



PROSTHETICS MANUAL

GRAND MORSE®



THE
GRAND MORSE®
IMPLANT SYSTEM

This PDF features interactive elements like buttons, bookmarks and hyperlinks.

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SINGLE-UNIT SCREW-RETAINED OR
SINGLE/MULTI-UNIT CEMENT-RETAINED PROSTHESIS

SINGLE/MULTI-UNIT SCREW-RETAINED PROSTHESIS

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| INTRODUCTION TO THE GRAND MORSE® INTERFACE

Over a few decades, internal connection represents an excellent part in dentistry. Thanks to their extended practicality, implants with internal connection generate optimal clinical results and have become widely accepted by dental surgeons. And also, internal connection improves biological and mechanical results⁽¹⁾.

Originally described by Stephen A. Morse in 1864, the Morse Taper connection is intended to provide a more stable and reliable connection between two parts. Tapering interface adjustments then began to be commonly used in engineering practices as Morse tapers, used to connect parts of lathes⁽²⁾. In the dental field, the internal connections are adapted to dental implants, where the characteristics of this fitting, such as the forces for removal, insertion and stress distribution of the parts depending on the⁽²⁻⁶⁾ :

- Angle of the taper;
- Length of the contact area;
- Internal and external diameter of the parts;
- Depth of insertion;
- Material properties;
- Coefficient of friction;
- Size and mass of the male connector.

As implant connections have become increasingly important in achieving satisfactory treatment results, Neodent® has developed a new implant system. The company, which has over 25 years of experience in dental implants, has built a team of specialists, focused on creating a complete package of innovations based on real clinical needs. The team has worked closely with the company's implant group to improve the current range of connections, creating the Grand Morse® connection (Figure 1).

These guidelines do not substitute each product's instructions for use (IFU). These can be found at our website: <https://ifu.neodent.com.br>. It is the surgeon's sole responsibility to analyse the most appropriate products for each clinical situation.

FIGURE 1. The Neodent® Grand Morse® Implant has a deep tapering connection on the inside of the implant, which is designed to increase the contact area between the implant and the abutment. In addition, this connection has a larger diameter, resulting in a simpler, more efficient clinical procedure.

This innovative approach has led to a major evolution in implant design. As everything has been designed from the connection to the body of the implant, new implants have been designed to be suitable for different surgical techniques and bone density. It has led to major advantages, including the fact that all Grand Morse® implants (Helix GM®, Drive GM® and Titamax GM®) have the same sized prosthetic connection, regardless of the diameter of the implant (Figure 2), with an internal angle of 16°. The thicker inner walls result in higher mechanical strength and improved results. They have been strategically designed for the Grand Morse® portfolio.



FIGURE 2. All Neodent® Grand Morse® implant connections have the same dimensions, regardless of the diameter of the implant, which results in a simpler prosthetic process.

In addition, the Grand Morse® tapered connection has an indexed internal hexagonal socket called Grand Morse® Exact, as shown in Figure 3. Grand Morse® Exact is used for the surgical positioning of the implant, giving a precise fit and orientation of the prosthetic abutments when working at the implant level.



FIGURE 3. An internal hex index developed to surgically guide the placement of the implant and shape the implant during the prosthetic phase.

Most of the Grand Morse® products require just one screwdriver, called the Neo Screwdriver. All the prosthetic screws have been redesigned and, when used with the Neo Screwdriver, provide the parts with high mechanical strength.



FIGURE 4. The Neo Screwdriver is used for most of the screws in the system.

The angled mini conical abutments in the Grand Morse® line have also been carefully designed to be more anatomically correct and less aggressive to the peri-implant soft tissue.



FIGURE 5. New angled abutments with anatomical profiles.

| CLASSIFYING DENTAL IMPLANT PROSTHESIS

There are several ways to rehabilitate patients using dental implants. To make this procedure easier, dental implant prosthesis can be classified according to:

- Level of work: implant or abutment level.
- Retention type: cement or screw-retained.
- Number of elements: single (coping or crown) or multiple (bar or bridge).



- Impressions and clinical trials can be performed at abutment level.
- Restorations can be either cement or screw-retained.
- Impressions and clinical trials can be performed at implant level.
- Abutments are always screw-retained in the implant.

| Work level for dental implant prosthesis: abutment or implant

Bone implants are first restored with the help of prosthetic abutments. These parts are screwed into the implants, acting as a component that enhance bone stability and has beneficial effects on the peri-implant marginal bone. Prosthetic abutments support the soft tissue during the procedure.

In cases where there are few soft tissues due to anatomical limitations, poor implant positioning, or any another reason, implants should be restored at their platform level (implant-level). Figures 8 and 9 show the clinical step of an impression at the implant level and impressions at the abutment level (restoration at implant level/restoration at abutment level).

There are many reasons to choose a restoration at either the implant or abutment level, especially now that digital solutions are available. However, abutment level restorations are strongly recommended when there is a minimum amount of mucosa, as they stabilize the soft tissue, provide a biological seal and mechanically protect the system.

Abutment level prosthesis require abutment level procedures, i.e. impressions, clinical tests, provisional restorations, etc. In which should always be carried out on the abutments. Thus, this article is not removed regularly, keeping the homeostasis of the peri-implant tissues intact (Figure 8).

FIGURE 8. A closed tray impression being taken at the abutment level.

Implant level restorations are carried out when there is the need for customized infrastructure. This customization process can be performed using either casting or milling (when using digital workflow).

The implant level work results in clinical procedures performed directly on the implant, as illustrated in Figure 9. This type of restoration is carried out when there is need for customized infrastructure. The customization process can be performed by using either casting or milling (when using digital workflow). The implant level restorations may be screw-retained or cement-retained. When is cement-retained, the prosthetic restoration requires a customized abutment for each specific clinical case.

FIGURE 9. A closed tray impression being taken at the implant level.



| Retention type: screw-retained prosthesis or cement-retained

Dental implant prosthesis can either be cement-retained or screw-retained, depending on the clinical situation and the preference of the dental surgeon. Screw-retained restorations are reversible and do not display a risk of inflammation of the mucosa due to the cement excess during placement. On the other hand, screw-retained prosthesis require excellent passive connection and seating. Also, they require an opening on the occlusal side for the screw channel. Therefore, the location of this opening must be planned in order to avoid esthetic impairment. Angled abutments are strongly recommended to avoid problems when the exit point towards the oral cavity.

Cement-retained restorations are more easily finished with enhanced esthetics since there is no concern about the outlet of the screw that fixes the abutment. However, it is not reversible. At the same time, cement excess should be avoided during crown cementation.

Figure 10 illustrates the difference between screw-retained and cement-retained dental prostheses. Although the cementation of the titanium base is performed outside the mouth, at the laboratory, eliminating the risk of cement excess on peri-implant tissues. Subsequently, the structure is screwed onto the implant.



FIGURE 10. Examples of screw-retained and cement-retained restorations.

| Number of elements: single (crown) or multiple (bar or bridge)

Dental implants may be used to restore gaps left by single or multiple missing teeth. Depending on the dentist's treatment plan, they may be joined, as bar or bridges, or placed separately, as individual crowns. The design of prosthetic abutments and cylinders is determined by these formats, which may be anti-rotational/engaged (for single-crowns) or rotational/non-engaged (for multiple prosthesis).

The selection of anti-rotational or rotational formats of the Grand Morse® system also depends on whether the lower part of the abutment has the Grand Morse® Exact. As well as whether there is an adjustment fitting in the cylinders for laboratory use. The presence or absence of an anti-rotational element on the cylinder establishes whether it is indicated for crowns or for multiple prostheses (Figure 11).

Multiple	Single (Crown)	Multiple	Multiple	Single (Crown)
Rotational 	Anti-rotational 	Rotational 	Rotational 	Anti-rotational 
Rotational 	Anti-rotational 	Rotational 	Anti-rotational 	Anti-rotational 
GM Mini Conical Abutment	GM Micro Abutment	GM Micro Abutment	GM Exact Angled Mini Conical Abutment	GM Exact Abutment

FIGURE 11. Rotational and anti-rotational formats are used for multiple or single prostheses. Each abutment or prosthetic component has its own characteristics and options (rotational or anti-rotational, Exact or non-Exact). Further details will be given when all the abutments are described in this manual. In any case, the relationship between the cylinder and the abutment determines whether they are indicated for use in single or multiple prostheses.

| ABUTMENT AND PROSTHETIC COMPONENTS SELECTION

The retention type, the workflow level and the number of units determinate the selection of the abutment, as can be seen in the table below:

Retention Type		Final Restoration			Removable
Level of Work	N° of units	Screw-retained	Cement-retained	Overdenture	
Temporary Restoration		<ul style="list-style-type: none"> • GM Pro Peek Abutment • Ti Temporary Abutment 			
Implant	Single	<ul style="list-style-type: none"> • GM Exact Titanium Base • Titanium Base C for GM Exact • GM Titanium Blocks • TiBase AS 	<ul style="list-style-type: none"> • GM Exact Click Universal Abutment • GM Exact Click Anatomic Abutment • GM Titanium Block 		
		<ul style="list-style-type: none"> • GM CoCr Abutment 			
	Multi	<ul style="list-style-type: none"> • TiBase Bridge 	<ul style="list-style-type: none"> • GM Titanium Block 	GM Equator Attachment	
Abutment	Single	<ul style="list-style-type: none"> • GM Exact Abutment • GM Micro Abutment 	<ul style="list-style-type: none"> • GM Exact Click Universal Abutment • GM Exact Click Anatomic Abutment 		
	Multi	<ul style="list-style-type: none"> • GM Mini Conical Abutment • GM Micro Conical Abutment 		GM Attachment TiN	

Once the abutment is selected, other features also need to be determined, as each abutment has a different gingival height, shape and angulation. The main features of an abutment are:

- Diameter;
- Interocclusal height (from the abutment);
- Gingival height;
- Angulation.

PLACING ABUTMENTS AND PROSTHETIC COMPONENTS

Abutments are placed during the following stages:

- (1) in the healed mucosa (after removal of healing abutments or temporary crowns);
- OR (2) during surgery with or without flaps, right after the positioning of the implant (in case of immediate loading);
- OR (3) after the removal of the cover screws.

After the abutment type is selected, consider this features to determinate its design:

- Interocclusal space, height, and diameter;
- Gingival height;
- Biological space (distance between the abutment and the bone crest);
- If there is the need for angle correction of the implant with the abutment or if it is parallel to adjacent abutments.

In addition to the relationship between healing abutments and abutments, other important biological aspects are described to facilitate this step.

