Neodent®

Helix™ GM™ Narrow

Surgical and Prosthetic Manual

NEODENT®
A Straumann Group Brand

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NEODENT® HELIX™ GM™ NARROW - SMALL DIAMETER, GREAT ACHIEVEMENTS

Bring reliability to your practice through the next generation of immediate esthetic solutions for reduced interdental spaces and bone availability.

Patient expectations for immediate and esthetic treatment for missing teeth are constantly growing, even in cases with challenging indications such as reduced interdental spaces and reduced bone availability.

Implant therapy in such situations can be perceived as challenging for even highly experienced clinicians, due to implant strength concerns and lack of adequate prosthetic options.[1]

Through surgical procedure approaches, both guided or non-guided handling can get arduous due to complex treatment procedures.

The Ø2.9mm Helix GM Narrow provides an immediate, small diameter solution which seeks to provide simplicity for treatment protocol – regardless of whether guided or non-guided techniques are used – confidence without compromising on strength, and flexibility for immediate esthetic outcomes in limited interdental spaces.

Confidence with a stable long-term implant foundation

A combination based on proven concepts.

Flexibility for immediate esthetic outcomes

Versatile portfolio designed for limited spaces.

Simplicity for treatment protocols

Intuitive and functional surgical cassette to best suit any chosen surgical procedure.

"With the new Helix GM Narrow system, I'm confident that I'm using a reliable long-term solution that allows for treatment of patients with reduced interdental space, with expected esthetic results.
The narrow implant design features adequate primary stability that enables the use of immediate loading.
The versatility of the hybrid surgical kit, as well as the comprehensive prosthetic portfolio, allows me to customize surgical plans seeking to provide a predictable and successful results for my patients."

DR. GENINHO THOMÉ

Confidence with a stable long-term implant foundation

Implant therapy for demanding indications, such as reduced interdental spaces, can raise concerns regarding resistance and biomechanical behavior. Therefore, features of an implant-abutment interface are essential to provide successful long-term functional, stable, and esthetic results.

The Ø2.9mm Helix™ features the strong and stable GM™ Narrow connection, based on proven concepts seeking to achieve long lasting results. A system produced out with the commercially pure titanium grade 4 offering treatment predictability through the ACQUA hydrophilic surface.

Reliable and strong GM Narrow connection

16° Morse Taper connection:

The implant-abutment interface is a relevant aspect that could interfere on the success of patient's outcome. Helix GM Narrow is designed to deliver a tight fit for optimal connection sealing and offers strong mechanical resistance.

Internal hexagonal indexation:

The connection is designed with internal hexagonal indexation for precise abutment positioning, easy handling.

Platform switching:

The abutment design features a narrower diameter than the implant coronal area, which enables platform switching. [2-6]

Screw-retained interface:

The Helix GM Narrow features a morse taper screw-retained connection, which fits into the internal thread with precision seeking to provide a stable abutment connection.

Commercially pure and mechanically strong titanium grade 4

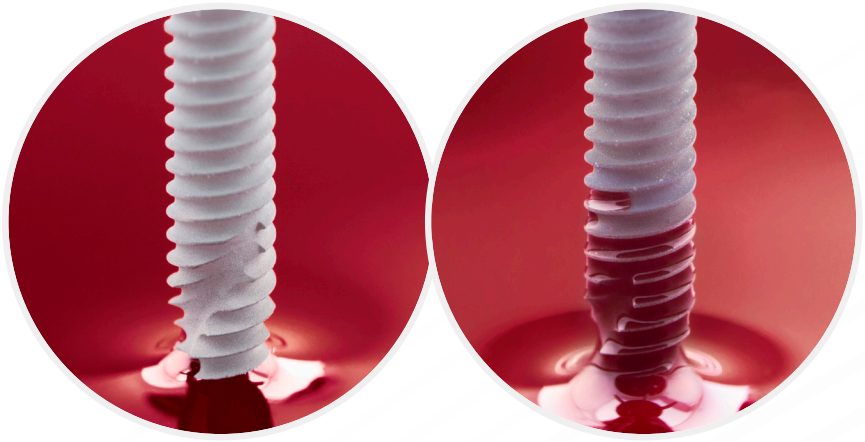
Beyond a versatile design allowing primary stability, the Helix GM Narrow is produced from the pure and mechanically strong titanium grade 4 (Ti Gr 4).

Static torsion tests have been conducted providing a greater performance and strength of +12.7% than the former small diameter Neodent® system (Ti6Al4V-ELI).

ACQUA Hydrophilic surface's and treatment predictability

The Neodent® ACQUA hydrophilic surface is the next level of the highly successful S.L.A. surface. It was developed to reach expected results outcomes even in the most challenging patient cases, such as soft bone or immediate protocols. [7-10]

The Neodent® hydrophilic surface presents a smaller contact angle when in contact with liquids. This provides greater accessibility of organic fluids to the ACQUA implant surface to help spur healing. [8]



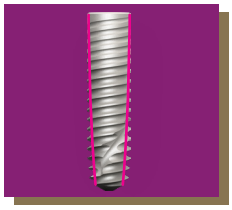
NeoPoros Surface Acqua Hydrophilic Surface

Flexibility for immediate esthetic outcomes

Patients lacking bone availability in the esthetic zone or experiencing limited space between adjacent teeth, can make tooth replacement procedures challenging for implant clinicians. When coupled with a lack of adequate prosthetic options to correctly replace missing teeth, patient satisfaction declines, and practices can suffer.

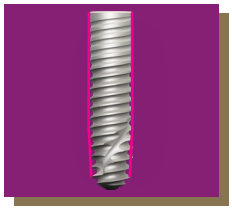
The versatile Neodent® Helix™ GM™ Narrow system combines a Ø2.9 mm Helix implant, with a comprehensive prosthetic portfolio to restore cases in limited bone availability and interdental spaces, for immediate esthetic results.

The unbeatable versatility of Helix



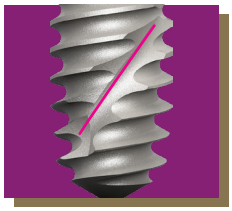
Tapered body design

Coronal: Progressive tapered design;
Apex: 12° Under-osteotomy for bone types 3 and 4.



Hybrid contour

Coronal: Cylindrical;
Apex: Conical.



Active Apex

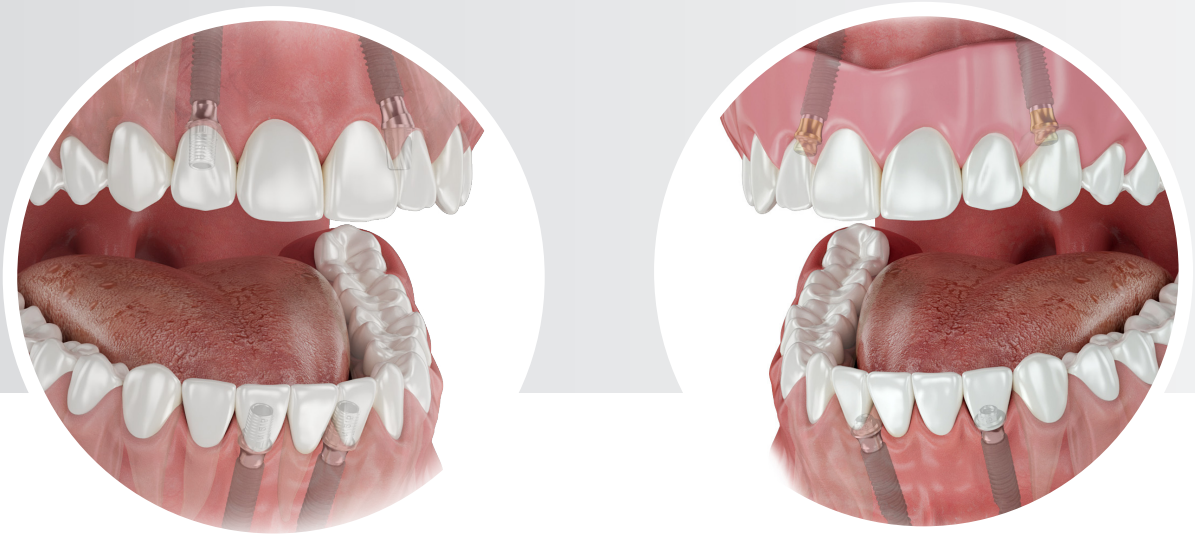
Short tip;
Helicoidal flutes.

Dynamic progressive thread design

Coronal: Double start threads with rounded root > compressing;
Apex: V-Shape > Self-cutting high primary stability.

