T3®, T3® PRO, and Osseotite®

Implant System

Surgical Manual

ZimVie

Important Product Information

ZimVie Dental Implants
For detailed product information on all ZimVie Dental Implants, refer to the ZimVie Dental Implant IFU [P-IIS086GI] located at labeling.zimvie.com.

ZimVie Kits and Instruments
The recommended procedure for Cleaning and Sterilization of ZimVie Kits and Instruments [P-ZBDINSTRP] is available at labeling.zimvie.com.

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Icon Key:
Certain® Internal Connection Implant System:

External Hex Connection Implant System:

How to Use the Icon Key:
The icons represent the connection types of the ZimVie Implant Systems represented in this manual. In the fully illustrated protocols, each icon is present next to each step. The blue icon indicates which system is illustrated. When both icons are displayed, both systems are illustrated.

NOTE: Images shown throughout this manual are representational in nature and may not be to scale or display the exact geometry or color of the actual components

T3 and Osseotite Overview

Introduction

These instructions were designed to serve as a reference guide for dental practitioners utilizing T3®, T3® PRO and Osseotite® Implants and associated Surgical Instruments.

The design of T3, T3 PRO and Osseotite Implants and Surgical Instruments enable the practitioner to place implants in edentulous or partially edentulous mandibles or maxillae in order to support fixed and removable bridgework, single-tooth crowns and overdentures.

General Information:

The success of any dental implant system depends upon proper use of the components and instrumentation. This manual is not intended for use as a substitute for professional training and experience, and does not comprise clinical advice. The clinician should use medically sound treatment planning and procedures appropriate for each patient's individual case for predictable results.

Treatment Planning Considerations

Reusable vs Single Patient Protocols

To allow flexibility regarding reusable versus single-use protocols, ZimVie has developed surgical instrumentation for both.

For reusable devices, please follow the recommended procedure for Cleaning and Sterilization of ZimVie Kits and Instruments referenced on the inner cover of this manual.

In order to support single-use protocols, ZimVie offers Single Patient instruments.

The surgical sequence for reusable and single-patient drills is identical. Product codes for single-patient drills mirror those of reusable drills, with the 'SP' prefix (e.g., QSD3211 to SPQSD3211).

Reusable Drill	Single Patient Drill
ACTPSD	SPACTPSD
QSD3211	SPQSD3211
CD100	SPCD100

Patient Evaluation and Selection

Several important factors must be considered when evaluating a patient prior to implant surgery. The presurgical evaluation must include a careful and detailed assessment of the patient's general health, current medical status, medical history, oral hygiene, motivation and expectations. Factors such as tobacco use, masticatory function and alcohol consumption should also be considered. In addition, the clinician should determine if the patient presents an acceptable anatomical basis conducive to implant placement. An extensive intraoral examination should be performed to evaluate the oral cavity for any potential bone or soft-tissue pathology. The examiner should also determine the periodontal status of the remaining teeth, the health of the soft tissue and the presence of occlusal abnormalities such as bruxism or crossbite. The presence of other conditions that could adversely affect any existing natural dentition or healthy soft tissue surrounding the implant should also be evaluated.

Diseases of the mucous membrane and connective tissues, pathologic bone disease and severe malocclusion can affect the determination of whether a patient is a suitable implant candidate.

The use of anticoagulants and the existence of metabolic diseases such as diabetes, allergies, chronic renal or cardiac disease and blood dyscrasia may significantly influence the patient's ability to successfully undergo implant procedures.

If the patient's medical history reveals an existing condition or signals a potential problem that may compromise treatment and/or the patient's well-being, consultation with a physician is recommended.

Top-Down Treatment Planning Considerations

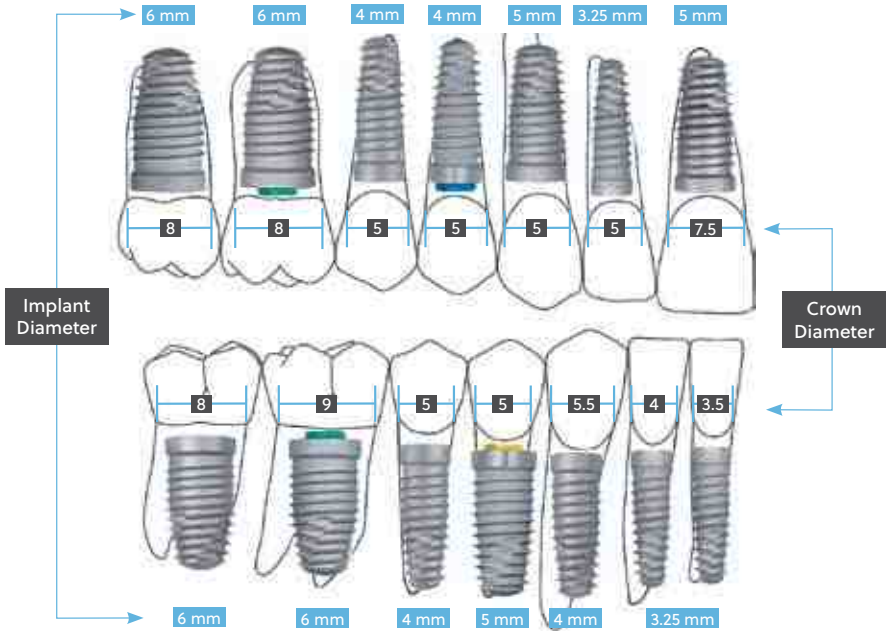
In its simplest form, top-down treatment planning refers to a guideline whereby the desired restorative result is considered first, leading to consideration of the appropriate prosthetic platform and subsequent implant selection based on bony anatomy, location and size of the missing tooth.

A top-down treatment planning methodology will provide maximum biomechanical stability and allow for soft-tissue flaring by utilizing an implant with a prosthetic platform slightly smaller in diameter than the emergence diameter of the tooth being replaced. The wide selection of ZimVie Implants aims to allow clinicians to match the size of the prosthetic platform to the restoration it will eventually support, while allowing for different bone volumes and anatomical features at the implant site. Implant and healing abutment selections are based upon the relationship of several key measurements:

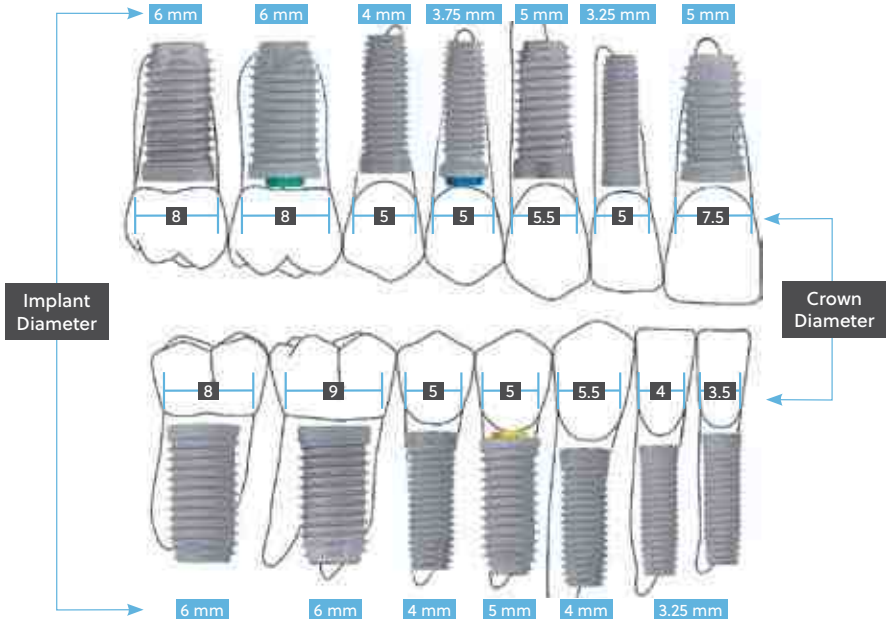
• The emerging dimension of the crown in relation to the diameter of the prosthetic platform of the implant.
• The height and diameter of the intended restoration at the tissue exit point.
• The bone volume at the implant site in relation to the diameter of the implant body.

The Emergence Profile EP® Healing Abutment System
consists of healing abutments of various diameters and heights designed for shaping the soft tissue to replicate the geometry and gingival contours of natural dentition.

Tapered Implants



Parallel Walled Implants



Implant Indications: Include both straight and pre-angled restorative components.

	3.25 mm(D)	3.75 mm(D)	4.0 mm(D)	5.0 mm(D)	6.0 mm(D)	4.0 mm(D) X 3.4 mm(P)	5.0 mm(D) X 4.1 mm(P)	6.0 mm(D) X 5.0 mm(P)
Anterior	✔	✔	✔	✔	✔	✔	✔	✔
Posterior			✔	✔	✔	✔	✔	✔

NOTE: It is recommended that implants less than 4 mm diameter not be placed in the posterior regions.

Preoperative Planning Considerations

Clinical Assessment

Preoperative Planning Considerations:

Proper treatment planning, as well as the selection of the proper implant length and diameter, are crucial to the long-term success of the implant and restoration.

Before an implant can be selected, the anatomical foundation available to receive the implant must be carefully assessed. Several steps should be taken to complete the evaluation:

1. Clinical examination of the oral cavity can provide important information about the health of the soft tissue at the proposed implant site. Tissue tone and the state of the superficial tissues should be evaluated. In addition, the patient should demonstrate an adequate dimension of attached gingiva or keratinized tissue at the site selected for implantation. In partially edentulous cases, the periodontal status of the remaining dentition should be assessed and interaction between the implant restoration and the adjacent natural dentition should be considered.
2. The bony foundation and ridge need to be clinically analyzed to ensure the presence of proper dimensions and the amount of bone for implant placement. At least one millimeter of bone should be present at the buccal and lingual aspects of the implant following placement. During the planning stage, it is useful to measure the existing bone foundation.

NOTE: Please ensure as many implants as necessary are used for a fully stable restoration.

CT Scans:

Image-guided surgical planning allows surgeons to see anatomical landmarks such as nerves, sinus cavities and bony structures in order to plan for the placement of dental implants and prostheses.

Through the use of CT scans, clinicians are able to more precisely measure the locations of anatomical structures, dimensions of the underlying bone and ascertain bone densities in order to plan and treat clinically demanding cases.

Radiographic Transparencies:

A dental implant radiographic transparency supports the preoperative implant treatment planning process. A radiographic transparency is overlaid onto a radiograph to assist the clinician in the preoperative determination of options for implant length and diameter. The vertical height of the bone can be determined radiographically. Accurate measurement of the vertical dimension on the radiograph facilitates the selection of the appropriate implant length. This helps to avoid implant placement into the maxillary sinus, the floor of the nose or the mandibular canal, and prevents perforation of the inferior aspect of the mandible. Measurements can be made directly on the panoramic radiograph using a millimeter ruler. Corrections should be made for the degree of enlargement or reduction produced by the particular radiographic equipment.

Radiographic marking balls of a known dimension can be embedded in a plastic template prior to radiographic examination. Once the radiograph is taken and the metal marking balls are visible on the image, measurements can be taken to determine the amount of bone available for implant placement.

To calculate the distortion factor, a simple formula can be utilized: (5 ÷ A) x B = the amount of actual bone available.

Formula Key

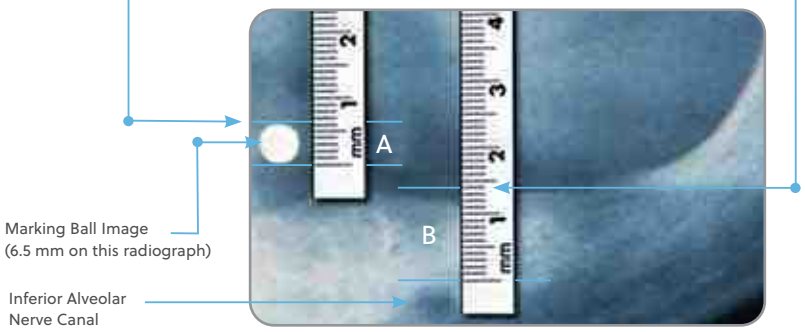
- Radiographic marking ball = 5.0 mm in diameter
- A = Size of marking ball image on radiograph
- B = Length in millimeters on the radiograph of available bone between the crest of the ridge and the inferior alveolar canal

Example:

A = 6.5 mm
B = 14 mm

Therefore: (5÷6.5) x 14 = 10.76 mm actual bone available

NOTE: A 2.0 mm margin of safety, from the apical end of the implant to any adjacent vital structure, should be considered.



Radiographic Transparencies Instructional Steps:

The transparency is used in conjunction with a 5.0 mm radiographic marking ball. Representations of the implant and the 5.0 mm radiographic marking ball are shown on the radiographic transparency at 100% and 125% scales.

Visually inspect the transparency before each use for damage. The transparency should not be used if damaged or deteriorated. The following steps outline the proper use of the radiographic transparency in conjunction with the 5.0 mm radiographic marking ball(s) during preoperative planning:

1. Overlay the 100% and 125% scaled 5.0 mm circular radiograph ball outline found on the transparency over the 5.0 mm radiographic ball image on the radiograph and determine which outline is closest to the diameter of the radiographic ball image on the radiograph. If the radiographic ball image on the radiograph extends outside the circular border of the radiographic ball outline on the 100% scale, use the 125% scale for measurement estimations. If the radiographic ball image extends outside the circular border of the radiographic ball outline on the 125% scale, DO NOT use this radiographic transparency and refer to the Radiographic Marking Balls procedure to determine approximate bone height (see section on calculation of distortion factor on page 6).

NOTE: The radiographic ball should maintain its spherical shape on the radiograph, otherwise distortion that cannot be measured may have occurred. If this happens, it is recommended that a new radiograph be taken.

2. Select the scale (100% or 125%) to use based on which circular radiograph ball outline best matches the diameter of the radiographic ball image on the radiograph.

3. To determine an approximation of available vertical bone height at the proposed implant site, align the zero mark on the selected ruler (100% or 125%) to the crest of the edentulous ridge and measure the length between the crest and anatomical structures in the proposed implant site including the floor of the maxillary sinus, the floor of the nose and the mandibular canal.

NOTE: A minimum of 2.0 mm margin of safety, from the apical end of the implant to the adjacent vital structure, should be considered.

4. Overlay the implant silhouette corresponding to the selected scale (100% or 125%) onto the proposed implant site to visually estimate if adequate vertical bone height is present for the selected implant length.

NOTE: The intended use of this device is exclusively for preoperative planning and to be used as a guide. Implant length and diameter should not be determined solely by relying on the radiographic transparency.

Torque Matrix — Internal Connection

Please use the table below as a guide which Drivers and Driver Tips must be used with ZimVie Certain® Internal threaded devices (e.g. screws and abutments), as well as the recommended torque values for each.

Recommended Torque Matrix – Internal Connection				
Threaded Devices		Recommended Torque Values	Drivers	Driver Tips
IUNITS	Certain Hex Try-In Screw	Hand Tighten	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 mm(L)	N/A
IWSU30	Certain Waxing Screw/Guide Pin			
LPCWS	Low Profile Abutment Waxing Screw			
CS2x0	Conical EP® Healing Cap	10 Ncm	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 mm(L)	RASH3N - Narrow Right Angle Large Driver Tip (Hexed) 24 mm(L) RASH8N - Narrow Right Angle Large Driver Tip (Hexed) 30 mm(L)
GSHx0	Gold-Tite® Hexed Retaining Screw			
ICS275	Certain Implant Headless Cover Screw			
ICSx00	Certain Implant Straight Cover Screw			
ICSFxx	Certain Flat Implant Cover Screw			
IMCSF34	Certain Micromini Flat Implant Cover Screw			
IMMCS1	Certain Cover Screw			
IOLHC	IOL® Healing Cap			
LPCHC	Low Profile Abutment Healing Cap			
LPCGSH	Low Profile Abutment Gold-Tite Retaining Screw			
LPCTSH	Low Profile Abutment Titanium Retaining Screw			
MHC33	Conical Healing Cap			
TS250	Standard Abutment Temporary Screw			
TSH30	Titanium Hexed Screw			
GSX00	Gold Slotted Screw	10 Ncm	PSD00 - Posterior Screw Driver 17 mm(L) PSD01 - Standard Screw Driver 24 mm(L)	RASD1 - Right Angle Slotted Driver Tip 24 mm(L) RASD6 - Right Angle Slotted Driver Tip 30 mm(L)
IEHAxxx	Certain Encode® Healing Abutment	20 Ncm	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 mm(L)	RASH3N - Narrow Right Angle Large Driver Tip (Hexed) 24 mm(L) RASH8N - Narrow Right Angle Large Driver Tip (Hexed) 30 mm(L)
ILPACxxxx	Certain Low Profile Angled Abutment			
ILRGHG	Certain Gold-Tite Large Hexed Screw			
ILRGHT	Certain Titanium Large Hexed Screw			
IMHAxxx	Certain EP Healing Abutment			
ISMHA3x	Certain Straight Healing Abutment 3.4 mm(D)			
ISHA4x	Certain Straight Healing Abutment 4.1 mm(D)			
ISWHAxx	Certain Straight Healing Abutment			

Recommended Torque Matrix – Internal Connection				
Threaded Devices		Recommended Torque Values	Drivers	Driver Tips
ITHAxx	Certain EP Healing Abutment	20 Ncm	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 mm(L)	RASH3N - Narrow Right Angle Large Driver Tip (Hexed) 24 mm(L) RASH8N - Narrow Right Angle Large Driver Tip (Hexed) 30 mm(L)
IUNIHG	Certain Gold-Tite Hexed Screw			
IUNIHT	Certain Titanium Hexed Screw			
IZSHG	Certain Zireal Post Gold-Tite Hexed Abutment Screw			
IABxx0	Certain® Standard Abutment	20 Ncm	PAD00 - Posterior Abutment Driver 17 mm(L) PAD24 - Standard Abutment Driver 24 mm(L)	RASA3 - Right Angle Abutment Driver Tip Steel
ICA00x	Certain Conical Abutment			
IIOLxxS	Certain IOL® Abutment			
ILPCxxx	Certain Low Profile Abutment			
ILPCxxxU	Certain Low Profile One-Piece Abutment			
IMCA3x	Certain Conical Abutment 3.4 mm(D)			
IWCAxx	Certain Conical Abutment			
ODS-CERTxxx	Certain OverdenSURE®	20 Ncm	ODS-DRVR (OverdenSURE Abutment Driver) used with TWR (Restorative Torque Wrench).	Compatible with Locator® tools, drivers and driver tips.

Torque Matrix — External Connection

Please use the table below as a guide for which Drivers and Driver Tips must be used with ZimVie External Hex threaded devices. (e.g. screws and abutments), as well as the recommended torque values for each.

Recommended Torque Matrix – External Connection				
Threaded Devices		Recommended Torque Values	Drivers	Driver Tips
MMCxx	Implant Mount	Hand Tighten	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 mm(L)	N/A
WSKxx	Waxing Screw/Guide Pin-Knurled			
MUNITS	Square Try-In Screw	Hand Tighten	PSQD0N - Narrow Posterior Square Driver 17 mm(L) PSQD1N - Narrow Posterior Square Driver 24 mm(L)	N/A
UNITS	Universal Try-In Screw Square Driver			
GSxxx	Gold Slotted Screw	10 Ncm	PSD00 - Posterior Screw Driver 17 mm PSD01 - Standard Screw Driver 24 mm	RASD1 - Right Angle Slotted Driver Tip, 24 mm(L) RASD6 - Right Angle Slotted Driver Tip, 30 mm(L)
CS275	Cover Screw, Headless	10 Ncm	PHD00N - Narrow Posterior Hex Driver 17 mm PHD01N - Narrow Standard Hex Driver 24 mm	RASH2N - Narrow Right Angle Small Hex Driver Tip 24 mm RASH7N - Narrow Right Angle Small Hex Driver Tip 30 mm
CS375	Cover Screw - Implant 4.1 mm(D)			
CSx00	Cover Screw - Implant			
MMCS1	Implant Cover Screw 3.4 mm(D)			
EHAxxx	Encode® Healing Abutment	20 Ncm	PHD02N - Narrow Posterior Large Hex Driver 17 mm(L) PHD03N - Narrow Posterior Large Hex Driver 24 m(L)	RASH3N - Narrow Right Angle Large Driver Tip (Hexed) 24 mm(L) RASH8N - Narrow Right Angle Large Driver Tip (Hexed) 30 mm(L)
LPACxxxx	Low Profile Angled Abutment			
MHA3x	EP Healing Abutment 3.4 mm(D)			
THAxx	EP Healing Abutment 4.1 mm(D)			
WTH5xx	EP Healing Abutment 5 mm(D)			
WTH6xx	EP Healing Abutment 6 mm(D)			
UNIHG	Gold-Tite Hexed Uniscrew			
UNIHT	Titanium Hexed Uniscrew			
THRCx	Temporary Healing Retention Cylinder			

Recommended Torque Matrix – External Connection				
Threaded Devices		Recommended Torque Values	Drivers	Driver Tips
ABxxx	Standard Abutment 4.1mm(D)	20 Ncm	PAD00 - Posterior Abutment Driver 17 mm(L) PAD24 - Standard Abutment Driver 24 mm(L)	RASA3 - Right Angle Abutment Driver Tip Steel
CA00x	Conical Abutment 4.1mm(D)			
IOLxxT	IOL® Abutment And Screw			
LPCxxx	Low Profile Abutment			
LPCxxxU	Low Profile One-Piece Abutment			
MCAxx	Conical Abutment 3.4mm(D)			
SCA00x	Conical Abutment Gold Standard Zr Tm 4.1mm(D)			
SWCAxx	Conical Abutment Gold Standard Zr Tm 5mm(D)			
WCAxx	Conical Abutment 5mm(D)			
OSOx0SC	O-Ring Abutment Screw 4.1mm(D)	20 Ncm	PAD01 - O-Ring/Dal-Ro Abutment Driver	RAOR1 - Right Angle O-Ring/Dal-Ro Abutment Driver Tip
DRHx0	Dal-Ro Abutment 4.1mm(D)			
UNISG	Gold-Tite Square Uniscrew	32-35Ncm	PSQD0N - Narrow Posterior Square Driver 17mm(L) PSQD1N - Narrow Posterior Square Driver 24mm(L)	RASQ3N - Narrow Right Angle Square Driver Tip 24mm(L) RASQ8N - Narrow Right Angle Square Driver Tip 30mm(L)
UNIST	Titanium Square Uniscrew			
ODS-EXHEXxxx	External Hex OverdenSURE	20 Ncm	ODS-DRVR (OverdenSURE Abutment Driver) used with TWR (Restorative Torque Wrench).	Compatible with Locator® tools, drivers and driver tips.
SCRNBAx	LDA Screw NobelActive®	35 Ncm Per Original Manufacturer's Recommendation	These threaded devices require a driver(s), driver tip(s) and other instrumentation not manufactured or sold by ZimVie. Please refer to the original equipment manufacturer for instrumentation and indications.	
SCRNBSx	LDA Screw NobelReplace®			
SCRSBLx	LDA Screw Straumann® Bone-Level			

Surgical Precautions

Clinical Considerations:

Actual bone contours can only be evaluated after tissue flaps have been reflected at the time of surgery or with preoperative high quality CT scans. Even if bone dimensions are meticulously measured prior to surgery, the doctor and patient must accept the possibility that inadequate bone anatomy might be discovered during surgery and preclude implant placement.

