

Neodent®

Ceramic Implant System

Surgical and Prosthetic Manual











A NEW MINDSET

Increasing expectations for treatments solutions, the Neodent Ceramic Implant System combines the notions of esthetic, stability and flexibility. This solution allows to immediately treat patients, thanks to the moderns naturally tapered design and wide prosthetic portfolio, achieving high-end esthetic

A new flexibility mindset

A new stability mindset

A new esthetic mindset











SUMMARY



A NEW MINDSET



IMPLANT PLACEMENT



PRE-OPERATIVE PLANNING



SOFT TISSUE MANAGEMENT



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SURGICAL PROCEDURES



PROSTHETIC PROCEDURES FOR ZI BASE



DRILLING PROTOCOL FOR THE NEODENT® ZI IMPLANT Ø 3.75



PROSTHETIC PROCEDURES FOR ZI BASE FOR C



DRILLING PROTOCOL FOR THE NEODENT® ZI IMPLANT Ø 4.3



PROSTHETIC PROCEDURES FOR CR ABUTMENT



IMPLANT PACKAGING







A NEW MINDSET

The Neodent® Ceramic implant system combines the reliable two-piece solution with a screw retained internal connection: ZiLock®, provides a solution in single unit restorations, seeking to achieve high treatment performance with natural esthetic excellence. The procedures are

standardized and have straightforward steps.

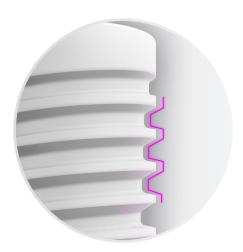
The implant prosthetic interface has a straight internal connection in which the prosthetic abutment fits inside the platform. The Neodent® Ceramic implant system has an anti-rotational function for indexing the prosthetic component.

Versatility in implant placement

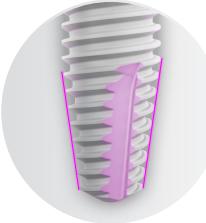
Neodent® Zi implant was designed with double trapezoidal thread from coronal part to the apex combining a naturally tapered body design: cylindrical coronal section and apically tapered, making this implant compatible with the shape of a natural tooth root, driving to achieve higher primary stability. "Trapezoidal-shaped" threads results in higher bone compaction during implant placement.⁽³⁾

Tapered implant design also result in higher stabilization values when compared to cylindrical or parallel wall designs.⁽⁴⁾

These features indicates implant placement in all bone densities according to proper drilling sequence, bringing one design to all clinical cases. Neodent® Zi presents implant diameters of 3.75 mm and 4.3 mm.



Double Trapezoidal thread design.



Apically tapered with chamber flutes.



Cilindrical coronal section.







Treatment performance

Bone deposition over the implant surface depends directly on physical interactions between cells and the implant (5)

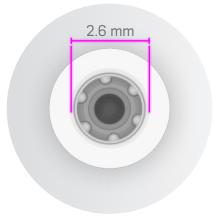
Secondary stability relies on the capacity of an implant to remain stable with live peri-implant tissue deposition and regeneration post-osseointegration. (6)

Study reveals that implant surface characteristics directly influence cell behavior, especially when it comes to adhesion, proliferation, morphometric and functional changes.⁽⁷⁾

Additionally, ceramic implants with roughened surface treatment result in an osseointegration comparable with titanium implants. [8]



Representative image of the implant surface - Scanning Electron Microscope (SEM) magnification of 5000x



Top view of the implant and the connection.

Friendly ZiLock® connection

ZiLock® is a ceramic straight internal connection with 6 lobes and 6 points. This indexation results in a precise abutment fit, protecting against rotation.

The outcome is a user-friendly system that may provide higher treatment flexibility when compared to one-piece implants.

Reliable and strong ceramic system

The unique patented ZiLock® connection is designed with a longer screw which provides a secure engagement between the ceramic implant and the ceramic abutment.

Additionally, it improves the ceramic performance by optimizing the force distribution along the internal connection.



Internal view of the implant and the connection.

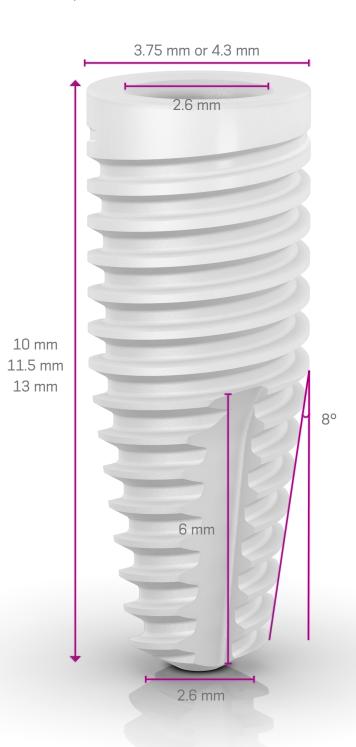


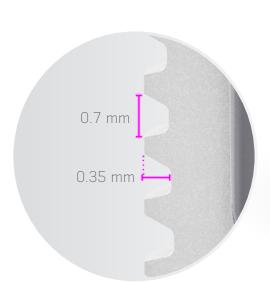


Neodent® Zi system's features

- 1 Available in the Surface treatment based on the successful Neoporos®;
- 2 Naturally tapered implant;
- 3 Compacting double trapezoidal threads;
- 4 Implant with dual screw threads for minimal trauma and improved implant placement;
- 5 Conical apex with low-activity chambers and chamber flutes designed to optimize secondary stability;
- 6 Indicated for all bone density types placement;

- Countersink is required if used in bone types I, II and III;
- 8 Bone tap is required if used in bone types I/II and post extraction.







PRE-OPERATIVE PLANNING

Applications

The Ceramic Implant is indicated as a support for single-unit prostheses, in immediate or conventional loading protocol.

Note: For immediate load application, primary stability must reach at least 35 N.cm and the patient must have physiological occlusion.

Zi implants with a diameter of 4.3 are indicated for the incisor, canine and premolar regions.

The 3.75 diameter Zi implants are indicated only for incisor and canine regions.

Implant positioning and peri-implant tissue

Implant positioning is the key to obtain the correct prosthetic restoration, and is the basis for surgical planning. Communication among patient, dentist, surgeon and lab technician is essential for reaching the desired prosthetic result.

To establish the correct planning, with the correct spatial position, choosing the ideal implant design (diameter and length), number and distribution of implants, it is recommended to:

- Perform a wax-up on the patient's study cast;
- Define the edentulous space to be restored;
- · Define the type of the coping;
- Complete a CT scan and radiographic exams.

The wax-up can then be used to fabricate the radiographic and/or surgical template, and be used as a temporary restoration. Physiological occlusion is determinant to the implant success in short and long term. Immediate loading procedures should not be performed in patients with problems in occlusion.

Note that the implant abutments should always be loaded axially, and the long axis of the implant aligned with the cusps of the opposing teeth. Extreme cusp formation should be avoided, since it may lead to overloading.

Position and number of implants are determined according to the anatomy and the prosthetic space available for each patient case. The recommendations presented here should be considered as basic guidelines for correct biological healing, adequate restorations and patient oral hygiene. The restoration design has a strong impact over occlusion and hygiene and it must be taken in consideration.

The final response of the hard and soft tissues is highly influenced by the position of the abutment, therefore the tri-dimensional positioning of the implant needs to be studied, being these:

- · Mesiodistal;
- · Buccolingual;
- Apical coronal.





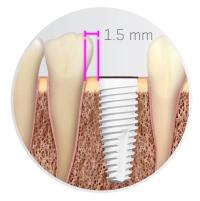


Mesiodistal implant positioning

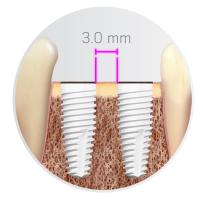
The available mesiodistal bone is an important factor when choosing the implant diameter and quantity. It is the distance between implant to teeth and implant to implant when multiple implants are required. The reference point is to measure the larger mesiodistal width of the implant, usually in the cervical area. Generally implants require a minimum of adjacent bone of 1,5 mm around it.

Rule 1 - Ideally, the distance of Neodent® Zi implants to adjacent teeth is at least 1,5 mm between the implant widest portion and the teeth, both on the mesial and distal aspects.

Rule 2 - As implants require at least 1,5 mm of adjacent bone, the distance to other implants is minimum 3 mm.



Rule 1.



Rule 2.



For single tooth restorations, the implant should be installed in the middle of the gap. The following example shows how to follow Rule 1.

