

**CLC CONIC™** *plus*

# **SURGICAL AND PROSTHETIC MANUAL**







# TABLE OF CONTENTS

|           |                                                          |           |
|-----------|----------------------------------------------------------|-----------|
| <b>1.</b> | <b>CLC CONIC IMPLANT SYSTEM</b>                          | <b>6</b>  |
|           | CLC CONIC IMPLANTS                                       | 7         |
|           | COLD FUSION CONNECTION AND THE PLATFORM SWITCHING SYSTEM | 8         |
|           | PRIMARY STABILITY                                        | 9         |
|           | OGI SURFACE TREATMENT                                    | 9         |
|           | SCIENTIFIC EVIDENCE                                      | 10        |
|           | IMPLANT SIZE/TOOTH POSITION                              | 12        |
|           | MINBO CONCEPT                                            | 13        |
| <b>2.</b> | <b>PREOPERATIVE PLANNING</b>                             | <b>16</b> |
|           | MESIODISTAL IMPLANT POSITION                             | 18        |
|           | VESTIBULOLINGUAL IMPLANT POSITION                        | 19        |
|           | CERVICOAPICAL POSITION OF THE IMPLANT                    | 19        |
| <b>3.</b> | <b>PLANNING AIDS</b>                                     | <b>20</b> |
| <b>4.</b> | <b>CLC CONIC SURGICAL CASSETTE</b>                       | <b>24</b> |
|           | DRILLS                                                   | 26        |
|           | DRILL STOPS                                              | 30        |
|           | INSTRUMENTS                                              | 32        |
|           | DRILLING PROTOCOL                                        | 34        |
| <b>5.</b> | <b>IMPLANT SURGERY – FIRST STEPS</b>                     |           |
|           | IMPLANT BED PREPARATION                                  | 36        |
|           | IMPLANT PACKAGING AND PICK UP                            | 38        |
|           | IMPLANT POSITIONING                                      | 40        |
|           | IMMEDIATE PLACEMENT                                      | 42        |
|           | SOFT TISSUE MANAGEMENT                                   | 44        |
|           | HEALING ABUTMENTS                                        | 45        |
| <b>6.</b> | <b>CLC CONIC PROSTHETIC PHASE</b>                        |           |
|           | CLC CONIC PROSTHETIC PROCEDURE                           | 46        |
|           | CLC CONIC PROSTHETIC COMPONENTS                          | 47        |
|           | PROSTHETIC OPTIONS OVERVIEW                              | 48        |
|           | ABUTMENTS OVERVIEW                                       | 50        |

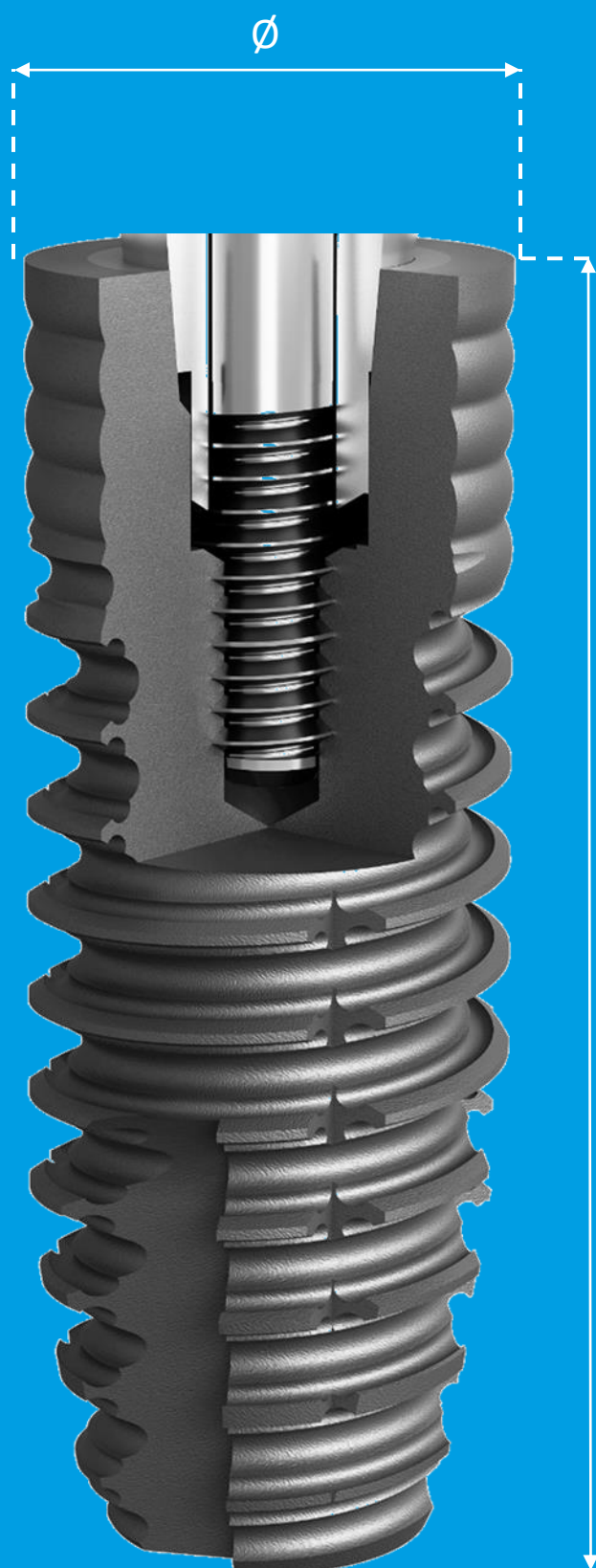
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|------------|-------------------------------------------------------------|------------|
| <b>7.</b>  | <b>PROSTHETIC WORKFLOWS</b>                                 |            |
|            | CEMENT-RETAINED RESTORATION WORKFLOW                        | 54         |
|            | SCREW-RETAINED RESTORATION ON IMPLANT WORKFLOW              | 68         |
|            | SCREW-RETAINED RESTORATION ON STRAIGHT AND ANGLED MUA       | 82         |
|            | BAR RETAINED OVERDENTURE WORKFLOW                           | 94         |
|            | ATTACH RETAINED OVERDENTURE WITH SPHERO BLOCK WORKFLOW      | 100        |
|            | ATTACH RETAINED OVERDENTURE WITH EQUATOR ABUTMENTS WORKFLOW | 104        |
| <b>8.</b>  | <b>MANUAL TORQUE WRENCH</b>                                 |            |
|            | MANUAL TORQUE WRENCH PROSTHETIC                             | 110        |
|            | MANUAL TORQUE WRENCH SURGICAL                               | 112        |
| <b>9.</b>  | <b>DRILLS REUSABILITY</b>                                   | <b>114</b> |
| <b>10.</b> | <b>STERILIZATION</b>                                        |            |
|            | STERILIZATION TERMS AND DEFINITIONS                         | 118        |
|            | STERILIZATION WORKFLOW                                      | 119        |
|            | STERILIZATION PROCESS                                       | 120        |
|            | MATERIALS AND INCOMPATIBLE INGREDIENTS                      | 124        |
|            | CLC SUGGESTIONS TO AVOID MISTAKES                           | 125        |
|            | STERILIZATION/DISINFECTION TECHNOLOGY STUDIES               | 126        |
| <b>11.</b> | <b>IMPORTANT GUIDELINES</b>                                 | <b>127</b> |
| <b>12.</b> | <b>NOTES</b>                                                | <b>128</b> |

### About this guide

This surgical and prosthetic procedure describes the steps required for implantation and restoration of the CLC CONIC Implant System. The CLC CONIC Implant System is recommended for use only by clinicians with advanced surgical skills. It is assumed that the user is familiar with placing dental implants.

Not all products shown are available in all markets.

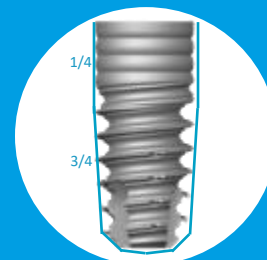
# CLC CONIC PLUS IMPLANT SYSTEM



1

## Tapered Implant

Tapered implants achieve a gradually increasing contact pressure with the surrounding bone, making them perfectly suitable for immediate loading.



2

## Conical Connection

The CLC CONIC implant is connected to the abutment with a 6° Morse taper connection.



3

## Platform Switching System

The gap between the abutment and the outer border of the implant creates a platform switching effect.



4

## High Primary Stability

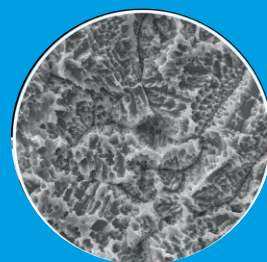
The body of the implant features a GEAR SHAPE screw thread consisting of a 25-micron double concavity.



5

## OGL Surface Treatment

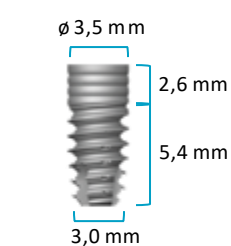
The surface of the implant is treated with O.G.I. Surface treatment (Sandblasting and acid-etching) treatment to achieve a moderate roughness (Sa 1.3 µm).



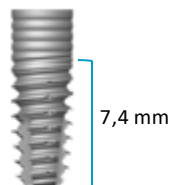
# CLC CONIC PLUS IMPLANTS

The surgical over screw is supplied with every single implant

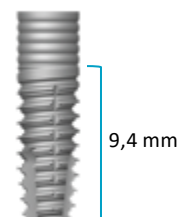
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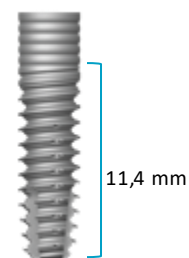
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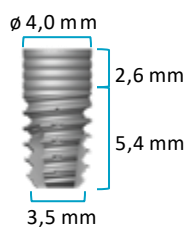


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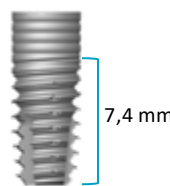


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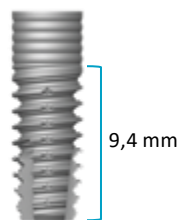
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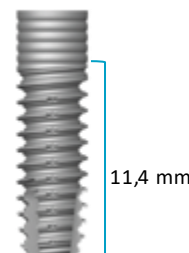
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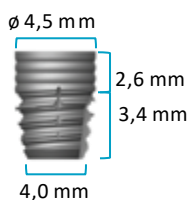


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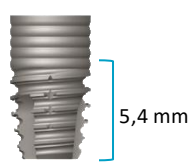


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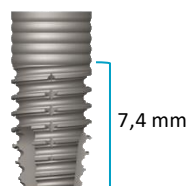
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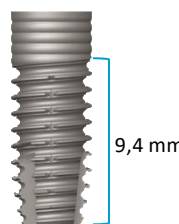
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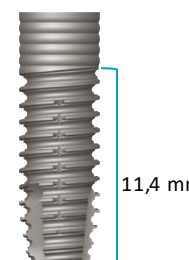
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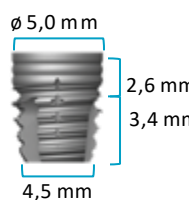


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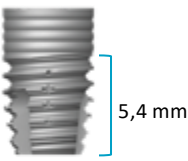


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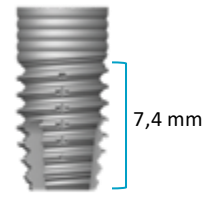
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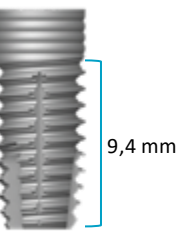
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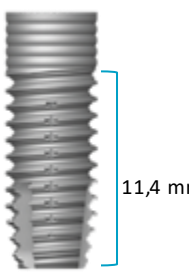
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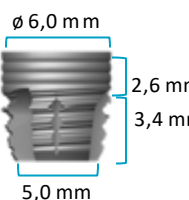


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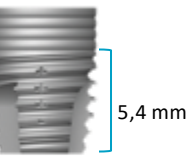


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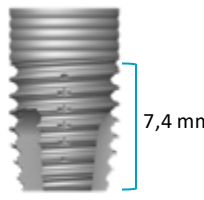
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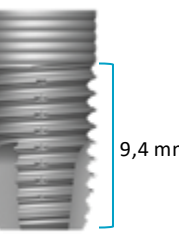
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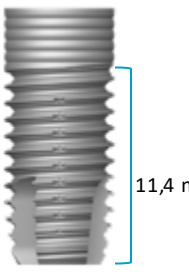
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# COLD FUSION CONNECTION AND THE PLATFORM SWITCHING SYSTEM

## COLD FUSION CONNECTION

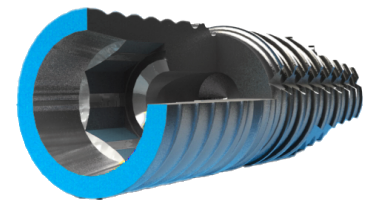
The **CLC CONIC PLUS** implant is connected to the abutment with a 6° Morse taper connection preserving the integrity of the marginal bone tissue and peri-implant soft tissue.

This conical implant-abutment connection makes the implant mechanically and biologically similar to a mono-block structure while providing the advantages of a two-part system.



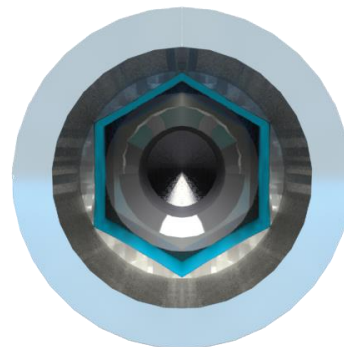
## SWITCHING PLATFORM

The abutment and the outer border present a gap to create a platform switching effect, which promotes healthy bone tissue and peri-implant mucosa around the implant in the long-term.



## HEXAGONAL ENGAGING

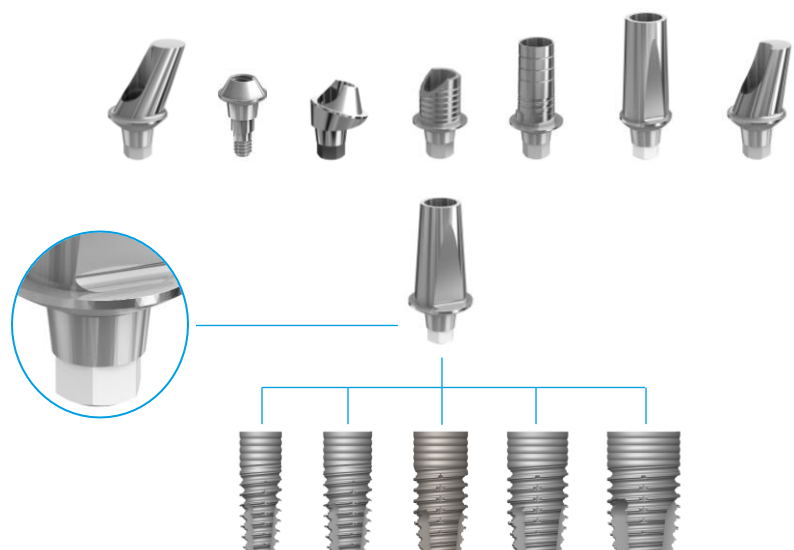
The hexagonal index permits the transfer of high torques while allowing a straightforward yet adaptable alignment of implant and abutment.



## ERGONOMIC CONNECTION

The CLC CONIC implant system features a single type of connection between the implant and prosthetic abutment, meaning one type of abutment can be used regardless of the implant's diameter.

CLC CONIC implants are therefore ergonomic, with fewer components and, consequently, simpler treatment protocols.



# PRIMARY STABILITY

The body of the implant is designed to adapt to all bone types.

The body of the implant features a GEAR SHAPE screw thread consisting of a 25-micron double concavity that increases bone-to-impact contact for improved osteointegration.

The macro groove at the tip guarantees better stability and prevents rotation. The atraumatic neck evenly distributes the load and relieves stress.

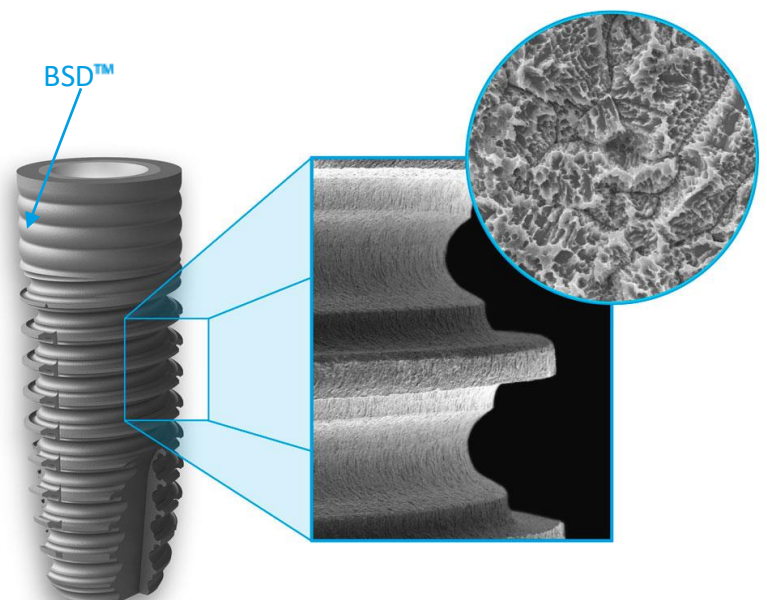


# OGI SURFACE TREATMENT

The surface of the implant is treated with O.G.I. (Osteo-Growth Induction Surface) Surface Treatment. Sandblasting and subsequent acid-etching, to achieve an average roughness (Sa 1.3  $\mu\text{m}$ ) that limits susceptibility to peri-implant infection.

The Bone Stability Design™ (BSD™) is based on key biological principles and thorough scientific research to support crestal bone preservation and stable soft tissue margins.

The O.G.I. surface technology combined with the unique Bone Stability Design™ guarantees fast osseointegration of CLC CONIC implants.



# SCIENTIFIC EVIDENCE

## **TAPER IMPLANT DESIGN** – ensuring primary stability

- Atieh MA, Alsabeeha N, Duncan WJ. *Stability of tapered and parallel-walled dental implants: A systematic review and meta-analysis.* Clin Implant Dent Relat Res. 2018 Aug;20(4):634-645. doi: 10.1111/cid.12623. Epub 2018 May 15. PMID: 29761846.
- Irinakis T, Wiebe C. *Initial torque stability of a new bone condensing dental implant. A cohort study of 140 consecutively placed implants.* J Oral Implantol. 2009;35(6):277-82. doi: 10.1563/AAID-JOI-D-09-00020.1. PMID: 20017643.

## **COLD FUSION CONNECTION** – ensuring better abutment fit, stability and seal performance, minimum bacterial colonization, an marginal bone level maintenance.

- Schmitt CM, Nogueira-Filho G, Tenenbaum HC, Lai JY, Brito C, Döring H, Nonhoff J. *Performance of conical abutment (Morse Taper) connection implants: a systematic review.* J Biomed Mater Res A. 2014 Feb;102(2):552-74. doi: 10.1002/jbm.a.34709. Epub 2013 May 9. PMID: 23533139.
- Koutouzis T, Wallet S, Calderon N, Lundgren T. *Bacterial colonization of the implant-abutment interface using an in vitro dynamic loading model.* J Periodontol. 2011 Apr;82(4):613-8. doi: 10.1902/jop.2010.100415. Epub 2010 Nov 2. PMID: 21043798.
- Larrucea Verdugo C, Jaramillo Núñez G, Acevedo Avila A, Larrucea San Martín C. *Microleakage of the prosthetic abutment/implant interface with internal and external connection. In vitro study.* Clin. Oral Impl. Res. 25, 2014, 1078–1083.
- Ghensi P, Tonetto G, Soldini C, Bettio E, Mortellaro C, Soldini C. *Dental Implants With a Platform-Switched Morse Taper Connection and an Osteo Growth Induction Surface.* J Craniofac Surg. 2019 Jun;30(4):1049-1054. doi: 10.1097/SCS.0000000000004795. PMID: 30394965.

## **PLATFORM SWITCHING:** ensuring high primary stability, survival, marginal bone level maintenance, highest outcomes in the aesthetic area, minimum interimplants bone remodeling.

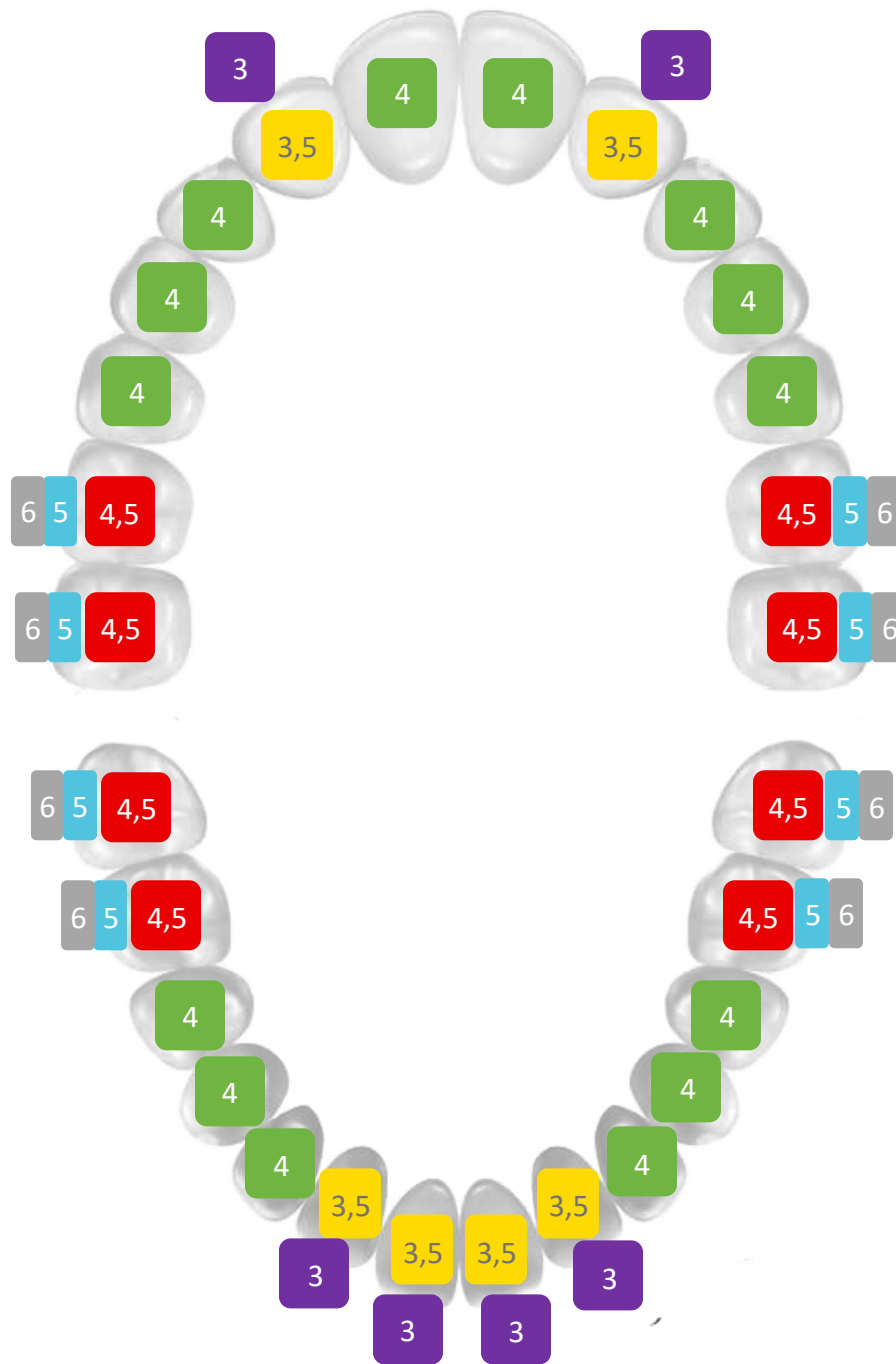
- Ghensi P, Tonetto G, Soldini C, Bettio E, Mortellaro C, Soldini C. *Dental Implants With a Platform-Switched Morse Taper Connection and an Osteo Growth Induction Surface.* J Craniofac Surg. 2019 Jun;30(4):1049-1054. doi: 10.1097/SCS.0000000000004795. PMID: 30394965.
- Strietzel FP, Neumann K, Hertel M. *Impact of platform switching on marginal peri-implant bone-level changes. A systematic review and meta-analysis.* Clin Oral Implants Res. 2015 Mar;26(3):342-58. doi: 10.1111/clr.12339. Epub 2014 Jan 20. PMID: 24438506; PMCID: PMC4340042.
- Soldini MC, Trentin F, Calabuig RP. *Marginal bone change, survival and biological complications around dental implants with a platform switched, Morse taper connection, and a medium rough surface in a sample of regular compliers patients.* J Dent Implant 2022;12:24-30.

- Chappuis V, Bornstein MM, Buser D, Belser U. Influence of implant neck design on facial bone crest dimensions in the esthetic zone analyzed by cone beam CT: a comparative study with a 5-to-9-year follow-up. *Clin Oral Implants Res.* 2016 Sep;27(9):1055-64. doi: 10.1111/clr.12692. Epub 2015 Sep 15. PMID: 26370904.
- Rodríguez-Ciurana X, Vela-Nebot X, Segalà-Torres M, Calvo-Guirado JL, Cambra J, Méndez-Blanco V, Tarnow DP. The effect of interimplant distance on the height of the interimplant bone crest when using platform-switched implants. *Int J Periodontics Restorative Dent.* 2009 Apr;29(2):141-51. PMID: 19408476.
- Soldini MC, Arroyo I, Pons R. Dealing with Peri-implant Soft Tissue Complication in the Esthetic Area: A Case Report. *Int J Prosthodont Restor Dent* 2021;11(3):151–155.

**OGI SURFACE:** enhancing osteogenic activities, ensuring high primary stability and survival, reducing biological complications.