During the presurgical planning phase, it is important to determine the interocclusal clearance - the actual space available between the alveolar crest and the opposing dentition - to confirm that the available space will accommodate the proposed abutment and the definitive restoration. The height required by the abutment may vary with the type of abutment; therefore, the surgeon and restorative dentist should carefully evaluate the abutment size. The definitive prosthesis should be conceptually designed prior to the placement of the implant.

Diagnostic casts can be used preoperatively to evaluate the residual ridge and to determine the position and angulation of all implants. These casts allow the clinician to evaluate the opposing dentition and its effect on the implant position. A surgical guide stent, which is critical for determining the precise position and angulation of the implant, can be constructed on the diagnostic cast.

Several software companies offer planning software that allow clinicians to plan implant placement three-dimensionally in conjunction with CT scans. From plans created in these software packages, surgical guides can be made to aid in the pre-angulation and placement of implants.

ZimVie offers the RealGUIDE software (available for free download at www.realguide.com) which is a guided surgery software that enables clinicians to plan implant placement in the intended position in a virtual patient. A virtual patient is created with the help of the DICOM files from CT scans and the STL files from an intraoral scanner. RealGUIDE can also be used to design surgical guides to aid in the pre-angulation and placement of implants in the intended position.

To prevent damage to the bone tissue and to prevent compromising osseointegration by overheating the bone during drilling, copious irrigation with sterile water or saline solution is mandatory during all drilling procedures.

Bone surgery utilizes a high-torque electric drilling unit that can be operated in forward and reverse modes at speeds ranging from 0 to 2000 rpm, depending on the surgical requirements. Sharp instruments of the highest quality should be utilized during implant site preparation to reduce possible overheating and trauma to the bone. Minimizing trauma enhances the potential for successful osseointegration.

The time elapsed between surgical placement of the implant and definitive abutment placement can vary or be modified, depending on the quality of the bone at the implantation site, bony response to the implant surface and other implanted materials and the surgeon's assessment of the patient's bone density at the time of the surgical procedure. Extreme care must be taken to avoid excessive force being applied to the implant during this healing period.

Bone Density

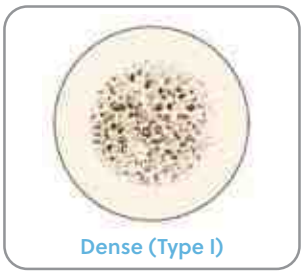
The protocols detailed in this Surgical Manual have been developed to include more specific information about drill selection when working in various bone densities. However, the clinician is responsible for assessing bone density and anatomy when determining the appropriate protocol.

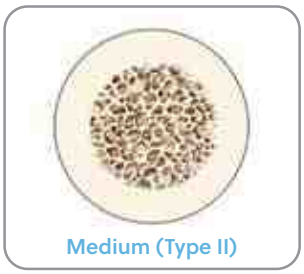
The various bone densities can be characterized by the following:[1]

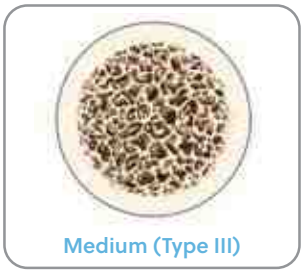
Dense (Type I) – A thick cortical layer and a very high density trabecular core

Medium (Type II and III) – A cortical layer of moderate thickness with a reasonably dense trabecular core

Soft (Type IV) – A thin cortical layer and a low density trabecular core


Dense (Type I)


Medium (Type II)


Medium (Type III)

Soft (Type IV)

1. Lekholm U, Zarb GA, Albrektsson T. Patient selection and preparation. Tissue integrated prostheses. Chicago: Quintessence Publishing Co. Inc. 1985:199-209.

Surgical Protocol for T3, T3 PRO, and Osseotite Tapered Implants

Certain Internal and External Hex Connection

T3 and Osseotite Tapered Implant with Certain connection

T3 PRO Implant with Certain connection

T3 and Osseotite Tapered Implant with External Hex connection

Preparing the Osteotomy for Tapered T3, T3 PRO, and Osseotite Implant

Tapered Implants

Due to the geometrical differences that exist between a tapered and a parallel walled implant, there are several important technique adjustments that are required.

In all tapered implant placement procedures, the surgeon should determine the appropriate vertical position of the implant (supracrestal, crestal or subcrestal) at the time of osteotomy preparation. The surgeon should prepare the tapered osteotomy so that when the implant is fully seated, the implant seating surface is at the desired position. The Tapered Implant Depth/Direction Indicator [NTDI] was designed to simulate the tapered implant position prior to placement.

After preparation of the osteotomy with the final shaping drill, flush the osteotomy with sterile water or saline solution and suction out any remaining debris. Select the corresponding NTDI and place the tapered end into the osteotomy. Check the platform position (crestal or subcrestal) of the NTDI in relation to the adjacent bone. This position locates where the platform of the tapered implant will be positioned when properly placed. If during placement with the drill unit, the tapered implant platform is higher in relation to the bone than was demonstrated with the NTDI platform, the clinician should consider using a hand ratchet to complete the implant placement so that the tapered portion of the implant body conforms correctly with the tapered portion of the osteotomy [Fig 1].

Over Preparing the osteotomy depth and then placing the implant at a crestal level may result in a conical space around the apical and coronal aspects of the tapered implant minimizing thread engagement [Fig 2]. This placement position may result in decreased implant to osteotomy contact, with contact occurring only along the parallel coronal portion of the implant, resulting in decreased stability of the implant.

Under Preparing the osteotomy depth and then placing the implant more apical relative to the prepared depth may result in the implant stopping short of the desired placement level. [Fig 3].

NOTE: T3 PRO Implants [T3PTxxxx, T3ST32xx, or T3STxxx] are designed with vertical placement flexibility up to 0.5mm below the prepared implant position simulated with the NTDI. This maximum vertical displacement corresponds to 3/4 of a full rotation.

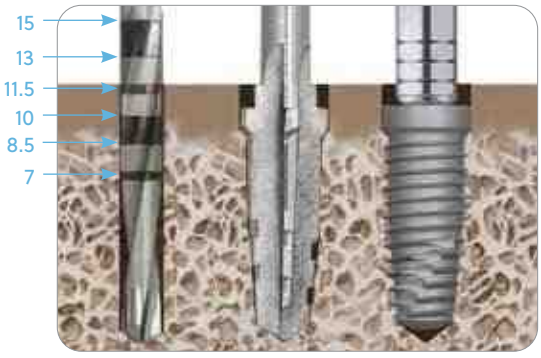


Fig. 1 Proper Subcrestal Placement Of 11.5 mm Implant

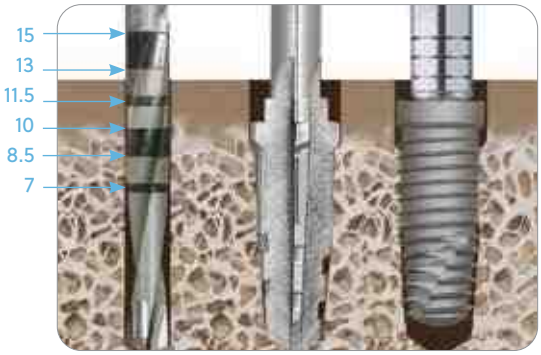


Fig. 2 Over Prepared Subcrestal Placement Of 11.5 mm Implant

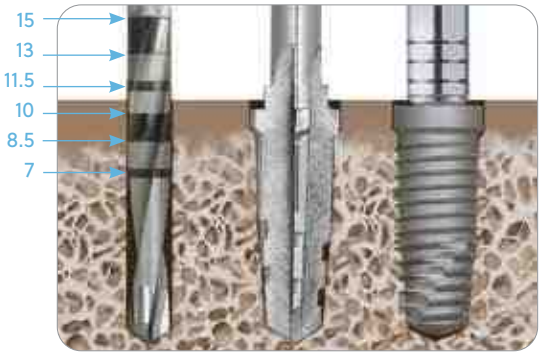


Fig. 3 Under Prepared Subcrestal Placement Of 11.5 mm Implant

Quad Shaping Drills (QSDs)

| Tapered Implants

Certain Internal and External Hex Connection Tapered Implants

The Quad Shaping Drills [QSDs] are used to prepare the osteotomy for placement of Certain Internal and External Hex Connection Tapered Implants. The Depth Measurement System includes drill depth marks on the ACT Twist Drill that correspond to the placement of the implant via a well-established procedure. The protocol follows the principles of protecting the implant from premature loading by placing the implant subcrestally.

The Quad Shaping Drills have been designed with geometrical depth landmarks to assess proper depth rather than laser etched markings. The clinician should become familiar with these depth landmarks to prevent over or under preparation of the osteotomy site.

Shaping Drill Speed:

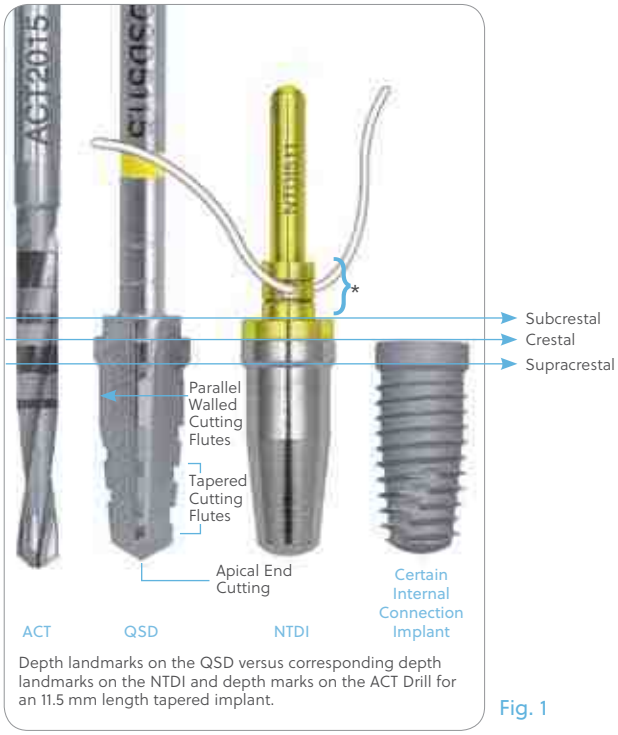
- QSDs should operate between 1200–1500 rpm.
- QSDs cut efficiently; reducing the downward force will allow the drill to cut without detectable chatter.

Shaping Drill Technique:

- For either crestal or subcrestal implant placement, drill to the top of either the crestal or subcrestal depth landmarks on the QSD. [Fig 1].
- Do not pump the shaping drill as you might do with a twist drill when creating the osteotomy as it may distort the dimensions of the osteotomy. The shaping drill should be advanced once to full depth, then be removed without any pumping action.
- Once the shaping drill has reached the desired depth, pull it out of the site without running the drill. If the drill does not pull out easily, tap the foot pedal while pulling the drill out. In addition to preserving the integrity of the osteotomy site, this technique maximizes autogenous bone recovery from the shaping drill flutes.
- When placing a tapered implant in soft bone (Type IV), the surgeon should consider undersizing the osteotomy. The final drill diameter should match the implant diameter, but be limited to 8.5 mm in length. This will create an osteotomy of proper dimension in the dense cortical bone to receive the implant, but will slightly undersize the osteotomy in the cancellous region (undersizes length only for the 10 mm, 11.5 mm, 13 mm and 15 mm length implants. The 8.5 mm implant will not be undersized).

It is required that the clinician tap the osteotomy when placing a Tapered Implant in dense bone (Type I).

NOTE: During preparation of the osteotomy, the Quad Shaping Drill should advance into the osteotomy using light pressure. The need to push heavily on the shaping drill may indicate the need to replace the shaping drill, the need to tap or that the previous drill depth was inadequate.



Depth landmarks on the QSD versus corresponding depth landmarks on the NTDI and depth marks on the ACT Drill for an 11.5 mm length tapered implant.

Fig. 1

*Gingival Depth Marks - These depth marks are not used in the surgical procedures covered in this manual.

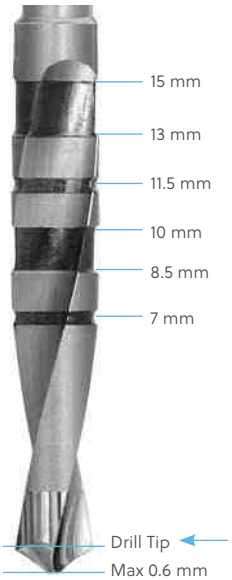
Twist Drill Depth Marking System

| Tapered Implants

Twist Drill Depth Marking System for ACT® Reusable and Single Patient Drills

A 2 mm Twist Drill is used to prepare the osteotomy for the sequential Quad Shaping Drills [QSDs] in the tapered surgical protocols. Pages 17-19 outline the guidelines for understanding the depth markings on the Twist Drill System.

Twist Drill Marks:



The center of the drill's single line depth marks and the beginning or end of the broad band indicate subcrestal placement for the corresponding length implant.

The length of the drill tip is not included in the depth mark measurement. The drill tip length should be considered when preparing the osteotomy.

The length of the drill tip varies with the diameter of the drill.

Drill Tip Dimensions		
Drill Diameter	DTN/DT Drill Tip Length	ACT Drill Tip Length
2 mm	0.6 mm	0.6 mm

The depth marks measurement system provides a mark on the drill that corresponds to the placement of the implant via well-established procedures. The protocol follows the principles of protecting the implant from premature loading by placing the implant subcrestally.

Drilling Depth:

The drilling depth with the Twist Drill will vary depending on the type of placement related to the bone crest.

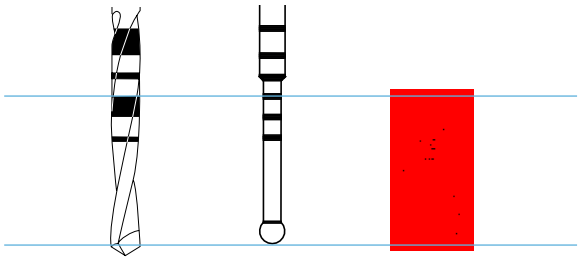
The depth marks are specific for subcrestal implant placement only. There are no specific depth marks on the drills for crestal or supracrestal placement.

The drill depth marks do not indicate implant lengths. Rather, the drill depth marks represent the length of the implant with a standard 1 mm cover screw in place. As a result, to place an implant and cover screw subcrestally requires drilling to the middle of the single line depth mark or the beginning or end of the broad band depth mark on ACT Drills (see reference on page 16 for Twist Drill marks). For crestal placement, drill halfway before the corresponding depth mark for the implant length. For supracrestal placement, the drill depth mark should remain above the bone by 1 mm for the cover screw plus the implant collar height. Refer to the diagram at the bottom of page 19 for more information on supracrestal placement.

Certain Internal Connection Implants are packaged with a 0.4 mm Cover Screw. However, the protocol for these implants do not differ from the protocol for the implants packaged with a 1 mm Cover Screw.

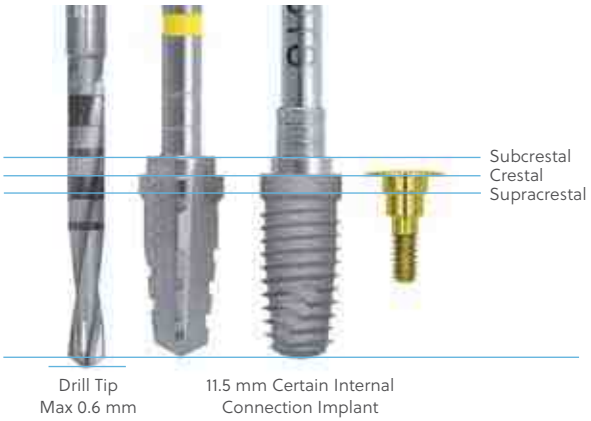
Standard Subcrestal Protocol

1 mm Cover Screw



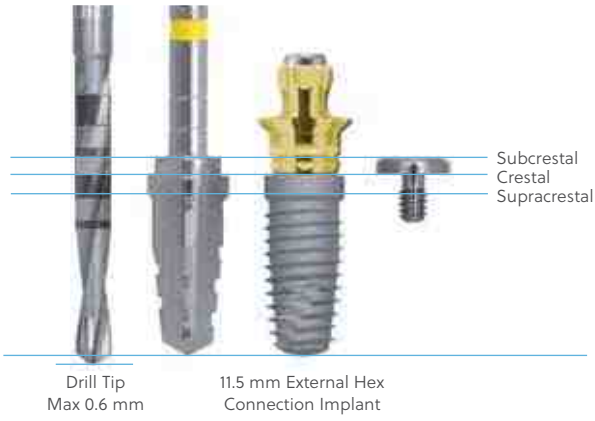
Drilling Depth Comparison

Certain Internal Connection



Drilling Depth Comparison

External Hex Connection



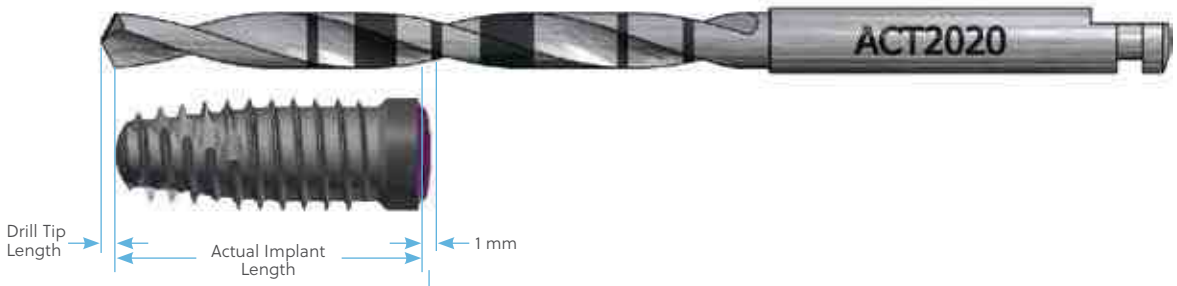
Twist Drill Depth Marking System

Certain Internal and External Hex Connection Tapered Implants

Implant Length or Depth Mark on Drill (Label)	Implant Length (Actual)*	Traditional Cover Screw Height (Actual)	Certain Cover Screw Height (Actual)	Actual Drill Length to Depth Mark (Applies only to ACT Drill and excludes tip length)
6.5 mm	6.6 mm	1 mm	0.4 mm	7.7 mm
7 mm	6.6 mm	1 mm	0.4 mm	7.7 mm
8.5 mm	8.1 mm	1 mm	0.4 mm	9.1 mm
10 mm	9.6 mm	1 mm	0.4 mm	10.7 mm
11.5 mm	11.1 mm	1 mm	0.4 mm	12.1 mm
13 mm	12.6 mm	1 mm	0.4 mm	13.7 mm
15 mm	14.6 mm	1 mm	0.4 mm	15.7 mm
18 mm	17.6 mm	1 mm	0.4 mm	18.7 mm
20 mm	19.6 mm	1 mm	0.4 mm	20.7 mm

* T3 PRO Implants [T3PTxxxx, T3ST32xx, or T3STxxx] are designed 0.5mm shorter than the values shown above to accommodate vertical placement flexibility. See Subcrestal Implant Placement Protocol for details.

11.5 mm Tapered Implant in Subcrestal Placement with Certain Cover Screw:

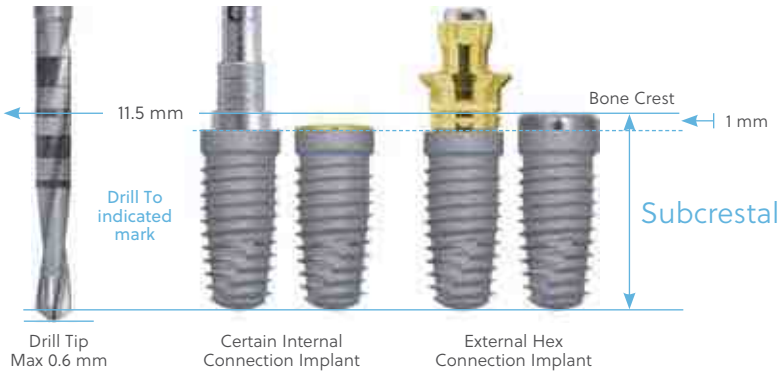


The center of the drill's single line depth marks and the beginning or end of the broad band indicate the length of the implant with a standard 1 mm cover screw in place when placed subcrestally.

The actual implant lengths from the top of the implant collar (platform) to the tip of the implant are shorter by 0.4 mm than the labeled length.

Subcrestal Placement Corresponding to an 11.5 mm Implant

- The implant platform will be 1 mm (or more) below the bone crest.
- Mostly used in the anterior region for aesthetics.



For subcrestal Certain Internal Connection and External Hex Connection Implant placement, drill to the drill depth mark that corresponds to the labeled implant length (11.5 mm).

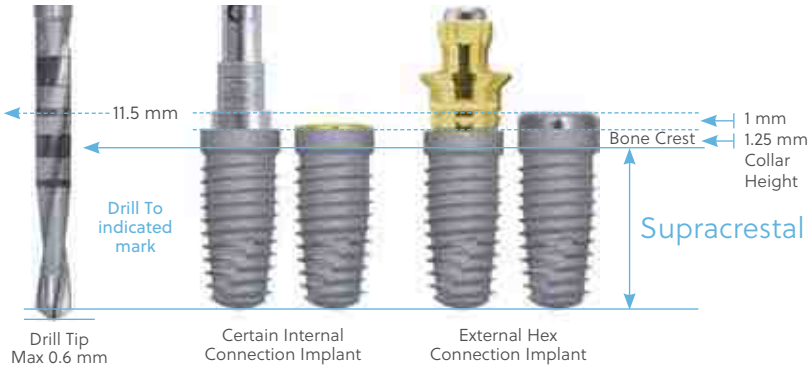
Crestal Placement Corresponding to an 11.5 mm Implant

- The implant platform will be at the bone crest.

For crestal Certain Internal Connection and External Hex Connection Implant placement, stop drilling 1 mm before the drill depth mark that corresponds to the labeled implant length (1 mm equals the traditional cover screw height).

Supracrestal Placement Corresponding to an 11.5 mm Implant

- The implant collar will be above the bone crest.



For supracrestal Certain Internal Connection and External Hex Connection Implant placement, stop drilling 2.25 mm before the drill depth mark that corresponds to the labeled implant length (2.25 mm equals the 1 mm external hex cover screw height plus the 1.25 mm implant collar height).

NOTE: A Countersink Drill is not needed for internal or external connection supracrestal implant placement.

IMPORTANT NOTE: A 2 mm margin of safety, from the apical end of the implant to the adjacent vital structure, should be considered.

Implant Depth/ Direction Indicator (NTDI)

Certain Internal and External Hex Connection Tapered Implants

The Tapered Implant Depth/Direction Indicator [NTDI] is used to simulate the implant platform position prior to placing the implant.

Step 1: When using the NTDI and after preparation of the osteotomy with the final shaping drill, flush the osteotomy with sterile water or saline solution and suction out any remaining debris [Fig. 1]. This will ensure that the osteotomy is clear of debris that could prevent the NTDI from fully seating.

Fig. 1

Step 2: Thread a suture through the NTDI hole to prevent accidental swallowing. Verify the NTDI platform position in reference to the crest of the bone. This also verifies the depth of the osteotomy that has been created. The NTDI platform should be at the level you desire the implant platform to attain. If the NTDI platform is too high versus the desired position, then re-drilling to the appropriate depth is required. If the NTDI platform is too deep versus the desired position, this indicates some degree of osteotomy over preparation has taken place. To ensure proper engagement of the implant, it must be seated to the depth demonstrated by the NTDI. A longer implant can be considered. The clinician may consider verifying the position of the NTDI with a radiograph [Fig. 2].