Note: For the "Interocclusal space, height and diameter", all screw head's designs should be considered in the case of screw-retained restorations. The head of the screws are directly related with the remaining interocclusal space planned for the restoration. So it should be considered:



GM Abutment*, GM Mini Conical Abutment and CoCr Base screws.

*GM Abutment has a wider screw when compared to others, designed to increase mechanical resistance.

GM Line with Removable Screw

Some components are available with removable screws. These components feature an internal thread added to keep the screws from falling and to make it easier to remove the abutment, when necessary.



Neo GM Screw (Short) only for GM Exact Abutment with 0.8 GH

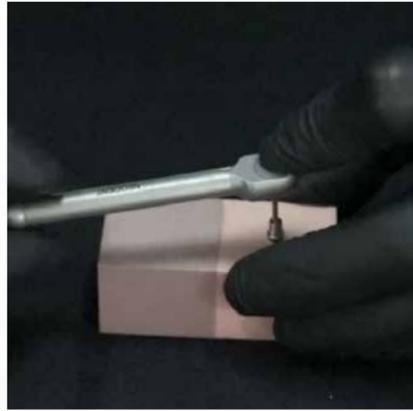
Neo GM Screw for abutments with 1.5-2.5 GH and Universal Abutment or Pro PEEK Abutment with 0.8 GH

Neo GM Screw (Long) for abutments with 3.5-5.5 GH (and for all Ti Bases)

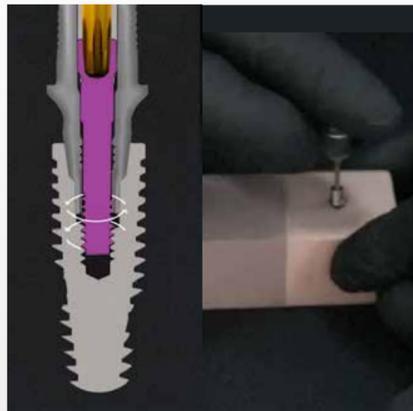
			
GM Universal Abutment	-	0.8-2.5 mm	3.5-5.5 mm
GM Anatomic Abutment	-	1.5-2.5 mm	3.5 mm
GM Pro Peek Abutment	-	0.8-2.5 mm	3.5-5.5 mm
GM Abutment	0.8 mm	1.5-2.5 mm	3.5-5.5 mm
GM Mini Conical Abutment	-	1.5-2.5 mm	3.5 mm
GM Titanium Base	-	-	0.8-5.5 mm

| How to remove the screw and the abutment

For removal of the screw and abutment of the GM Abutments with Removable Screw, follow the steps:

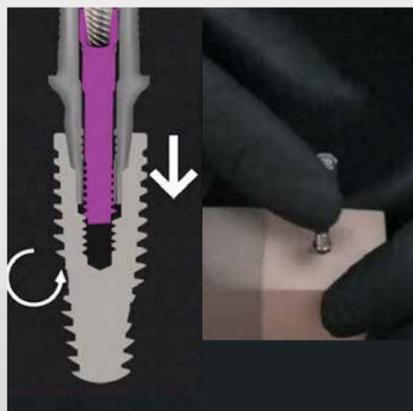


1- Adapt the Torque Wrench on the Neo Screw driver Torque Connection and apply torque on the reverse direction (counterclockwise) to loosen the screw.



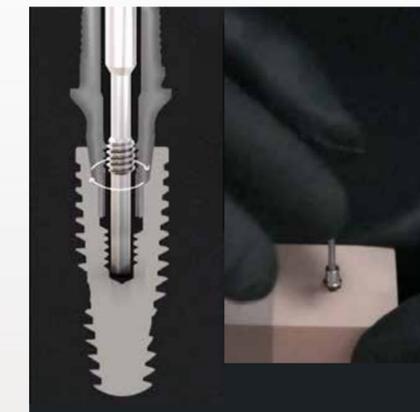
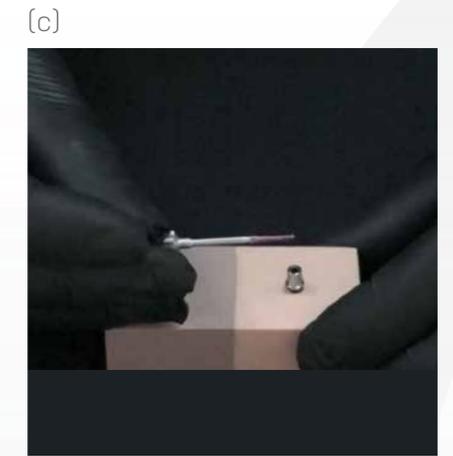
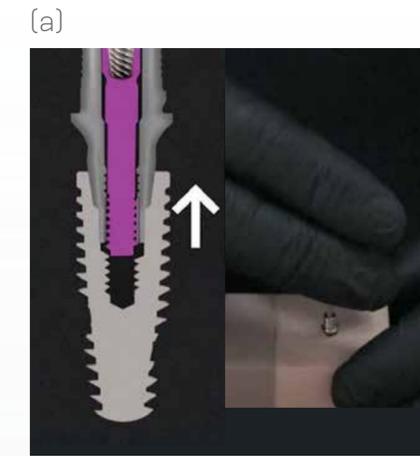
2- Use the Neo Manual Screw driver to unscrew until it is completely removed from the implant thread.

3- In case that the abutment is stuck into the implant and was not possible to remove with the Neo Manual Screwdriver, please proceed with the following steps with the Remover for Neo Screw.



4- Place the Remover for Neo Screw over the screw interface of the prosthetic abutment and manually rotate counterclockwise by applying light pressure, causing the remover to overlap the screw until it is completely removed from the implant thread.

5- Then pull the screw to the start of the abutment thread(a). Continue turning the remover counterclockwise until the screw is completely removed(b-c).



6- Use the Remover for Abutments with Internal Threads, inserting it in the abutment, respecting the thread axis and rotate manually clockwise until the abutment is completely removed.

Important: The procedure should be done respecting the axis of the thread of the component. Using the Remover for Neo Screw makes the screw useless, which must be discarded and replaced.

When, after screw removal, the component remains attached to the implant, there is the option of using abutment remover to assist in the complete removal of the component. To do this, use the Remove for Abutments with Internal Threads, inserting it in the abutment, respecting the thread axis and rotate manually clockwise until the abutment is completely removed.

Important: The procedure should be done respecting the axis of the thread of the component.



| Overview of Grand Morse® healing abutments

The Grand Morse® implant range includes a variety of healing abutments, with different diameters and gingival heights, designed to adapt to the final abutments. The correct choice of this element determines adequate healing of soft tissues, controlling pressure while maintaining the biological distance.

There are a number of standard Grand Morse® healing abutment shapes, which can be selected according to the needs of each clinical case:



Grand Morse® healing abutments were designed to ensure the correct emergence profile, adapted to all abutment types, as described in the figure below.

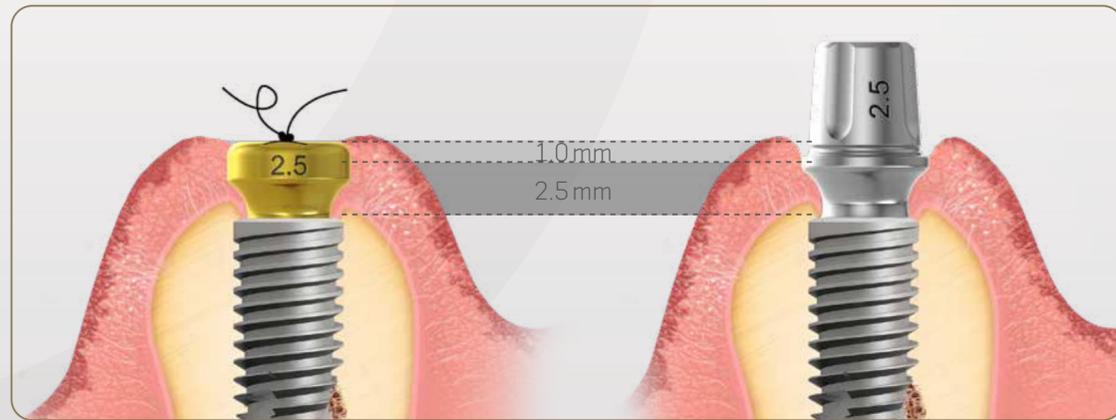
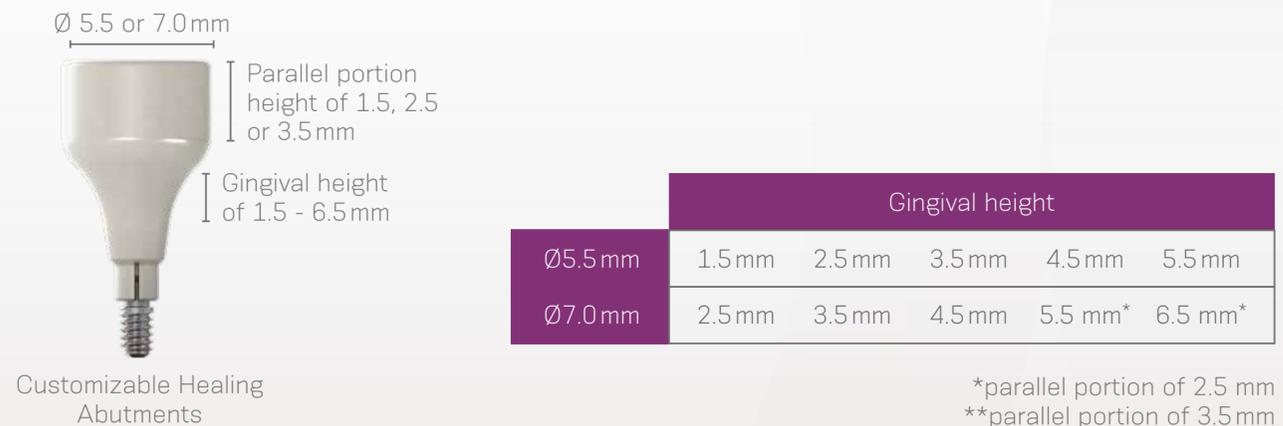


FIGURE 12. Relationship between the design of healing abutments and the dimensions of all Grand Morse® abutments.

The Grand Morse® line also features customizable healing abutments. They are produced in titanium, with a customizable portion made of PEEK. The available diameters and gingival heights are presented below. It is also important to notice the height of the parallel portion, which is of 1.5 mm for all options, with the exception of the 7.0X5.5 mm (2.5 mm high parallel portion) and the 7.0X6.5 mm (3.5 mm high parallel portion) customizable healing abutments.

In all cases, there is the possibility of customizing the upper and lateral portions of the product. A minimum thickness of 0.5 mm is recommended to be maintained between the screw and the lateral and upper portions.