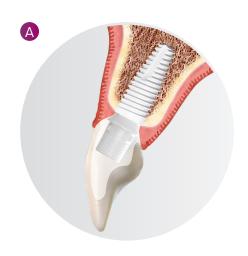
For all Neodent® Zi implants, the gap size needs to be considered for the selection of the implant diameter. Aiming to place an implant in the gap width according to the Rule 1, the following aspects can be used as an approximation:

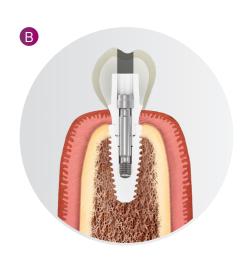
The distance between adjacent teeth is approximately 1 mm more at the bone level because of the tooth anatomy and the interproximal contact point when compared to the real bone gap width (two times 0,5 mm). So, applying Rule 1, the gap width must be 2 mm wider than the implant diameter.



The buccal and lingual bone layer must be at least 1 mm in thickness so as to contribute to a stable hard and soft tissue conditions, besides a wellfitted prosthetic restoration. Also, the surgeon needs to know if the plan is to do a screw or cement-retained prosthesis.

Note: Techniques for bone augmentation are highly advisable for ridges where the orofacial bone wall is 1 mm or less or where there is bone missing on one of the sides. These procedures should be conducted only by dentists with advanced experience in grafted bone regeneration.





Example of implant positioned for cement-retained prosthesis (A) and screw-retained prosthesis (B), where there is access to the retaining screw.

Instruments for planning

Space Planning Instrument as a diagnosis and help for implant placement

By using the 7/9 mm Space Planning Instrument in the patient's mouth or on a model, an initial analyses of the spatial relations can be obtained aiming to select the implant diameter and prosthetic reconstruction.

The Space Planning tool has two tips with 7 and 9 mm in width and a mark exactly in the middle (of 3,5 or 4,5 mm), it works as a reference for the surgeon when placing implants respecting the 1,5 mm rule of minimum adjacent periimplant bone.

The 1,5 mm rule is important for implant placement according to the teeth position, implants and anatomical structures as nerves, for example, the Space Planning Instrument can help positioning an implant closer to a foramen.



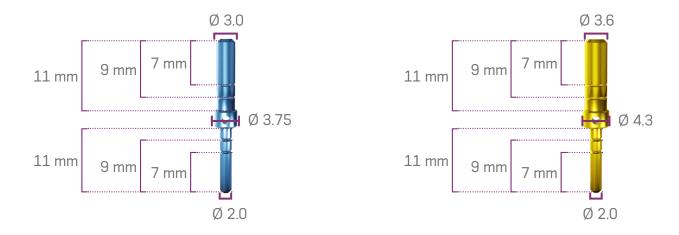




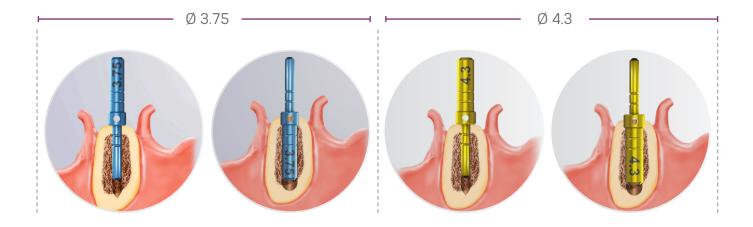
Direction Indicator pins for the diagnosis of adjacent bone

Every Direction Indicator pin in Neodent® has different designs aiming to analyze the quantity of bone around an osteotomy.

The lower part of all pins has a 2.0 diameter to be adapted after the first osteotomy. The medium part of the pin has the same width as the respective implants, based on the values written at the upper part.



The Direction Indicator allows the surgeon to check the adjacent bone as illustrated beside. Ensure to use the correct direction indicator: 128.020 for 3.75 or 128.022 for 4.3 implant.



Direction Indicator inserted after the Tapered Drill 2.0 and adapted inside the last osteotomy based on drill protocol. It helps the analysis of the remaining adjacent bone when positioned.







SURGICAL PROCEDURES

Implant bed preparation

Diameter, position and number of implants should be selected taking into account anatomy and spatial circumstances. Basic implant bed preparation involves ridge preparation and tapered drill with water cooling, for which the diameter and the design (conical) of the selected implant determine the instruments to be used. Fine implant bed preparation involves profile drilling and tapping, for which the type of implant and bone density determine the instruments to be used.

After opening a flap and exposing the bone, the preparation of the alveolar ridge begins. Once the position of the implant has been decided previously and with surgical guide aids, the

cervical cortical layer is perforated with the initial drill (step1) and verified visually for its spatial positioning. The indicated rotations per minutes (rpm) for drilling relies basically on the bone density, where in bone type I and II is applied 800-1200 rpm and type III and IV 500-800 rpm. This initial perforation works as a guide. After, the Tapered Drill 2.0 is used to reach the desired depth for the chosen implant at a bone level. The next drill is used to prepare the osteotomy following a sequence according to the implant type and diameter, as chosen in the preoperative planning. All drills are adapted to contra-angle according to the ISO 1797-1 - Dental rotary instruments - Shank.







Drilling Protocol – Precautions

The sequence of drills must be followed and performed taking into account anatomy and spatial circumstances. Wrong implant instrument combination can lead to bone damage.

Do not exceed the maximum insertion torque during the implant placement. Applying a torque

higher than 60 N.cm may cause damages and/ or break the implant. If maximum torque is reached and the insertion cannot be concluded, it is recommended to remove the implant and reprepare the implant bed for a new insertion attempt.

Bone types I and II



- · Tapered drill speed: 800-1200 rpm;
- Use of countersink is required: 300 rpm;
- Use of bone tap is required.

Bone types III and IV





- Tapered drill speed: 500-800 rpm.
- Use of Countersink is required in bone type III: 300 rpm.

Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.

Neodent® Zi Implant Insertion

- Maximum insertion torque: 60 N.cm;
- Minimum torque value for Immediate Loading: 35 N.cm.

Length markings on the drills



All conical drills have similar marks related to each implant length, regardless of diameter.









Surgical protocol – instruments to be used in Neodent® Zi 3.75 Implant

STEP	CODE	MAX. RPM BONE TYPE I and II	MAX. RPM BONE TYPE III	MAX. RPM BONE TYPE IV	IMAGE
Prepare the implant bed and initial drilling (optional)	103.170	1200	800	800	-4 (1) = = 2.0 jų
2 Tapered Drill 2.0*	103.425	1200	800	800	2.0 H
Check the long axis of the implant with Direction indicator 3.0/3.75	128.020	-	-	-	
4 Tapered 3.5	103.561	1200	800	800	35 1 35
5 Tapered 3.75	103.564	1200	800	800	
Check the long axis of the implant with Direction indicator 3.0/3.75	128.020	-	-	-	
Tapered x-ray positioner 3.75	129.020	-	-	-	
8 Countersink 3.75	103.609	300	300	N/A	3.75
9 Bone tap 3.75	111.049	30	N/A	N/A	
Implant Driver - Contra-angle	105.002	30	30	30	
Implant Driver - Torque Wrench (short)	105.001	-	-	-	

^{*}The sequence can be started directly with the 2.0 drill if the bone bed is flat.

Note: For bone types I and II is necessary to follow steps 1 to 9.

For bone type III is necessary to follow steps 1 to 8.

For bone types IV is necessary to follow only steps 1 to 7.

Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.

DRILLING Ø 3.75 ● ● ● ● ● ● ● ● ● ●







Surgical protocol – for all bone types for Neodent® Zi 4.3 Implant



Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.



Surgical Kit

To place the Neodent® Zi Ø 3.75 Implant follow the blue marks color code on the kit.









1 Implant Ø 3.75 - Preparing the site of the implant and initial drilling with the Initial Drill



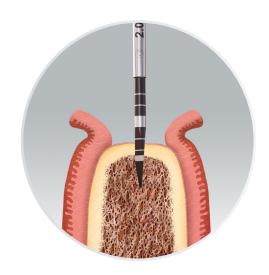




Bone types I and II 800-1200 rpm

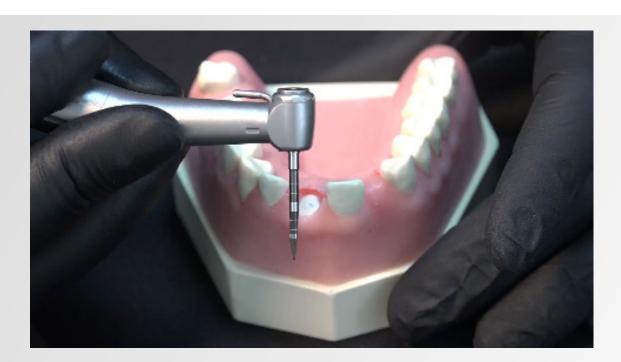


Bone types III and IV 500 - 800 rpm



Carefully reduce and smooth to provide a flat bone surface before marking the position of the implant with the initial drill. Use the initial drill about 5-7 mm appically with the rpm in accordance to the bone density.

