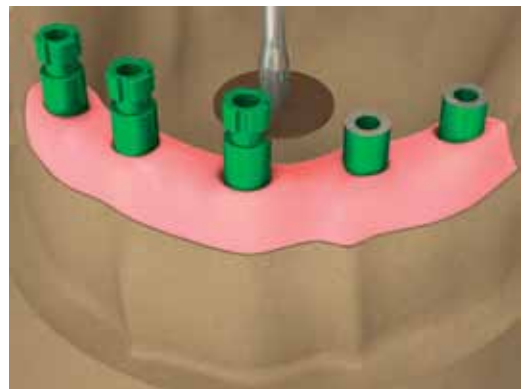
Laser-welding procedures allow the use of precision-machined titanium parts to be used instead of castable components. This often results in a more passive-fitting bar. Use only a qualified, trained laser welding dental lab.



Lab 2 - Fabricating a verification bar

Attach the Direct Pick-up Copings to the Implant Analogs with the Abutment Screws. Remove the top section of the Direct Pick-up Copings. Laser weld the bar as prescribed, without attachments, to the modified Direct Pick-up Copings.

Verify passive fit by removing all screws and reinserting a long screw in one of the most distal copings. Hand-tighten with the .050" (1.25mm) Hex Driver. Passive fit is verified if the remaining copings in the verifications bar rest passively on the remaining implant analogs.



IMPORTANT

A verification bar is simply the final bar without attachments. Laser assembly provides the ability to modify the bar and configure the attachments at any time during the fabrication process without the risk of having to remake the bar. The attachments will be laser welded onto the bar after a jaw relationship is established.



Send to Clinician

- Verification bar and baseplate
- Working model

BAR OVERDENTURE SCREW-RETAINED

Clinical 3 - Verify accuracy of impression and bar passivity

Remove the Healing Abutments from the implants with the .050" (1.25mm) Hex Driver. Make sure the prosthetic platforms are free of bone and soft tissue.

Place the framework (verification bar) onto the implants using the Abutment Screws and hand-tighten with the .050" (1.25mm) Hex Driver. Take a radiograph to ensure the framework is seated completely on the implants.

Confirm passive fit by removing the bar and reattaching to the most distal implant with a single screw. Passive fit is verified if the remaining copings within the framework rest passively on the implants.

Remove the framework, reattach to the working model and return to the laboratory.

Replace the Healing Abutments with the .050" (1.25mm) Hex Driver.



Send to Lab

- **Passive bar (if not passive follow steps below)**
- **Working model**

Clinical 4 - Correcting a non-passive framework (if required)

If a bar framework does not fit passively, determine where the framework should be cut and mark. Remove from the patient's mouth and replace the Healing Abutments on the implants. Replace bar on working model and section the framework where necessary with a very thin separating disk and a high-speed handpiece. Remove the Healing Abutments and attach the sectioned framework to the implants with the Abutment Screws and hand-tighten. Lute the sectioned framework together with a fast-setting autopolymerizing resin. Remove the sectioned, resin-secured framework from the mouth. **DO NOT** reattach the framework to the working model. Return to the laboratory for laser assembly.



Send to Lab

- **Sectioned and luted bar (DO NOT ATTACH BAR)**
- **Working model**

BAR OVERDENTURE SCREW-RETAINED

Lab 5 - Correcting the master cast

Once a passive fit has been corrected in the mouth, the working model must be corrected.

Remove the misaligned Implant Analogs from the working model, one at a time. When the framework rests passively on the remaining Implant Analogs; reattach the removed Implant Analogs to the framework. Seat the framework on the model, securing the bar framework to the Implant Analogs that remained in the model. The reattached Analogs will be suspended within the hole created when they were removed from the model. Soak the model in water. Carefully vibrate stone into the voids around the retentive undercuts of the Implant Analogs. Allow the stone to set.



Lab 6 - Laser weld correction

Remove the resin from the sectioned framework and clean each segment of the bar. Return the framework to the corrected master cast and laser-weld corrections.



Lab 7 - Fabricating a baseplate / occlusal rim

Place the retention clip of choice on the bar in the designated area. Block out the undercuts with wax. Adapt a sheet of light-cured baseplate material over the verification bar capturing the clip within the baseplate material. Contour the material around the bar and edentulous areas to create a stabilized baseplate. Create a wax occlusion rim on the stabilized baseplate. Send the verification bar assembly and baseplate to the clinician for fit verification and occlusal records.



 Send to Clinician

- Verification bar and baseplate
- Working model

BAR OVERDENTURE SCREW-RETAINED

Clinical 8 - Jaw relationship

Remove the Healing Abutments from the Implants with the .050" (1.25mm) Hex Driver. Place the framework onto the Implants with the Abutment Screws using the .050" (1.25mm) Hex Driver. Hand-tighten.

Clip the baseplate and occlusal rim assembly to the bar. Contour the occlusal rim and mark the midline and smile line. Record the vertical dimension of the occlusion with a bite registration. Remove the baseplate and bite from the patient's mouth. Remove the bar and reassemble on the working model with the Abutment Screws. Replace the Healing Abutments onto the implants. Select teeth and return everything to laboratory for the fabrication of a stabilized denture wax try-in.



Send to Lab

- **Tooth selection**
- **Occlusal rim**
- **Working model**
- **Bite records**
- **Bar**

Lab 9 - Attachment configuration and processed denture base

Mount the working and opposing model on an articulator. Laser-weld the attachment of choice to the bar to support and retain the denture. Assemble the attachments on the bar and block out the undercuts in wax. Process an acrylic base capturing the retentive elements of the attachments. Trim and polish the borders. This is the final base for the denture. Arrange the denture teeth in wax on the processed denture base. Send the bar and set-up to the clinician for wax try-in.