A solution for limited horizontal bone availability in all bone types

Indicated for all bone types, the Neodent® Helix GM Narrow is specifically engineered to address esthetic challenges in situations with limited bone, thanks to its small diameter implant of 2.9mm.



Comprehensive prosthetic portfolio for optimized esthetic and functional results

The Helix GM Narrow system was designed to offer clinicians greater levels of treatment flexibility with a comprehensive prosthetic portfolio, designed to meet patient expectations regarding short treatment times, esthetic and functional results.

It allows single and multi-unit restorations from screw and cement-retained, to removable prosthesis. The system also allows natural-looking restorations using either conventional or immediate protocols.

Titanium Temporary Abutment

Titanium Base

Universal Abutment

Micro Abutment

Attachment Removable

Single-unit screw-retained prosthesis

Single-unit cement-retained prosthesis

Multiple-unit screw-retained prosthesis

Temporary

Overdenture

Simplicity for treatment protocols

When it comes to implant procedures, both guided and non-guided surgeries can become unnecessarily complex due to the number of instruments that are usually needed. Additionally, the lack of clear instrument identification can increase the risk of errors and reduce patient satisfaction.

The Helix GM Narrow system provides an intuitive hybrid surgical kit designed to best suit any chosen surgical procedure, whether conventional or guided, adding even more simplicity to the system by using the Neo Screw connection.

An intuitive and functional compact surgical cassette

The Helix GM Narrow system allows intuitive conventional and guided surgeries with the functional compact surgical kit, to support improve outcomes and patient satisfaction.

A predictable guided procedure with the EasyGuide concept

The Neodent® EasyGuide concept offers a straightforward guided surgery technique enabling surgical convenience with one-hand procedures, and pursuing predictable surgical results with confidence for accurate implant positioning.

One Screwdriver available both for Neodent® GM™ and GM Narrow

The Helix™ GM Narrow system features the Neo Screwdriver, which has a star attachment offering reliability and durability, compatible with all GM Narrow healing abutments and restorative screws.

IMPLANT POSITIONING AND PERI-IMPLANT TISSUE

Implant positioning is the key to obtain the correct prosthetic restoration and is the basis for surgical planning. The communication among patients, dentists, surgeons and lab technicians 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 or bar structure;
- 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 in short and long term success. 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. It must 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:

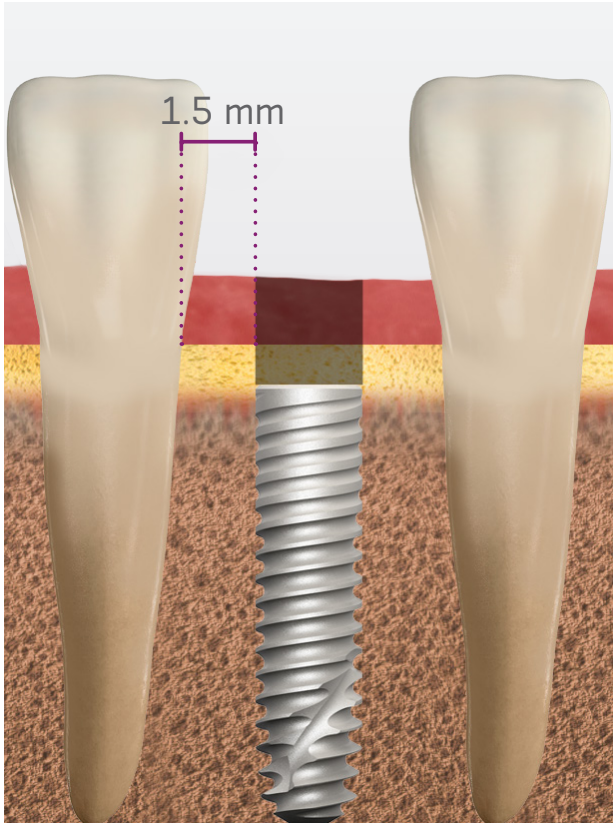
- Mesiodistal;
- Buccolingual;
- Apical coronal.

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. The Helix™ GM™ Narrow implants were specially developed for narrow spaces.

Rule 1

Ideally, the distance of Helix GM Narrow implants to adjacent teeth is at least 1.5 mm between the implant widest portion and the cervical of the teeth, both on the mesial and distal aspects.



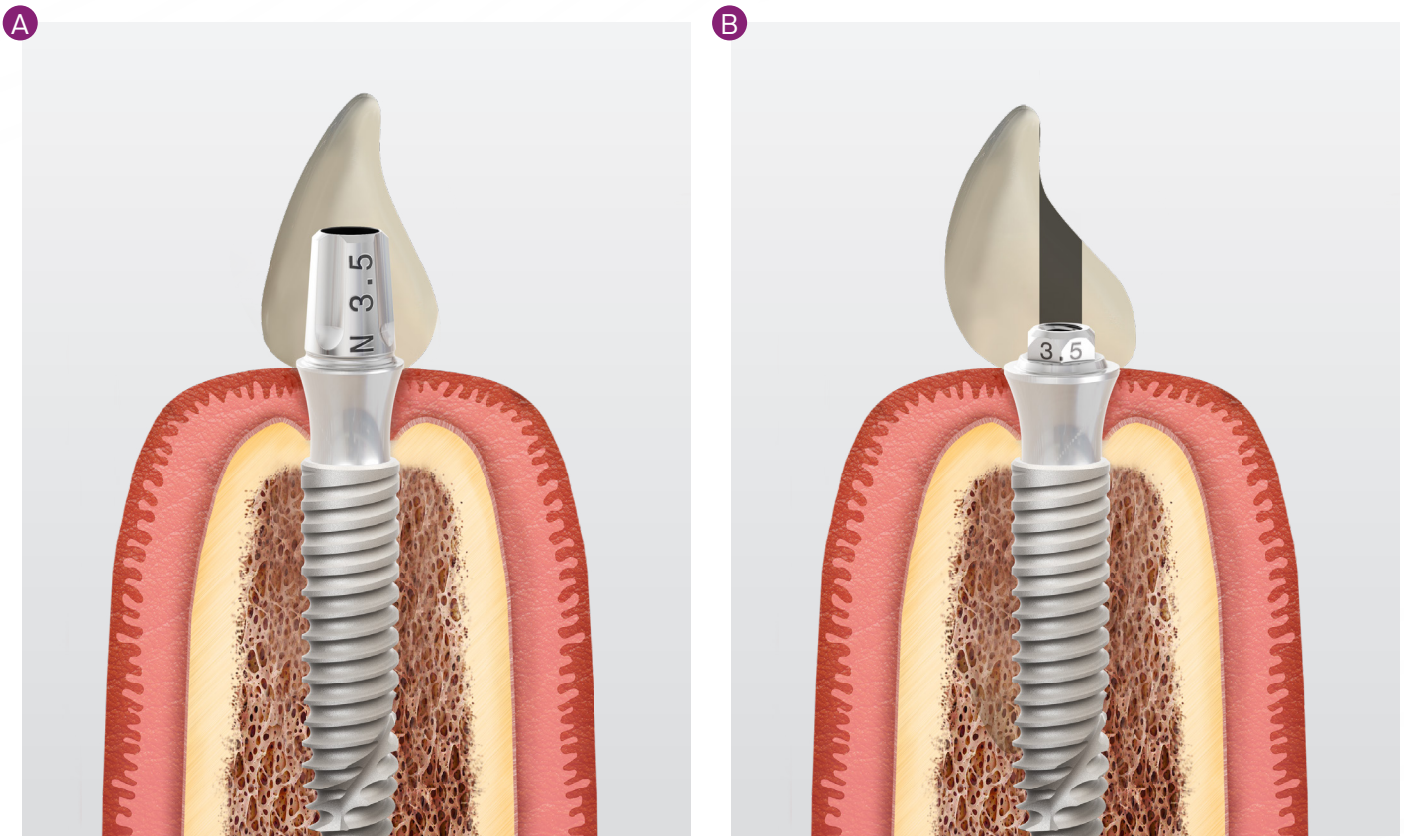
Rule 2

As implants require at least 1.5 mm of adjacent bone, the distance to other implants is minimum 3 mm.

Buccal-lingual implant positioning

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, if the plan is to do a screw or cement-retained prosthesis, it will need to be decided by the clinician.

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 screw.

APPLICATIONS

The Helix™ GM™ Narrow Implant is indicated for intraoral surgical installation in bone with density I/II/III/IV according to bone classification of Lekholm and Zarb (1985) in the region of lateral incisors in the maxilla or in the region of lateral and central incisors in the mandible. It can be used as a support for single or multiple prostheses in immediate or conventional loading protocol. It may be installed immediately after the extraction of dental root and proper bone preparation. It is recommended for the following rehabilitation:

• Single-unit prostheses in the regions of lower central and lower lateral incisors and upper lateral incisors.