Note: the reduction/preparation of the bone needs to be considered in the preoperative planning since it influences the choice of the implant diameter and length.









2 Implant Ø 3.75 - Tapered Drill 2.0





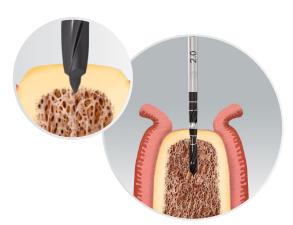
-0-0-0-0-0-0



Bone types I and II 800-1200 rpm

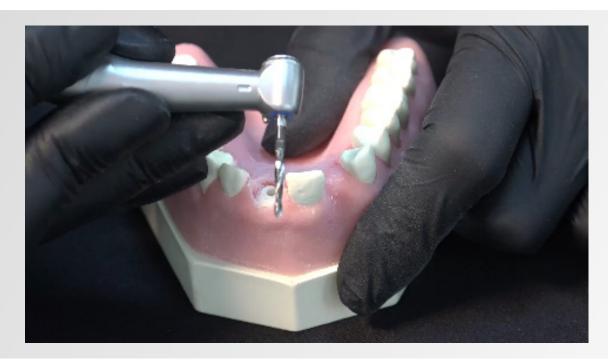


Bone types III and IV 500 - 800 rpm



Use the Tapered Drill 2.0 mm to reach the planned preparation depth. The use of the surgical probe is recommended to control the depth.

Note: the Tapered Drill 2.0 has an active tip that can be used as an initial drill. This can be performed in situations were there is a flat bone ridge and so the use of the initial drill can be avoided.









3 Implant Ø 3.75 - Check the implant axis with the Direction Indicator





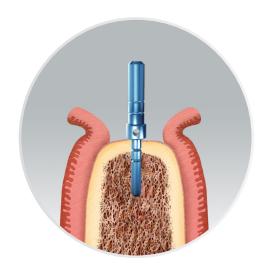


Bone types I and II 800-1200 rpm



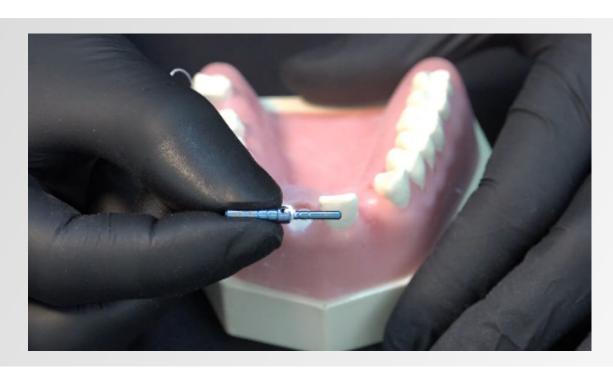
Bone types III and IV 500 - 800 rpm





After using the Tapered Drill 2.0, check the implant axis using the Direction Indicator 3.0/3.75.

Note: a periapical X-ray at this point would be recommended for checking vertical bone availability, or checking the axis in relation to adjacent roots, for example. The Direction Indicator pin is fully inserted into the drilled area, allowing to visualize the drill hole in relation to the anatomical structures.









4 Implant Ø 3.75 - Tapered Drill 3.5



short 103.562 medium 103.561 long 103.563

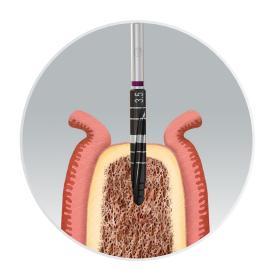


Bone types I and II 800-1200 rpm



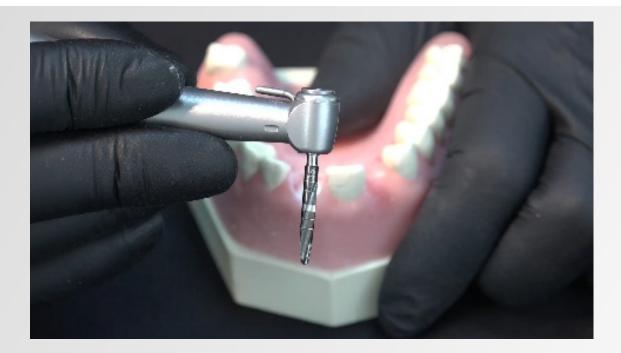
Bone types III and IV 500 - 800 rpm





Use the Tapered Drill 3.5 to reach the planned preparation depth.

*Under abundant irrigation.









5 Implant Ø 3.75 - Tapered Drill 3.75



short 103.565 medium 103.564 long 103.566

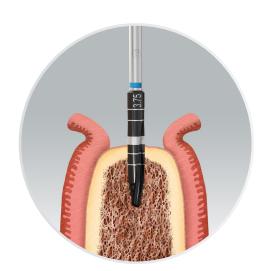


Bone types I and II 800-1200 rpm



Bone types III and IV 500 - 800 rpm





Use the Tapered Drill 3.75 to reach the planned preparation depth.

*Under abundant irrigation.









6 Implant Ø 3.75 - Check the implant axis with the Direction Indicator



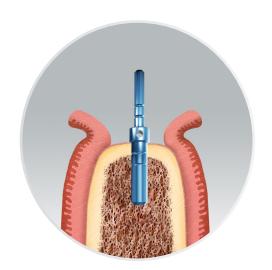




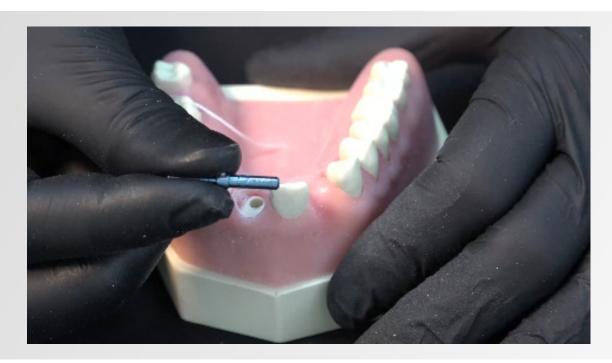


Bone types III and IV 500 - 800 rpm





After using the Tapered Drill 3.75, check the implant axis using the Direction Indicator 3.0/3.75.









7 Implant Ø 3.75 - X-Ray Positioner 3.75





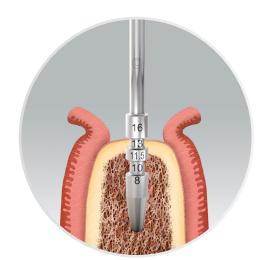


Bone types I and II 800-1200 rpm



Bone types III and IV 500 - 800 rpm



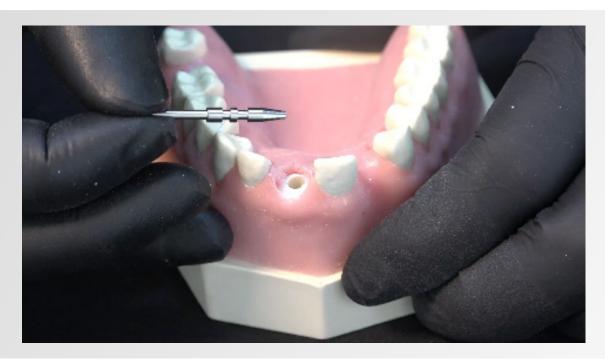


A periapical X-ray would be recommended for checking vertical bone availability, or checking the axis in relation to adjacent roots using the Tapered X-ray positioner.

Attention

- If you are placing a Neodent® Zi Implant in bone type IV: Please, stop the drilling protocol at the step 7 and place the Neodent® Zi implant;
- If you are placing a Neodent® Zi Implant in bone type I, II or III: Please move forward.

Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.









8 Implant Ø 3.75 - Countersink Drill 3.75

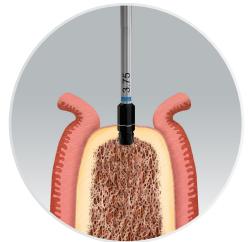








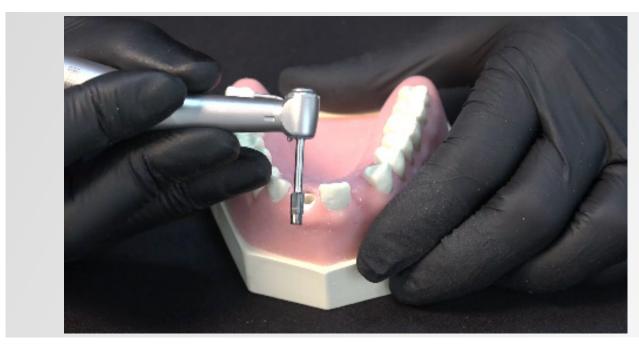
Bone types III 300 rpm



Countersink drills are employed to prepare the implant bed to widen the diameter of one tapered drill to another, in the basic instrumentation procedure. For the special bone preparation, countersink drills helps to position the platform of the implants according to the bone bed, if there is a denser cortical bone, and are generally used in this manner in bone types I, II and III. The maximum rotation speed used for these drills is 300 rpm.