The Grand Morse® line also features specific healing abutments for the CoCr Abutments. This solution was designed to deliver an emergence profile more suitable to the abutment thanks to the parallel walls. This solution is indicated for maintenance of the soft tissues during the osseointegration. They are available in three different diameters, since the fitting of the CoCr Abutment is on the implant platform, the implant placement should be in bone level, and there is no need to have healing abutments with different gingival heights.



Overview of Grand Morse® abutments and their corresponding healing abutments

Grand Morse® Screw-retained Options

Grand Morse® Cement-retained Options

Type	GM Mini Conical Abutment	GM Exact Angled Mini Conical Abutment	GM Micro Abutment	GM Exact Abutment	GM Titanium Base				GM Titanium Base AS			GM Titanium Base for Bridge			Abutment GM Exact Universal Click					
					3.5mm	4.5mm	5.5mm	6.5mm	4.0mm	4.5mm	5.0mm	3.5mm	4.5mm	5.5mm	3.3mm		4.5mm			
																Straight	Angled	Straight	Angled	
Abutment	Ø Available	4.8mm	4.8mm	3.5mm	4.8mm	3.5mm	4.5mm	5.5mm	6.5mm	4.0mm	4.5mm	5.0mm	3.5mm	4.5mm	5.5mm	3.3mm		4.5mm		
	Gingival height	0.8 mm		0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm	1.5 mm				0.8 mm	0.8 mm	0.8 mm	0.8 mm		0.8 mm		
		1.5 mm			1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm		0.8 mm	0.8 mm	0.8 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
		2.5 mm	1.5 mm		2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm		1.5 mm	1.5 mm	1.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
		3.5 mm	2.5 mm		3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm		2.5 mm	2.5 mm	2.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm
		4.5 mm	3.5 mm		4.5 mm	4.5 mm	4.5 mm	4.5 mm	4.5 mm		2.5 mm	2.5 mm	2.5 mm	3.5 mm	3.5 mm	3.5 mm	4.5 mm	3.5 mm	4.5 mm	3.5 mm
5.5 mm			5.5 mm	5.5 mm	4.5 mm	4.5 mm	4.5 mm	4.5 mm				4.5 mm	4.5 mm	4.5 mm	5.5 mm		5.5 mm			
Corresponding healing abutment	Ø Available	4.5mm	4.5mm	3.3mm	4.5mm	3.3mm	4.5mm	5.5mm	6.5 mm 7.0 mm	4.0mm	4.5mm	5.5mm	4.0mm	4.5mm	5.5mm	3.3mm		4.5mm		
	Gingival height	0.8 mm		0.8 mm	0.8 mm	0.8 mm	0.8 mm	1.5 mm	1.5 mm				0.8 mm	0.8 mm	1.5 mm	0.8 mm		0.8 mm		
		1.5 mm			1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm		0.8 mm	0.8 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
		2.5 mm	1.5 mm		2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm		1.5 mm	1.5 mm	1.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
		3.5 mm	2.5 mm		3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm		2.5 mm	2.5 mm	2.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm	3.5 mm
		4.5 mm	3.5 mm		4.5 mm	4.5 mm	4.5 mm	4.5 mm	4.5 mm		2.5 mm	2.5 mm	2.5 mm	3.5 mm	3.5 mm	4.5 mm	4.5 mm	3.5 mm	4.5 mm	3.5 mm
5.5 mm			5.5 mm	5.5 mm	4.5 mm	4.5 mm	4.5 mm	4.5 mm				4.5 mm	4.5 mm	4.5 mm	5.5 mm		5.5 mm			

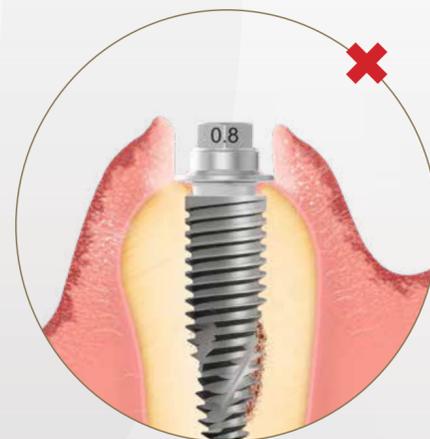
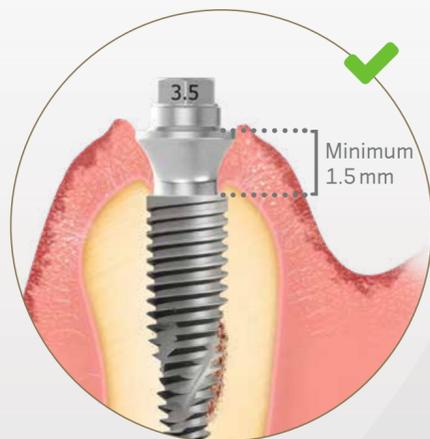
Grand Morse® CoCr Abutment Options

CoCr Abutment	
Abutment Ø available	Corresponding healing abutment
4.1mm	3.5 / 3.75mm
4.5mm	4.0 / 4.3mm
5.0mm	5.0 / 6.0mm

| Biological care when placing Grand Morse® abutments and prosthetic components

Grand Morse® abutments are normally placed inside the bone crest in intraosseal position. This results in a certain amount of bone tissue around the cervical portion of the implant, which may impact the placement of the abutments on the implants. To solve such situations, Neodent® provides the GM Bone Profile drill. The GM Height Measurer is used to check and select the correct gingival height of the abutment.

The margin of the abutment should be away from the bone crest in at least 1.5 mm to the bone crest and no more than 2mm under the mucosa. The images below illustrate different situations and the correct final positioning of the abutment.



| CONVENTIONAL IMPRESSION

The implant and its impression can be sent to the laboratory in different ways, as modern prosthesis can be fabricated by conventional casting procedures (conventional flow) or through the use of digital workflow. This chapter covers conventional impression techniques.

| Transfer of implants/abutments (open or closed tray impressions)

The procedure for transferring implants or abutments is similar to conventional dental impression. It can be carried out using open or closed trays. Individual articles, known as impression copings, are screwed or adapted to the abutments or directly onto the implants.

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. Some different closed tray impression caps are made in plastic and captured directly by the impression material. Each abutment has its own impression system and each option should be reviewed in the catalog or working protocol.

In some Grand Morse® impression copings for implants, there are two options available: open or closed tray. The first one is indicated for multi-unit restorations and the second one for single-unit prostheses. There are also two lengths available, depending on the gingival height and the final position of the implant. These options are described below.

Generally, the transfer sequence for abutments follows the same workflow as that set out for the transfer of implants (open or closed), but with the impression copings adapted to each abutment. The features of each abutment should be noted, as only some allow for either an open or closed transfer process to be used.

	Open Tray (Multi-unit restorations)	Closed Tray (Single-unit restorations)
Conventional		
Long		

| Model Production

First of all, the impression should be checked, to ensure that the impression coping is correctly adjusted and positioned. The following steps should be carried out in the prosthesis laboratory:

- Analog (implant or abutment, depending on the technique) is positioned. It should fit exactly as shown in the figure below:

- Use the preferred artificial gingival material to make a removable, accurate and faithful gum 3 to 4 mm in depth (follow the manufacturer's instructions for the material used for making the artificial gum indicated in the respective IFU);

- Use and prepare the mixture using Type IV plaster. Make sure to mix the powder and the water correctly, following the manufacturer's instructions;

- Pour the plaster mixture into the impression. Make sure that the plaster coats all anatomical details and, in particular, that it covers the analog completely;

- Wait the recommended time for the plaster to set and then carefully remove the model from the impression tray;

- Check if there are no bubbles and if all the details have been completely copied;

- Finish the model;

- It is also important to have a model of the opposite arch and assemble them both in an articulator.



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.



FIGURE 13. Hybrid Repositionable Analogs for Grand Morse® Implant, Abutment, Mini Conical Abutment, Micro Abutment and Universal Abutment.

| DIGITAL IMPRESSION/SCANNING

The implant and its impression can be sent to the laboratory in different ways, as modern prosthesis can be fabricated by conventional casting procedures (conventional flow) or through the use of digital workflow. This chapter covers conventional impression techniques.

| Scanbody

The scanbody can be used on an implant and/or abutment level in order to transfer their positions following the scanning to use in CAD/CAM procedure. This is used to realign the library of implants/abutments with the correct position, according to the reference implant/abutment. The scanbodies can be used for both plaster model scanning (on top of analogs) and intraoral scanning (for implants and abutments). The Neodent® scanbodies are made in titanium and have an opaque surface that eliminates the need for any type of opaque spray. They also are reusable up to 10 times.

The Neodent® scanbodies for universal abutments are made in PEEK, an opaque polymer that eliminates the need for any type of opaque spray and are for single use.

FIGURE 14. Scanbodies are essential for the digitization of models or for intraoral scanings.



| Digital scanning for prosthesis (CAD/CAM)

| Scanning a plaster model

Once the plaster model is made (Item 5.2 - impressions of implants/abutments), 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.

* For this step, the appropriate library must be installed in the software.

The order of the following steps may vary depending on the software and scanner used, but should be basically the same for all:

- Start the software database/chosen scanner;
- Select the correct option and material for the case and make sure that the selected library matches the scanbodies that are to be used;
- 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.

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 platform may lead to digitalization problems

- After digitalization, design the prosthesis in the CAD software.

*Libraries are available for the following softwares: CARES Visual, exocad, Dental Wings and 3Shape at [https://www.neodent.com/Products/implant-scanning](#). Make sure that your CAD library is updated.

| Intraoral scanning

Dentists surgeons need an Intraoral (IO) scanner at their practice to perform an intraoral scanning. The dental laboratory receives an e-mail with the file instead of a pack with the physical impression. The intraoral scanning process must follow all the clinical cares and safety instructions and also follow the step-by-step of the IO scanner manufacturer. Scanners indicated to Neodent® Scanbodies are: Virtuo Vivo Dental Wings Intraoral Scanner or TRIOS by 3Shape. Follow these steps to perform the intraoral scanning:



- Fill all order from the software properly;
- Use the correct intraoral scanbody, according to the chosen abutment or Grand Morse® implant;
- 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;
- 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 with CAD/CAM system).