• Multi-unit partial fixed prostheses in lower and upper incisor regions;

• Multi-unit total fixed prostheses in lower and upper incisor regions, when associated with implants with larger diameters;

• Total removable protheses (overdentures) in lower and upper incisor regions;

Contraindications

They are contraindicated for single-unit rehabilitation in region of upper central incisor, canine, premolar and molar.

They are contraindicated in the regions of canine, premolar and molar in multi-unit rehabilitation.

They are contraindicated for total restorations in fixed prostheses, when not associated with conventional diameter implants.

This product is contraindicated for patients exhibiting signs of allergy or hypersensitivity to the chemical ingredients of the material: titanium.

Narrow GM implants of length 10 mm are not recommended for bone type IV.

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 of the selected implant 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 drilled with the initial drill 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.

The drill is used to prepare the osteotomy following a sequence according to the implant length and the bone type, 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 45 Ncm may cause damages to the implant. If maximum torque is reached and the insertion cannot be concluded, it may be necessary to apply reverse torque during insertion of the implant into the bone. To apply reverse torque, invert the direction of the Torque Wrench to the counterclockwise direction and apply the torque in that direction.

Helix™ GM™ Narrow implant insertion

- Maximum insertion torque: 45 Ncm;
- Minimum torque value for Immediate Loading: 35 Ncm.

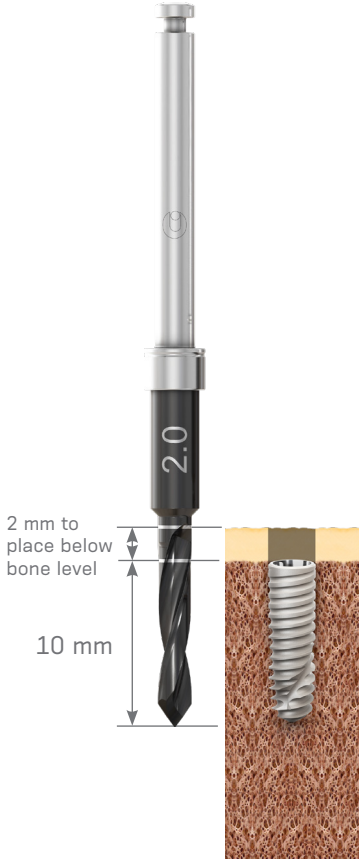
Length markings on the drills

The Helix GM Narrow drills have two laser markings for using through conventional surgery. The first one indicate the depth of the drill for the selected implant and the second marking for placing the implant 2mm below bone level.

Helix GM Narrow drills can also be used in guided surgery and for this they have a stop system that ensures the planned depth.

NGM DRILL 2.0X10 mm

103.589

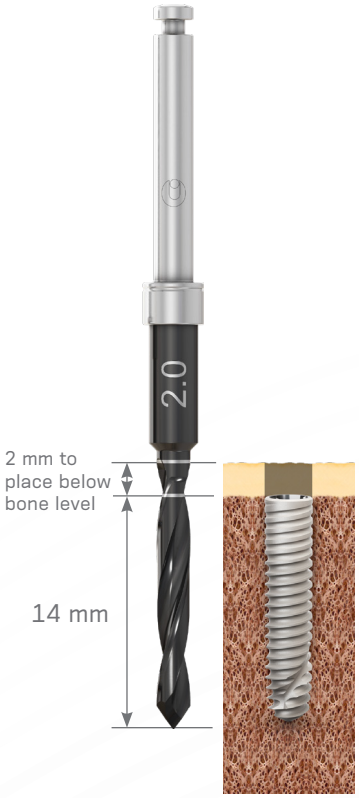


NGM DRILL 2.0X12 mm

103.590

NGM DRILL 2.0X14 mm

103.591



INITIAL PROCEDURES FOR GUIDED SURGERY

Previous Procedures

Neodent® Narrow GM instruments are designed for procedures with 3D planning software using Cone Beam Computed Tomography (CBCT). They are designed to prepare the osteotomy and install Neodent® implants in combination with surgical guide, including Neodent® Sleeves.

1. Diagnosis/ Data gathering

The treatment plan is based on the diagnosis that is made in the patient's appointment and specific needs. Bone volume, density, anatomy of the restoration area, type of restoration, load type, number of implants, esthetic and functional factors and any other important factors that justify the guided surgery treatment plan must be taken into consideration.

Regardless of imaging technology, a CBCT scan (following the correct parameters) is the basis for a precise digital plan and for accurate implant installation. To obtain correct scanning data, radiologist and patient should be correctly positioned and scanning instructions/parameters should be followed, in accordance with the software manufacturer's instructions for use (IFU). A dental impression is mandatory and can be made conventionally or digitally.

Note: For procedures with surgical guides, the patient's mouth opening capacity must be sufficient to accommodate guided surgery instruments.

2. Virtual planning

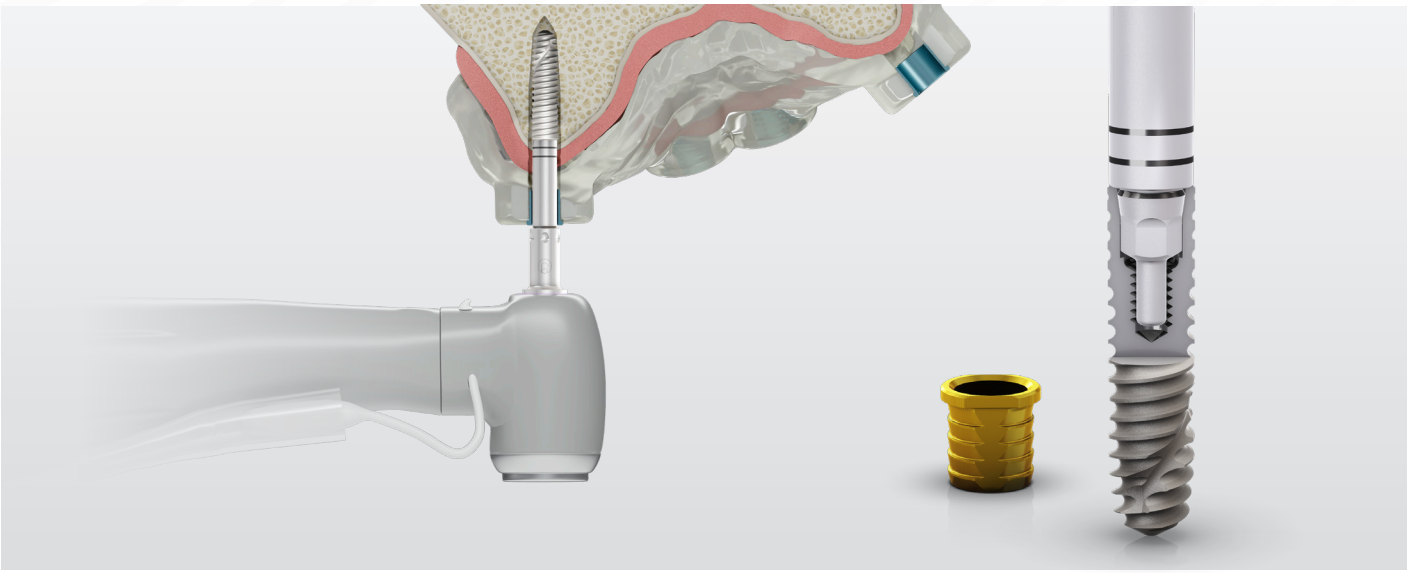
The 3D data set (DICOM) can be imported directly into commercially available planning software (for example, coDiagnostiX™) and superimposed with the dental impression extracted with the scanners (STL File). The implant is positioned in relation to the patient's anatomy and the desired prosthetic result.

3. Surgical guide production

Once virtual planning has been successfully completed, the treatment plan is sent to the surgical guide manufacturer. Either the software manufacturer or dental prosthesis laboratory can make the surgical guide depending on the software concept used.

Note: In this step, the surgical guide manufacturer should guarantee the compatibility with Neodent® Narrow GM Instruments, using Neodent® sleeves for guided surgery, positioned according to Neodent® parameters.

General Aspects



Once the surgical guide is placed in the patient's mouth, optionally using the Neodent® Clamp, the osteotomy for the Neodent® Helix™ GM™ Narrow line of implants should be prepared with Neodent® Narrow GM instruments. The surgical protocol, provided along with the surgical guide, states which instruments are required for preparing each implant site. Neodent® Narrow GM instruments allow fully guided preparation of the bone bed using drills with physical depth control (stops) and guided implant insertion using surgical guides with guided surgery NGM drivers.