Attention

- In bone types I, II and III, it is required to use the Countersink;
- If you are placing a Neodent® Zi Implant in bone type III: Please, stop the drilling protocol at the step 8 and place the Neodent® Zi implant;
- If you are placing a Neodent® Zi Implant in bone type I or II: Please move forward. Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.







9 Implant Ø 3.75 - Bone Tap 3.75







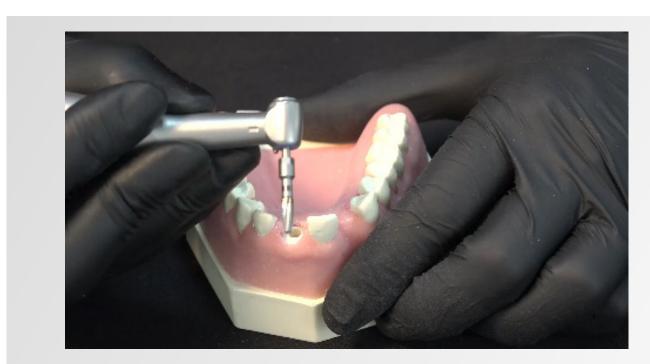
Bone types I and II Contra Angle: 30 rpm; 35 N.cm

Torque Wrench: Maximum torque of 60 N.cm

Bone taps are designed for the formation of threads in the surgical alveolus before the Neodent® Zi implants placement in hard bone, type I or type II, in the finalization process of implant bed preparation. This step is intended to keep the insertion torque at a desirable level. Note: The bone taps have the markings corresponding with implants' diameter and lengh.

In order to use the Bone Tap, follow the steps below:

Step 1: In order to initiate the Bone Tap insertion, use the Contra-Angle handpiece. Fit the Bone Tap into the Contra-Angle and set the surgical motor to maximum drilling speed of 30 rpm and torque of 35 N.cm. Start the motor and insert the Bone Tap in the surgical alveolus, maintaining the perforation axis until stability is obtained and/or the maximum torque of 35 N.cm is achieved.







 \bullet

Step 2: Then, proceed the installation with the Torque Wrench Driver, using the Implant Driver for Torque Wrench. For that, fit the Bone Tap into the Implant Driver for Torque Wrench and perform insertion movements, in clockwise direction, slightly pressing the Torque Wrench Driver, considering the maximum torque of 60 N.cm. In case there is too much resistance, it is recommended to apply countertorque and then continue the insertion. Proceed with the insertion until the Bone Tap for Ceramic Implant reaches the marking corresponding to the chosen implant. For a complete removal of the Bone Tap from the surgical cavity, reverse the Torque Wrench Driver direction to counterclockwise and remove it carefully. If performed differently, its removal can compromise thread formation.

Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.









Surgical protocol – instruments to be used in Neodent® Zi 4.3 Implant

To demonstrate the preparation of the alveolus, use as an example the presentation of \emptyset 3.75 applying the sequence of drills indicated for \emptyset 4.3.

STEP	CODE	MAX. RPM BONE TYPE I and II	MAX. RPM BONE TYPE III	MAX. RPM BONE TYPE IV	IMAGE
Prepare the implant bed and initial drilling (optional)	103.170	1200	800	800	→ INE === 20 =#
2 Tapered Drill 2.0*	103.425	1200	800	800	2.0 H
Check the long axis of the implant with Direction indicator 3.6/4.3	128.022	-	-	-	
4 Tapered 3.5	103.561	1200	800	800	
5 Tapered 4.3	103.570	1200	800	800	
Check the long axis of the implant with Direction indicator 3.6/4.3	128.022	-	-	-	
7 Tapered x-ray positioner 4.3	129.013	-	-	-	•(दंगुंह व
8 Countersink 4.3	103.610	300	300	N/A	4.3
9 Bone tap 4.3	111.050	30	N/A	N/A	43
Implant Driver - Contra-angle	105.002	30	30	30	
Implant Driver - Torque Wrench (short)	105.001	-	-	-	

^{*}The sequence can be started directly with the 2.0 drill if the bone bed is flat.

Note: For bone types I and II is necessary to follow steps 1 to 9.

For bone type III is necessary to follow steps 1 to 8.

For bone types IV is necessary to follow only steps 1 to 7.

Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.







Surgical protocol – for all bone types for Neodent® Zi 4.3 Implant



Obs: In order to prepare the surgical alveolus after extraction, use sequences of the drill used in type I bone. For mandible, use bone tap.



Surgical Kit

To place the Neodent® Zi Ø 4.3 Implant follow the yellow marks color code on the kit.









Neodent® packaging has been specially updated for easy handling and seeking to achieve a safe surgical procedure, providing practicality from implant stocking to the capture and transport and implant bed. The implant's features, such as type, diameter and length, are readily identifiable on the outside of the packaging.

Three self-adhesive labels are provided for recording in the patient's medical records and for

reporting to the prosthesis team. They also allow traceability for all articles.



Instructions on opening the implant package

1 The cardboard and blister packagings must be opened, manually, without the use of sterile gloves. Break the seal of the cardboard packaging and remove the blister. Open the blister pack. Deposit the sterile flask over the surgical field.

NOTE: The clear tube and implant must be handled with a sterile surgical glove, in a surgical environment. Hold the bottle using the non-dominant hand and take the lid off.





2 The internal support containing the implant and transfer piece must come out attached to the lid. To do so, remove the lid and the clear tube's internal support in the axial direction without making any lateral movements.







3 Keep the support stable and remove the lid.





4 For installation, capture the implant transfer piece with the Hexagonal Connection, keeping it stable and slightly rotating the internal support, searching for the perfect fit between connection and transfer piece.



5 Take the transfer-implant assembly to the surgical cavity.

Watch the illustrative video





IMPLANT PLACEMENT

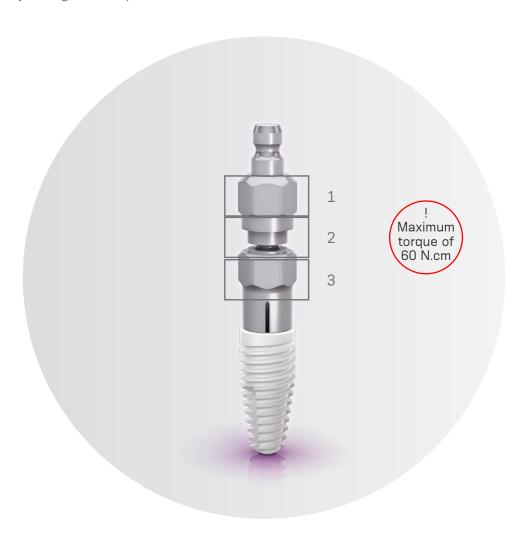
Neodent® Zi implants were developed to begin placement with the contra-angle handpiece or manually and completed with the Torque Wrench.

The maximum recommended rotation speed for the surgical motors is 30 rpm, with a maximum torque of 35 N.cm. Neodent® Zi implants are provided with a transfer piece manufactured in stainless steel, which has the function to transfer the torque applied by the connection to the implant. The transfer piece is compatible with the Neodent® Hexagonal Connection.

According to the image below, the transfer piece presents several features:

- (1) an hexagon compatible with the Neodent® Hexagonal Implant Driver this feature is used to apply torque during the installation;
- (2) an intermediate safety feature (fuse) intended to break if a torque higher than 60 N.cm is applied to the implant in order to protect the integrity of the implant;
- (3) a secondary hexagon for implant removal (counter-clockwise).

IMPLANT PLACEMENT ● ● ●













1 Adapt contra-angle implant driver

Hold the implant through the blister, and attach the contra-angle hexagonal implant driver to the Neodent® Zi implant transfer piece. All drivers for the contra-angle handpiece have metal tweezers in the active apex to keep the implant stable during transport. The torque wrench drivers do not have tweezers to keep the implants in position for transport.

2 Place the implant with the contra-angle handpiece in the implant bed with a maximum torque of 35 N.cm and speed of 30 rpm, clockwise.

