Symbol descriptions for product labeling

- **LOT**: Lot/batch number
- **REF**: Reference/article number
- **STERILE**: Sterile by gamma irradiation
- **NON-STERILE**: Non-sterile
- **Rx Only**: Caution: Federal (USA) law restricts these devices by, or on the order of, a dentist or physician.
- **Single use only**: Single use only
- **Refer to Instructions for Use**: Refer to Instructions for Use
- **Use before expiration date (YYYY-MM)**
- **Manufacture date (YYYY-MM)**
- **BioHorizons products carry the CE mark and fulfill the requirements of the Medical Devices Directive 93/42/EEC**
- **Prosthetic platform**
  - Ø3.5mm Prosthetic Platform
  - Ø4.5mm Prosthetic Platform
  - Ø5.7mm Prosthetic Platform
- **Implant diameter : surface treatment**
  - Ø3.8mm Implant: RBT
  - Ø4.6mm Implant: RBT
  - Ø5.8mm Implant: RBT

Disclaimer of Liability
BioHorizons dental implants may only be used in conjunction with the associated original components and instruments according to BioHorizons instructions for use. Use of any non-BioHorizons products in conjunction with BioHorizons implants will void any warranty or any other obligation, expressed or implied, of BioHorizons.

This literature serves as a reference for BioHorizons 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. BioHorizons continually strives to improve its products and therefore reserves the right to improve, modify, change specifications or discontinue products at any time.

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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BioHorizons Tapered Internal features

- Proprietary Laser-Lok® microchannels *
- Anatomically tapered implant body
- Patented reverse buttress threads **
- Proven internal hex connection

* Laser-Lok design patent #6,454,569 and 6,419,491
** Reverse Buttress thread design patent #5,964,766
BioHorizons Laser-Lok Technology

Laser-Lok microchannels are a series of precision-engineered 8 and 12 micron grooves on the collar of dental implants. This patented laser surface is unique within the industry as the only surface treatment shown to attach and retain both hard and soft tissue.

Laser-Lok microchannels are the result of over 15 years of research and documented studies at leading Universities. As part of the research, numerous in vitro animal and human studies were conducted to (1) understand how bone and soft tissue cells react to various types of surface geometries and (2) evaluate how specific surface microgeometries affect crestal bone and the biologic width around dental implants.

In vitro Research

Cellular activity was studied on a variety of surface finishes including smooth, roughened and specifically engineered microgeometries. The engineered microgeometries were designed in a variety of repeating patterns and in a number of different sizes. Through various cell model designs, it was shown that a linear grooved pattern in the range of 8 to 12 microns was optimal for inhibiting cell growth, maximizing cellular contact guidance and providing a directed tissue response.1

In vivo Validation

A series of animal studies (rabbit and canine) were conducted in both an implantable chamber model (intended to assess biologic response) and a dental model to assess the differences in tissue response to an engineered microgeometry versus a machined surface (control). Through these studies, it was shown that a microchannel pattern of 8 and 12 microns improved soft tissue integration, controlled cell ingrowth, increased bone and tissue attachment and reduced bone loss.

Clinical Evidence

To evaluate how dental implants treated with the Laser-Lok microchannels benefit patients, a series of human histologic case studies and prospective controlled studies have been conducted. In a prospective, controlled multi-center study conducted by the Group for Implant Research in Italy, it was shown that, at 37 months post-op, the mean crestal bone loss for implants with Laser-Lok microchannels was only 0.59mm versus 1.94mm for the control implant. The Laser-Lok treated implants formed a stable soft-tissue seal above the crestal bone.8 Interestingly, a prospective, randomized study has been initiated comparing an implant with Laser-Lok microchannels to the 3i Osseotite® NT implant and the Nobel-Biocare Select. This study is evaluating the peri-implant bone and soft tissue complex in patients at 6, 12, 24 and 36 months post-restoration.
Surgical Protocol Options

**Two-stage Surgery** was the original protocol developed for placing modern dental implants. 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 Surgery** leaves the implant/abutment connection exposed to the oral cavity via a removable Healing Abutment. 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.

**Single-stage Surgery with Non-functional Immediate Provisionalization** provides the patient a non-functioning provisional prosthesis early in the treatment plan. An abutment is placed on the implant at or shortly after surgery, and a provisional restoration is secured to it with temporary cement. The provisional can help contour the soft tissue profile during healing.

