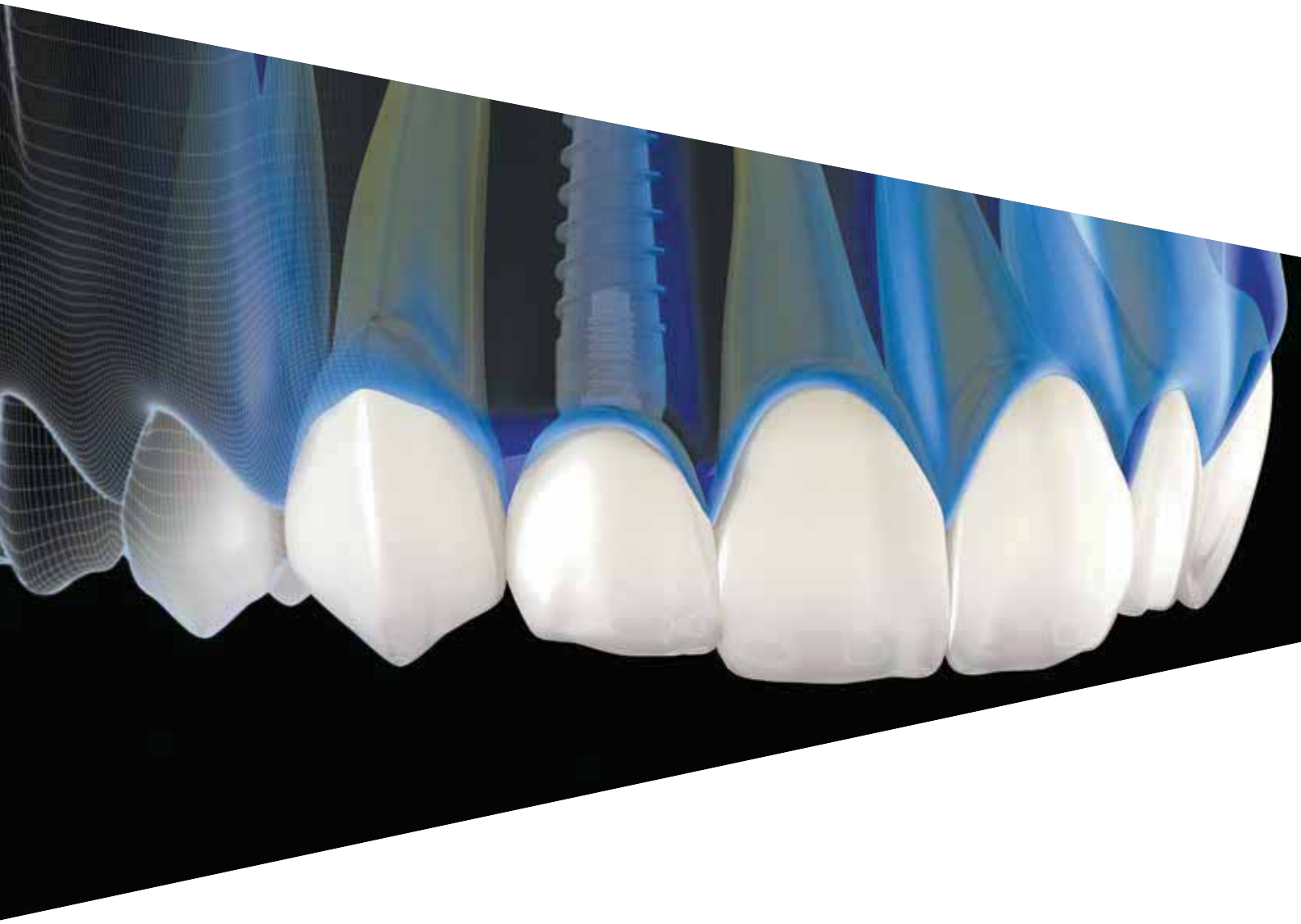
Prosthetic Manual

PRAMA



sweden & martina
IMPLANTOLOGY

PRAMA

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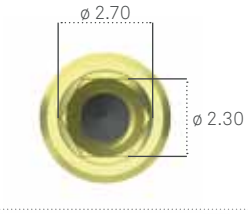
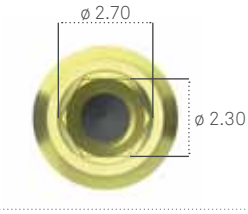
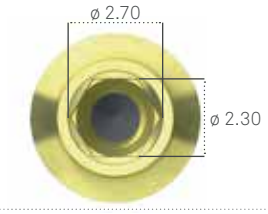
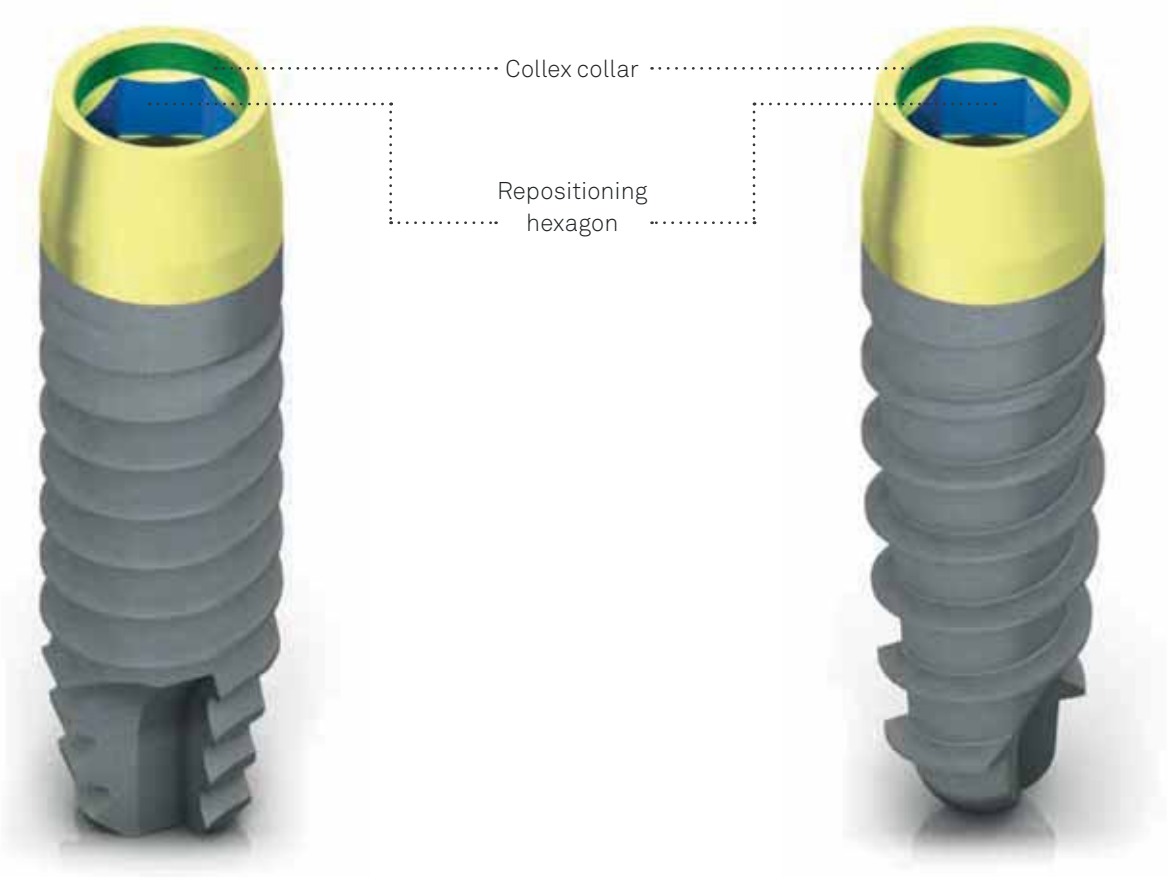
Guide chart to the single prosthetic connection

ø endosseous diameter	3.80 mm	4.25 mm	5.00 mm
Colour code			
ø maximum of emergence ø connection platform			
ø inside of the collar			
Implant/abutment interface			
Implant analogs			
Pick-up transfers			
Pull-up transfers			
Fixation screws with conical support for final posts			
Fixation screws for temporary posts			

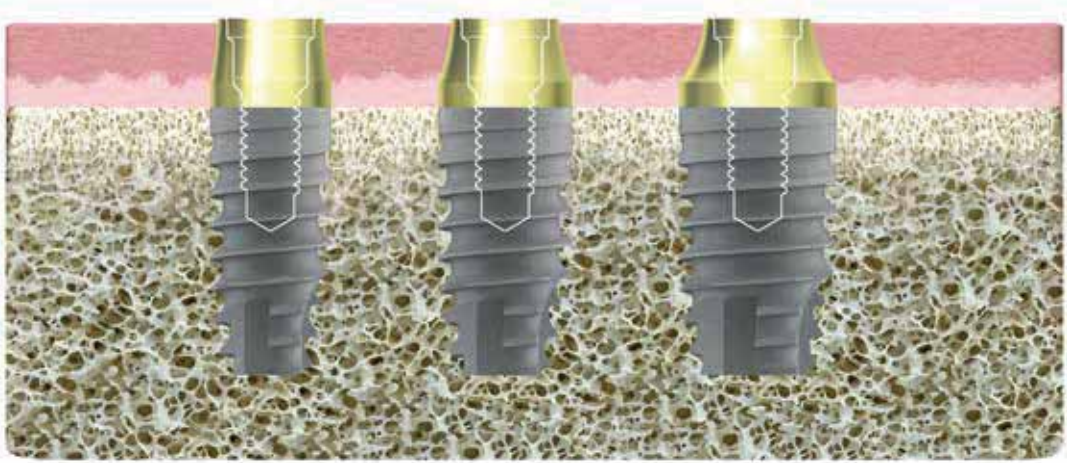
All measurements are in mm, unless otherwise indicated.

Connection details

The connection is characterized by a Collex collar, documented by decades of clinical success, which has the function of stabilizing the prosthesis and guarantees the correct distribution of the masticatory loadings. Underneath the collar there is a repositioning hexagon.
In order to document and quantify the advantages of the Collex connection a FEM analysis has been performed between a Premium implant and a virtual model with the same internal hexagon connection but without the external prosthetic collar. The results highlighted values 25% higher in terms of robustness and prosthetic stability compared to standard connection, without collar. *(Covani U., Ricci M., Barone A. – An evaluation of new designs in implant-abutment connections: a finite element method assessment – Implant Dentistry Volume 22, Number 3 2013).*

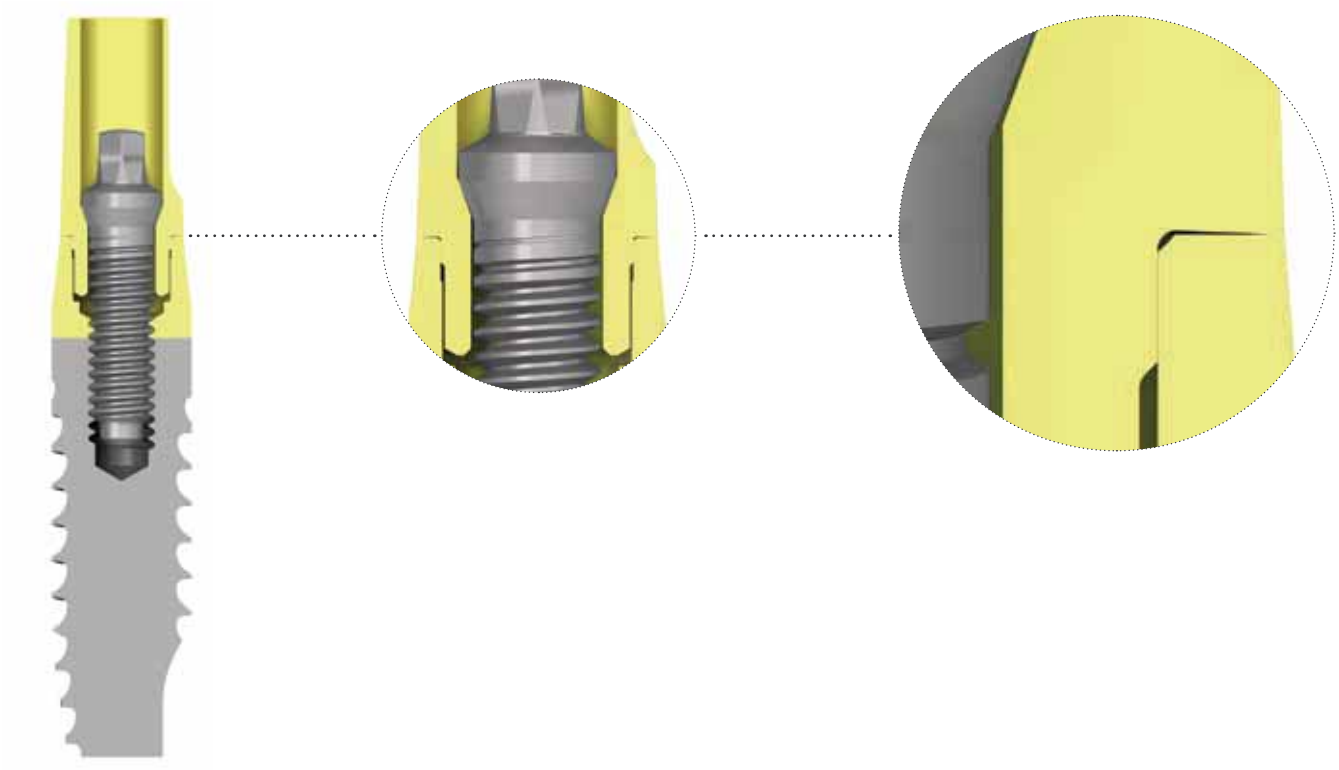


The connection takes up the whole emergent portion of the implant and it is clearly visible during the prosthetic manoeuvres. The platform is the same for all the implant diameters, thus simplifying the management of the prosthetic components.



Contracone seal

One of the key factors in determining the success of an implant-prosthetic rehabilitation is the absence of bacterial infiltration; to achieve this, there must be no spaces between the implant and abutment platforms that could permit the transit of bacteria, which, migrating towards the implant could cause anaerobic proliferation with serious consequences for peri-implant tissues Sweden & Martina has patented a special micromechanical production process that makes both surfaces resting against each other perfectly conical. This creates a mechanical barrier that guarantees a peripheral seal that can limit bacterial penetration and protect peri-implant tissues against possible inflammation.



Important warning
The precision of this coupling is possible only thanks to a strict study of the working tolerances, so the benefits of the Contracone seal are obtained only when using original Sweden & Martina prosthetic components. Using non original products not only invalidates the concept of the Contracone, but it risks creating large gaps at the connection level.

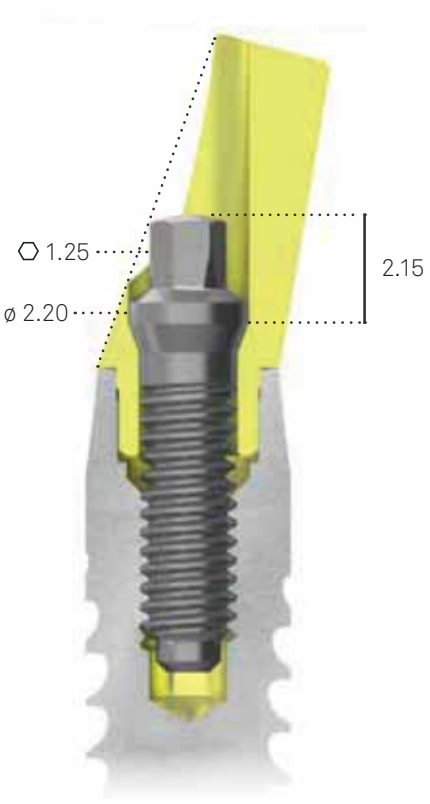
Prosthetic screws with conical support

The prosthetic screws with conical support of Prama posts are available in two versions: Full Head and with standard head. Both have been specifically studied in order to allow a wide freedom of posts personalization. The head of the screws presents a conical support which improves the prosthetic fastening without obstructing the eventual removal.

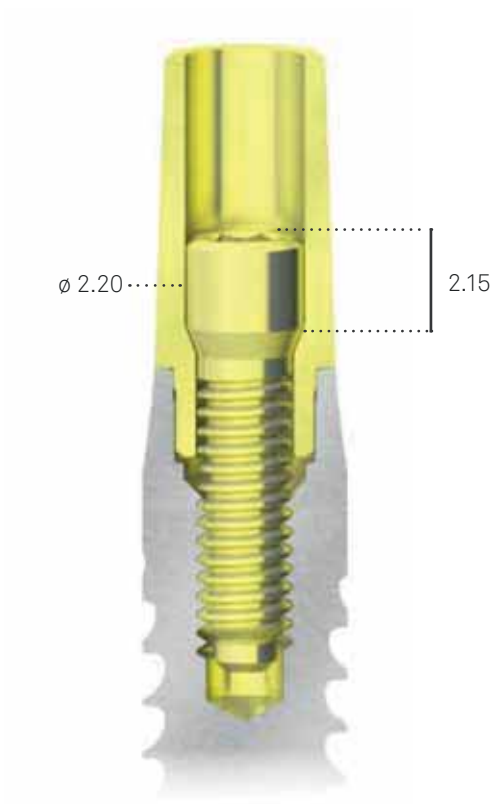
The head of Full-Head screw (**img. A**), supplied with angled pre-made posts, is full and presents an external hexagon of reduced dimensions compared to the head of a standard prosthetic screw with internal hexagon. For the screwing and unscrewing manoeuvres of this particular prosthetic screw, dedicated screwdrivers are available, in steel for surgical use, in three different lengths with grafts for dynamometric ratchet and one with right angle shank (see page 26).

Standard fixation screws with conical support (**img. B**) have the engagement of the internal driver for traditional screwdrivers of the HSM series (see page 27). These screws are particularly useful when the total height of the posts must be consistently reduced, and therefore there is no sufficient height to cover the screw hole of the removable material. The size of the head of the screw, equal to that of the screw hole of the prosthesis posts, allows in fact not to leave spaces where you can thread the cement used to fix the crown.