The patient's mouth opening capacity must be sufficient to allow correct use of Neodent® NGM drills and drivers in the region of the implant to be installed. The drills and drivers used in guided surgery techniques must offset soft tissue thickness and sleeve height and are therefore considerably longer than instruments used in conventional techniques. Limited mouth-opening capacity may hinder implant installation in guided surgery procedures.

Neodent® NGM has a line of drills specially developed to be used directly in the surgical guide sleeve, making the use of drill guides or reducers unnecessary. Moreover, they have titanium stops to physically control drilling depth. The standard distance (offset) of the system is 10 mm (H10) between the upper part of the sleeve and implant platform, providing sufficient height for soft tissue thickness and placement below the bone crest, should that be the surgeon's choice. The choice of drills should always take into consideration the length of the implant to be installed during the procedure, regardless of its final position in relation to bone level.

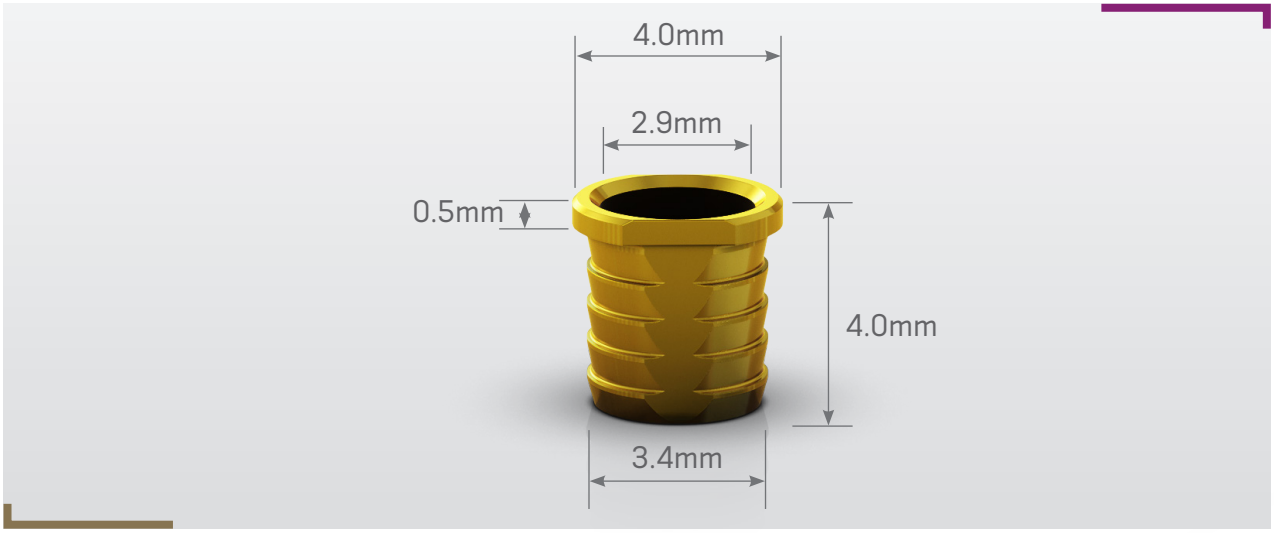
In the case of osteotomy for regulating bone crest or various extractions, immediate installation of implants with guided surgery technique is not suitable due to bone remodeling after this procedure. The physiological process of ridge reduction may result in loss of structure that would be used before planning implant installation.

Surgical Guides: Types of support

Various types of support for surgical guides are commercially available, depending on personalized surgical recommendations, taking into consideration software planning characteristics and guide manufacturer. All are possibilities, depending on the clinician's preference for planning software used and surgical guide manufacturer. For example it could be a Mucosa-supported surgical guide or Tooth-supported surgical guide. It is very important that the surgical guide fits correctly and in the correct position to guarantee the placement of the implant in the planned position.

Sleeves

During digital planning, sleeve positions must be assessed to avoid impact. Neodent® Sleeves have two-sided surfaces on the upper part which helps in narrow spaces, and yellow color which helps to distinguish them from other sleeves.



Surgical Kit

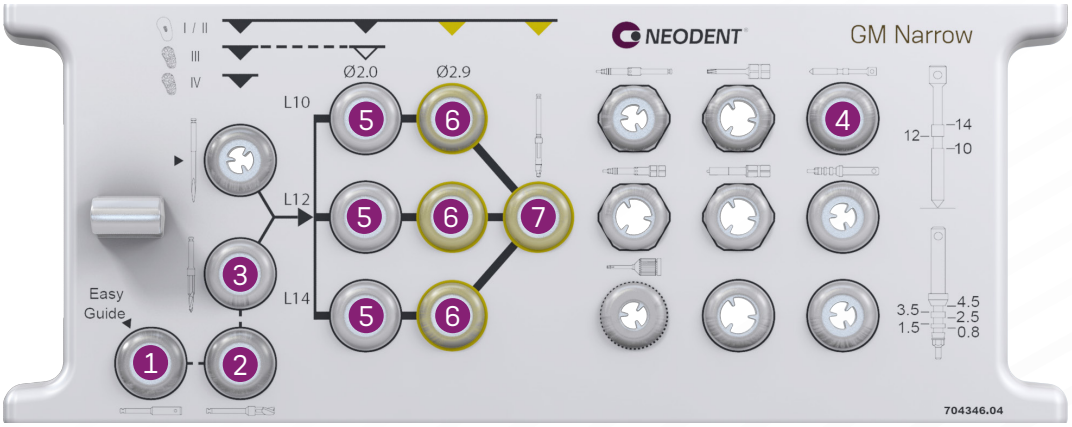
An intuitive and functional compact surgical cassette, the Neodent® Helix™ GM™ Narrow system allows intuitive conventional and guided surgeries with the functional compact surgical kit.

DRILLING PROTOCOL

Drilling protocol for guided surgery

STEP	Implant length	Code	MAX. RPM Bone Type I and II	MAX. RPM Bone Type III and IV	IMAGE
1 Mucosa Punch	-	103.585	60	60	
2 Leveling Drill	-	103.587	1200	800	
3 Initial Drill	-	103.588	1200	800	
4 Helix NGM X-ray Positioner	-	129.035	-	-	
5 Tapered Drill 2.0	10mm	103.589	1200	800 *optional for bone type III	
	12mm	103.590	1200	800 *optional for bone type III	
	14mm	103.591	1200	800 *optional for bone type III	
6 Tapered Drill 2.9	10mm	103.592	1200	-	
	12mm	103.593	1200	-	
	14mm	103.594	1200	-	
7 NGM Countersink drill	-	103.595	1200	-	
Contra-angle narrow implant driver	-	105.165	-	-	
Torque wrench narrow implant driver	-	105.166	-	-	

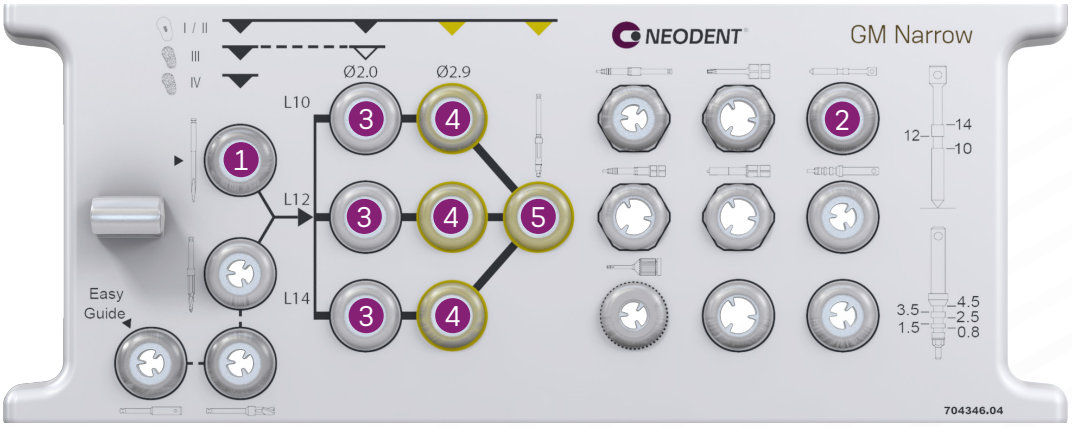
Notes: For bone types I and II is necessary to follow steps 1 to 7.
For bone type III is necessary to follow steps 1 to 3, and 4 and 5 are optional.
For bone types IV is necessary to follow only steps 1 to 3 and 4 is optional.