Warning: Corrections in the vertical position by means of reverse rotations during surgery can lead to reduced primary or mechanical stability. Do not apply lateral forces during implant insertion.



Remove the contra-angle hexagonal handpiece driver from the transfer piece, check the perfect fit between the piece transfer and implant and fit the hexagonal torque wrench driver short for the final positioning (bone level) of the implant and torque measurement. At the end of the installation, make sure that one of the six hexagonal faces of the transfer piece, corresponding to the implant indexer, is facing the vestibular face.

Attention

The torque wrench driver should not be used to transport the implant from one place to another because the product can fall out. Apply torque until the implant reaches its final position. All torque wrenches show torque levels a value above 60 N.cm are contraindicated.





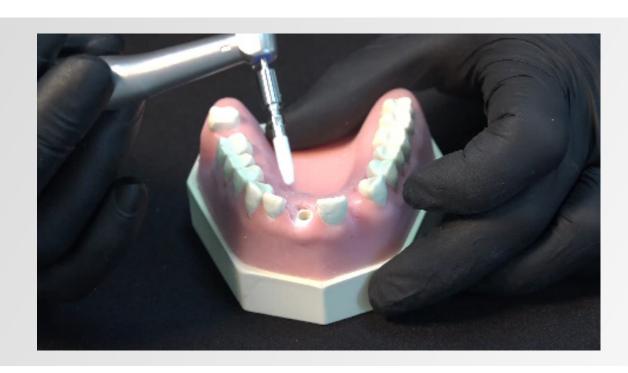




Illustrative step by step implant placement

The implant's final placement torque determines the protocol. Correct and physiological occlusion is also determinant in the definition. The following criterias need to be observed when using a immediate loading protocol:

- Torque: 35 to ≤ 60 N.cm;
- Healing Protocol: Immediate loading or selection of abutment;
- General characteristics:
- > Lateral mechanical load on provisional crowns is contraindicated;
- > Patients should present a balanced or physiological occlusion;
- > Periodontally compromised patients should have their condition controlled prior to treatment, especially when a component is exposed to the oral environment.









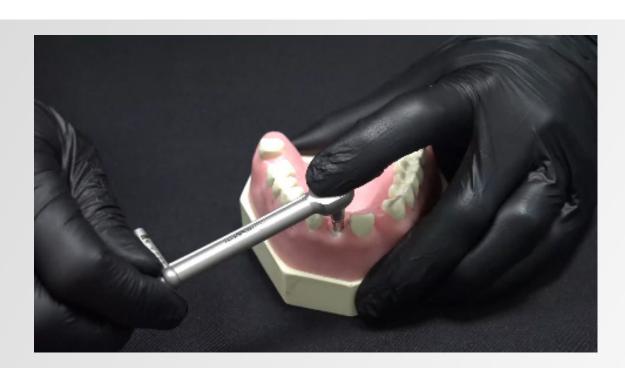
Precaution: do not exceed torque higher than 60 N.cm

The maximum insertion torque for the Neodent® Zi Implant is 60 N.cm. Applying a torque higher than 60 N.cm may cause damages and/or break the implant.

If you are placing the implant and realize that the maximum torque is close and the Transfer Piece it is not fractured, it is recommended to remove the implant and reprepare the implant bed for a new insertion attempt.

If one insists to place the implant with a higher torque, the transfer piece has a safety feature that will fracture (2). This fracture impedes the user to continue with the implant insertion. From this moment on, the removal of the implant is **mandatory**, which must be performed through the secondary hexagonal fitting in a counter-clockwise movement (3). After the removal, the substitution for a new implant is indicated.

The secondary hexagon shall only be used for implant removal. Never use this feature to insert the implant deeper.













SOFT TISSUE MANAGEMENT

Conventional loading - Soft tissue management

After implant placement with conventional loading, in order to protect the implant platform, a cover screw or a healing abutment can be used.

Two stage/ submucosal healing: For under mucosal healing (under a closed mucoperiostal flap) the use of a cover screw is indicated.

A second surgical procedure is required to uncover the implant and insert the desired prosthetic abutment.

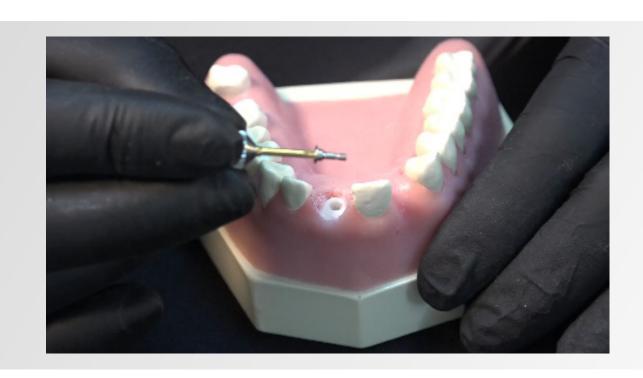
Use the Neo Screwdriver to place the cover screw on the implant. Maximum torque: 10 N.cm.







Neo Screwdriver



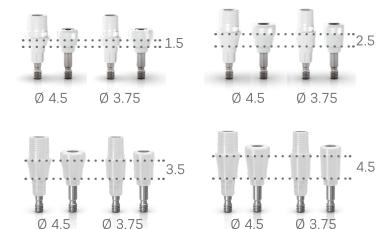




Conventional loading - Healing phase

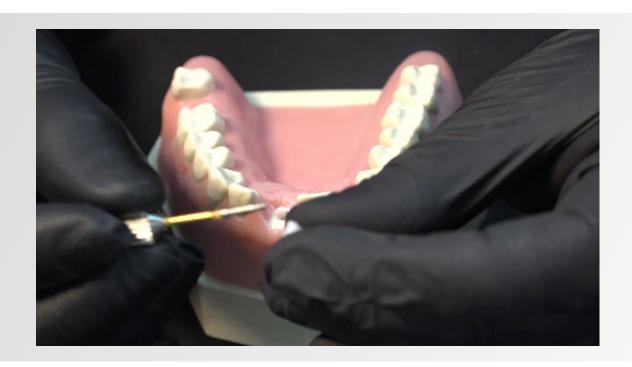
Neodent® Zi healing abutments are available in different diameters and gingival heights. This solution is designed to create a suitable gingival emergence profile, which adapts to the final abutments. The correct choice of this healing abutment determinates the adequate soft tissue healing process, maintaining the indicated biological distance, as described in the figure at the side.

Use the Neo Screwdriver to place the healing abutment on the implant. Maximum torque: 10 N.cm.









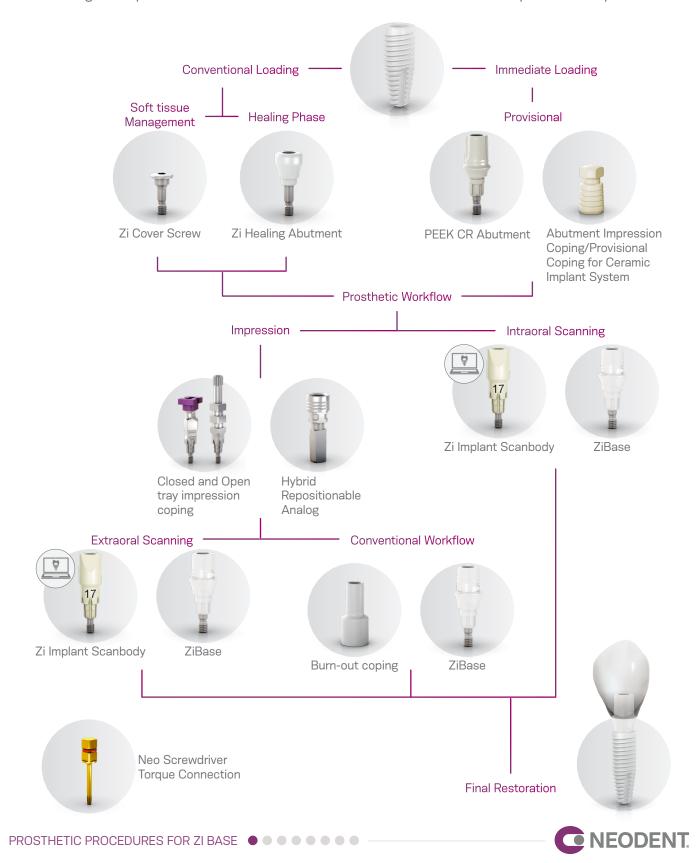




PROSTHETIC PROCEDURES FOR ZI BASE

After the surgical procedure, the prosthetic workflow should be followed. This means the most appropriate immediate or conventional workflow and its related prosthetic abutments.