- Ghensi P, Bressan E, Gardin C, Ferroni L, Ruffato L, Caberlotto M, Soldini C, Zavan B. Osteo Growth Induction titanium surface treatment reduces ROS production of mesenchymal stem cells increasing their osteogenic commitment. *Mater Sci Eng C Mater Biol Appl.* 2017 May 1;74:389-398. doi: 10.1016/j.msec.2016.12.032. Epub 2016 Dec 9. PMID: 28254309.
- Caroprese M, Soldini C, Ricci S, Rea M, Lang NP, Botticelli D. Healing at implants placed in bone of different morphology: an experimental study in dogs. *Clin Oral Implants Res.* 2017 Aug;28(8):961-965. doi: 10.1111/clr.12905. Epub 2016 Jun 28. PMID: 27350591.
- Ghensi P, Tonetto G, Soldini C, Bettio E, Mortellaro C, Soldini C. Dental Implants With a Platform-Switched Morse Taper Connection and an Osteo Growth Induction Surface. *J Craniofac Surg.* 2019 Jun;30(4):1049-1054. doi: 10.1097/SCS.0000000000004795. PMID: 30394965.
- Soldini MC, Trentin F, Calabuig RP. Marginal bone change, survival and biological complications around dental implants with a platform switched, Morse taper connection, and a medium rough surface in a sample of regular compliers patients, *J Dent Implant* 2022;12:24-30.

# IMPLANT SIZE/TOOTH POSITION



Multiple considerations are required for each tooth replacement: the support needed for the final restoration in a particular position, soft-tissue healing, and implant design and size.

The illustration indicates the recommended implant sizes in relation to the natural dentition, provided there is sufficient bone volume and space in relation the adjacent dentition.

**Small diameter implants (3 and 3.5mm) are strongly not recommended for the molar region.**

# MINBO CONCEPT

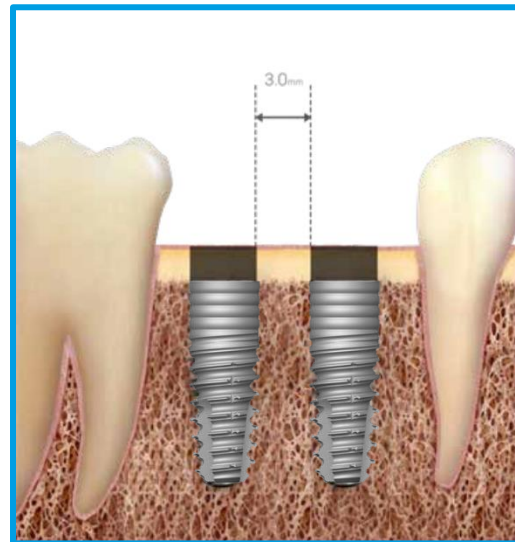
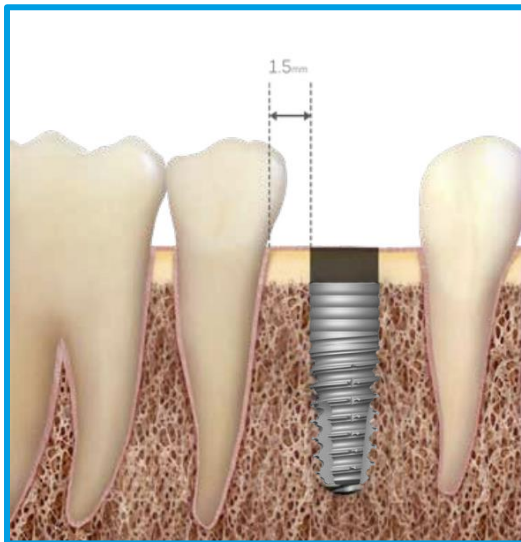
The mesiodistally available bone is an important factor in choosing the diameter and number of implants. The mesiodistal gap is the distance between the implant and the teeth or between implants when multiple implants are necessary.

The point of reference is the measurement of the largest mesiodistal width of the implant, usually in the cervical regions.

**Minimal Bone (MinBo Concept):** Implants require a minimum of adjacent bone surrounding them of **1.5 mm**.

According to the **MinBo Concept**:

1. The minimum distance between an implant and a natural tooth should be at least 1.5mm.
2. The minimum distance between adjacent implants should be at least 3mm.







LEO XIII PONT MAX  
ANN III

# PREOPERATIVE PLANNING

**To perform a correct diagnosis and treatment plan it is fundamental to:**

1) Obtain exhaustive medical history and clinical overview of the patient;

## **Absolute contraindications:**

- Cardiac diseases, unless otherwise specified by a cardiologist.
- Coagulation disorders.
- Oral anticoagulants.
- Psychological Diseases.
- Uncontrolled acute infections.
- Uncontrolled Diabetes.

## **Risk Factors:**

- Age
- Controlled diabetes.
- Previous radiotherapy of the jaws.
- Chemotherapy.
- Smoke.
- Alcohol and drug consumption.
- Some oral lesions.
- Long-lasting and High dosage corticosteroid therapy.
- History of bisphosphonates assumption.

2) Recognition of specific oral problems;

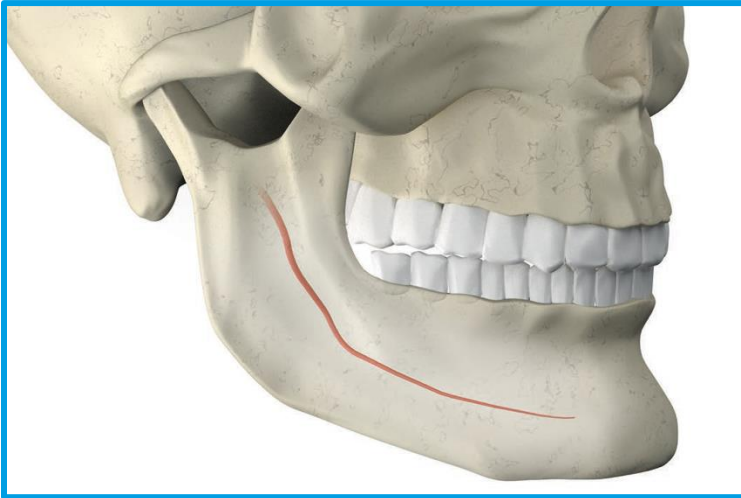
It is fundamental to discuss the goal of treatment with the patient, in terms of aesthetic and functional outcomes, to fulfill the patient's expectations.

Give the patient exhaustive pieces of information regarding risks, costs, and duration of treatment.

3) Choice of implant;

Length and diameter have to be chosen according to bone quantity. Intraoral X-rays, panoramic X-ray, diagnostic casts, and clinical examinations are essential steps to assess the existence **of sufficient bone volume in the implant site**.

A deepened overview of bone anatomy can be achieved thanks to CT scans, to avoid iatrogenic damages **caused by incorrect positioning of the implants** (i.e., inferior alveolar nerve proximity).



The inferior alveolar nerve and mental foramen must be preserved during surgical procedures.



The submandibular fossa and space, hosting sublingual artery, must be preserved during surgical procedure.

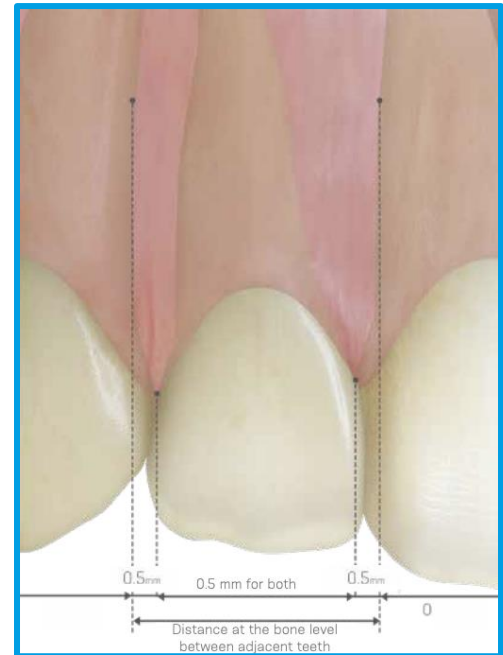


The maxillary sinus and floor of the nasal cavity must be identified not to be penetrated during surgery.

# MESIODISTAL IMPLANT POSITION

For single-tooth restorations, the implant should be placed in the center of the gap. The distance between adjacent teeth is approximately 1.0 mm greater at the bone level compared to the gap level. This is due to the crown's anatomy and the interproximal contact point.

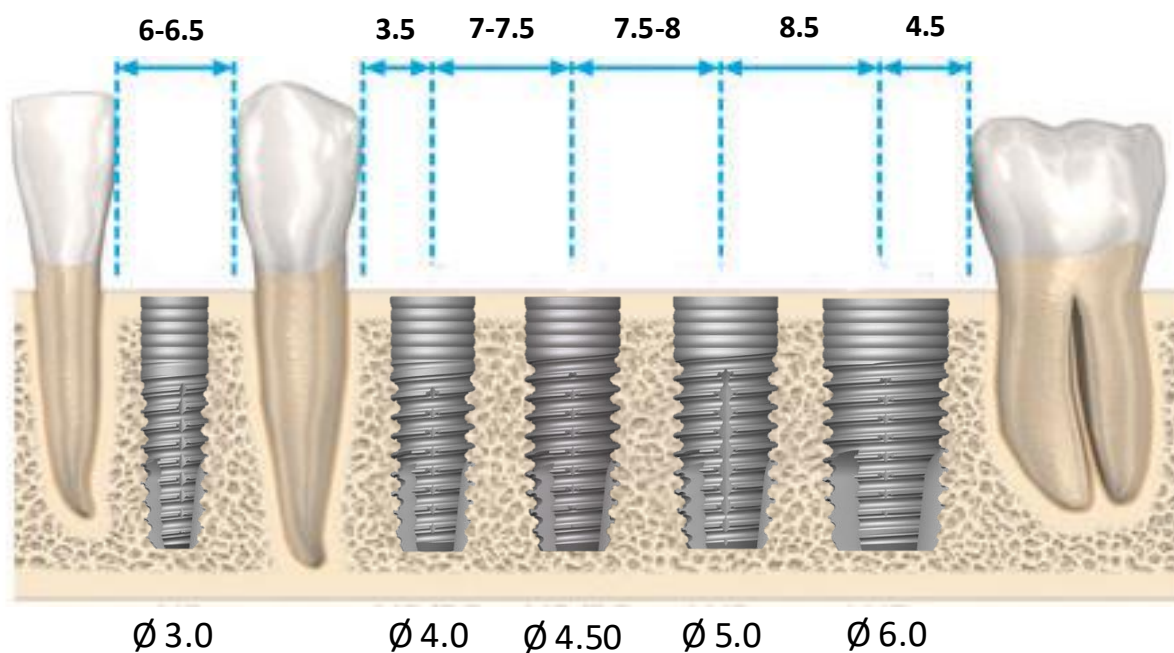
**Rule 1 :** Ideally, at bone level, the distance from the implant to the adjacent teeth should be at least 1.5 mm between the largest portion of the implant and the teeth, in both the mesial and distal aspects.



To calculate the available mesiodistal space for the implant we must consider:

1. The **MinBo Concept** (+1.5mm on each side at bone level= 3mm).
2. Subtract to the **MinBo** 1mm of difference between the gap and bone space

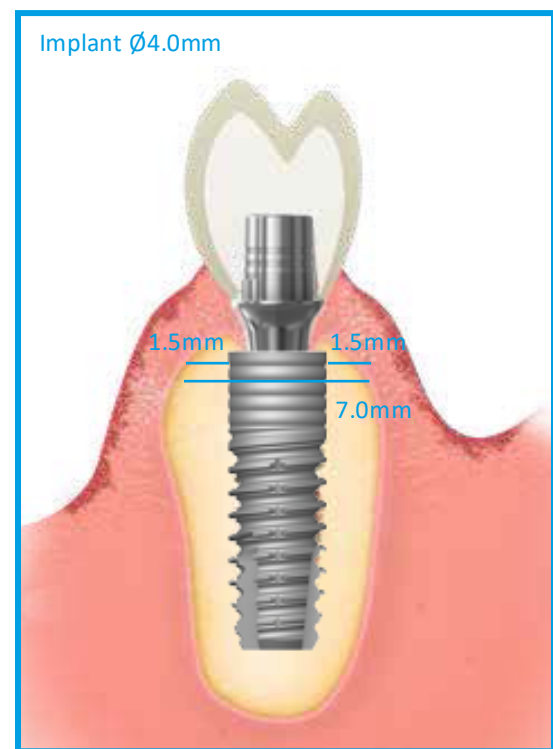
The gap must be 2.0 mm wider than the width of the implant.



# VESTIBULOLINGUAL IMPLANT POSITION

The buccal and palatal bone plate should be at least 1.5 mm thick to ensure the stability of the bone tissue and the condition of the soft tissue.

Bone graft techniques are highly advisable in the alveolar ridges in which the buccal bone plate is less than 1.5 mm thick or when bone is lacking on one of the sides.

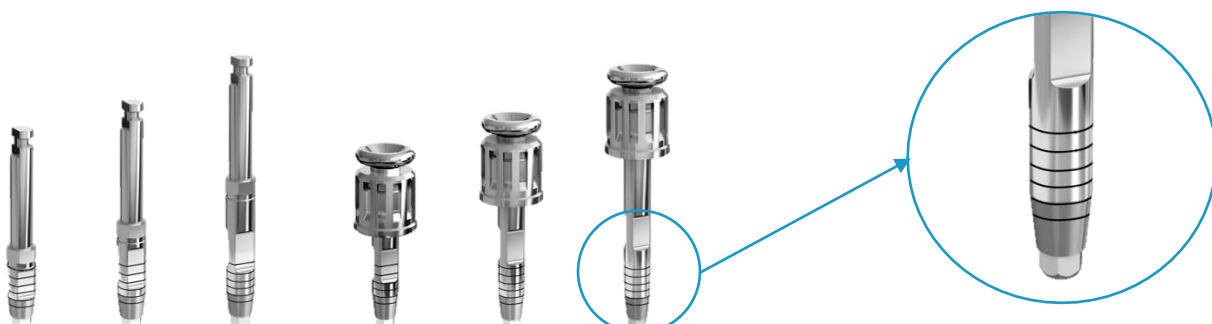
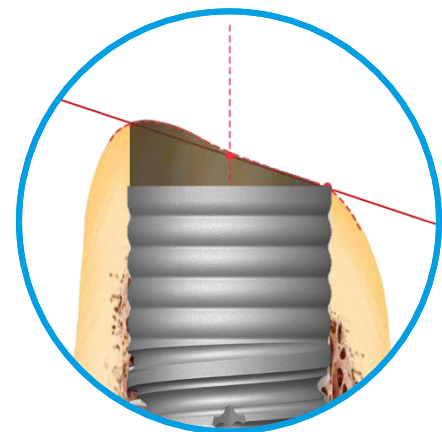


# CERVICOAPICAL POSITION OF THE IMPLANT

CLC CONIC implants were developed for 1.5 mm positioning below bone level to optimize the stability of hard and soft tissue and for better esthetic results of the restorations, especially in the anterior regions.

In an uneven ridge situation, position the implant at the bone level corresponding to the most apical bone wall.

Note that the CLC implant drivers have black notches engraved on the body so that the clinician can assess the implant insertion depth.



# PLANNING AIDS

## Planning tools

The maximum permissible length of the implant is influenced by the availability of vertical bone. To facilitate the assessment of vertical bone availability, it is advised to utilize X-ray imaging.

## X-ray templates

The X-ray Templates serve the purpose of measurement and comparison, aiding users in the selection of an appropriate implant type, diameter, and length. To accommodate distortions in X-rays, the templates display implant dimensions along with corresponding distortion factors.

## CLC Guided

There is also the possibility of digital planning with CLC Guided®.

This 3D diagnostics and implant planning software is designed for the image-guided surgical planning of dental implants, which are included in the digital library of the system.

Working with the software is based on a patient's medical image data such as a CT (Computed Tomography) or DVT (Digital Volume Tomography) scan that is processed by CLC Guided®.

Planning includes the calculation of several views (such as virtual OPG or a 3-dimensional reconstruction of the image dataset) and the analysis of the image data and the placement of implants, abutments, and drilling sleeves.

CLC Guided® software is designed for use by professionals with appropriate knowledge in implantology and surgical dentistry. For further information, please refer to the CLC Guided® Manual.









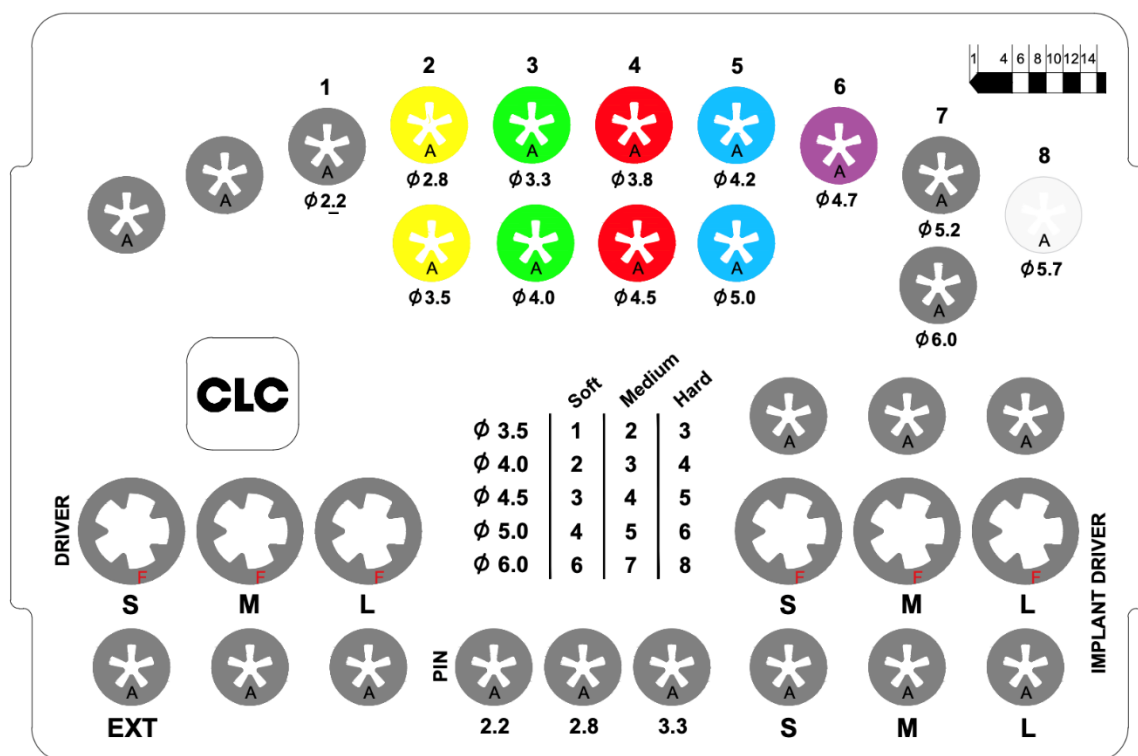
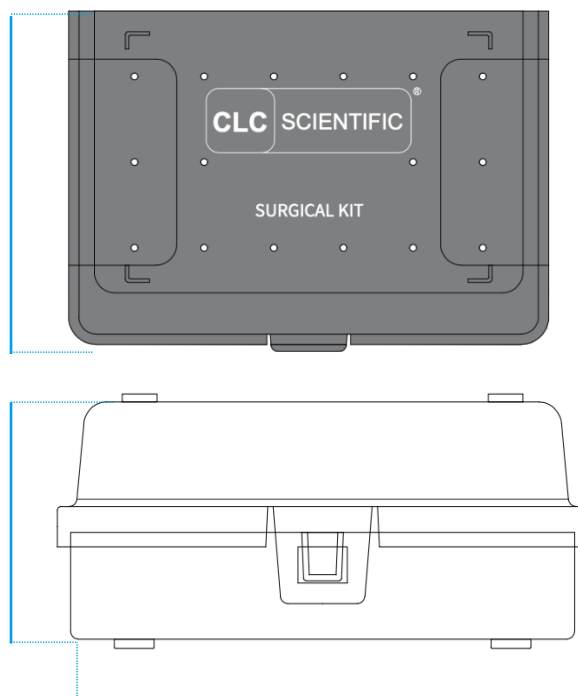
# CLC CONIC SURGICAL CASSETTE

The CLC® Surgical Cassette (KIT01) is used for the secure storage, cleaning, and sterilization of surgical instruments and auxiliary instruments. The guidelines about cleaning and sterilization are available for consultation in the CLC® Surgical and Prosthetic Manual.

100 mm

61 mm

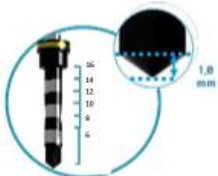
143 mm





#### Cortical drill

- Stainless steel
- Dedicated drill for dense bone or thick cortex



#### Twist drill

- Stainless steel, DLC coating
- Optimized site preparation for soft and medium bone



#### First guide Drill

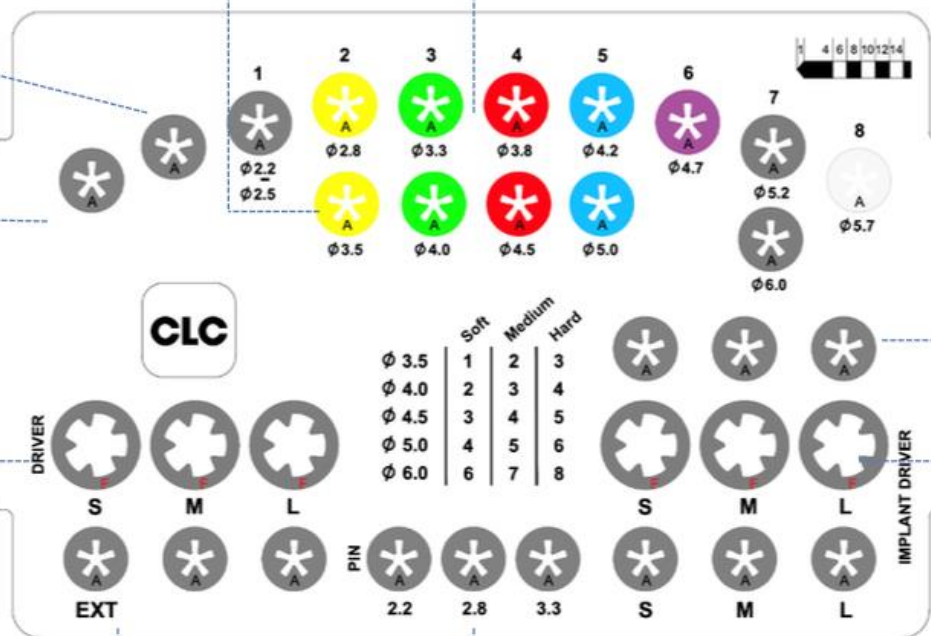
- Stainless steel, DLC coating
- $\phi$  1,7 mm /  $\phi$  2,2

TPCL2216

#### Direction drill

- $\phi$  2,0 mm
- Stainless steel, DLC coating
- Modification of osteotomy's direction

LCDR20



#### Round drill

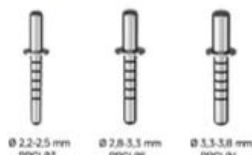
- $\phi$  2,3 mm
- Stainless steel
- Design of the correct implant's position



RBCL20

#### Direction Indicator

- Checks the positioning and direction of the osteotomy



#### Drill extension

- Increases the length of the drill shaft



EDCL16

#### Implant Driver Handle

- Takes correctly the implant and inserts it into the implant site



Short DRCL83



Medium DRCL125



Long DRCL185

#### Hex Driver Handle

- Tightens the CLC CONIC screws (except for the angled screw)



Short DRCL1390



Medium DRCL1340



Long DRCL1390

#### Implant Driver Fa

- Takes correctly the implant and inserts it into the implant site



Short MNCL95



Medium MNCL135



Long MNCL175

# DRILLING PROTOCOL

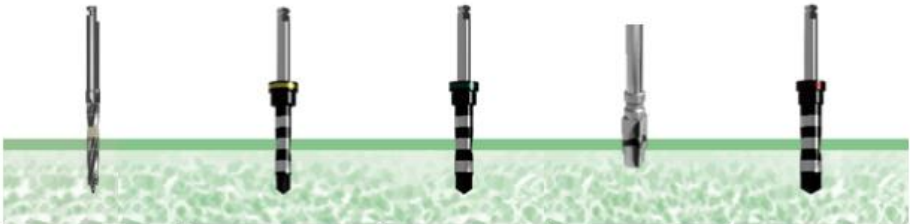
D 3.5



| Bone quality | Drill 1<br>Ø 2.2-2.6 | Drill 2<br>Ø 2.8 | Cortical drill 3,5 | Drill 3<br>Ø 3.3 |
|--------------|----------------------|------------------|--------------------|------------------|
| Hard         | ●                    | ●                | ○                  | ●                |
| Medium       | ●                    | ●                | ○                  |                  |
| Soft         | ●                    |                  |                    |                  |

LEGENDA: ○ optional

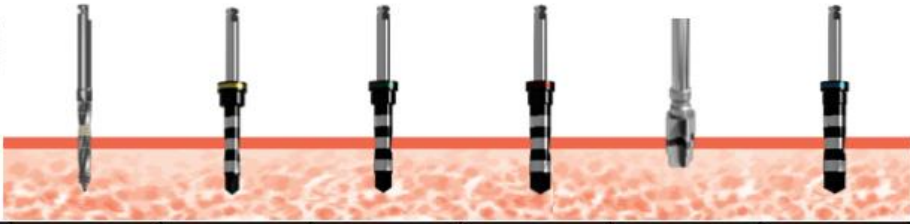
D 4.0



| Bone quality | Drill 1<br>Ø 2.2-2.6 | Drill 2<br>Ø 2.8 | Drill 3<br>Ø 3.3 | Cortical drill 4,0 | Drill 4<br>Ø 3.8 |
|--------------|----------------------|------------------|------------------|--------------------|------------------|
| Hard         | ●                    | ●                | ●                | ○                  | ●                |
| Medium       | ●                    | ●                | ●                | ○                  |                  |
| Soft         | ●                    | ●                |                  |                    |                  |

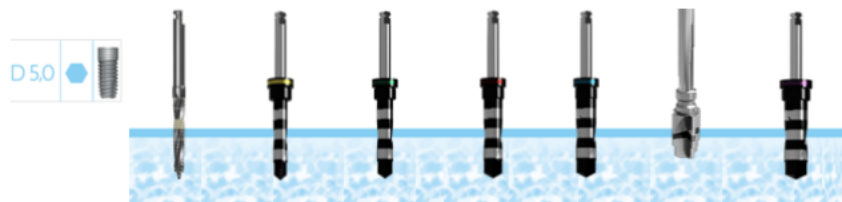
LEGENDA: ○ optional

D 4.5



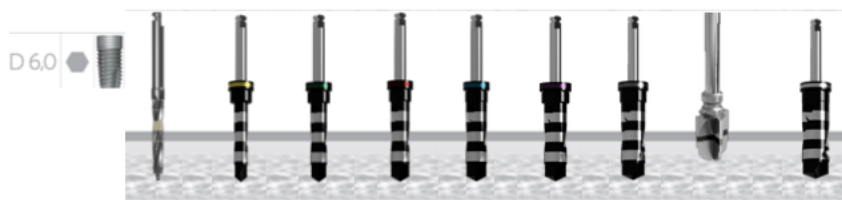
| Bone quality | Drill 1<br>Ø 2.2-2.6 | Drill 2<br>Ø 2.8 | Drill 3<br>Ø 3.3 | Drill 4<br>Ø 3.8 | Cortical drill<br>4,5 | Drill 5<br>Ø 4.2 |
|--------------|----------------------|------------------|------------------|------------------|-----------------------|------------------|
| Hard         | ●                    | ●                | ●                | ●                | ○                     | ●                |
| Medium       | ●                    | ●                | ●                | ●                | ○                     |                  |
| Soft         | ●                    | ●                | ●                |                  |                       |                  |

LEGENDA: ○ optional



| Bone quality | Drill 1<br>Ø 2.2-2.6 | Drill 2<br>Ø 2.8 | Drill 3<br>Ø 3.3 | Drill 4<br>Ø 3.8 | Drill 5<br>Ø 4.2 | Cortical drill<br>5,0 | Drill 6<br>Ø 4.7 |
|--------------|----------------------|------------------|------------------|------------------|------------------|-----------------------|------------------|
| Hard         | ●                    | ●                | ●                | ●                | ●                | ○                     | ●                |
| Medium       | ●                    | ●                | ●                | ●                | ●                | ○                     |                  |
| Soft         | ●                    | ●                | ●                | ●                |                  |                       |                  |

LEGENDA: ○ optional



| Bone quality | Drill 1<br>Ø 2.2-2.6 | Drill 2<br>Ø 2.8 | Drill 3<br>Ø 3.3 | Drill 4<br>Ø 3.8 | Drill 5<br>Ø 4.2 | Drill 6<br>Ø 4.7 | Drill 7<br>Ø 5.2 | Cortical drill<br>6,0 | Drill 8<br>Ø 5.7 |
|--------------|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|------------------|
| Hard         | ●                    | ●                | ●                | ●                | ●                | ●                | ●                | ○                     | ●                |
| Medium       | ●                    | ●                | ●                | ●                | ●                | ●                | ●                | ○                     |                  |
| Soft         | ●                    | ●                | ●                | ●                | ●                | ●                |                  |                       |                  |

LEGENDA: ○ optional

LEGENDA: ○ optional

**Drilling speed:** Drilling must proceed at high speed (800-1200 RPM) under constant and abundant external irrigation of sterile saline solution at room temperature. In dense bone conditions, drill in a continuous back-and-forth motion.