Drilling protocol for conventional surgery

STEP	Implant length	Code	MAX. RPM Bone Type I and II	MAX. RPM Bone Type III and IV	IMAGE
1 Initial Drill	-	103.586	1200	800	
2 Helix NGM X-ray Positioner	-	129.035	-	-	
3 Tapered Drill 2.0	10mm	103.589	1200	800 *optional for bone type III	
	12mm	103.590	1200	800 *optional for bone type III	
	14mm	103.591	1200	800 *optional for bone type III	
4 Tapered Drill 2.9	10mm	103.592	1200	-	
	12mm	103.593	1200	-	
	14mm	103.594	1200	-	
5 NGM Countersink drill	-	103.595	1200	-	
Contra-angle narrow implant driver	-	105.165	-	-	
Torque wrench narrow implant driver	-	105.166	-	-	

Notes: For bone types I and II is necessary to follow steps 1 to 5.
For bone type III is necessary to follow steps 1 and 2 and step 3 is optional.
For bone types IV is necessary to follow only steps 1 and 2.

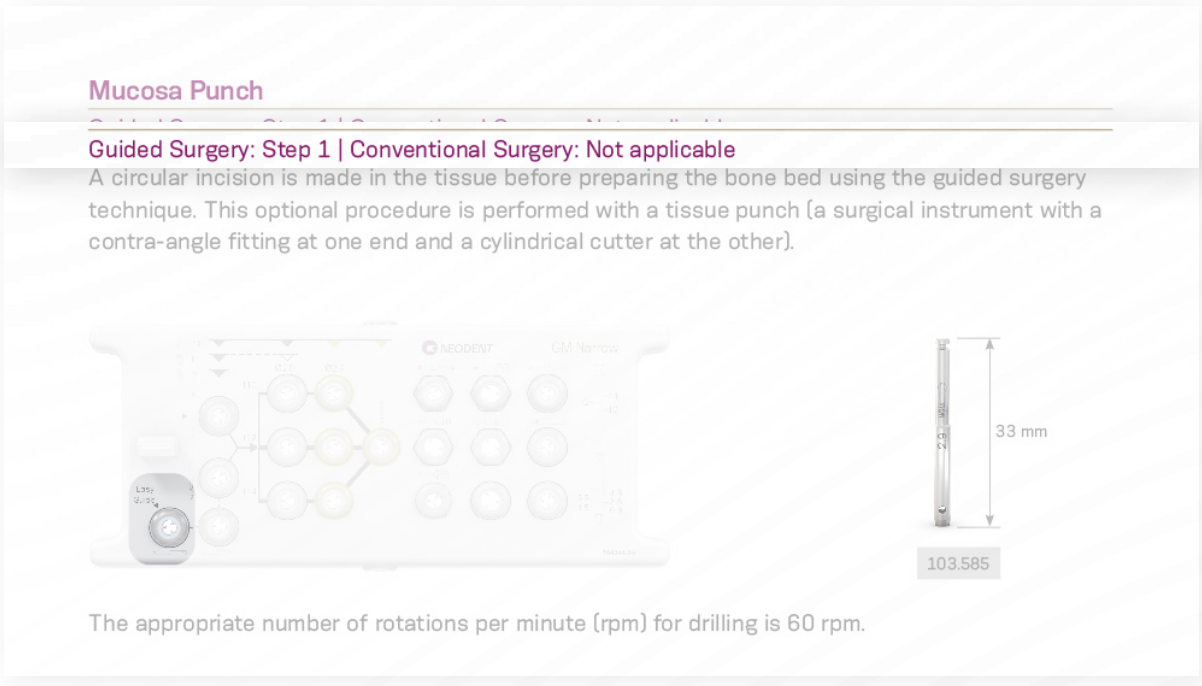


Comparison between types of surgery

Conventional	Guided
1 Initial Drill	1 Mucosa Punch
2 Helix™ NGM X-ray Positioner	2 Leveling Drill
3 Tapered Drill 2.0	3 Initial Drill
4 Tapered Drill 2.9	4 Helix NGM X-ray Positioner
5 NGM Countersink drill	5 Tapered Drill 2.0
Contra-angle narrow implant driver	6 Tapered Drill 2.9
Torque wrench narrow implant driver	7 NGM Countersink drill
	Contra-angle narrow implant driver
	Torque wrench narrow implant driver

How to follow the steps on this manual

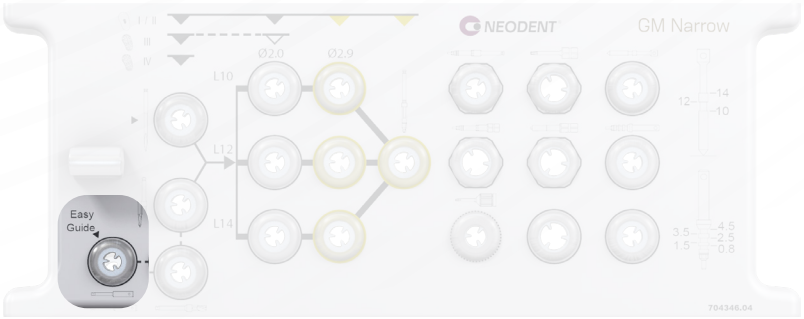
At the top of the page have the step information for each type of surgery and if that is not applicable. Check it on the next pages.



Mucosa Punch

Guided Surgery: Step 1 | Conventional Surgery: Not applicable

A circular incision is made in the tissue before preparing the bone bed using the guided surgery technique. This optional procedure is performed with a tissue punch (a surgical instrument with a contra-angle fitting at one end and a cylindrical cutter at the other).



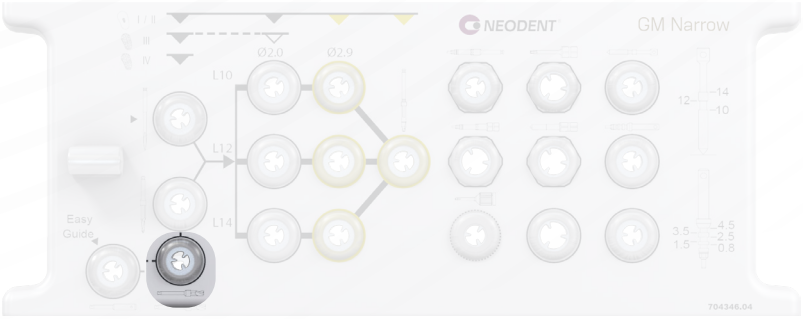
103.585

The appropriate number of rotations per minute (rpm) for drilling is 60 rpm.

Leveling Drill

Guided Surgery: Step 2 | Conventional Surgery: Not applicable

The Leveling Drill is used for the preparation of the bone bed prior to drilling. It has a titanium ring (stop) which limits the depth of drill insertion. Its geometry, size and diameter are compatible with the sleeves.



103.587

Bone types I and II
800 - 1200 rpm

Bone types III and IV
500 - 800 rpm

Note: for Guided Surgery it has a titanium ring (stop) which limits the depth of insertion of the drills. Insert until the stop reaches the sleeve.

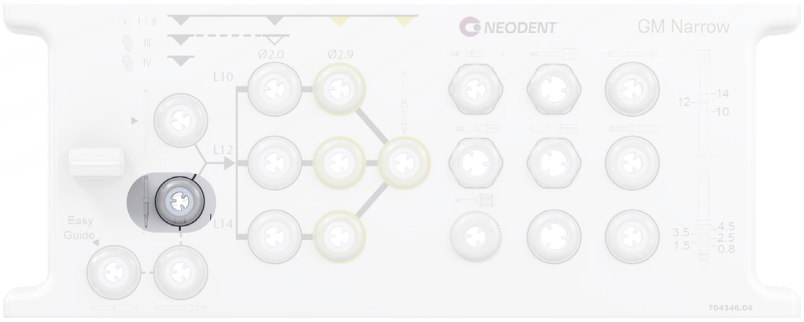
Initial Drill (for guided)

Guided Surgery: Step 3 | Conventional Surgery: Not applicable

For marking out and breaking the cortical bone, the Initial Drill is used. It has a titanium ring (stop) which limits the depth of insertion of the drills. Its geometry, size and diameter are compatible with the sleeves.

During drilling, pressure cannot be excessive, and must be done with continuous movements of insertion and removal, under abundant irrigation.

Do not interrupt the rotation of the motor while the drill is inside the surgical cavity, as this may impede its removal or cause it to break.



103.588

Bone types I and II
800 - 1200 rpm

Bone types III and IV
500 - 800 rpm

Note: for Guided Surgery it has a titanium ring (stop) which limits the depth of insertion of the drills. Insert until the stop reaches the sleeve.