**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.
Introduction
This Surgical Manual serves as a reference for use of the BioHorizons Tapered Internal implants and surgical instruments. 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, or placement 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 of implants and associated treatment.

The procedures illustrated and described within this manual reflect idealized patient presentations with adequate bone and soft tissue to accommodate implant placement. No attempt has been made to cover the wide range of actual patient conditions that may adversely affect surgical and prosthetic outcomes. Clinician judgment as related to any specific case must always supersede any recommendations made in this or any BioHorizons literature.

Before beginning any implant surgical procedure with BioHorizons implants:
• Read and understand the Instructions for Use that accompany the products.
• Clean and sterilize the surgical tray and instruments per appropriate Instructions for Use.
• Become thoroughly familiar with all instruments and their uses.
• Study Surgical Kit layout, color-coding scheme and iconography.
• Design a surgical treatment plan to satisfy the prosthetic requirements of the case.

Treatment Planning
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 should determine the design, number and position of the implants.

Placement of small diameter implants or the use of angled abutments is not recommended in the posterior region of the mouth.

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 directs the surgeon to 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.

Laboratory Guide Templates
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.
Surgical Specifications:
- Two-stage or single-stage protocol
- 3 Body diameters
- 5 Implant lengths
- 3 Prosthetic platform diameters
- Titanium Alloy (Ti-6Al-4V)

<table>
<thead>
<tr>
<th>Body Diameter</th>
<th>Implant Lengths</th>
<th>Platform Diameter</th>
<th>Apical Diameter</th>
<th>Minimum Ridge Width</th>
<th>Minimum Mesial / Distal Space</th>
<th>Machined Collar Height</th>
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</table>
Always consider that a margin of safety of at least 1mm should be factored into treatment plans adjacent to any vital anatomic structure.

Purpose: Aids clinician in preoperative determination of options for implant length and diameter.

The template has several unique features:

• All implants are shown at 100% scale and 125% scale (for panoramic radiography). Be aware that panoramic radiography varies in magnification from 115% to 135%.

• 5mm circular representations are shown at 100% and 125% for the radiographic ball technique. This technique uses radiographic marking balls embedded in a plastic template prior to radiographic examination of the patient. These marking balls will be visible on the radiographic image.

• Measurements can be taken to determine the magnification factor of the radiograph and help the practitioner accurately determine the amount of available bone for implant placement. The following example shows the calculation of a magnification factor and the subsequent determination of available bone:

Step 1. The radiographic marking ball has a known diameter of 5mm.

Step 2. A direct measurement of the marking ball appears on the radiograph to have a diameter of 6mm.

Step 3. The magnification factor is calculated as: 6 ÷ 5 = 1.2 or 120%.

Step 4. Assume that the distance between the crest of the ridge and the superior aspect of the mandibular nerve canal appears on the radiograph to have a length of 15mm.

Step 5. The actual distance between the crest of the ridge and the mandibular canal would be calculated as: 15mm ÷ 1.2 = 12.5mm.
All spacing recommendations given within this literature are general guidelines. Clinicians must apply their best judgement as to whether these guidelines are appropriate for individual patient presentations.

Spacing considerations for BioHorizons Tapered Internal implants:
- Proper spacing is essential for esthetic restorations and hygiene considerations
- Measurements are taken at the osseous crest
- Consider the implant body diameter (3.8 / 4.6 / 5.8mm) rather than prosthetic platform diameter
- Maintain 1.5mm from contact at crest to the edge of the implant
- Maintain 3.0mm edge-to-edge spacing between adjacent implants
- Watch for tooth roots tipped or angled beyond the contact region of the crown
- Minimum spacing guidelines are illustrated below (figures rounded up to the next 0.1mm)

The osteotomy centerpoint required to maintain a 1.5mm implant-to-tooth spacing is derived using the following calculation: $\frac{1}{2} [\text{implant body diameter}] + 1.5\text{mm}$. The measurements for the three Tapered Internal body diameters are shown below.

The osteotomy center-to-center measurement required to maintain a 3.0mm edge-to-edge spacing between Tapered Internal implants is derived using the following calculation: $\frac{1}{2} [\text{sum of 2 implant body diameters}] + 3.0\text{mm}$. The table below lists the permutations.
**Purpose:** Multi-function instrument for intraoral measurements.