The Neodent® Zi implant prosthetic system provides flexibility, stability and esthetics to the final restoration. It allows single unit prosthesis for screw or cement-retained restorations on implant level impression.





4

Temporary Abutment - The PEEK CR Abutment

The PEEK CR Abutment is a provisional prosthetic solution to be used with a temporary crown. Indicated to remain into the mouth until 6 months, a compatible provisional coping is available to facilitate crown manufacturing and delivery an esthetic solution during provisional prosthetic step.

It can be used before the installation of the final abutment to maintain, stabilize and shape soft tissues during the healing phase.

Use the Neo Screwdriver to place the PEEK CR Abutment on the implant. Maximum torque: 10 N.cm.

It is important to keep in mind that this abutment cannot be placed in occlusion and under lateral forces.



PEEK CR Abutment



Neo Screwdriver Torque Connection and Torque Wrench



Attention

• Applying a torque higher than 10 N.cm may cause damages and/or break the implant.

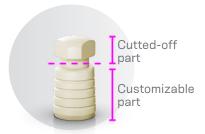




Temporary Abutment – Provisional Coping CR Abutment

Follow these steps to make a provisional crown:

- Place the PEEK CR Abutment on the implant.
- The upper portion of the Abutment Impression Coping/Provisional Coping for Ceramic Implant System must be cutted-off and the provisional crown produced on the remaining part.
- · This ensemble needs to be cemented with provisional cement over the PEEK CR Abutment.



Impression Coping / **Provisional Coping** CR Abutment







Intraoral scanning

The scanbody is used on implant level in order to transfer their positions following the scanning to use in CAD/CAM procedure. The Neodent® scanbodies are made in PEEK, an opaque polymer that eliminates the need for any type of opaque spray.





Scanbody

Neo Screwdriver

To perform the intraoral scanning the dental surgeon should use the Zi scanbody; select correctly the indication, material and specify which is the element implant related; follow the step by step indicated by the scanner manufacturer. The digitalization of a scanbody has to copy as most details as possible and finalize the scan process following the software instructions.

The final scanning files should be sent to the CAD software (Chairside or send to a dental laboratory by CAD/CAM system) or e-mail.

The laboratory will receive the final scanning files and will design (CAD software) the future prosthesis. After that, the design will be transferred to the milling machine (CAM). Once the prosthesis is milled, the fit should be tried on onto de ZiBase.

Notes:

- The flat surface of the scanbody should be positioned towards the oral cavity;
- Make sure that the scanbody is properly seated;
- Scanbodies with damaged implant plataform may lead to digitalization problems
- After digitalization, design the prosthesis in the CAD software.
- *Libraries are available for the following softwares: CARES Visual, exocad GmbH, Dental Wings Inc and 3Shape A/S at www.neodent.com/cadcam. Make sure that your CAD library is updated.













Extraoral scanning

Once the plaster model is made it can be scanned. This technique requires a plaster model scanner or a bench scanner. Neodent® Digital Solutions recommends the following scanners: Straumann CARES and Dental Wings 7Series.

The steps set out by the scanner's manufacturer must be followed, the important thing is to scan the plaster model with and without the removable gum (usually carried out at different steps) and, to scan the scanbody of the implant or abutment in the right position.

The laboratory will receive the final scanning files and will design (CAD software) the future prosthesis. After that, the design will be transferred to the milling machine (CAM). Once the prosthesis is milled, the fit should be tried on onto de ZiBase.







PROSTHETIC PROCEDURES FOR ZI BASE O O O O O

Impression taking

The Zi Impression Coping allows transferring, by means of molding, the tridimensional position of the Neodent® Zi implant. The solution is for molding techniques with closed and open tray.

Within the closed tray technique, a negative impression of the post is made using an impression material. The impression coping is then removed from the oral cavity and adapted to the impression material in the tray.

- Place the Zi Impression Coping on the implant with the Neo Screwdriver (maximum torque: 10 N.cm);
- · Perform the impression;
- Place the Zi Impression Coping and Hybrid Repositionable Analog on the mold.









Within the open tray technique, the body of the Impression Coping should be fit into the implant selected and rotate the screw manually or with the aid of the Torque Connection. The transfers should be screwed-out and removed from the patient's mouth with the impression material in the tray. Ensure that you do not move the Impression Coping while fitting of the analog.

- Place the Zi Impression Coping on the implant;
- · Perform the impression;
- Place the Hybrid Repositionable Analog on the mold.



After performing the impression:

- Ensure that the impression coping is correctly adjusted and positioned.
- Place the analog on the right position.
- Continue with placing the artificial gingiva and pouring the plaster mixture. Check if there are no bubbles and if all the details have been completely copied.
- Neodent® has developed a new generation of analogs, which can be used either in the conventional (plaster model) or the digital workflows (printed model), for prototyped models. They are called Hybrid Repositionable Analogs and are available for Neodent® Zi implant portfolio.

Final restoration: Burn Out Coping

The Burn-Out Coping is a device designed for the confection of ceramic infrastructures of unitary prostheses cemented over the ZiBase.

To produce the prosthesis, the desired geometry needs to be produced, in the laboratory, in appropriate wax and placed on the Burn-Out coping. In the press technique, the wax is removed and the ceramic material is injected.



Burn-out coping features.





Final restoration: ZiBase abutment

Zi Base Abutment covers single-unit final restorations for Neodent® Zi implant system. It can be used according a conventional workflow with ceramic injection molding by CAD/CAM system.

This abutment is recommended for cement-retained or screw-retained prostheses, though cementation of the ZiBase must be carried out outside the patient's mouth, in the laboratory, using a chemically activated resin cement. This step eliminates the risk of excess cement on periimplant tissues. Subsequently, the structure is screwed onto the implant.

For ZiBase cementation follow these steps:

- Place the abutment over the plaster model or 3D model:
- Pass the fixation screw through it with a slight tightening;
- Protect access to the screw throughout the cementation process. For cement handling, follow its manufacturer's instructions;
- Apply the cement in the external portion of the ZiBase and press the restoration, fit it according to

the three available indexes guides;

- Press the restoration over the ZiBase and immediately remove any excessive cement;
- After cement setting, unscrew the structure from the Analog and remove the remaining cement of the ZiBase edge;
- Screw the ensemble (Crown+ZiBase) into the patient's mouth.
- * It is recommended to use chemically activated resin cements for bonding on ceramic (e.g. Panavia
- Kuraray). On Lithium Dissilicate, the use of IVOCLAR Multilink cement is required.

Use the Neo Screwdriver Torque Connection to place the ZiBase on the implant. Maximum torque: 32 N.cm.





Neo Screwdriver Torque Connection and Torque Wrench



* If the rehabilitation followed the digital workflow it is necessary to use the correct digital library. Libraries are available for the following softwares: CARES Visual, exocad GmbH, Dental Wings Inc and 3Shape A/S at www.neodent.com/cadcam. Make sure that your CAD library is updated.









IMPLANT PLACEMENT AND ZI BASE WORFLOW STEP BY STEP

1 Implant Bed Preparation.



In bone types I and II: use of Bone Tap with Torque-Wrench. Maximum torque of 60 N.cm.



6 Soft tissue management: Zi Cover Screws.



9 Provisional crown - Impression Coping /Provisional Coping



*If conventional workflow: impression.



2 In bone types I, II e III: use of Countersink with Contra-Angle.



Neodent® ZI implant placement.



Healing phase: Zi Healing Abutment.



10 *If digital workflow: intra-oral scanning.



Final Restoration:
Burn-Out Coping.



A In bone types I and II: use of Bone Tap with Contra-Angle.



Attention! Maximum torque of 60 N.cm.



Provisional phase: PEEK CR Abutment.



*If digital workflow: extra-oral scanning.



Final Restoration placed on patient's mouth.











CONVENTIONAL PROSTHETIC WORKFLOW FOR ZI BASE

1 Geometry in wax (top) and burn-out coping used.



Gathered prostheses for plaster cast molding.



Plaster being poured around the wax pieces for mold forming.



Ceramic material used.



Ingots and piston positioned for injection of the ceramic material into the mold.



6 parts injected after cleaning.



Parts without finishing (left) and with surface finish (right).



Cementation of the crown on the ZiBase.



Cementation of the crown on the ZiBase.



9 Final crown - Zi Base.









DIGITAL PROSTHETIC WORKFLOW FOR ZI BASE





2 Scanbody alignment with images captured by laboratory scanning.



3 Coping/ Crown.



4 Milled Crown.



Milled Copong/ Crown, prosthetic interface.



6A Cementation of the crown on the ZiBase.



6B Cementation of the crown on the ZiBase.