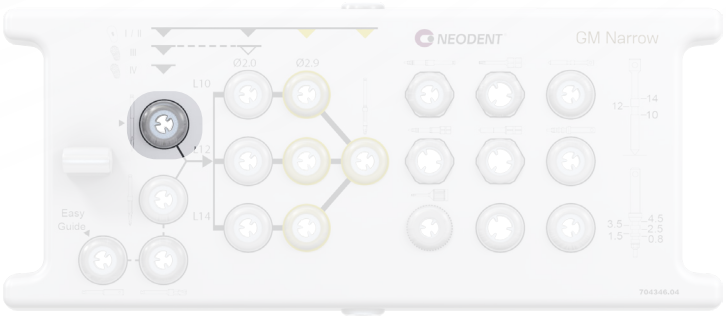
Initial Drill (for conventional)

Guided Surgery: Not applicable | Conventional Surgery: Setp 1

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.

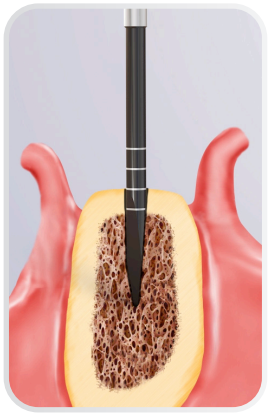
During drilling, pressure cannot be excessive. It must be done with continuous movements of insertion and removal, under abundant irrigation.

Do not interrupt the rotation of the motor while the drill is inside the surgical cavity, as this may impede its removal or cause it to break.



Bone types I and II
800 - 1200 rpm

Bone types III and IV
500 - 800 rpm



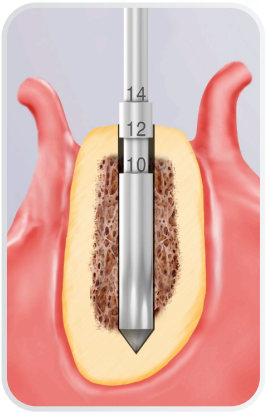
103.586

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.

Helix™ NGM x-ray positioner

Guided Surgery: Step 4 (optional) | Conventional Surgery: Step 2

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.



129.035

Attention

- If you are placing a Neodent® Helix NGM implant in bone type IV: Please, stop the drilling protocol at this step and place the Neodent® Helix NGM;
- If you are placing a Neodent® Helix NGM implant in bone type III: The next Step is optional.

Tapered Drill 2.0

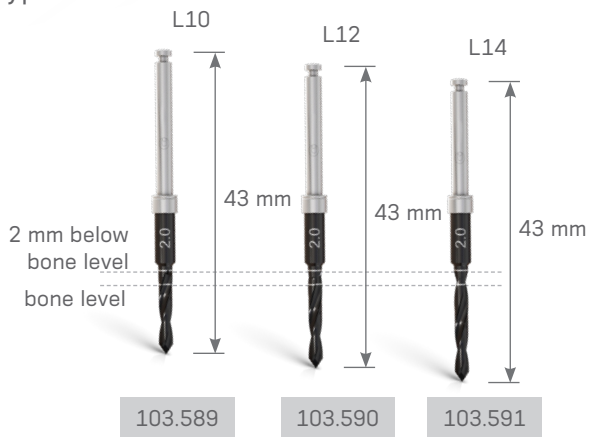
Guided Surgery: Step 5 | Conventional Surgery: Step 3

Start the motor and perform bone bed drilling with continuous movements of insertion and removal, under abundant irrigation. This irrigation can be either manual or combined with the irrigation from the motor. During drilling, pressure cannot be excessive.

Do not interrupt the rotation of the motor while the drill is inside the surgical cavity, as this may impede its removal or cause it to break.

The tapered drills have 2 laser markings. One for bone level and one for 2 mm below bone level placement.

If you are placing a Neodent® Helix™ NGM implant in bone type III: This Step is optional.



Bone types I and II
800 - 1200 rpm

Bone types III
500 - 800 rpm

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.

For Guided Surgery it has a titanium ring (stop) which limits the depth of insertion of the drills. Insert until the stop reaches the sleeve.

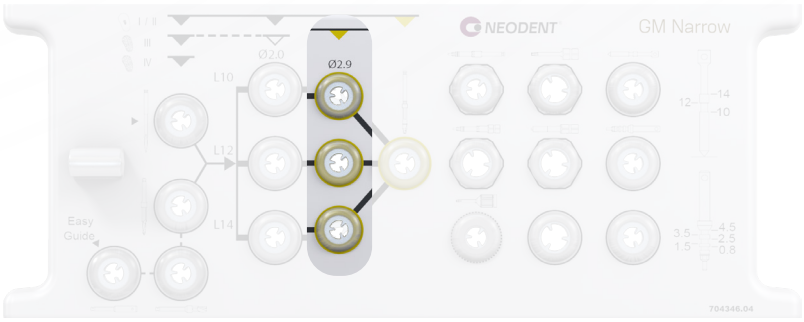
Tapered Drill 2.9

Guided Surgery: Step 6 | Conventional Surgery: Step 4

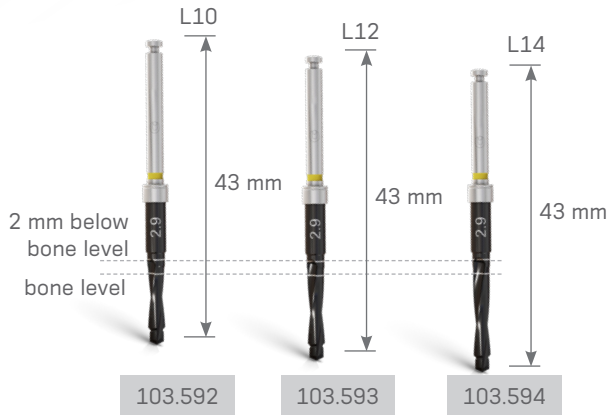
Start the motor and perform bone bed drilling with continuous movements of insertion and removal, under abundant irrigation. This irrigation can be either manual or combined with the irrigation from the motor. During drilling, pressure cannot be excessive.

Do not interrupt the rotation of the motor while the drill is inside the surgical cavity, as this may impede its removal or cause it to break.

The tapered drills have 2 laser markings. One for bone level and one for 2 mm below bone level placement.



Bone types I and II
800 - 1200 rpm



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.

For Guided Surgery it has a titanium ring (stop) which limits the depth of insertion of the drills. Insert until the stop reaches the sleeve.

NGM Countersink Drill

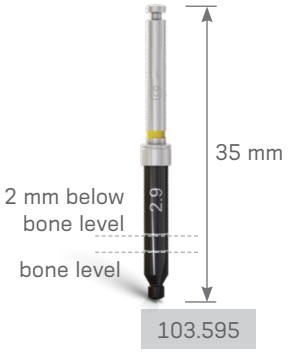
Guided Surgery: Step 7 | Conventional Surgery: Setp 5

The NGM Countersink Drill is used as a reaming drill at the osteotomy end to adapt the bone crest format to the occlusal implant platform. For the special bone preparation, countersink drills help position the platform of the implants according to the bone bed, when dense cortical bone is present.

Start the motor and perform bone bed drilling with continuous movements of insertion and removal, under abundant irrigation. This irrigation can be either manual or combined with the irrigation from the motor. During drilling, pressure cannot be excessive.

The Countersink drills have 2 laser markings. One for bone level and one for 2 mm below bone level placement.

Bone types I and II
800 - 1200 rpm



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.

For Guided Surgery it has a titanium ring (stop) which limits the depth of insertion of the drills. Insert until the stop reaches the sleeve.

IMPLANT PACKAGING AND PLACEMENT

Implant Packaging

Neodent® packaging has been specially updated for easy handling during surgical procedures, providing practicality from implant stocking to pick up and transport to the implant bed. The implant's features, such as type, diameter and length, are readily identifiable on the outside of the packaging.

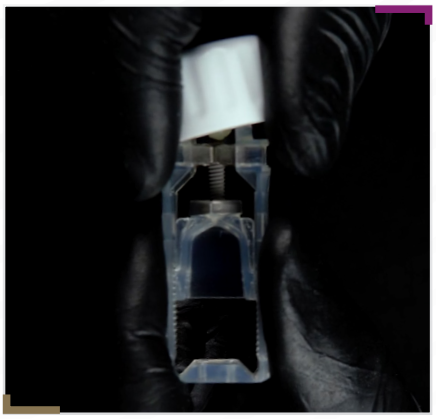
Three self-adhesive labels are provided for recording in the patient's medical records and for reporting to the prosthesis team. They also allow traceability for all articles.