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 platform may lead to digitalization problems.

| CONVENTIONAL WORKFLOW FOR PROSTHESIS

Select the most appropriate abutment for the case, and follow the workflow described in the table below:

Cylinder	Indication	Technique
 <p data-bbox="279 699 509 727">Titanium or Polymer</p>	<p data-bbox="726 551 1036 583">Provisional/ Temporary</p>	<ul data-bbox="1192 408 2219 727" style="list-style-type: none"> - Select a Neo Titanium Cylinder or Temporary Click Cylinder; - Fix the cylinder on the analog and customize to match the interocclusal space available; - Prepare the temporary prosthesis; - Test the passivity and the fit of the prosthesis structure to the cylinder; - Secure the cylinder on the abutment and check the occlusion; - Temporary crowns can be made in the laboratory or in the dental office (chairside).
 <p data-bbox="359 1206 436 1234">CoCr</p>	<p data-bbox="736 1061 1026 1093">Definitive Prosthesis</p>	<ul data-bbox="1192 776 2352 1384" style="list-style-type: none"> - Place the cylinder onto the analog on the plaster cast; - Apply wax to the restoration; - The thickness of the wax must be at least 0.5 mm, and can be reduced to 0.3 mm after overcasting; - Prepare the base of the cylinder for casting and add the covering; - The alloy must be compatible with the esthetic material and the CoCr base; - Do not apply porcelain directly onto the CoCr base; - Apply the porcelain (specific to this type of alloy) directly over the area not covered by the metallic alloy used for overcasting, as this can cause cracks; - Ensure that the original format of the screw access opening is preserved; - Polishing protectors are recommended during finishing and polishing procedures; - Do not use corrosive materials during the finishing of the alloy, as they may contain iron particles.
 <p data-bbox="343 1656 449 1684">Burn-out</p>	<p data-bbox="736 1543 1026 1575">Definitive Prosthesis</p>	<ul data-bbox="1192 1431 2479 1690" style="list-style-type: none"> - Place the cylinder onto the analog on the plaster cast; - Apply wax to the restoration; - Prepare the base of the cylinder for casting and add the covering; - Continue with the casting and finishing processes; - Ensure that the original format of the screw access opening is preserved, when using a screw-fixed prosthesis.

OVERVIEW OF TORQUES AND CONNECTIONS



| GRAND MORSE® ABUTMENT TRY-IN KIT

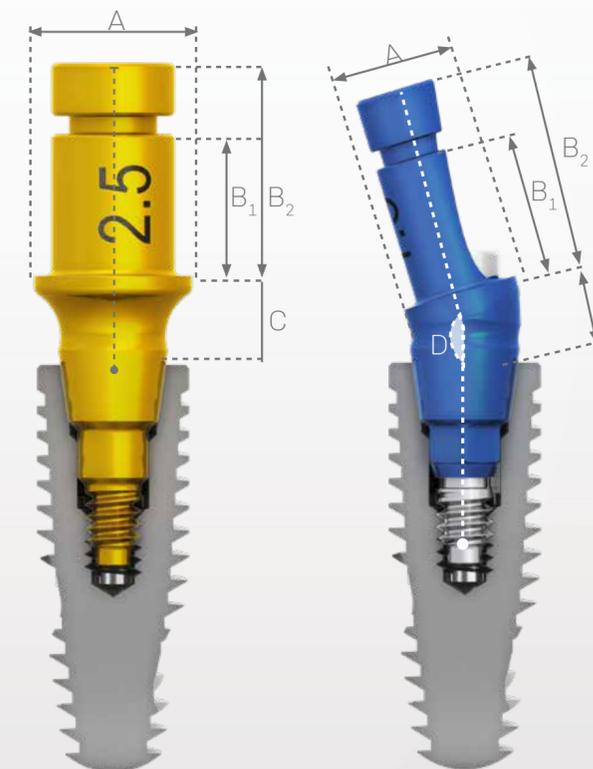
To help choosing healing abutments and prosthetic abutments, Neodent® has developed the Grand Morse® Prosthetic Try-in Kit. It gathers the possible combinations of width, gingival height, angulation and interocclusal height of the Grand Morse® abutment line. It is a cassette composed with titanium pieces similar to abutments. Every abutment has individual dimensions replicating important references for diagnosing the spaces.



Grand Morse® Abutment Try-In Kit, composed by titanium pieces similar to the abutments.

The main references are:

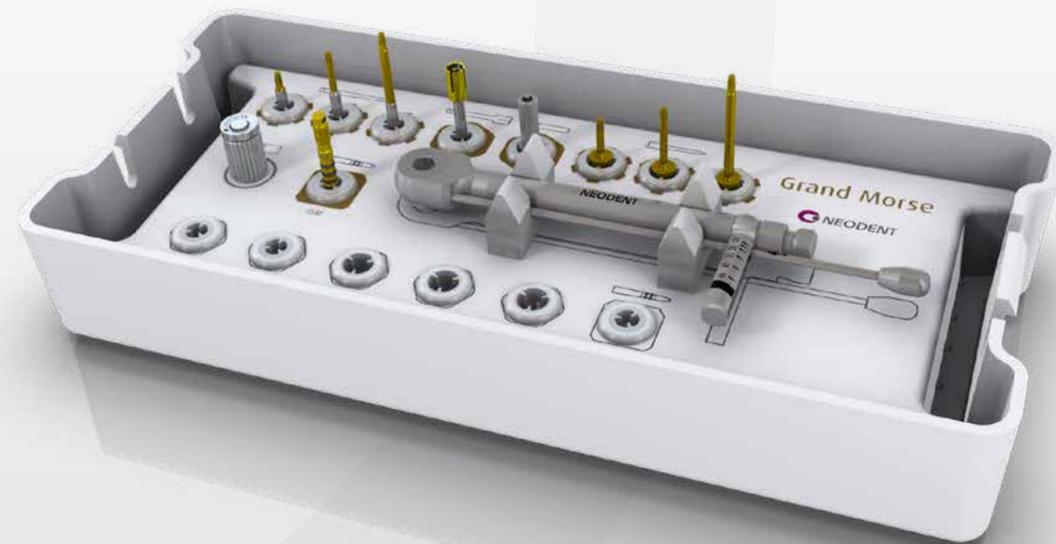
- Diameter (A);
- Occlusal height of the prosthetic component (B1 = 4 mm; B2 = 6 mm);
- Gingival height (C);
- Angulation (D).



| GRAND MORSE® PROSTHETIC KIT

The Grand Morse® Prosthetic Kit features all instruments necessary to insert the Grand Morse® abutments:

- Neo Screwdrivers Torque Connections for Contra-angle and for Torque Wrench;
- Hexagonal Prosthetic Drivers for Contra-angle and Torque Wrench;
- A manual Screwdriver Torque;
- A GM Height Measurer;
- A torque Wrench.



Grand Morse® Prosthetic Kit.

| BIBLIOGRAPHY

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4. Bozkaya D, Müftü S. Efficiency considerations for the purely tapered interference fit (TIF) abutments used in dental implants. *J Biomech Eng.* 2004 Aug;126(4):393-401.
5. Bozkaya D, Müftü S. Mechanics of the taper integrated screwed-in (TIS) abutments used in dental implants. *J Biomech.* 2005 Jan;38(1):87-97.
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| GM PRO PEEK ABUTMENT

The GM Pro PEEK Abutment is a temporary abutment which consists of two parts: the first is a body made of PEEK (a high-performance polymer) in cylindrical shape, that can be customized, and the second is manufactured in titanium, to be placed into the implant using the GM Exact indexation. The GM Pro PEEK Abutment should be customized to determine and establish the emergence profile during the period of healing of peri-implant tissues, prior to final selection of an abutment. PEEK is an easily prepared dental material when compared to other materials and is biocompatible.

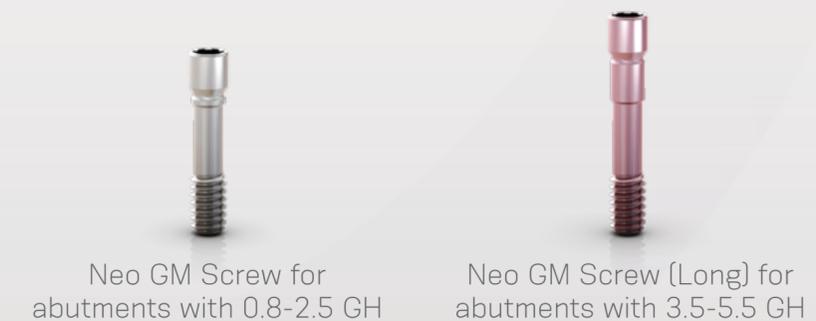
The GM Pro PEEK Abutment is available in different diameters and different gingival heights, as shown below:



Note: The Pro PEEK Abutment is a device indicated only for provisional crowns (maximum time in the mouth: 6 months).

To use the GM Pro PEEK Abutment, some steps should be followed:

- Select the GM Pro PEEK Abutment according to the treatment planning, respecting the biological tissues as previously described.
- Place the Pro PEEK abutment with 20N.cm using the Neo Screwdriver for Torque Wrench;
- Make sure that the abutment is aligned with the insertion axis of the implant;
- Ensure that it is perfectly seated on the implant (using periapical X-ray);
- Personalize the GM Pro PEEK Abutment with a high speed handpiece in the patient's mouth. It is necessary to keep a PEEK minimum height of 5mm;
- Create and adapt a temporary restoration to establish the emergence profile and soft tissue;
- Test the adaptation of the prosthetic structure;
- Cement the restoration using the manufacturer's instructions for use:
 - Important to protect the access of the screw;
 - Be aware to keep the mucosa free of cement excess.
 - Be aware of using the correct screw as listed below.



| GM TITANIUM TEMPORARY ABUTMENT

The Titanium Temporary Abutment is a prosthetic temporary device to re-establish occlusal function, in maxilla or mandible bones. It can be used for single or multiple screw-retained provisional prosthesis (es). It can be customized respecting the interocclusal space and minimum height of 4.0mm.

This abutment is supplied with a removable screw.

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



Follow these steps for outside patient's mouth:

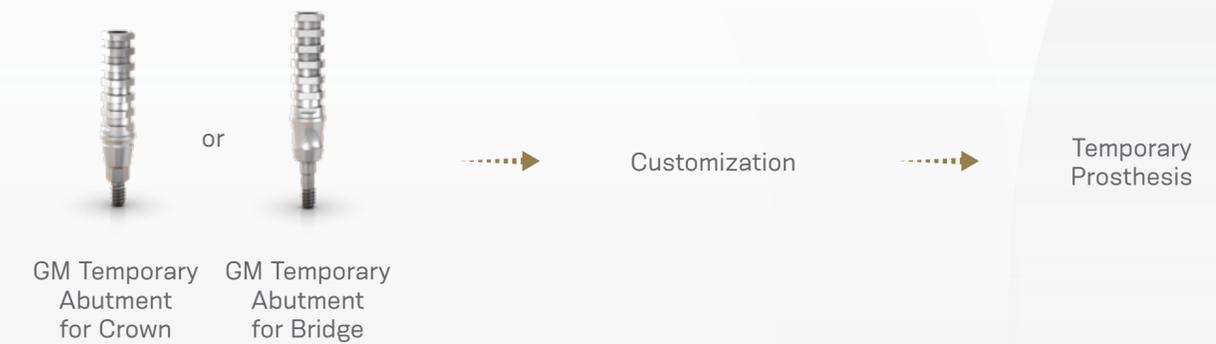
- After implant installation in the mouth, place the compatible impression coping and make an impression;
- The technician select the correspondent GM Implant Analog and produce the plaster model in the laboratory;

- Screw the Titanium 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 20N.cmm
- 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:

- After implant installation in the mouth, place the compatible impression coping and make an impression;
- The technician select the correspondent GM Implant Analog and produces the plaster model;
- Screw the Titanium Temporary Abutment over the implant inside the patient's mouth. Customize the abutment under abundant irrigation, in accordance with the interocclusal height;
- 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 20N.cmm
- 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.