**Depth measurement system:** The drills have a real-depth measurement system. All drills and components are marked to allow preparation of the implant site to the correct depth and to achieve predictable and stable positioning of the implant.

**Attention:** Twist Drills extend up to 1.0 mm beyond the implant in place. Therefore, when drilling close to vital anatomical structures, the increased length must be taken into account.

# IMPLANT BED PREPARATION

## Site Preparation System

Implant Ø3,5mm x 10mm length

### Flap raising



### Position markers drill

To verify the position of the implant between the bone edge and adjacent teeth or implants.



### Direction drill

Simplifies the achievement of a correct implant axial direction. Allows to modify the axial direction when required.

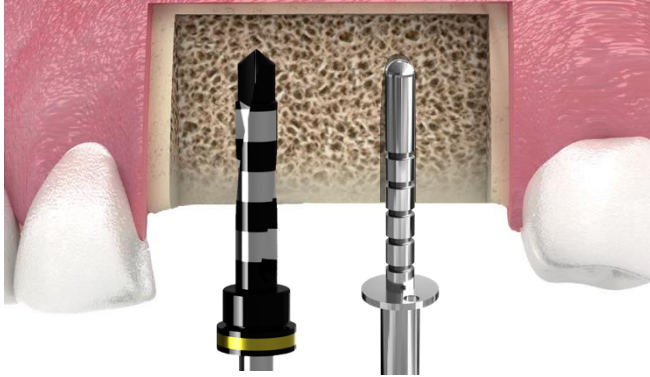


### Twist drill 2,2 mm diameter

Allows to reach the desired depth (based on the markers on the drill). It will be used with a movement back and forth, keeping pressure on the bone for 1-2 sec.

A 2.2 mm diameter direction indicator is inserted into the initial preparation to verify the correct position and direction in case of multiple implants.





### **Twist drill 2,8 mm**

Allows to reach the desired depth (based on the marks on the drill) with a suitable diameter for insertion of the selected implant. It will be used with a back-and-forth movement, keeping pressure on the bone for 1-2 sec.



### **Cortical drill 3,5 (Bone D1, D2)**

Allows the placing of the implant neck in the presence of compact bone.



### **Twist drill 3,3 (Bone D1)**

In the presence of very compact bone, develops a wider site, facilitating the insertion of the implant.

# IMPLANT PACKAGING AND PICK UP



## Packaging

The CLC CONIC dental implants are provided in a sealed sterile packaging that protects from external influences and ensures sterility until the expiration date.

The implant's information such as diameter, length, and expiration date are easily identifiable on the label placed on the outer box.

The sterile packaging complies with the European standard EN 556 - I: 2002.

The package consists of:

- Rigid paper box (outer box)
- Rigid plastic box (contains the blister, the information manual, and three self-adhesive labels for recording in the patient medical records and for reporting to the prosthesis team)
- Blister (secondary packaging)
- PMMA vial with cap (primary packaging).

The implant Inside the PMMA ampoule is supported apically by a Grade 4 titanium base. The contact surface between the fixture and the supports is at the most reduced to guarantee the implant roughness surface integrity.



## Implant pick up

Once the implant bone site is prepared, open the sterile blister, carefully unscrews the vial cap, engages the handpiece mounted implant driver at the implant. At this point, the implant can be easily removed from the vial. This kind of connection allows a safe transport and a controlled implant installation and permits to transfer the necessary torque during the implant placement (Max torque 60 N).



### Step 1

To access to the PMMA vial, break the blister squeezing out the half shell containing the vial.

### Step 2

To access to the implant, remove the cap of the vial. Once the cap is removed, it can be placed on a sterile surface. The cover screw is safely retained by the cap.



### Step 3

Once the cap is removed engage the implant using the specific implant carrier, manually or using the handpiece.

# IMPLANT POSITIONING



## Placing the implant

Assess precisely the depth of drilling before implant placement using a depth gauge.



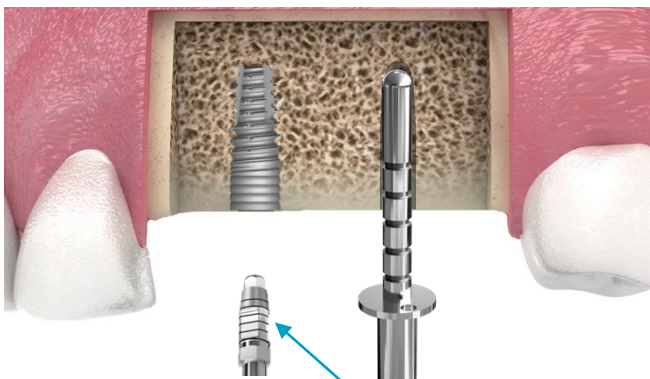
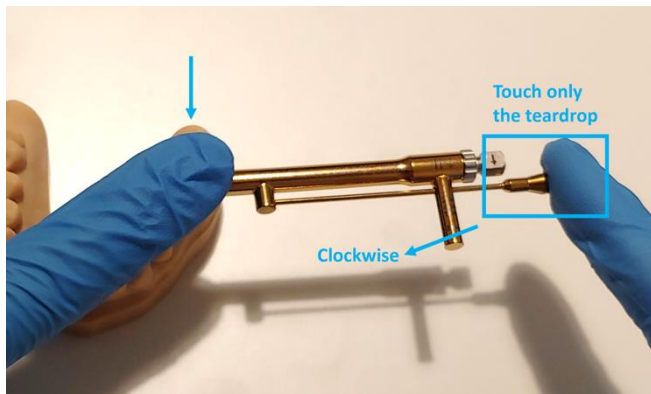
Install the implant into the osteotomy without irrigation, using low speed (20 rpm) and a torque value between 25 and 45 Ncm.

The final tightening and/or verification of implant stability can be done manually using the Manual Torque wrench.

Very high torque values may result in unwanted bone compression.

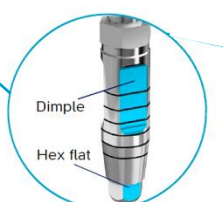
In addition, a higher torque (over 60-80N) could cause deformations of implant connection components.

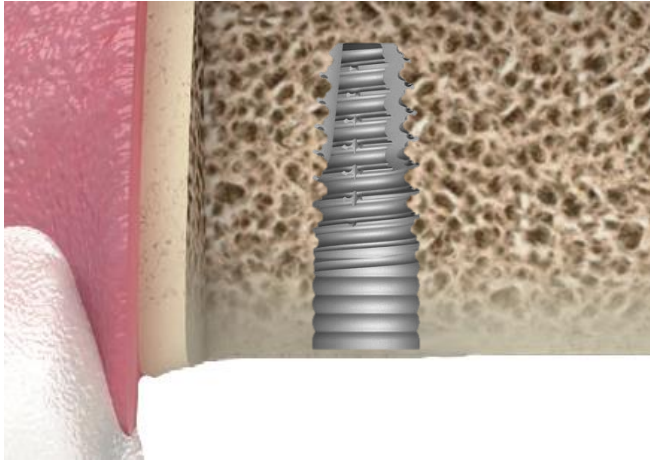
Therefore, under these conditions remove the implant, use a larger diameter twist drill, and reinsert the implant.



## Disconnect the implant

Once you have completely inserted the implant, simply remove the implant driver from the head of the implant. Then install on the implant a cover screw or a healing abutment.





## **WARNING**

### **Implant placement**

To reach the advantage of internal conical connection and minimize the peri-implant bone resorption, it is recommended to place the implant head 1mm below the bone crest.

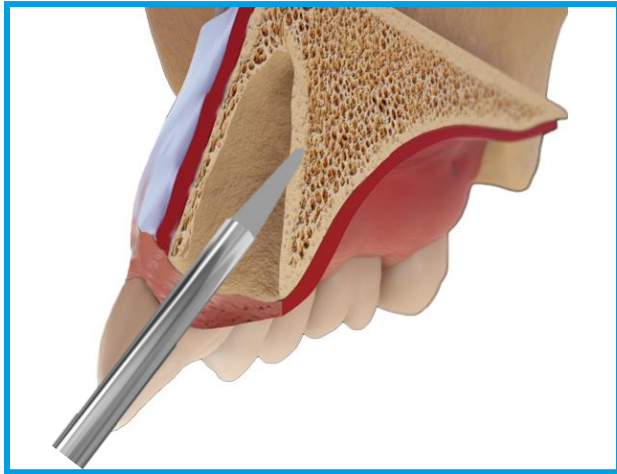
Placement of the implant in the subcrestal position promotes the formation of new bone above the edge of the implant platform.

This provides further support for the overlying soft tissue and a better prospect for long-term aesthetics of the hard and soft tissues.

The implant can, however, be located, without any problems, even in the crestal position.

This way reduces the benefit from the prosthetic abutment subcrestal positioning, but there is no negative consequence from the biological point of view.

# IMMEDIATE PLACEMENT



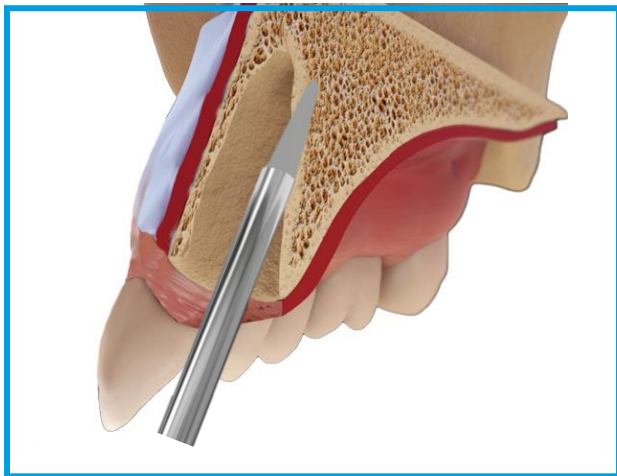
## Implant bed preparation

Start with the Marker drill to create a purchase point at the apical part of the extraction socket.

Optionally, start with the Direction drill in the palatal direction, then straighten the drill direction to the intended implant bed axis.

Drill 2 to 3mm only, maximum to implant length.

Note: Prep the palatal wall with the Marker drill to straighten the implant bed on the palatal side.



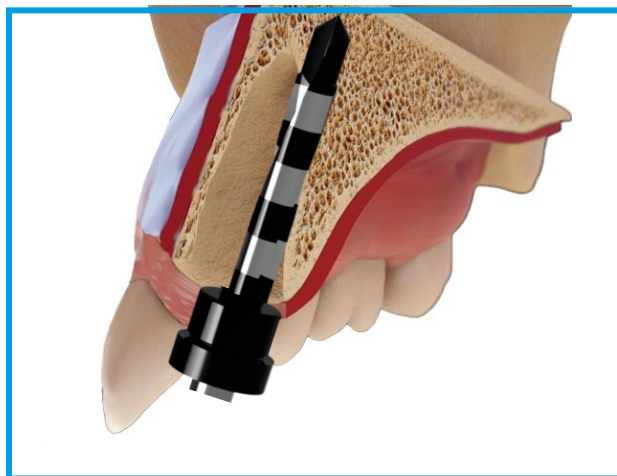
## Implant axis and depth

Pre-drill the implant bed with the Twist drill Ø2.0mm to mark the implant axis on the palatal side of the extraction socket. Potentially direct palatally and redirect after 1-2mm into the implant direction. Always apply lateral bur pressure towards the palate with the burs while drilling. Insert the Ø2.0mm Direction indicator to check for correct implant axis orientation and preparation depth.

Widen the implant bed and correct the implant bed position if necessary.

Use the drill protocol for soft bone.

**Note:** First drill at a steep angle to straighten out the palatal wall.



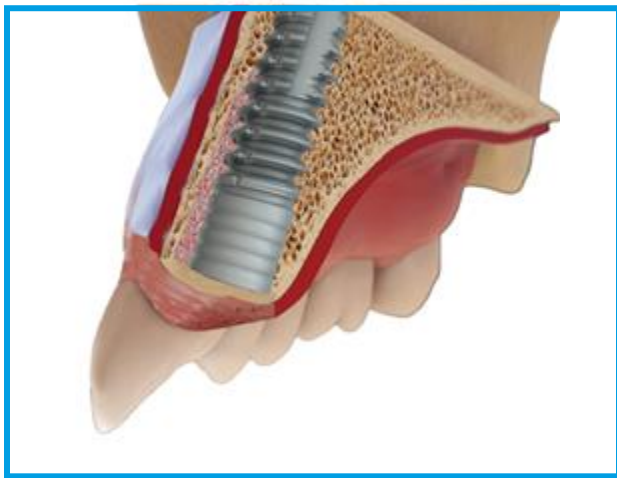
# IMMEDIATE PLACEMENT



## **Implant placement**

Angle the implant at insertion palatally until engaged in the bone, then redirect to the final implant bed position.

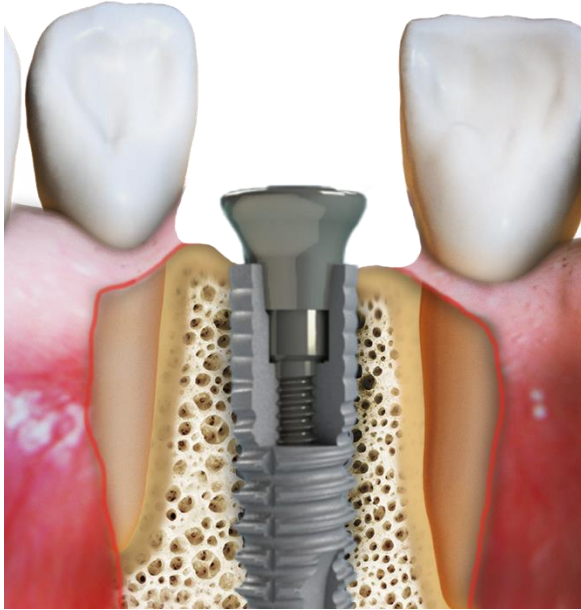
**Note:** If the implant is placed sub-osseous, consider scalloping the palatal bone to create space for the healing abutment or provisional.



## **Consider bone augmentation**

Consider filling the gap between the implant and buccal bone with bone chips. Complete with any required bone augmentation procedure on the buccal wall.

# SOFT TISSUE MANAGEMENT



Healing abutment

After the placement, the implant is covered with a cover screw or healing abutment to protect it.

The surgeon may choose between submucosal (under a closed mucoperiosteal flap), or transmucosal healing and has all the available options for handling soft tissue with a versatile portfolio of CLC CONIC healing abutments.

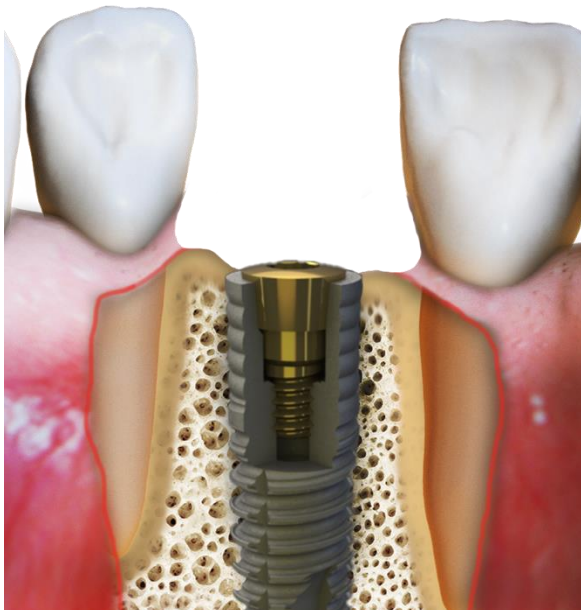
**Submucosal healing** may be indicated in several conditions such as when primary stability is low, or when simultaneous guided bone regeneration (GBR) is performed.

For submucosal healing, the use of a cover screw is indicated. A second surgical procedure is necessary to expose the implant and insert the desired abutment.

## Note

Do not use healing component for longer than 180 days.

Healing components are NOT provided sterile, therefore must be sterilized before use (refer to specific instructions for use).



Cover screw

# HEALING ABUTMENTS

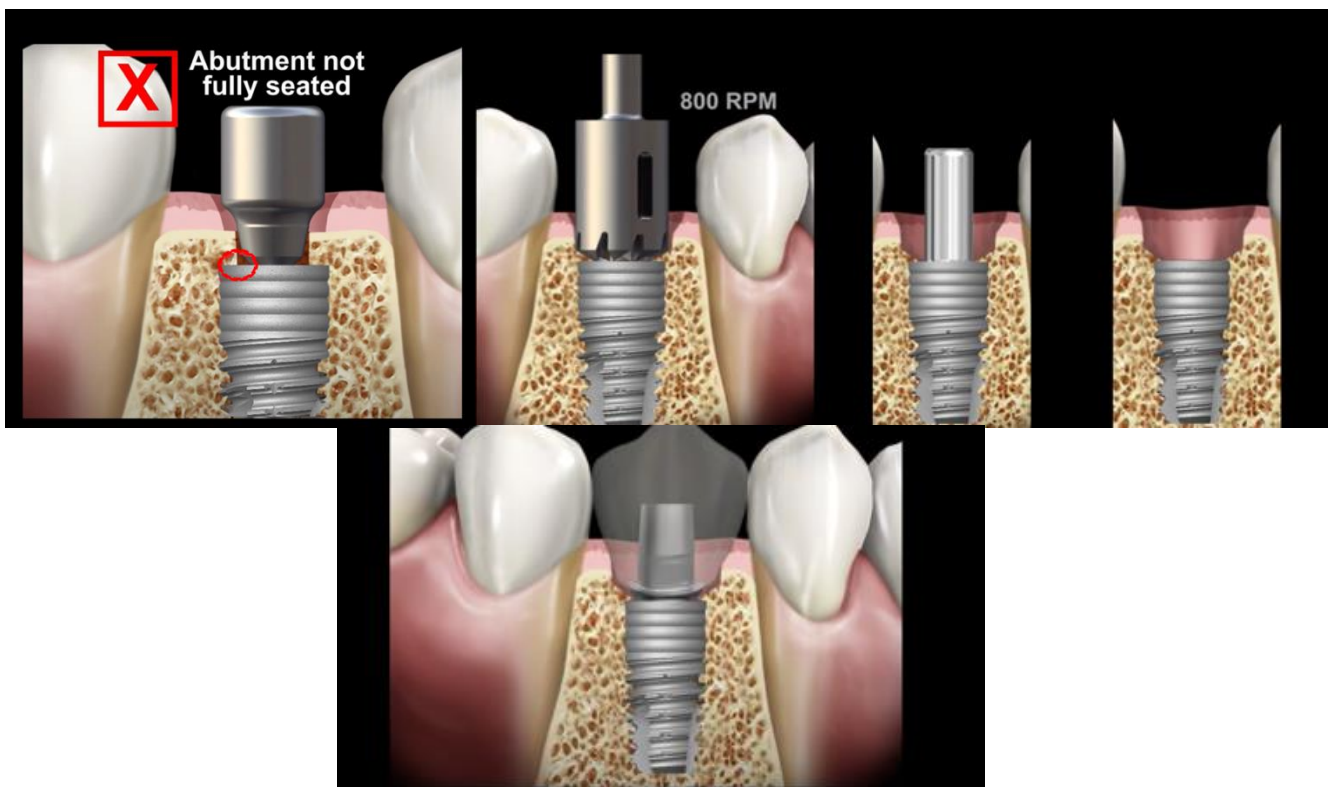


| HEALING ABUTMENTS  |      |      |      |      |
|--------------------|------|------|------|------|
| $\varnothing$      | H    |      |      |      |
|                    | 2.50 | 3.50 | 4.50 | 6.00 |
| $\varnothing$ 4.00 | X    | X    | X    | X    |
| $\varnothing$ 5.00 | X    | X    | X    | X    |
| $\varnothing$ 6.00 | X    | X    | X    |      |

Legenda

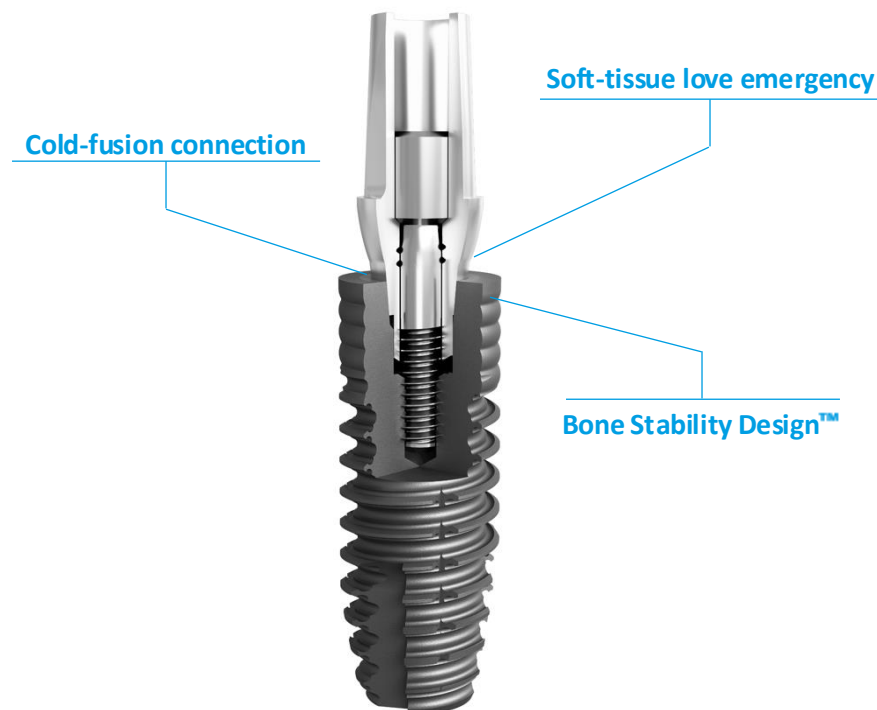
$\varnothing$ : diameter - H: height

Abutment not fully seated : how to solve it



# CLC CONIC PROSTHETIC PROCEDURE

The CLC CONIC implant provides you with a solution for all bone level treatments – CLC expertise and quality built in. Its design is based on the latest technology and scientific know-how in implant dentistry. Moreover, it respects key biological principles, brings predictable esthetic results and offers simple handling in all indications.



## Bone Stability Design™

The unique Bone Stability Design™ is based on key biological principles and thorough scientific research to support crestal bone preservation and stable soft tissue margins. It features the following strengths:

- Fast osseointegration with the OGI surface technology.
- Optimal transmission of forces into the bone through the biomechanical implant design.
- Consideration of the biological distance with a horizontal distance of micro gap to bone.
- Reduction of micro movements while controlling the micro gap through a conical connection.

## Soft-tissue love emergency

The prosthetic components of the CLC CONIC Implant line are designed to facilitate highly esthetic restorations that perfectly mimic natural teeth. These implant line components, designed to match the abutment profiles, allow you to easily attain esthetic results through soft tissue management.

## Cold-fusion connection

The prosthetic connection is intuitive, self-guiding and easy to grasp.

The Cold-fusion connection:

- provides a clear-cut insertion through the guidance by 4 grooves and the deep, conical connection.
- ensures precision against rotation through orthogonal fit between implant and abutment.
- gives prosthetic flexibility with mechanical long-term stability through its conical connection.