Instructions on opening the implant package

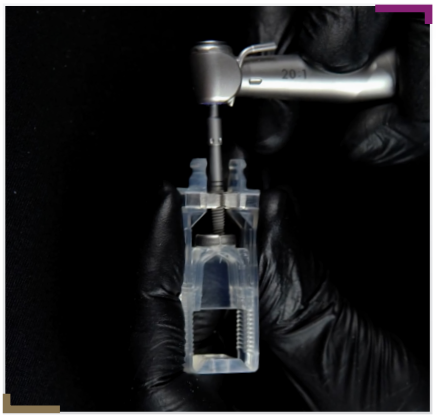
1 The cardboard and blister packagings must be manually opened without the use of sterile gloves. Break the seal of the cardboard packaging and remove the blister. Open the blister pack. Deposit the sterile flask over the surgical field.

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 Hold the bottle using the non-dominant hand and take the lid off. The internal support containing the implant should come out attached to the lid. To do so, remove the lid and the clear tube's internal support in the axial direction making no lateral movements.



3 Using the non-dominant hand, press the sides of the internal support promoting a “pincer effect” and immobilizing the implant. Keep the support pressed and remove the lid.



4 For installation, hold the implant with the driver for contra angle, keeping the connection stable and slightly rotating the internal support, searching for the perfect fit between the connection and the implant.

5 Take the implant to the surgical cavity.

6 Place the implant to its final position with a maximum torque of 35 Ncm and speed of 30 rpm, clockwise.

Final positioning of the implant

Neodent® Narrow GM™ implants have an internal hexagon index known as Exact. Ensure that the final position of the implant shows one of the prosthetic orientation marks facing the buccal aspect.

The implant drivers have six marks that line up with the six sides of the NGM Exact. Position one of the driver marks towards the buccal aspect to ensure the optimal positioning of the indexed abutments with NGM Exact.

Note 1: There are 2 similar markings at 1-mm intervals in the Drivers for the Contra-angle handpiece and Torque Wrench. These markings guide the depth of the final positioning of the implant in the following way: first stripe for 1 mm below bone level, second for 2 mm.

Note 2: An important difference between the contra-angle driver and the torque wrench driver is that the contra-angle handpiece driver features metal ring in the apex to keep the implant in position. Torque Wrench drivers are therefore not indicated for transporting the implant from the blister to the patient's mouth.

Completing the positioning of the implant with the Torque Wrench

Remove the contra-angle handpiece driver from the implant, and fit the torque wrench driver for the final positioning of the implant and torque measurement. First, use the fingers to fit the driver to the interior of the implants and then hitch the torque wrench onto the driver. The torque wrench drivers 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 45 Ncm is contraindicated.

To ensure that the torque during installation of the implant does not exceed the maximum recommended torque of 45 Ncm, it may be necessary to apply reverse torque during insertion of the implant into the bone. To apply reverse torque, invert the direction of the torque wrench to the counterclockwise direction and apply the torque in that direction.

SOFT TISSUE MANAGEMENT

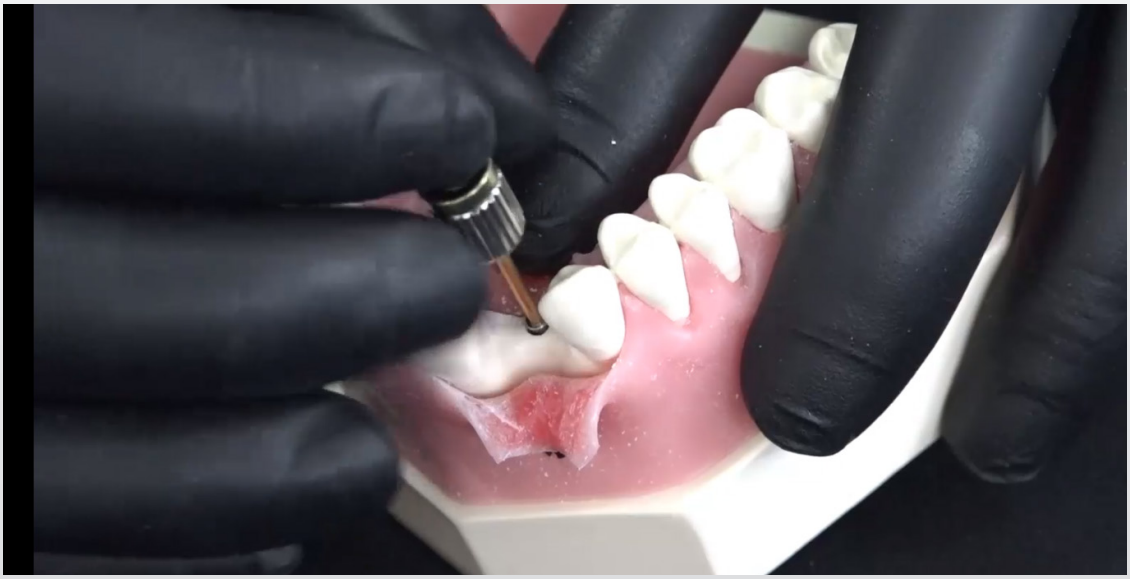
Conventional loading – Cover Screw

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 Ncm.

NGM Cover Screw

Neo Manual Medium Screwdriver



Conventional loading – Healing Abutment

Neodent® NGM healing abutments are available in different 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 establish the adequate soft tissue healing process, maintaining the indicated biological distance. Use the Neo Screwdriver to place the healing abutment on the implant. Maximum torque: 10 Ncm.

PROSTHETIC PROCEDURES

Immediate Loading

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 ≤ 45 Ncm;

• 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.

WORKING MODEL PRODUCTION

Intraoral scanning

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

Scanbody

Hybrid Repositionable Analog

Neo Manual Medium Screwdriver

To perform the intraoral scanning the dental surgeon should use the correct 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 onto the abutment.

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, Dental Wings Inc and 3Shape A/S at www.straumann.com/connectivity.html#download. Make sure that your CAD library is updated.

CARES® Visual

Dental Wings

3Shape

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 Virtuo vivo and Dental Wings 7Series.

Scanbody

Hybrid Repositionable Analog

Neo Manual Medium Screwdriver

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

CARES® Visual

Dental Wings

3Shape

TEMPORARY ABUTMENT

NGM Exact Temporary Abutment

The NGM Exact Temporary Abutment is a prosthetic abutment intended to be used in temporary, unitary and screwed prosthetic structures. It can be customized respecting the interocclusal space and minimium height of 4.0mm.

In order to use the Temporary Abutment Narrow GM™, for a two-stage procedure, prior preparation of the soft tissue can be performed with the use of the healing abutment.

This abutment is supplied with a removable screw.

For using the NGM Exact Temporary Abutment two different procedures can be performed, inside or outside patient's mouth.

Follow these steps for outside patient's mouth workflow:

- After implant installation in the mouth, place the compatible impression coping and make an impression;
- The technician select the correspondent NGM Implant Analog and produce the plaster model in the laboratory;
- Screw the NGM Exact Temporary Abutment over the correspondent analog and customize it in accordance with the available interocclusal space;
- Prepare the temporary prosthesis(es);
- Test the passivity and the adaptation of the prosthesis(es);
- Before placing into the patient's mouth, it should be cleaned and sterilized. Follow this steps for cleaning and sterilization:

- Immerse the piece completely in enzymatic detergent (diluted according to the manufacturer);

- Wash in an ultrasound washer for approximately 10 to 15 minutes;

- Rinse with plenty of distilled water, until the solution residues are completely removed. It is recommended to use nylon brushes.

- Dry with a clean, dry cloth or with compressed air.

- Conduct visual inspection, observing if there are any failures in the cleaning process. If there are still residues, the piece must be immersed in detergent again – first step- and, if necessary, the cleaning should be done with the aid of a nylon brush. Repeat the sequence of rinsing and drying.

- After cleaning, the following sterilization methods are recommended: moist heat (steam) autoclave, gravity-displacement or dynamic-air-removal (fractionated vacuum) cycle, unwrapped, 3 minute exposure at 132 °C (270 °F). The product must be unwrapped on an appropriate tray. Use the sterilized restoration immediately after sterilization, do not store;

- Screw the prosthesis(es) in the mouth using the Neo Screw Driver Torque wrench with a torque of 20Ncm.
- Ensure that it fits perfectly on the abutment and that the prosthesis is not pressing on the peri-implant tissue. Also check for a possible excess of cement.

Follow these steps for inside patient's mouth workflow:

- After implant installation in the mouth, the Temporary Abutment can be screwed directly in the mouth, over the implant, as indicated, using the Neo Screw Driver Torque wrench with a torque of 20 Ncm.
- Customize the abutment under abundant irrigation, in accordance with the interocclusal height;
- Prepare the temporary prosthesis directly over it. Passivity and adaptation tests of the prosthesis structure must be performed. During the preparation in mouth, it must be ensured that the material for temporary crown preparation does not leak into the adjacent tissues or implant. Protect the access for the screw (with teflon and resin compound).