A

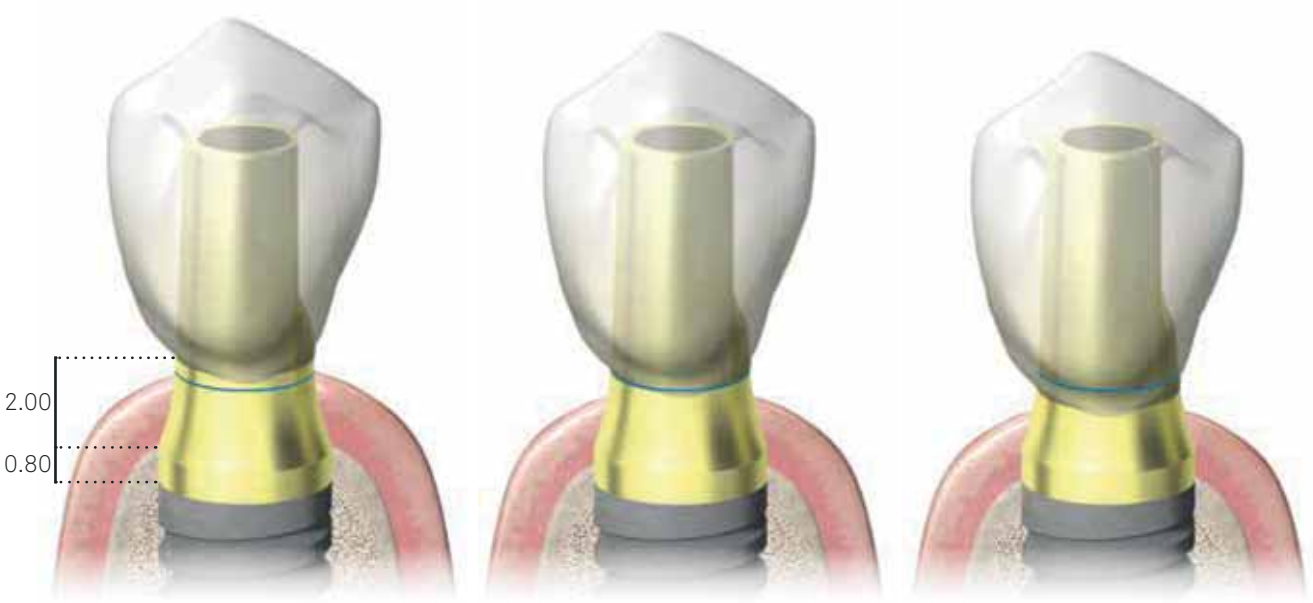


B



Prama neck

Prama transgingival neck is characterized by a cylindrical part of 0.80 mm and a hyperbolic part with a height of 2.00 mm designed in order to guarantee an effective continuity with the post. This absence of sharp edges will allow the soft tissues to adhere on the titanium without finding obstacles and to reach the profile established by the prosthodontist. Moreover, it will facilitate the positioning of the prosthetic crown in any part of the transgingival section. With respect to the biological width, **the cylindrical section can be managed positioning the implant iuxta-osseus or submerged** so that the crown doesn't cover an excessive portion of the Prama neck, thus nullifying the biological benefits.



The radius follows different rays in the three implant diameters, so that the diameter of the connection is always 3.40 mm and that the same prosthetic components can be used for all the 3 implant diameters, except for the Prama IN components (see the next page).

ZirTi Gold UTM: The transgingival section of the implant is submitted to a controlled passivation process which gives a golden pale yellow colour to the metal, making it highly mimetic both under the soft tissues and under the translucent materials used in implantoprosthesis. Histological studies have shown that this surface is able to guarantee excellent results also in contact with hard tissues in case of submerged implants.

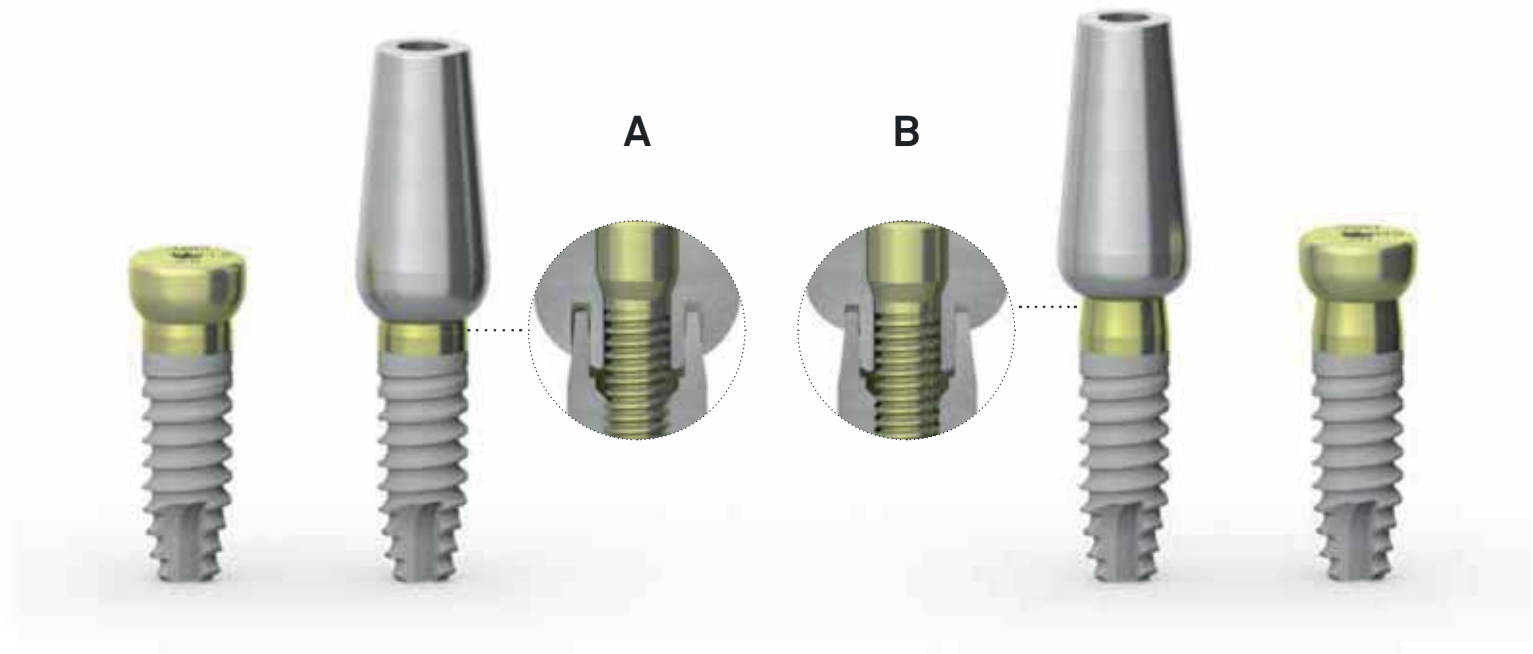
SEM image of the ZirTi Gold UTM surface

Prama IN prosthetic components

Starting from healing abutments, in titanium for direct screwing or in REEF resin with passing screw and preparable chairside, soft tissues can be conditioned by a mucous tunnel, in order to provide adequate space for temporary and final prosthetic rehabilitation. This also avoids pain and discomfort for the patient during the prosthetic load. Both types of healing abutments follow the hyperbolic geometry of Prama neck: they are so available in the diameters: 3.80 mm, 4.25 mm and 5.00 mm, not interchangeable.

Prama IN components have been designed to close subgingval at 0.50 mm (**img. A**) or at 1.50 mm (**img. B**) incorporating part of the transgingival neck. Both the heights **guarantee the complete ferulization of the implant**. The first one is usually employed in delayed loading protocols, while the second one is indicated for immediate loading protocols when the prosthetic structure is produced within 72h.

Prosthetic rehabilitation can be finalized using either preparable posts or castable posts with a metal base for overcasting, depending on the needs of each case. Specifically developed following the Prama IN concepts in the three implant diameters, these posts are available both in the versions with or without repositioning hexagon and in the two closing subgingival heights on the implant neck at 0.50 mm and 1.50 mm, except for castable posts with a gold alloy base that are available only in the 0.50 mm height, without repositioning hexagon.



The Prama surgical kit

The Prama surgical kit contains all the surgical and prosthetic instruments useful for the management of all the operative phases, from the insertion of the implant to the definitive prosthesis.
For the details related to the surgical instruments please refer to Prama catalogue and surgical manual.

1

L-HSM-EX

L-HSML-EX

L-HSMXL-EX

L-HSM-CA

2

HSM-20-CA

HSM-20-EX

HSML-20-EX

3

HSMXS-20-DG

HSM-20-DG

HSML-20-DG

4

BPM-15

5

AVV-CA-DG-EX

6

CRI5

Note: to guarantee the maximum duration of surgical instruments, it is advisable to follow the recommended cleaning and sterilization procedures.

Screwdrivers for fixation screws

All the screwdrivers are made of stainless steel for surgical use.
There are two different types of screwdrivers for Prama implants: the traditional ones (**img. A and B**) and those for screws with Full Head technology (**img. C**).
They differ in the design of the tip, studied in the first case to engage a screw with internal hexagonal connection and the other with external hexagonal connection, therefore they are not interchangeable. In both cases, the slightly tapered coupling between the screwdriver and the screw allows for a proper retentive capacity for transporting the latter to the oral cavity.
Regularly check to ensure that this function has not been impaired due to wear on the tip.
Both screwdriver families are available in different shank lengths to facilitate the ergonomics, depending on the patient's anatomy.
The standard screwdrivers are also available in the digital one-piece version, this means that they are integral with the hand knob which allows the grip.

A

Standard screwdrivers and screws

B

Standard screwdrivers and fixation screws with conical support

C

Specific screwdrivers for screws with Full Head technology

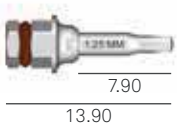
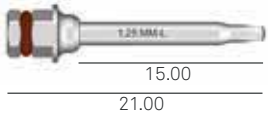
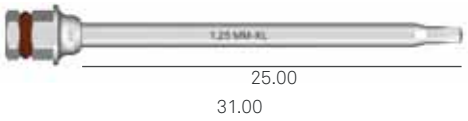
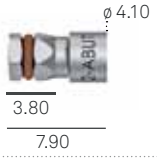
Important warning
Excessive torques can damage the thread of the well or of the sharp edges of the fixation screws and damage the thread of the screwdrivers, causing also severe intra-operative or prosthetic complications.
The recommended torque for the tightening of the different components are summarized in the following chart:

surgical cover screws, healing abutments	(manually) 8–10 Ncm
all prosthetic screws	20-25 Ncm
all prosthetic components for directly screwing onto an implant	25-30 Ncm
transfer fixation screws	(manually) 8–10 Ncm

Given the importance of the tightening torque, it is recommended to use always the screwdrivers with hexagonal connector, keeping always the exerted torque under control with the dynamometric ratchet. To facilitate the joint of the screws or of the threaded sections of the prosthetic components, the screwing should be started with the digital screwdrivers.

Screwdrivers that can be used with the torque-control ratchet

Screwdrivers with an upper hexagonal connector are designed for use with the torque-control ratchet to provide torque control. The Screw Kit includes short, long and extra-long versions, and this latter is for use when the screw hole inside posts is longer than 13.00 mm.
Some of these drivers are also included in the surgical kits of the Prama system.
Please refer to the catalogues and surgical manuals of the single systems for details.

description	code
Driver for fixation screws, with hexagonal connector for dynamometric key or hand knob, short	**HSM-20-EX** 
Driver for fixation screws, with hexagonal connector for dynamometric key or hand knob, long	**HSML-20-EX** 
Driver for fixation screws, with hexagonal connector for dynamometric key or hand knob, extra.long	**HSMXL-20-EX** 
Screwdriver for P.A.D. straight abutments, with hexagonal connector for dynamometric key	**AVV2-ABUT** 

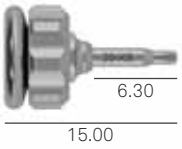
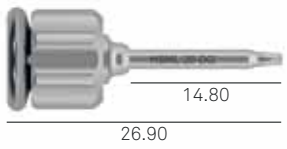
Important warning
All drivers for use with a ratchet have a red polymer O-ring inside the connection hexagon, to ensure adequate grip for instruments and therefore the correct position of components. This O-ring must be checked periodically and replaced when worn or no longer able to ensure the correct grip.

A kit of 5 spare O-rings is available, with order code **ORING180-088**.

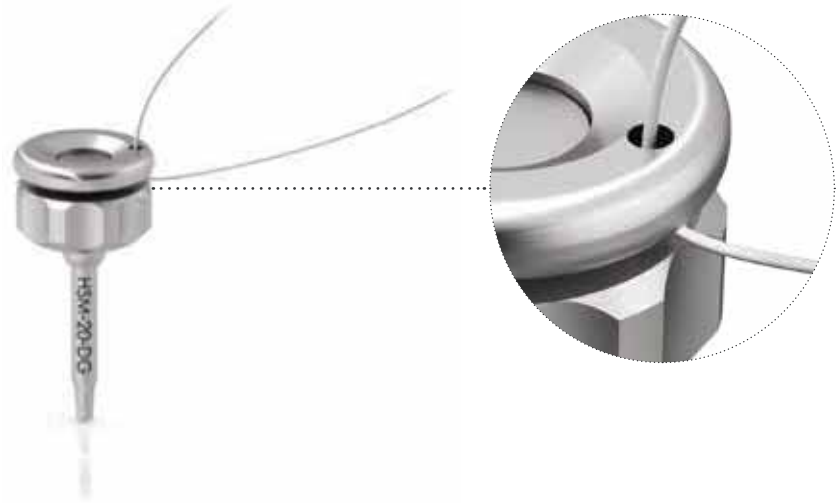
All measurements are in mm, unless otherwise indicated.

Surgical screwdrivers

Their design makes them extremely practical during surgical phases and when uncovering and handling healing abutments. They must not be used in the final prosthetic phases because they do not allow the torque control.
These screwdrivers are available, in the three different lenghts, inside the Prama surgical kit and the Screw kit.

description	code
Driver for surgical cover screws and fixation screws, digital, extra short	**HSMXS-20-DG** 
Driver for surgical cover screws and fixation screws, digital, short	**HSM-20-DG** 
Driver for surgical cover screws and fixation screws, digital, long	**HSML-20-DG** 

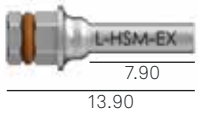
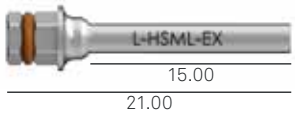
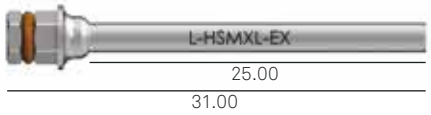
Important warning
It is recommended to pass a safety thread through the hole on the top of the knob to prevent it being dropped.



All measurements are given in mm, unless indicated otherwise.

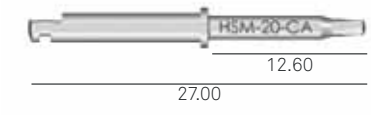
Prosthesic screwdrivers for screws with Full Head technology

The specific screwdrivers for the screws with Full Head technology are available in the version with hexagonal connector for dynamometric ratchet, with different shank lengths. A screwdriver with right angle connector is also available. The instruments tip has an hexagonal notch, which connects the full hexagon of the Full Head screws, giving the retention needed for the carriage of the screw. These screwdrivers cannot be used for the fixation screws of the temporary posts or for other types of screws in the catalogue.

description	code
Screwdriver for screw with Full Head technology, digital, extra short	**L-HSM-EX** 
Screwdriver for screw with Full Head technology, digital, short	**L-HSML-EX** 
Screwdriver for screw with Full Head technology, digital, long	**L-HSMXL-EX** 

Screwdriver for right angle

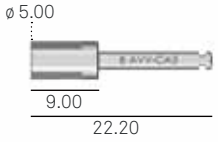
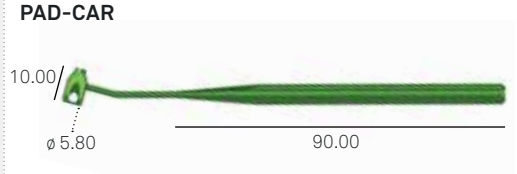
Both the Screw kit and the Prama surgical kit also contain a screwdriver with right angle shank, very practical both in the surgical and prosthetic phase, if it is used with a micromotor with the torque control. This screwdriver can be only used for the tightening of the posts whose hole for the passing of the screw is not longer than 11.00 mm.

description	code
Screwdriver for fixation screws, with right angle shank	**HSM-20-CA** 

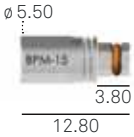
All measurements are in mm, unless otherwise indicated.

Other instruments

The following instruments are included in the Screw Kit or can be ordered separately.
The adaptor for right angle shank for instruments with hexagonal connector is contained in the Prama kit.

description	code
Adapter with right angle shank for instruments with hexagonal connector	**B-AVV-CA3** 
Manual knob for drivers, hexagonal keys and manual drivers	**AVV3-MAN-DG** 
Carrier for transport of angled P.A.D. abutments into the oral cavity, sterilizable and reusable. Must be fixed to abutments with screw PADVTRAL-140	**PAD-CAR** 

The BPM-15 extension, which may be useful in some clinical situations, is not included in the Screw Kit, but can be ordered separately, and is included in the Prama surgical kit.

description	code
Extension for hexagonal keys, drivers and manual drivers, with hexagonal connector for torque-control ratchet	**BPM-15** 

All measurements are in mm, unless otherwise indicated.

Screw Kit

The Sweden & Martina Screw Kit is a practical set containing the drivers necessary for the prosthetic phases of Prama implants for the various prosthetic solutions: standard posts, abutments, P.A.D. prostheses, Locator Abutments, ball attachments and their respective retention caps. In addition to manual and contra-angle handpiece drivers, the Screw Kit also includes a carrier for transporting angled P.A.D. abutments.
The kit also includes a torque-control ratchet, but not the Prama screwdrivers for Full Head screws. Small and easily transportable, the kit makes it possible to manage the post-surgical prosthetic rehabilitation phase simply and rapidly.

1

PAD-CAR

CRI5

AVV-CAP-TIT-1

AVV3-MAN-DG

AVV2-ABUT

BASCC-EX

2

HSM-20-CA

HSM-20-EX

HSML-20-EX

HSMXL-20-EX

3

8927-SW

8926-SW

4

B-AVV-CA3

5

HSMXS-20-DG

HSM-20-DG

HSML-20-DG

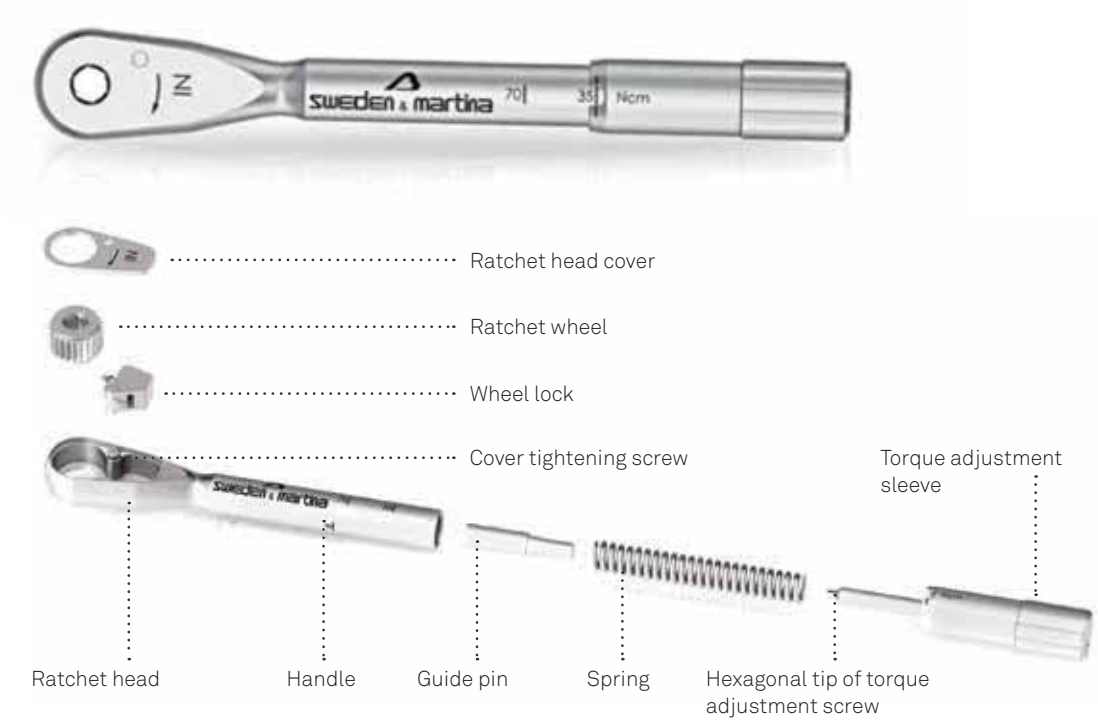
Note: to guarantee the maximum duration of surgical instruments, it is advisable to follow the recommended cleaning and sterilization procedures.

description	code
Complete Screw Kit	**ZSCREW-INT** 
Instrument tray for Screw Kit	**SCREW-TRAY-INT** 
Kit with 5 spare silicone supports for surgical trays, for drills or instruments with shank for contra-angle handpiece	**GROMMET-CA-1** 
Kit with 5 spare silicone supports for surgical trays, for instruments with a hexagonal connection	**GROMMET-CA-2** 

Important warning
Some of the instruments necessary for prosthetic protocols may also be included in surgical kits.
Please consult the respective catalogues for details on the updated contents of these kits.