# CLC CONIC PROSTHETIC COMPONENTS

| CODE                             | Description                                         | Ø         | H                            | angle° |
|----------------------------------|-----------------------------------------------------|-----------|------------------------------|--------|
| <b>BTSE042-342</b>               | Titanium base – with index                          | 4.7       | 1-2-3                        | 0      |
| <b>TBSA421-423</b>               | Titanium base for Angled Hex Driver fa – with index | 4.7       | 1-2-3                        | 0      |
| <b>MOCCO475 –<br/>MOCCO565</b>   | Standard abutment                                   | 4.50-5.50 | 1.00-1.50-3.00-<br>4.00-6.00 | 0      |
| <b>MOCCO1515 -<br/>MOCCO315</b>  | Angled Abutment 15°                                 | 5.50      | 1.50-3.00                    | 15     |
| <b>MOCCO1525 -<br/>MOCCO325</b>  | Angled Abutment 25°                                 | 5.50      | 1.50-3.00                    | 25     |
| <b>BSTOCO401 -<br/>BSTOC406</b>  | Straight MUA                                        | 4.2       | 1-2-3-4-6                    | 0      |
| <b>MACLK0118 -<br/>MACLK0218</b> | Angled MUA 17°                                      | 5.0       | 1-2                          | 17     |
| <b>MACLK0318 -<br/>MACLK0418</b> | Angled MUA 30°                                      | 5.0       | 1-2                          | 30     |
| <b>OTCL01K-OTCL06K</b>           | Equator Abutment                                    | 3.50      | 1-2-3-4-6                    | 0      |
| <b>SFCCO05-SFCCO6</b>            | Sphero block                                        | 4.0       | 1-2-3-4-6                    | 0      |

# PROSTHETIC OPTIONS OVERVIEW

|                                                                                                          |                 |                                                                                      |                                                     |
|----------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Single crown</b><br> | Screw-retained  |     | Titanium base- with index                           |
|                                                                                                          |                 |     | Titanium base for Angled Hex Driver fa – with index |
|                                                                                                          | Cement-retained |    | Standard Abument                                    |
|                                                                                                          |                 |     | Angled Abutment 15°                                 |
|                                                                                                          |                 |    | Angled Abutment 25°                                 |
| <b>Bridge</b><br>     | Screw-retained  |   | Straight MUA                                        |
|                                                                                                          |                 |   | Angled MUA 17°                                      |
|                                                                                                          |                 |   | Angled MUA 30°                                      |
|                                                                                                          |                 |   | Titanium base- with index                           |
|                                                                                                          | Cement-retained |   | Titanium base for Angled Hex Driver fa – with index |
|                                                                                                          |                 |  | Standard Abument                                    |
|                                                                                                          |                 |   | Angled Abutment 15°                                 |
|                                                                                                          |                 |   | Angled Abutment 25°                                 |

|                                                                                                                                       |                                                                                      |                                                                                     |                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------|
| <div>Fixed prosthesis for edentulous patient</div>  | Screw-retained                                                                       |    | Straight MUA                                        |
|                                                                                                                                       |                                                                                      |    | Angled MUA 17°                                      |
|                                                                                                                                       |                                                                                      |    | Angled MUA 30°                                      |
|                                                                                                                                       |                                                                                      |    | Titanium base- with index                           |
|                                                                                                                                       |                                                                                      |    | Titanium base for Angled Hex Driver fa – with index |
| Cement-retained                                                                                                                       |  | Standard Abument                                                                    |                                                     |
|                                                                                                                                       |   | Angled Abutment 15°                                                                 |                                                     |
|                                                                                                                                       |   | Angled Abutment 25°                                                                 |                                                     |
| <div>Removable overdenture</div>                   |                                                                                      |  | Equator Abutment                                    |
|                                                                                                                                       |                                                                                      |  | Sphero Block                                        |

# ABUTMENT OVERVIEW

|                                                | Straight MUA                                                                      | Angled MUA 17°                                                                     | Angled MUA 30°                                                                      | Titanium base-with index                                                            |
|------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                |  |  |  |  |
| <b>Single crown</b>                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Screw-retained                                 |                                                                                   |                                                                                    |                                                                                     | ●                                                                                   |
| Cement-retained                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>Bridge</b>                                  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Screw-retained                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   |
| Cement-retained                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>Fixed prosthesis for edentulous patient</b> |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Screw-retained                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   |
| Cement-retained                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>Removable overdenture</b>                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>Impression</b>                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Implant level                                  |                                                                                   |                                                                                    |                                                                                     | ●                                                                                   |
| Abutment level                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   |                                                                                     |

| Titanium base<br>for Angled Hex<br>Driver fa –<br>with index                      | Standard<br>Abument                                                               | Angled<br>Abutment 15°                                                            | Angled<br>Abutment 25°                                                             | Equator<br>Abutment                                                                 | Sphero Block                                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
|                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
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|                                                                                   | •                                                                                 | •                                                                                 | •                                                                                  |                                                                                     |                                                                                     |
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| •                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
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|                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |





# CEMENT-RETAINED RESTORATION

## STANDARD WORKFLOW



Pick Up/Transfer



Implant Replica  
Laboratory  
ANDG5411

Temporary Abutment



Antirotational  
Temporary  
Abutment



Standard  
Abutment

Definitive Prosthetic  
Abutment



Angled  
Abutment



Scan body



Implant Replica  
Laboratory  
ANDG5411

Prototyping

VSANDG01



Pre-milled  
Abutment



Single crown



Partial bridge



Full Arch bridge

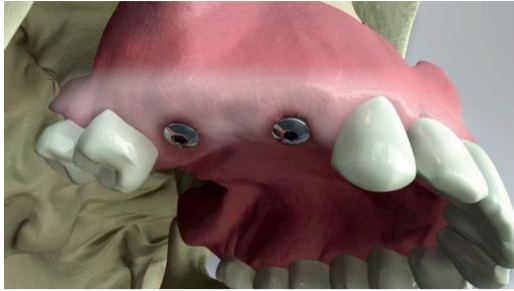
## OVERVIEW OF PRODUCTS USED IN THE STANDARD WORKFLOW

| Abutment           | Open tray implant impression | Closed tray implant impression | Replica    |
|--------------------|------------------------------|--------------------------------|------------|
| Temporary abutment |                              |                                | ● optional |
| Standard abutment  | ●                            | ●                              | ●          |
| Angled abutment    | ●                            | ●                              | ●          |

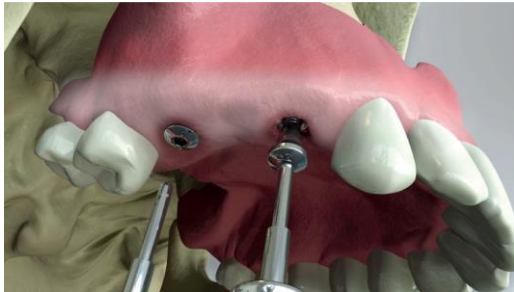
## OVERVIEW OF PRODUCTS USED IN THE DIGITAL WORKFLOW

| Abutment            | Digital impression | Replica + basal screw |
|---------------------|--------------------|-----------------------|
| Pre-milled abutment | ●                  | ● optional            |

# STANDARD WORKFLOW



**Healing abutments on implants placed**



**Healing abutments removal by Hex driver handle**



**Implants**

## A. OPEN TRAY PROCEDURE



**Pick up insertion, screwed with a light force by Hex driver handle**



**Impression material appliance on the pick up**



**Open impression tray placement**



**Unscrewing of pick up retention screws by  
Hex driver handle**



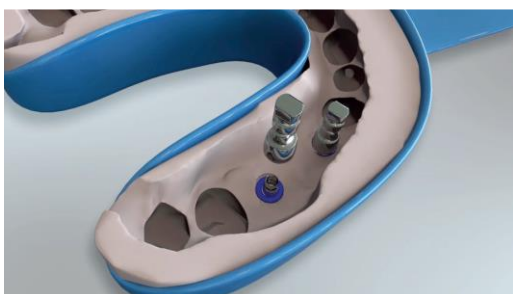
**Removal of pick up retention screws**



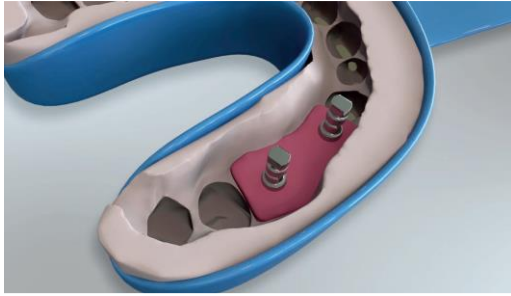
**Removal of impression tray with pick up**



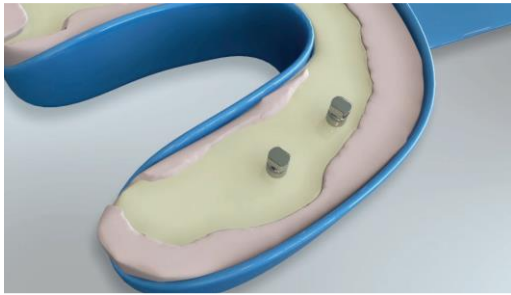
**Impression tray with pick up is sent to the  
laboratory for casting the model**



**Insertion of implant replica screwed to the  
corresponding pick up**



**Pink soft resin for gum replica**



**Plaster master cast mounting**



**Master cast with pick up**

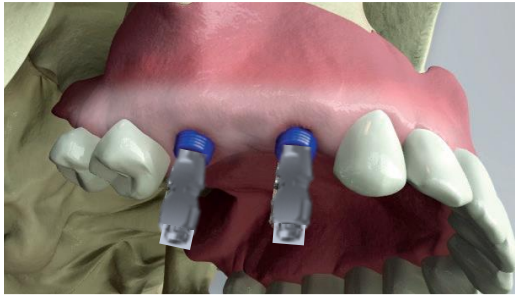


**Master cast with pick up removal**

## **B. CLOSED TRAY PROCEDURE**



**Transfer insertion, screwed with a light force by Hex driver handle**



**Impression material appliance on the transfer**



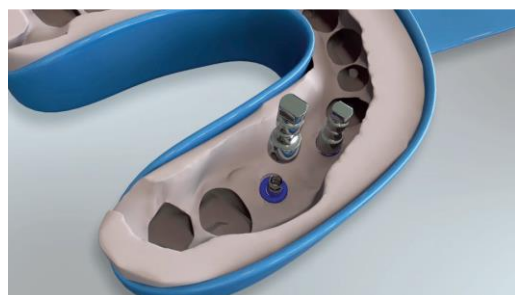
**Closed impression tray placement**



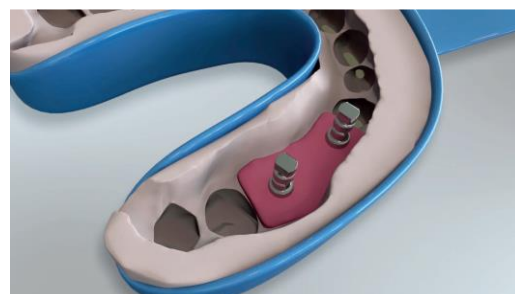
**Removal of impression tray**



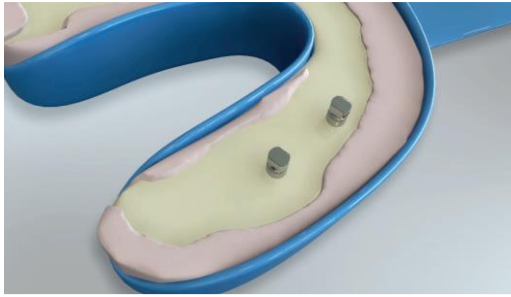
**Impression tray with transfer is sent to the laboratory for casting the model**



**Insertion of implant replica screwed to the corresponding transfer**



**Pink soft resin for gum replica**



**Plaster master cast mounting**



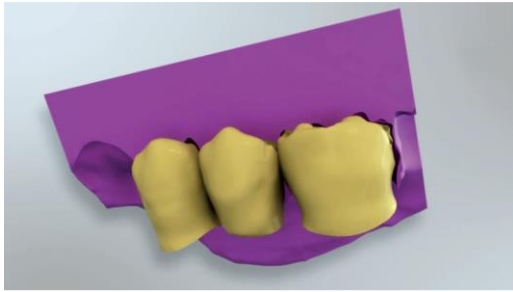
**Master cast with transfer**



**Master cast with transfer removal**



**Crowns bridge wax on implant replica**



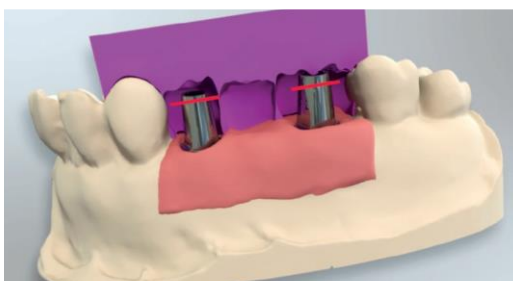
**Silicon impression of crowns bridge wax**



**Screwing of lab red retention screws after abutment placement**



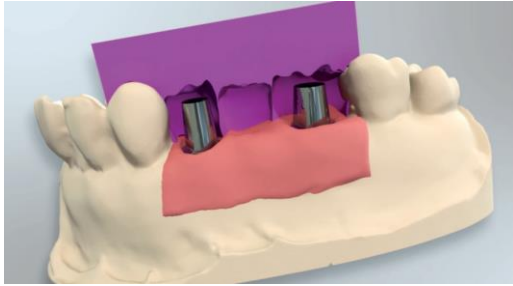
**Abutment of prosthesis screwed on the connector replica**



**Analysis of prosthesis abutments reduction**



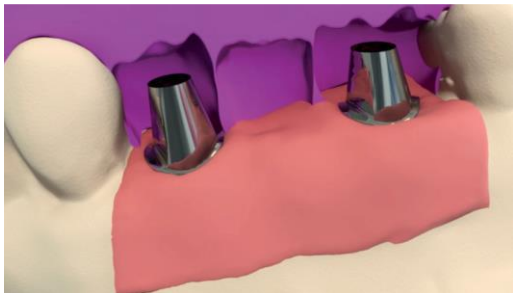
**Trimming of coronal portion of prosthesis abutments based on crowns bridge dimension**



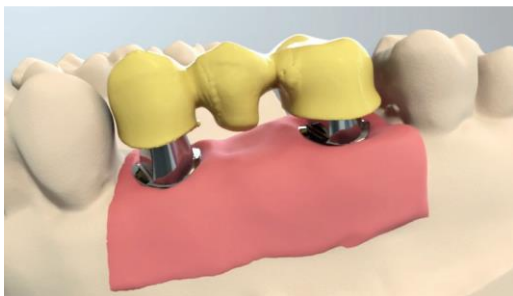
**Evaluation of prosthesis abutments**



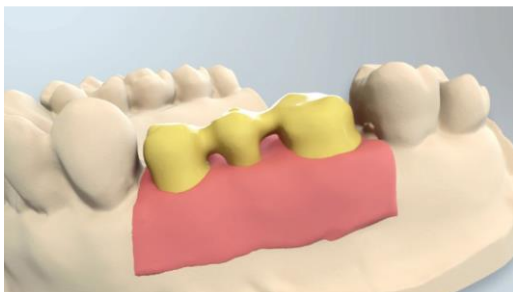
**Trimming of prosthesis abutments by tungsten carbide bur**



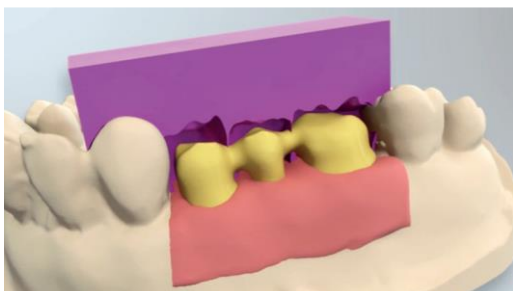
**Final evaluation of prosthesis abutments dimension and direction**



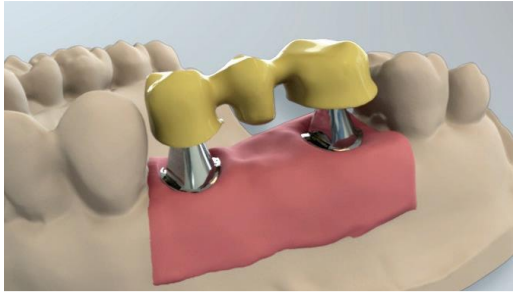
**Wax bridge framework placement on the reduced prosthesis abutments**



**Wax bridge reduction to create the metal framework of the ceramic bridge**



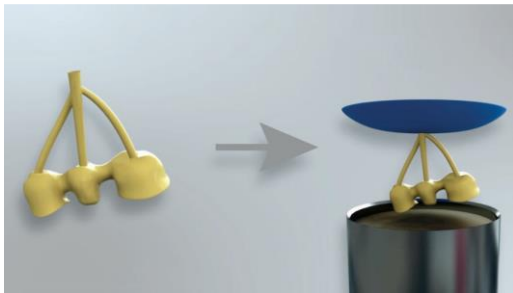
**Evaluation of the wax framework dimension**



**Displacement of the wax framework of the ceramic bridge**



**Wax framework of the ceramic bridge ready for the merger**



**Wax framework placement into the melting oven**

## CASTING INFORMATION



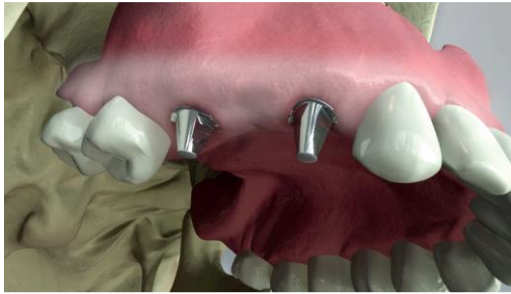
**Metal framework**



**Metal framework test on the prosthesis abutments placed in the master cast**



**Metal framework test on the master cast**



**Prosthesis abutments on the corresponding implants**



**Metal framework test on the prosthesis abutments placed in the patient mouth**



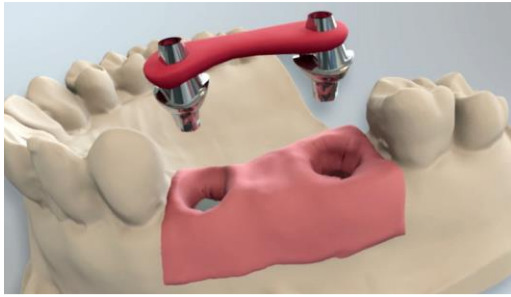
**Ceramic structure on the metal framework**



**Ceramic bridge test on the master cast**



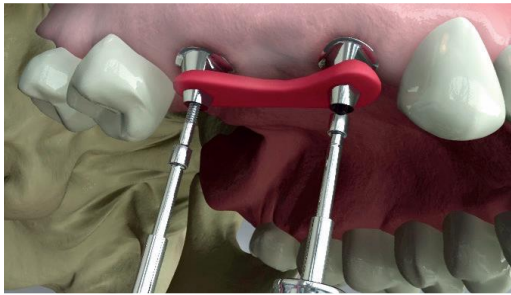
**Resin positioning jig prosthesis abutment placement**



**Positioning JIG removal with prosthesis abutments**



**Positioning JIG placement in patient mouth with prosthesis abutments**



**Prosthesis abutment retention screws screwing by Hex driver handle**



**Final Prosthesis abutment screwing by ratchet wrench at 25N**



**Closure of prosthesis abutment access holes**

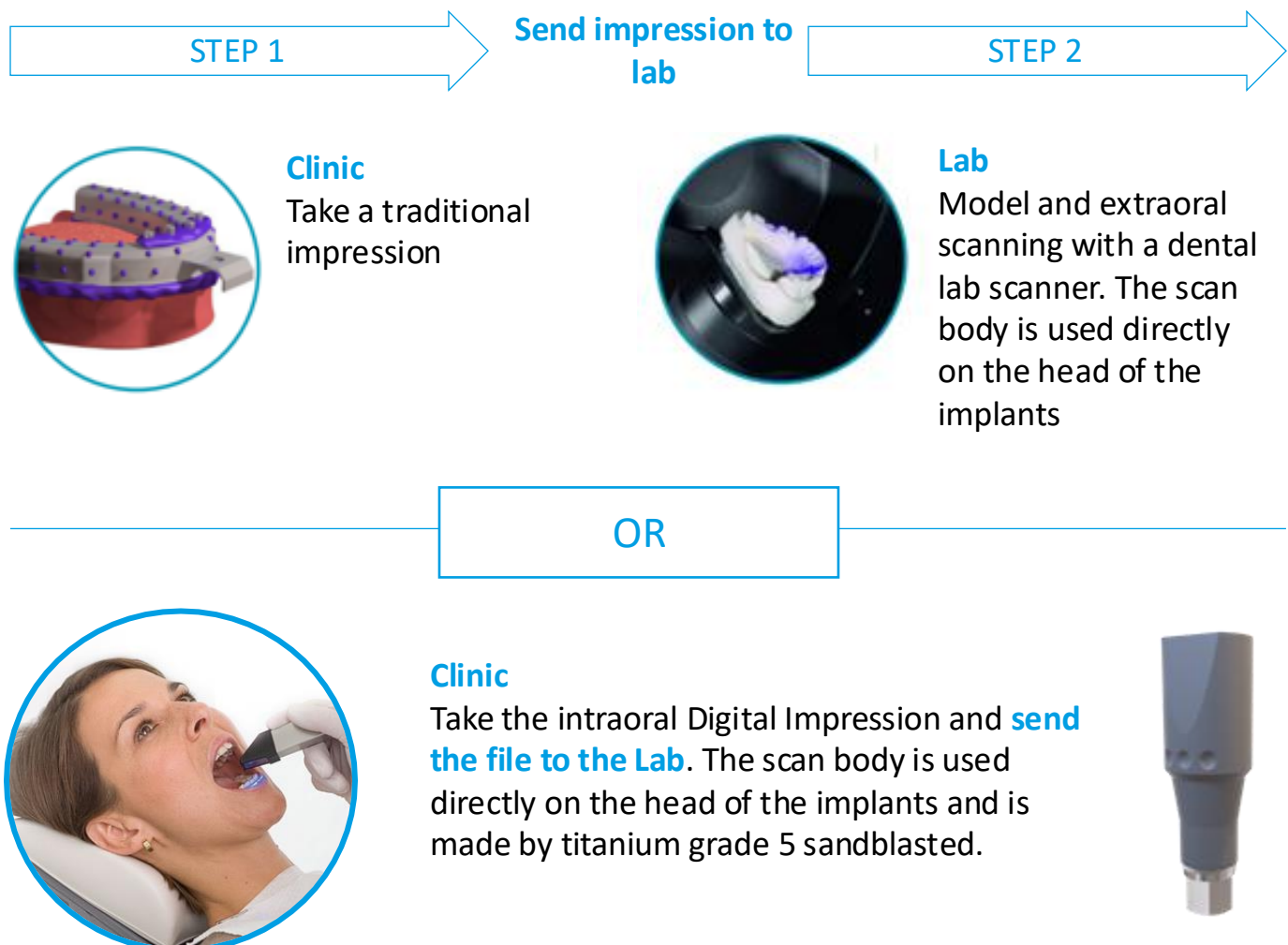


Ceramic bridge placement by cement retention



Ceramic bridge after careful removal of cement excesses

## FROM STANDARD TO DIGITAL WORKFLOW



# DIGITAL WORKFLOW



## Cad Design

Ask CLC for the full libraries for Exocad or 3Shape or Dentalwings

## Cam Manufacturing

Maximum precision and flexibility: the laboratory technician can realize custom-made abutments for personalized results. A prosthetic restoration with CLC Pre-milled abutments for CAM/CAM requires an impression to be taken at implant level.



## Master cast fabrication - OPTIONAL

Traditional and digital implant replicas are available for the laboratory technician.

## Implant Replica CAD CAM

CLC designed also an Implant Replica CAD CAM for the CLC Implants. This Implant Replica CAD CAM are especially designed for an application with digital intraoral scanning: their particular shape is especially designed to reach an easy accurate repositioning in the 3D model. The basal screw on the left is used to keep the three dimensions (x, y, and z) of the replica in the 3D printed model. The replica can be used for both digital and traditional workflow.



## Cementation and final restoration

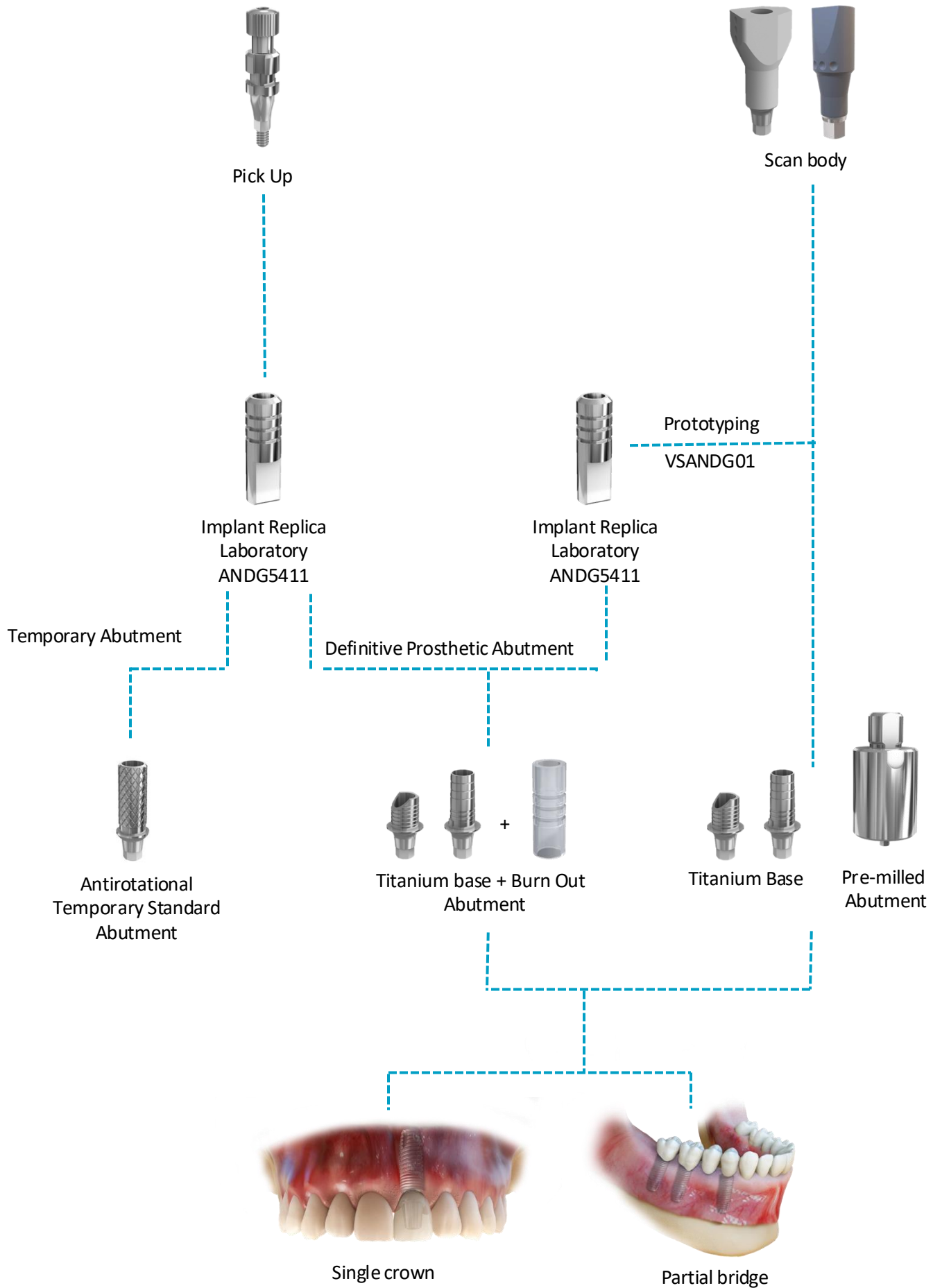
When the crown is ready, proceed to sandblast both the abutment and the internal contact part of the crown to increase the cement bonding, finally the lab technician must cement the crown on the abutment.