GM EXACT TITANIUM BASE



Digital workflow

The position of the GM TITANIUM BASE is transferred basing on the position of the GM implant. When conventional impression is used, once the plaster model is made, the implant analog position should be scanned, by using the model Scanbody. For intraoral scanning, the GM implant Scanbody should be used.

After scanning, these steps should be followed:

- Open the CAD software;
- Carefully select in the CAD software library the correspondent GM Exact Titanium Base, as previously chosen;
- Proceed with the prosthesis CAD design;
- After completing the prosthesis design, start the milling process in the CAM machine ;
- Mill the crown/coping in-house
- Try on the fit of the crown/coping onto the titanium base, preferably in the patient's mouth and check the occlusion;
- The GM Exact Titanium Base should be cemented in the laboratory;

- Screw the GM Exact Titanium Base into the implant analog of the 3D printed model ;
 - Protect the access to the screw;
 - Follow the cement manufacturer's instructions for use. The GM Exact Titanium Base has been tested with chemically-activated resin cement (e.g.: Panavia);
 - Apply the cement to the GM Exact Titanium Base and apply pressure to the restoration, following the three indexes;
 - Remove any cement excess immediately;
 - Remove the infrastructure from the analog after the cement sets and remove any remaining cement surrounding the GM Exact Titanium Base;
 - Before placing the prosthesis in the mouth, give it a final clean and sterilization :
 - Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
 - Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
 - Rinse thoroughly with distilled water to completely remove any remaining solution;
 - The use of nylon brushes is recommended;
 - Dry with a clean, dry cloth or with compressed air;
 - Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;
 - Proceed with the placement in the mouth (using the Neo Screwdriver Torque Connection with a torque of 20 N.cm
 - Make sure that the Titanium base engaging is aligned with the centre axis of the implant;
 - Make sure that the prosthesis is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues.
- Note: Check in the IFU the indication of minimum material thickness, maximum angulation and other important information of the GM Exact Titanium Bases.



| Conventional workflow

Titanium Bases can also be used according to a conventional workflow for ceramic injection molding.

Follow this steps for conventional work flow:

- Place the GM Implant Impression Copings over the implant and take the impression;
- The technician select the correspondent GM Implant Analog (3.5/3.75; 4.0/4.3 or 5.0/6.0) and produce the plaster model in the laboratory;
- The laboratory technician produces a single screw-retained prosthesis using ceramic injection conventional techniques, along with the selected burn-out coping (3.5x4.0; 3.5x6.0; 4.5x4.0; 4.5x6.0; 5.5x4.0; 5.5x6.0); 330
- The GM Exact Titanium Base can be cemented in the laboratory;
- Screw the GM Exact Titanium Base into the implant analog of model ;
- Protect the access to the screw;
- Follow the cement manufacturer's instructions for use;
- Apply the cement to the GM Exact Titanium Base and apply pressure to the restoration, following the three indexes;
- Remove any cement excess immediately;
- Remove the infrastructure from the analog after the cement sets and remove any remaining cement surrounding the GM Exact Titanium Base;
- Before placing the prosthesis in the mouth, give it a final clean and sterilization :

- Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
- Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
- Rinse thoroughly with distilled water to completely remove any remaining solution;
- The use of nylon brushes is recommended;
- Dry with a clean, dry cloth or with compressed air;
- Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;
- Proceed with the placement in the mouth using the Neo Screwdriver Torque Connection with a torque of 20 N.cm;
- Make sure that the Titanium base engaging is aligned with the central axis of the implant;
- Ensure that it fits perfectly on the implant (with the aid of a periapical x-ray) and that the prosthesis is not pressing on the peri-implant tissue.



TITANIUM BASE C FOR GM EXACT

The Titanium Base C for GM Exact allows milling of customized parts, using the CEREC System, provided by Dentsply Sirona. It is recommended for single prosthesis: copings and crowns cemented in the laboratory and screwed into the implant in the mouth.

This abutment is supplied with a removable screw.

The Titanium Base C for GM Exact has the following features:



Follow these steps to use the Titanium Base C for GM Exact:

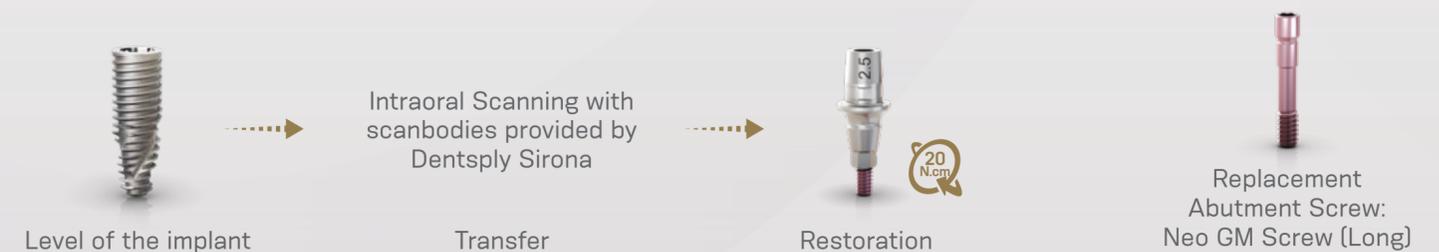
- Select the Titanium Base C for GM Exact according to the Gingival height;
- Insert the Titanium Base C for GM Exact into the implant using the Neo Screwdriver Torque Connection; If using Scanbase C for scanning, insert the Scanbase C instead of the titanium Base C at this point
- Insert the scanbody, provided by Dentsply Sirona, onto the titanium Base C or Scanbase C for GM Exact and perform the intra oral scanning
- Select in the CAD software the correspondent third-party Titanium Base and perform the digital design in the Sirona inLab software version 3.65) or Sirona CEREC Software (version 4.2) according to the previous prosthetic planning and the raw material to be used. Titanium Base C for Neodent implants can be used with of the Sirona inLab software (version 3.65) or Sirona CEREC Software (version 4.2) software libraries;
- Mill the digital design and cement the restoration onto the the Titanium Base C for GM Exact. Be sure to remove all the cement excess;
- Before placing the prosthesis in the mouth, give it a final clean and sterilization :
 - Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
 - Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
 - Rinse thoroughly with distilled water to completely remove any remaining solution;
 - The use of nylon brushes is recommended;
 - Dry with a clean, dry cloth or with compressed air;
 - Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining

dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;
- Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
- Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
- Rinse thoroughly with distilled water to completely remove any remaining solution;
- The use of nylon brushes is recommended;
- Dry with a clean, dry cloth or with compressed air;
- Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process of rinsing and drying.
- Proceed with the placement in the mouth (using the Neo Screwdriver Torque Connection with a torque of 20 N.cm
- Make sure that the Titanium base engaging is aligned with the centre axis of the implant;
- Make sure that the prosthesis is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues.

The CEREC digital libraries and Sirona's products compatible with the Neodent Titanium Base C are described in the table below:

Library	Sirona's Products				Compatible with implant System	
	Scanbody	REF Scanbody Omnicam	REF Scanbody Bluecam / Ineos	Grinding block	Implant manufacturer	Implant system
NBB 3.4 L	L	6431311	6431295	inCoris ZI meso L	Neodent®	GM, CM, HE, IIPlus
NB A 4.5 L						
SSO 3.5 L						
S BL 3.3 L						
S BL 4.1 L						
BO 3.4 L						



| GM EXACT ABUTMENT

The GM Exact Abutment is made of titanium alloy in accordance with ASTM Standard F136 and is recommended for screw-retained single prosthesis (crowns). The fixation screw that came with the cylinders of this abutment is larger in diameter than the fixation screws of conventional prosthetics (the fixation screws for the GM Exact Abutment has 2.0 vs. 1.4 mm of conventional screws). This results in improved mechanical performance.



Follow these steps to use the GM Exact Abutment:

- Check if the soft tissue and emergence profile are ready;
- Select the appropriate GM Exact Abutment according to the treatment plan, respecting the biological tissues, as previously described;
- Place the GM Exact Abutment (use the Neo Screwdriver Torque Connection with a torque of 20 N.cm);
- Make sure it fits well and follow the transfer sequence already described in chapter 5.1 (transfer);

- The laboratory technician then produces the piece using conventional techniques (lost-wax) or milling (CAD/CAM);
- Place the GM Exact Abutment (using the Neo Screwdriver Torque Connection with a torque of 10 N.cm).
- Make sure that the GM Exact Abutment is aligned with the axis of insertion of the implant;
- Make sure that the GM Exact Abutment is perfectly positioned over the implant and that the restoration is not pressing the peri-implant tissues (with the aid of a periapical X-ray).



Be aware of using the correct screw as listed below:



| GM TITANIUM BASE AS

The GM Titanium Base AS allows milling of customized prosthesis and it is indicated for single prosthesis: copings and crowns cemented in the laboratory and screwed into the implant in the patient's mouth.

This abutment is supplied with a removable screw.

The GM Titanium Base AS is available in three different diameters: 4.0, 4.5 and 5.5 mm and in two different cementable areas: 4.0 and 6.0 mm. This solution allows crown screw channel angulation until 20° depending on the gingival height and cementable area of the abutment. GM Exact Titanium Bases share the following features:



The position of the GM TITANIUM BASE AS is transferred basing on the position of the GM implant. When conventional impression is used, once the plaster model is made, the implant analog position should be scanned, by using the model Scanbody. For intraoral scanning, the GM implant Scanbody should be used.