CRI5-KIT torque-control ratchet

The surgical kit of the implant system includes a special ratchet (CRI5-KIT), together with an adjustment key that can be used to rapidly turn the torque adjustment sleeve, and a gel lubricant for maintenance. The ratchet can be used with torque regulations from 10 to 70 Ncm, or in a locked position without torque control. When using the prosthetic ratchet to tighten screws, reference must be made to the torque values indicated on page 249. The CRI5 ratchet is a multipurpose instrument that can be dismantled, and it is supplied as nonsterile.



Every time this instrument is used, it must first be cleaned and sterilized, following the instructions on page 251. Adequate maintenance, carried out scrupulously following all steps indicated for dismantling and reassembly of the instrument during cleaning operations, is essential for its correct use and to prolong its lifespan. Personnel using this instrument must be suitably trained, and must have read the instructions given in this manual before proceeding with any operations whatsoever with it. After sterilization, the ratchet is ready for use. It must be tested for correct assembly and operation every time it is used, whether for surgical procedures or for prosthetic procedures.
Torque is adjusted by aligning the marking for the desired torque in the circular opening of the handle. The “IN” arrow on the head when seen from above indicates the position of the ratchet that allows screws to be tightened. The “OUT “ arrow on the head when seen from above indicates the position of the ratchet that allows screws to be loosened. A position of unlimited torque can be obtained by setting the torque adjustment device to the notch marked “R” on the ratchet handle.

The torque adjustment sleeve can be tightened and slackened manually, but these operations can be carried out more rapidly using the hexagonal key included in the kit, which allows it to be turned more quickly. The personnel responsible for the use and maintenance of this dental instrument must check it for possible signs of deterioration of the tightening, insertion and torque mechanisms. The single components of the ratchet are not interchangable, and it is not possible to use a component from one ratchet to replace a component on another, because every ratchet is INDIVIDUALLY calibrated. If a component is lost, always return the entire instrument to Sweden & Martina for all necessary repairs. Components for the assembly of the ratchet are not sold individually. Failure to respect the instructions provided may cause maintenance problems and may also affect prosthesis stability.

Important warning
Torque is always adjusted by tightening/slackening the sleeve at the end of the instrument handle. Torque must always be adjusted upwards, starting from a value lower than that required and tightening the adjustment sleeve in a clockwise direction until the desired value is reached. This means that if a torque value lower than that used previously is to be set, the adjustment sleeve must be slackened by a minimum of two whole turns beneath the new torque value required, and then tightened again in a clockwise direction to the desired value.

To adjust torque upwards, turn the adjustment sleeve in a clockwise direction.

To adjust torque downwards to a value lower than that used previously, turn the adjustment sleeve in an anticlockwise direction until it is a minimum of two whole turns below the required value. Then tighten it in a clockwise direction until the desired torque value is reached.

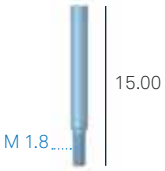
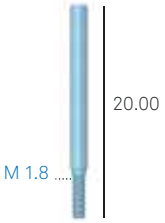
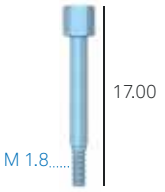
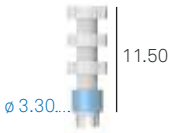
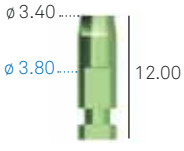
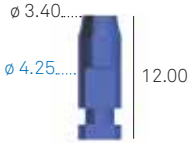
Techniques for taking impressions and making models

The correct taking of impressions is the key to success in any implant-prosthetic treatment plan, because if information with as few errors as possible is sent to the laboratory, this makes it possible to save working time and above all to produce prostheses without internal stresses that do not exert undesired strain on implants.
Impressions can be taken at various moments of surgery, depending on the adopted protocols and/or habits. On all the Prama implants it is possible to take the impression using the open tray technique with Pick-up transfers. For distal zones in which the manoeuvres of screwing and unscrewing of the screw can be difficult, and also in cases of limited oral opening, Pull-Up transfers in PEEK can be used together with Pick-up transfers, presenting a titanium ring anodized in blue at the base, making it possible to verify the correct insertion into the implant platform with a X-ray.

The components for impressions taking and for the production of model are manufactured with the same machines used to make implants, thus ensuring the same high level of precision for tolerances and for the accurate reproduction of clinical situations. The anodization of the analogs according to the colour code of the reference platform make it easier to recognize the implant diameter and simplify the laboratory work.

Pull-up transfer: the connection with tabs snaps into the hexagonal implant connection, without needing of a screw

Pick-up transfer: the design of the upper section guarantees excellent retention and therefore extremely stable fixation in the impression

ø implant	3.80 mm	4.25 mm	5.00 mm
Pick-up transfer Straight emergence Fixation screw included	**L-TRA-380** 	**L-TRA-425** 	**L-TRA-500** 
Single pack Fixation screw for Pick-up transfer Supplied with the transfers, it can also be ordered separately as a spare	**VTRA2-180-15** 	Use VTRA2-180-15	Use VTRA2-180-15
Single pack Fixation screw for Pick-up transfer Not supplied with the transfers, available separately as a spare	**VTRA2-180-20** 	Use VTRA2-180-20	Use VTRA2-180-20
Single pack Fixation screw for Pick-up transfer For manual screwing Not supplied with transfers, available separately as a spare	**VTRA2-180-MAN** 	Use VTRA2-180-MAN	Use VTRA2-180-MAN
Pull-up transfer in radiopaque PEEK and Gr. 5 titanium ring Straight emergence	**A-TRAP-330** 	Use A-TRAP-330	Use A-TRAP-330
Analogs	**L-ANA-380** 	**L-ANA-425** 	**L-ANA-500** 

Recommended torque for transfer screws: 8-10 Ncm.

Important warning
It is advisable to always use new transfers and analogs for all cases, so as to guarantee maximum coupling precision at the level of the connection. Transfers and analogs used more than once reciprocally deform the walls of the respective hexagons, transferring errors to impressions that can generate stresses in prostheses which are then transferred to implants and can compromise satisfactory clinical outcomes, above all in the case of multiple structures.

See technical characteristics of titanium Gr. 5 and PEEK on pages 238 and 239.

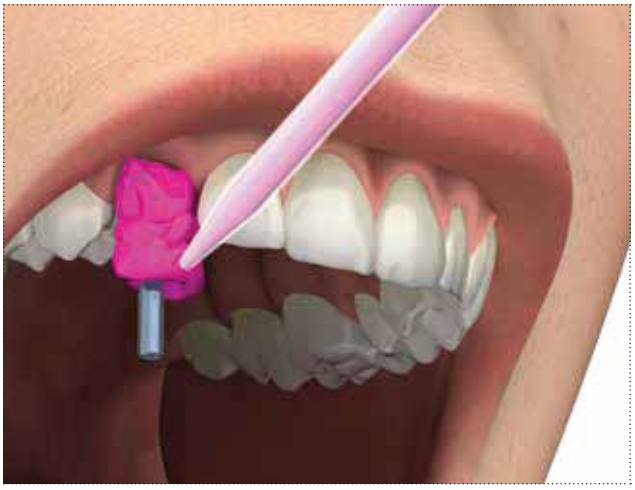
Open tray impression with Pick-up transfer – single crown

The Prama implant presents a transgingival emergence, therefore it is dedicated to techniques with only one surgical phase. If the impression is taken after a healing period, remove the surgical cover screw or the healing abutment.

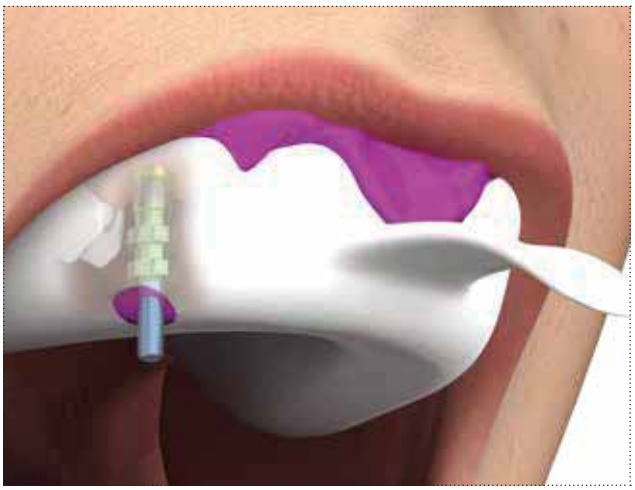
Tighten the Pick-up transfer with the specific supplied screw and the most suitable screwdriver from the HSM series, without exceeding a torque of 8-10 Ncm (**img. A**).

Note: Pick-up transfer can also be fastened using the transfer screw for manual screwing of 17.00 mm lenght which presents a hexagon on the top (**img. B**).

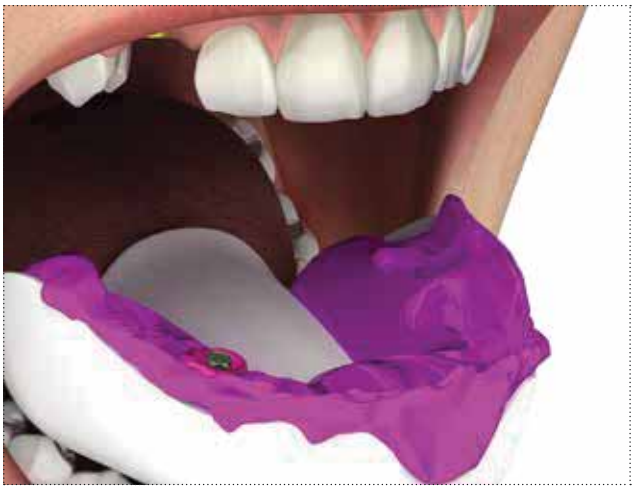
Check that the personalized tray, when placed in the mouth, contains the entire height of the transfer inside its walls, and that the summit of the transfer screw emerges for a suitable lenght from the respective hole in the tray. If necessary, the transfer can be shortened by one or two notches.
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, cod SKY14) around the transfer and the emergent section of the implant.



Fill the impression tray with a harder impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch. Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.



Unscrew the transfer screw and remove it from the impression, to prevent it from accidentally falling into the patient's mouth when the impression tray is removed. Remove the tray: the Pick-up transfer remains incorporated in the impression.



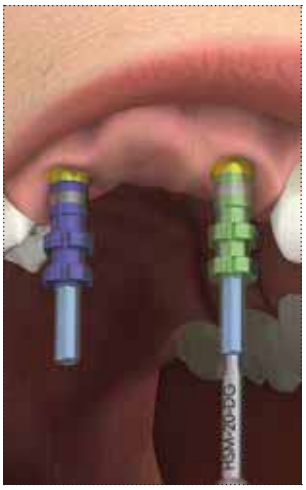
Screw the laboratory analog (L-ANA-*) onto the transfer using the transfer screw, replaced in the hole left by it in the impression material.
The recommended torque is 8-10 Ncm.
Develop the model as usual.

Open tray impression with Pick-up transfers – bridge

The Prama implant presents a transgingival emergence, therefore it is dedicated to techniques with only one surgical phase. If the impression is taken after a healing period, remove the surgical cover screws or the healing abutments.

Tighten the Pick-up transfers with the specific supplied screw and the most suitable screwdriver from the HSM series, without exceeding a torque of 8-10 Ncm (**img. A**). If desired, fix the transfers together with wire and resin or composite, and wait for polymerization to be completed, as indicated by the manufacturer (e.g. SUN resin, code SUN-A2 or SUN-A3).

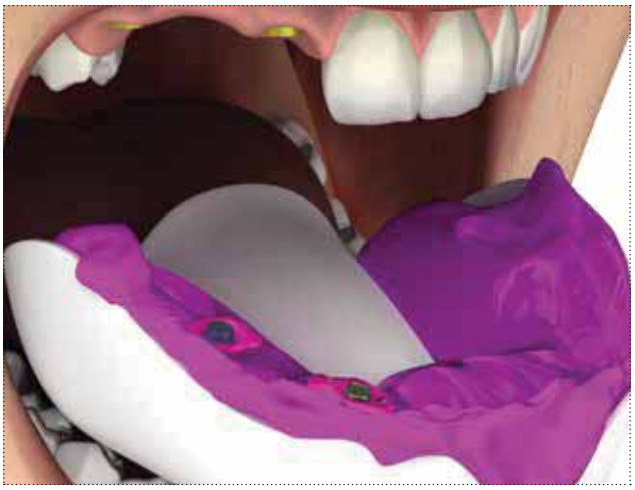
Note: Pick-up transfers can also be fastened using the transfer screw for manual screwing of 17.00 mm lenght which presents a hexagon on the top (**img. B**).



Check that the personalized tray, when placed in the mouth, contains the entire height of the transfers inside its walls, and that the summit of the transfer screws emerge for a suitable lenght from the respective holes in the tray. If necessary, the transfers can be shortened by one or two notches.
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, cod SKY14) around the transfers and the emergent section of the implants.

Fill the impression tray with a harder impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch. Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.

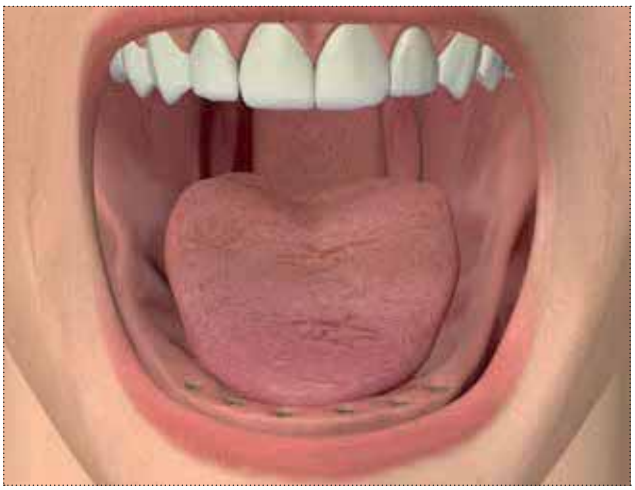
Unscrew the transfer screws and remove them from the impression, to prevent them from accidentally falling into the patient's mouth when the impression tray is removed. Remove the tray: the Pick-up transfers remain incorporated in the impression.



Screw the laboratory analogs (L-ANA-*) onto the transfers using the transfer screws, replaced in the holes left by them in the impression material.
The recommended torque is 8-10 Ncm.
Develop the model as usual.

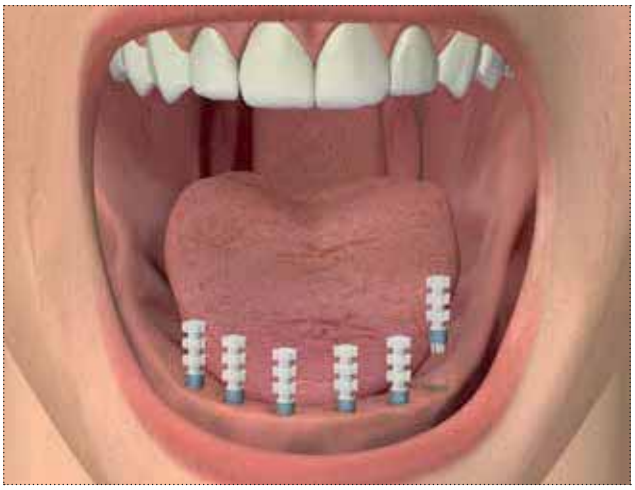
Closed tray impression with Pull-up transfers – full arch

Remove the surgical cover screws of the healing abutments.



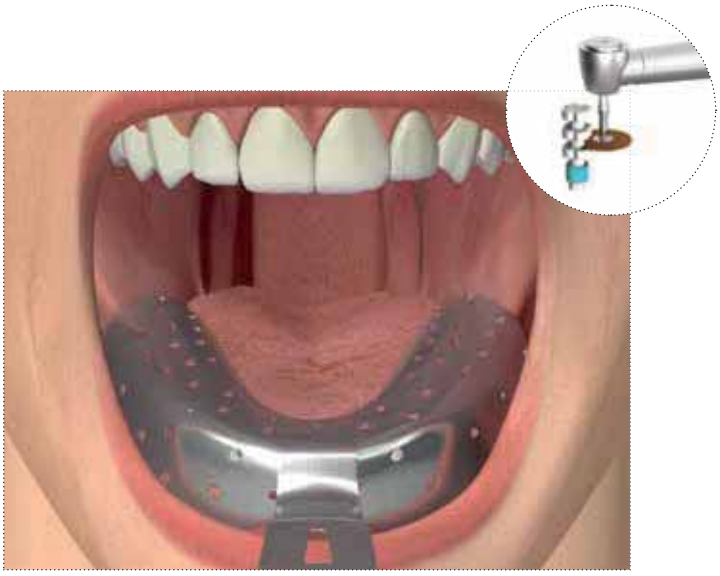
Position the Pull-up transfers and fix them by simply applying pressure with the hand, without needing to use instruments. The characteristic click of the transfer tabs indicates that the transfers have been correctly inserted in the implant connection.

Important warning
In case of poor visibility or doubts on complete coupling between the transfer and the implants, carry out a radiographic check. The titanium ring at the base of the transfers make them visible with an x-ray.