# SCREW RETAINED RESTORATION ON IMPLANT

## STANDARD WORKFLOW

## DIGITAL WORKFLOW



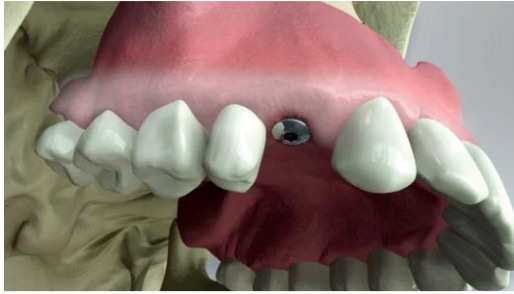
## OVERVIEW OF PRODUCTS USED IN THE STANDARD WORKFLOW

| Abutment           | Open tray implant impression | Closed tray implant impression | Replica    |
|--------------------|------------------------------|--------------------------------|------------|
| Temporary abutment |                              |                                | ● optional |
| Titanium base      | ●                            | ●                              | ●          |

## OVERVIEW OF PRODUCTS USED IN THE DIGITAL WORKFLOW

| Abutment                          | Digital impression | Replica + basal screw |
|-----------------------------------|--------------------|-----------------------|
| Titanium base + burn out abutment |                    | ● optional            |
| Titanium base                     | ●                  | ● optional            |
| Pre-milled abutment               | ●                  | ●                     |

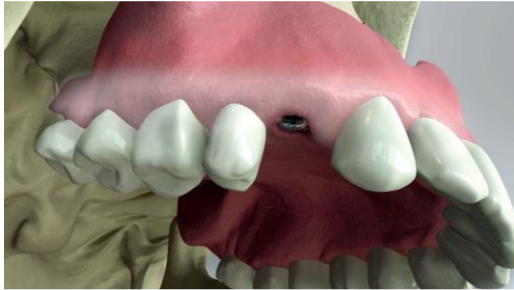
# STANDARD WORKFLOW



**Healing abutment on implant placed**



**Healing abutment removal by Hex driver handle**



**Implant**

## A. OPEN TRAY PROCEDURE



**Pick up insertion, screwed with a light force by Hex driver handle**



**Impression material appliance on the pick up**



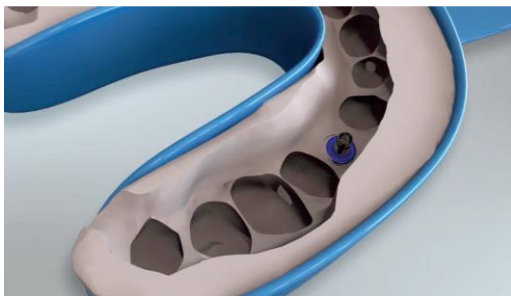
**Open impression tray placement**



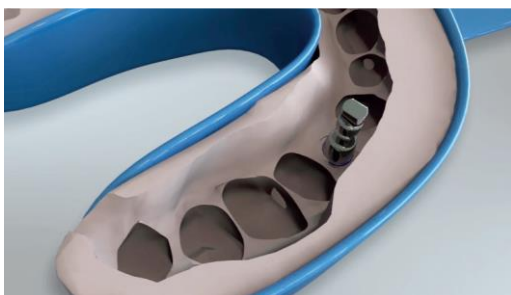
**Unscrewing of pick up retention screw by Hex driver handle**



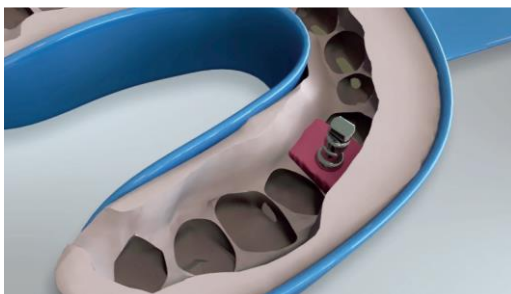
**Removal of pick up retention screw**



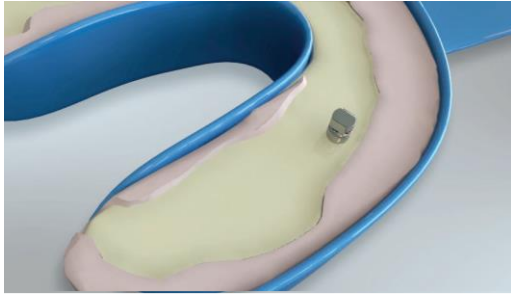
**Impression tray with pick up is sent to the laboratory for casting the model**



**Insertion of implant replica screwed to the corresponding pick up**



**Pink soft resin for gum replica**



**Plaster master cast mounting**



**Master cast with pick up**



**Master cast with pick up removal**

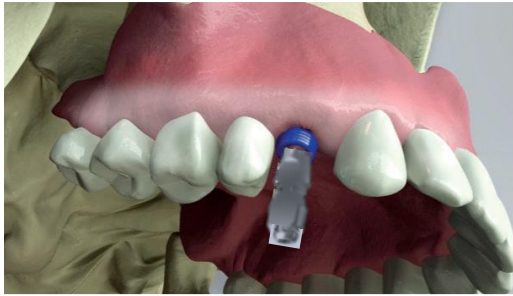


**Master cast with implant replica after pick up removal**

## **B. CLOSED TRAY PROCEDURE**



**Transfer insertion, screwed with a light force by Hex driver handle**



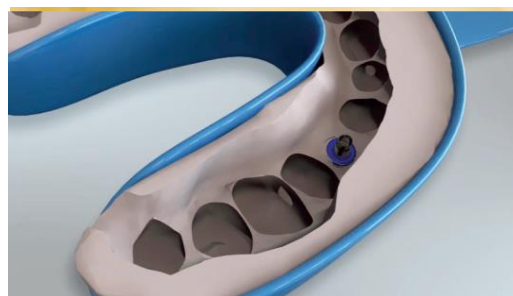
**Impression material appliance on the transfer**



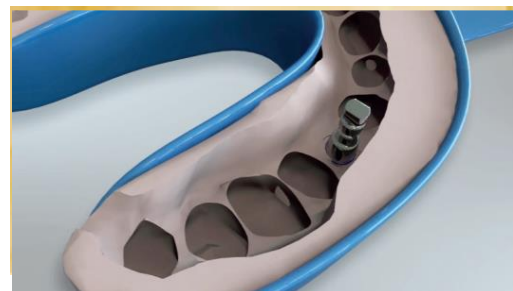
**Closed impression tray placement**



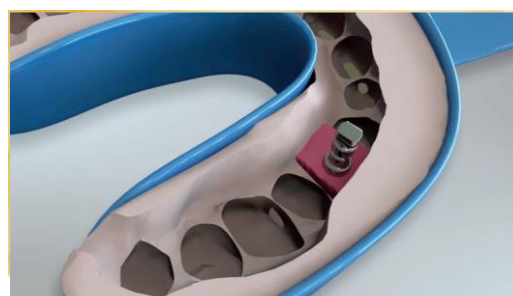
**Removal of impression tray**



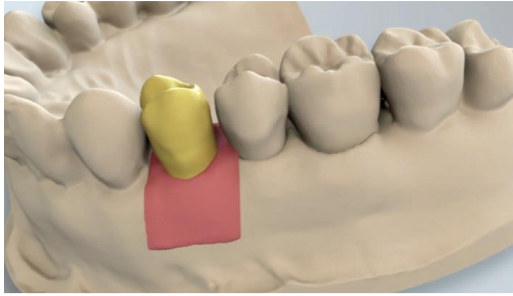
**Impression tray with transfer is sent to the laboratory for casting the model**



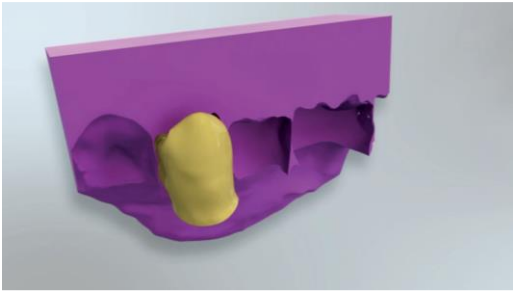
**Insertion of implant replica screwed to the corresponding transfer**



**Pink soft resin for gum replica**



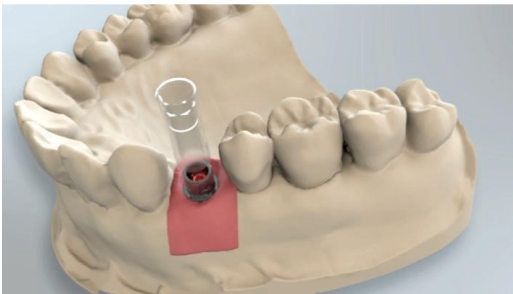
**Crown wax on implant replica**



**Silicon impression of crown wax**



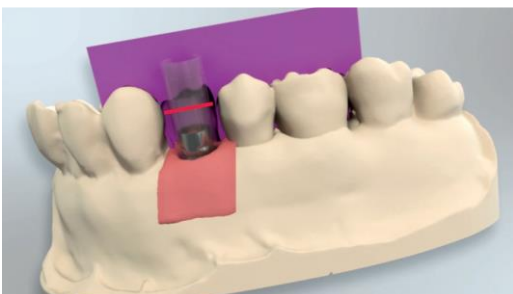
**Screwing of titanium base**



**Burn out abutment placement**



**Burn out abutment on titanium base**



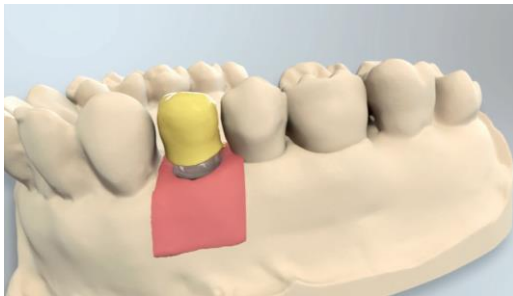
**Analysis of burn out abutment reduction by silicon impression of crown wax**



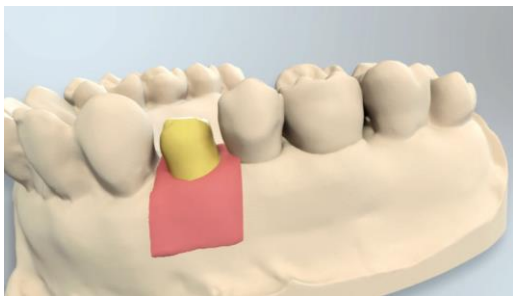
**Burn out abutment reduced**



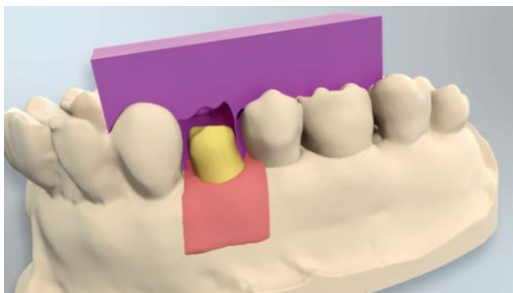
**Evaluation of abutment's dimension and direction**



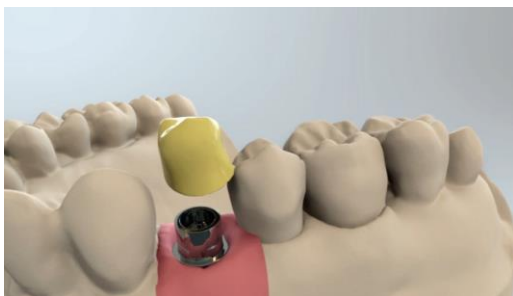
**Wax crown placement on the reduced abutment**



**The wax crown on the reduced burn out abutment**



**Evaluation of the dimension of the wax framework of the ceramic crown**



**Displacement of the wax framework and burn out abutment**

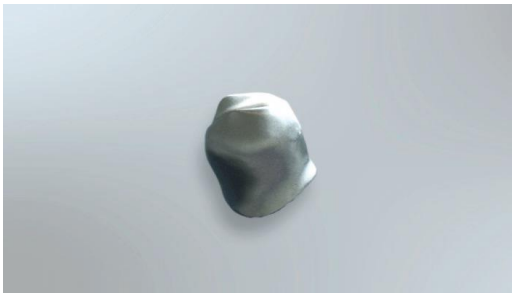


**Wax framework and burn out abutment  
ready for the merger**



**Wax framework and burn out abutment  
placement into the melting oven**

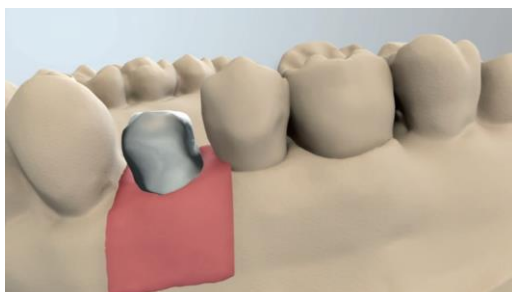
## **CASTING INFORMATION**



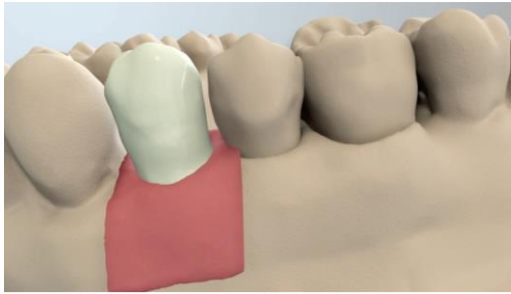
**Metal framework**



**Metal framework test on the titanium base**



**Metal framework test on the master cast**



**Ceramic structure on the metal framework**



**Bonding of ceramic crown on titanium base**



**Ceramic crown bonded to the titanium base**



**Unscrewing of ceramic crown and titanium base**



**Red laboratory screw removal**



**Ceramic crown removal**



**Ceramic crown positioning on the master cast**



**Ceramic crown positioned on the master cast**



**Unscrewing of ceramic crown**



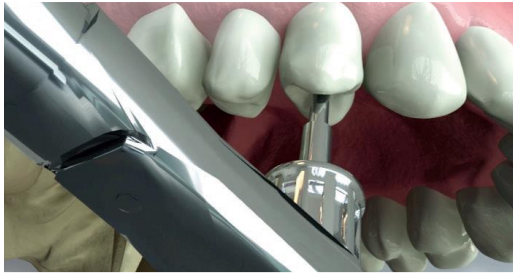
**Ceramic crown positioning in the patient mouth**



**Ceramic crown positioned in the patient mouth**



**Ceramic crown retention screw screwed by hex driver handle**

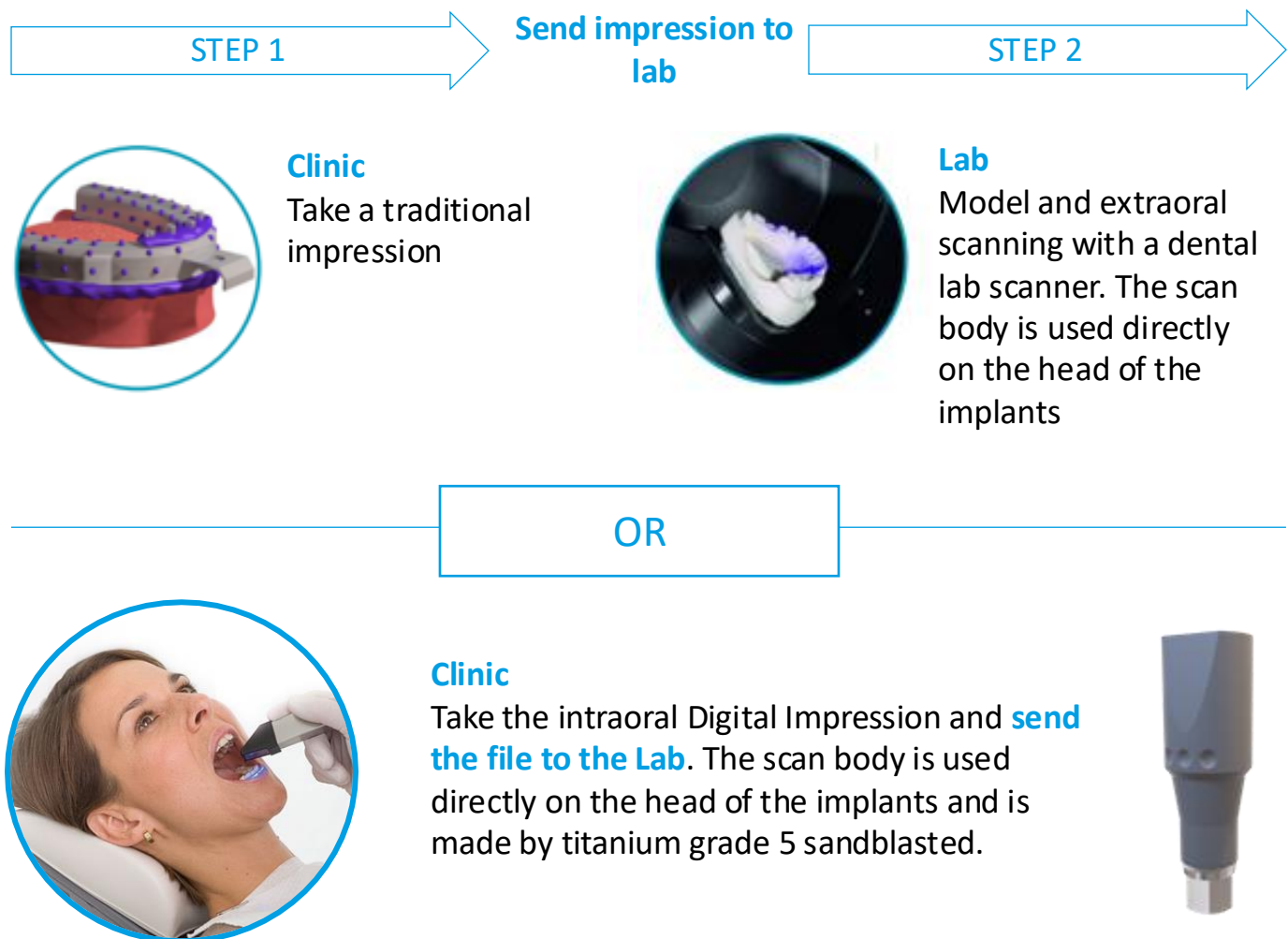


**Ceramic crown retention screw screwed by ratchet wrench at 25 N**



**Ceramic crown after access hole's closure**

# FROM STANDARD TO DIGITAL WORKFLOW



## DIGITAL WORKFLOW



### Cad Design

Ask CLC for the full libraries for Exocad or 3Shape or Dentalwings.

- You can work choosing between engaging and non engaging connection libraries
- Importing TiBase libraries in your software, you can directly work also at abutment level with all TiBase mathematics with both engaging and non engaging connection.



### Cam Manufacturing

Maximum precision and flexibility: the laboratory technician can realize custom-made abutments for personalized results. and the laboratory technician can also work at abutment level Importing all TiBase mathematics in the software with both engaging and non engaging connection.



### Master cast fabrication - OPTIONAL

Traditional and digital implant replicas are available for the laboratory technician.



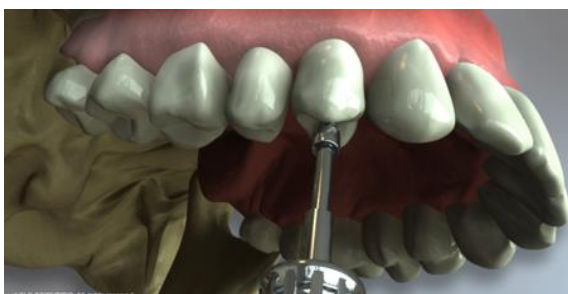
### Implant Replica CAD CAM

CLC designed also an Implant Replica CAD CAM for the CLC Implants. This Implant Replica CAD CAM are especially designed for an application with digital intraoral scanning: their particular shape is especially designed to reach an easy accurate repositioning in the 3Dmodel. The basal screw on the left is used to keep the three dimensions (x, y, and z) of the replica in the 3D printed model. The replica can be used for both digital and traditional workflow.

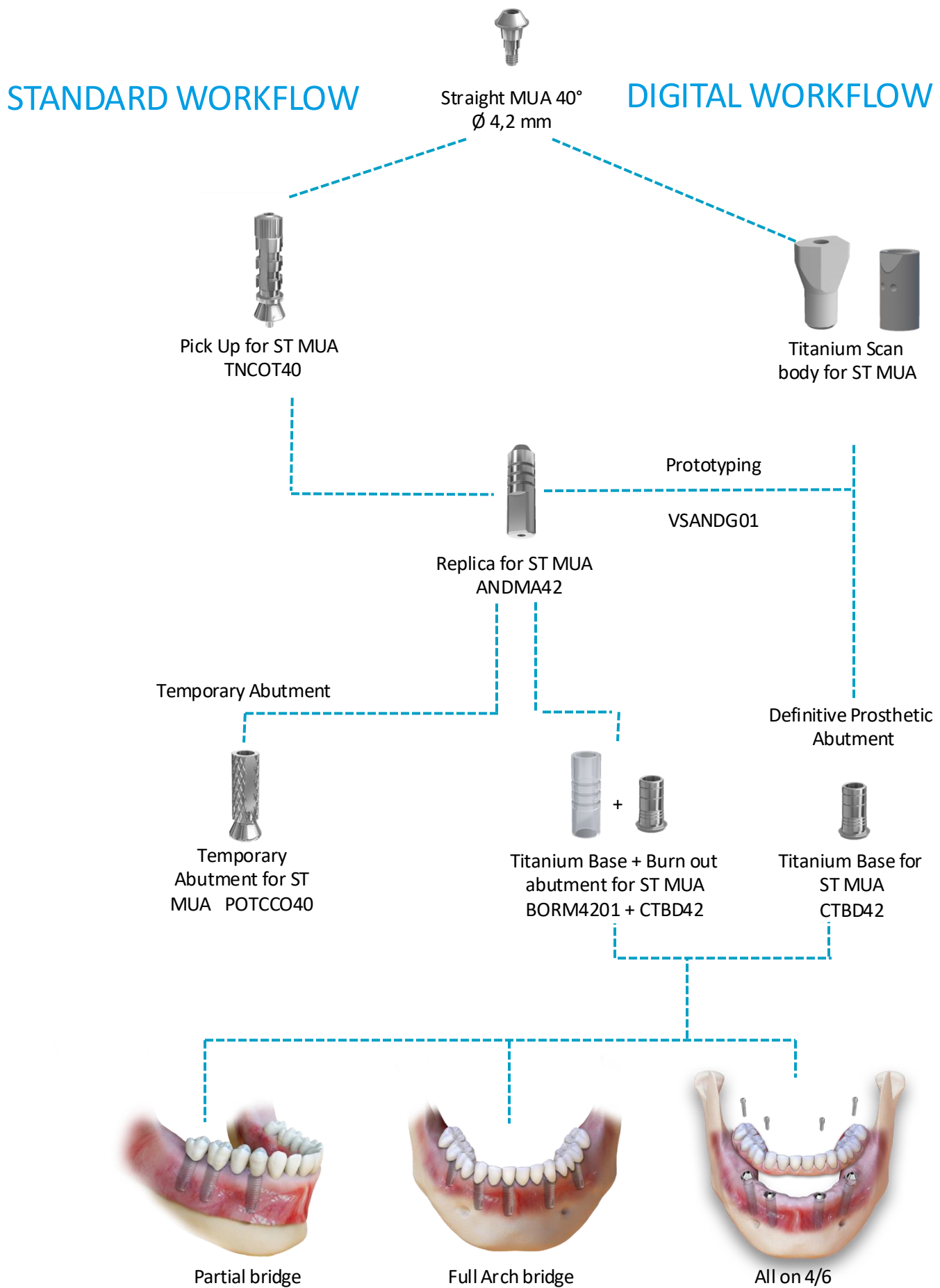


### Cementation and final restoration

When the crown is ready, proceed to sandblast both the abutment and the internal contact part of the crown to increase the cement bonding, finally the lab technician must cement the crown on the abutment.