- Ø2.0mm probe tip measures osteotomy depth in millimeter increments
- Five centimeter graduated ruler on shaft
- End measures implant-to-implant spacing, mesial/distal and buccal/lingual
- End measures implant spacing adjacent to an existing tooth

The rectangular end of the tool provides intraoral measurements of buccal/lingual and mesial/distal space.

Center-to-center implant spacing

Useful for marking center-to-center implant spacing on the ridge prior to multiple implant placement.

Probe tip measures osteotomy depth.

Using the rectangular end as shown against an existing crown places the osteotomy approximately 4.25mm from the contact.
The Tapered Internal Surgical Kit uses an intuitive layout to guide the surgeon through the instrument sequence. The sequence begins in the upper left hand corner and works left-to-right and then down. Color-coded lines, instruments and grommets further aid in instrument selection and identification.

Prior to use, clean and sterilize the surgical tray and instruments per appropriate Instructions for Use and study the Surgical Kit layout, color-coding and iconography. Surgical assistants should also be thoroughly familiar with all instruments and their uses.
The Starter Drill, Depth Drills, Width Increasing Drills and Bone Taps are marked with 1mm bands to aid in both supracrestal and crestal implant placement. Supracrestal placement puts the machined collar and 8 micron Laser-Lok channels (1mm total) in contact with the soft tissue and promotes soft tissue attachment to the implant (see page 23).

**Drill Depth Markings**

The Starter Drill, Depth Drills, Width Increasing Drills and Bone Taps are marked with 1mm bands to aid in both supracrestal and crestal implant placement. Supracrestal placement puts the machined collar and 8 micron Laser-Lok channels (1mm total) in contact with the soft tissue and promotes soft tissue attachment to the implant (see page 23).

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**Important Drilling Considerations**

Peri-operative oral rinses with a 0.12% Chlorhexidine Digluconate solution have been shown to significantly lower the incidence of post-implantation infectious complications. A preoperative 30-second rinse is recommended, followed by twice daily rinses for two weeks following surgery.

Drilling must be done under a constant stream of sterile irrigation. A pumping motion should be employed to prevent overheating the bone. Surgical drills and taps should be replaced when they are worn, dull, corroded or in any way compromised. BioHorizons recommends the replacement of drills after 12 to 20 osteotomies. A Drill-usage Tracking Chart is available from BioHorizons to aid offices in recording this important information.

There is a risk of injury to the mandibular nerve associated with surgical drilling in lower posterior regions. To minimize the risk of nerve injury, it is imperative that the clinician understands the drill depth markings in order to correlate implant length with the actual drilling depth to produce the desired vertical placement of the implant.
**Drill Extender**

**Purpose:** Extends overall length of latch-type drills and burs.

**Used:** With Tapered Internal Drills and Burs.

- Adds 16mm to overall length of drills and burs
- Provides access between long crowns
- Internal geometry engages drill’s latch geometry
- Compatible with latch-type handpieces, burs and drills

An Extended Shank version will be available that adds 8mm to overall length. Depth markings are identical to standard length drills. Contact customer care for availability of this product in your market.
Paralleling Pins may be used following the Ø2.0mm Starter Drill to evaluate any changes needed to improve implant angulation and position. The Paralleling Pins are provided both straight or with a 20° angle. The large end of the paralleling pin may be used after the osteotomy is enlarged to Ø2.5mm.

Radiographic evaluation of the osteotomy’s proximity to adjacent anatomy can be made using the pins as reference, however the level of radiographic magnification must be taken into account. Divide the feature’s apparent length on the image by the known actual length to calculate the magnification factor (apparent length ÷ actual length = magnification factor).

By example: if the shank measures 10.5mm on the radiograph, the magnification factor is: 10.5 ÷ 9 = 1.16 or 116%. Therefore if the Parallel Pin appears on the radiograph to be 4.0mm away from a structure, the actual distance is 4.0mm ÷ 1.16, or 3.4mm.
Purpose: Sets osteotomy depth following use of the Ø2.0mm Starter Drill.