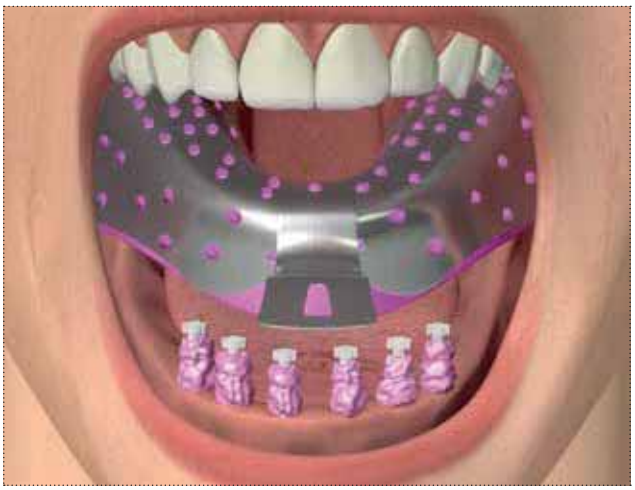


Position the tray and check that the entire height of the transfers is contained inside the walls of the impression tray.

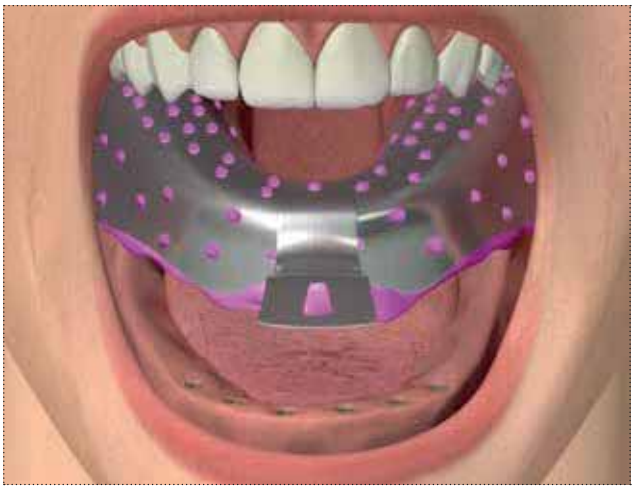
Important warning
If necessary, the height of Pull-up transfers can be reduced by cutting away one or two vertical modules or removing the portions of the horizontal tabs creating interference.
The retention of the remaining portion of the transfers in the impression material will be sufficient to ensure that the impression is taken correctly.



Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers and at the same time fill the impression tray with a harder material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) along the entire arch. Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.



Lift the tray off vertically: the Pull-up transfers will remain incorporated in the impression.

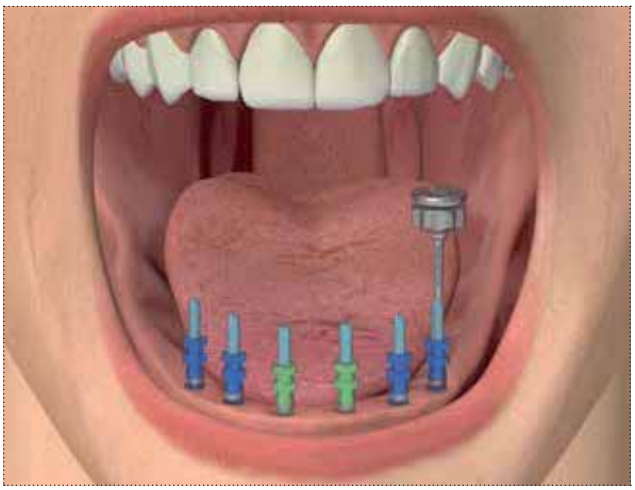


Couple each of the transfers with a laboratory analog of a corresponding diameter of the implant inserted in the patient's mouth. Develop the prelimary model and create an individual impression tray using normal methods.

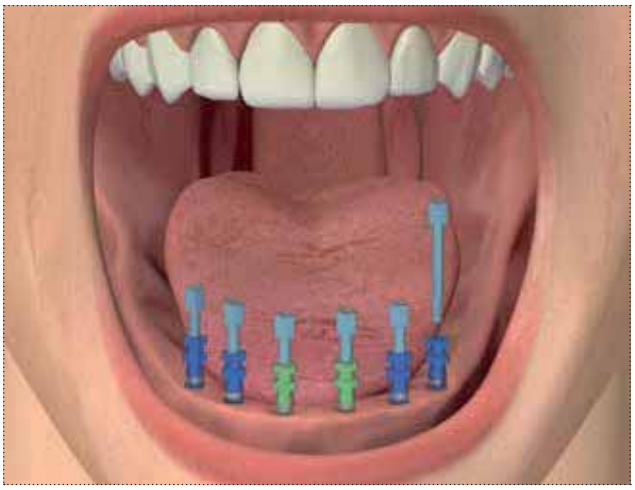
Important warning
The Pull-up transfers are available in only one diameter with a titanium anodized ring in blue, not following the colour code system, so it is necessary to indicate the laboratory the analog diameter that must be engaged to the transfers.

Open tray impression with Pick-up transfers – full arch

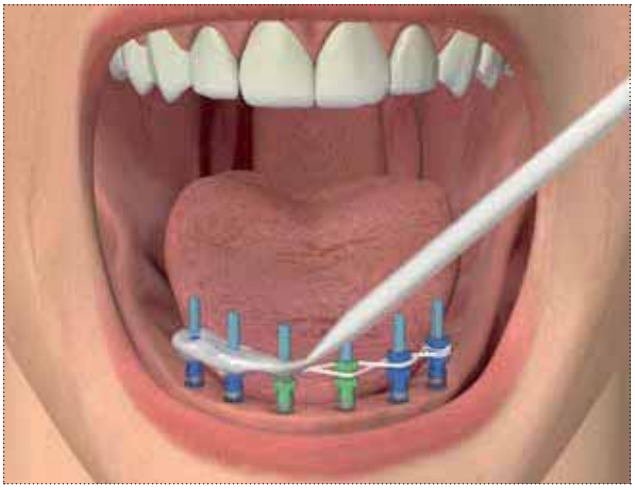
Tighten the Pick-up transfers with the specific supplied screw and the most suitable driver without exceeding a torque of 8–10 Ncm.



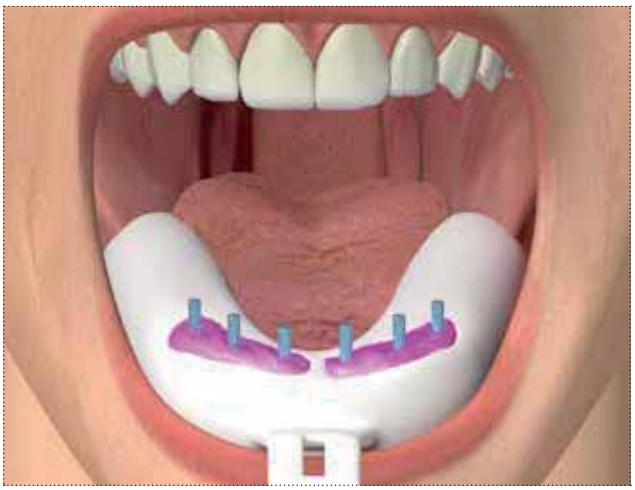
Pick- up transfers can also be fastened using the transfer screw for manual screwing of 17.00 mm lenght which presents a hexagon on the top.



If desired, fix the transfers together with wire and resin or composite, and wait for polymerization to be completed, as indicated by the manufacturer (e.g. SUN resin, code SUN-A2 or SUN-A3).



Check that the personalized tray, when placed in the mouth, contains the entire height of the transfers inside its walls, and that the summit of the transfer screws emerges for a suitable length from the respective holes in the tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers and fill the impression tray with a harder material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.
Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.

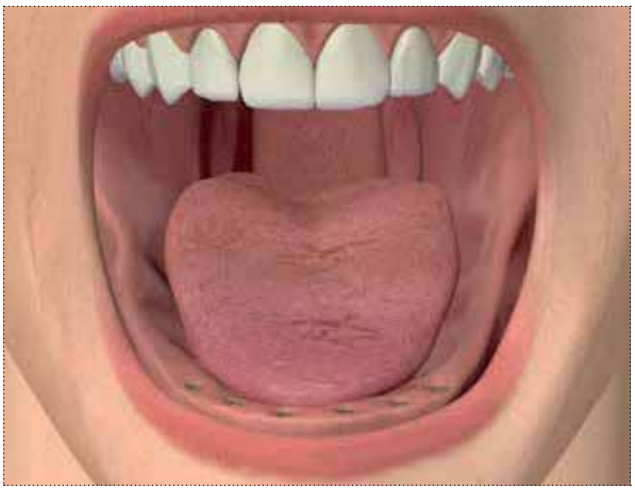


Unscrew the transfer screws and remove them from the impression, to prevent them from accidentally falling into the patient's mouth when the impression tray is removed. Remove the tray: the Pick-up transfers remain incorporated in the impression.

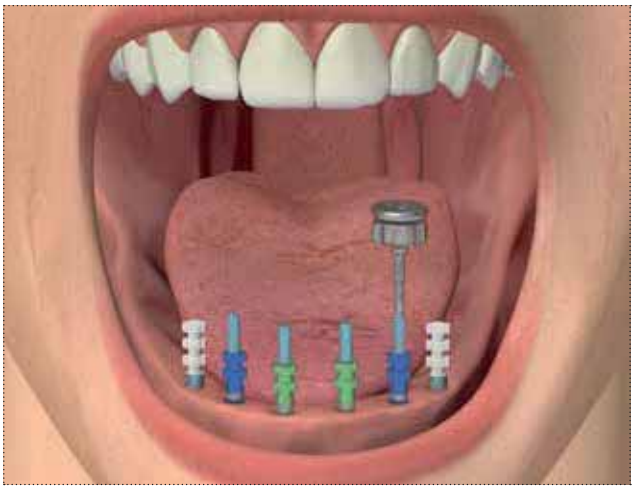
Screw the laboratory analogs (L-ANA-*) onto the transfers using the transfer screws, replaced in the holes left by them in the impression material.
The recommended torque is 8-10 Ncm.
Develop the model as usual.

Open tray impression with Pick-up and Pull-up transfers and mixed technique - full arch

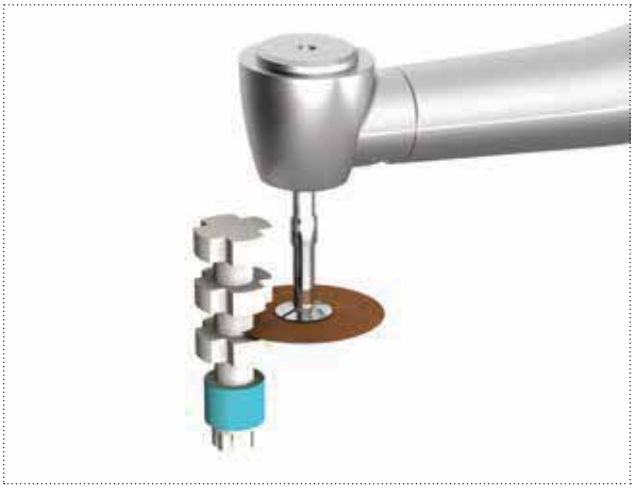
The Prama implants present a transgingival emergence, therefore they are dedicated to techniques with only one surgical phase. If the impression is taken after a healing period, remove the surgical cover screws or the healing abutments.



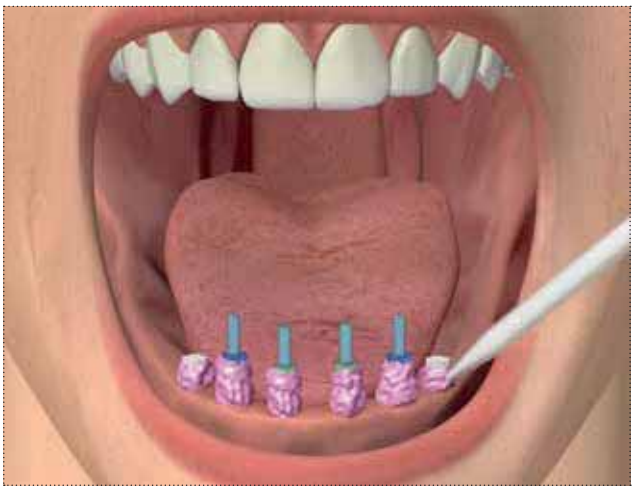
To facilitate the impression phase in distal sectors and patients with limited oral opening, it is possible to use the Pull-up transfers together with the Pick-up transfers. Pull-up transfers exercise retention in the connection with the dedicated retentive tabs, while the Pick-up transfers must be tigthened to the implant with the specific supplied transfer screw at a maximum torque of 8-10 Ncm. In order to do this operation use a screwdriver of the HSM series of the most suitable length.



If necessary, the height of Pull-up transfer can be reduced by cutting away one or two vertical modules with a disk outside the oral cavity: the retention of the remaining portion of the transfer in the impression material is sufficient to ensure the correct impression taking.



Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers and the emergent section of the implants.



Fill the impression tray with a harder impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch. Then position the tray *in situ* and wait for the hardening times as indicated by the instructions. Unscrew the transfer screws and remove them from the impression, to prevent them from accidentally falling into the patient's mouth when the impression tray is removed.

Remove the tray: both the Pick-up and the Pull-up transfers remain incorporated in the impression. Screw the laboratory analogs (L-ANA-*) onto the transfers using the transfer screws, replaced in the holes left by them in the impression material. The recommended torque is 8-10 Ncm.
In the Pull-up transfers case, the characteristic click of the transfer tabs indicates that the transfers have been correctly inserted. Develop the model as usual.

Important warning
The Pull-up transfers are available in only one diameter with a titanium anodized ring in blue, not following the colour code system, so it is necessary to indicate the laboratory the analog diameter that must be engaged to the transfers.

Soft tissues conditioning with Prama IN healing abutments

The particular morphology of Prama IN healing abutments helps soft tissues conditioning during their healing, in order to facilitate the impression phase and leave an adequate space for the rehabilitation avoiding pain and discomfort for the patient during the prosthetic load.

The Prama IN healing abutments in titanium, designed to close subgingval at 0.50 mm or 1.50 mm incorporating part of the transgingival neck of the Prama implant, are available in three diameters corresponding to those of the implants in order to follow the radius of the hyperbolic neck.

The Prama IN healing abutments made of REEF resin, with a special nanostoichiometric conformation that gives a high capacity of resistance to bacterial attacks which lasts over time and makes the adherence of plaque more difficult, are also available in the two different heights of closing on the implant neck at 0.50 mm or 1.50 mm.
See instructions for use at page 23.

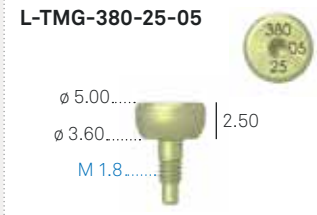
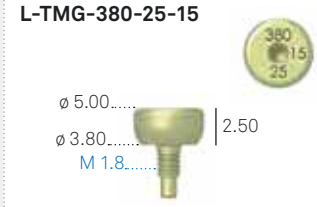
Healing abutment that incorporates the implant-abutment interface for 0.50 mm. The laser marking reports the connection diameter (in the example 380 = 3.80), the transingival height (in the example 25 = 2.50) and the closure on the neck (in the example 05 = 0.50)

Healing abutment in REEF resin that incorporates the implant-abutment interface for 0.50 mm

Healing abutment that incorporates the implant-abutment interface for 1.50 mm. The laser marking reports the connection diameter (in the example 380 = 3.80), the transingival height (in the example 25 = 2.50) and the closure on the neck (in the example 15 = 1.50)

Healing abutment in REEF resin that incorporates the implant-abutment interface for 1.50 mm

Prama IN healing abutments in titanium

ø implant	3.80 mm	4.25 mm	5.00 mm
Prama IN healing abutments In titanium Gr. 5 Closing of 0.50 mm Transgingival h. 2.50 mm	**L-TMG-380-25-05** 	**L-TMG-425-25-05** 	**L-TMG-500-25-05** 
Prama IN healing abutments In titanium Gr. 5 Closing of 1.50 mm Transgingival h. 2.50 mm	**L-TMG-380-25-15** 	**L-TMG-425-25-15** 	**L-TMG-500-25-15** 
Prama IN healing abutments In titanium Gr. 5 Closing of 0.50 mm Transgingival h. 3.50 mm	**L-TMG-380-35-05** 	**L-TMG-425-35-05** 	**L-TMG-500-35-05** 
Prama IN healing abutments In titanium Gr. 5 Closing of 1.50 mm Transgingival h. 3.50 mm	**L-TMG-380-35-15** 	**L-TMG-425-35-15** 	**L-TMG-500-35-15** 

Prama IN healing abutments in REEF resin

ø implant	3.80 mm	4.25 mm	5.00 mm
Prama IN healing abutments In REEF resin Closing of 0.50 mm Transgingival h. 6.00 mm Standard fixation screw included	**L-TMGPF-380-05** 	**L-TMGPF-425-05** 	**L-TMGPF-500-05** 
Prama IN healing abutments In REEF resin Closing of 1.50 mm Transgingival h. 6.00 mm Standard fixation screw included	**L-TMGPF-380-15** 	**L-TMGPF-425-15** 	**L-TMGPF-500-15** 
Single pack Pack of 10 pieces Standard fixation screw Supplied with the healing abutments, it can also be ordered separately	**VM2-180** **VM2-180-10** 	**Use** **VM2-180** **VM2-180-10**	**Use** **VM2-180** **VM2-180-10**

Recommended torque for transgingival healing abutments: 8-10 Ncm.

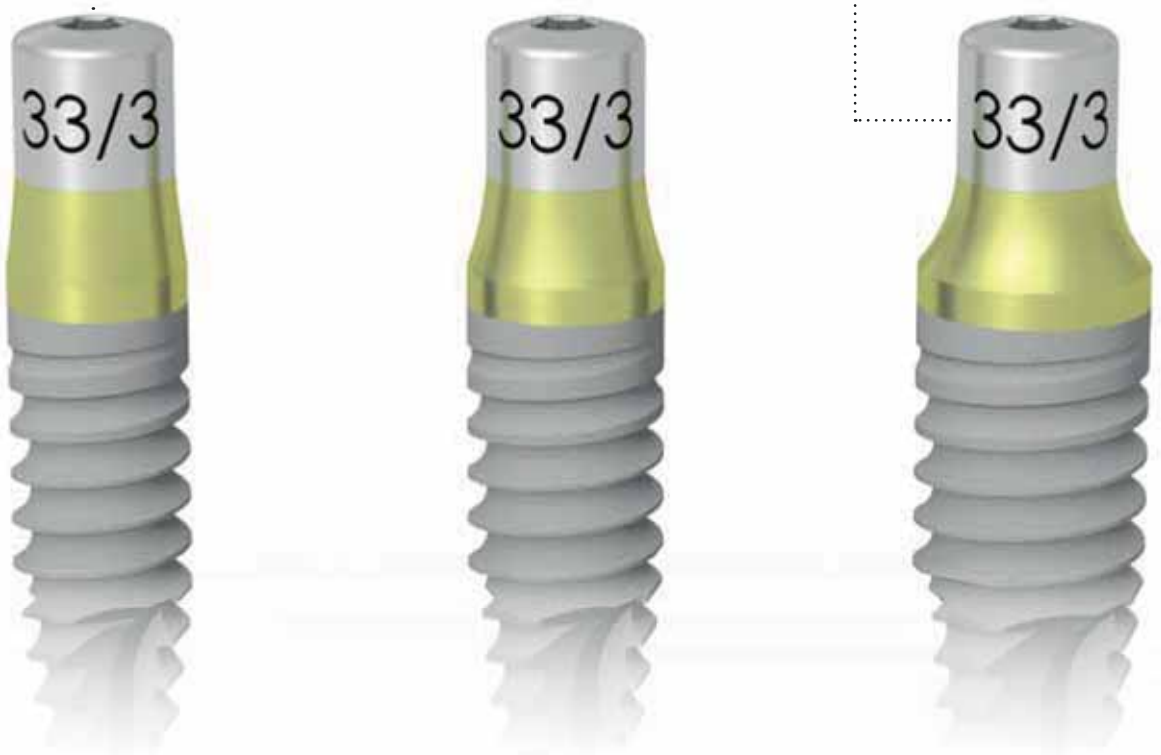
See technical characteristics of Gr. 5 titanium and REEF resin on page 238.