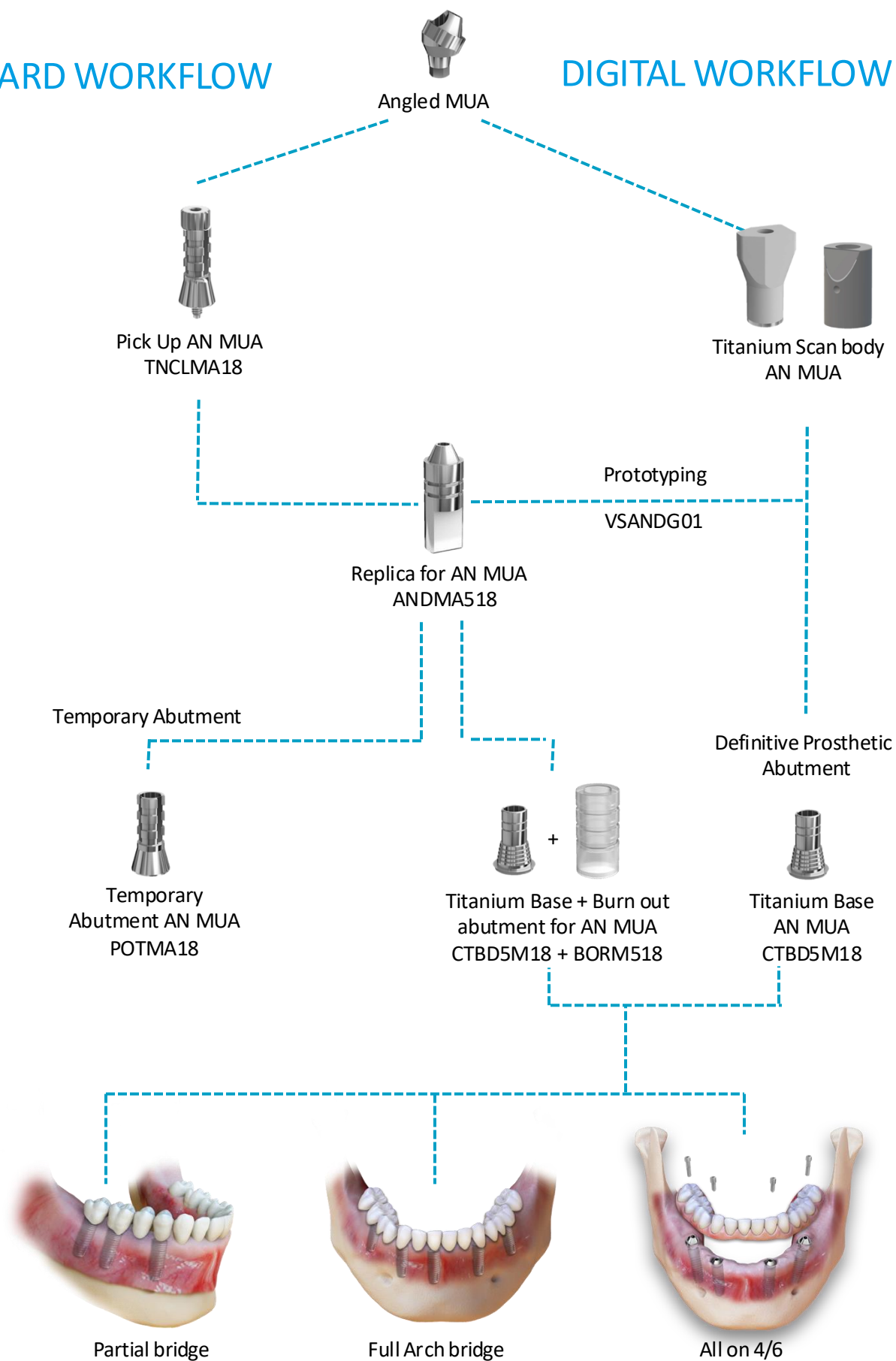
# SCREW RETAINED PROSTHESIS ON STRAIGHT MUA



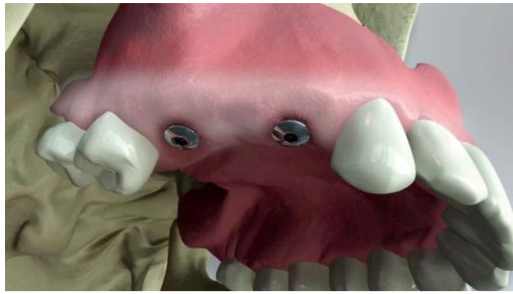
# SCREW RETAINED PROSTHESIS ON ANGLED MUA

## STANDARD WORKFLOW

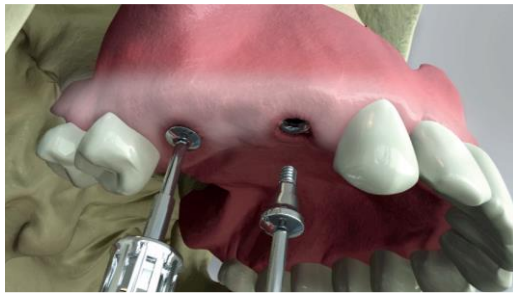
## DIGITAL WORKFLOW



# STANDARD WORKFLOW



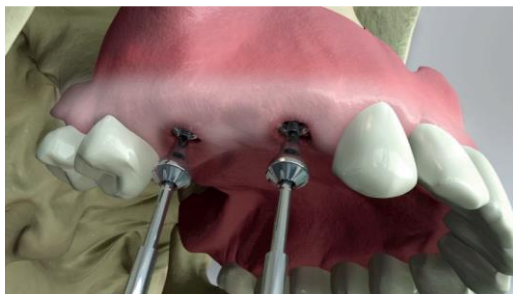
**Healing abutment on implants placed**



**Healing abutments removal by Hex driver handle**



**Implants**



**Insertion of suitable mua by hex driver handle. The height of the selected mua is based on the perimplant mucosa dimension**



**Muas screwed to the implant morse taper connection**



**Pick up for Mua screwed by hex driver handle with a light force**



**Impression material appliance on the pick up for mua**



**Open impression tray placement**



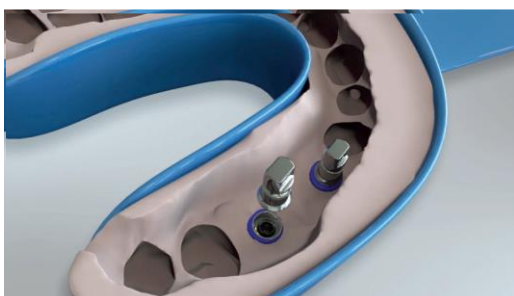
**Unscrewing of pick up for mua retention screws**



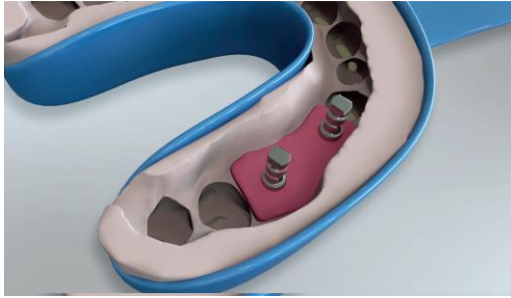
**Removal of impression tray with pick up for mua**



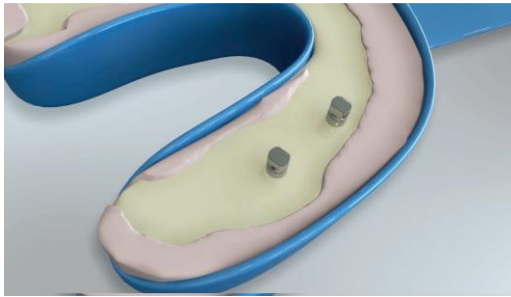
**Impression tray with pick up is sent to the laboratory for casting the model**



**Insertion of implant replica screwed to the corresponding pick up for mua**



**Plaster master cast mounting**



**Master cast with pick up**



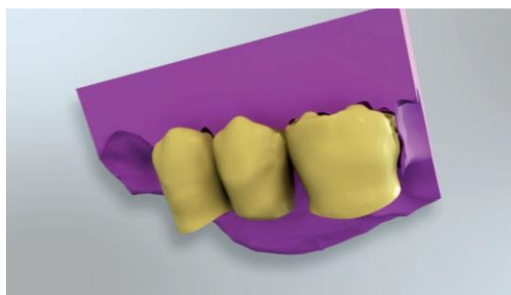
**Master cast with pick up removal**



**Master cast with implant replica after pick up removal**



**Crowns bridge wax on connector replica**



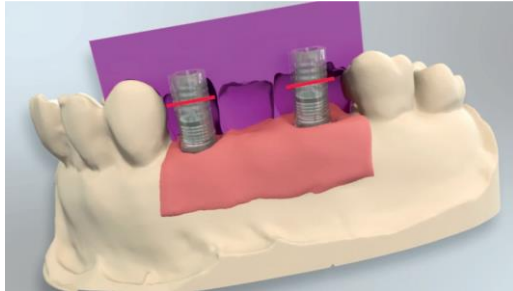
**Silicon impression of crowns bridge wax**



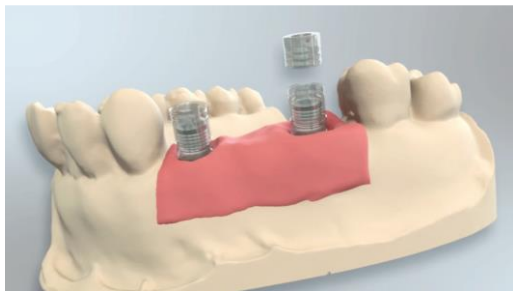
**Titanium base+ burn out abutments placement**



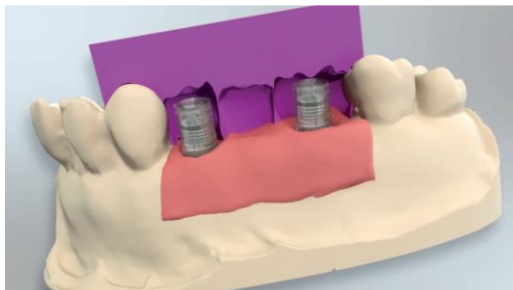
**Screwing of laboratory red retention screws**



**Analysis of mua reduction**



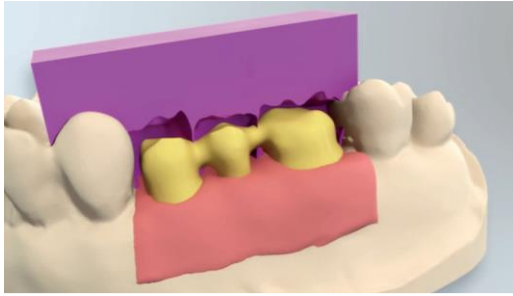
**Trimming of burn out abutments based on crowns bridge dimension**



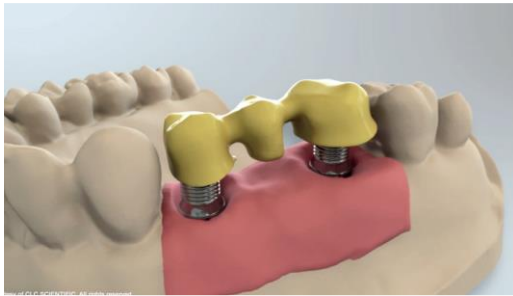
**Evaluation of muas dimension and direction**



**Wax bridge framework placement on the reduced prosthesis abutments**



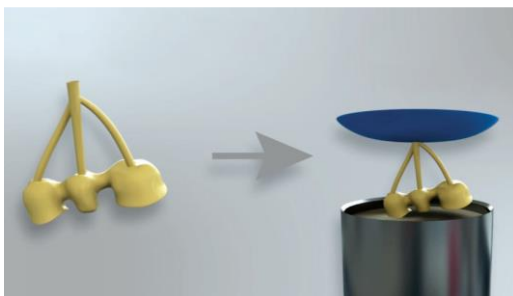
**Evaluation of the dimension of the wax framework**



**Displacement of the wax framework with the burn out abutment**



**Wax framework of the ceramic bridge and burn out abutment ready for the merger**

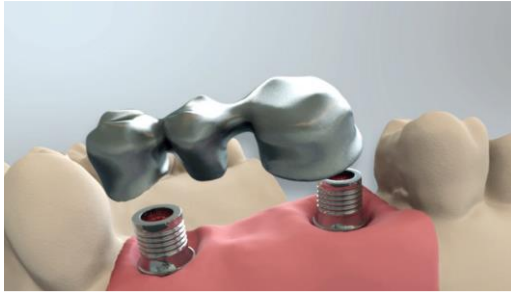


**Wax framework and burn out abutment placement into the melting oven**

## **CASTING INFORMATION**



**Metal framework**



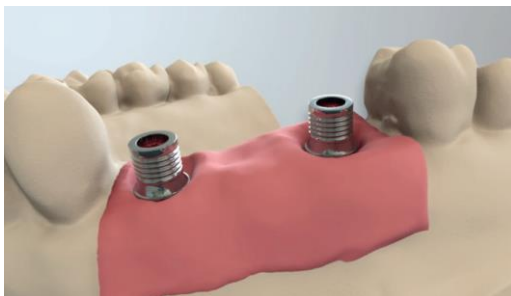
**Metal framework test on the titanium base**



**Metal framework test on the master cast**



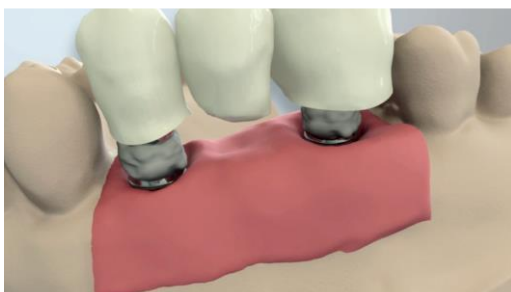
**Ceramic structure on the metal framework**



**Titanium base**



**Bonding agent on the titanium base**



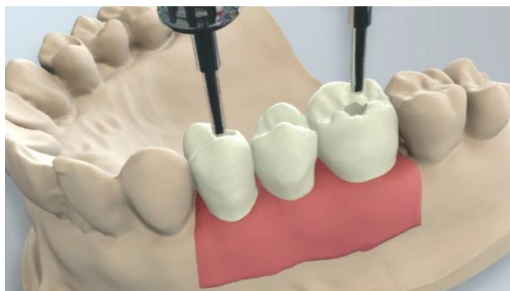
**Bonding of ceramic bridge on titanium base**



**Bonding agent to be removed**



**Ceramic bridge bonded to the titanium base**



**Unscrewing of ceramic bridge and titanium base**



**Red laboratory screws removal**



**Ceramic bridge with the access holes**



**Ceramic bridge retention screws screwed by hex driver handle**



**Final ceramic bridge retention screws  
screwed by ratchet wrench at 15-20 N**

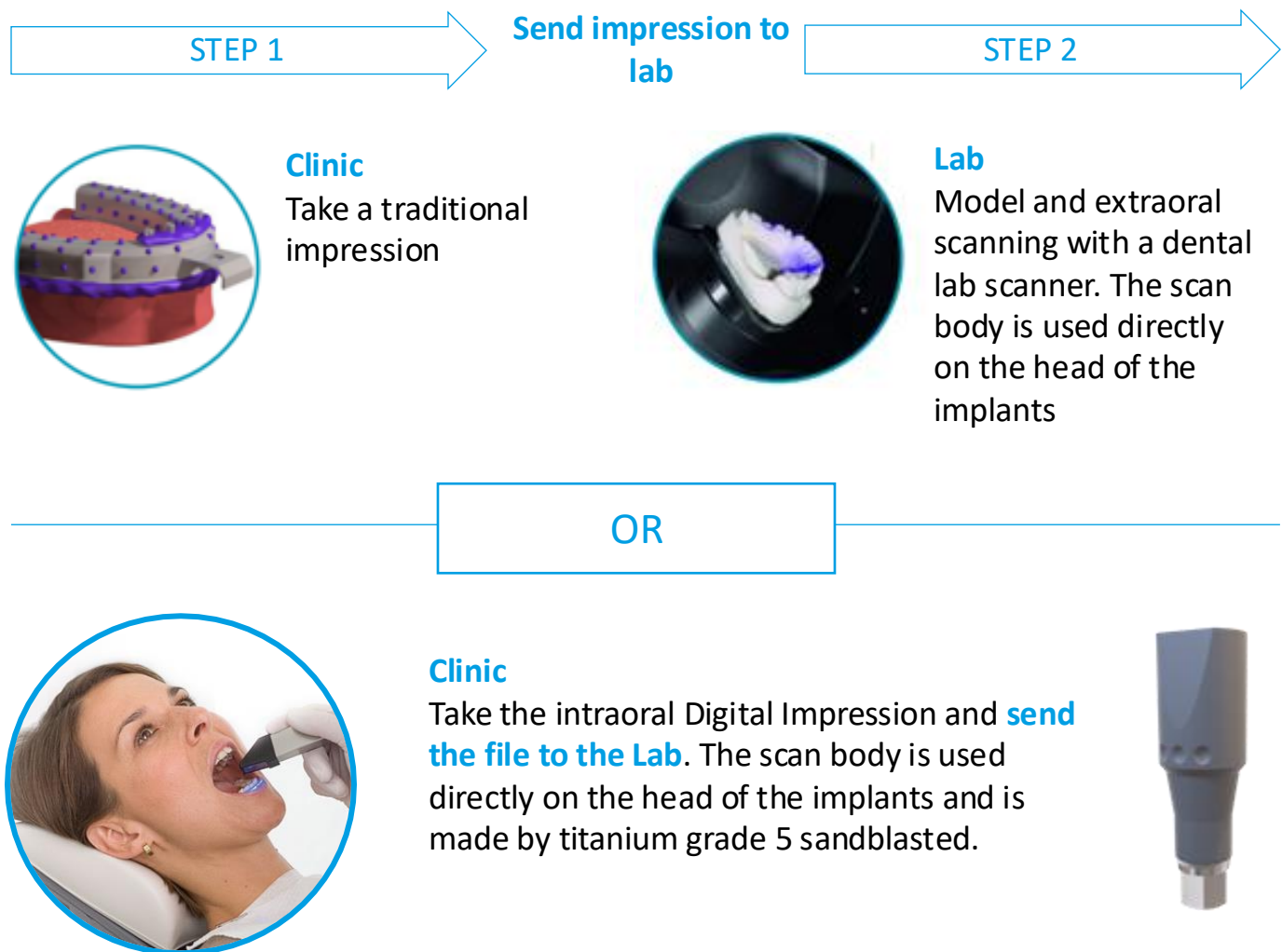


**Ceramic bridge retention screws screwed by  
ratchet wrench at 15-20 N**



**Ceramic bridge after access holes closure**

# FROM STANDARD TO DIGITAL WORKFLOW



## DIGITAL WORKFLOW



### Cad Design

Ask CLC for the full libraries for Exocad or 3Shape or Dentalwings.

Importing TiBase libraries in your software, you can directly work also at abutment level with all TiBase mathematics with non engaging connection.



### Cam Manufacturing

Maximum precision and flexibility: the laboratory technician can realize custom-made abutments for personalized results and the laboratory technician can also work at abutment level Importing all TiBase mathematics in the software with non-engaging connection.



### Master cast fabrication - OPTIONAL

Traditional and digital implant replicas are available for the laboratory technician.



### Implant Replica CAD CAM

CLC designed also an Implant Replica CAD CAM for the CLC Implants. This Implant Replica CAD CAM are especially designed for an application with digital intraoral scanning: their particular shape is especially designed to reach an easy accurate repositioning in the 3D model. The basal screw on the left is used to keep the three dimensions (x, y, and z) of the replica in the 3D printed model. The replica can be used for both digital and traditional workflow.



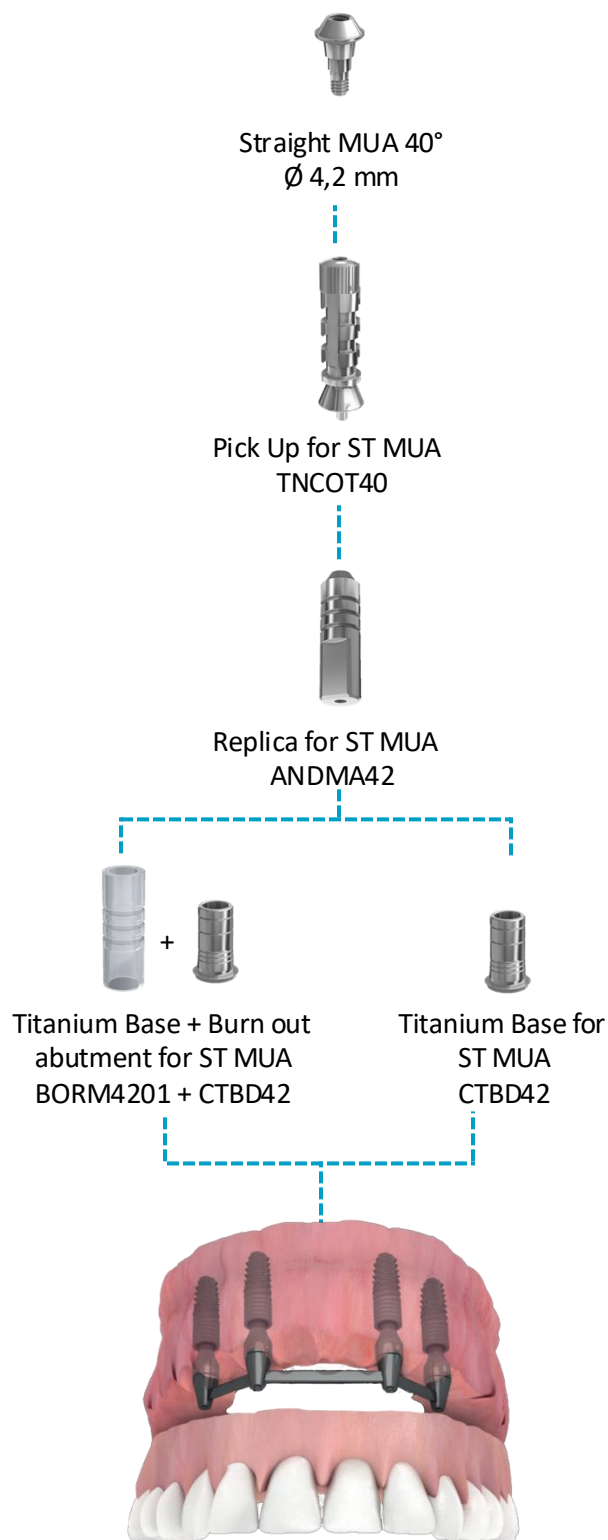
### Cementation and final restoration

When the crown is ready, proceed to sandblast both the abutment and the internal contact part of the crown to increase the cement bonding, finally the lab technician must cement the crown on the abutment.

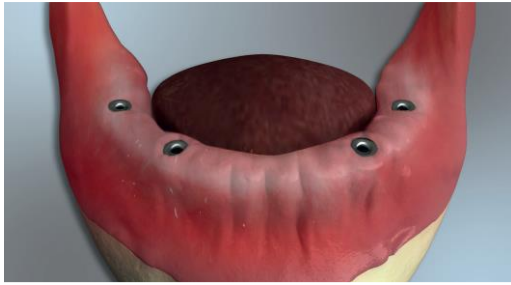
## BAR RETAINED OVERDENTURE

Implant Bar Overdentures offer a removable implant solution for edentulous patients desiring a stable and esthetic prosthesis that improves retention, function and speech.

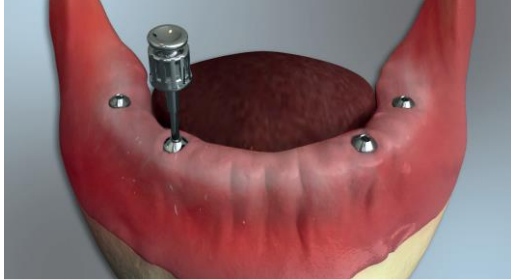
Before moving forward with the Implant Bar Overdenture option, consider anterior-posterior spread and keep in mind that 12 mm or more of vertical clearance is required. Although a closed-tray impression technique is described here, open-tray impressions are acceptable.



# OPERATIONS SEQUENCE



**Remove the healing abutments from the implants.**



**Insert the MUA of the suitable height and tighten the screw.**



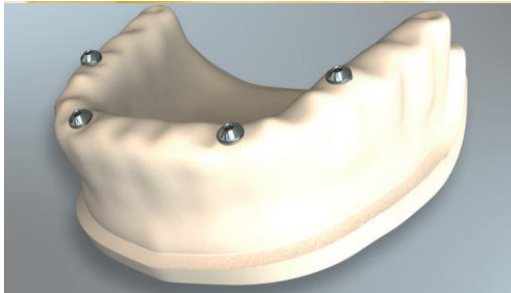
**Seat the coping pick up and tighten the screws.**



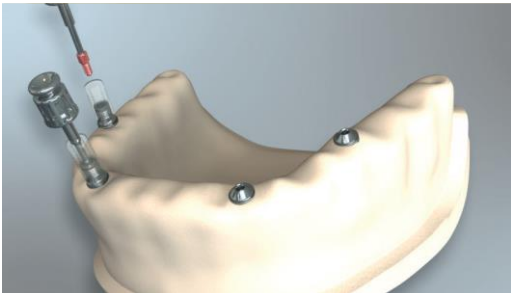
**Take a connector-level impression of the edentulous arch.**



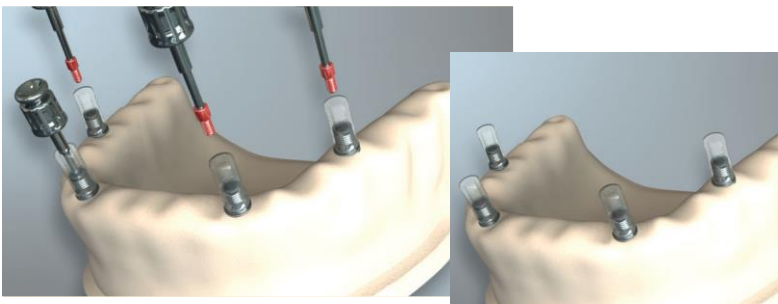
Allow the material to completely set before loosening the screws and removing the impression tray



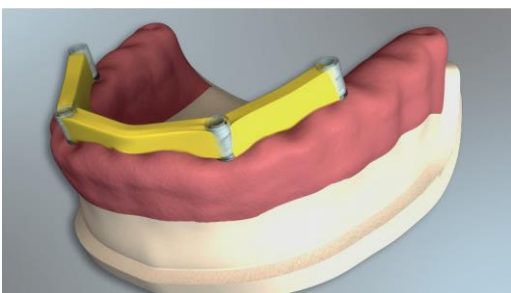
Master cast with replicas for mua



Titanium base+ burn out abutment placement.