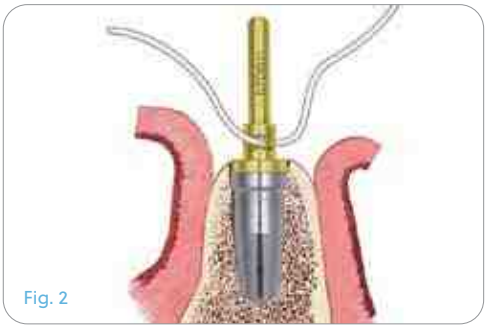


Fig. 2

Step 3: When placing the implant, the implant platform should reach the same position that the NTDI platform previously attained. If the implant platform is positioned higher in relation to the crest of the bone than the platform of the NTDI previously demonstrated, or if the surgical motor stalls prior to full placement of the implant due to insufficient torque, then hand ratcheting is recommended to achieve the proper final implant seating position [Fig. 3].

Fig. 3

NOTE: T3 PRO Implants [T3PTxxxx, T3ST32xx, or T3STxxx] are designed with vertical placement flexibility up to 0.5mm below the prepared implant position simulated with the NTDI. This maximum vertical displacement corresponds to 3/4 of a full rotation.

These guidelines are designed to help ensure good bone-to-implant contact and primary stability of the implant.

Bone Tap

Certain Internal and External Hex Connection Tapered Implants

Dense Bone Taps:

When placing a tapered implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping the osteotomy with a dense bone tap prior to implant placement is required [Fig. 1].

Dense Bone Taps are available to fully thread the entire osteotomy. These Dense Bone Taps are both length and diameter specific to correspond to each tapered implant [Fig. 2].
Fully seat the tap to the level demonstrated by the NTDI.

NOTE: It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench.

Fig. 1

Fig. 2

Surgical Kit

The T3® PRO Surgical Kit, is a modular surgical kit intended to contain instrumentation for site preparation and implant placement. The kit is designed to support Certain® tapered implants, External Hex tapered implants, and T3® Short implants, and allows clinicians to configure the kit based on implant connection preference and clinical needs.
The kit features a compact base and lid with removable, function-specific modules. This modular design allows clinicians to select either a Certain Tooling Module or an External Hex Tooling Module, while sharing common drilling and auxiliary instrumentation. Instruments are organized by function and size, with commonly used instruments positioned in upper modules and auxiliary instruments housed in lower modules. Not all instruments or modules are required for every procedure.

Modules Included

The Modular Surgical Kit may include the following modules:

Surgical Kit Lid and Base

Upper Modules:

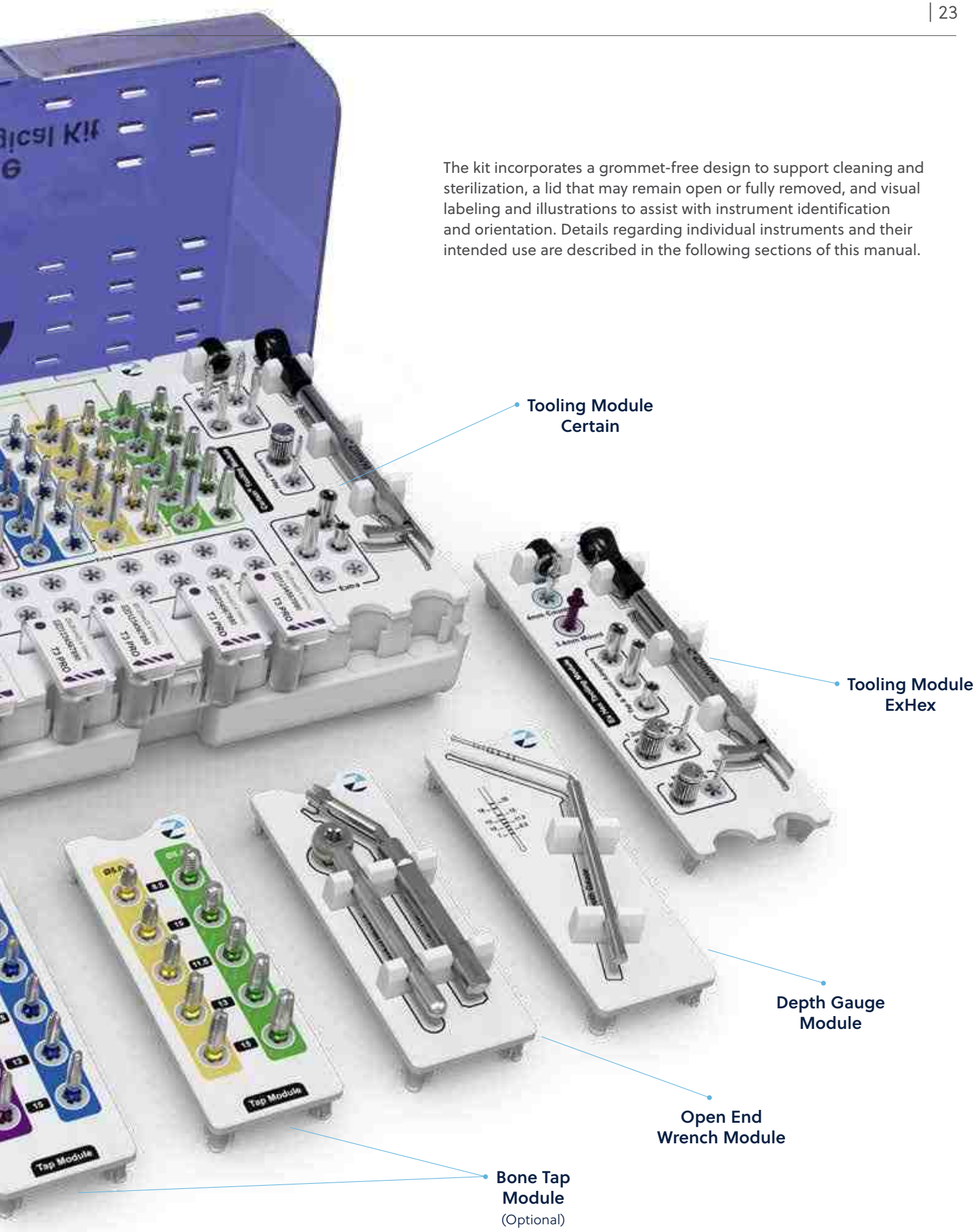
- Drill Module – Upper module which houses all drills and direction and depth indicators required to prepare an osteotomy for T3, T3 PRO, or Osseotite Tapered Implants. Includes multiple implant staging positions for use during surgery.
- Certain or External Hex Tooling Module – Interchangeable upper modules which house instruments, such as implant drivers and restorative drivers, required for implant placement relative to the selected connection type.

Lower Modules:

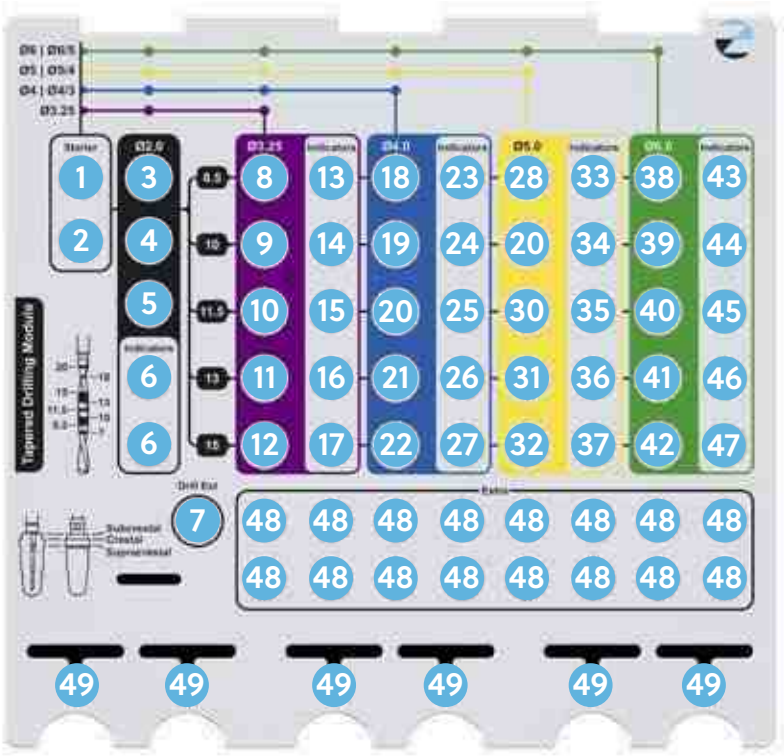
- Bone Tap Modules – Optional lower modules which house all dense bone taps compatible with T3, T3 PRO, or Osseotite Tapered Implants. Tapered Bone Tap Modules (3.25 mm / 4.0 mm and 5.0 mm / 6.0 mm) are optional and may be included in the kit or purchased separately, based on clinician preference.
- Open End Wrench Module – Lower module which houses additional wrenches (such as the Open End Wrench) specialized for External Hex Tapered or T3 Short Implant placement.
- Depth Gauge Module – Lower module which houses the Depth Gauge auxiliary instrument.
- T3 Short Surgical Module – Optional lower module which houses all drills and taps required to prepare an osteotomy for T3 Short Implants.

T3 Short Surgical Module
(Optional)

The kit incorporates a grommet-free design to support cleaning and sterilization, a lid that may remain open or fully removed, and visual labeling and illustrations to assist with instrument identification and orientation. Details regarding individual instruments and their intended use are described in the following sections of this manual.



Surgical Kit Layout



1 **ACTPSD**
Pointed
Starter Drill

2 **RD100**
Round Drill

3 **ACT2010**
Twist Drill
2.0 mmD x
10 mmL

4 **ACT2015**
Twist Drill
2.0 mmD x
15 mmL

5 **ACT2020**
Twist Drill
2.0 mmD x
20 mmL

48 Empty Grommets

49 Implant Staging Slots

6 **DI100**
Direction
Indicator,
2 mmD x
10 mmL

7 **DEG**
Drill Extender

8
QSD3285
Quad-
Shaping Drill
3.25 mmD x
8.5 mmL

13
NTDI3285
Depth
Indicator
3.25 mmD x
8.5 mmL

18
QSD485
Quad-
Shaping Drill
4 mmD x
8.5 mmL

23
NTDI485
Depth
Indicator
4 mmD x
8.5 mmL

28
QSD585
Quad-
Shaping Drill
5 mmD x
8.5 mmL

33
NTDI585
Depth
Indicator
5 mmD x
8.5 mmL

38
QSD685
Quad-
Shaping Drill
6 mmD x
8.5 mmL

43
NTDI685
Depth
Indicator
6 mmD x
8.5 mmL

9
QSD3210
Quad-
Shaping Drill
3.25 mmD x
10 mmL

14
NTDI3210
Depth
Indicator
3.25 mmD x
10 mmL

19
QSD410
Quad-
Shaping Drill
4 mmD x
10 mmL

24
NTDI410
Depth
Indicator
4 mmD x
10 mmL

29
QSD510
Quad-
Shaping Drill
5 mmD x
10 mmL

34
NTDI510
Depth
Indicator
5 mmD x
10 mmL

39
QSD610
Quad-
Shaping Drill
6 mmD x
10 mmL

44
NTDI610
Depth
Indicator
6 mmD x
10 mmL

10
QSD3211
Quad-
Shaping Drill
3.25 mmD x
11.5 mmL

15
NTDI3211
Depth
Indicator
3.25 mmD x
11.5 mmL

20
QSD411
Quad-
Shaping Drill
4 mmD x
11.5 mmL

25
NTDI411
Depth
Indicator
4 mmD x
11.5 mmL

30
QSD511
Quad-
Shaping Drill
5 mmD x
11.5 mmL

35
NTDI511
Depth
Indicator
5 mmD x
11.5 mmL

40
QSD611
Quad-
Shaping Drill
6 mmD x
11.5 mmL

45
NTDI611
Depth
Indicator
6 mmD x
11.5 mmL

11
QSD3213
Quad-
Shaping Drill
3.25 mmD x
13 mmL

16
NTDI3213
Depth
Indicator
3.25 mmD x
13 mmL

21
QSD413
Quad-
Shaping Drill
4 mmD x
13 mmL

26
NTDI413
Depth
Indicator
4 mmD x
13 mmL

31
QSD513
Quad-
Shaping Drill
5 mmD x
13 mmL

36
NTDI513
Depth
Indicator
5 mmD x
13 mmL

41
QSD613
Quad-
shaping drill
6 mmD x
13 mmL

46
NTDI613
Depth
Indicator
6 mmD x
13 mmL

12
QSD3215
Quad-
Shaping Drill
3.25 mmD x
15 mmL

17
NTDI3215
Depth
Indicator
3.25 mmD x
15 mmL

22
QSD415
Quad-
Shaping Drill
4 mmD x
15 mmL

27
NTDI415
Depth
Indicator
4 mmD x
15 mmL

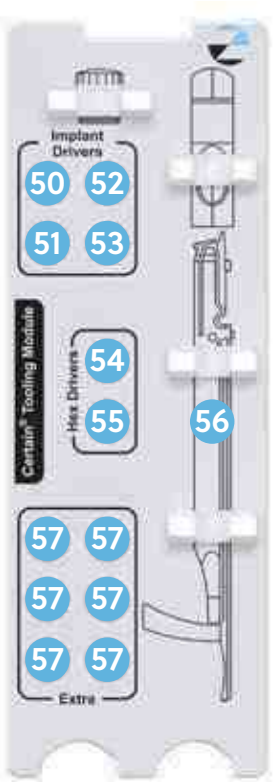
32
QSD515
Quad-
Shaping Drill
5 mmD x
15 mmL

37
NTDI515
Depth
Indicator
5 mmD x
15 mmL

42
QSD615
Quad-
Shaping Drill
6 mmD x
15 mmL

47
NTDI615
Depth
Indicator
6 mmD x
15 mmL

Certain Tooling Module



50

IIPDTUL
Internal Connection Universal Placement Driver Tip - Long

51

IRE200U
Certain® Universal Ratchet Extension Implant Driver (Long)

52

IIPDTUS
Internal Connection Universal Placement Driver Tip - Short

53

IRE100U
Certain® Universal Ratchet Extension Implant Driver (Short)

54

PHD02N
Narrow Posterior Large Hex Driver-17 mm

55

IHX1.2D
Latch-Lock Hex Driver Tip with GemLock Retention
1.2 mmD
24 mmL

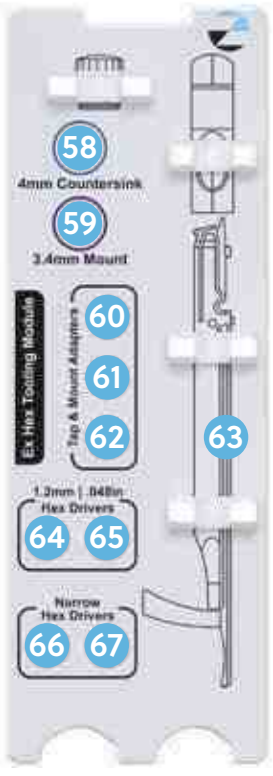
56

H-TIRW
High Torque Indicating Ratchet Wrench

57

Empty Grommets

ExHex Tooling Module



58

ICD100
Countersink Drill 4.0 mmD Implant

59

MMC15
Implant Mount 3.4 mmD x 15 mmL

60

MDR10
Handpiece Connector

61

RE200
Ratchet Extension 15 mm Long

62

RE100
Ratchet Extension 6 mm Long

63

H-TIRW
High Torque Indicating Ratchet Wrench

64

PHD02N
Narrow Posterior Large Hex Driver-17 mm

65

IHX1.2D
Latch-Lock Hex Driver Tip with GemLock Retention
1.2 mmD 24 mmL

66

PHD00N
Narrow Posterior Hex Driver - 17 mm

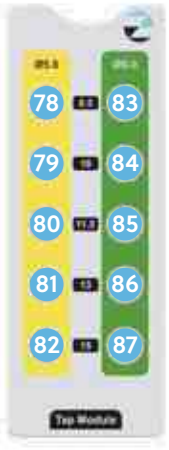
67

RASH2N
Narrow Right Angle Small Hex Driver Tip 24 mm

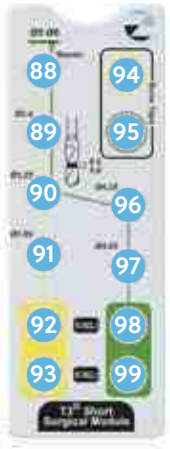
Tap Modules

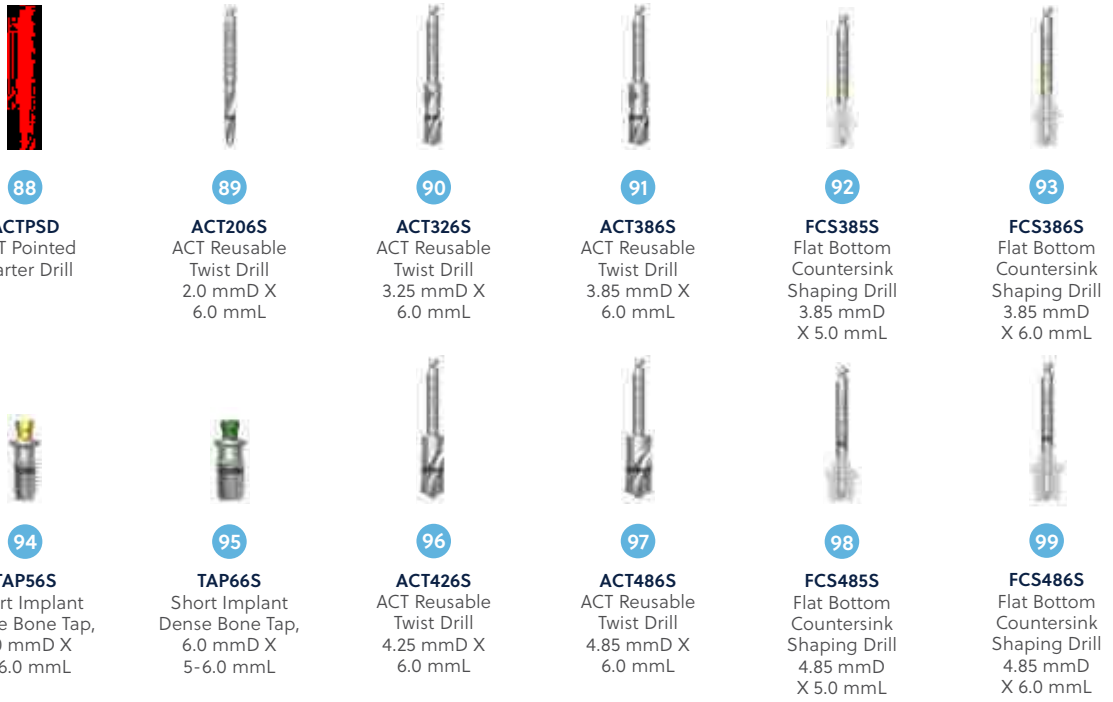
68 **NTAP3285** Bone Tap 3.25 X 8.5 mm
69 **NTAP3210** Bone Tap 3.25 X 10 mm
70 **NTAP3211** Bone Tap 3.25 X 11.5 mm
71 **NTAP3213** Bone Tap 3.25 x 13 mm
72 **NTAP3215** Bone Tap 3.25 x 15 mm
78 **NTAP585** Bone Tap 5 x 8.5 mm
79 **NTAP510** Bone Tap 5 x 10 mm
80 **NTAP511** Bone Tap 5 x 11.5 mm
81 **NTAP513** Bone Tap 5 x 13 mm
82 **NTAP515** Bone Tap 5 x 15 mm

73 **NTAP485** Bone Tap 4 x 8.5 mm
74 **NTAP410** Bone Tap 4 x 10 mm
75 **NTAP411** Bone Tap 4 x 11.5 mm
76 **NTAP413** Bone Tap 4 x 13 mm
77 **NTAP415** Bone Tap 4 x 15 mm
83 **NTAP685** Bone Tap 6 x 8.5 mm
84 **NTAP610** Bone Tap 6 x 10 mm
85 **NTAP611** Bone Tap 6 x 11.5 mm
86 **NTAP613** Bone Tap 6 x 13 mm
87 **NTAP615** Bone Tap 6 x 15 mm



T3 Short Surgical Module





88 **ACTPSD** ACT Pointed Starter Drill
89 **ACT206S** ACT Reusable Twist Drill 2.0 mmD X 6.0 mmL
90 **ACT326S** ACT Reusable Twist Drill 3.25 mmD X 6.0 mmL
91 **ACT386S** ACT Reusable Twist Drill 3.85 mmD X 6.0 mmL
92 **FCS385S** Flat Bottom Countersink Shaping Drill 3.85 mmD X 5.0 mmL
93 **FCS386S** Flat Bottom Countersink Shaping Drill 3.85 mmD X 6.0 mmL

94 **TAP56S** Short Implant Dense Bone Tap, 5.0 mmD X 5-6.0 mmL
95 **TAP66S** Short Implant Dense Bone Tap, 6.0 mmD X 5-6.0 mmL
96 **ACT426S** ACT Reusable Twist Drill 4.25 mmD X 6.0 mmL
97 **ACT486S** ACT Reusable Twist Drill 4.85 mmD X 6.0 mmL
98 **FCS485S** Flat Bottom Countersink Shaping Drill 4.85 mmD X 5.0 mmL
99 **FCS486S** Flat Bottom Countersink Shaping Drill 4.85 mmD X 6.0 mmL

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100 **WR150** Ratchet Wrench

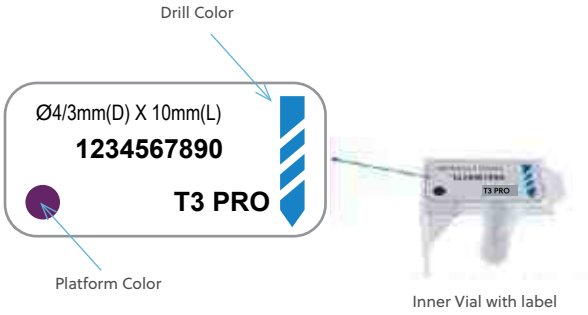
101 **CW100** Open End Wrench

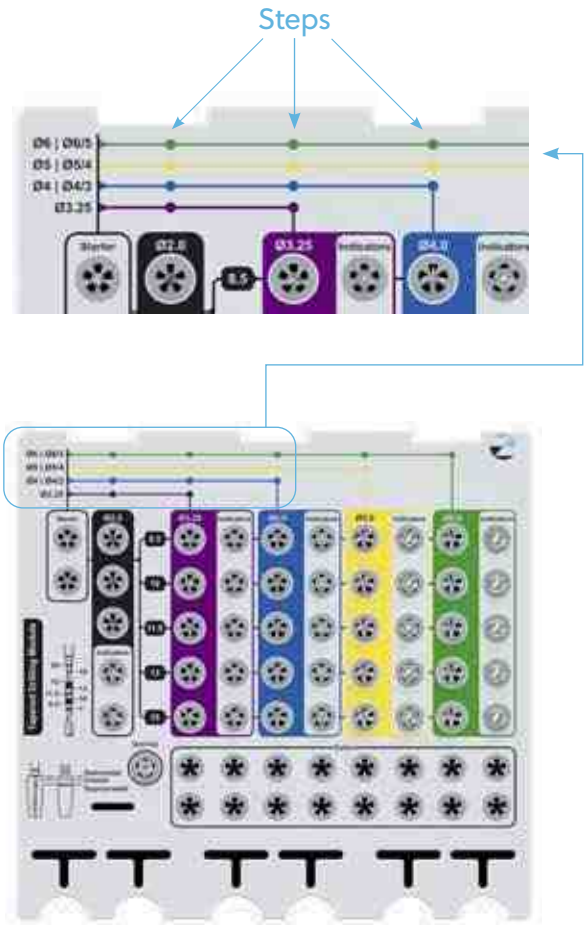
102 **DP020** Implant Depth Gauge

103 Empty Grommets

Drill Sequence

Osteotomy preparation always begins with the ACT Pointed Starter Drill or Round Drill to penetrate the cortical bone and establish the initial entry point and angulation. The subsequent drill sequence for tapered implants follows a color-coded workflow within the Tapered Drilling Module designed to match the selected implant diameter and bone density.