Soft tissues conditioning with standard healing abutments

The Prama implants present a transgingival neck which makes them suitable for protocols with only one surgical phase. During the healing phase in the presence of a thick biotype it can often be useful to condition soft tissues with a straight healing abutment.
These healing abutments are available in different heights and a single diameter compatible with all Prama implant diameters.

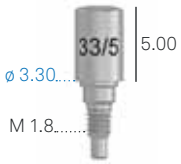
The straight healing abutments are available in a single diameter of 3.30 mm for all the Prama implant sizes

The laser marking reports the diameter (in the example 33 = 3.30 mm) and the transgingival height (in the example 3 = 3.0 mm), which can be 2.00, 3.00 and 5.00 mm



ø 3.80 ø 4.25 ø 5.00

Standard healing abutments

description	code	
Healing abutments Straight emergence Transgingival h. 2 mm	**A-TMG-330-2**	
Healing abutments Straight emergence Transgingival h. 3 mm	**A-TMG-330-3**	
Healing abutments Straight emergence Transgingival h. 5 mm	**A-TMG-330-5**	

Recommended torque for healing abutments: 8-10 Ncm.

See technical characteristics of Gr. 5 titanium on page 238.

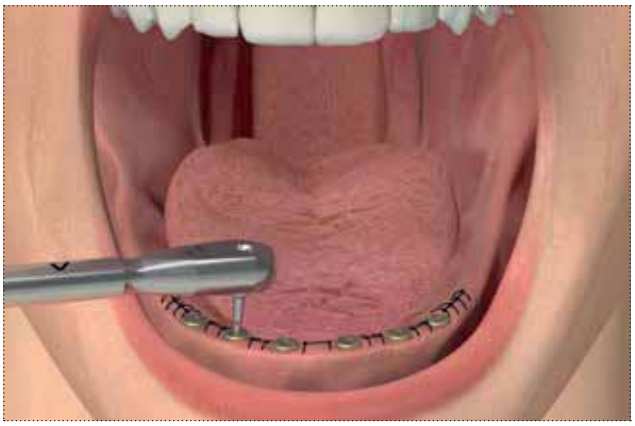
Soft tissues conditioning with Prama IN healing abutment - single crown

Healing abutment must be inserted using screwdrivers from the HSM series, not exceeding a tightening torque of 8–10 Ncm.

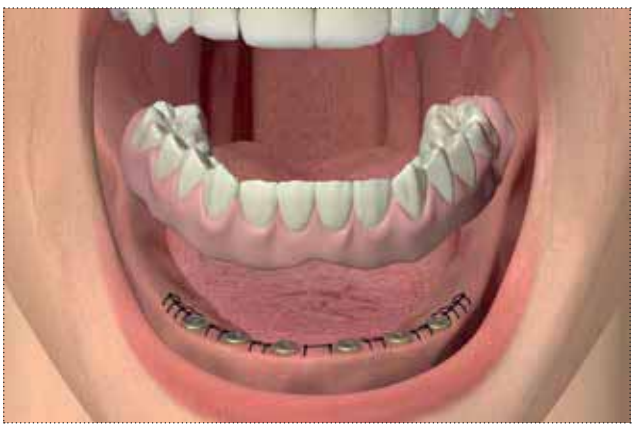
During the healing period of the soft tissues, the aesthetics, where necessary, can be mantained luting a Mariland bridge to the adjacent teeth, to avoid applying loads to the healing abutment and consequently to the implant.

Soft tissues conditioning with with Prama IN healing abutments - full arch

Healing abutments must be inserted using screwdrivers from the HSM series, not exceeding a tightening torque of 8–10 Ncm.



In case of screw retained or cemented full-arch prostheses, soft tissues can be conditioned using the healing abutments of the same size of the posts to be used. Healing abutments can be covered during the healing period with a properly loaded orverdenture over the implants, relined with a soft material.



Soft tissues conditioning with Prama IN healing abutment in REEF resin - single crown

Healing abutment must be inserted using screwdrivers from the HSM series, not exceeding a tightening torque of 8–10 Ncm.

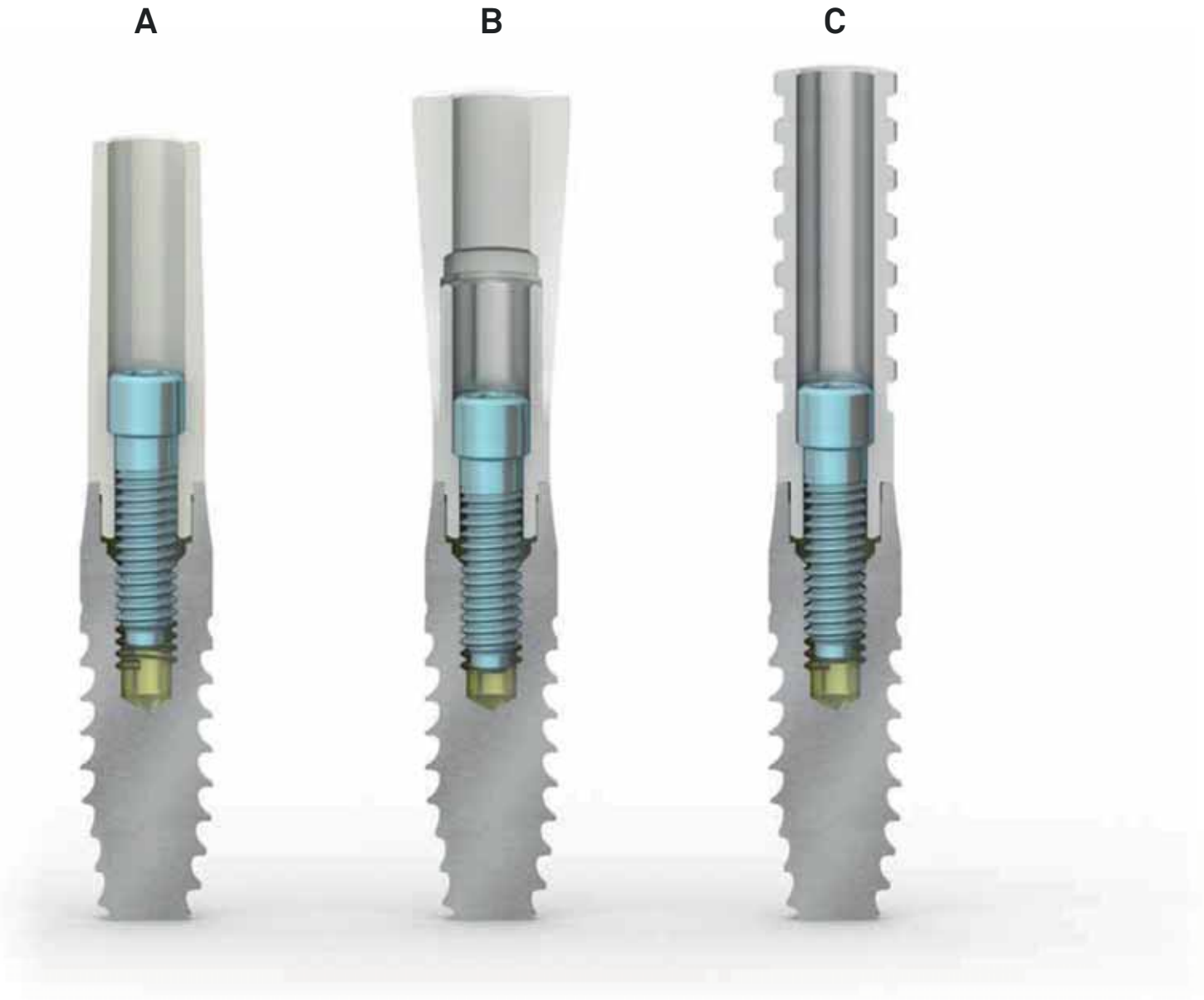
Important warning
It is always advisable to prepare the healing abutment outside the oral cavity, tightening it to an analog if necessary, to avoid vibrations to compromise the implant primary stability, especially in immediate loading cases.

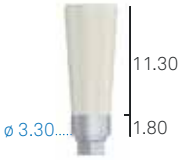
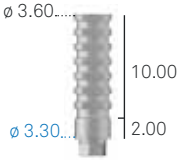
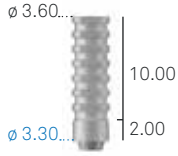
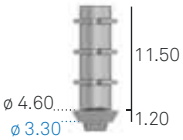
In the oral cavity, model the healing abutment according to the available space.

Important warning
In case of screw retained or cemented full-arch prostheses, soft tissues can be conditioned using properly prepared healing abutments. Healing abutments can be covered during the healing period with a properly loaded orverdenture over the implants, relined with a soft material.

Soft tissues conditioning with temporary posts

Temporary posts can also be used as an alternative to conventional healing abutments for soft tissue conditioning, depending on the adopted prosthetic protocols. Temporary posts in REEF resin (**img. A**) are characterized by a special nanostoichiometric conformation that ensures a high capacity of resistance to bacterial attack which lasts over time and makes the adherence of plaque more difficult, facilitating the healing phase.
Simple temporary posts in PEEK with a Gr. 5 titanium base (**img. B**) are ideal for supporting single cemented crowns. The PEEK resin is extremely simple to use chairside, permitting easy relining and construction of the morphology restoration.
Simple temporary posts in Gr. 5 titanium (**img. C**) have been studied to provide a resistant support both in case of single crowns and multiple rehabilitations or full arch. The connection is provided with a hexagon in the engaging version for single crowns and it is not indexed in the non engaging version for multiple rehabilitations and full arch.



description	code	
Temporary posts in REEF resin Engaging Standard fixation screw included	**A-PPF-330-EX**	
Temporary posts in REEF resin Non engaging Standard fixation screw included	**A-PPF-330**	
Simple temporary posts in PEEK with a Gr. 5 titanium base Engaging Standard fixation screw included	**A-MPSC-330**	
Simple temporary posts in Gr. 5 titanium Engaging Standard fixation screw included	**A-MPSCI-330-EX**	
Simple temporary posts in Gr. 5 titanium Non engaging Standard fixation screw included	**A-MPSCI-330**	
Simple temporary posts in Gr. 5 titanium Non engaging Emergenza anatomica Standard fixation screw included	**A-MPSA-330**	
Single pack Pack of 10 pieces Standard fixation screw Supplied with the temporay posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10**	

Recommended torque for temporary posts in REEF resin: 8-10 Ncm.
Recommended torque for temporary posts in PEEK with a Gr. 5 titanium base: 20-25 Ncm.

See technical characteristics of Gr. 5 titanium, REEF resin and PEEK on pages 238 and 239.

Healing phase and soft tissues conditioning using temporary B.O.P.T. post in REEF resin - single crown

For the frontal sectors, where the spaces are limited but the need for an aesthetic temporary post is even greater, B.O.P.T. temporary posts in REEF resin are available with a reduced size, on which a moulded prosthesis made in the laboratory can be easily fixed chairside.

Avvertenza importante
In the case of a canine, as showed in the following sequence, it is necessary to reduce the finite element to prevent it causing occlusal interference when inserted in the mouth.

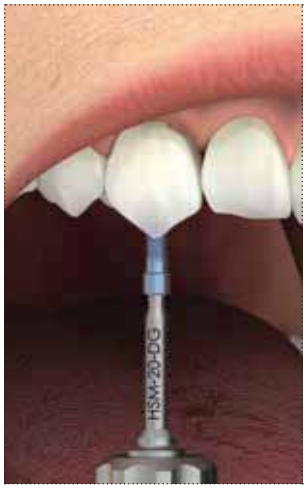
Tighten the temporary B.O.P.T. post in REEF resin with a repositioning hexagon onto the implant with the specific supplied screw, using the most suitable driver of the HSM series.
Leave the temporary post initially at the original length.

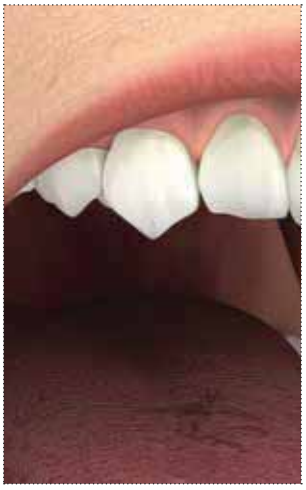
Insert on the B.O.P.T. temporary post a pre-made pierced crown made in the laboratory so as to allow it to slide easily on the cylinder body in resin.

Fix with resin the pre-made crown to the B.O.P.T. temporary post in the occlusal margin. Wait for the polymerization according to the times as indicated by the manufacturer.

Once polymerization is completed remove the two parts, now joined, reposition them on an implant analog and proceed with the resin filling of the whole internal space left between the pre-made crown and the B.O.P.T. temporary post. Finish the temporary screw retained prosthesis both in occlusal portion, eliminating the excess of the temporary post, and in the apical portion, according to the shapes of the emergence profiles.

Screw the temporary prosthesis with the supplied screw and a screwdriver of the HSM series. The recommended torque must not exceed 8-10 Ncm. The temporary crown will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.

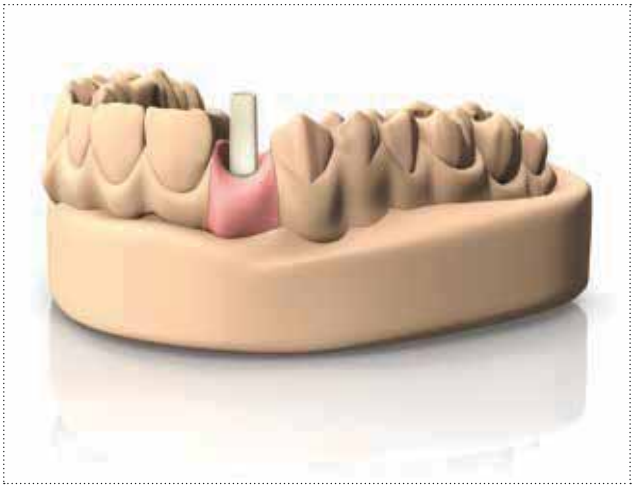




Temporarysingle screw retained rehabilitation - indirect method

The fabrication of the temporary prosthesis can take also place in the laboratory, on the model.

Insert the B.O.P.T. temporary post in REEF resin on the model.

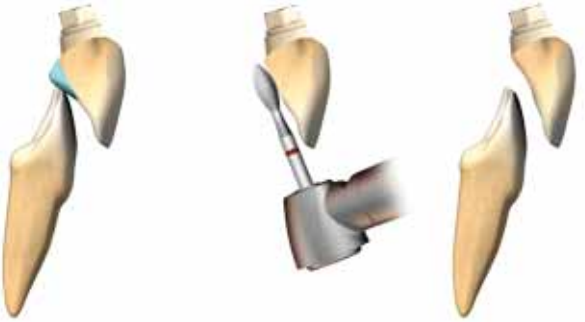


Reduce the post to a size compatible with the patient's vertical dimension with an abrasive disk.

Produce the screw retained crown according to the traditional procedures.

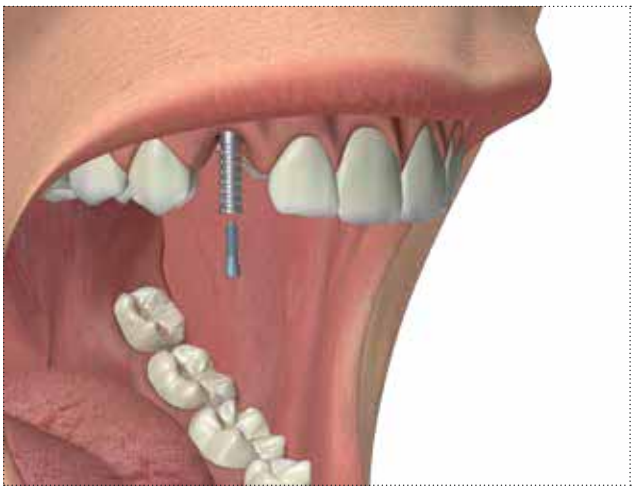
Reduce the finished element, to prevent it causing occlusal interference when it is inserted in the patient's mouth.

Important warning
The recommended tightening torque is 8-10 Ncm. It is recommended to use new screws for tightening in the mouth.

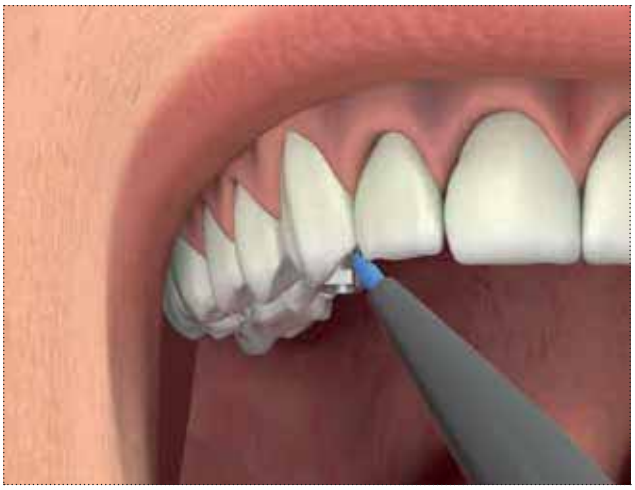


Temporary single screw retained rehabilitation with Simple titanium post

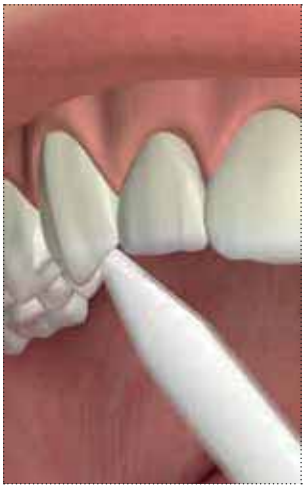
Remove the surgical cover screw or the healing abutment to expose the implant connection. Choose an engaging Simple temporary post in Gr. 5 titanium and tighten it to the implant, leaving it initially at the original length. The recommended torque is 8-10 Ncm.



Insert a pre-made crown produced in the laboratory pierced so as to allow it to slide easily on the body of the post. Mark the palatal and vestibular margin of the temporary crown, so as to reduce the titanium sleeve appropriately.