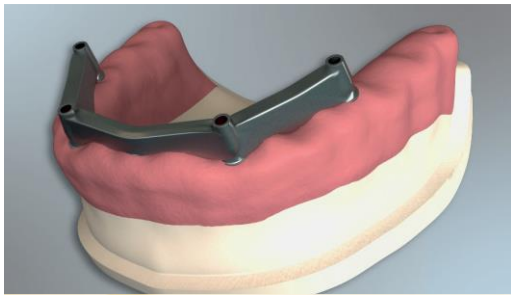
Screwing of **red** laboratory retention screws titanium base + burn out abutments.



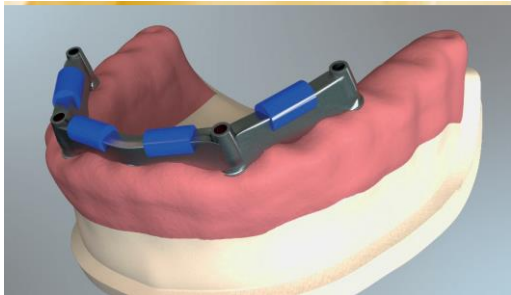
Wax bar on muas



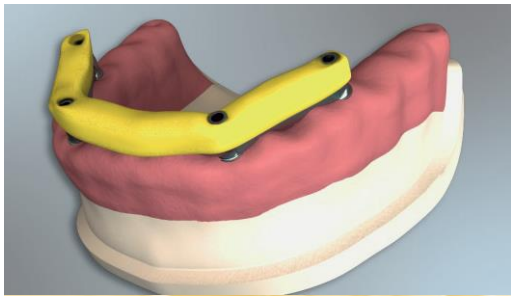
Final titanium bar



**The bar contoured to connect implant together, runs parallel residual ridge**



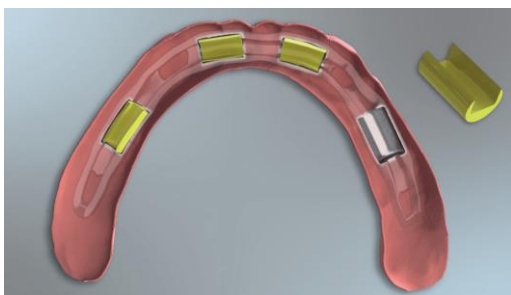
**Titanium bar and retention clips**



**Wax framework to be seated in the prosthesis overlying the bar**



**Final metal framework to be seated in the prosthesis overlying the bar**



**Final metal framework seated in the prosthesis showing retention clips and their relative places in the metal framework seated in the final prosthesis**



**Titanium bar seated on oral implant  
muas in the patient mouth**



**Tighten of Titanium bar retention  
screws**

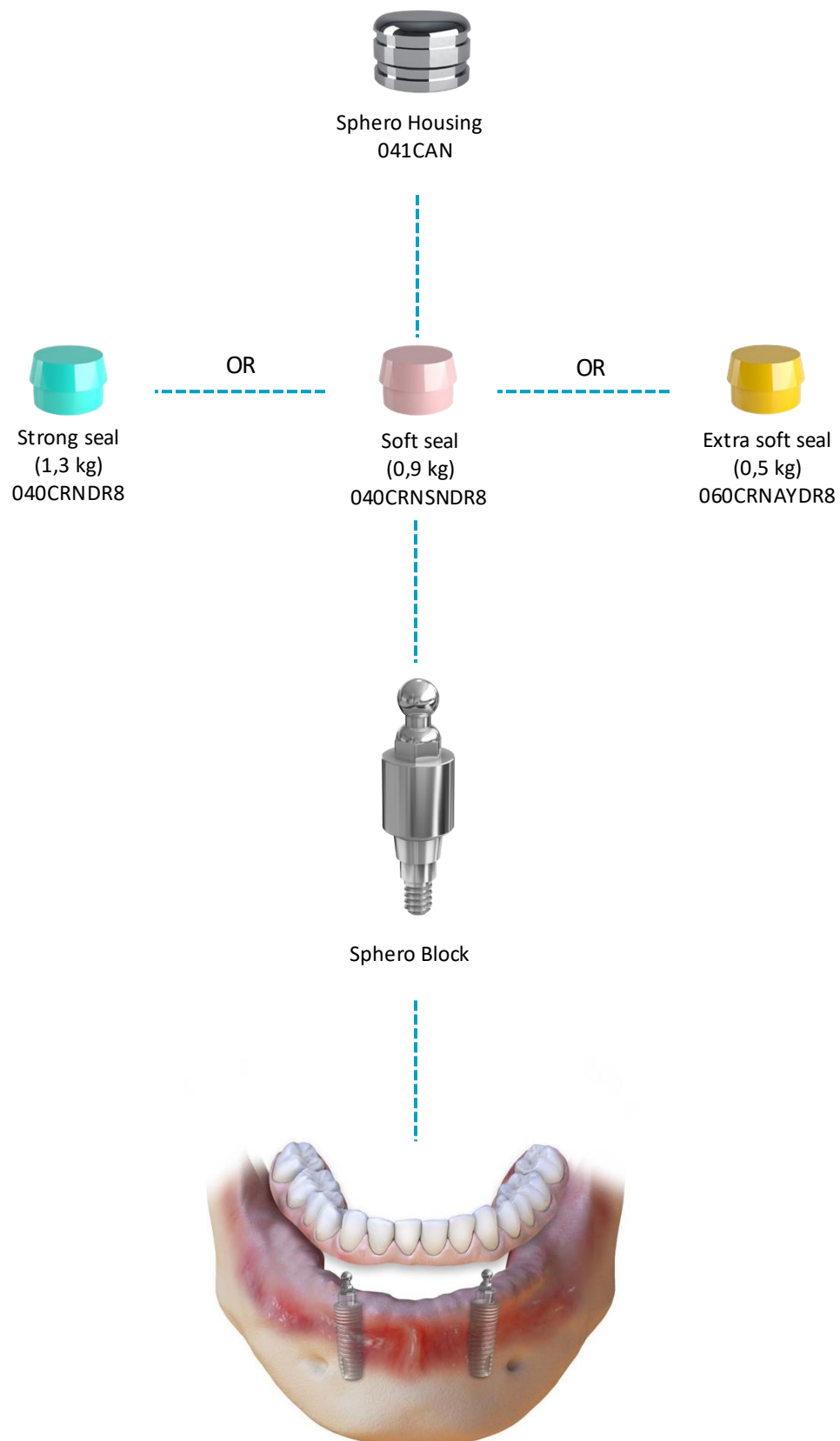


**Closure of titanium bar holes**



**The final prosthesis with  
retention clips is seated on  
the titanium bar**

# ATTACH RETAINED OVERDENTURE SPHERO BLOCK



# OPERATIONS SEQUENCE



In the lower jaw, a minimum of 2 implants can be sufficient



But for a best retention and stability, four implants should be placed



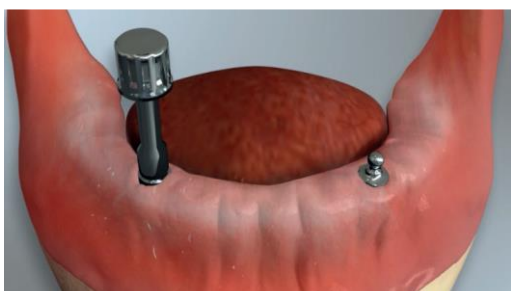
In the upper jaw, instead, a minimum of 4 implants are requested



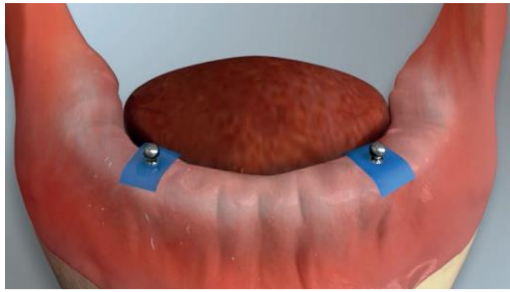
Following a complete healing period, an assessment of the distance between the top of the implant and the highest level of peri-implant mucosa must be calculated



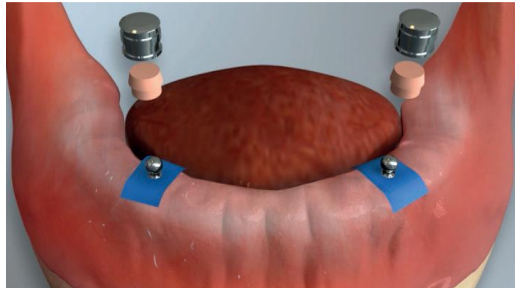
Depending on that distance, the suitable spheroblock abutment is chosen. Spheroblock abutments should never be positioned under the mucosal tissue



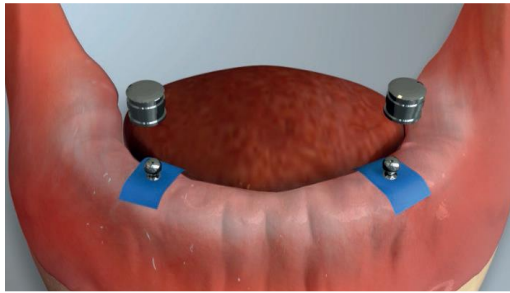
Use a spheroblock driver to install each abutment. Using a clockwise movement, engage the abutment within the internal cone morse portion of the implant and use a torque wrench of 20N to secure the seating



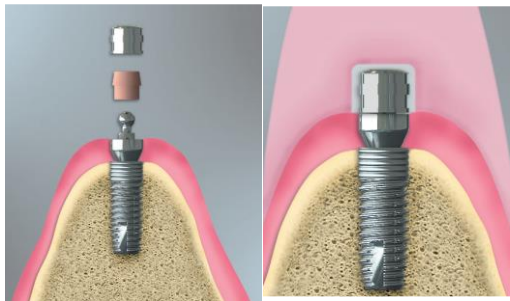
**Place a plastic disc over the active segment of the attachment**



**Connect the Sphero Inox Ball Housing to the Sphero Plastic Insert**



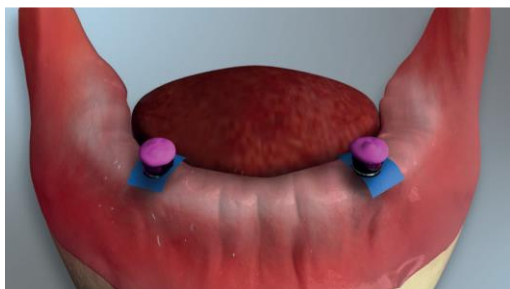
**Connect the Sphero Inox Ball Housing and the Sphero Plastic Insert to the Sphero Block attachment**



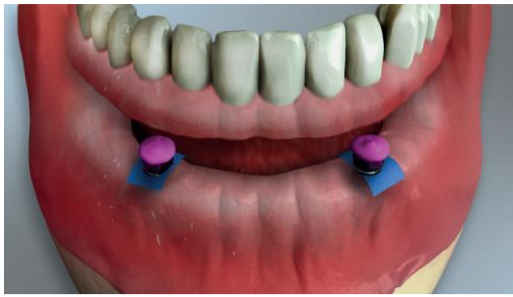
**Create a cavity within the denture base above the implant sites, leaving a space of 2 mm around the attachment housing**



**Try-in the denture, asking the patient to bite down, to ensure it seats without any distortion**



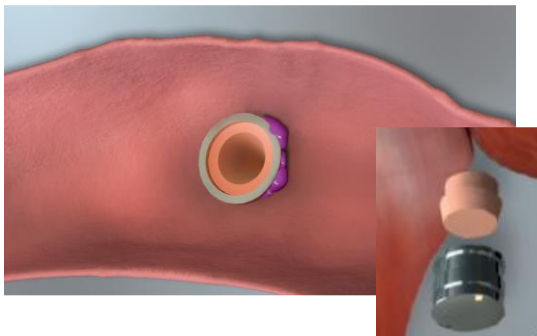
**Mix a self curing acrylic resin.  
Cover housing and fill prepared cavities within the denture base**



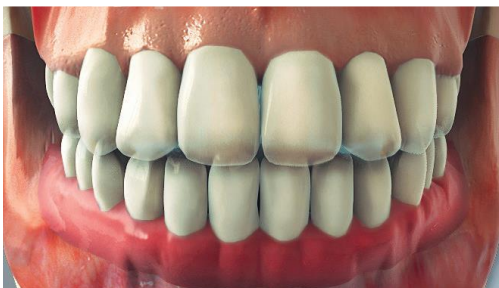
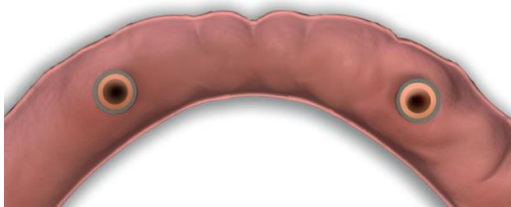
**Fit the denture and ask the patient to bite down all the way.  
Wait until resin is completely cured**



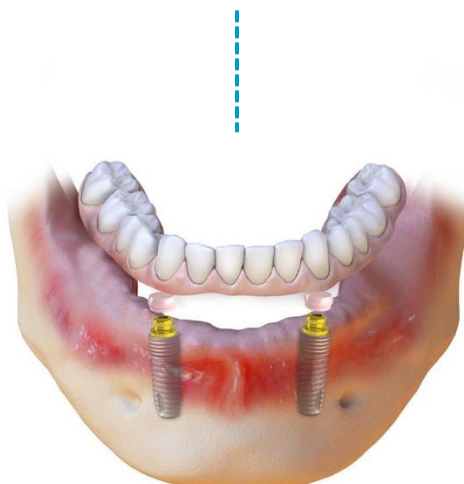
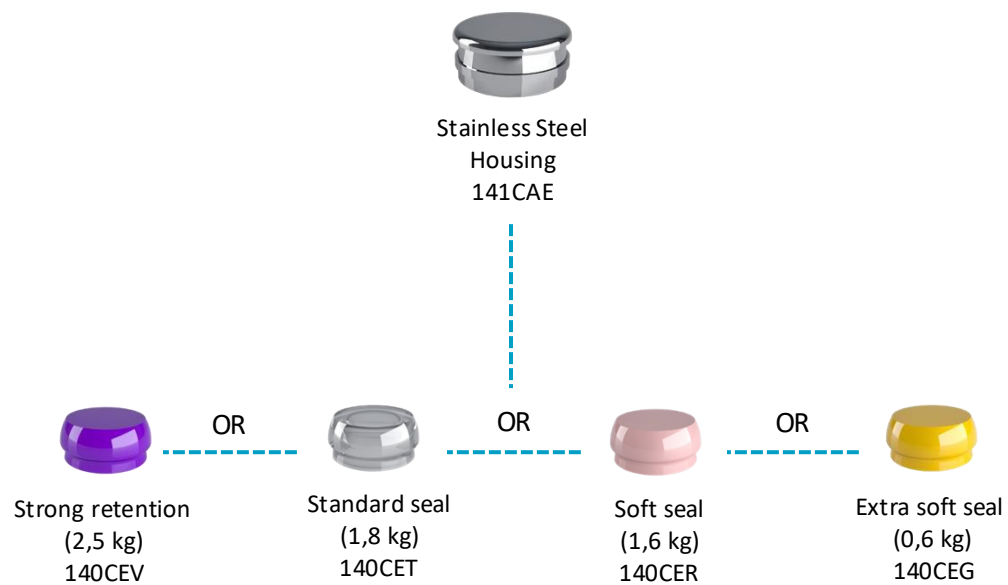
**Inspect for voids and if needed, add small amounts of pink acrylic resin to ensure that housing are completely embedded in resin and always placed denture in the mouth, completely seated under occlusal pressure. Adjust and remove excess resin if present around the housing**



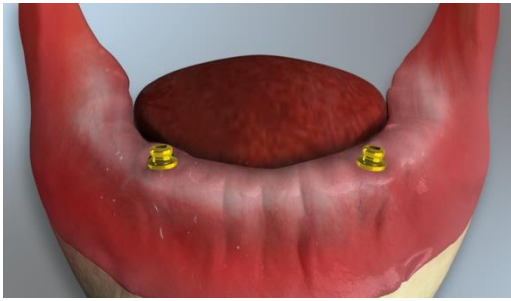
**Caps will require periodic replacement, typically once very year. Replacement times are depending on multiple factors including number of implants/attachments, relative inclination of implants, hygiene habits of patients etc...**



# ATTACH RETAINED OVERDENTURE EQUATOR



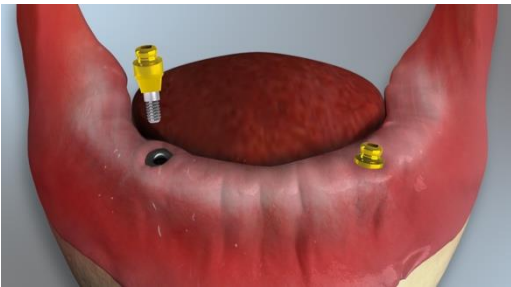
# OPERATIONS SEQUENCE



In the lower jaw, a minimum of 2 implants can be sufficient



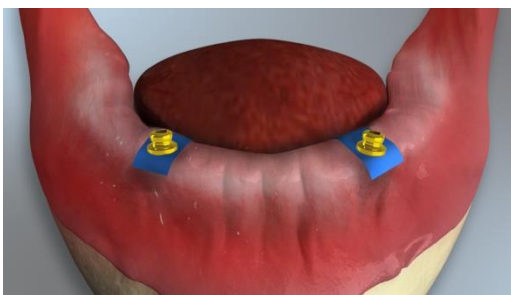
Following a complete healing period, an assessment of the distance between the top of the implant and the highest level of peri-implant mucosa must be calculated



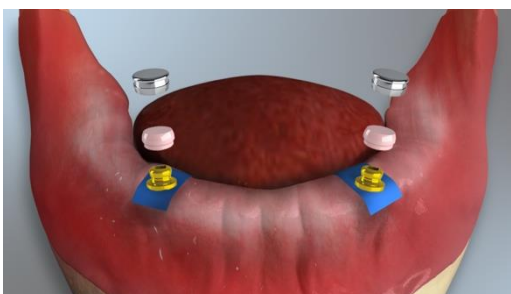
Depending on that distance, the suitable equator abutment is chosen. Equator abutments should never be positioned under the mucosal tissue



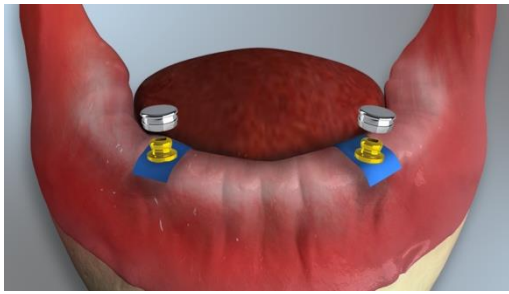
Use an equator driver to install each abutment. Using a clockwise movement, engage the abutment within the internal cone morse portion of the implant and, with a Ø8 mm ratchet wrench, use a torque wrench of 20N to secure the seating



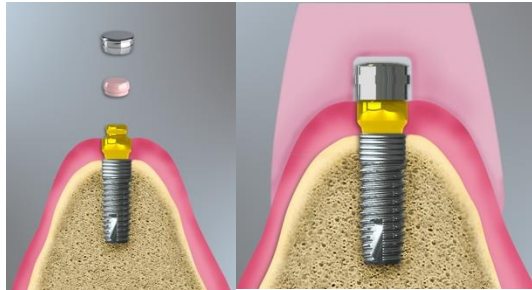
Place a plastic disc over the active segment of the attachment



Connect the equator housing to the equator plastic insert



**Connect the equator housing and the equator plastic insert to the equator attachment**



**Create a cavity within the denture base above the implant sites, leaving a space of 2 mm around the attachment housing**



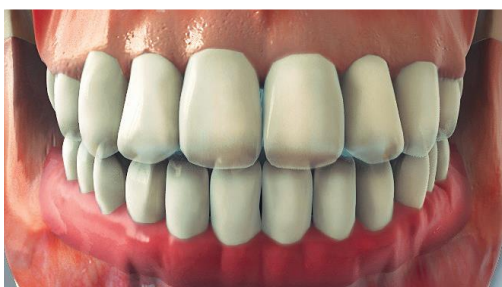
**Try-in the denture, asking the patient to bite down, to ensure it seats without any distortion**

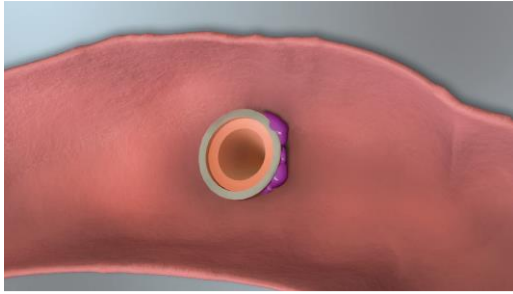


**Mix a self curing acrylic resin. Cover housing and fill prepared cavities within the denture base**

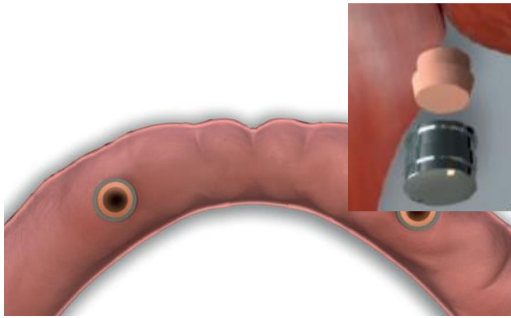


**Fit the denture and ask the patient to bite down all the way. Wait until resin is completely cured**





**Inspect for voids and if needed, add small amounts of pink acrylic resin to ensure that housing are completely embedded in resin and always placed denture in the mouth, completely seated under occlusal pressure. Adjust and remove excess resin if present around the housing**



**Caps will require periodic replacement, typically once very year. Replacement times are depending on multiple factors including number of implants/attachments, relative inclination of implants, hygiene habits of patients etc...**





# MANUAL TORQUE WRENCH PROSTHETIC

## Instruction for use

The Manual Torque Wrench is the device needed to tight the prosthetic retention screw with the correct torque during the prosthetic phase. The correct torque develops the right preload necessary to avoid screw loosening, screw fracture and to guarantee a waterproofing gap-free connection between the abutment and the implant. The Manual Torque Wrench displays clearly the three most common used torque measurements 15, 25, and 35 Ncm.

## Tightening

- 1) Before inserting the screwdriver into the Manual Torque Wrench, be careful and make sure the word "IN", marked on the Manual Torque Wrenches, is visible and the arrow is pointing toward the lever arm. (Figure A)
- 2) Hold the handle of the driver with the finger and with your other hand grab only the teardrop at the end of the torque bar. Do not touch and hold any part of the Manual Torque Wrench other than the teardrop otherwise the specified torque will not be applied (Figure C).
- 3) Holding the teardrop, simply move the torque bar clockwise to the appropriate Ncm mark (see Table 1). The instrument does not have a stopping mechanism; therefore, you are finished once the torque bar reaches the appropriate Ncm mark.
- 4) Release the teardrop, the torque bar will automatically go back to its starting point.
- 5) Remove the Manual Torque Wrench and then remove the screwdriver

Figure A

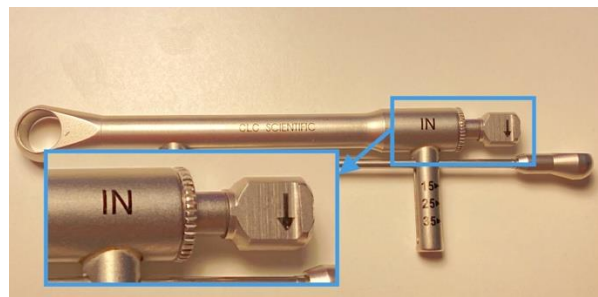


Figure B

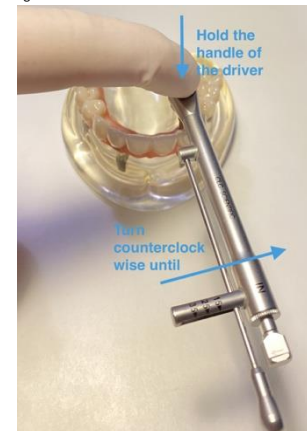
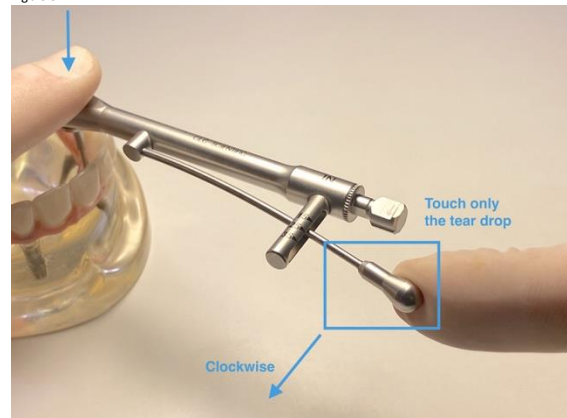


Figure C



## Loosening

- 1) Before inserting the screwdriver into the Manual Torque Wrench, be careful and make sure the word "OUT", marked on the Manual Torque Wrench, is visible and the arrow is pointing toward the lever arm ( Figure D).
- 2) Place manually the screwdriver in the mouth
- 3) Hold the handle of the driver with the finger and with your other hand grab only the teardrop at the end of the torque bar. Do not touch and hold any part of the Manual Torque Wrench other than the teardrop otherwise the specified torque will not be applied (Figure E).
- 4) Holding the teardrop, simply move the torque bar counterclockwise to the appropriate Ncm mark.
- 5) Release the teardrop, the torque bar will automatically go back to its starting point.
- 6) Remove the Manual Torque Wrench.
- 7) Finger loosen the screw ( or abutment) and then remove both.

Figure D

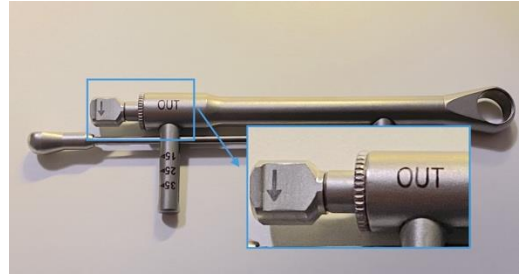


Figure E



Table 1

| PRODUCT CATEGORY                                    | Torque (Ncm) |
|-----------------------------------------------------|--------------|
| Screw for straight MUA (M 2,0mm)                    | 25 N         |
| Straight MUA (M 1,6mm)                              | 25 N         |
| Screw for angled MUA (M 1,8mm)                      | 20 N         |
| Screw for titanium base/standard abutment (M 1,6mm) | 32 N         |

# MANUAL TORQUE WRENCH SURGICAL

## Instruction for use

The Manual Torque Wrench Surgical is intended for use with CLC CONIC dental implant drivers, to ensure the desired torque is achieved during the positioning of the implant.