- Efficient cutting drill design collects bone for autografting

An Extended Shank version will be available that adds 8mm to overall length. Depth markings are identical to standard length drills. Contact customer care for availability of this product in your market.

Supracrestal (drill to leading edge)

Crestal (drill to trailing edge)

1mm bands

Depth Drill - The Ø2.5mm Depth Drill is designed to increase and/or set the depth of the osteotomy following use of the Ø2.0mm Starter Drill. It may also be the first drill used to set the osteotomy depth for implant placement in an extraction socket. This drill is designed for placing the implant 1mm supercrestal or at the crest. The clinician must manually stop the drill at the desired depth based on the depth marks on the shaft.
**Width Increasing Drills**

- Used to widen the diameter of the osteotomy in small increments after the depth has been established with a Ø2.5mm Depth Drill. The gradual removal of bone reduces heat generation in the surrounding tissue. The drill tip is designed for limited end cutting. However, the osteotomy depth can be increased with these drills.

**Purpose:** Incrementally widens the osteotomy to reduce heat generation.

- Depth-marked for reference
- Efficient cutting drill design collects bone for autografting

Extended Shank versions will be available that add 8mm to overall length. Depth markings are identical to standard length drills. Contact customer care for availability of this product in your market.
Tapered Internal Depth Gauges

**Purpose:** Verifies that osteotomy has been prepared to required depth.

- Depth-marked for reference.
- Used following the final Width Increasing Drill for each implant.
**Tapered Internal Crestal Bone Drills**

**Purpose:** Removes cortical bone at ridge crest to facilitate pressure-free seating of the implant collar

- **Site Specific.** Indicated when dense cortical bone is present at crest
- Rounded non-end cutting hub centers drill in osteotomy
- Used following the final Width Increasing Drill for each implant

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Example 1. (Supercrestal) Only partial cutting geometry used.

Example 2. (Crestal) Full cutting geometry used.

1mm left above osseous crest.

Implant platform level with osseous crest.

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Tapered Internal Crestal Bone Drills prepare dense crestal bone to seat the implant collar. This drill is optional in less dense bone.

Do not use the full length of the cutting geometry if all or part of the collar is to be left supracrestal (Example 1). Preparing the bone to the top of the drill’s cutting geometry allows the implant to be placed with the prosthetic platform level with the crestal ridge (Example 2).
**Bone Taps**

**Purpose:** Prepares dense cortical bone for implant threads.

- Site Specific: Not typically used in soft (D3-D4) bone
- 30 rpm or less
- Final osteotomy preparation instrument prior to implant placement
- Square drive shaft interfaces with Handpiece, Ratchet, Hand Wrench and Surgical Driver

**Bone Taps -** The osteotomy should be tapped in dense bone (D1-D2) to prepare the site to accept the implant’s threads without creating excessive pressure. The use of a Bone Tap may also be indicated in less dense bone when one or more sides of the osteotomy are in contact with a lateral plate of cortical bone.

The Bone Taps may be driven with either a Handpiece, Ratchet, Hand Wrench or by the BioHorizons Surgical Driver (purchased separately, ref. 150-000). The Ratchet and Hand Wrench Extender may be used when additional length is needed.

Place the tip of the Bone Tap into the osteotomy, apply firm apical pressure and begin rotating slowly in a clockwise direction (30 rpm or less is recommended). When the threads engage, allow the tap to feed without excessive pressure. To remove, rotate the Bone Tap in a counter-clockwise direction, allowing it to back out of the osteotomy. **Do not pull on the Bone Tap to remove it from the site.**
<table>
<thead>
<tr>
<th>Ø3.8mm implant body</th>
<th>Ø4.6mm implant body</th>
<th>Ø5.8mm implant body</th>
</tr>
</thead>
</table>

**Depth Drill Sequence**  
*(in average bone density)*

**Width Increasing Drill Sequence**  
*(in average bone density)*

**Depth Gauges**  
*(site specific)*

**Crestal Bone Drills**  
*(site specific)*

**Bone Taps**  
*(site specific)*

**Abutment-level and/or Implant-level Drivers**
BioHorizons Tapered Internal implants are provided in double-layer packaging (as depicted below). A cardboard sleeve protects a blister pack that contains the implant in a sterile inner vial. Only the sterile inner vial should be introduced into the sterile surgical field. The blister tray lid has multiple peel-and-stick labels for affixing to the patient’s chart.
When the lid of the blister tray is removed, the implant vial is exposed and may then be placed in the sterile field. While holding the vial in an upright fashion, remove the cap by rotating it in a counter-clockwise direction. The implant can then be removed from the vial by engaging the premounted 3inOne Abutment with the appropriate Driver.