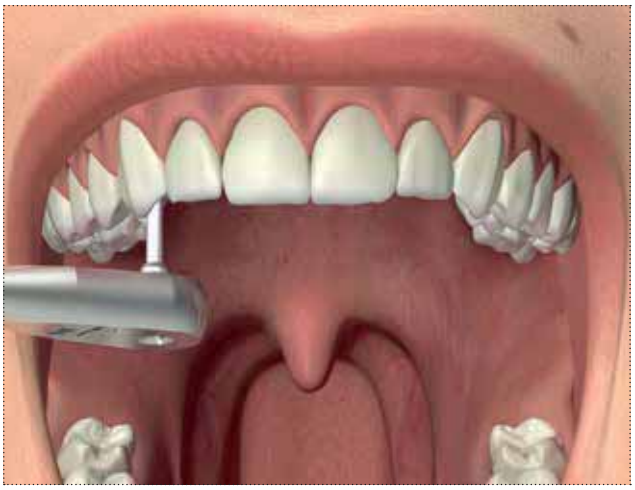


Remove the pre-made crown and unscrew the post. Screw it onto an analog and cut it at the marked height, using an abrasive disk. Reposition the temporary post on the implant, tightening the screw at 8-10 Ncm, and secure the crown in the desired position using resin.

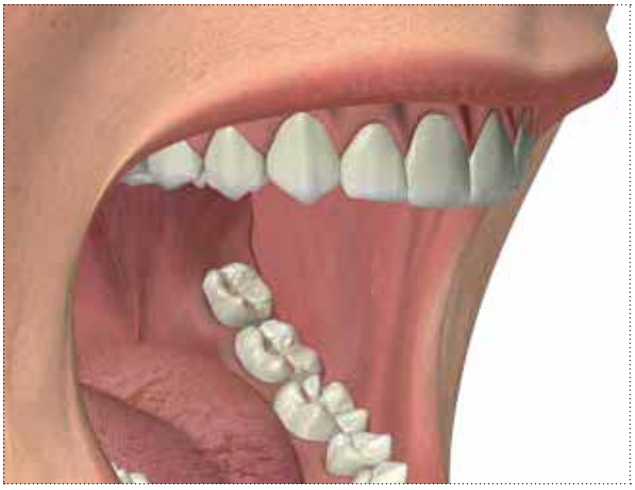


Remove the crown fixed on the post from the patient's mouth to fill with resin the crown cavity, waiting for polymerization as idicated by the instructions.
Then, finish the margin removing all the roughness.

When polymerization is complete, tighten the temporary post to the implant, taking care to keep the flaps of soft tissue away from the connection during inserting procedures. The temporary post must be tightened with the respective screw and a screwdriver from the HSM series. The recommended torque is 20–25 Ncm.

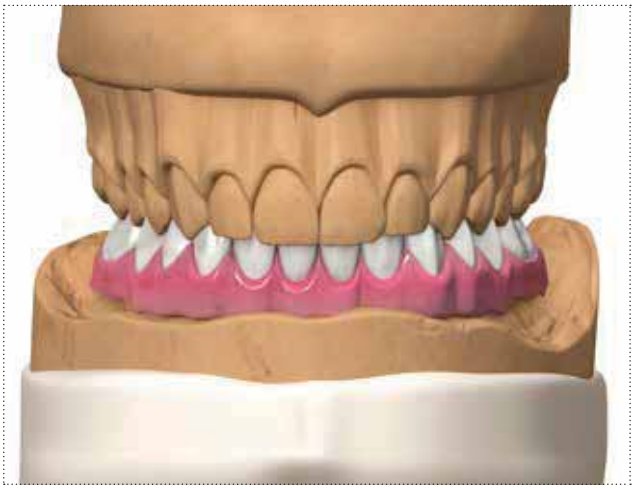


Insert teflon, gutta-percha or soft cement into the screw hole of the Simple temporary post and close the top with resin or a composite material to preserve the head of the screw. The temporary crown will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.

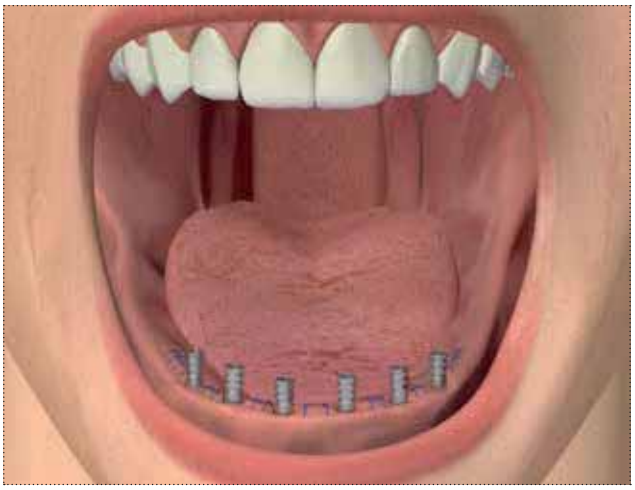


Simple technique for the production of a temporary resin prosthesis

Prepare a diagnostic wax-up of the edentulous arch on the preliminary model to functional and aesthetic aspects to be studied.
Reduce the height of the Simple posts in accordance with the vertical dimension defined by the wax-up.
When working with preassembly on silicone masks, regulate the bite with a silicone rim.

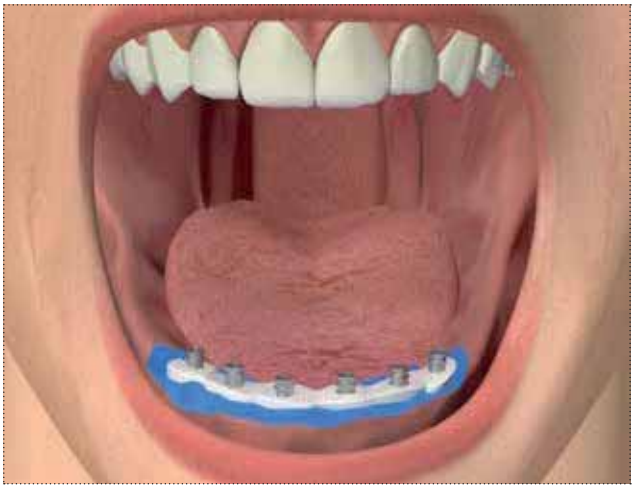


Screw the Simple posts onto the implants just inserted and suture the flaps around them.



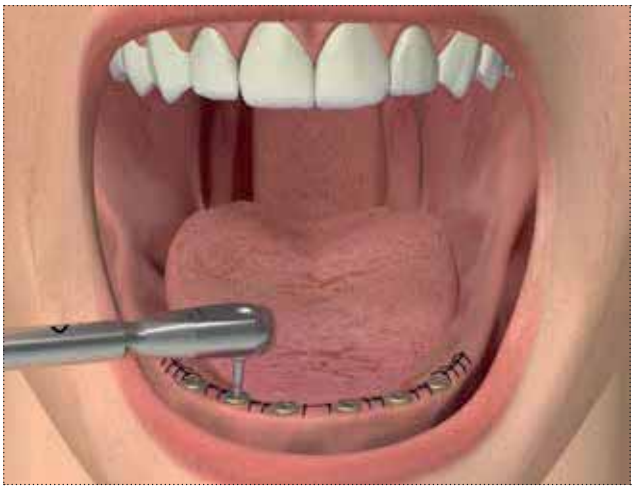
Fit a silicone dam around the bases of the Simple posts and fix them together with a self-polymerizing resin, so as to obtain a repositioning key.
If preferred, the posts can also be fixed to a repositioning plate prefabricated in the laboratory.

Important warning
Take great care to scrupulously respect the resin hardening times indicated by the manufacturer, to avoid distortions and/or contractions after the removal of the repositioning key from the patient's mouth.

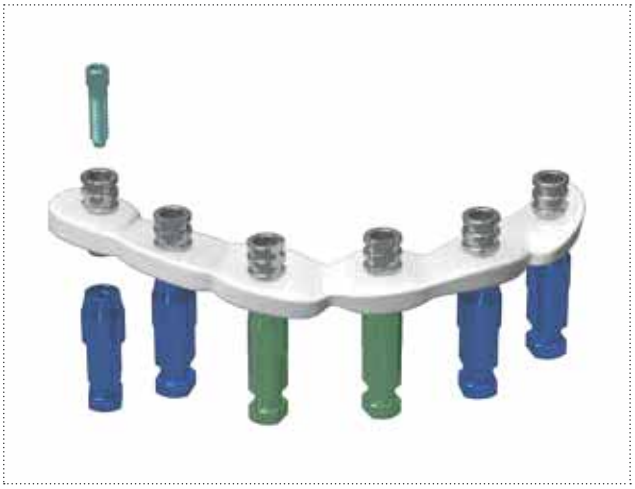


Determine the intermaxillary relationship between the upper arch and the Simple posts with a silicone rim.

Unscrew the Simple posts and fit the healing abutments until the temporary prosthesis is available.



Screw the respective implant analogs onto the Simple posts fixed together.



Insert the entire assembly into the intraoperative silicone bite block.
Suitably positioned in the articulator, the block makes it possible to complete the lower model with the three-dimensional position of the implants.

Note: this procedure can be accomplished either by casting a new model starting from the repositioning key fitted into the articulator, or by using the single model method, using the preliminary model and repositioning the analogues screwed onto the repositioning key.

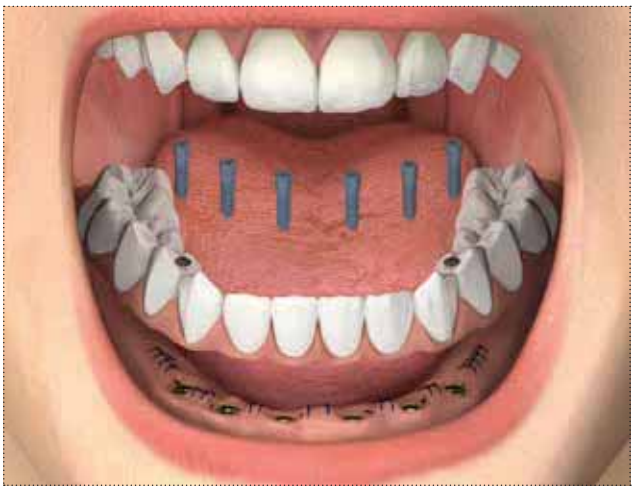
Incorporate the resin repositioning key in the diagnostic wax-up. In the case of a silicone mask, reposition the teeth used in preassembly inside their respective recesses, and pour the resin.

Important warning
It is advisable to suitably model and polish the emergence profiles of the Simple posts so as to obtain optimal conditioning of soft tissues during the healing phase.

Remove the temporary prosthesis from the model.

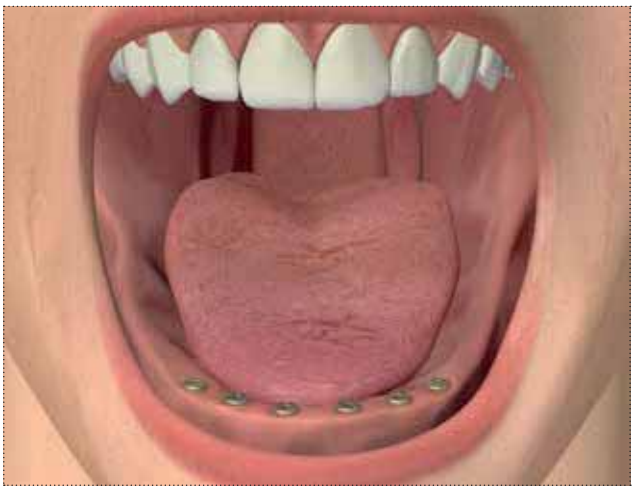
Screw the temporary Simple prosthesis into the mouth, checking its passivation and the occlusal relationships.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



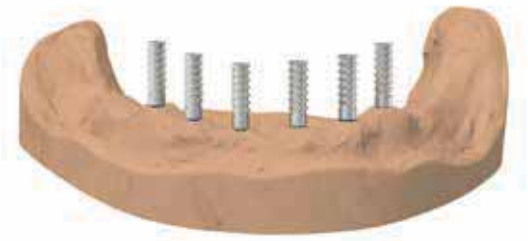
Simple technique for a reinforced structure

After taking the post-operative impression (see page 42), and while waiting for the prosthesis to be available, tighten the healing abutments onto the implants, choosing appropriate height.



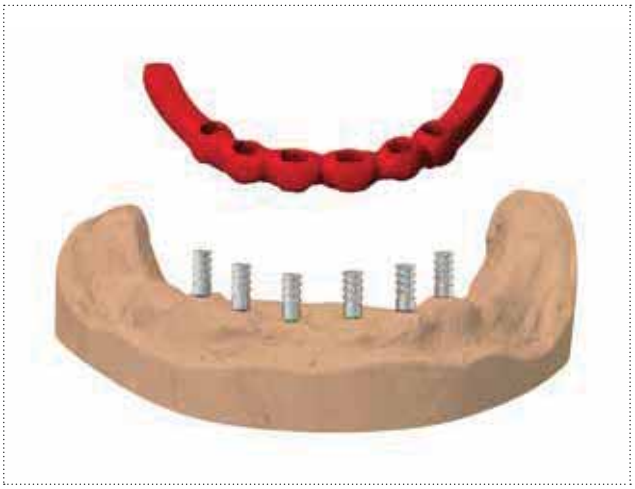
On the fabricated model tighten the Simple titanium posts with the specific screwdriver of the HSM series.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

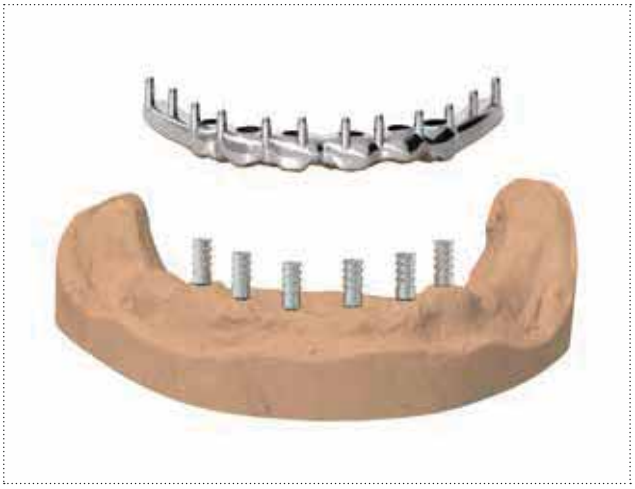


Reduce the Simple posts to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.

Model the prosthesis reinforcement structure with wax or resin using normal methods and model it around Simple posts.

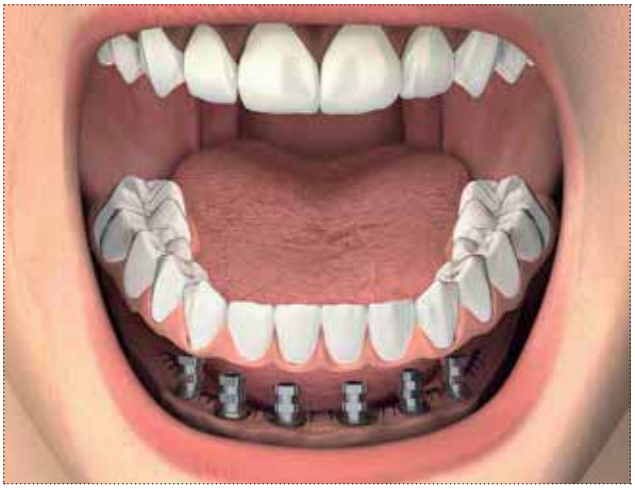


Proceed with the production of the metallic structure using normal methods. Test the structure on the model to check its complete passivity and correct perforation for the Simple posts. Complete the pink and white aesthetic part of the prosthesis.



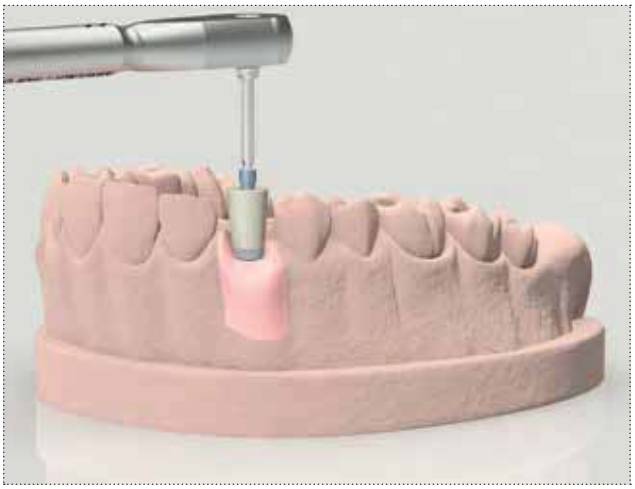
Tighten the Simple posts into the mouth, respecting the positions defined by the laboratory. Test the temporary prosthesis, checking its passivation and occlusal relationships, and proceed with definitive luting.
Trim the base of the temporary prosthesis and screw it back into the patient's mouth, using a tightening torque of 20–25 Ncm. Cover the screw holes with a material that can be removed by the operator.

Note: if it is not chosen to use a reinforced structure, it is possible to use the existent patient's overdenture.
Reline the prosthesis and pierce it at the positions of the implants, then lute the structure onto the posts.



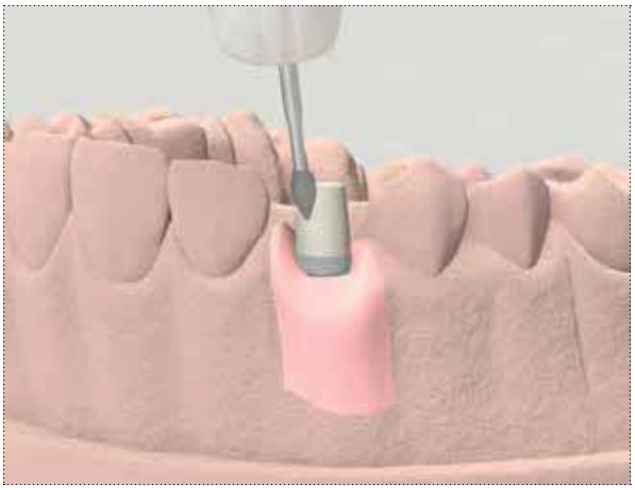
Temporary single cemented rehabilitation on a Simple post in PEEK with a titanium base

Screw the Simple temporary post in PEEK of the chosen emergence into the patient's mouth or on the model using a screwdriver from the HSM series. The tightening torque must not exceed 8–10 Ncm. The palatal and the vestibular margin must be marked if tightened directly into the patient's mouth.

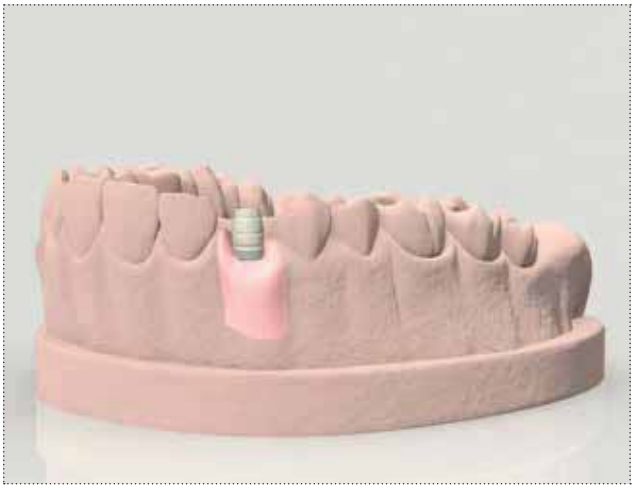


Important warning
It is always advisable to mill the post outside the oral cavity, screwing it on the model or even to an analog, to prevent vibrations from compromising the primary stability of the implant, especially in case of immediate loading.