7 Final crown – Zi Base.



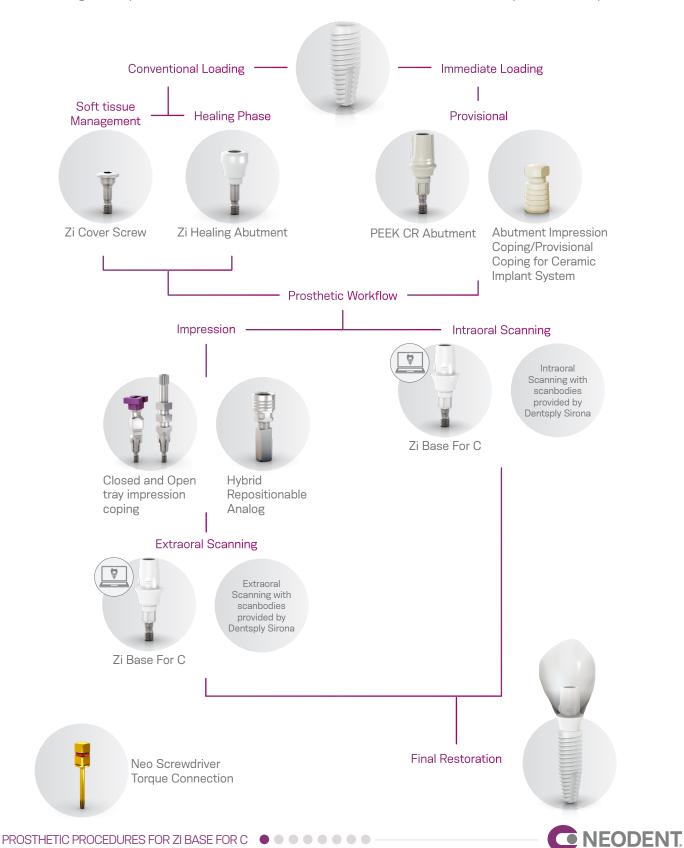




PROSTHETIC PROCEDURES FOR ZI BASE FOR C

After the surgical procedure, the prosthetic workflow should be followed. This means the most appropriate immediate or conventional workflow and its related prosthetic abutments.

The Neodent® Zi implant prosthetic system provides flexibility, stability and esthetics to the final restoration. It allows single unit prosthesis for screw or cement-retained restorations on implant level impression.





4

Temporary Abutment - The PEEK CR Abutment

The PEEK CR Abutment is a provisional prosthetic solution to be used with a temporary crown. Indicated to remain into the mouth until 6 months, a compatible provisional coping is available to facilitate crown manufacturing and delivery an esthetic solution during provisional prosthetic step.

It can be used before the installation of the final abutment to maintain, stabilize and shape soft tissues during the healing phase.

Use the Neo Screwdriver to place the PEEK CR Abutment on the implant. Maximum torque: 10 N.cm.

It is important to keep in mind that this abutment cannot be placed in occlusion and under lateral forces.



PEEK CR Abutment



Neo Screwdriver Torque Connection and Torque Wrench



Attention

• Applying a torque higher than 10 N.cm may cause damages and/or break the implant.

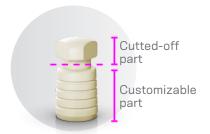




Temporary Abutment – Provisional Coping CR Abutment

Follow these steps to make a provisional crown:

- Place the PEEK CR Abutment on the implant.
- The upper portion of the Abutment Impression Coping/Provisional Coping for Ceramic Implant System must be cutted-off and the provisional crown produced on the remaining part.
- · This ensemble needs to be cemented with provisional cement over the PEEK CR Abutment.

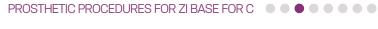


Impression Coping / **Provisional Coping** CR Abutment









Intraoral scanning

The scanbody is used on abutment level in order to transfer their positions following the scanning to use in CAD/CAM procedure.

Select and install the Zi Base C on the implant according to preplanning. Insert the scanbody compatible with the equipment of the CAD/CAM system used over the Zi Base C, and perform scanning as indicated by the manufacturer. The digitalization of a scanbody has to copy as most details as possible and finalize the scan process following the software instructions.

Design the prosthesis structure on Sirona inLab software (Version 3.65) or Sirona CEREC® Software (Version 4.2) according to previous prosthetic planning and raw material to be used. Zi Bases C for Ceramic implants can be used along with Sirona products, with any of the libraries from the Sirona inLab Software (Version 3.65) or Sirona CEREC® Software (Version 4.2) libraries, according to the table below:

Library	Scanbody* (Sirona)	REF Scanbody* Omnicam (Sirona)	REF Scanbody* Bluecam / Ineos (Sirona)
NBB 3.4 L NB A 4.5 L	L	6431329	6431303
SSO 3.5 L			
S BL 3.3 L			
S BL 4.1 L			
BO 3.4 L			

Notes:

- Make sure that the scanbody is properly seated;
- Scanbodies with damaged implant plataform may lead to digitalization problems
- After digitalization, design the prosthesis in the CAD software.
- * The Scanbody to be used with the Zi Base C is not supplied by Neodent; it is an accessory from the Sirona Dental CAD / CAM System.

Design the external portion of the meso-structure according to the preparation guidelines for the superstructure required. Make sure not to exceed an angle of 20° between the implant axis and the restoration axis. If the meso-structure was designed to receive the aesthetic ceramic, make sure that this will not narrow the screw channel. The cavity for fitting the meso-structure onto the Zi Base for C cannot be coated. Ensure there are no sharp edges nor corners in the meso-structure design. Before creating the structure of the prosthesis, make sure that the machining block size is compatible with the design to be performed. Create the piece as indicated, using Sirona CEREC® MC X, inLab MC XL, or inLab MC X5 machining equipment.







Extraoral scanning

Perform molding of the implant according to preplanning, clinical situation of the patient and implant interface. Use artificial gingiva on the plaster model to simulate the patient's soft tissues. Create the plaster model according to appropriate techniques. Select and install the Zi Base C over the analog. Insert the selected scanbody compatible with the CAD/CAM system equipment used and perform scanning according to the manufacturer's instructions. Ensure the correct fit of the scanbody on the Zi Base C.

Library	Scanbody* (Sirona)	REF Scanbody* Omnicam (Sirona)	REF Scanbody* Bluecam / Ineos (Sirona)
NBB 3.4 L			
NB A 4.5 L			
SSO 3.5 L	L	6431329	6431303
S BL 3.3 L			
S BL 4.1 L			
BO 3.4 L			

^{*} The Scanbody to be used with the Zi Base C is not supplied by Neodent; it is an accessory from the Sirona Dental CAD / CAM System.





Impression taking

The Zi Impression Coping allows transferring, by means of molding, the tridimensional position of the Neodent® Zi implant. The solution is for molding techniques with closed and open tray.

Within the closed tray technique, a negative impression of the post is made using an impression material. The impression coping is then removed from the oral cavity and adapted to the impression material in the tray.

- Place the Zi Impression Coping on the implant with the Neo Screwdriver (maximum torque: 10 N.cm);
- · Perform the impression;
- Place the Zi Impression Coping and Hybrid Repositionable Analog on the mold.



Hybrid

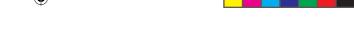


Hybrid Repositionable Analog

Neo Screwdriver







Within the open tray technique, the body of the Impression Coping should be fit into the implant selected and rotate the screw manually or with the aid of the Torque Connection. The transfers should be screwedout and removed from the patient's mouth with the impression material in the tray. Ensure that you do not move the Impression Coping while fitting of the analog.

- · Place the Zi Impression Coping on the implant;
- · Perform the impression;
- Place the Hybrid Repositionable Analog on the mold.

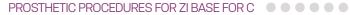


After performing the impression:

- Ensure that the impression coping is correctly adjusted and positioned.
- Place the analog on the right position.
- Continue with placing the artificial gingiva and pouring the plaster mixture. Check if there are no bubbles and if all the details have been completely copied.
- Neodent® has developed a new generation of analogs, which can be used either in the conventional (plaster model) or the digital workflows (printed model), for prototyped models. They are called Hybrid Repositionable Analogs and are available for Neodent® Zi implant portfolio.







Final restoration: Zi Base for C

Zi Base for C covers single-unit final restorations for Neodent® Zi implant system. It can be used according a digital worflow, following the CAD/ CAM technique through the Sirona Dental CAD/ CAM System.

This abutment is recommended for cement-retained or screw-retained prostheses, though cementation of the ZiBase for C must be carried out outside the patient's mouth, in the laboratory, using a chemically activated resin cement. This step eliminates the risk of excess cement on periimplant tissues. Subsequently, the structure is screwed onto the implant.