Select the Abutment-level Driver and engage the implant as shown below. Do not touch the implant surface during the transfer. The implant is carried to the surgical site on the driver.
**ABUTMENT-LEVEL PLACEMENT**

**Purpose:** Engages the 3inOne Abutment allowing the implant to be driven into the osteotomy.

- Pre-mounted 3inOne Abutment serves as the surgical drive mount
- Drivers interface with the internal square of the 3inOne Abutment
- PEEK plastic snap ring secures implant to be carried to osteotomy
- Electric handpiece or manual insertion options
- 30 rpm or less

Abutment-level Drivers engage Tapered Internal implants via the square in the interior coronal aspect of the pre-mounted 3inOne abutment. Remove the cap from the implant sterile inner vial and seat the chosen driver, either Handpiece- or Ratchet-driven. Remove the implant from the vial and carry it to the osteotomy on the driver, taking precautions not to touch the implant surface during the transfer.

**If the driver’s square does not engage the abutment’s square during pick-up, the plastic snap ring WILL secure the implant for transport to the osteotomy. The square will automatically engage when the driver is slowly rotated under apical pressure.**

Place the apex of the implant into the osteotomy, apply firm apical pressure and begin rotating slowly (30 rpm or less is recommended). When the threads engage, allow the implant to feed without excessive pressure.

Overtightening the implant in the osteotomy may cause osseous microfracture. Too much pressure at the crest may also compromise surgical results. Manual seating via the Abutment-level Driver for Ratchet may be desired to gain a tactile sense of final implant placement. If too much resistance is felt during insertion, remove the implant and revise the osteotomy with the appropriate Crestal Bone Drill or Bone Tap as deemed necessary to reduce insertion torque.
### IMPLANT PLACEMENT LEVELS

**Placement Options**

The stated length of BioHorizons Tapered Internal implants is measured from the apex of the implant to the top of the prosthetic platform (see page 6). The placement level should be driven by the prosthetic necessities of each case. Contributing factors include: available inter-occlusal space, soft tissue thickness and planned prosthesis type.

<table>
<thead>
<tr>
<th>Supracrestal</th>
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<tr>
<td>Supracrestal placement puts the machined portion of the collar and the 8 micron Laser-Lok channels in contact with the soft tissue and promotes soft tissue attachment. For supracrestal placement, reduce your osteotomy depth by 1mm using the appropriate length indicator on the drills. Prior to closure, verify the implant has initial stability and the soft tissue coverage is adequate.</td>
</tr>
<tr>
<td>! Supracrestal placement is not recommended for 7.5mm length Tapered Internal Implants.</td>
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<tr>
<td>! Supracrestal placement is not recommended for RBT-collar Tapered Internal implants (non Laser-Lok). Contact Customer Care for availability of this product in your market.</td>
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<th>Uneven Ridge</th>
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<tr>
<td>Uneven Ridge When placing the Tapered Internal implant in an uneven ridge, prepare the osteotomy and place the implant so that the bone/soft-tissue junction is within the 1.5mm Laser-Lok transition zone. If the discrepancy is more than 1.5mm, leveling the ridge should be considered.</td>
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<thead>
<tr>
<th>Crestal</th>
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<tr>
<td>Crestal To place the implant flush with the crest, drill to the length indicator on the drills that corresponds to the selected implant length.</td>
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<tr>
<td>! Crestal placement is the recommended protocol for RBT-collar Tapered Internal implants (non Laser-Lok). Contact Customer Care for availability of this product in your market.</td>
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To remove the 3inOne Abutment, engage the Abutment Screw with the .050" (1.25mm) Hex Driver. Apply firm apical pressure to the Hex Driver and rotate counter-clockwise until the screw is completely disengaged from the implant body. The 3inOne Abutment may then be removed.

In soft bone, or when the implant lacks initial stability, an Abutment Clamp (ref. IMPAH, sold separately) should be used to grasp the outside of the abutment to provide counter-torque during the loosening of the Abutment Screw. The 3inOne Abutment may be removed once the Abutment Screw has been completely loosened.