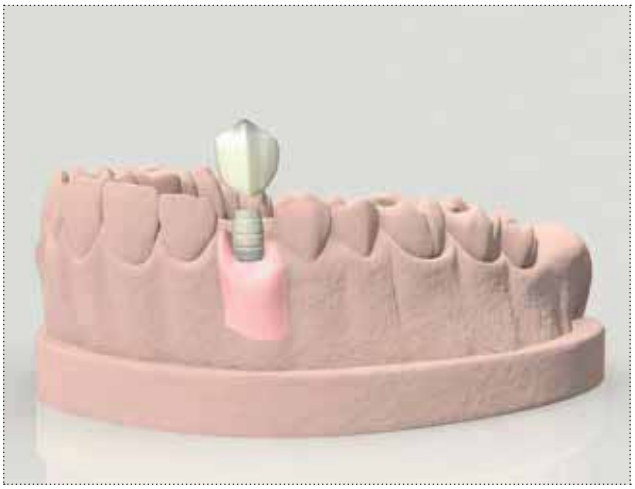
Reduce the height and diameter of the post, taking care to leave the screw head unaltered, to avoid the risk of modifying it and causing mechanical problems during screwing or unscrewing procedures.



Create holes or retentive grooves on the PEEK body of the post to facilitate the cementation of the temporary crown.



Define the morphology, volume and occlusion, preparing a wax-up and creating the temporary crown using the preferred method.



Screw the post in PEEK onto the implant using the appropriate screwdriver from the HSM series.
The tightening recommended torque is 20–25 Ncm.
Cover the screw hole and cement the crown on the post.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

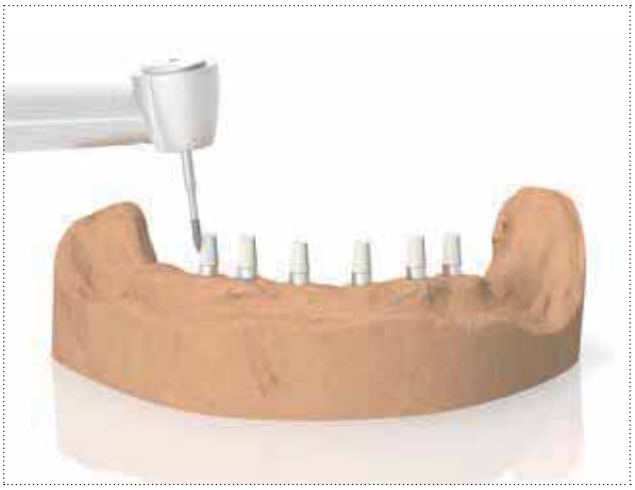
The temporary crown will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.

Temporary full arch cemented rehabilitation on Simple posts in PEEK with a titanium base

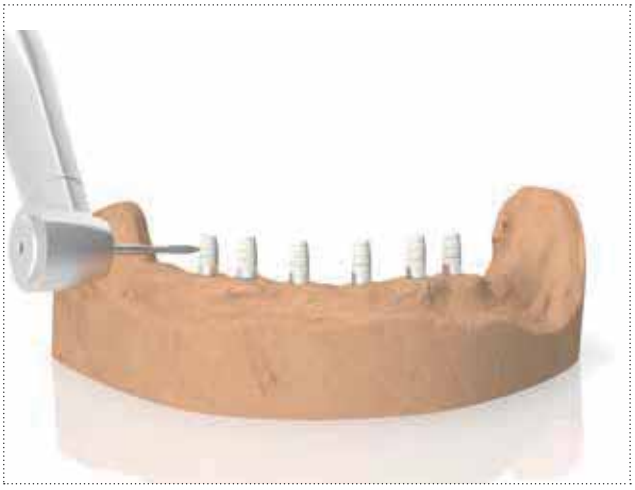
Tighten the Simple temporary posts in PEEK into the patient's mouth or onto the model using screwdrivers from the HSM series. The tightening torque must not exceed 8–10 Ncm. The palatal and the vestibular margin must be marked if tightened directly into the patient's mouth.

Important warning
It is always advisable to mill the post outside the oral cavity, screwing it on the model or even to an analog, to prevent vibrations from compromising the primary stability of the implant, especially in case of immediate loading.

Reduce the height and the diameter of the posts, taking care to leave the screw heads unaltered to avoid the risk of modifying them and causing mechanical problems during screwing or unscrewing procedures.



Create holes or retentive grooves on the PEEK body of the posts to facilitate the cementation of the temporary prosthesis.

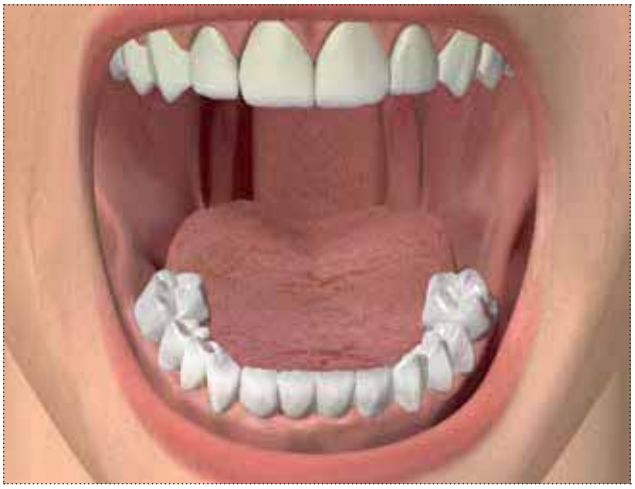


Define the morphology, volume and occlusion, after preparing a diagnostic wax-up and creating the temporary prosthesis using the preferred method.

Screw the posts in PEEK onto the implants using the appropriate screwdriver from the HSM series.
The tightening recommended torque is 20–25 Ncm.
Proceed to cementation of the structure on the posts taking care to remove all the excess cement.

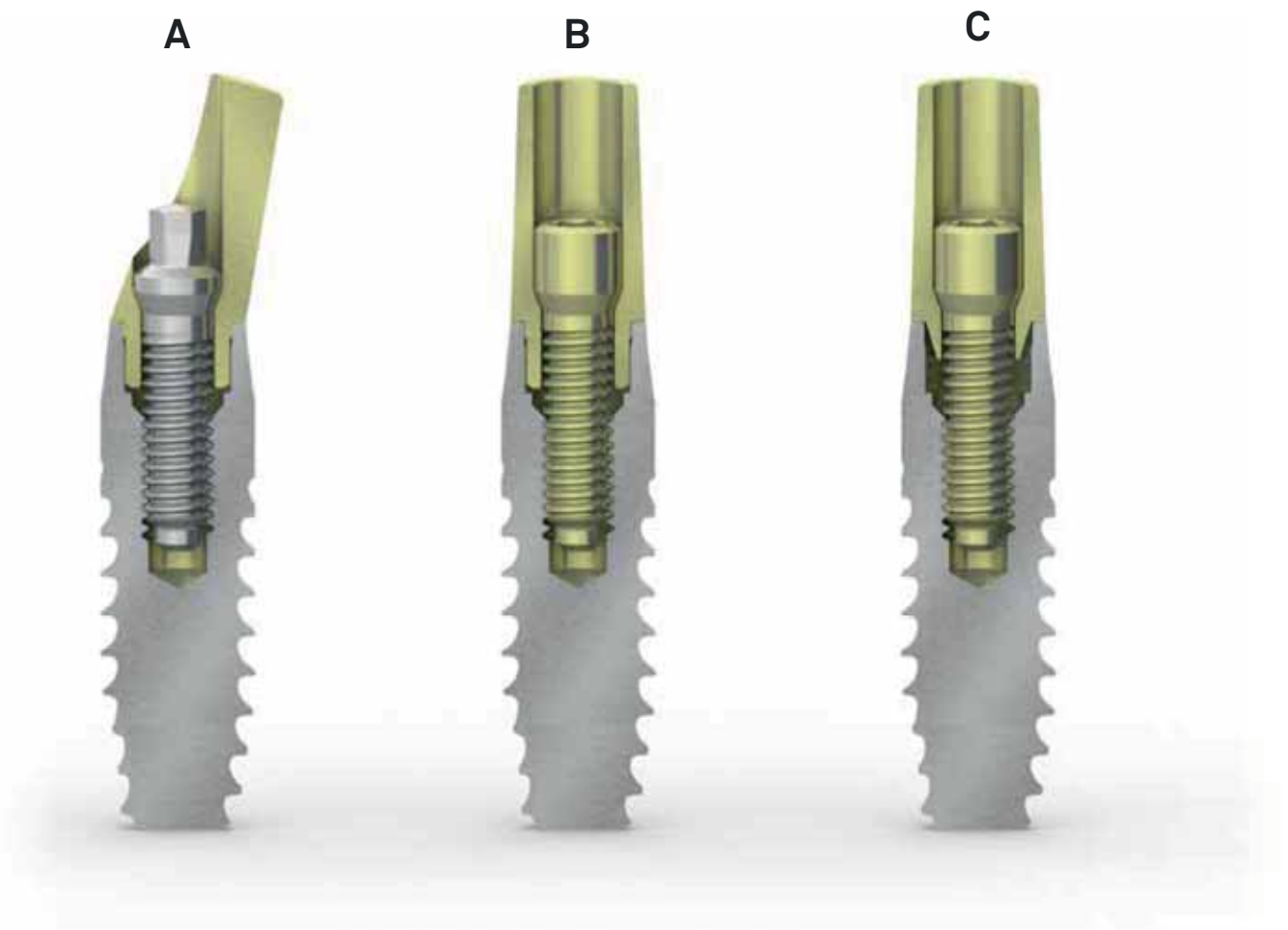
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

The temporary post will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the gingival tissues that will later receive the definitive prosthesis with excellent aesthetic results.

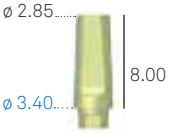


Definitive rehabilitation with pre-made posts

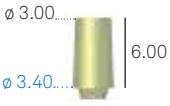
The straight and angled pre-made posts are made of Gr. 5 titanium and are subjected to a controlled passivation process that changes their surface colour: the result is a characteristic golden pale yellow colour. This colour is obtained through an oxidation process and, therefore, there is no type of coating, so it ensures the use of a highly biocompatible and highly aesthetic surface, especially if it is used with ZirTi Gold UTM implants.
The tightening of angled posts (**img. A**) is made with a specific Full Head screw with conical support, which occupies a smaller room compared to the head of the standard screws, allowing greater customization possibilities in case of special angulations.
The straight posts, available in two heights, either with a repositioning hexagon (**img. B**) indicated for single and multiple cemented rehabilitations, and without hexagon (**img. C**) indicated for screwed retained protocols. Both the types are tightened with fixation screws with conical support with a standard head, using the screwdrivers of the series HSM.
Internal evidence have shown that the conical support increases unscrewing resistance by 20%.



Straight and angled pre-made posts

description	code	
Pre-made straight posts Engaging H. 6.00 mm Fixation screw with conical support included	**L-MD-340-6**	
Pre-made straight posts Engaging H. 8.00 mm Fixation screw with conical support included	**L-MD-340-8**	
15° angled pre-made posts Engaging H. 6.00 mm Full Head screw included	**L-MA15-340**	
Single pack Pack of 10 pieces Fixation screw with conical support Supplied with straight pre-made posts, it can also be ordered separately as a spare	**L-VMS-180** **L-VMS-180-10**	
Single pack Pack of 10 pieces Full Head screw Supplied with angled pre-made posts, not supplied with straight pre-made posts*	**L-VM-180** **L-VM-180-10**	

Conical pre-made posts

description	code	
Conical pre-made posts Non engaging H. 6.00 mm Fixation screw with conical support included	**L-MD-340-6-ROT**	
Conical pre-made posts Non engaging H. 8.00 mm Fixation screw with conical support included	**L-MD-340-8-ROT**	
Single pack Pack of 10 pieces Fixation screw with conical support Supplied with conical pre-made posts, it can also be ordered separately as a spare	**L-VMS-180** **L-VMS-180-10**	

Recommended torque for pre-made posts: 20-25 Ncm.

** The fixation screws with Full Head technology (L-VM-180) must be tightened with the appropriate drivers for screws with Full Head technology contained in the Prama surgical kit.*

Important warning

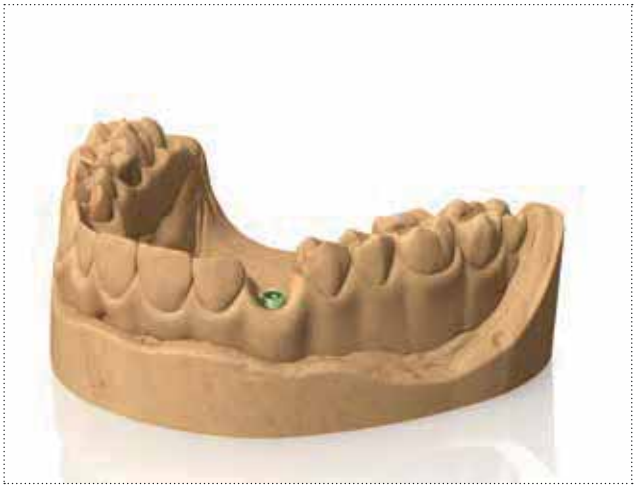
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium on page 238.

Definitive single cemented rehabilitation on pre-made posts

Screw the Prama transfer onto the analog with the specific screwdriver of the HSM series.

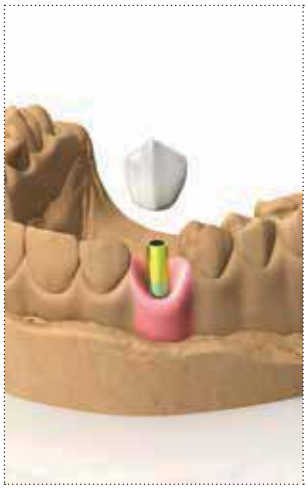
Box the impression with wax or resin and develop the model as usual; the Prama analog will reproduce exactly the position of the implant transgingival neck.



Tighten the straight or angled post onto the analog, depending on the prosthetic needs, using the specific screwdriver according to the chosen screw. The recommended torque must not exceed 8-10 Ncm.

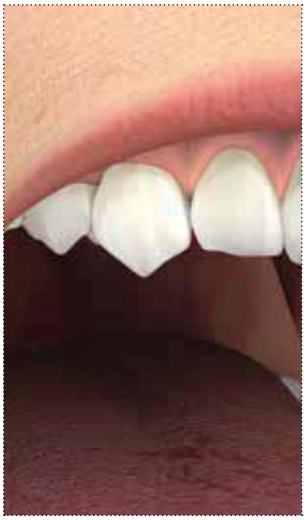
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

Once the models are put together in the articulator, define the height of the post in relation with the space with the antagonist. At the same time define the wanted morphology of the soft tissues modelling the gypsum and recreating a new emergence profile with the dedicated silicone for the gum simulation.
Define shape, volume and occlusion of the post and fabricate a crown according to the chosen method.



Tighten the post onto the implant, using the proper supplied screw and the proper screwdriver of the HSM series.
The recommended torque is 20-25 Ncm.

Cement the crown on the post. The gums will adapt on the morphology of the crown recreating the emergence profiles previously planned.



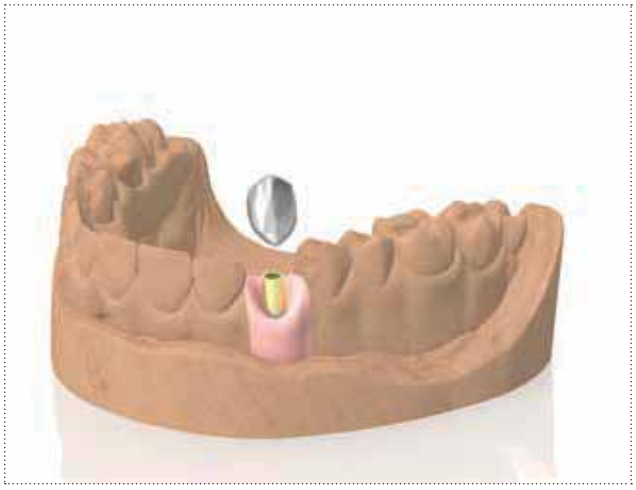
Definitive single rehabilitation with pre-made conical post: luting technique

Insert a pre-made conical post on the precision model, choosing the correct height among those available on page 71. Tighten the post applying a maximum torque of 8–10 Ncm.

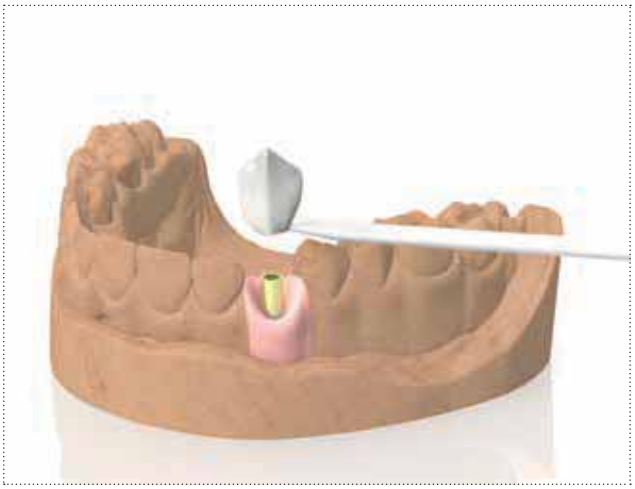
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

Model the definitive aesthetic crown in castable resin around the conical post.

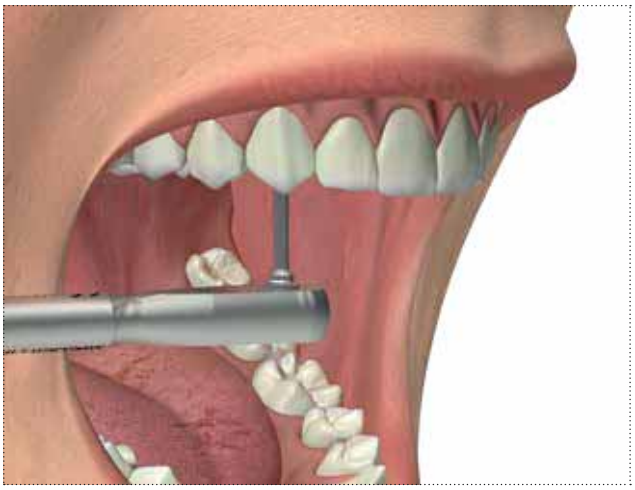
Proceed with the casting as usual or by CAD CAM technique. Test the crown on the model to check that there is no roughness that could obstruct its correct positioning.