After scanning, these steps should be followed:

- Open the CAD software;

- Carefully select in the CAD software library the correspondent GM Titanium Base AS, as previously chosen;
- Proceed with the prosthesis CAD design;
- After completing the prosthesis design, start the milling process in the CAM machine ;
- Mill the crown/coping in-house
- Try on the fit of the crown/coping onto the titanium base, preferably in the patient's mouth and check the occlusion;
- The GM Exact Titanium Base should be cemented in the laboratory;
- Screw the GM Exact Titanium Base into the implant analog of the 3D printed model ;
- Protect the access to the screw;
- Follow the cement manufacturer's instructions for use. The GM Exact Titanium Base has been tested with chemically-activated resin cement (e.g.: Panavia);
- Apply the cement to the GM Exact Titanium Base and apply pressure to the restoration, following the three indexes;
- Remove any cement excess immediately;
- Remove the infrastructure from the analog after the cement sets and remove any remaining cement surrounding the GM Exact Titanium Base;

- Before placing the prosthesis in the mouth, give it a final clean and sterilization :

- Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);

- Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;

- Rinse thoroughly with distilled water to completely remove any remaining solution;

- The use of nylon brushes is recommended;

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

- Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;

- Proceed with the placement in the mouth (using the Neo Screwdriver Torque Connection with a torque of 20 N.cm

- Make sure that the Titanium base engaging is aligned with the centre axis of the implant;

- Make sure that the prosthesis is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues.

Note: Check in the IFU the indication of minimum material wall thickness, maximum angulation and other important information of the GM Titanium Base AS.

- Intraoral



- Model Scanning



Be aware of using the correct screw as listed below:



| GM TITANIUM BLOCK

GM Titanium Blocks are pre-milled abutment made in titanium, created to be adapted in milling machines for in-house work flow (laboratory or chairside). The original GM prosthetic interface of the abutment allows it to be applicable to the Original Neodent® program. They are available in two different models: one compatible with Medentika holder and other one compatible with Amann Girschbach holder.

This abutment is supplied with a removable screw.

GM Titanium Blocks for the Medentika holder, are available in two different diameters: 11.5 mm and 15.8 mm.

GM Titanium Blocks for AG holders, are available in one diameter: 12 mm.



Follow these steps to use the GM Titanium Block:

- Select the GM Titanium Block according to the necessity for diameter and angulation of the customized abutment;
- Insert the GM Implant Intraoral Scanbody into the Grand Morse® Implant (using the Neo Screwdriver Torque Connection) and perform the digital scanning;

- Select in the CAD software the compatible abutment previously chosen and perform the abutment digital design;
- Mill the designed part;
- Before placing the final abutment in the mouth, give it a final clean and sterilization :
 - Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
 - Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
 - Rinse thoroughly with distilled water to completely remove any remaining solution;
 - The use of nylon brushes is recommended;
 - Dry with a clean, dry cloth or with compressed air;
 - Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;
- Place the customized abutment into the Grand Morse® Implant, using the Neo Screwdriver Torque Connection with a torque of 20 N.cm.



| GM CoCr ABUTMENT

The GM CoCr Abutment can be used for single-unit prostheses, screw or cement-retained. It is offered in three different diameters and is available as a set, which includes one GM CoCr Abutment, one titanium screw and one GM Implant Analog. The 3.5/3.75 GM CoCr Abutment is indicated for Ø 3.5 or Ø 3.75 Grand Morse® Implants; the 4.0/4.3 GM CoCr Abutment is indicated for Ø 4.0 or Ø 4.3 Grand Morse® Implants; and the 5.0/6.0 GM CoCr Abutment is indicated for Ø 5.0 or Ø 6.0 Grand Morse® Implants. The Screw and the Analog from the CoCr Abutment for Crown Set are of laboratory use.

In two-step procedure, the preparation of the soft tissues can be done with specific Healing designed for GM CoCr Abutment.

The GM CoCr Abutment is available with a customizable height of 12 mm, which can be reduced up to a minimal height remaining of 5 mm. GM CoCr Abutments have the following features:



Follow these steps to use the GM CoCr Abutment:

- Identify the Grand Morse® implant diameter (3.5, 3.75, 4.0, 4.3, 5.0 or 6.0) in order to determine the set of GM CoCr Abutment to be used, if: (a) 3.5/3.75; (b) 4.0/4.3; (c) 5.0/6.0;

- Place the GM Implant Impression Copings over the implant and take the impression;
- Place the selected GM Implant Analog (3.5/3.75; 4.0/4.3 or 5.0/6.0) in the Impression Coping, produce the plaster model and send it to the laboratory, along with the GM CoCr Abutment (3.5/3.75; 4.0/4.3 or 5.0/6.0) and the working screw;
- Insert the healing compatible with GM CoCr Abutment emergence profile for correspondent soft tissue formation;
- The laboratory technician produces the prosthesis using conventional techniques. The restoration can be either cemented or screw-retained. Crown cementation is performed at the patient's mouth if a cemented restoration is chosen.
- After temporalization, make sure that the soft tissues and emergence profile are ready;
- Insert the CoCr Abutment, using the Neo Screwdriver Torque Connection with a torque of 20 N.cm and the GM Neo Screw (if the restoration is cement-retained, this procedure should be performed after GM CoCr Abutment adaption, avoiding cement excess).
- Before placing the prosthesis in the mouth, give it a final clean and sterilization :
 - Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);
 - Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
 - Rinse thoroughly with distilled water to completely remove any remaining solution;
 - The use of nylon brushes is recommended;



GM Neo Screw

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

- Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;

- Ensure that it fits perfectly on the implant (with the aid of a periapical x-ray) and that the prosthesis is not pressing on the peri-implant tissue.



| GM MICRO ABUTMENT

The GM Micro Abutment is indicated for use with single screw-retained prosthesis (crown) or multiple prostheses (bars).

This abutment is available in different gingival heights, as shown below:



Note: The GM Micro Abutment can be used for crowns or multiple prostheses. It is not available with different angles.

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

- Place the GM Micro Abutment, applying a torque of 32 N.cm, using the Hexagonal Prosthetic Driver;

- Ensure that the abutment is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues ;

- Check that the impression coping fits well and follow the sequence already described in chapter 5.1;

- The laboratory technician then produces the prosthesis(es) using conventional techniques (lost-wax) or digital (CAD/CAM);

- Place the definitive prosthesis(es) using the Neo Torque Wrench with a torque of 10 N.cm;

- Ensure that the abutment is aligned with the long insertion axis of the implant. In case of only single prosthesis.



GM MINI CONICAL ABUTMENT

The GM Mini Conical Abutment is indicated for multiple screw-retained prostheses. The GM Mini Conical Abutment is available in straight model or in four different angles: 17°, 30°, 45°* and 60°**. Angled abutments are also available in different gingival heights, as shown below:



*The Mini Conical 45° is indicated for use only with Helix® GM™ Long and Zygoma GM™ implants.

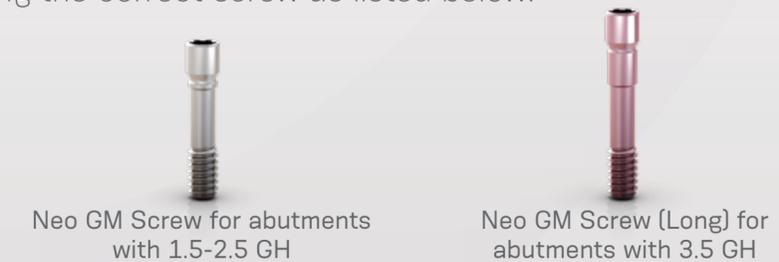
** The Mini Conical 60° is indicated for use only with Zygoma GM™ implants.

Follow these steps to use the GM Mini Conical Abutment:

- Select the appropriate abutment in accordance with the treatment plan, respecting the biological tissues, as previously described;
- Place the GM Exact Mini Angled Conical Abutment, applying a torque of 20 N.cm, using the Neo Screwdriver Torque Connection. If placing the GM Exact Mini Straight Abutment, use the Hexagonal Prosthetic Driver for insertion applying a torque of 32 N.cm;
- Ensure that the abutment is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues;
- Check that the impression coping fits well and follow the sequence already described in chapter 5.1;
- The laboratory technician then produces the prostheses using conventional techniques (lost-wax) or digital (CAD/CAM);
- Place the definitive prostheses, using the Neo Torque Wrench with a torque of 10 N.cm.



Be aware of using the correct screw as listed below:



| GM TITANIUM BASE FOR BRIDGE

The GM Titanium Base for Bridge allows milling of customized prosthesis and it is indicated for multiple prostheses: bars or bridges, cemented in the laboratory and screwed into the implant in the patient's mouth.

This abutment is supplied with a removable screw.

The GM Titanium Base for Bridge is available in different diameters: 3.5, 4.5 or 5.5 mm. This abutment should not be used when the angle between the implant and the abutment is higher than 10° for Ø3.5 mm Titanium Bases and 16° for Ø4.5 and Ø5.5 mm Titanium Bases. GM Titanium Base for Bridge share the following features:



The position of the GM Titanium Base for Bridge is transferred based on the position of the GM implant. When conventional impression is used, once the plaster model is made, the implant analog position should be scanned, by using the model Scanbody. For intraoral scanning, the GM implant Scanbody should be used.

After scanning, these steps should be followed:

- Open the CAD software;

- Carefully select in the CAD software the correspondent library of the GM Titanium Base for Bridge, as previously chosen;
- Proceed with the prosthesis CAD design;
- After completing the prosthesis design, start the milling process in the CAM machine;
- Mill the crown/coping in-house;
- Try on the fit of the bridge onto the titanium base, preferably in the patient's mouth and check the occlusion;
- The GM Titanium Base for Bridge should be cemented in the laboratory;
- Screw the GM Titanium Base for Bridge in the implant analog of the 3D printed model ;
- Protect the access to the screw;
- Follow the cement manufacturer's instructions for use. GM Titanium Base for Bridge has been tested with chemically-activated resin cement (e.g.: Panavia);
- Apply the cement to the GM Titanium Base for Bridge and apply pressure to the restoration, following the three indexes;
- Remove any cement excess immediately;
- Remove the infrastructure from the analog after the cement sets and remove any remaining cement surrounding the GM Bridge Titanium Base;
- Before placing the prosthesis in the mouth, give it a final clean:
 - Immerse the piece completely in a solution of enzymatic detergent (diluted according to the manufacturer's instructions);

- Leave in the ultra-sonic cleaning equipment for approximately 10 to 15 minutes;
- Rinse thoroughly with distilled water to completely remove any remaining solution;
- The use of nylon brushes is recommended;
- Dry with a clean, dry cloth or with compressed air;
- Perform a visual inspection, noticing possible failures in the cleaning process. If there is any remaining dirt, the part must be immersed again in the enzyme solution and, if necessary, cleaned with the aid of a nylon brush. Repeat the process 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;

- Proceed with the placement in the mouth (using the Neo Screwdriver Torque Connection with a torque of 20 N.cm)

- Make sure that the Titanium base engaging is aligned with the centre axis of the implant;

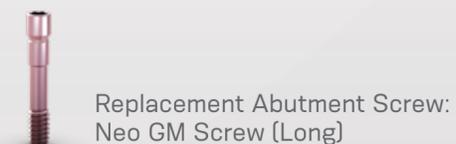
- Make sure that the prosthesis is perfectly positioned over the implant (with the aid of a periapical X-ray) and that the restoration is not pressing the peri-implant tissues.