The 3inOne Abutment and the Abutment Screw should be retained with the patient’s chart. They can later be used in the impression making procedure and as a temporary or final abutment for cement retention.
**Implant Position Adjustment**

**Hex Orientation**

The flat surface on the external aspect of the 3inOne Abutments is indexed to one of the six flats of the implant’s internal hexagon. In most cases one of the hex flats should be oriented to the facial aspect, as it allows for angulation correction with stock angled abutments. It also allows the flat of the 3inOne Abutment to be placed to the facial which leaves more room for porcelain in that area on the final prosthesis.

⚠️ The implant’s rotational position can be adjusted following removal of the 3inOne Abutment using the Implant-level Drivers as described below.

**Implant-level Drivers**

- **Purpose:** Engages implant’s internal hex allowing its position to be adjusted in the osteotomy.
  - May be used following removal of the 3inOne Abutment
  - Offers a narrower path of insertion and better clearance than the 3inOne Abutment / Abutment-level Driver option
  - Handpiece or manual insertion options
  - 30 rpm or less

The rotational position (hex flat orientation) or the placement level of Tapered Internal implants can be adjusted with the Implant-level Drivers following removal of the 3inOne Abutment. Engage the implant’s internal hex with the appropriate driver and rotate to the desired position. The dimple found on Implant-level Drivers is indexed to one of the internal hex flats and can be used to help achieve the desired hex orientation.
Cover Caps

Purpose: Protects prosthetic platform in two-stage (submerged) surgical protocols.

- Irrigate implant to remove blood and other debris
- Remove Cover Cap from plastic holder with .050" (1.25mm) Hex Driver
- Thread clockwise into implant body
- Hand-tighten (10-15 Ncm) utilizing .050" (1.25mm) Hex Driver
- Color-coded by prosthetic platform

An antibacterial paste may be placed on the end of the Cover Cap to help seal it with the implant body and decrease the risk of bacterial growth within the implant body during the healing phase. Following placement of the Cover Cap, the surgical site should be irrigated and the soft tissue adapted in a normal surgical fashion.

Healing Abutments

Purpose: Transmucosal element for single-stage surgical protocol or for soft tissue healing period following second-stage uncovery.

- Select Healing Abutment by desired height and emergence profile
- Remove Cover Cap or 3inOne Abutment
- Irrigate implant to remove blood and other debris
- Thread clockwise into implant body
- Hand-tighten (10-15 Ncm) utilizing .050" (1.25mm) Hex Driver
- Color-coded by prosthetic platform
- Encoded for easy intraoral identification, for example: GR3 = Green (4.5mm) platform / Reg. Emerg. / 3mm High

Healing Abutments are placed after uncovery in a two-stage surgical protocol, or in lieu of a Cover Cap in a (non-submerged) protocol. Healing Abutments are specific to each of the three prosthetic platform diameters (Ø3.5mm, Ø4.5mm and Ø5.7mm), and come in three heights (1mm, 3mm and 5mm) with the choice of narrow, regular and wide emergence profiles. The height should be chosen so that it extends approximately 1mm through the soft tissue.

An antibacterial paste may be placed on the screw portion to help seal the Healing Abutment with the implant body and decrease the risk of bacterial growth within the implant body during the healing phase. Following seating, irrigate the surgical site and adapt the soft tissue in normal surgical fashion. A gingivectomy or apically positioned flap technique may be used to reduce the soft tissue thickness and to decrease sulcular depth around the implant. The suture groove on the Healing Abutment may be used to apically position the soft tissue flap.
A period of unloaded healing time is often recommended. This is dependent on individual patient healing rates and bone quality of the implant site. Each case must be independently evaluated. This unloaded healing period allows for integration between the bone and implant surface.

The patient must be instructed to follow a post-surgical regimen including cold packs for 24 hours post-implantation. The patient’s diet should consist of soft foods and possibly dietary supplements. Pharmacological therapy should be considered as the patient’s condition dictates.

If a removable prosthesis is used during the initial healing phase, it is recommended that a soft liner material be used to prevent pressure on the surgical site. This soft liner should be relieved over the implant site. The patient should be checked periodically to monitor healing of the soft tissues and bone using clinical and radiographic evaluations.