Sequence Navigation

- Identification: Clinicians identify the color-coded line that corresponds to the selected implant body diameter: **Purple (3.25 mm), Blue (4.0 mm), Yellow (5.0 mm), or Green (6.0 mm)**. Double color coding on the inner vial label indicates platform diameter (colored dot) and drilling sequence (colored drill). The drills's color indicates which sequence to follow on the surgical kit.

- **Progression:** Along each color-coded line are steps, denoted by dots, which indicate the sequential progression of the drills. These lines visually connect the initial preparation instruments to the final shaping drills.

- **Drill Selection:** At each stop along the selected line, the clinician uses either a multi-length 2.0mm Twist Drill or a length-specific **Quad Shaping Drill (QSD)** that matches the planned implant length.

Drilling Technique

All drills should be operated at **1200–1500 rpm** with **copious irrigation**. While the initial twist drills may require a pumping action, **QSDs must be advanced to the desired depth only once without pumping**, as a pumping motion with the QSDs may distort the dimensions of the osteotomy. QSDs utilize **geometrical depth landmarks** to indicate supracrestal, crestal, or subcrestal placement levels.

Drilling Sequence Modifications for Bone Density

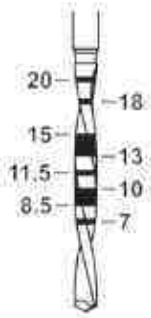
- **Soft Bone Sequence (Type IV):** To increase primary stability, the final stop along the selected color-coded line should be the 8.5 mm length QSD, regardless of the planned implant length. This adequately prepares for the implant collar diameter while under sizing the diameter preparation in the cancellous region.

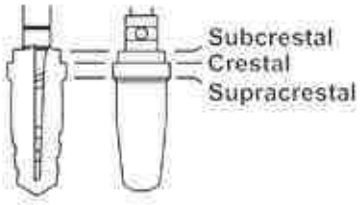
- **Dense Bone Protocol (Type I):** It is **required** to tap the osteotomy when placing an implant in Type I bone or whenever insertion torque is anticipated to exceed **90 Ncm**. **Dense Bone Taps** are both diameter and length specific and must be driven to the vertical level previously demonstrated by the indicators.

Osteotomy Verification

Following the final shaping step, a **Depth/Direction Indicator (NTDI)** must be used to simulate the final vertical position of the implant platform. The NTDI verifies that the osteotomy is clear of debris and that the trajectory is correct. For patient safety, it is mandatory to thread a safety suture through the holes of all indicators and ratchet extensions before use.

The surgical kit also includes a graphic that provides a clear visual reference for depth control using the true-to-scale twist drill, which features laser-etched depth markings from 7 to 20 mm to guide precise osteotomy preparation. Adjacent to the twist drill is an icon representing the quad-shaping drill and illustrate subcrestal, crestal, and supracrestal placement refereces.

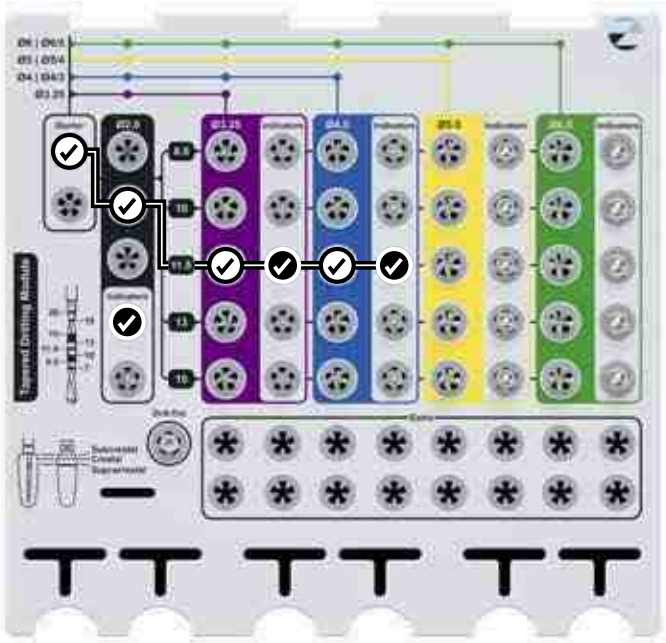




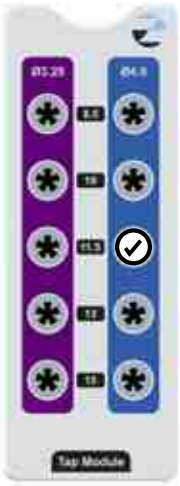
Examples of Drill Sequence

Drill or Dense Bone Tap

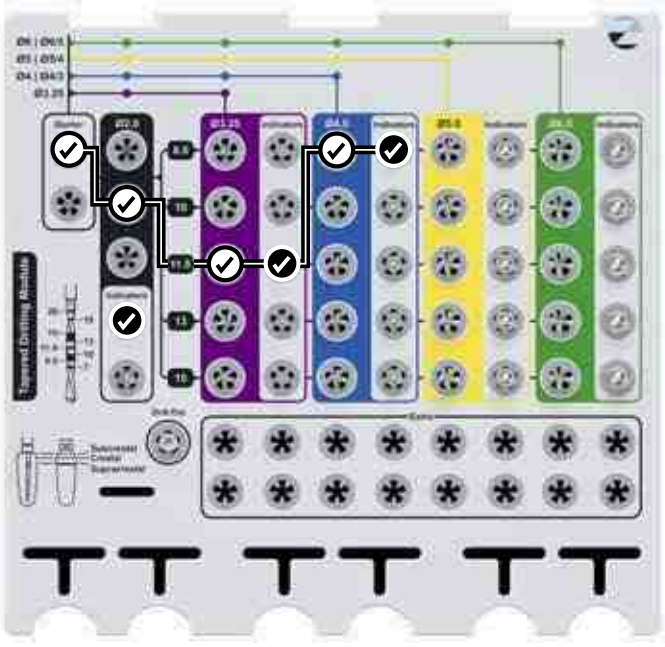
Directional and/or Depth Indicator



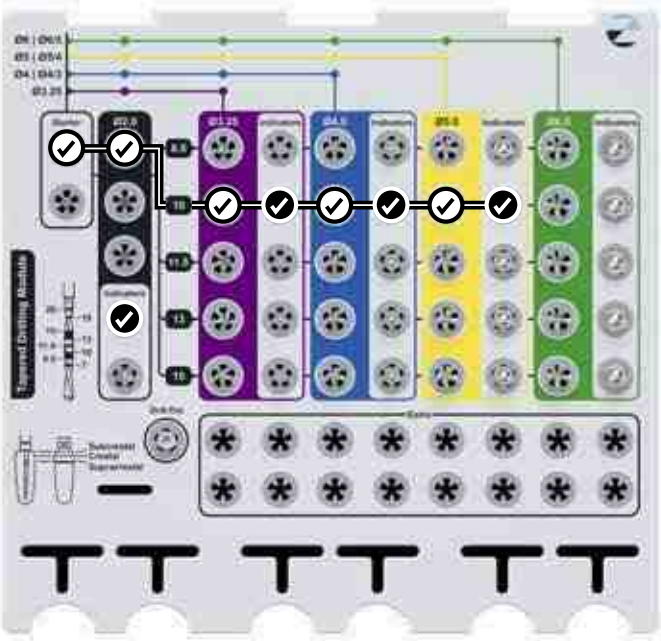
Drill Sequence - 4 x 11.5 Implant in Regular or Dense Bone



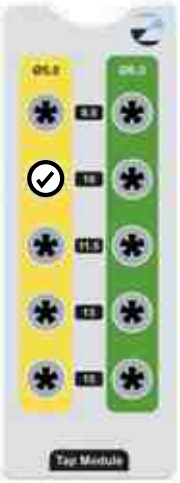
Tap whenever insertion torque is anticipated to exceed 90 Ncm.



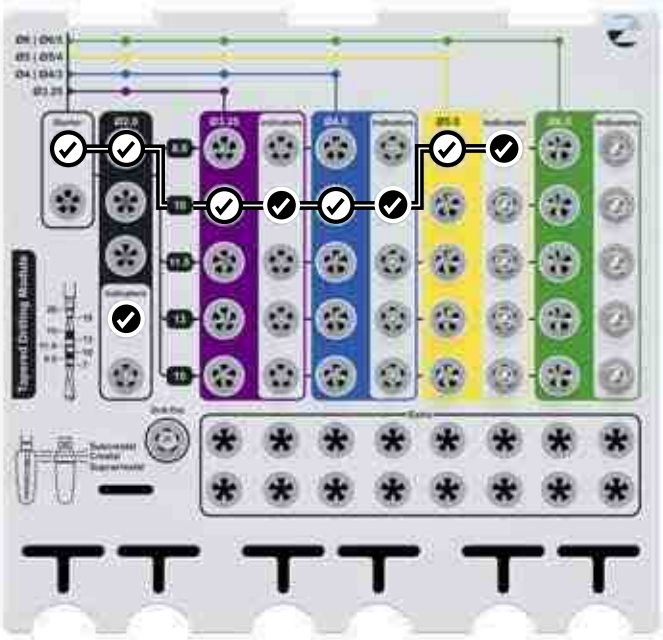
Drill Sequence - 4 x 11.5 Implant in Soft Bone



Drill Sequence - 5 x 10 Implant
in Regular or Dense Bone



torque is anticipated to
exceed 90 Ncm.



Drill Sequence - 5 x 10 Implant
in Soft Bone

Quick Reference Subcrestal Surgical Protocol

Certain Internal and External Hex Connection Tapered Implants

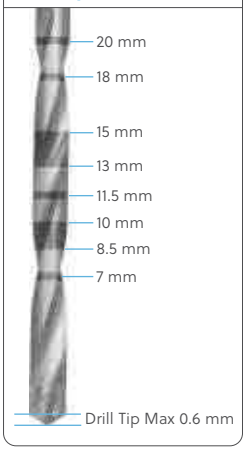
Important Considerations:

- The recommended drill speed for all drills is 1200–1500 rpm.
- The Quad Shaping Drills must be used without pumping actions.
- The recommended implant placement speed is 15–20 rpm.
- Use the drill motor/handpiece to start implant placement to ensure the implant tracks/goes into the osteotomy in the same direction as drilled.
- Verify that the drill is engaged/retained within the locking mechanism of the drill motor/handpiece, in order to prevent accidental swallowing or aspiration of the drill.
- Do not initiate implant placement with the hand ratchet as hand torquing could result in off-angle placement of the implant.
- Transition to the hand ratchet only when the implant cannot be fully seated with the handpiece.
- Apply finger pressure along the vertical axis of the ratchet driver tip and implant to ensure the driver tip does not back out of the implant's internal connection.
- When insertion torque exceeds 50 Ncm, hand ratcheting is necessary in order to fully seat the implant.
- Certain Internal Connection Driver Tips should be inspected for wear before use.
- It is recommended that reusable drills be replaced after 15 uses.
- Tapping is required for implant placement in dense bone (Type I) or when the insertion torque is more than 90 Ncm.

IMPORTANT NOTE: Exceeding insertion torque of more than 90 Ncm may deform or strip the driver tip or the implant's internal hex and may possibly delay the surgical procedure.

D = Diameter
P = Platform
L = Length

ACT Twist Drill Depth Marks



Tapered 3.25 mm(D) Implants

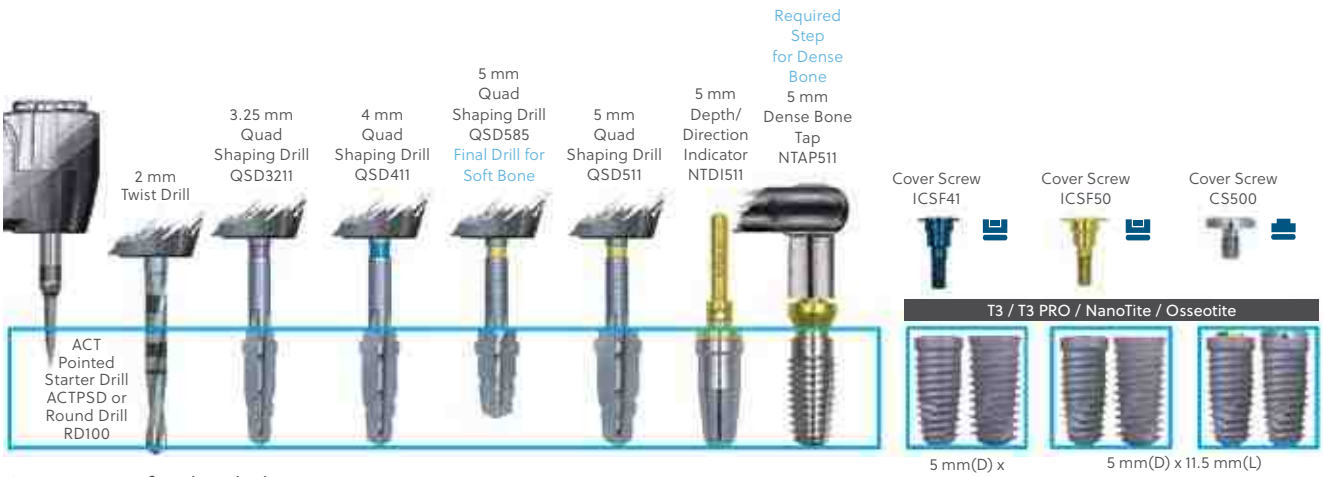
3.25 mm(D) x 11.5 mm(L)

See page 33 for detailed instructions.

Tapered Platform Switched 4 mm(D) X 3.4 mm(P) and 4 mm(D) Implants

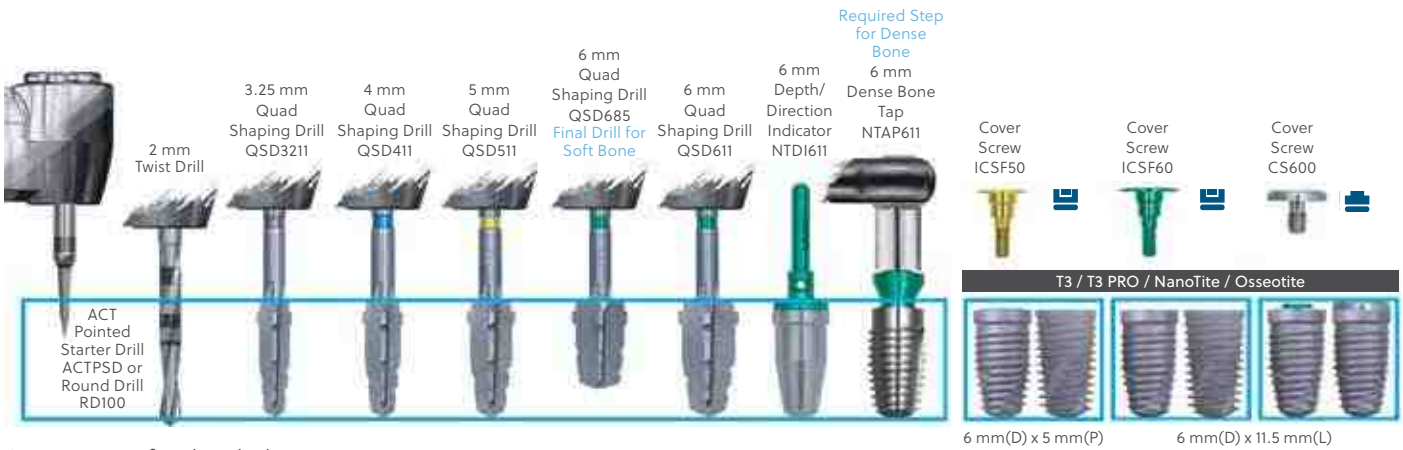
See page 36 for detailed instructions.

Tapered Platform Switched 5 mm(D) X 4.1 mm(P) and 5 mm(D) Implants



See page 40 for detailed instructions.

Tapered Platform Switched 6 mm(D) X 5 mm(P) and 6 mm(D) Implants



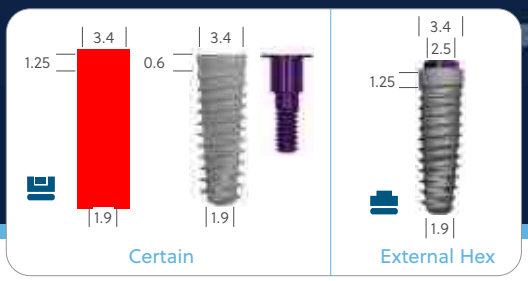
See page 44 for detailed instructions.

Subcrestal Surgical Protocol

Certain Internal and External Hex
Connection Tapered 3.25 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 48-50.

T3 / T3 PRO / NanoTite / Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed: ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

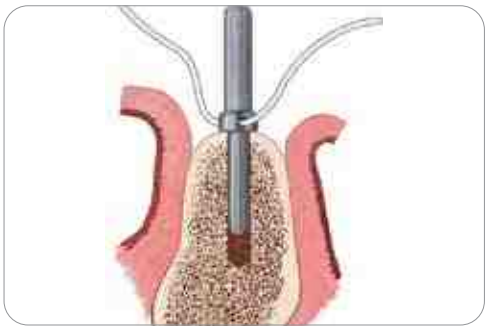
   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



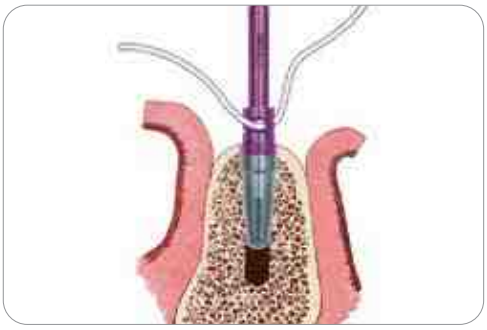
Final Shaping Drill Step for a Tapered 3.25 mm(D) Implant in Soft Bone (Type IV)

In soft bone situations where dense cortical bone is present, it will be necessary to prepare the coronal aspect of the osteotomy.

4a: After preparing the osteotomy with the 2 mm Twist Drill, finish with a 3.25 mm x 8.5 mm Quad Shaping Drill [QSD3285]. This will create an osteotomy of proper dimension in the dense cortical bone to receive the implant, but will slightly undersize the osteotomy in the cancellous region. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

Preparation for Placement of a Tapered 3.25 mm(D) Implant in Soft Bone (Type IV)

4b: Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].



4c: Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 3.25 mm x 8.5 mm NTDI [NTDI3285]. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the 3.25 mm x 8.5 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with the 3.25 mm x 8.5 mm NTDI.

Proceed to step 1 on page 48 for implant placement.

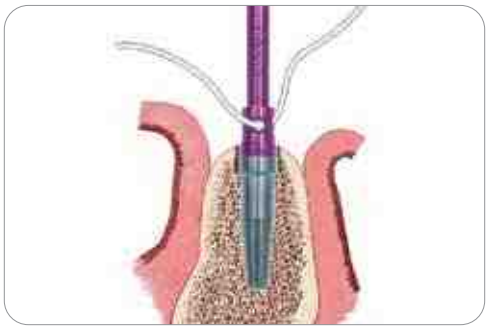
Final Shaping Drill Step for a Tapered 3.25 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

5a: Proceed with the 3.25 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

- Instrument needed:
  Quad Shaping Drill [QSD32xx]

Preparation for Placement of a Tapered 3.25 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

5b: Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].



5c: Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 3.25 mm (purple) NTDI that corresponds to the length of the implant to be placed. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the corresponding 3.25 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with a proper length NTDI.

Proceed to step 1 on page 48 for implant placement.

Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 3.25 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is required.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Fully seat the tap to the level demonstrated by the NTDI. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Dense Bone Tap [NTAP32xx], Ratchet Extension [RE100 or RE200], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench and [H-TIRW]

Proceed to step 1 on page 48 for implant placement.

For more information on various bone densities please see page 12.

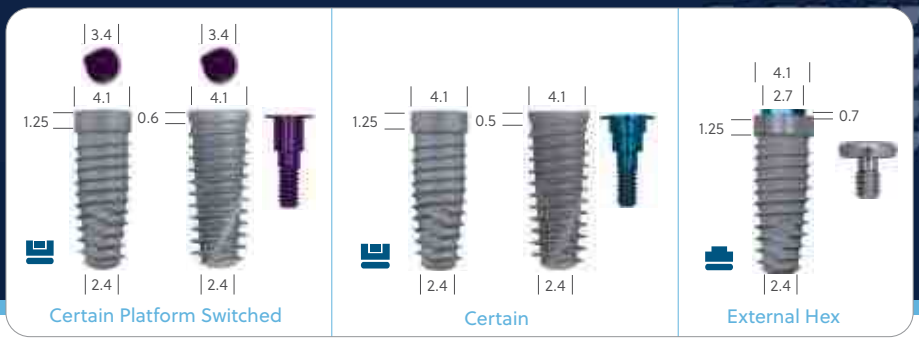
Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

Tapered Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 31-32.

T3, T3 PRO and Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

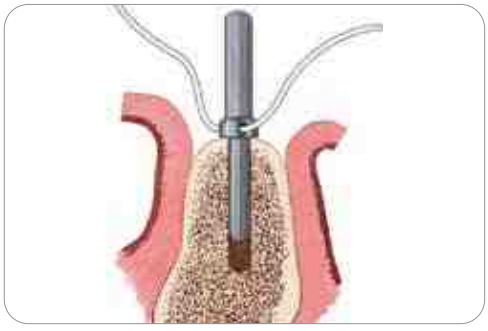
   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



4. Proceed with the 3.25 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

   • Instrument needed:
   Quad Shaping Drill [QSD32xx]

Final Shaping Drill Step for a Tapered Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implant in Soft Bone (Type IV)

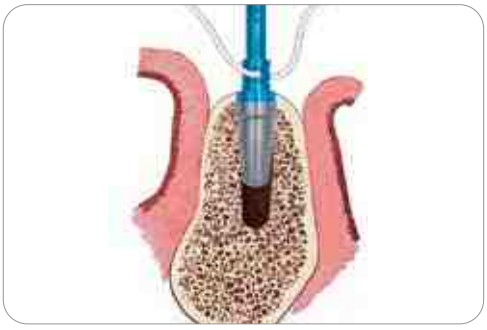
In soft bone situations where dense cortical bone is present, it will be necessary to prepare the coronal aspect of the osteotomy.

5a: After preparing the osteotomy with the 3.25 mm Quad Shaping Drill, finish with a 4 mm x 8.5 mm Quad Shaping Drill [QSD485]. This will create an osteotomy of proper dimension in the dense cortical bone to receive the implant, but will slightly undersize the osteotomy in the cancellous region. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

Preparation for Placement of a Tapered Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implant in Soft Bone (Type IV)

5b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].

5c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 4 mm x 8.5 mm NTDI [NTDI485]. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the 4 mm x 8.5 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with the 4 mm x 8.5 mm NTDI.