For ZiBase for C cementation follow these steps:

- Place the abutment over the plaster model or 3D model;
- Pass the fixation screw through it with a slight tightening;
- Protect access to the screw throughout the cementation process. For cement handling, follow its manufacturer's instructions;

- Blast the Zi Base C surfaces intended for cementation of the prosthesis structure with aluminum oxide, 50 µm, maximum pressure of 2 bar.
- Apply the cement in the external portion of the ZiBase for C and press the restoration, fit it according to the three available indexes guides;
- Press the restoration over the ZiBase for C and immediately remove any excessive cement;
- After cement setting, unscrew the structure from the Analog and remove the remaining cement of the ZiBase edge;
- Screw the ensemble (Crown+ZiBase for C) into the patient's mouth.
- * It is recommended to use chemically activated resin cements for bonding on ceramic (e.g. Panavia
- Kuraray). On Lithium Dissilicate, the use of IVOCLAR Multilink cement is required.

Use the Neo Screwdriver Torque Connection to place the ZiBase for C on the implant. Maximum torque: 32 N.cm.





Neo Screwdriver Torque Connection and Torque Wrench



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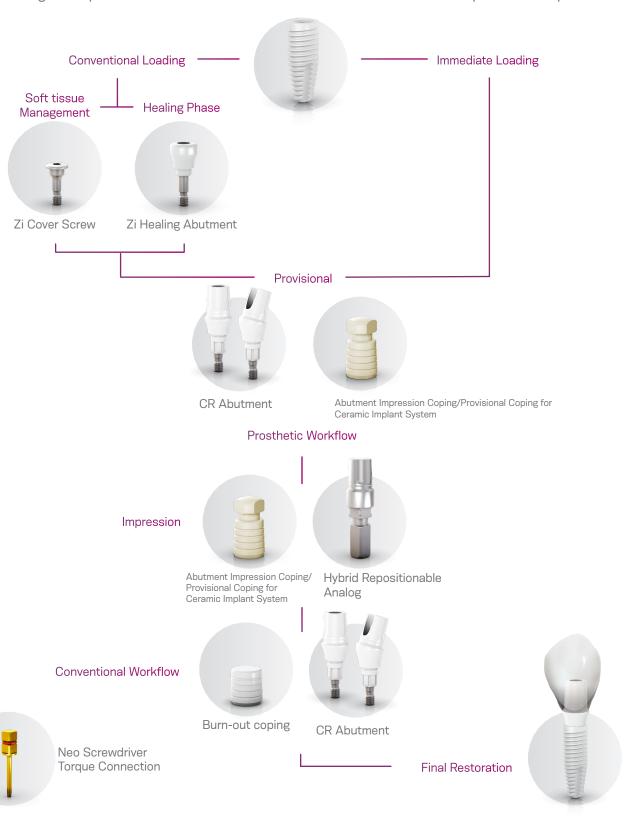




PROSTHETIC PROCEDURES FOR CR ABUTMENT

After the surgical procedure, the prosthetic workflow should be followed. This means the most appropriate immediate or conventional workflow and its related prosthetic abutments.

The Neodent® Zi implant prosthetic system provides flexibility, stability and esthetics to the final restoration. It allows single unit prosthesis for screw or cement-retained restorations on implant level impression.







CR Abutment

The CR Abutment is an abutment placed over Neodent Ceramic Implants in order to provide support for prosthetic restorations, such as copings or crowns. It may be used for single-unit restorations that are cement-retained in esthetical areas over implants installed in maxilla or mandible. It can be user according a conventional workflow.

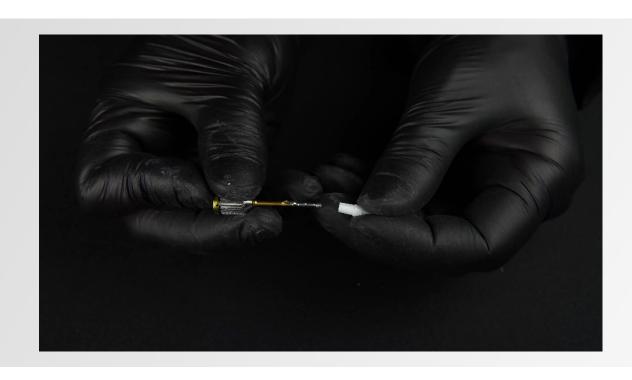






Neo Screwdriver Torque Connection and Torque Wrench





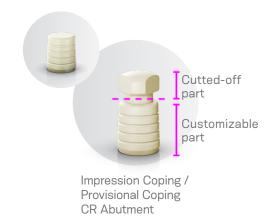




Abutment Impression Coping/Provisional Coping for Ceramic Implant System

Follow these steps to make a provisional crown:

- Place the CR Abutment on the implant.
- The upper portion of the Abutment Impression Coping/Provisional Coping for Ceramic Implant System must be cutted-off and the provisional crown produced on the remaining part.
- This ensemble needs to be cemented with provisional cement over the CR Abutment.











Impression taking

The Abutment Impression Coping/Provisional Coping for Ceramic Implant System allows transferring, by means of molding, the tridimensional position of the CR Abutment. The solution is for molding techniques with closed tray.

Within the closed tray technique, a negative impression of the post is made using an impression material. The impression coping is then removed from the oral cavity and adapted to the impression material in the tray.

- Place the Abutment Impression Coping/Provisional Coping for Ceramic Implant System until it clicks;
- Perform the impression procedure according to the closed tray technique. The Abutment Impression Coping/Provisional Coping for Ceramic Implant System must stay in the mold after the mold removal;
- Place the REGULAR CERAMIC CR ABUTMENT ANALOG on the mold;



Abutment Impression Coping/ Provisional Coping for Ceramic Implant System



Hybrid Repositionable Analog



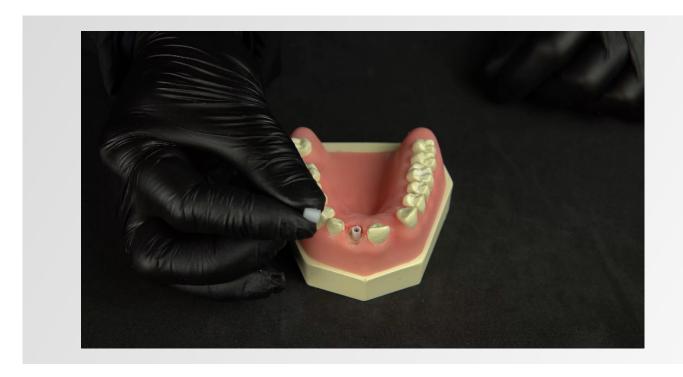
Final restoration: Burn Out Coping

The CR Abutment Burn Out Coping is a device designed for the manufacture of ceramic infrastructures of unitary prostheses cemented on the CR Abutment, for laboratory use.

To produce the prosthesis, the desired geometry needs to be produced, in the laboratory, in appropriate wax and placed on the Burn-Out coping. In the press technique, the wax is removed and the ceramic material is injected.



Burn-out coping features.











IMPLANT PLACEMENT AND CR ABUTMENT STEP-BY-STEP

1 Implant Bed Preparation.



In bone types I and II: use of Bone Tap with Torque-Wrench. Maximum torque of 60 N.cm.



6 Soft tissue management: Zi Cover Screws.



Provisional crown - Impression Coping /Provisional Coping CR Abutment



Perform the provisional cemetation.



In bone types I, II e III: use of Countersink with Contra-Angle.



Neodent® ZI implant placement.



Healing phase: Zi Healing Abutment.



perform impression according the closed tray technique



Final Restoration: Burn-Out Coping.



A In bone types I and II: use of Bone Tap with Contra-Angle.



Attention! Maximum torque of 60 N.cm.



8 Provisional phase: CR Abutment.



Customize the Impression Coping / Provisional Coping CR Abutment for provisional manufacture.



Final Restoration placed on patient's mouth.









CONVENTIONAL PROSTHETIC WORKFLOW FOR CR ABUTMENT

Geometry in wax (top) and burn-out coping used.



Gathered prostheses for plaster cast molding.



Plaster being poured around the wax pieces for mold forming.



4 Ceramic material used.



Ingots and piston positioned for injection of the ceramic material into the mold.



6 parts injected after cleaning.



Parts without finishing (left) and with surface finish (right).



Cementation of the crown on the CR Abutment in mouth.









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It is the clinician's exclusive responsibility to evaluate the patient's health conditions and viability of the procedure. The reproduction of this material does not imply the success of similar procedures, as it will depend on the clinician's technique and ability, on patient's conditions on the previous and post procedure.

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