Ongoing hygiene for the implant patient is vital. Hygiene recall appointments at three month intervals are suggested. Instruments designed for implant abutment 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 contain no glass or graphite fillers that can scratch titanium implant abutments.
**Bone Profilers**

**Purpose:** Remove and contour excess bone and soft tissue from the area of the prosthetic platform.

- Compatible with latch-type, speed-reducing handpieces
- 850-2,500 rpm drill speed with steady sterile irrigation
- Profiler Guide protects implant platform
- Bone Profiler cuts away excess bone and soft tissue
- Color-coded by specific prosthetic platform

Bone Profilers remove and contour excess bone and soft tissue from the area of the prosthetic platform prior to the seating of a healing or prosthetic abutment. There is a specific Bone Profiler and Guide for each of the three prosthetic platforms: Ø3.5mm, Ø4.5mm and Ø5.7mm.

To use, remove the surgical Cover Cap from the implant and place the Profiler Guide [both use the .050” (1.25mm) Hex Driver]. The Guide aligns the Bone Profiler and protects the implant from damage. **Do not use the Profiler without the Guide in place.** The Profiler is used in a latch-type, reduction handpiece under copious amounts of sterile irrigation. Following removal of the excess bone and soft tissue, unscrew the Guide from the implant and seat the desired prosthetic element.
ANCILLARY INSTRUMENTS

Ø2.0mm Lindemann Drill

Purpose: Side-cutting drill for correction of osteotomy position and/or angulation.

Used: With latch-type, speed-reducing handpieces.

• Compatible with latch-type, speed-reducing handpieces
• BioHorizons ref. 122-110
• 850-2,500 rpm with steady sterile irrigation

Surgical Driver

Purpose: Manual implant placement.

Used: As a drive tool in lieu of the Ratchet or Hand Wrench.

• BioHorizons ref. 150-000
• May be used to drive the following instruments:
  • Implant-level and Abutment-level Drivers, Ratchet
  • .050” (1.25mm) Hex Drivers (regular and long)
  • Bone Taps

.050” (1.25mm) Handpiece Hex Drivers

Purpose: Removal and placement of Cover Caps, Healing Abutments and Abutment Screws.

• Compatible with latch-type, speed-reducing handpieces
• Use a surgical motor with torque-limiting capabilities when using drivers to tighten components
• Available in Regular and Long versions
• Compatible with most torque wrenches that utilize latch-type connection drivers
• BioHorizons ref. 134-350 (regular) and 134-450 (long)
Surgical Kit Cleaning

All BioHorizons Surgical Kits are provided non-sterile and must be cleaned and sterilized prior to use following the accompanying Instructions for Use. Always remove instruments from the packaging prior to sterilization, and remove and discard packaging materials used to stabilize and secure kits during shipment. Double-check all surgical instruments to ensure their functionality prior to surgery. Verify the dimensional accuracy of drill shanks using a Bur Testing Gauge (below). Keeping backup sterile drills available is recommended.

Caution: The use of hydrogen peroxide or other oxidizing agents will cause damage to the surface of the instruments. Towel- or air-dry all instrumentation before sterilizing. Drills and taps should be replaced when wear is noticed, such as a decrease in cutting efficiency or when signs of discoloration appear. BioHorizons recommends replacing the drills after approximately 12 to 20 osteotomy cycles, depending on the bone density.

It is also recommended that proper testing, cleaning and calibration of sterilization equipment occur frequently to assure that the units are in proper working order. Equipment operating conditions vary and it is the responsibility of each dental office to ensure that the proper sterilization technique for instrumentation is followed.

Clinicians may opt to lay out all the surgical instruments into the sterile field in the order of use prior to surgery. This may help assure a correct progression through the surgical sequence.

Bur Testing Gauge

Also called a “Go / No-Go Gauge,” the Bur Testing Gauge is used to verify the dimensional accuracy of drill shanks of latch-type burs. Burs in proper condition WILL fit into the larger diameter hole, but WILL NOT fit into the smaller hole (marked red).

Burs that fail either of these criteria are unfit for use and may become stuck in the handpiece if used. The gauge is included with all W&H starter packages, and may also be ordered from the BioHorizons Tapered Internal catalog.
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