The Temporary Abutment can remain in the mouth for up to 180 days.

The customization of the retentive portion height by up to 6.0 mm and must respect the minimum height of 4.0 mm.

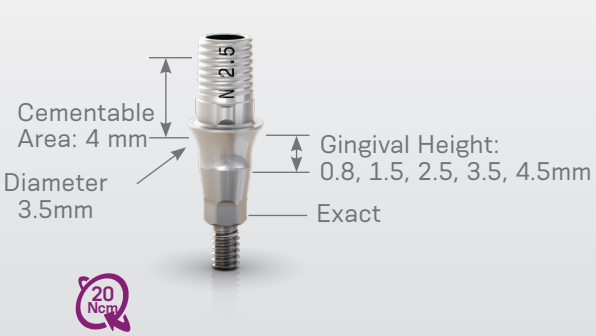
Neo Screwdriver Torque Connection and Torque Wrench

For a complete product training content access globalplay.neodent.com

SINGLE-UNIT PROSTHESIS

Narrow GM™ Titanium Base

It is a prosthetic abutment intended to be installed on Narrow GM implants, providing support for custom prosthetic structures. It consists of an abutment body and a removable screw. The Narrow GM Titanium Base presents antirotational (crown or coping) interface, it is provided straight/without angulation and must be used in this manner.



Narrow GM Titanium Bases feature three engagers working as rotational locks which restrict the crown's rotation, micro helical grooves with the purpose of increasing retention and optimizing the cementation and a recess that enables the cutting to reduce the cementable height from 6.0 to 4.0 mm. The Ti Bases also feature a hexagon which works as a rotational lock with the implant. All abutments have a conical abutting geometry and an internal thread for the screw to pass through, making transport to the mouth easier.

Neo Screwdriver
Torque Connection
and Torque Wrench

Prosthetic Procedures for NGM Exact Titanium Base

Intraoral

NGM Implant
Scanbody

NGM Hybrid Analog

NGM Exact
Titanium Base

NGM Exact Click Universal Abutment

The Narrow GM™ Universal Abutment is a prosthetic abutment to be installed between implant and prosthesis (crown), intended for use in single cemented prosthetic structures.

The abutment has a hexagon which works as a rotation limiting in relation to the implant. All abutments have a conical abutting geometry and an internal thread for the screw to pass through, making transport to the mouth easier.

The Narrow GM Universal Abutment is offered as straight or 17º angled and can be used in immediate or conventional rehabilitation procedures on the maxilla or mandible.

In the cementable portion of all models there are four concave recesses and a concave recess for the "click" of the scanbody and provisional cylinder. In this region is also the identification of the gingiva height. The "click" recess is also concave, but in the straight abutments it is presented in the form of a ring around the cement portion while in the angled models it consists of 4 interrupted recesses.

Angled abutments permit different gingival heights, as shown below:

4 mm cementable
Ø3.3 / 17º

6 mm cementable
Ø3.3 / 17º

The following steps should be used when placing the GM Exact Click Universal Abutment:

In order to use the Narrow GM™ Universal Abutment in two-stage procedures, prior preparation of the soft tissues can be performed with a healing abutment.

The NGM Exact Click Universal Abutment can be used immediately since there is the option to use acrylic cylinders for temporary crowns the emergence profile can be defined from them.

• Select the appropriate NGM Exact Click Universal Abutment according to the treatment plan, respecting the biological tissues;

• Place the NGM Exact Click Universal Abutment using the Neo Screwdriver Torque Connection with a torque of 20 Ncm;

• Protect the access of the screw (with teflon and resin compound), if applicable. It is recommended to install a provisional prosthesis (using the corresponding acrylic Cylinder of the Narrow GM Universal Abutment) for gingival conditioning.

• Use an scanbody to transfer the position and direction of NGM Exact Click Universal Abutment

• Send the .STL file to the laboratory and produce the model with the chosen abutment analog.

• The laboratory technician then produces the prosthesis;

• Cement the prosthesis and avoid excess cement on the peri-implant tissue;

• Ensure that it fits perfectly on the abutment and that the prosthesis is not pressing on the peri-implant tissue. Also check for a possible excess of cement.

This product is not compatible with the following instruments:

104.058 - NEO MANUAL SCREWDRIVER (SHORT)

104.059 - NEO MANUAL SCREWDRIVER (LONG)

105.133 - NEO SCREWDRIVER (SHORT)

105.134 - NEO MANUAL SCREWDRIVER (LONG)

105.136 - NEO SCREWDRIVER CONTRA-ANG

105.146 - NEO EXTRA SHORT SCREWDR.TORQ.CON.CONTRA

Prosthetic Procedure for NGM Exact Click Universal Abutment

NGM Exact Click
Universal Abutment

Intraoral

Universal Abutment
Scanbody

Universal Abutment Hybrid
Repositionable Analog

Milled Crown

Neo Screwdriver
Torque Connection

SINGLE/MULTI-UNIT PROSTHESIS

NGM Micro Abutment

The NGM Micro Abutment is indicated for use with single screw-retained prosthesis (crown) or multiple prostheses (bars). They are accompanied by a Polymeric transfer piece attached on the upper interface.

For use of the Narrow GM Micro Abutment in two stage procedures, a prior preparation can be done on the soft tissues with the use of a healing abutment.

• Select the appropriate abutment in accordance with the treatment plan, respecting the biological tissues, as previously described;

• Place the NGM Micro Abutment, applying a torque of 32 Ncm, using the Hexagonal Prosthetic Driver;

• Ensure that the abutment is perfectly positioned over the implant (with the aid of a periapical X-ray);

• Check that the scanbody fits well and follow the sequence already described;

• The laboratory technician then produces the prosthesis(es);

• Place the provisional or the definitive prosthesis(es) using the Neo Torque Wrench with a torque of 10 Ncm;

Prosthetic Procedures for NGM Micro Abutment

NGM Micro Abutment

Intraoral

GM™ Micro Abutment Scanbody

Micro Abutment Hybrid Repositionable Analog

Neo Micro Conical Abutment One Step Hybrid Coping

GM Micro Abutment Coping for Crown Digital Workflow

Drivers

1  Hexagonal Prosthetic Driver +  Torque Wrench

2  Neo Screwdriver Torque Connection +  Torque Wrench

3  Neo Screwdriver Torque Connection +  Manual Screwdriver Torque

REMOVABLE FULL ARCH PROSTHESIS

NGM TIN Attachment

The NGM Novaloc® abutments are recommended for removable prosthesis retained by attachments, known as overdentures. The Neodent® system of overdenture over attachment is contraindicated in cases which the angulation between the implants exceeds 30º or between abutments exceeds 40º.

Follow these steps to use the GM Novaloc abutments with overdenture:

- Ensure that the implant is not covered by hard or soft tissue and define the appropriate abutment based on the height markings on the Narrow GM Height Measurer.
- Place the Novaloc® TiN Attachment Narrow GM abutments using the Neo Screwdriver Torque Connection with 20 Ncm;
- Place the Forming/Fixing Matrix on the Novaloc® TiN Attachment;
- Use the mucodynamic technique for impression taking (vinyl polysiloxane or polyether rubber). Send the impression to the dental lab;
- Insert the Novaloc Model Analogs into the Forming/Fixing Matrix and Pour the plaster on the mold according to appropriate techniques;
- After the plaster setting phase, separate the impression and place white Mounting Collars on the Analogs;
- Place the Matrix Housing including preassembled Mounting Insert onto the Novaloc Abutments.

Note: for a chairside polymerization of the matrix housing use the processing spacer to create the space needed;

- Process the overdenture according to standard procedures;
- The dental lab will return the finalized overdenture to the dental office including the mounting inserts in place;
- Remove all mounting inserts from the matrix housing using the blue demounting tool for mounting inserts;
- Select the appropriate retention insert. Insert the retention inserts to the matrix housing using the mounting and brown demounting tool for retention inserts;
- Seat the finished overdenture and check the occlusion.

Prosthetic Procedures for NGM TIN Attachment

NGM TIN Attachment

Forming/Fixing Matrix

Forming/Fixing Matrix

Analog

Attachment Analog

Mounting Collar

Mounting Collar

Matrix Housing

Mounting Collar

Titanium

PEEK

Retention Insert

Red (approx. 300 g)

Green (approx. 1650 g)

White (approx. 750 g)

Blue (approx. 2100 g)

Yellow (approx. 1200 g)

Black (approx. 2550 g)

Final restoration

Accessories

Equipment Box

Processing Spacer

Mounting Insert

Matrix Housing Extractor

Mounting and Demounting Tool for Retention Inserts

Demounting Tool for Mounting Inserts for Analogs

Neo Screwdriver Torque Connection

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