Send to Clinician

- **Denture base with selected teeth**
- **Working model**

Clinical 10 - Bar and prosthesis try-in

Sanitize bar and denture (per standard clinical procedure).

Remove the Healing Abutments from the Implants with the .050" (1.25mm) Hex Driver.

Seat the bar onto the Implants with the Abutment Screws using the .050" (1.25mm) Hex Driver. Hand-tighten.

Insert the prosthesis into the patient's mouth and engage the retention attachments on the bar. Evaluate fit, form and function.

Adjust as necessary. Return wax denture and bar to the lab for final processing. Replace the Healing Abutments onto the Implants with the .050" (1.25mm) Hex Driver.



Clinical 11 - Deliver bar and denture

Remove the Healing Abutments or Cover Caps from the implants/abutments with the .050" (1.25mm) Hex Driver. Make sure the prosthetic platforms are free of bone and soft tissue. Irrigate the internal thread connections and dry.







Place the bar onto the Implants and secure with the Screws. Torque the Screws to 30 Ncm with the .050" (1.25mm) Hex Driver and a calibrated torque wrench.

Insert the finished denture in the patient's mouth, engaging the attachments. Make occlusal or tissue adjustments as necessary. Instruct the patient on insertion and removal of the prosthesis and oral hygiene maintenance.



ICON LEGEND

Symbol descriptions for product labeling

| | |
|---|---|
|  | Reference/ article number |
|  | Lot/batch number |
|  | Use before expiration date (YYYY-MM) |
|  | Manufacture date (YYYY-MM) |
|  | Sterile by gamma irradiation |
|  | Non-sterile |
| Rx Only | Caution: Federal (USA) law restricts these devices to the sale, distribution and use by, or on the order of, a dentist or physician. |

 Single use only

 Refer to
Instructions for Use



BioHorizons products carry the CE mark and fulfill the requirements of the Medical Devices Directive 93/42/EEC

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Prosthetic platform



Ø3.5mm Prosthetic Platform



Ø4.5mm Prosthetic Platform



Ø5.7mm Prosthetic Platform

Disclaimer of Liability

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This literature serves as a reference for BioHorizons Internal and Tapered Internal implants, prosthetics and instrumentation. It is not intended to describe the methods or procedures for diagnosis, treatment planning, or placement of implants, nor does it replace clinical training or a clinician's best judgment regarding the needs of each patient. BioHorizons recommends appropriate training as a prerequisite for the placement of implants and associated treatment.

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.

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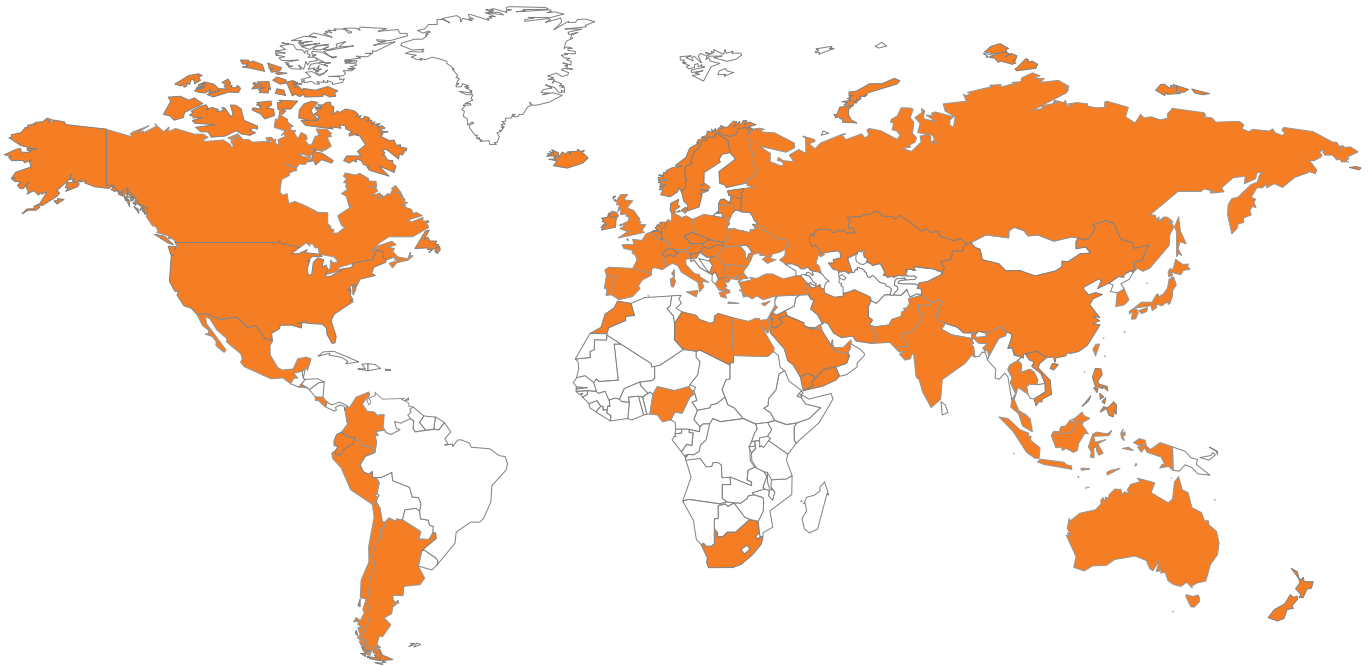
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