5d. **IMPORTANT NOTE:** To prepare the ridge and accommodate the Cover Screw [CS375] for a 4 mm(D) External Hex Connection implant, use a Countersink Drill [ICD100]. The recommended drill speed is 1200–1500 rpm. This step is not required for crestal and supracrestal placement of these implants. This step is not required with the flat cover screw packaged with Certain Internal Connection Implants.

Proceed to step 1 on page 48 for implant placement.

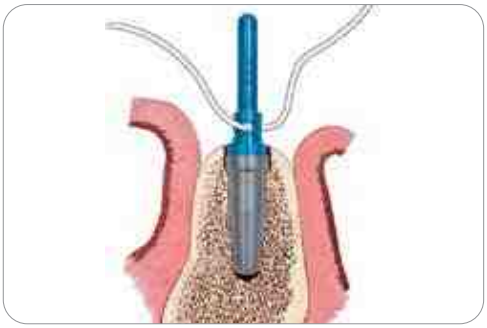
Final Shaping Drill Step for a Tapered Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

6a. Resume preparing the osteotomy with the 4 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

- Instrument needed:
  Quad Shaping Drill [QSD4xx]

Preparation for Placement of a Tapered Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

6b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].



6c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 4 mm (blue) NTDI that corresponds to the length of the implant to be placed. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the corresponding 4 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with a proper length NTDI.

Proceed to step 1 on page 48 for implant placement.

6d. **IMPORTANT NOTE:** To prepare the ridge and accommodate the Cover Screw [CS375] for a 4 mm(D) External Hex Connection implant, use a Countersink Drill [ICD100]. The recommended drill speed is 1200–1500 rpm. This step is not required for crestal and supracrestal placement of these implants. This step is not required with the flat cover screw packaged with Certain Internal Connection Implants.

Proceed to step 1 on page 48 for implant placement.

Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 4 mm(D) x 3.4 mm(P) or 4 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is required. Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Fully seat the tap to the level demonstrated by the NTDI. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Dense Bone Tap [NTAP4xx], Ratchet Extension [RE100 or RE200], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench and [H-TIRW]

Proceed to step 1 on page 48 for implant placement.

For more information on various bone densities please see page 12.

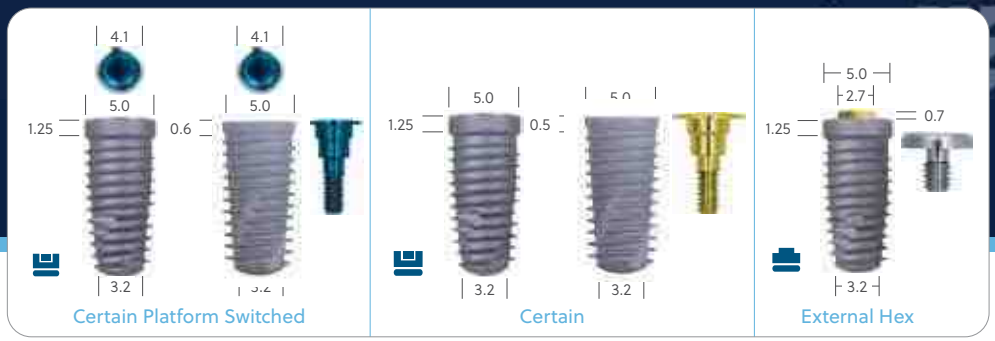
Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

Tapered Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 31-32.

T3, T3 PRO, and Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

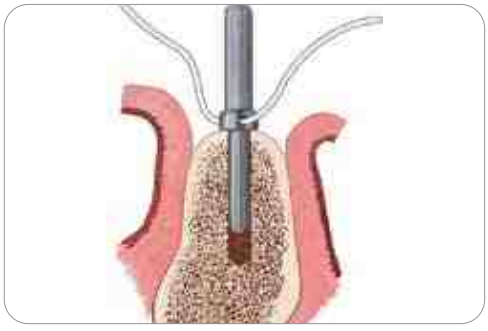
   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



4. Proceed with the 3.25 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

   • Instrument needed:
   Quad Shaping Drill [QSD32xx]

5. Resume preparing the osteotomy with the 4 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Quad Shaping Drill [QSD4xx]

Final Shaping Drill Step for a Tapered Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implant in Soft Bone (Type IV)

In soft bone situations where dense cortical bone is present, it will be necessary to prepare the coronal aspect of the osteotomy.

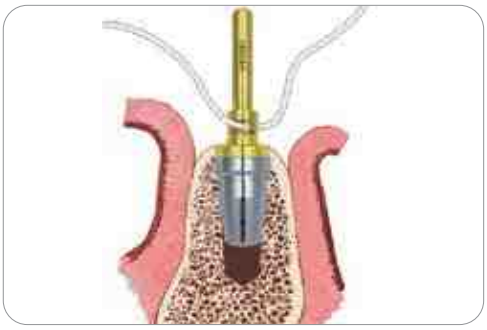
6a. After preparing the osteotomy with the 4 mm Quad Shaping Drill, finish with a 5 mm x 8.5 mm Quad Shaping Drill [QSD585]. This will create an osteotomy of proper dimension in the dense cortical bone to receive the implant, but will slightly undersize the osteotomy in the cancellous region. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

Preparation for Placement of a Tapered Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implant in Soft Bone (Type IV)

6b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].

6c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 5 mm x 8.5 mm NTDI [NTDI585]. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the 5 mm x 8.5 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with the 5 mm x 8.5 mm NTDI.

Proceed to step 1 on page 48 for implant placement.



Final Shaping Drill Step for a Tapered Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

7a. Resume preparing the osteotomy with the 5 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

- Instrument needed:
  Quad Shaping Drill [QSD5xx]

Preparation for Placement of a Tapered Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

In soft bone situations where dense cortical bone is present, it will be necessary to prepare the coronal aspect of the osteotomy.

7b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].

7c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 5 mm (yellow) NTDI that corresponds to the length of the implant to be placed. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the corresponding 5 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with a proper length NTDI.

Proceed to step 1 on page 48 for implant placement.

Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 5 mm(D) x 4.1 mm(P) or 5 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is required. Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Fully seat the tap to the level demonstrated by the NTDI. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Dense Bone Tap [NTAP5xx], Ratchet Extension [RE100 or RE200], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench and [H-TIRW]

Proceed to step 1 on page 48 for implant placement.

For more information on various bone densities please see page 12.

Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

Tapered Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 31-32.

T3, T3 PRO, and Osseotite

1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

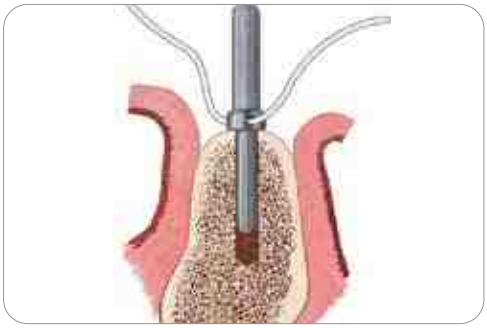
   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



4. Proceed with the 3.25 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

   • Instrument needed:
   Quad Shaping Drill [QSD32xx]

5. Resume preparing the osteotomy with the 4 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

   • Instrument needed:
   Quad Shaping Drill [QSD4xx]

6. Resume preparing the osteotomy with the 5 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

   • Instrument needed:
   Quad Shaping Drill [QSD5xx]

Final Shaping Drill Step for a Tapered Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implant in Soft Bone (Type IV)

In soft bone situations where dense cortical bone is present, it will be necessary to prepare the coronal aspect of the osteotomy.

7a. After preparing the osteotomy with the 5 mm Quad Shaping Drill, finish with a 6 mm x 8.5 mm Quad Shaping Drill [QSD685]. This will create an osteotomy of proper dimension in the dense cortical bone to receive the implant, but will slightly undersize the osteotomy in the cancellous region. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

Preparation for Placement of a Tapered Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implant in Soft Bone (Type IV)

7b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].

7c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 6 mm x 8.5 mm NTDI [NTDI685]. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the 6 mm x 8.5 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with the 6 mm x 8.5 mm NTDI.

Proceed to step 1 on page 48 for implant placement.

Final Shaping Drill Step for a Tapered Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

8a. Resume preparing the osteotomy with the 6 mm Quad Shaping Drill that is the same length as the implant to be placed. The recommended drill speed is 1200–1500 rpm. Do not pump the drill.

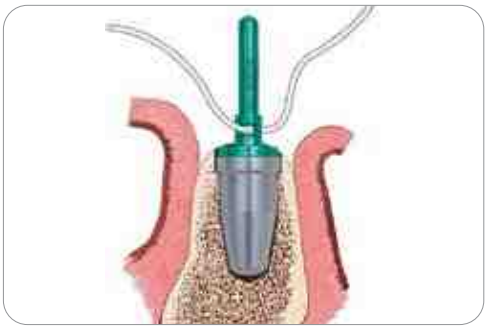
- Instrument needed:
  Quad Shaping Drill [QSD6xx]

Preparation for Placement of a Tapered Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

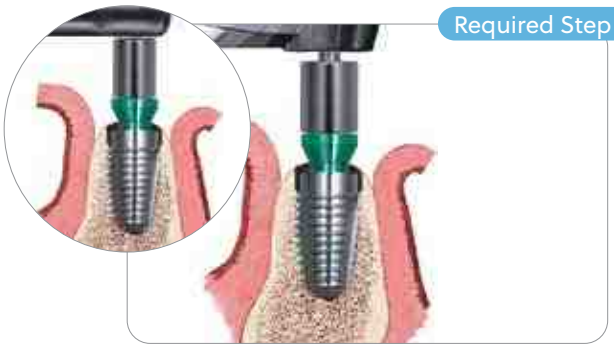
8b. Flush the osteotomy with sterile water or saline solution. Using suction, remove any remaining drilling debris from the osteotomy before proceeding with the Depth/Direction Indicator [NTDI].

8c. Thread a suture through the hole of the NTDI to prevent accidental swallowing. Insert the tapered end of the 6 mm (green) NTDI that corresponds to the length of the implant to be placed. This will simulate the position of the implant platform in relation to the crest of the bone. If the position of the NTDI does not indicate proper osteotomy depth, adjust the depth of the osteotomy with the corresponding 6 mm Quad Shaping Drill or consider a longer length implant if the site has been over prepared. Re-evaluate with a proper length NTDI.

Proceed to step 1 on page 48 for implant placement.



Required Step



Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 6 mm(D) x 5 mm(P) or 6 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is required. Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Fully seat the tap to the level demonstrated by the NTDI. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Dense Bone Tap [NTAP6xx], Ratchet Extension [RE100 or RE200], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench and [H-TIRW]

Proceed to step 1 on page 48 for implant placement.

For more information on various bone densities please see page 12.

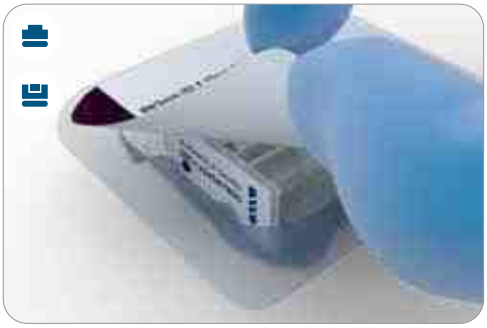
Subcrestal Implant Placement Protocol

Internal Connection Universal Placement Driver Tips

In addition to Certain Tapered and Certain Parallel Walled Implants, IIPDTUS and IIPDTUL are intended to be used with Certain Implant Cover Screws, Certain Flat Implant Cover Screws, and Certain EP® 1-PC Healing Abutments.

Subcrestal Implant Placement Protocol
No-Touch™ Delivery of Certain Internal Tapered and Parallel Walled Implants

1. Remove contents from the implant box.
   The nonsterile assistant should peel back the tray lid and drop the No-Touch Implant Tray onto the sterile drape.



2. Wearing sterile gloves, place the No-Touch Implant Tray into the appropriate location on the surgical tray.

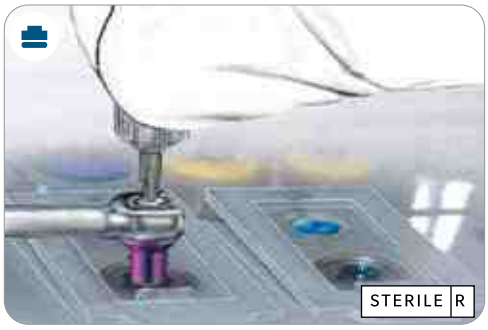
3. Peel back the tray lid to expose the implant and cover screw.

4. For the Certain Internal Connection Implant, pick up the implant from the surgical tray using an Internal Connection Universal Placement Driver Tip. Carry the implant to the mouth facing upward to prevent accidental dislodging. Internal Connection Universal Placement Driver Tips should be inspected for wear before use.

   • The instruments needed for Certain Tapered Implants and for Certain Parallel Walled Implants are:
   Internal Connection Universal Placement Driver Tip- Short [IIPDTUS] and Internal Connection Universal Placement Driver Tip- Long [IIPDTUL]

   The driver tips listed above are able to be used with all Certain Implants: 3.25 mm(D), 4 mm(D) x 3.4 mm(P), 5 mm(D) x 4.1 mm(P), 6 mm(D) x 5 mm(P) and 4, 5 mm(D) and 6 mm(D) Tapered and Parallel Walled Implants. The item numbers can be identified on the side of the driver tip.

5. Place the implant into the prepared site with the drilling unit set to 50 Ncm and 15–20 rpm. It is not uncommon for the handpiece to stall before the implant is completely seated. The implant position must match what was simulated with the Depth/Direction Indicator [NTDI] or there is a risk of a poor fit between the implant and osteotomy.



   NOTE: T3 PRO Implants [T3PTxxxx, T3ST32xx, or T3STxxx] are designed with vertical placement flexibility up to 0.5mm below the prepared implant position simulated with the NTDI. This maximum vertical displacement corresponds to 3/4 of a full rotation

6. When insertion torque exceeds 50 Ncm, hand ratcheting is necessary in order to fully seat the implant. Tapping is required in dense bone (Type I) or when the insertion torque is more than 90 Ncm. Final seating of the implant may require the use of the Ratchet Extension and the Ratchet Wrench. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

   • Instruments needed:
   Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench [H-TIRW] Certain Ratchet Extension [IRE100U or IRE200U] or 3.25 mm(D) Ratchet Extension [IMRE100 or IMRE200]

7. To remove the Certain Ratchet Extension from the implant, lift it straight up and out.

8. If performing a two-stage surgical protocol, pick up the Cover Screw from the No-Touch Implant Tray with the Implant Placement Driver Tip or Large Hex Driver and place it onto the implant.

   NOTE: When using an Internal Connection Universal Placement Driver Tip, reduce the torque setting on the drill unit to 10 Ncm. Tighten the cover screw to 10 Ncm.

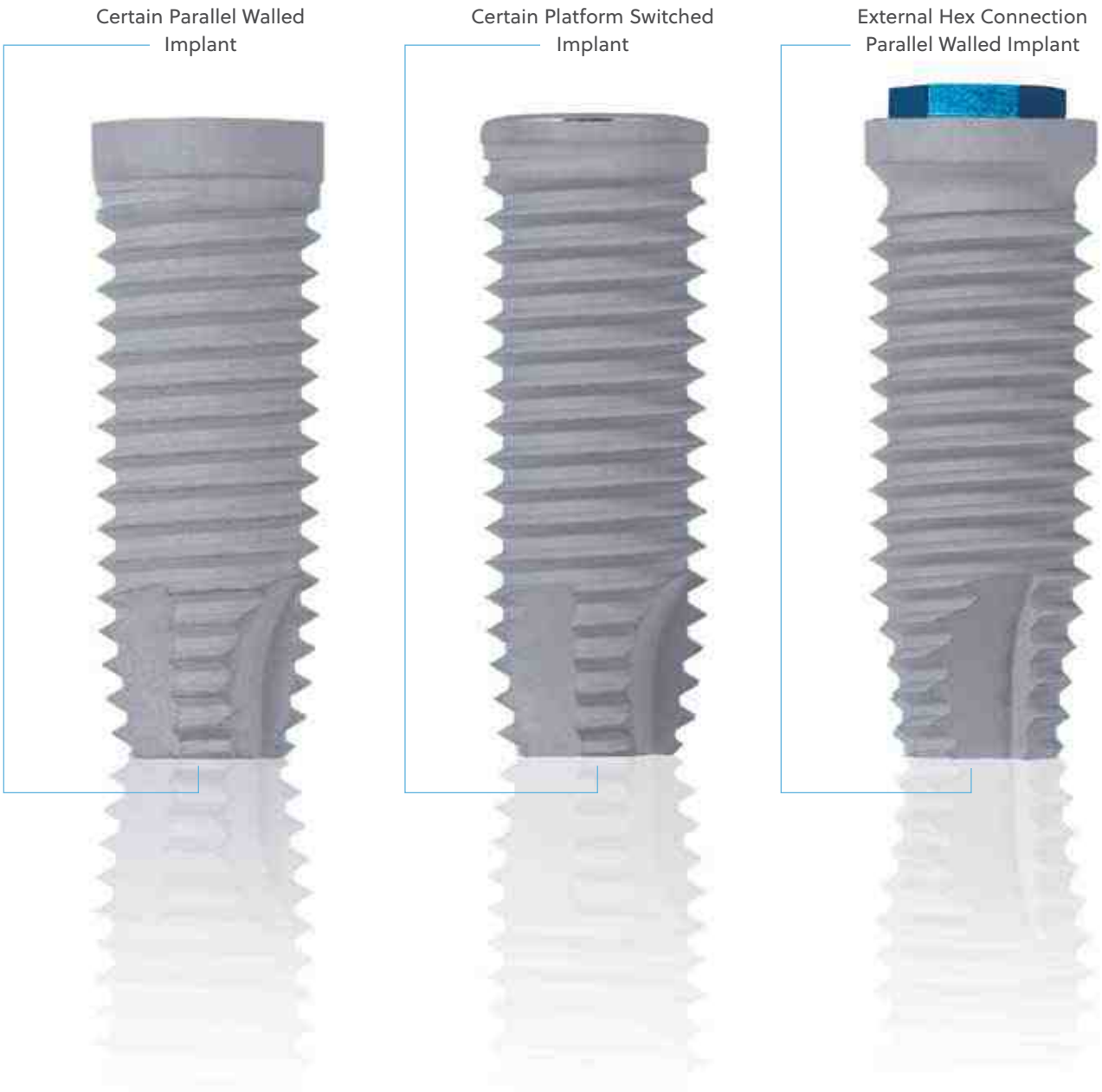
   NOTE: At this step, a temporary healing abutment may be placed in lieu of a cover screw when performing a single-stage surgical protocol. Tighten the healing abutment to 20 Ncm.

   • Instruments needed:
   Implant Placement Driver Tip [IIPDTUS or IIPDTUL] and Large Hex Driver [PHD02N]

9. Reposition the soft-tissue flaps and secure with sutures.

Surgical Protocol for T3 and Osseotite Parallel Walled Implants

Certain Internal and External Hex Connection

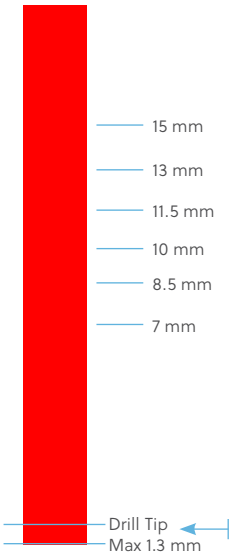


Twist Drill Depth Marking System for ACT Reusable and Single-Patient Drills

Certain Internal and External Hex Connection Parallel Walled Implants

A 2 mm Twist Drill is used to prepare the osteotomy for the sequential twist drills in each of the parallel walled surgical protocols. Pages 52-55 outline the guidelines for understanding the depth markings on the Twist Drill System.

Twist Drill Marks:



The center of the drill's single line depth marks and the beginning or end of the broad band indicate subcrestal placement for the corresponding length implant.

The length of the drill tip is not included in the depth mark measurement. The drill tip length should be considered when preparing the osteotomy.

The length of the drill tip varies with the diameter of the drill.

Drill Tip Dimensions		
Drill Diameter	DTN/DT Drill Tip Length	ACT Drill Tip Length
2 mm	0.6 mm	0.6 mm
2.3 mm	0.7 mm	N/A
2.75 mm	0.8 mm	0.9 mm
3 mm	0.9 mm	0.9 mm
3.15 mm	1 mm	1 mm
3.25 mm	1 mm	1 mm
3.85 mm	N/A	1.2 mm
4.25 mm	0.4 mm	0.7 mm
4.85 mm	N/A	0.7 mm
5.25 mm	0.5 mm	1.2 mm

The depth marks measurement system provides a mark on the drill that corresponds to the placement of the implant via well-established procedures. The original protocol follows the principles of protecting the implant from premature loading by placing the implant subcrestally.

Drilling Depth:

The drilling depth with the Twist Drill will vary depending on the type of placement related to the bone crest.

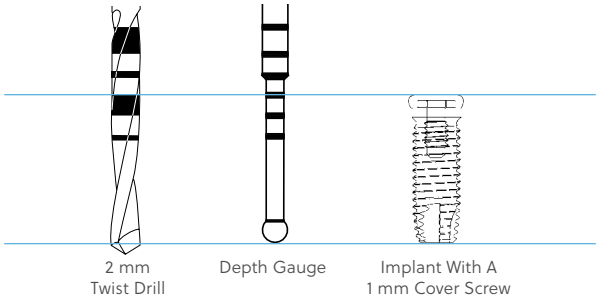
The depth marks are specific for subcrestal implant placement only. There are no specific depth marks on the drills for crestal or supracrestal placement.

The drill depth marks do not indicate implant lengths. Rather, the drill depth marks represent the length of the implant with a standard 1 mm cover screw in place. As a result, to place an implant and cover screw subcrestally requires drilling to the middle of the single line depth mark or the beginning or end of the broad band depth mark on ACT Drills (see reference on page 51 for Twist Drill marks). For crestal placement, drill halfway before the corresponding depth mark for the implant length. For supracrestal placement, the drill depth mark should remain above the bone by 1 mm for the cover screw plus the implant collar height. Refer to the diagram at the bottom of page 54 for more information on supracrestal placement.

Certain Internal Connection Implants are packaged with a 0.4 mm Cover Screw. However, the protocol for these implants does not differ from the protocol for Certain Implants packaged with a 1 mm Cover Screw.