Note: Check in the IFU the indication of minimum material wall thickness, maximum angulation and other important information of the GM Exact Titanium Bases for Bridge.

• Intraoral



• Model Scanning



GM EXACT CLICK UNIVERSAL ABUTMENT

The GM Exact Click Universal Abutment is intended to be used for cement-retained single prosthesis. It has a click system that helps in the impression and the cementation/production of temporary prosthesis. The GM Exact Click Universal Abutment is available in different dimensions, as listed below:



The click system is reproduced in all the analogs and acrylic cylinders for temporary crowns. In addition, conventional analogs and impression coping are identified by colors according to the height of the cementable area (violet for 4 mm and green for 6 mm), as presented below. The Hybrid Repositionable Analogs can also be used in this workflow, but this solution no different colour is applied.



Analogs with slots for the click system and the difference in the colors of the analogs and transfers identify the height of the cementable area.

The GM Exact Click Universal Abutment is available in different angles (straight, 17° and 30°) for all the dimensions offered. Angled abutments permit different gingival heights, as shown below.

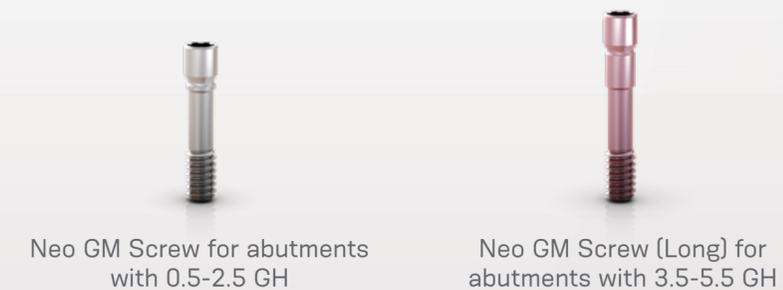


The following steps should be used when placing the GM Exact Click Universal Abutment:

- When the healing abutment is removed, the GM 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 GM Exact Click Universal Abutment according to the treatment plan, respecting the biological tissues;
- Place the GM Exact Click Universal Abutment using the Neo Screwdriver Torque Connection with a torque of 20 N.cm;
- Use an impression coping for closed tray with the click function to transfer the position and direction of GM Exact Click Universal Abutment;
- Send the impression to the laboratory and produce a model, inserting the chosen abutment analog in the impression coping with click;
- The laboratory technician then produces the prosthesis using conventional work-flow (lost-wax);
- 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.



Be aware of using the correct screw as listed below:



| GM EXACT CLICK ANATOMIC ABUTMENT

The GM Exact Click Anatomic Abutment is indicated for single-unit cement-retained prostheses. It has two shapes, one standard, indicated for upper central incisors, and one narrow, for upper lateral incisors and lower incisors. The pink colour anodization improves the esthetic outcomes, as it mimics the natural gingiva colour. It has a click system that helps in the impression and the handling of the temporary prosthesis. It can be used in two different work level:

- Implant level: take the impression from the platform of the implant with the corresponding impression coping and send the GM Exact Click Anatomic Abutment over the GM Implant Analog to the laboratory. For this sequence, another GM Exact Click Anatomic Abutment should be placed in mouth for provisional step.

- Abutment level: place the GM Exact Click Anatomic Abutment over the implant and perform the impression as a regular tooth. The GM Exact Click Anatomic Abutment can be used provisional step.

Each model of the GM Exact Click Anatomic Abutment is available in straight or angled version (17°), it also features GM Exact indexation and unlocking feature.



In both techniques, the provisional coping for the GM Exact Click Anatomic Abutment can be used for provisional step.

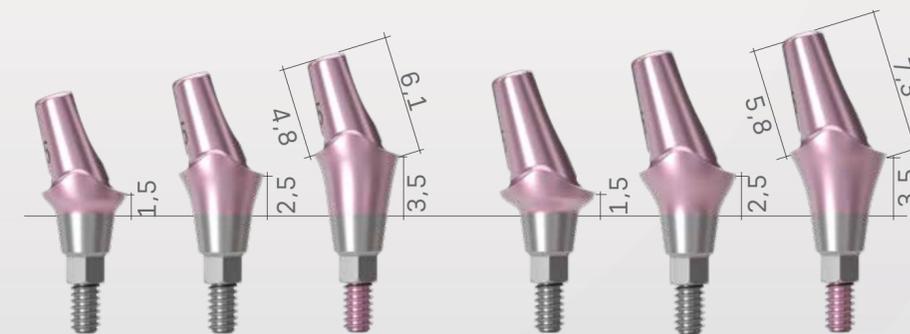


The follow dimensions of each model of GM Exact Click Anatomic Abutment:



GM Exact Click Narrow Anatomic Abutment

GM Exact Click Anatomic Abutment



Narrow Anatomic Abutment 17°

Anatomic Abutment 17°

For the sequence at implant level, follow these steps:

- Carefully place the GM Implant Impression Copings over the implant and take the impression;
- Place the GM Implant Analog in the Impression Coping, produce the plaster model and send it to the laboratory, along with the GM Exact Click Anatomic Abutment. Insert another GM Anatomic Abutment for provisional step, over the Grand Morse® Implant, using the Neo Screwdriver Torque Connection with 20 N.cm torque.
- Make a provisional crown over the GM Exact Click Anatomic Abutment using the Click Anatomic Provisional Coping;
- The laboratory technician produces the crown using conventional techniques (lost-wax);
- After provisional step, make sure that the soft tissues and emergence profile are ready;
- Remove the provisional crown and cement the final prosthesis on the GM Exact Click Anatomic Abutment;
- Ensure that it fits perfectly on the abutment and that the prosthesis is not pressing the peri-implant tissue. Also check for a possible excess of cement.



Follow these steps to work with the GM Exact Click Anatomic Abutment at abutment level:

- Place the GM Exact Click Anatomic Abutment over the Grand Morse® Implant, with the Neo Screwdriver Torque Connection and 20 N.cm torque;
- Take the impression from the abutment using the same technique as the one for dental preparations;
- Make a provisional crown over the GM Exact Click Anatomic Abutment using the Click Anatomic Provisional Coping;
- Send the impression to the laboratory for plaster model production;
- The laboratory technician produces the crown using conventional technique (lost-wax);
- After provisional step, make sure that the soft tissues and emergence profile are ready;
- Remove the provisional crown and cement the final prosthesis on the GM Exact Click Anatomic Abutment;
- 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.



| GM ATTACHMENT TiN* FOR REMOVABLE PROSTHESES

The GM Attachment TiN* for Removable Prostheses 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 30° or between abutments exceeds 40°.



GM Attachment Prosthesis GM Attachment TiN* for Removable Prostheses 15° (with removable screw)

Accessories

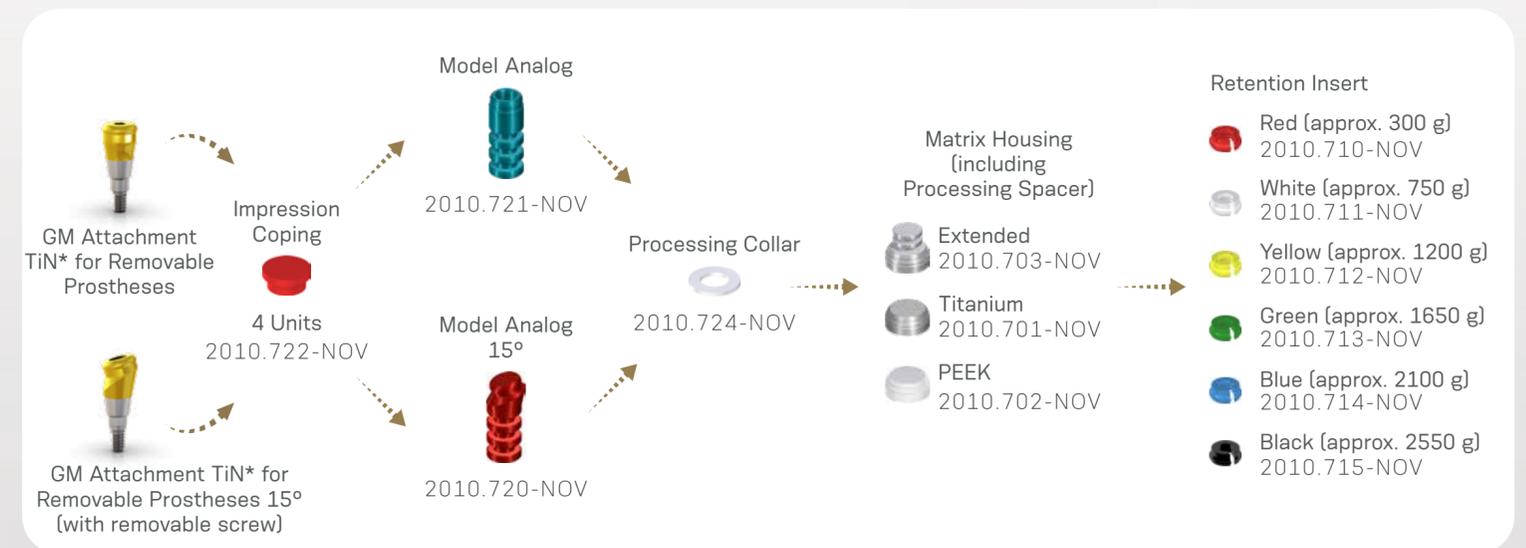


Equipment Box 2010.101-NOV Block Out Spacer 2010.723-NOV Processing Insert 2010.725-NOV Matrix Housing Extraction Instrument 2010.751-NOV Processing Insert Removal Instrument 2010.731-NOV Retention Insert Instrument 2010.741-NOV

Follow these steps to use the GM Attachment TiN* for Removable Prostheses abutments with overdenture:

- Place the GM Attachment TiN* for Removable Prostheses abutments using the Neo Screwdriver Torque Connection with 20 N.cm;
- Place the Impression Coping on the GM Attachment TiN* Abutment;
- Use the mucodynamic technique for impression taking (vinyl polysiloxane or polyether rubber). Send the impression to the dental lab;
- Insert the Attachment Model Analogs into the Impression Coping;

- Pour a master model using standard methods and type-4 dental stone. Note: the master model can also be created with an implant-level impression;
- Place white Processing Collars on all Model Analogs;
- Place the Matrix Housing incl. preassembled processing insert onto the GM Attachment TiN* 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 processing inserts in place;
- Remove all processing inserts from the matrix housing using the blue Processing Insert Removal Instrument;
- Select the appropriate retention insert. Insert the retention inserts to the matrix housing using the brown Retention Insert Instrument;
- Seat the finished overdenture and check the occlusion.