The Manual Torque Wrench Surgical displays clearly the four most common used torque measurements 25, 40, 50, 80 Ncm.

## Tightening

- 1) Before inserting the implant driver into the Manual Torque Wrench Surgical, be careful and make sure the word "IN", marked on the Manual Torque Wrenche Surgical, is towards you and the arrow is pointing toward the lever arm. (Figure A).
- 2) Place the looped end of the Manual Torque Wrench Surgical over the handle of the implant driver. Hold the handle of the implant driver with the finger for stabilization and turn the Manual Torque Wrench Surgical counterclockwise until you hear a "click" and feel a mechanical stop (Figure B).
- 3) Hold the handle of the implant driver with the finger and with your other hand grab only the teardrop at the end of the torque bar. Do not touch and hold any part of the Manual Torque Wrench Surgical other than the teardrop or the specified torque will not be applied (Figure C).
- 4) Holding the teardrop, simply move the torque bar clockwise to the appropriate Ncm mark (see Table 1). The instrument does not have a stopping mechanism, therefore you are finished once the torque bar reaches the appropriate Ncm mark.
- 5) Release the teardrop, the torque bar will automatically go back to its starting point.
- 6) Remove the Manual Torque Wrench Surgical and then remove the implant driver.

Figure A

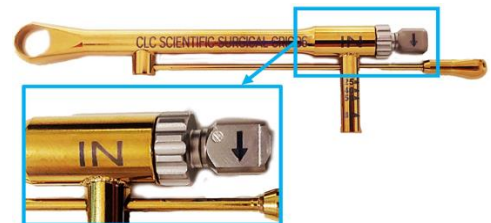
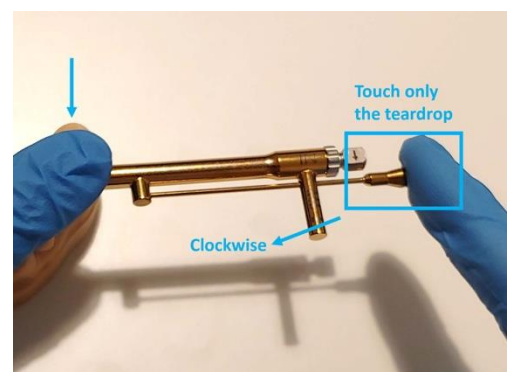


Figure B



Figure C



## Loosening

- 1) Before inserting the implant driver into the Manual Torque Wrench Surgical, be careful and make sure the word "OUT", marked on the Manual Torque Wrench Surgical, is towards you and the arrow is pointing toward the lever arm (Figure D).
- 2) Place manually the implant driver in the mouth.
- 3) Place the looped-end of the Manual Torque Wrench Surgical over the handle of the implant driver. Hold the handle of the implant driver with the finger for stabilization and turn the Manual Torque Wrench Surgical counterclockwise until you hear a "click" and feel a mechanical stop.
- 4) Hold the handle of the implant driver with the finger and with your other hand grab only the teardrop at the end of the torque bar. Do not touch and hold any part of the Manual Torque Wrench Surgical other than the teardrop or the specified torque will not be applied ( Figure E).
- 5) Holding the teardrop, simply move the torque bar counterclockwise to the appropriate Ncm mark.
- 6) Release the teardrop, the torque bar will automatically go back to its starting point.
- 7) Remove the Manual Torque Wrench Surgical.

Figure D

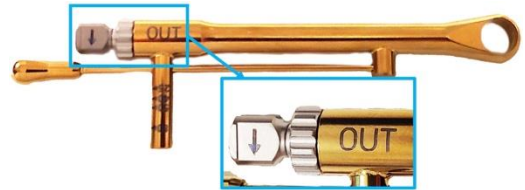
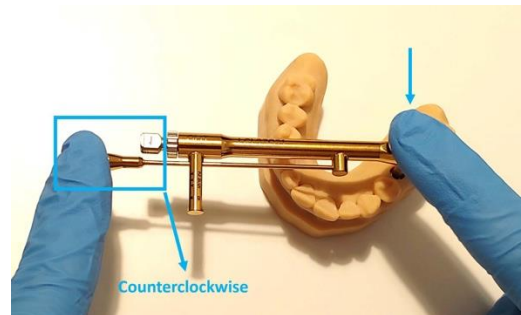


Figure E





CLEMENS XII  
AQUAM  
COPIA ET SALUBRITATE  
CIVITATI MAGNIFICENTIA  
ANNO DOMINI MDCCLXXVI

PERFEKIT BENEDICTUS

POSUIT SCULPSIT ET ANA



PONTI-MAX-  
IRGINEM  
TE COMMENDATAM  
FICO-ORNAVIT  
CXXXV-PONTIF-VI

IVS XIV- PONTI-MAX-

ANNO DOMINI MDCCCXIV

# STERILIZATION TERMS AND DEFINITIONS

According to the ISO 111399, the terms used in the sterilization process are explained below in detail.

**Pre-cleaning:** Coarse impurities must be removed from the products (multiple use components within two hours [2 h] at the most after use). Sort the products in material and rinse them under running water while removing coarse contamination with a fine, soft nylon brush.

**Cleaning:** remove of visible soil (e.g. organic and inorganic material). This process is intended to remove visible residues by inspection with naked eye.

**Decontamination:** remove of pathogenic microorganism from object so that the device is safe to handle, use or discard.

**Disinfection:** a process that kills most of the diseased produced microorganism but not all microbial forms (e.g. Bacterial Spores).

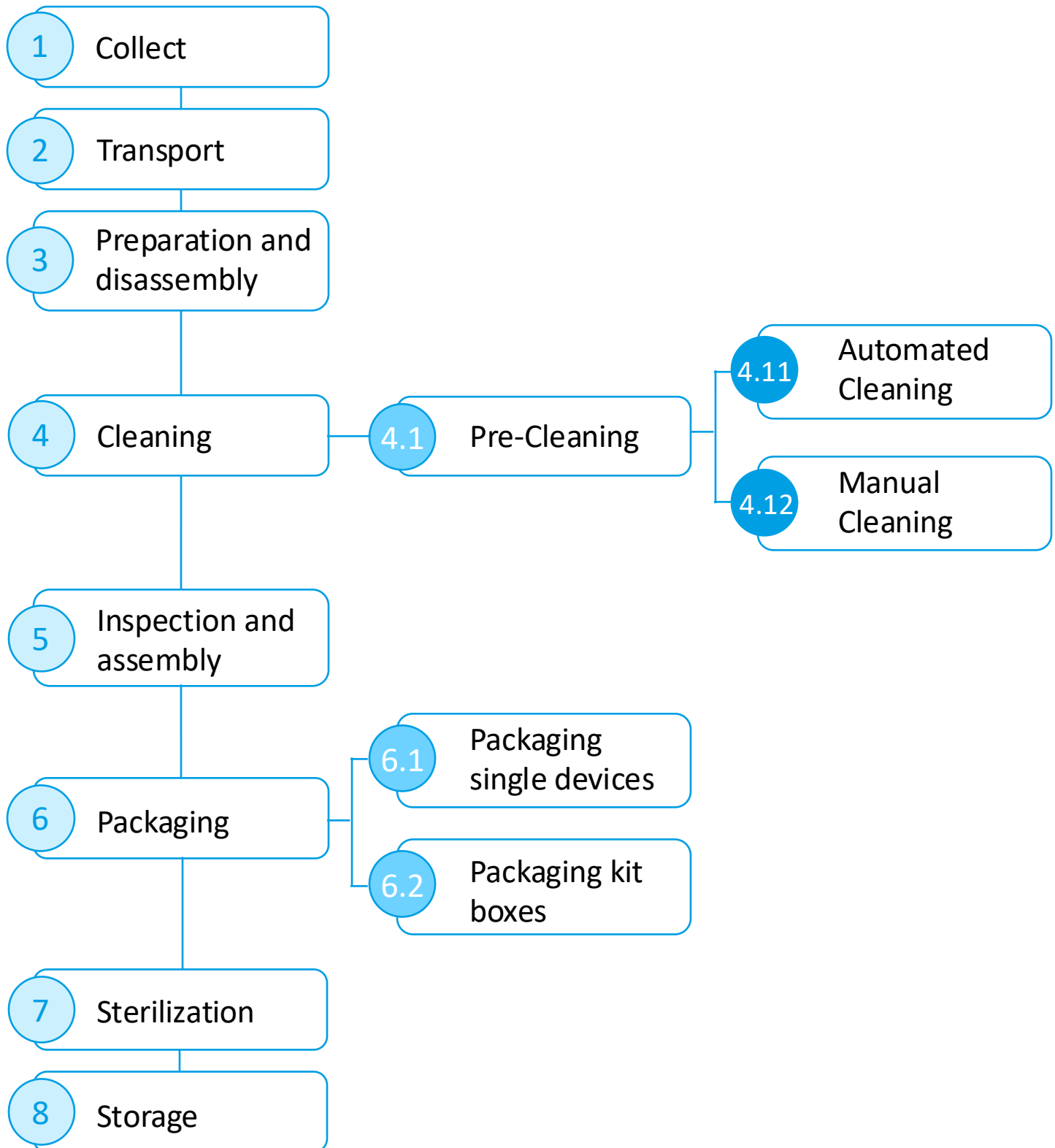
**Sterilization:** a validated process used to render a product free from viable microorganisms.

Sterilization is a process that kills microorganisms and their spores. Prior decontamination and cleaning of dental implant drills is essential because the reduction of the quality/quantity of the microbial load (bioburden) is the key to successful sterilization.

The user should follow the following sterilization process before initial use the dental implant drills or between patients.

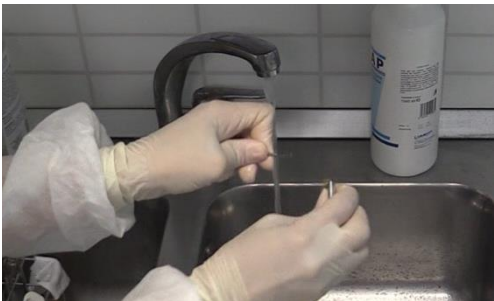
| Symbol                                                                              | Description                        | Symbol                                                                               | Description                               |
|-------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------|
|  | Consult instructions for use       |  | Do not reuse                              |
|  | Batch code                         |  | Producer                                  |
|  | Catalogue number                   |  | Production date                           |
|  | Use by                             |  | Keep away from sunlight                   |
|  | Do not resterilise                 |  | Store in a dry place                      |
|  | Sterilized with ionizing radiation |  | Caution                                   |
|  | Non sterile                        |  | Do not use if the packaging is not intact |
|  | CE marking                         |  | Use for a maximum of 20 times             |

# STERILIZATION WORKFLOW



# STERILIZATION PROCESS IN COMPLIANCE WITH ISO 17664

| PROCESSES | ACTIVITIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | <b>1) COLLECT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | <ul style="list-style-type: none"> <li>After surgery, we recommend you process contaminated dental implant drills as quickly as possible for cleaning.</li> <li>Use appropriate protective clothing and gloves for this operation.</li> <li>Make sure that dental implant drills are undamaged. Damaged dental implant drills should be collected and disposed of separately.</li> <li>Contaminated dental implant drills must be placed carefully and separately into rigid containers and transferred to the area where decontamination is performed to reduce the microbial load prior to cleaning.</li> </ul> |
|           | <b>2) TRANSPORT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | <ul style="list-style-type: none"> <li>Avoid mechanical damage: do not put heavy devices with delicate ones.</li> <li>Pay particular attention to cutting edges.</li> <li>Minimize time before cleaning: if the transfer to the processing area is likely to be delayed consider covering the medical devices with a damp cloth or immerse in a bath of a lukewarm cleaning solution to avoid drying of soil and/or debris.</li> </ul>                                                                                                                                                                            |
|           | <b>3) PREPARATION AND DISASSEMBLY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|           | <p>Multiple-piece instruments must be disassembled prior to cleaning:</p> <ul style="list-style-type: none"> <li>Ratchet wrench, impression components, drill sleeve, trays, all on four guides.</li> </ul> <p>Kit boxes must be disassembled completely.</p>                                                                                                                                                                                                                                                                                                                                                     |
|           | <b>4) CLEANING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           | <b>4.1) PRE-CLEANING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|           | <ul style="list-style-type: none"> <li>Remove debris in lukewarm water (&lt;40°C ) and immerse in a solution of detergent liquid, which can be based on surfactants, enzyme, multienzyme, with PH between 5 and 9. Always adhere to the manufacturer’s recommendations for temperatures, concentrations and exposure durations.</li> <li>Scrub with bristle soft nylon brush.</li> </ul>                                                                                                                                                                                                                          |
|           | <b>4.11) AUTOMATED CLEANING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           | <ul style="list-style-type: none"> <li>After the pre-cleaning rinse the instruments with tap water.</li> <li>Place the instruments in an instrument tray and load them into the washer/disinfector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    |



- Run cleaning and disinfection cycle provided by the manufacturers of the washing machine.
- Run drying cycle of the washer/disinfector, if needed additional manual drying can be performed using filtered compressed air or lint-free single-use wipes.



#### 4.12) MANUAL CLEANING

##### **Ultrasound cleaning:**

A good result is attained if the following points are rigidly adhered to:

- Instruments must be of the same material.
- Follow the manufacturer's recommendations and solution concentration (appropriate cleaning agent for material, neutral, non-corrosive), water temperature around 40°C (based on the solution used), the ultrasound frequency around 35 KHz, exposure time (minimum 5 minutes).
- Instruments must be completely immersed in the solution, jointed or hinged items should be in an open position, items must be placed in such a way that there is no overlapping.
- To improve the effectiveness of the ultrasonic bath, cleaning without the lid is recommended.
- The cleaning solution must be replaced at regular intervals in accordance with the manufacturer's instructions. This will depend on the frequency and conditions of use but, in any event, at least once daily.

Rinse for at least 1 minute with purified or sterile water until all traces of cleaning solution are removed.



##### **Disinfection**

Prepare a bath with a disinfection solution at the concentration and temperature specified in the detergent manufacturer's instruction and immerse the devices for at least the time specified by the detergent manufacturer.

Rinse for at least 1 minute with purified or sterile water until all traces of cleaning solution are removed.



##### **Drying**

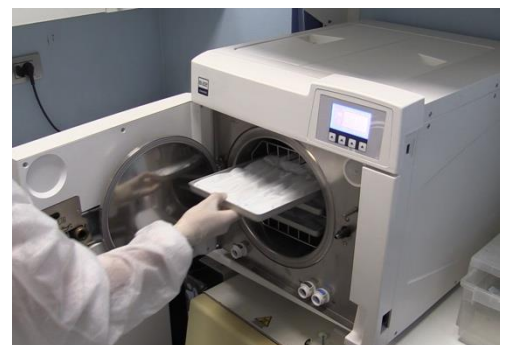
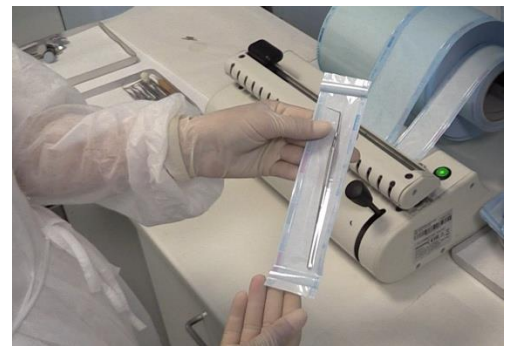
Instruments must be dried using filtered compressed air or lint-free single-use wipes.



#### 5) INSPECTION AND ASSEMBLY

- Check all instruments to make sure they are clean and intact; pay special attention to critical areas such as handle structures, joints and blind holes.
- Examine carefully for signs of corrosion.
- If the instruments are still contaminated, they must be cleaned and disinfected anew.
- Reassemble any instruments which have been taken apart such as the ratchet wrench.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p align="center"><b>6) PACKING</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p align="center"><b>6.1) PACKAGING SINGLE DEVICES</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>Use appropriate sterile bags suitable for saturated steam. The packaging for thermal sterilized medical devices should fulfil the following requirements:</p> <ul style="list-style-type: none"> <li>• ISO 11607 and/or DIN 58953-7.</li> <li>• Suitable for steam sterilization (temperature resistance up to a least 137°C/279°F, sufficient steam permeability).</li> <li>• Sufficient protection of the instruments and sterilization packaging from mechanical damage.</li> <li>• For USA: Use FDA-cleared sterilization accessories.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p align="center"><b>6.2) PACKAGING KIT BOXES</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>The CLC case is designed for steam sterilization up to 134°. Place the instruments into the CLC case and place the loaded case into an appropriate sterilization pouch.</p> <p><b>Label pouches:</b></p> <ul style="list-style-type: none"> <li>• Date of sterilization.</li> <li>• Name of the person who packed the devices.</li> <li>• Lot (if applicable).</li> <li>• «sterile» and the sterilization methods (if several are used).</li> <li>• Number of devices.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p align="center"><b>7) STERILIZATION</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>Steam sterilization involves the use of steam under pressure, delivered at a particular temperature for an appropriate time. Devices used for the purpose of steam sterilization are called autoclaves, or steam sterilizers.</p> <p>All autoclaves/sterilizers should comply with the requirements of, and be validated, maintained and checked in accordance with SN EN 13060, EN 285, EN ISO 17665-1, AAMI ST79 or your national standard.</p> <p>The relationships between the three physical parameters (time, temperature and pressure) are given by the European Pharmacopoeia and European regulations on steam sterilization (EN 285, EN 554).</p> <p>Instruments and sterilization cases must not be exposed to temperatures higher than 134 °C (273 °F).</p> <p>It is important to regularly inspect and clean the sterilization unit and instruments: rust particles from corroded instruments may contaminate instruments in all future sterilization cycles.</p> <p>We recommend labelling pouches before sterilizing. This will facilitate recall of items in the event that monitoring detects a problem with a sterilizer.</p> <p>When sterilizing multiple instruments in one autoclave cycle, ensure that the sterilizer's maximum load is not exceeded. Refer to the sterilizer's instructions for use.</p> <p>The part of the sterile pouch made of paper has to be placed face up and must not protrude over the edge of the tray.</p> |



When removing the sterilized pouch from the sterilizer, check that the internal/external indicator tapes have turned the appropriate colour according to the manufacturer's instructions.

Recommended sterilization parameters for single devices sealed in pouches

| Outside USA      |                                                    |                 |
|------------------|----------------------------------------------------|-----------------|
| Method           | Moist heat sterilization according to ISO 17665    |                 |
| Cycle            | Saturated steam with fractional forced air removal | Saturated steam |
| Temperature      | 132°C (270°F)                                      |                 |
| Temperature max. | 137°C (279°F)                                      |                 |
| Exposure time    | 3 minutes                                          |                 |
| Pre-vacuum       | 3 times < 60 mbar                                  | N/A             |
| Drying time      | 10 minutes in chamber                              |                 |

Recommended sterilization parameters for devices mounted in kit and sealed in pouches

| Outside USA      |                                                    |                 |
|------------------|----------------------------------------------------|-----------------|
| Method           | Moist heat sterilization according to ISO 17665    |                 |
| Cycle            | Saturated steam with fractional forced air removal | Saturated steam |
| Temperature      | 132°C (270°F)                                      |                 |
| Temperature max. | 137°C (279°F)                                      |                 |
| Exposure time    | 4 minutes                                          | 15 minutes      |
| Pre-vacuum       | 3 times < 60 mbar                                  | N/A             |
| Drying time      | 30 minutes in chamber                              |                 |

Principal causes of failure of steam sterilization:

Incorrect wrapping of instruments (packaging the instruments when they are wet):

- Incorrect loading of the steam sterilizer.
- Air bubbles in the sterile pouches.
- Wet packs.

## 8) STORAGE

- Never store the sterile pouches when they are still wet or moist.
- Instruments must be conserved inside their pouch at room temperature (18°-25°).
- Use sterilized instruments within the period indicated by the producer of the sterile pouches.



# MATERIALS AND INCOMPATIBLE INGREDIENTS

Different materials require different disinfectants and cleaning agents. Placing all instruments together, without taking this into account, will result in an increased risk of contact corrosion.

The instruments must be separated into groups according to their material composition. For this reason, CLC recommend you do not disinfect, clean or sterilize instruments made of different materials together.

CLC instruments are made of:

- Stainless steel,
- Titanium,
- Plastic.

In the following table, we identify disinfectants and cleaning agents incompatible with the different materials and the negative consequences of their use.

| Material        | Incompatible ingredients                                                                                                                                     | Consequence                                                                               |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Stainless steel | Chlorine, oxalic acid, hydrogen peroxide ( $H_2O_2$ ).                                                                                                       | Pitting and contact corrosion.                                                            |
| Titanium        | Chlorine, oxidizing acids ( <i>nitric acid, sulfuric acid, oxalic acid</i> ), hydrogen peroxide ( $H_2O_2$ ).                                                | Discoloration.                                                                            |
| Aluminium       | PH value outside the range of 5–8.                                                                                                                           | Destruction of the oxide layer which leads to an increase in susceptibility to corrosion. |
| Plastic         | Organic solvents ( <i>alcohols, ethers, ketones and benzines</i> ), hydrogen peroxide ( $H_2O_2$ ), aldehyde, halogens ( <i>chlorine, iodine, bromine</i> ). | Deformation and destruction.                                                              |

# CLC SUGGESTIONS TO AVOID MISTAKES

While placing all the instruments together will result in an increased risk of contact corrosion, it is also true that exposing instruments to moisture for long periods of time may lead to damage.

- CLC recommends you use only cleaning agents and disinfectants intended for the material in question and follow the manufacturers' instructions for use.
- CLC recommends you avoid using products which contain the following ingredients: organic, mineral and oxidizing acids or strong alkalis (pH value outside the 5-9 range), organic solvents (alcohols, benzines ethers, ketones), oxidation agents, halogens (bromine, chlorine, iodine), aldehydes, aromatic/halogenated hydrocarbons and heavy metal salts.

In the following table, we identify some common cleaning error, their negative consequences and their prevention.

| Error                                                                                     | Consequence                                                    | Prevention                                                                                                               |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Allowing surgical residues (blood, body fluids, tissue residues) to dry on an instrument. | Corrosion, rusting.                                            | Clean the instruments immediately after surgery.                                                                         |
| Using incorrect cleaning agents and disinfectants.                                        | Corrosion, pitting, discoloration, deformation.                | Only use cleaning agents and disinfectants intended for the material and follow the manufacturer's instructions for use. |
| Using steel wool and steel brushes.                                                       | Corrosion and destruction of the material surface.             | Use soft brushes only.                                                                                                   |
| Mixing instruments of dissimilar materials.                                               | Corrosion.                                                     | Do not mix instruments of dissimilar materials.                                                                          |
| Impurities in the sterilizer.                                                             | Initial rust and later contamination of instruments with rust. | Maintain the sterilizer correctly.                                                                                       |
| Insufficient rinsing and drying.                                                          | Corrosion, rust.                                               | Rinse and dry the instruments very thoroughly.                                                                           |
| Exposing instruments to temperatures higher than 134°C (273 °F).                          | Destruction, discoloration, deformation.                       | Do not expose instruments to temperatures higher than 134°C (273 °F).                                                    |

# STERILIZATION/DISINFECTION TECHNOLOGY STUDIES

The sterilization process workflow is structured based on the ISO/DIS 17664 Sterilization of medical devices which lists all the information to be provided by the manufacturer for the preparation of re-sterilizable medical devices. Moreover, the procedure was designed also looking at the following reference:

- ISO 14937 Sterilization of Health Care Products – General Requirements for characterization of a sterilizing agent and development, validation and routine control of a sterilization process for medical devices.
- ISO 15233-1 Medical devices – Symbols to be used with medical device labels, labeling and information to be supplied.
- ISO 17644 Sterilization of medical devices – Information to be provided by the manufacturer for the processing of re-sterilizable medical devices.
- ISO 17665-1 Sterilization of health care products Part 1: Development, validation and routine control of a sterilization process for medical devices.
- FDA Guidance Document 1748 Processing/Reprocessing Medical Devices in Healthcare Settings: Validation Methods and Labeling.
- ISO 11607 Packaging for terminally sterilized medical devices – Part 1: Requirements for materials, sterile barrier systems and packaging systems.
- ISO 14161 Sterilization of Health Care Products – Biological Indicators – Guidance for the selection, use and interpretation of results.
- Kohn WG, Harte JA, Malvitz DM, et al. Guidelines for infection control in dental health care settings--2003. J Am Dent Assoc. 2004;135(1):33-47.
- CDC document, "CDC Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care",  
<https://www.cdc.gov/oralhealth/infectioncontrol/pdf/safe-care2.pdf>.

The responsibility for the sterilization of the device lies with the user customer. On the packaging and in the user manual it is clearly highlighted that the device is NOT STERILE.

# IMPORTANT GUIDELINES

A team of highly specialized technicians oversees and guarantees the high standards of quality demanded by CLC Conic.

However, it is not enough that CLC Scientific produces reliable and high-precision instruments, these need to be looked after properly and each device must be used only for its intended purpose.

All instruments must be cleaned, disinfected, and sterilized before every use to avoid the risk of contamination from patient to patient.

Responsibility for the cleaning of CLC instruments and the regular maintenance of equipment used for this purpose lies with the user.

Practitioners must have appropriate knowledge in the handling of the CLC CONIC implant system for using the CLC Scientific products safely and properly following the instructions for use.

The CLC Scientific products are part of an overall concept and must be used exclusively with the corresponding original components and instruments distributed by CLC Scientific and not in association with any other products from third parties. Any such use will void any warranty or other obligation, express or implied, of CLC Scientific.

## Availability

Some of the CLC Scientific products listed in this document may not be available in all countries.

## Caution

In addition to the caution notes in this document, our products must be secured against aspiration when used intraorally.

## Validity

Upon publication of this document, all previous versions are superseded.

## Documents

For detailed instructions on the CLC Scientific products, consult the IFU on the website or contact Customer Service.

## NOTES









*passion for dental excellence*



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