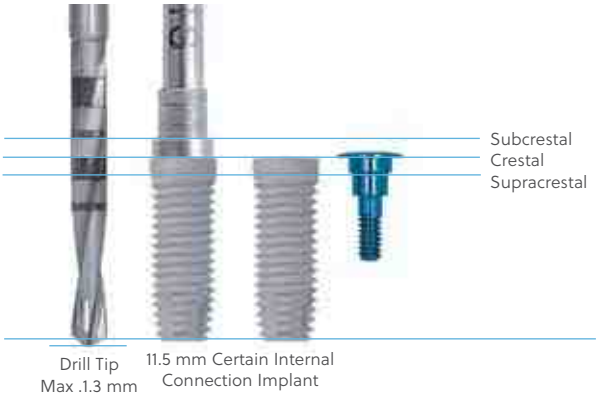
Standard Subcrestal Protocol

1 mm Cover Screw



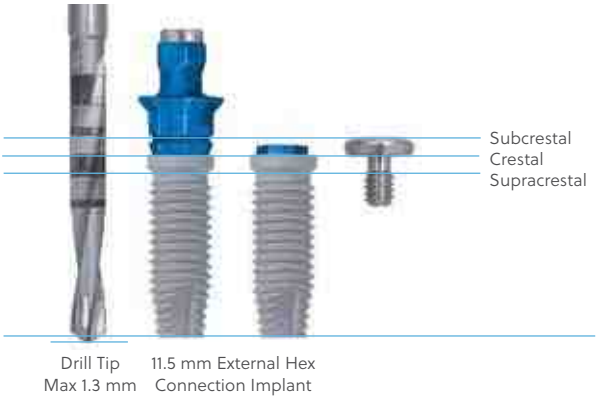
Drilling Depth Comparison

Certain Internal Connection



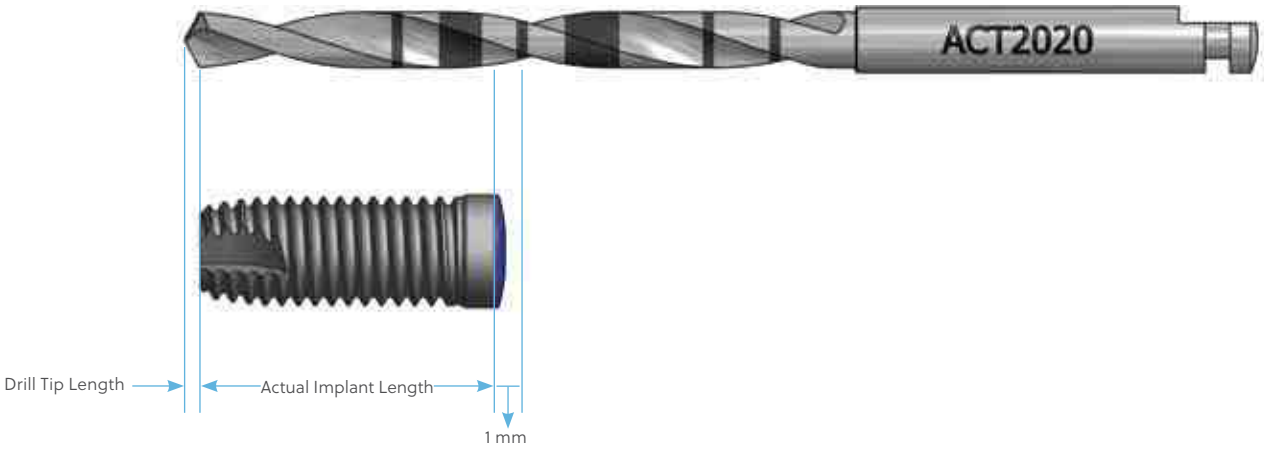
Drilling Depth Comparison

External Hex Connection



Implant Length or Depth Mark on Drill (Label)	Implant Length (Actual)	Traditional Cover Screw Height (Actual)	Certain® Cover Screw Height (Actual)	Actual Drill Length to Depth Mark (Applies only to ACT Drill and excludes tip length)
6.5 mm	6.6 mm	1 mm	0.4 mm	7.7 mm
7 mm	6.6 mm	1 mm	0.4 mm	7.7 mm
8.5 mm	8.1 mm	1 mm	0.4 mm	9.1 mm
10 mm	9.6 mm	1 mm	0.4 mm	10.7 mm
11.5 mm	11.1 mm	1 mm	0.4 mm	12.1 mm
13 mm	12.6 mm	1 mm	0.4 mm	13.7 mm
15 mm	14.6 mm	1 mm	0.4 mm	15.7 mm
18 mm	17.6 mm	1 mm	0.4 mm	18.7 mm
20 mm	19.6 mm	1 mm	0.4 mm	20.7 mm

11.5 mm Parallel Implant in Subcrestal Placement



The center of the drill's single line depth marks and the beginning or end of the broad band indicate the length of the implant with a standard 1 mm cover screw in place when placed subcrestally.

The actual implant lengths from the top of the implant collar (platform) to the tip of the implant are shorter by 0.4 mm than the labeled length.

A 2 mm margin of safety, from the apical end of the implant to the adjacent vital structure, should be considered.

Subcrestal Placement Corresponding to an 11.5 mm Implant

- The implant platform will be 1 mm (or more) below the bone crest.
- Mostly used in the anterior region for aesthetics.

For subcrestal Certain Internal Connection and External Hex Connection Implant placement, drill to the drill depth mark that corresponds to the labeled implant length (11.5 mm).

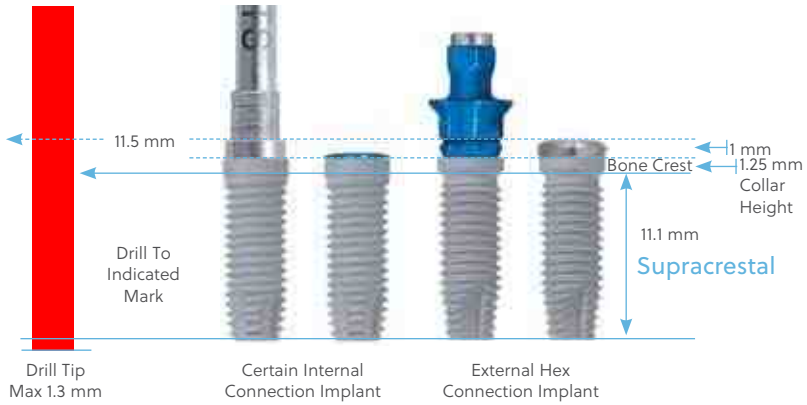
Crestal Placement Corresponding to an 11.5 mm Implant

- The implant platform will be at the bone crest.

For crestal Certain Internal Connection and External Hex Connection Implant placement, stop drilling 1 mm before the drill depth mark that corresponds to the labeled implant length (1 mm equals the traditional cover screw height).

Supracrestal Placement Corresponding to an 11.5 mm Implant

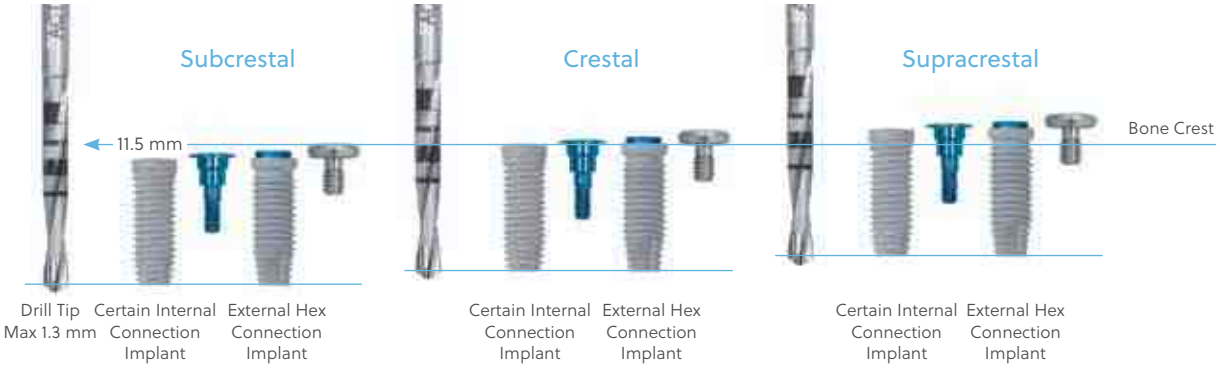
- The implant collar will be above the bone crest.



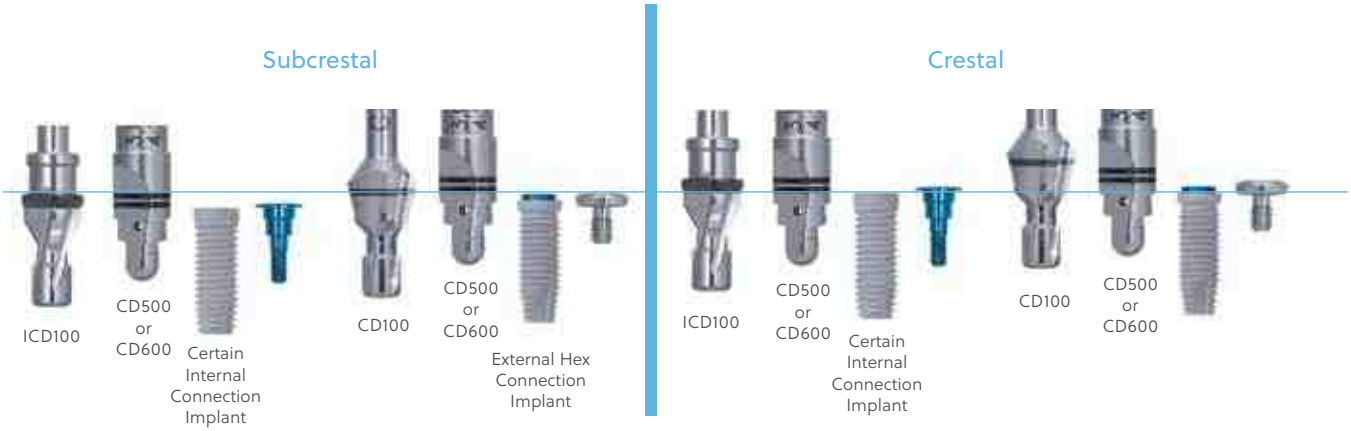
For supracrestal Certain Internal Connection and External Hex Connection Implant placement, stop drilling 2.25 mm before the drill depth mark that corresponds to the labeled implant length (2.25 mm equals the external hex cover screw height plus the implant collar height).

NOTE: A Countersink Drill is not needed for internal or external connection supracrestal implant placement.

Subcrestal, Crestal and Supracrestal Placement Comparison Corresponding to an 11.5 mm Implant



Countersink Drill Depth Marking System Corresponding to an 11.5 mm Implant



A Countersink Drill is used when placing 4, 5 and 6 mm(D) Implants subcrestally to shape the crestal bone to accept the implant collar.

For crestal placement of the implant, a Countersink Drill may be needed in dense bone due to the shape of the implant collar.

Quick Reference Subcrestal Surgical Protocol

Certain Internal and External Hex Connection Parallel Walled Implants

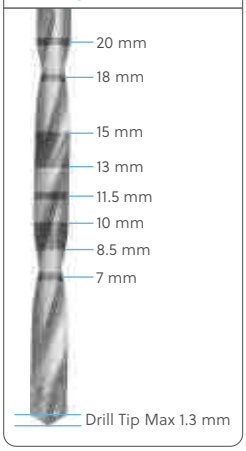
Important Considerations:

- The recommended drill speed for drills 3.85 mm diameter or smaller is 1200–1500 rpm.
- The recommended drill speed for drills 4.25 mm diameter or larger is 900 rpm.
- The recommended implant placement speed is 15–20 rpm.
- Use the drill motor/handpiece to start implant placement to ensure the implant tracks/goes into the osteotomy in the same direction as drilled.
- Verify that the drill is engaged/retained within the locking mechanism of the drill motor/handpiece, in order to prevent accidental swallowing or aspiration of the drill.
- Do not initiate implant placement with the hand ratchet as hand torquing could result in off-angle placement of the implant.
- Transition to the hand ratchet only when the implant cannot be fully seated with the handpiece.
- Apply finger pressure along the vertical axis of the ratchet driver tip and implant to ensure the driver tip does not back out of the implant's internal connection.
- When insertion torque exceeds 50 Ncm, hand ratcheting is necessary in order to fully seat the implant.
- Final Twist Drill selection is based on clinician evaluation of bone quality.
- Certain Internal Connection Driver Tips should be inspected for wear before use.
- It is recommended that reusable drills be replaced after 15 uses.
- Tapping is required for implant placement in dense bone (Type I) for parallel walled 5 mm, 6 mm, 5/4 mm and 6/5 mm diameter implants or when the insertion torque is more than 90 Ncm.

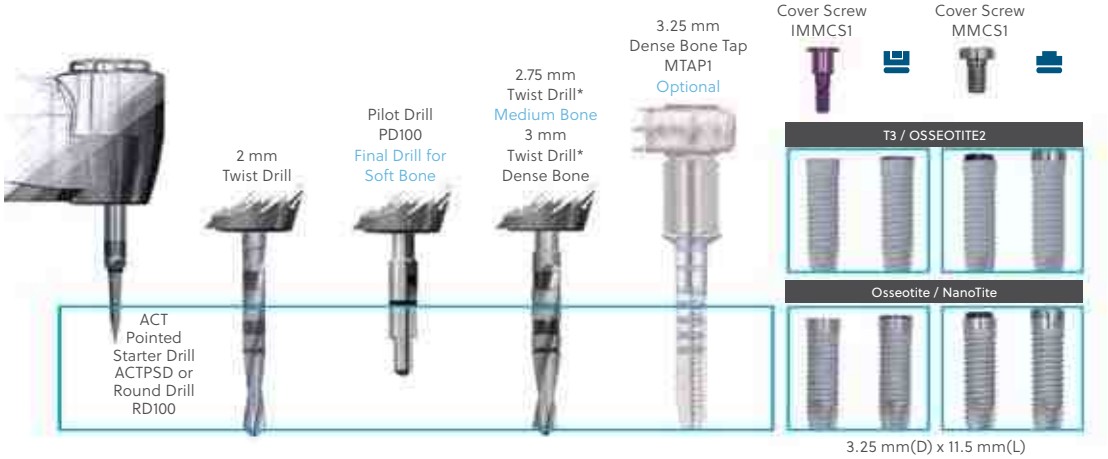
IMPORTANT NOTE: Exceeding insertion torque of more than 90 Ncm may deform or strip the driver tip or the implant's internal hex and may possibly delay the surgical procedure.

D = Diameter
P = Platform
L = Length

ACT Twist Drill Depth Marks

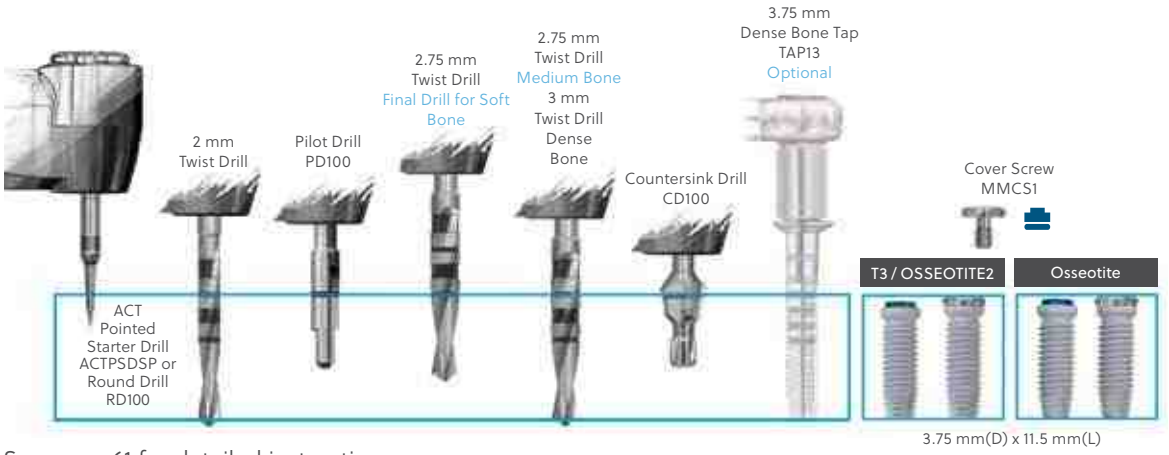


Parallel Walled 3.25 mm(D) Implants



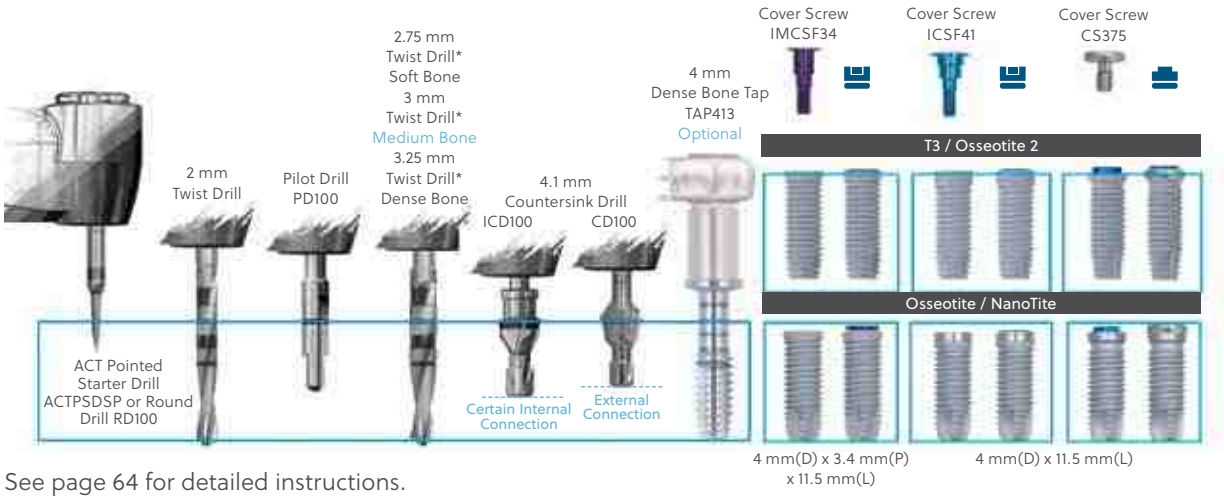
See page 59 for detailed instructions.

Parallel Walled 3.75 mm(D) Implants



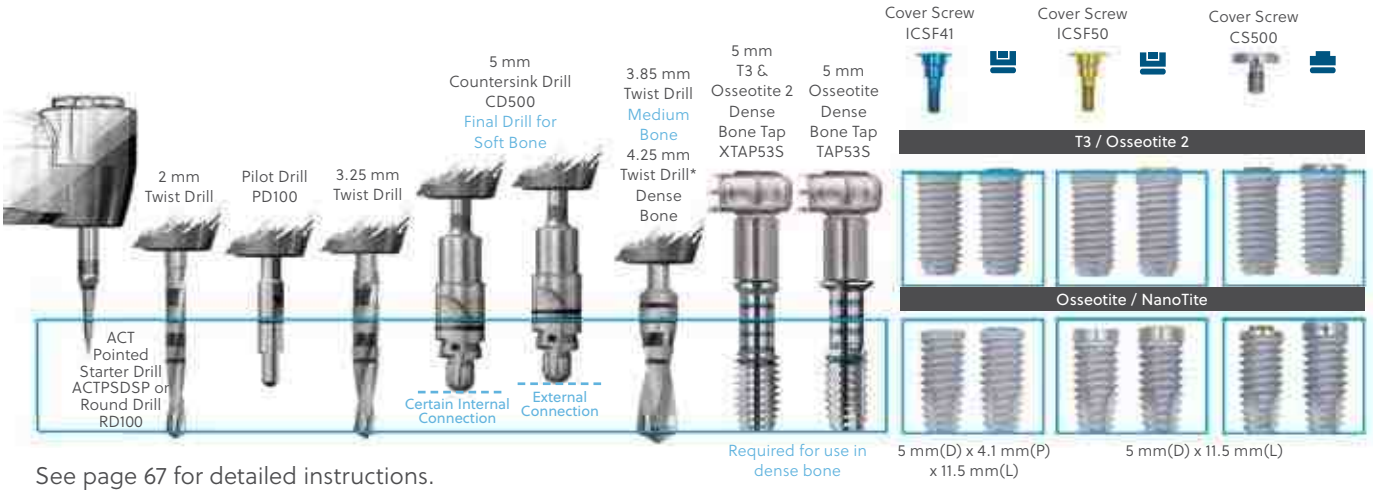
See page 61 for detailed instructions.

Parallel Walled Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implants



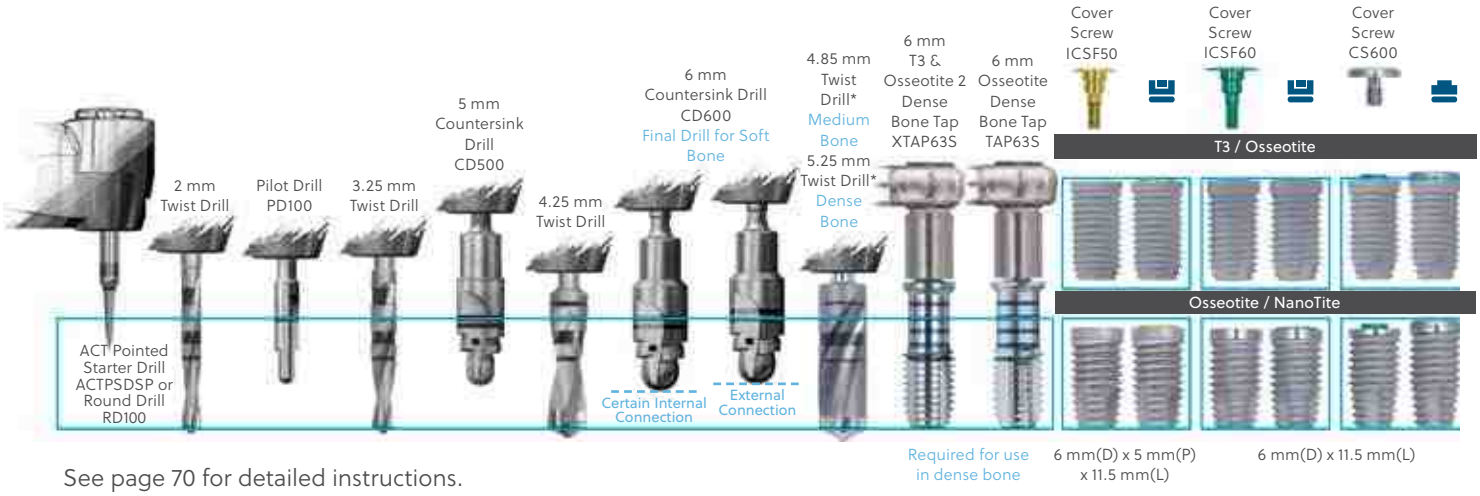
See page 64 for detailed instructions.

Parallel Walled Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implants



See page 67 for detailed instructions.

Parallel Walled Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implants



See page 70 for detailed instructions.

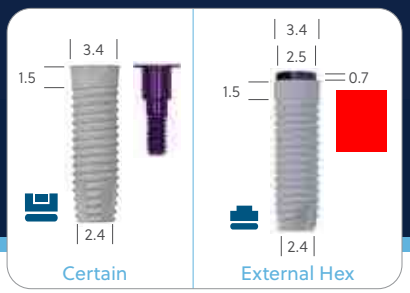
Subcrestal Surgical Protocol

Certain Internal and External Hex

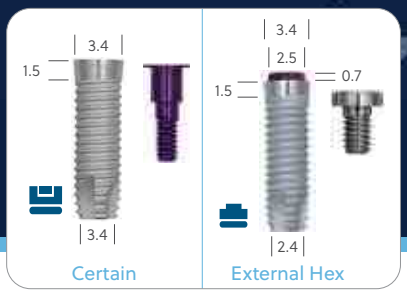
Parallel Walled 3.25 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 56-58.

T3 and Osseotite® 2



Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100 or DR100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

   Continue to advance the drill into the osteotomy to the desired depth.

   The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310]
   Gelb Radiographic Depth Gauge [XDGxx]

4. Use the Pilot Drill to shape the coronal aspect of the implant site and to provide a starting point for the next diameter drill. Drill to the depth mark. The recommended drill speed is 1200–1500 rpm.

   For soft bone (Type IV), this is the final drill. Proceed to step 1 on page 74 for implant placement.