MINI CONICAL ABUTMENT COPING FOR REMOVABLE PROSTHESIS

Mini Conical Abutment Coping for Removable Prosthesis are indicated for removable prostheses with a fitting on the Mini Conical Abutment installed in the maxilla or mandible and can be used in partial removable prostheses or overdentures by the Attachment TiN System, which can later be replaced with fixed prostheses.

It can be used to convert an existing denture into an overdenture or create a new overdenture, using a Mini Conical Abutment and Mini Conical Abutment Coping for a removable prosthesis, combined or not with Attachment TiN Abutments.

There is still the possibility of a transition from a removable prosthesis to a fixed one, aiming at a better chewing and aesthetic function for the patient.

Follow these steps to use the GM Attachment TiN abutments with overdenture:

- Place the Mini Conical Abutment Coping for Removable Prosthesis over the GM Mini Conical Abutments using the Neo Screwdriver Torque Connection with 15 N.cm;
- Place the Impression Coping on the Mini Conical Abutment Coping;
- Use the mucodynamic technique for impression taking (vinyl polysiloxane or polyether rubber). Send the impression to the dental lab;
- Insert the Attachment TiN Model Analog into the Impression Coping;
- Pour a master model using standard methods and type-4 dental stone. Note: the master model can also be created with an implant-level impression;
- Place white Processing Collars on all Model Analogs;
- Place the Matrix Housing incl. preassembled processing insert onto the Attachment TiN 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 or customize the patient denture to an overdenture;
- The dental lab will return the finalized overdenture to the dental office including processing insert in place;
- Remove all processing inserts from the matrix housing using the blue Processing Insert Removal Instrument;
- Select the appropriate retention insert. Insert the retention inserts to the matrix housing using the brown Retention Insert Instrument;
- Seat the finished overdenture and check the occlusion.



Accessories

 Equipment Box 2010.101-NOV	 Block Out Spacer 2010.723-NOV	 Processing Insert 2010.725-NOV	 Matrix Housing Extraction Instrument 2010.751-NOV	 Processing Insert Removal Instrument 2010.731-NOV	 Retention Insert Instrument 2010.741-NOV
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Retention Insert

- Red (approx. 300 g) 2010.710-NOV
- White (approx. 750 g) 2010.711-NOV
- Yellow (approx. 1200 g) 2010.712-NOV
- Green (approx. 1650 g) 2010.713-NOV
- Blue (approx. 2100 g) 2010.714-NOV
- Black (approx. 2550 g) 2010.715-NOV

| ONE STEP HYBRID TECHNIQUE

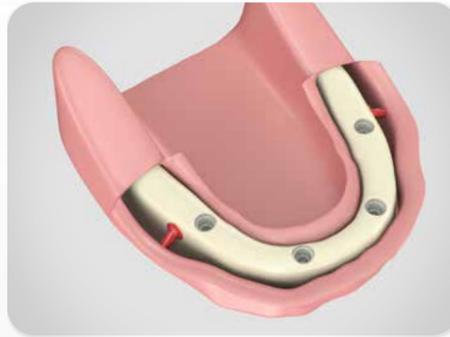
The One Step Hybrid technique allows the passive fitting of prosthesis, without the need for weld procedure, by cementing the neo micro/mini titanium abutment coping base into the metal structure. This technique allows as well through a digital workflow, milled dental structure to be cemented on top of this titanium abutment coping. It is indicated for multi-unit screw-retained prosthesis and results in reduced laboratory work times. It can be performed over GM Mini Conical Abutments or GM Micro Abutments. The sequence to perform the One Step Hybrid technique is described in the following pictures:



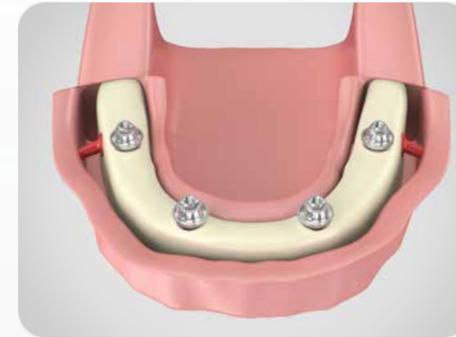
1) Regularize the alveolar ridge.



2) Surgical drilling completed, obtaining adequate distance from distal implant in relation to the mental foramen with 7 mm Space Planning Instrument.



3) Placement of 4 Neodent® implants, according to their indication.



4) Placement of corresponding Neodent® Abutments.



5) Placement of Impression Copings, splinted with acrylic resin.



6) Positioning of Multifunctional Guide to obtain intermaxillary correlation. Soft silicone is injected to take the soft tissue impression.



7) Removal of Multi-Functional Guide and placement of Analogs to the impression copings.



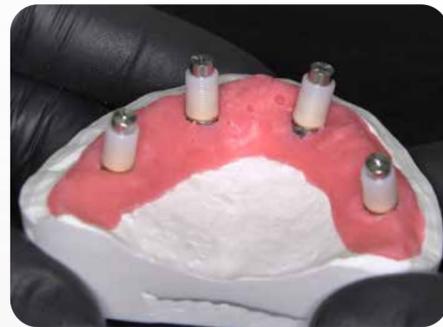
8) Working model with artificial gum.

| Option 1 -Conventional Workflow for cast framework

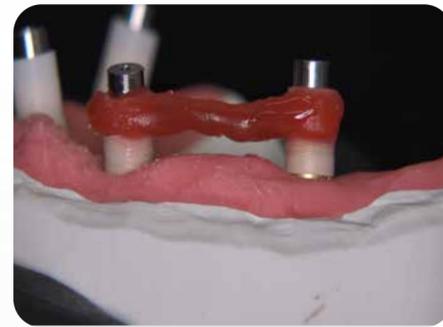
NEO MINI ABUTMENTS COPINGS
ONE STEP HYBRID TECHNIQUE



1) Working model with artificial gum.



2) Brass Copings are placed over analogs, then Burn-out Copings are fixed by working screws.



3) Wax-up the framework.



4) Cast framework. If necessary, provide internal wear in the regions corresponding to the castable copings.



5) Placement of both the Neo Mini Conical Abutment Coping Base and the sealing pin on top of the analog.



6) Apply a specific primer and proceed with the cementation according to the cement manufacturer.



7) Press the infrastructure over the coping base and immediately remove any overflowed cement excess as well as the sealing pin.



8) Unscrew the infrastructure from the model. Final framework with ensured passivity.

| Option 2- Digital Workflow for milled Zirconia Bar

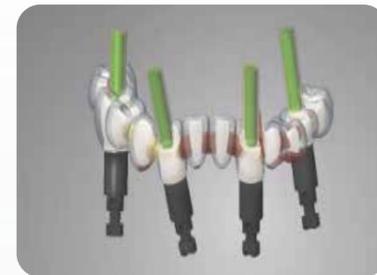
NEO MINI CONICAL COPING BASE



1) Working model with artificial gum.



2) Install the GM Mini Conical Abutment Scanbody on the model and proceed with the scanning.



3) Design the zirconia bar in the CAD/CAM software.



4) Mill the zirconia bar.



5) Placement of both the Neo Mini Conical Abutment Coping Base and the sealing pin on top of the analog.



Titanium

118.382



6) Apply a specific primer and proceed with the cementation according to the cement manufacturer.



7) Press the infrastructure over the coping base and immediately remove any overflow cement excess as well as the sealing pin.



8) Unscrew the infrastructure from the model. Final framework with ensured passivity.



9) Final framework.

| DISTAL BAR

This technique is used to ease mandible rehabilitations, by using a provisional total prosthesis supported by implants. The prosthesis becomes more resistant to fractures, due to the resulting cantilever. The Distal Bar technique can be performed over GM Mini Conical or Micro Abutments. The technique is described by the following images:



1) Neodent® Abutments placed.



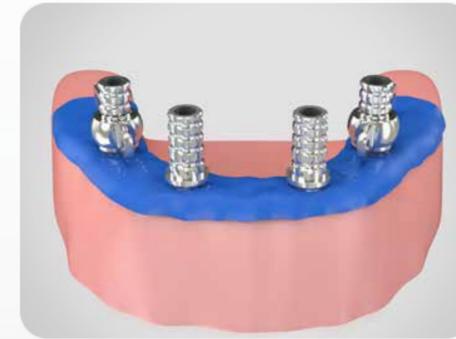
2) Prosthesis wearing, keeping posterior region integrity.



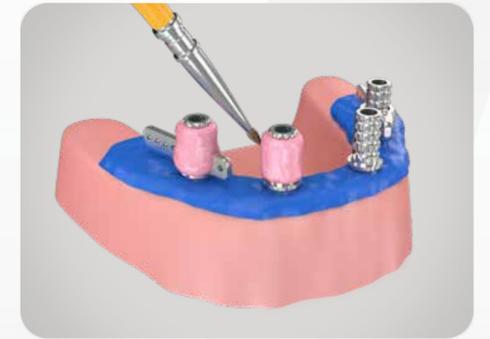
3) Place the copings into the central Implants and Distal Bar to distal Implants.



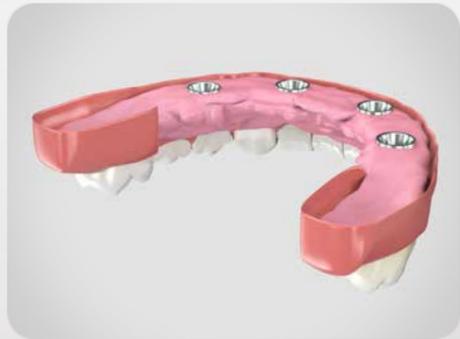
4) Proof of inferior prostheses wearing (centered occlusion position, no interference on copings).



5) Placement of rubber dam over copings to protect soft tissues.



6) Apply selfpolymerizing acrylic resin on and between the copings.



7) Apply to worn area in lower prosthesis, repositioning inside mouth. Keep patient in occlusion until total polymerization.



8) Remove the inferior prosthesis after resin is polymerized. Copings already captured.



9) Adjustments, finishing and polishing procedures of inferior prosthesis with polishing protectors.



10) Placed provisional implant supported prosthesis.



11) Final inside-mouth posterior view.



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