   • Instrument needed:
   Pilot Drill [PD100]

5. Once proper alignment is verified using the Direction Indicator, proceed with the 2.75 mm Twist Drill to the desired depth for implant placement in medium bone (Type II and III). Proceed with the 3 mm Twist Drill to the desired depth for implant placement in dense bone (Type I).

   The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2.75 mm Twist Drill for medium bone (Type II and III)
   3 mm Twist Drill for dense bone (Type I)

Optional Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

Optional Step

If placing a 3.25 mm(D) Implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is recommended.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

• Instruments needed:
Handpiece Connector [MDR10], Bone Tap [MTAP1 or MTAP2], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench [H-TIRW] Ratchet Extension [RE100 or RE200]

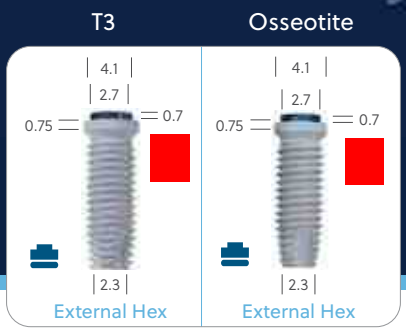
Proceed to step 1 on page 74 for implant placement.

For more information on various bone densities, please see page 12.

Subcrestal Surgical Protocol

External Hex Connection
Parallel Walled 3.75 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 56-58.



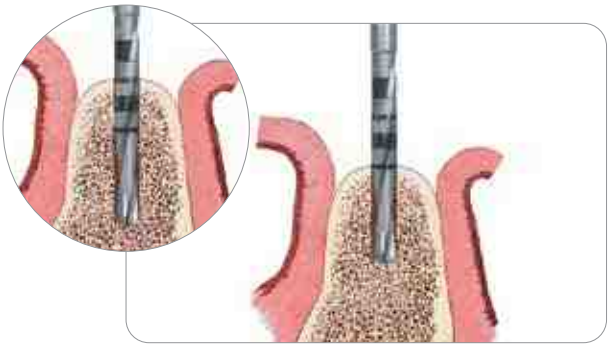
1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

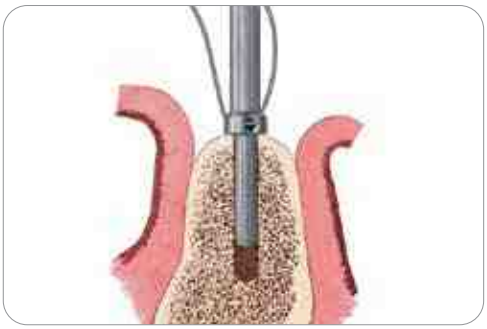
   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]



3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



4. Use the Pilot Drill to shape the coronal aspect of the implant site and to provide a starting point for the next diameter drill. Drill to the depth mark. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Pilot Drill [PD100]

Final Twist Drill Step for a Parallel Walled 3.75 mm(D) Implant in Soft Bone (Type IV)

In soft bone situations where dense cortical bone is present, it may be necessary to prepare the coronal aspect of the osteotomy.

5a. After preparing the osteotomy with the PD100 Pilot Drill, proceed with the 2.75 mm Twist Drill* to the first depth mark (7 mm).

Proceed to step 6 for soft bone (Type IV).

Final Twist Drill Step for a Parallel Walled 3.75 mm(D) Implant in Medium (Type II and Type III) to Dense Bone (Type I)

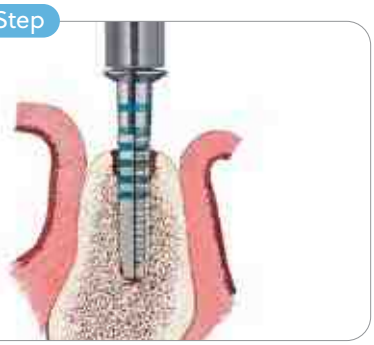
5b. Once proper alignment is verified using the Direction Indicator, proceed with the 2.75 mm Twist Drill to the desired depth for implant placement in medium bone (Type II and III). Proceed with the 3 mm Twist Drill to the desired depth for implant placement in dense bone (Type I). The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2.75 mm Twist Drill for medium bone (Type II and III) and 3 mm Twist Drill* for dense bone (Type I)

6. Using the Countersink Drill, prepare the coronal aspect of the osteotomy to accept the 4.5 mm flared cover screw of the 3.75 mm(D) implant for subcrestal placement. Drill to the center of the depth mark for subcrestal placement. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Countersink Drill [CD100]

Optional Step



Optional Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 3.75 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is recommended.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the tap may require the use of the Ratchet Extension and the Ratchet Wrench. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Dense Bone Tap - 3.75 mm(D) [TAP10, TAP13 or TAP20], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench [H-TIRW] and Ratchet Extension [RE100 or RE200]

Proceed to step 1 on page 74 for implant placement.

For more information on various bone densities, please see page 12.

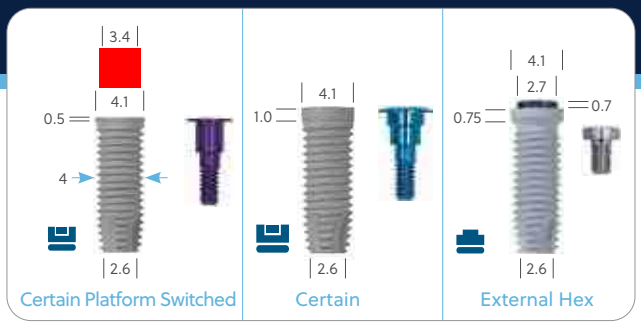
Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

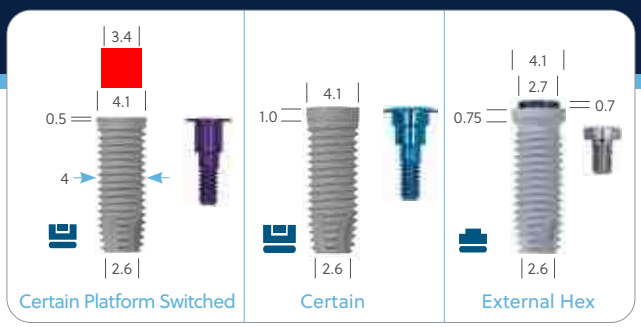
Parallel Walled Platform Switched 4 mm(D) x 3.4 mm(P) and 4 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 56-58.

T3 and Osseotite 2



Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]

4. Use the Pilot Drill to shape the coronal aspect of the implant site and to provide a starting point for the next diameter drill. Drill to the depth mark. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Pilot Drill [PD100]

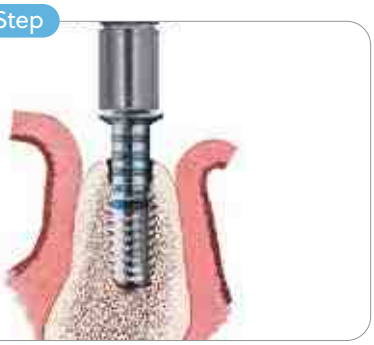
5. Once proper alignment is verified using the Direction Indicator, proceed with the 2.75 mm Twist Drill to the desired depth for implant placement in soft bone (Type IV). Proceed with the 3 mm Twist Drill to the desired depth for implant placement in medium bone (Type II and III). Proceed with the 3.25 mm Twist Drill for implant placement in dense bone (Type I). The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2.75 mm Twist Drill for soft bone (Type IV), 3 mm Twist Drill* for medium bone (Type II and III) and 3.25 mm Twist Drill* for dense bone (Type I)

6. Using the Countersink Drill, prepare the coronal aspect of the osteotomy to accept the 4 mm(D) implant collar. Drill to the top edge of the depth mark for subcrestal placement of Certain Internal Connection Implants. Drill to the center of the depth mark for subcrestal placement of External Hex Connection Implants. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   - Countersink Drill [ICD100]
   - Countersink Drill [CD100]

Optional Step



Optional Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

If placing a 4 mm(D) x 3.4 mm(P) or 4 mm(D) Implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is recommended.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Bone Tap [TAP410, TAP413 or TAP420], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench [H-TIRW] and Ratchet Extension [RE100 or RE200]

Proceed to step 1 on page 74 for implant placement.

For more information on various bone densities, please see page 12.

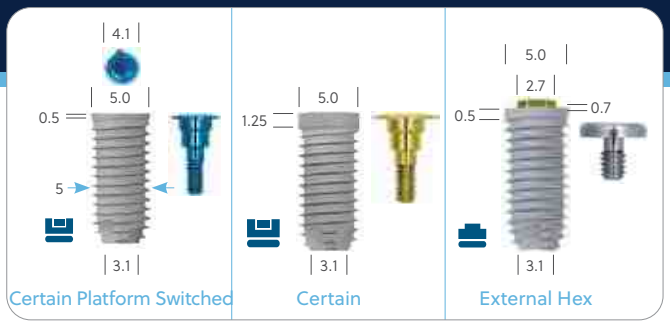
Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

Parallel Walled Platform Switched 5 mm(D) x 4.1 mm(P) and 5 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 56-58.

T3 and Osseotite 2



Osseotite

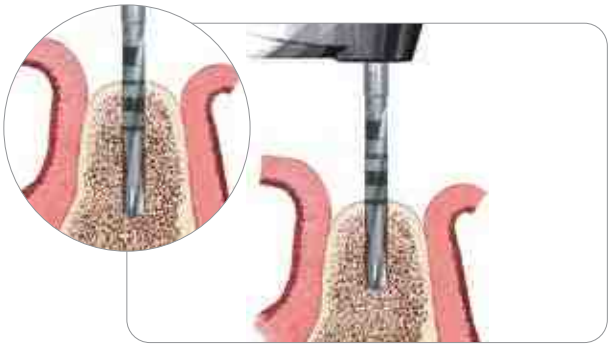
1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]



3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]

4. Use the Pilot Drill to shape the coronal aspect of the implant site and to provide a starting point for the next diameter drill. Drill to the depth mark. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Pilot Drill [PD100]

5. Once proper alignment is verified using the Direction Indicator, proceed with the 3.25 mm Twist Drill to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   3.25 mm Twist Drill

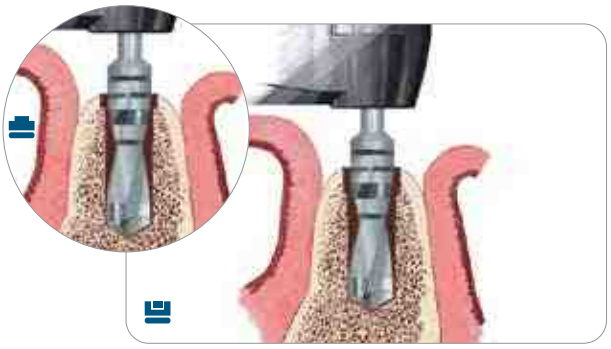
6. Use the 5 mm(D) Countersink/Pilot Drill to shape the coronal aspect of the implant site. For subcrestal placement of a Certain Internal Connection Implant, drill to the top edge of the top depth mark. For subcrestal placement of an External Hex Connection Implant, drill to the center of the bottom depth mark. The recommended drill speed is 900 rpm.

   • Instrument needed:
   5 mm Countersink/Pilot Drill [CD500]

   For soft bone (Type IV), this is the final drill. Proceed to step 1 on page 74 for implant placement.

7. Once the coronal aspect of the osteotomy has been prepared, proceed with the 3.85 mm Twist Drill to the desired depth for implant placement in medium bone (Type II and III). Proceed with the 4.25 mm Twist Drill to the desired depth for implant placement in dense bone (Type I). The recommended drill speed is 900 rpm.

   • Instruments needed:
   3.85 mm Twist Drill for medium bone (Type II and III) and
   4.25 mm Twist Drill for dense bone (Type I)



Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

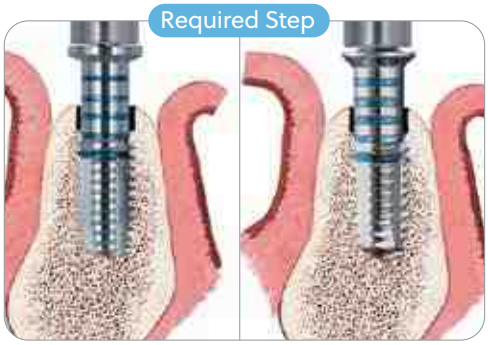
If placing a 5 mm(D) x 4.1 mm(P) or 5 mm(D) implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is recommended. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench.

• Instruments needed:
Handpiece Connector [MDR10], Bone Tap [XTAP58S, XTAP53S or XTAP518S], Ratchet Wrench [WR150] or High Torque, Indicating Ratchet Wrench [H-TIRW] and Ratchet Extension [RE100 or RE200]

Proceed to step 1 on page 74 for implant placement.

For more information on various bone densities, please see page 12.



Osseotite 2 | Parallel Walled Implants Except for Osseotite 2

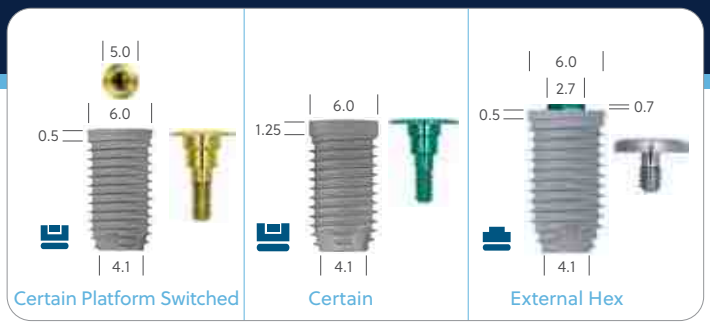
Subcrestal Surgical Protocol

Certain Internal and External Hex Connection

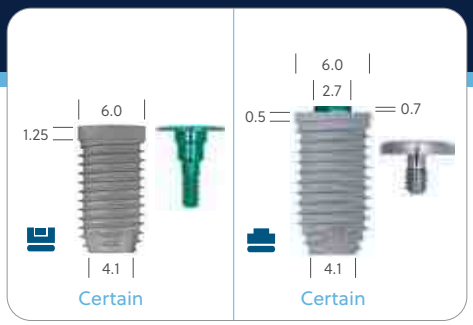
Parallel Walled Platform Switched 6 mm(D) x 5 mm(P) and 6 mm(D) Implants

For a quick reference guide to implant placement, please refer to page 56-58.

T3 and Osseotite 2



Osseotite



1. Once the implant site has been determined, mark the site with the ACT Pointed Starter Drill or Round Drill and penetrate the cortical bone to the depth mark of the drill. The recommended drill speed is 1200–1500 rpm. Use copious irrigation with sterile water or saline solution to prevent overheating of the bone during high speed drilling.

   • Instrument needed:
   ACT Pointed Starter Drill [ACTPSD] or Round Drill [RD100]

2. Proceed with the initial Twist Drill to approximately 7 mm. Thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction with the narrow end of the Direction Indicator.

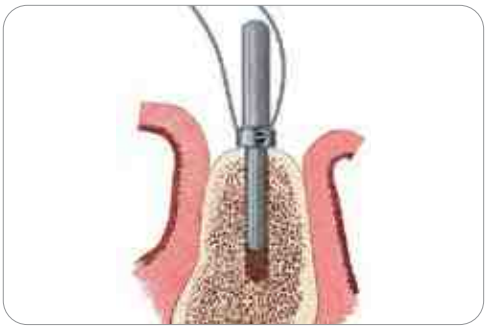
   Continue to advance the drill into the osteotomy to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instruments needed:
   2 mm Twist Drill and Direction Indicator [DI100 or DI2310]

3. Again, thread a suture through the hole of the Direction Indicator to prevent accidental swallowing. Verify the direction and position of the preparation by inserting the narrow end of the Direction Indicator into the osteotomy.

   At this step, a Gelb Radiographic Depth Gauge may also be used.

   • Instruments needed:
   Direction Indicator [DI100 or DI2310] and Gelb Radiographic Depth Gauge [XDGxx]



4. Use the Pilot Drill to shape the coronal aspect of the implant site and to provide a starting point for the next diameter drill. Drill to the depth mark. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   Pilot Drill [PD100]

5. Once proper alignment is verified using the Direction Indicator, proceed with the 3.25 mm Twist Drill to the desired depth. The recommended drill speed is 1200–1500 rpm.

   • Instrument needed:
   3.25 mm Twist Drill

6. Advance the 5 mm Countersink/Pilot Drill to the center of the top depth mark to widen the coronal aspect of the osteotomy, allowing the 4.25 mm Twist Drill to enter the osteotomy. The recommended drill speed is 900–1200 rpm.

   • Instrument needed:
   5 mm Countersink/Pilot Drill [CD500]

7. Once the coronal aspect of the osteotomy has been prepared, proceed with the 4.25 mm Twist Drill to the desired depth. The recommended drill speed is 900–1200 rpm.

   • Instrument needed:
   4.25 mm Twist Drill

8. Use the 6 mm(D) Countersink/Pilot Drill to shape the coronal aspect of the implant site. For subcrestal placement of a Certain Internal Connection Implant, drill to the top edge of the top depth mark. For subcrestal placement of an External Hex Connection Implant, drill to the center of the bottom depth mark. The recommended drill speed is 900–1200 rpm.

   • Instrument needed:
   6 mm Countersink/Pilot Drill [CD600]

   For soft bone (Type IV), this is the final drill. Proceed to step 1 on page 74 for implant placement.

9. Once the coronal aspect of the osteotomy has been prepared, proceed with the 4.85 mm Twist Drill to the desired depth for implant placement in medium bone (Type II and Type III). Proceed with the 5.25 mm Twist Drill to the desired depth for implant placement in dense bone (Type I). The recommended drill speed is 900 rpm.

   • Instruments needed:
   4.85 mm Twist Drill for medium bone (Type II and III) and
   5.25 mm Twist Drill for dense bone (Type I)

Proceed to step 1 on page 74 for implant placement.

Required Tapping Step: **For dense bone (Type I) or when the insertion torque is more than 90 Ncm.**

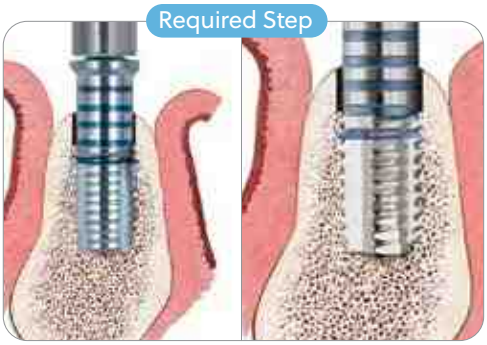
If placing a 6 mm(D) x 5 mm(P) or 6 mm(D) Implant in dense bone (Type I) or when the insertion torque is more than 90 Ncm, tapping with a Dense Bone Tap is required.

Using the Handpiece Connector, advance the tap into the prepared site at approximately 15–20 rpm. It is not uncommon for the drill unit to stall before the tap is completely seated. Final seating of the Dense Bone Tap may require the use of the Ratchet Extension and the Ratchet Wrench. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

- Instruments needed:
  Handpiece Connector [MDR10], Bone Tap [XTAP68S, XTAP63S or XTAP618S], Ratchet Wrench [WR150] or High Torque Indicating Ratchet Wrench [H-TIRW] and Ratchet Extension [RE100 or RE200]

Proceed to step 1 on page 74 for implant placement.

For more information on various bone densities, please see page 12.



Osseotite 2 Tap

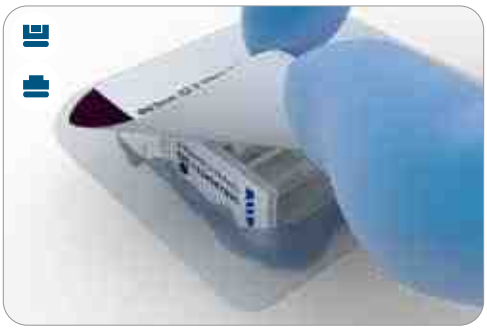
Parallel Walled Implant Tap Except for Osseotite 2

Subcrestal Implant Placement Protocol

No-Touch Delivery of Certain Internal and External Hex Connection Parallel Walled Implants

1. Remove contents from the implant box.

2. The non-sterile assistant should peel back the tray lid and drop the No-Touch Implant Tray onto the sterile drape.



3. Wearing sterile gloves, place the No-Touch Implant Tray into the appropriate location on the surgical tray.

4. Peel back the tray lid to expose the implant and cover screw.

Instructions Specific to a Certain Parallel Walled Platform Switched 4 mm(D) x 3.4 mm(P) and 3.25 mm(D) Implant

5. For the Certain Internal Connection Implant, pick up the implant from the surgical tray using the dedicated Certain Implant Placement Driver Tip. Carry the implant to the mouth facing upward to prevent accidental dislodging. Due to wear, periodic o-ring replacement is required for the Certain Internal Connection Driver Tip. Certain Internal Connection Driver Tips should be inspected for wear before use. See page 82 for additional technical tips.

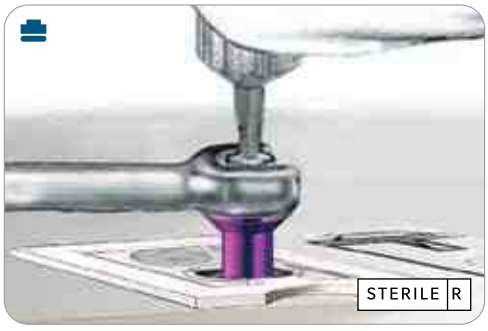
   • Instrument needed for 4 mm(D) x 3.4 mm(P) and 3.25 mm(D) Implants: Dedicated Certain 3.25 mm(D) Driver Tip [IMPDTS or IMPDTL]

   Note: The Certain Parallel Walled 4 mm(D) x 3.4 mm(P) and 3.25 mm(D) Implants require the use of a dedicated Certain 3.4 mm(D) Driver Tip [IMPDTS or IMPDTL] that is marked with a purple band on the shank. The internal connection configuration is smaller than the Certain 4, 5 and 6 mm(D) Standard Implants. The item numbers can be identified on the side of the driver tip.

   Proceed to step 6 on page 76.

Or

Instructions Specific to an External Hex Parallel Walled 3.25 mm(D) Implant



5. For the External Hex Connection Implant, pick up the implant mount from the surgical kit using the Open End Wrench. Place the mount onto the implant. Once placed on the implant, hand-tighten the mount screw using the large hex driver. Pick up the implant from the surgical tray using the Handpiece Connector. Carry the implant to the mouth facing upward to prevent accidental dislodging.

   • Instruments needed:
   Open End Wrench [CW100], Large Hex Driver [PHD02N], Implant Mount [MMC03 or MMC15] and Handpiece Connector [MDR10]

   Proceed to step 6 on page 76.

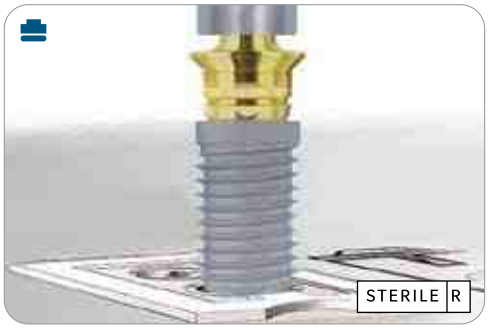
Instructions Specific to a Certain Parallel Walled 4 mm(D) or Larger Implant

5. For the Certain Internal Connection Implant, pick up the implant from the surgical tray using the dedicated Certain Implant Placement Driver Tip. Carry the implant to the mouth facing upward to prevent accidental dislodging. Due to wear, periodic o-ring replacement is required for the Certain Internal Connection Driver Tip. Certain Internal Connection Driver Tips should be inspected for wear before use. See page 82 for additional technical tips.

   • Instrument needed for 5 mm(D) x 4.1 mm(P), 6 mm(D) x 5 mm(P) and 4, 5 and 6 mm(D) Implants:
   Dedicated Certain Standard Driver Tip [IIPDTUS or IIPDTUL]

Or

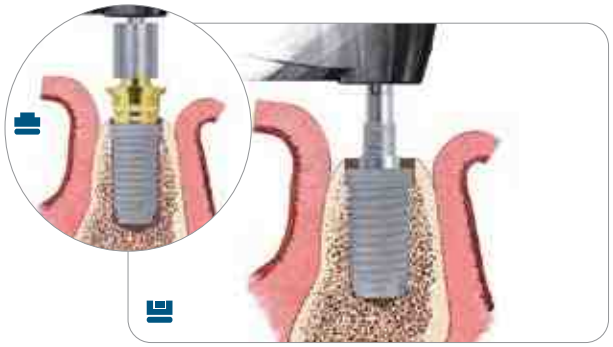
Instructions Specific to an External Hex Parallel Walled 3.75 mm(D) or Larger Implant



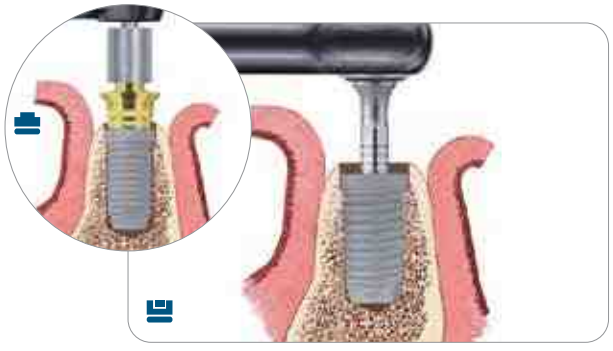
5. For the External Hex Connection Implant, pick up the implant from the surgical tray using the Handpiece Connector.

   • Instrument needed:
   Handpiece Connector [MDR10]

   Optional Step for External Hex Implant Placement Between or Adjacent to Teeth: **Remove the pre-attached mount and replace with the standard (long) mount from the surgical kit for 3.75, 4, 5 and 6 mm(D) Implants. Fully seat the mount and hand-tighten the mount screw using the hex driver.**



6. Place the implant in the prepared site at approximately 15–20 rpm. It is not uncommon for the handpiece to stall before the implant is completely seated. In dense bone (Type I), tapping is required prior to placement of a 5 mm(D) x 4.1 mm(P), 6 mm(D) x 5 mm(P) and 5 and 6 mm(D) Implants and is optional for 4 mm(D) x 3.4 mm(P), 3.25, 3.75 and 4 mm(D) Implants.

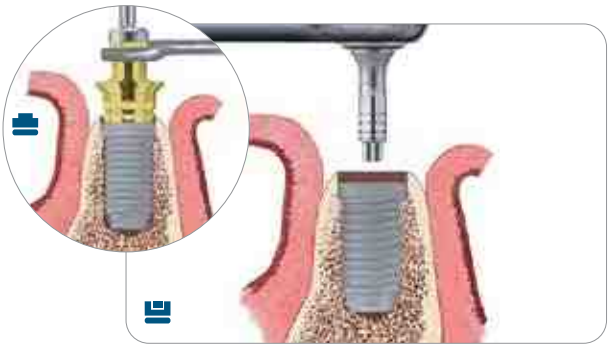


7. Final seating of the implant may require the use of the Ratchet Wrench and Certain Ratchet Extension. Verify that the Ratchet Extension is engaged/retained within the Ratchet Wrench [WR150 or H-TIRW], in order to prevent accidental swallowing or aspiration of the Ratchet Extension.

   • Instruments needed:
   Ratchet Wrench [WR150], High Torque Indicating Ratchet Wrench [H-TIRW], Certain Ratchet Extension [IRE100U or RE200U] and External Hex Connection Ratchet Extension [RE100 or RE200]

8. To remove the Certain Ratchet Extension from the implant, lift straight up and out.
To remove the implant mount, place the Open End Wrench onto the mount. Loosen the screw at the top of the mount with a Large Hex Driver or the Large Hex Driver Tip inserted into the Right-Angle Driver and rotate counter-clockwise. After the screw is completely loosened, rotate the Open End Wrench counter-clockwise slightly, remove the Mount Driver Tip and Open End Wrench at the same time.

- Instruments needed:
  Open End Wrench [CW100], Large Hex Driver Tip [RASH3N] and Right-Angle Driver [CATDH] or Large Hex Driver [PHD02N]



9. If performing a two-stage surgical protocol, pick up the Cover Screw from the No-Touch Implant Tray with the Implant Placement Driver Tip or Large Hex Driver and place it onto the implant.

NOTE: When using the Certain Implant Placement Driver, reduce the torque setting on the drill unit to 10 Ncm. Tighten the cover screw to 10 Ncm.

- Instruments needed:
  Implant Placement Driver Tip [IIPDTUS or IIPDTUL] and Large Hex Driver [PHD02N]

Or

If performing a two-stage surgical protocol, pick up the Cover Screw from the No-Touch Implant Tray with the Small Hex Driver [PHD00N] and place it onto the implant. Thread a suture through the hole to prevent accidental swallowing. Tighten the cover screw to 10 Ncm.

NOTE: At this step, a temporary healing abutment may be placed in lieu of a cover screw when performing a single-stage surgical protocol. Tighten the healing abutment to 20 Ncm.

10. Reposition the soft-tissue flaps and secure with sutures.

Key considerations for Tapered and Parallel Walled Implants

Certain Internal and External Hex Connection

T3 and Osseotite Tapered Implant with Certain Internal connection

T3 PRO Tapered Implant with Certain Internal connection

T3 and Osseotite Tapered Implant with External Hex connection

T3 and Osseotite Parallel walled Implant with Certain Internal connection

Surgical Indexing

Surgeon

1. For surgical implant placement of a Certain or External Hex Implant, follow the normal protocol as described in the previous sections.

Surgical Indexing

2. A surgical index may be made at stage one or stage two surgery to facilitate the fabrication of a provisional restoration. This can be accomplished by using a Pick-Up Impression Coping (or a Hexed Temporary Cylinder) with retention, a waxing screw and medium-to-heavy body impression material.

Creating a Surgical Indexing

3. Select the proper Pick-Up Impression Coping by matching it with the implant diameter platform.

Certain Internal Connection Implants			
Diameter Platform			
4/3 mm 3.25 mm	5/4 mm 4.0 mm	6/5 mm 5.0 mm	6.0 mm
3.4 mm	4.1 mm	5.0 mm	6.0 mm

External Hex Connection Implants				
Diameter Platform				
3.25 mm	3.75 mm	4.0 mm	5.0 mm	6.0 mm
3.4 mm	4.1 mm	4.1 mm	5.0 mm	6.0 mm

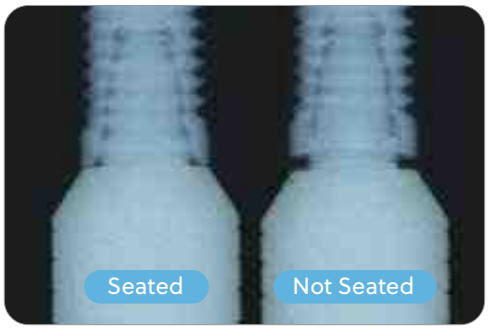
Activate the fingers using the QuickSeat® Activator Tool. Place the Pick-Up Impression Coping or the Temporary Cylinder into the implant, line up the hex and press firmly until feeling a tactile click.

Or

Place the Pick-Up Impression Coping or the Temporary Cylinder on the implant and engage the hex.

Thread the Pick-Up Impression Coping Screw or Waxing Screw into the implant until finger tight. Tighten the screw using the Large Hex Driver. If the Impression Coping touches the adjacent teeth, the Impression Coping may need to be modified with a bur or disc.

4. If flapless surgery is performed or when the index is made at stage two surgery, take a radiograph of the interface to verify complete seating of the coping on the implant. Place the film or digital sensor perpendicular to the interface of the coping on the implant.



5. Syringe a medium-to-heavy body impression material around the impression coping or temporary cylinder and over the occlusal surfaces of the adjacent teeth (approximately 1.5 teeth on either side). Allow the impression material to set per the manufacturer's instructions. Once the material has set, remove the impression coping screw or waxing screw using the Large Hex Driver. Remove the surgical index from the mouth. Send the index to the restorative clinician so that it may be included in the package to the laboratory. Do not place a lab analog into the index.

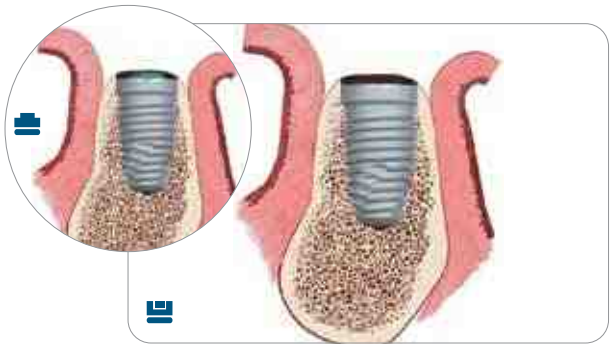
6. Select a healing abutment by matching the implant platform, preferred emergence profile diameter and collar height. The collar height should be selected by measuring from the implant platform to the highest crest of the gingival tissue and adding 1 mm.

Single-Stage Treatment Protocol

Certain Internal and External Hex Connection Tapered and Parallel Walled Implants

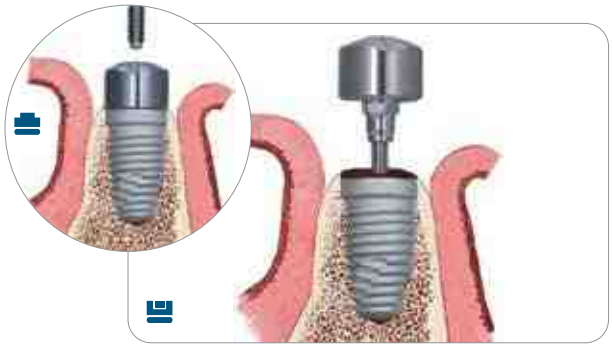
There may be several advantages to utilizing a two-stage implant system in a single-stage treatment protocol. Attaching a one-piece or two-piece healing abutment immediately following implant placement eliminates the need for a second-stage surgery. Eliminating the second surgical procedure reduces trauma and decreases treatment time, while the two-stage implant design maintains restorative flexibility.
NOTE: Tapered Implants are illustrated below. These instructions are also to be followed when using Parallel Walled Implants.

1. Fully seat the implant. If using an External Hex Connection Implant, remove the implant mount.



2. Select the appropriate one-piece healing abutment or Encode Healing Abutment depending upon the implant seating surface, tissue depth and desired emergence profile dimension.

   Bone profiling of the osteotomy may be necessary to fully seat the healing abutment onto the implant. See page 85 for bone profiling instructions.



3. Tighten the one or two-piece healing abutment screw to 20 Ncm and secure the soft-tissue flaps around it with intermittent sutures.

Mountless Delivery Protocol

Certain Internal and External Hex Connection Tapered and Parallel Walled Implants

NOTE: Tapered Implants are illustrated below. These instructions are also to be followed when using Parallel Walled Implants.

Pick-Up and Delivery of Implant

Care must be taken when inserting the Implant Placement Driver Tip into the implant. A very low RPM must be used as you approach the internal connection of the implant with the driver tip to properly align the internal hex of the implant with the external hex of the driver. Press down firmly to engage the implant securely.

NOTE: The Certain Platform Switched 4 mm(D) x 3.4 mm(P) and 3.25 mm(D) Implants require the use of a dedicated Certain 3.4 mm(D) Driver Tip [IIPDTUS or IIPDTUL] that is marked with a purple band on the shank. The internal connection configuration of these implants is smaller than the Certain 4 mm(D), 5 mm(D) and 6 mm(D) Implants. The item numbers can be identified on the side of the driver tip.

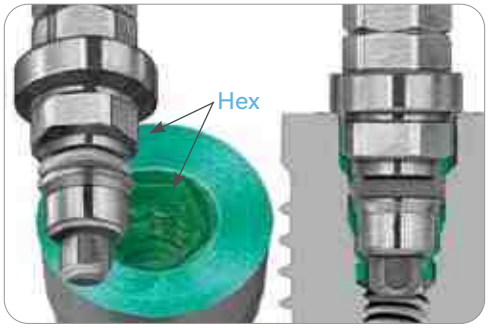
Pick-Up and Delivery of Cover Screw or Healing Abutment

The 0.048 inch tip of the Certain Implant Placement Driver Tip can be used to pick up and place the cover screw or the healing abutment.

NOTE: When using the Certain Internal Connection implant driver [IIPDTUS or IIPDTUL] to place a cover screw or healing abutment, reduce the torque setting on the drilling unit to 10 Ncm. Tighten the cover screw to 10 Ncm.

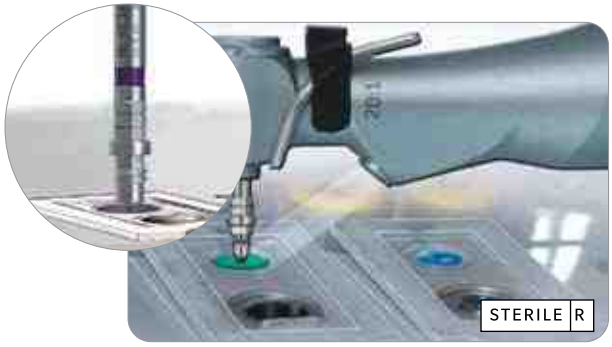
The cover screw replica portion of the driver allows for visual verification of the standard 1 mm cover screw position, making subcrestal and crestal placement of the implant predictable.

NOTE: Periodic O-ring [IRORDR] replacement is required for the Certain Internal Connection Driver. Certain Internal Connection Driver Tips should be inspected for wear before use.

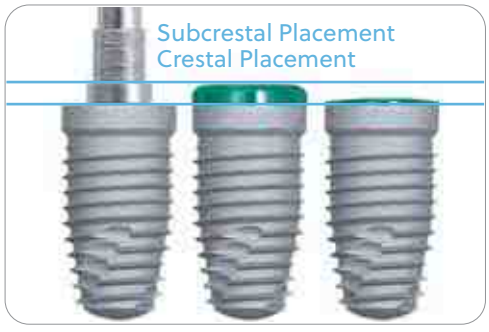


Implant And Driver Hex Design

Implant Pick-Up



Cover Screw Pick-Up



Implant Placement in Dense Bone

Certain Internal and External Hex Connection Tapered Implants Only

The specifications of Tapered Implants and the corresponding Quad Shaping Drills [QSDs] and Depth and Direction Indicators [NTDIs] are held to rigorous tolerances, which are intended to provide a closely integrated implant-to-osteotomy fit and primary stability. Because of the precise implant-to-osteotomy fit, the Tapered Implant may require reasonably higher levels of insertion torque (cutting torque resistance — the resistance created by the implant threads cutting a path into the osteotomy walls) to seat completely within the osteotomy. Higher torque may be equated with higher primary stability and hand ratcheting the implant to the final position may be required. Therefore, when placing a Tapered Implant, the insertion torque required to fully seat the implant may exceed the maximum torque capable of being delivered by an implant drill unit (typically 50 Ncm) and the need to tap the osteotomy may occur, such as in dense bone (Type I) or when the insertion torque is more than 90 Ncm. More importantly, tapping (pre-threading) the osteotomy wall reduces cutting torque resistance so that the implant can be placed more passively while still maintaining a precise implant-to-osteotomy fit.

Preparation of an Osteotomy in Dense Bone

The QSDs for placement of Tapered Implants are designed to prepare the osteotomy to match the dimension of the minor diameter of the Tapered Implant (i.e. the implant body without the threads). The Tapered Implant NTDI is also precisely matched to the minor diameter of the implant. Therefore, in order to verify the accuracy of the desired placement (bucco-lingually, mesio-distally and apico-occlusally), the NTDI should be placed into the prepared site after irrigating and suctioning bone debris from the osteotomy. Thread a suture through the hole to prevent accidental swallowing. The NTDI should fit smoothly and cleanly (without binding or snapping) to the exact depth of the preparation, mimicking the final position of the implant. Should the NTDI not seat to the desired depth of the final seating position of the implant, it is likely because the drill was not advanced to the appropriate depth landmark on the QSD or the site was inadvertently ledged (subcrestal, crestal or supracrestal). If this occurs, additional drilling may be necessary to achieve the desired position using the QSD depth landmark as guidance. When Tapered Implants are placed subcrestally, care should be taken to ensure that residualsupracrestal bone does not interfere with complete seating of the implant [Figs 1A and 1B]. Adjustment of the supracrestal bone may be required as illustrated in [Fig 2A]. After adjustment, the fit of the NTDI should be verified [Fig 2B].

Fig. 1A

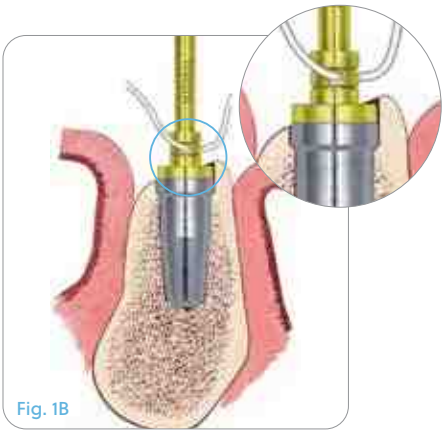


Fig. 1B

Fig. 2A

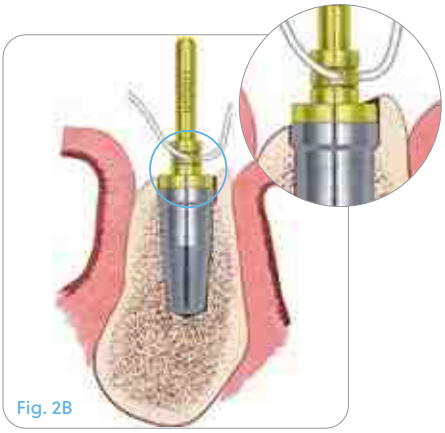


Fig. 2B

Certain Internal and External Hex Connection Tapered and Parallel Walled Implants

Using Dense Bone Taps

In dense bone (Type I) or when the insertion torque is more than 90 Ncm, it is often necessary to tap the osteotomy in order to fully seat the implant and reduce insertion torque. If tapping is not performed, deformation of the external hex or internal hex of the implant or implant placement mount may occur. Dense Bone Taps should be advanced into the prepared osteotomy with the drilling unit set to 50 Ncm and 15–20 rpm. It is not unusual for the handpiece to stop prior to the tap reaching the full depth of the osteotomy. Therefore, a hand ratchet should be used to complete the tapping process [Fig 3].

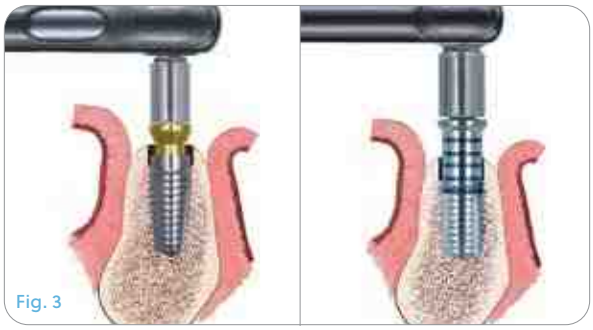


Fig. 3

Clinical Tip: A thumb or forefinger should be placed on top of the Ratchet Wrench with light downward pressure applied [Fig 4]. This helps ensure continued full engagement of the mount and prevents implant wobble during insertion and assists in keeping the orientation in the proper plane.

Fig. 4

Debris Removal from the Osteotomy

Bone debris remaining in the osteotomy after site preparation with the drills or taps should be removed by irrigation with sterile water or saline solution and suction [Fig 5], as debris in the site may increase cutting torque resistance during tapping and implant placement, or prevent the implant from fully seating.

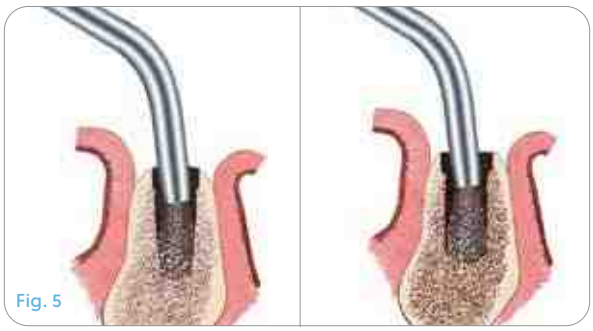


Fig. 5

Bone Profiling

ZimVie Dental Bone Profilers are used to assist in bone removal around the coronal aspect of the implant allowing for proper seating of healing abutments, prosthetic components, impression copings and final restorations. This step can be employed in one-stage or in two-stage surgical protocol. It is especially useful for subcrestal implant placement but can be utilized in select crestally placed implants as needed.
Each Bone Profiler exhibits an ISO-Latch connection design and can be used with:

- A contra-angle handpiece drill for powered use
- A Low Torque Indicating Ratchet Wrench Standard ISO 1797 Adapter [C9980] attachment to facilitate manual use.

Important Considerations

- ZimVie Dental Bone Profilers are available for use with Certain® and External Hex.
- Bone Profilers are provided non-sterile. The Bone Profilers are reusable up to 15 uses and require cleaning and sterilization prior to each use. For recommended cleaning and sterilization procedures of Bone Profilers, please refer to **Cleaning and Sterilization of ZimVie Kits and Instruments (P-ZBDINSTRP) available at labeling.zimvie.com.** For sterilization, utilize parameters for stand-alone Instruments.
- Bone Profilers should be inspected for wear before each use.
- Recommended Bone Profiler speed is at or below 50 rpm. Exceeding rpm may damage the implant seating surface or internal structure.
- Verify that the Bone Profiler is engaged/retained within the locking mechanism of the drill motor / handpiece, in order to prevent accidental swallowing or aspiration.
- Bone Profiler should be fully seated onto the implant site before use. Activating Bone Profiler prior to seating may damage the implant seating surface or internal structure.

Directions For Use

1. Attach Bone Profiler to the appropriate delivery tool:
   - Powered use - contra-angle handpiece drill.
   - Manual use - Low Torque Indicating Ratchet Wrench Standard ISO 1797 Adapter [C9980].

   NOTE: If applicable, remove excess bone that may have grown over the cover screw and remove cover screw prior to Bone Profiler use.

2. Insert the Bone Profiler into the placed implant. Ensure the Bone Profiler guide pin is aligned coaxially with the implant.

3. Once the Bone Profiler is seated onto the implant site:
   - Powered use - start the handpiece drill rotating at or below 50 rpm, clockwise.
   - Manual use - begin rotating the Bone Profiler clockwise.

   Apply light pressure in the direction of the implant. The Bone Profiler will gradually cut away the excess bone from around the coronal aspect of the implant to allow prosthetic components to fully seat.

   NOTE: For optimal cutting, ensure cutting teeth are clear of collected debris. Excess debris may result in poor performance of the Bone Profiler, which could lead to implant connection damage.

4. Continue cutting away at the bone until the Bone Profiler no longer removes bone and excess bone has been sufficiently reduced to allow for proper seating of prosthetic components.

   NOTE: Ensure that the implant platform is cleaned from bone remnants prior to seating the restorative component.

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