Ceramize the final crown using normal methods then proceed to luting on the post positioned on the model, waiting for the polymerization to be completed, as indicated by the manufacturer.



Once the polymerization is completed, tighten the crown onto the implant using the supplied screw and a screwdriver of the HSM series.
The recommended torque is 20-25 Ncm.

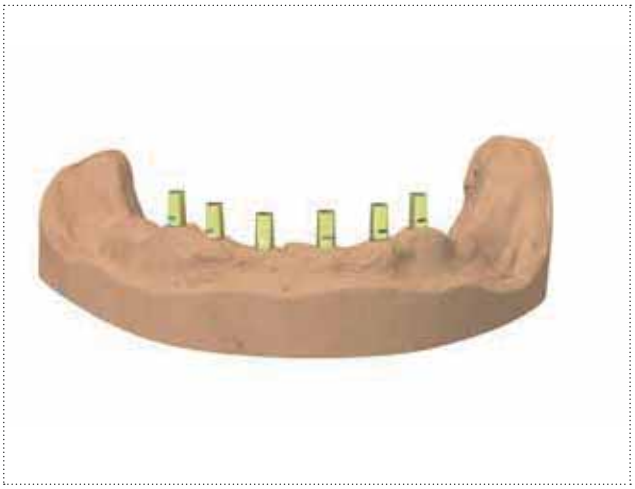


The gums will adapt on the morphology of the crown recreating the emergence profiles previously planned.

Definitive cemented full arch rehabilitation on pre-made posts

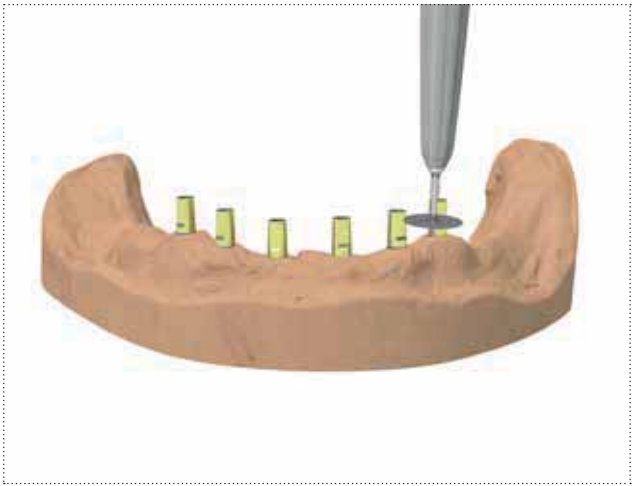
Insert a pre-made post onto every analog on the precision model, choosing the most suitable height and angulation among those available on page 71. Tighten the posts applying a maximum torque of 8–10 Ncm.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



Reduce the height of the posts without altering the screw heads.

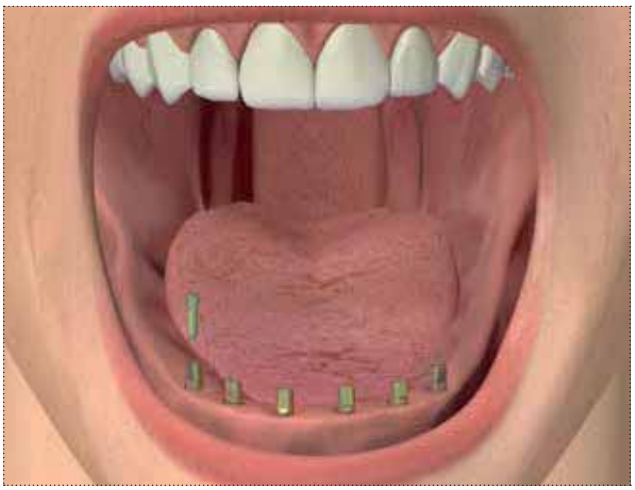
Note: if the implants are disparallel, the use of angled posts and a parallelometer may be appropriate. For more substantial modifications, that might weaken the pre-made posts walls, the use of preparable posts is recommended (see page 81).



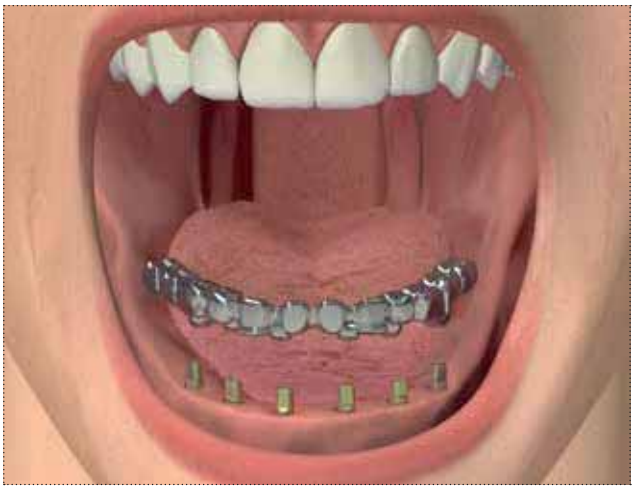
Model the structure in wax or resin, leaving sufficient space for the cement, and proceed to casting or developing using CAD CAM technique. Test the structure on the model to check its passivation.

Important warning
If the structure is not completely passive, even after following the normal checking protocol before casting, adjust it as usual.

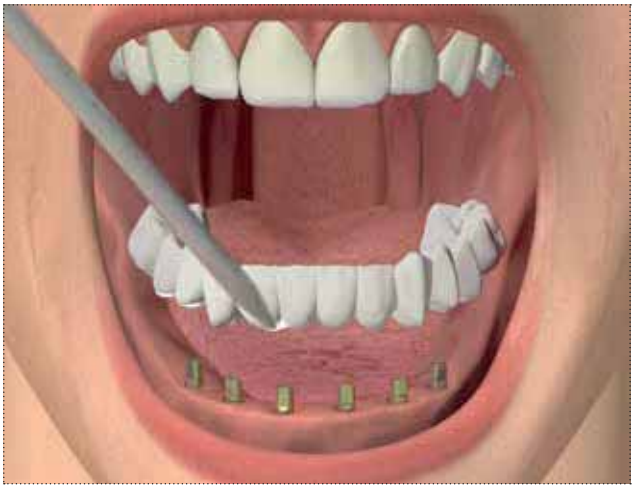
Tighten the modified posts into the patient's mouth, taking care to respect the position of every single element and to keep the same positioning of the non-rotational faces adopted on the model.
Tighten the screws at a torque of 20-25 Ncm with the dynamometric key and a screwdriver of the HSM series.



Perform a test of the metallic structure in the patient's mouth to check for its complete passivation, and if necessary make any further adjustments.

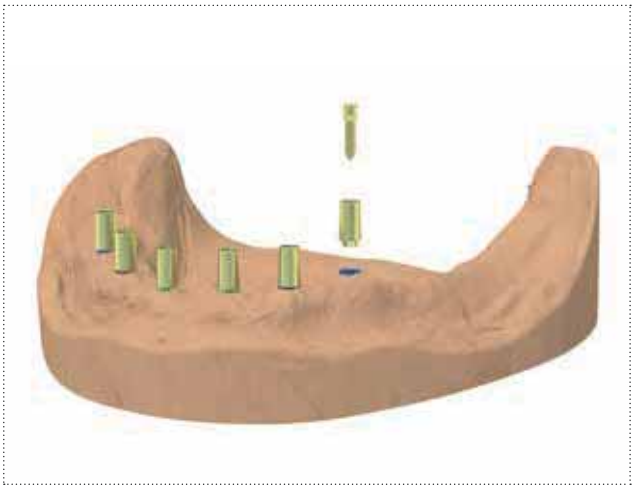


Ceramize the final prosthesis as usual.
Cement the arch on the posts, taking care to remove all the excess cement from margin.

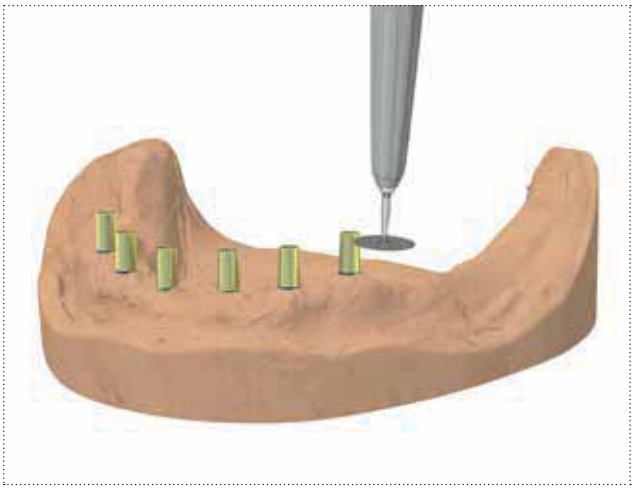


Definitive full arch screw retained rehabilitation on pre-made conical posts

Insert a pre-made conical post onto every analog on the precision model, choosing the most suitable height among those available on page 71. Tighten the posts applying a maximum torque of 8–10 Ncm.



Reduce the height of the posts without altering the screw heads.



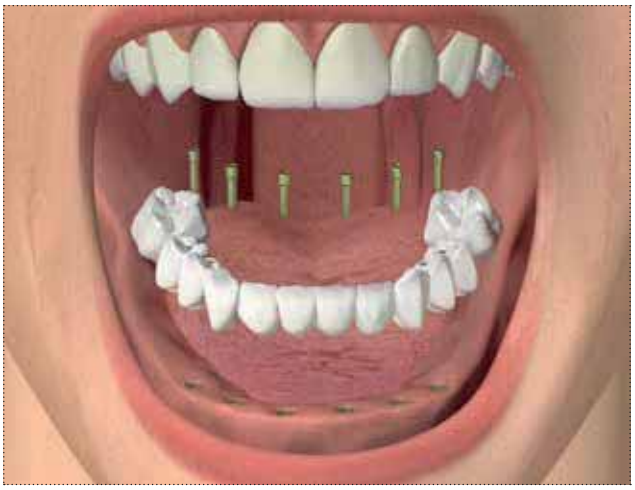
Model the castable structure, which will allow the metal framework of the final prosthesis to be obtained. Create the structure by casting or with CAD CAM technique, paying attention to lean it on the posts on the model. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. If necessary correct any roughness with an appropriate drill.

Important warning
If the structure is not completely passive, even after following the normal checking protocol before casting, adjust it as usual.

Ceramize the final prosthesis as usual.
Then proceed to lute the prosthesis on the posts on the model.

Unscrew the structure composed of the prosthesis and the pre-made posts and proceed to tightening in the patient's mouth. Tighten the screws with dynamometric key applying a torque of 20–25 Ncm and using a screwdriver of the HSM series.

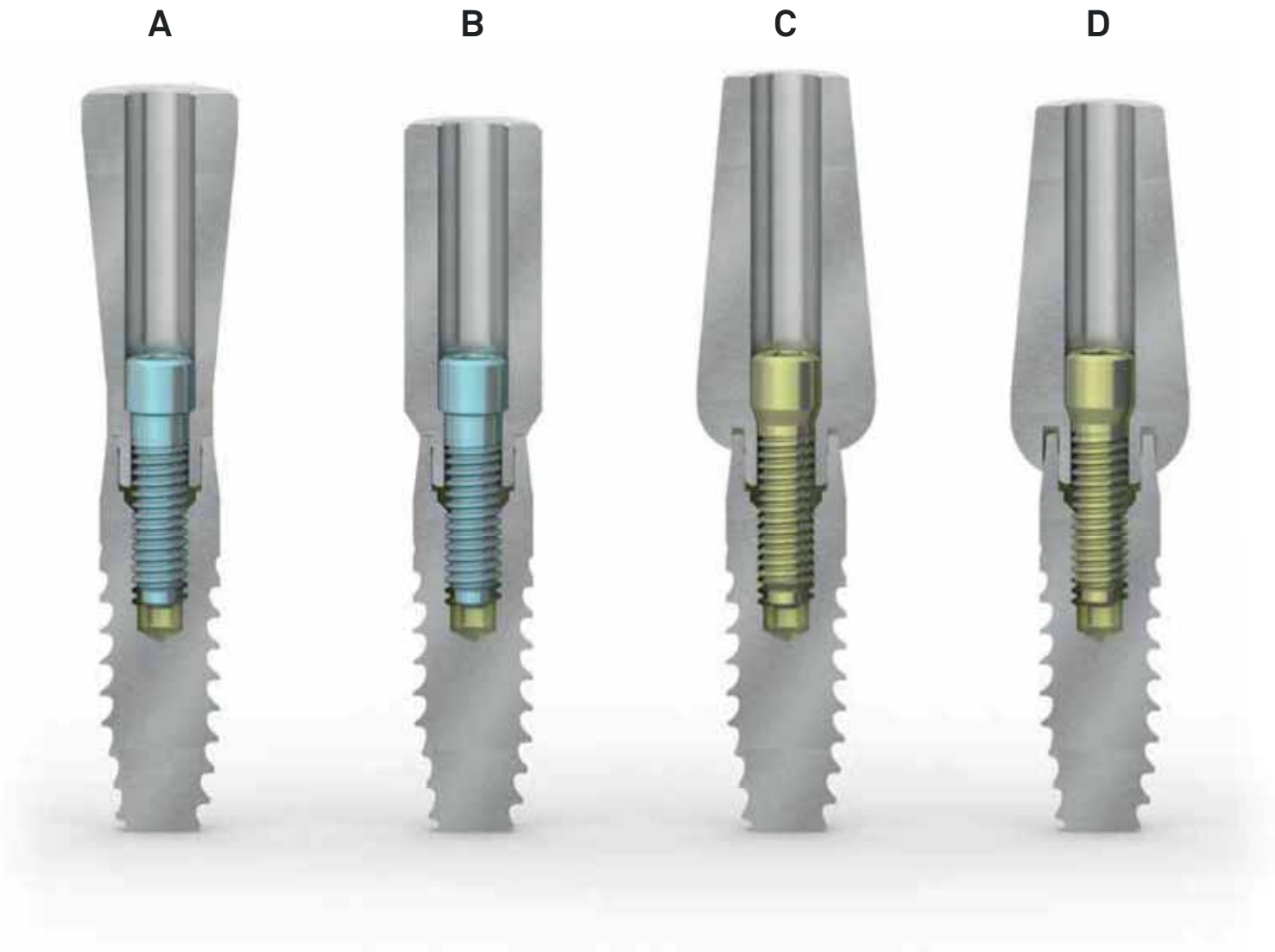
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



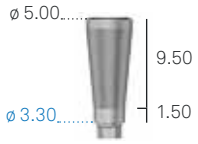
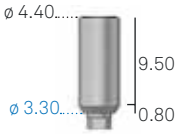
Definitive rehabilitation with preparable posts

Preparable posts are made of Gr. 5 titanium and are designed for cemented protocols, both for single and multiple restorations. They respond to complex anatomical requirements in terms of both prosthetic spaces and implant disparallelism, due to the possibility of being prepared. Preparable posts are available in three different morphologies:

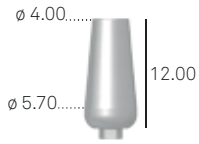
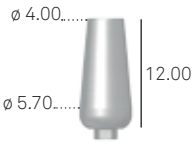
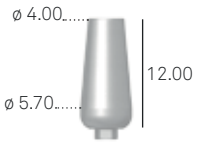
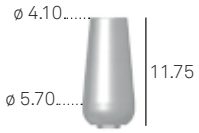
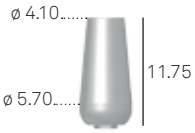
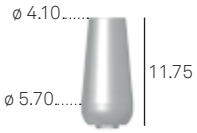
- straight (**img. A**), presenting profile in the shape of an inverted cone, which makes them makes them ideal for angles of up to 10° and small profiles;
- Simple (**img. B)**, whose emergence profile acan be adapted to any anatomy obtained with Simple temporary posts;
- Prama IN (**img. C and D**), available in two different heights of closure on the implant's neck (0.50 mm or 1.50 mm); furthermore, they allow for hybrid modelling with a side of the post with a feather edge morphology and the opposite side where a closing margin can be individuated (see page 82).



Preparable posts

description	code
Standard preparable posts Engaging Straight emergence Standard fixation screw included	**A-MF-330** 
Simple preparable posts Engaging Very wide emergence Standard fixation screw included	**A-MFS-330** 
Single pack Pack of 10 pieces Standard fixation screw Supplied with preparable post, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 

Prama IN preparable posts

ø implant	3.80 mm	4.25 mm	5.00 mm
Prama IN preparable posts Engaging Closing of 0.50 mm Fixation screw with conical support included	**L-MF-380-05** 	**L-MF-425-05** 	**L-MF-500-05** 
Prama IN preparable posts Engaging Closing of 1.50 mm Fixation screw with conical support included	**L-MF-380-15** 	**L-MF-425-15** 	**L-MF-500-15** 
Single pack Pack of 10 pieces Fixation screw with conical support Supplied with preparable posts, it can also be ordered separately as a spare	**L-VMS-180** **L-VMS-180-10** 	Utilizzare L-VMS-180	Utilizzare L-VMS-180
Single pack Pack of 10 pieces Full Head screw Not supplied with preparable posts, available optionally*	**L-VM-180** **L-VM-180-10** 	Utilizzare L-VM-180	Utilizzare L-VM-180

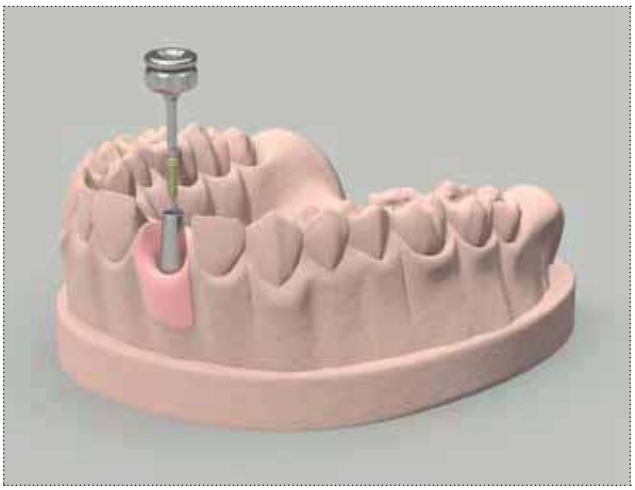
Recommended torque for preparable posts: 20-25 Ncm.

** The fixation screws with Full Head technology (L-VM-180) must be tightened with the appropriate drivers for screws with Full Head technology contained in the Prama surgical kit.*

See technical characteristics of Gr. 5 titanium on page 238.

Definitive single cemented rehabilitation with a Prama IN preparable post

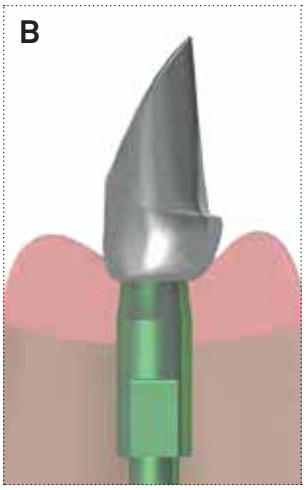
Insert a preparable post on the precision model, choosing among those available on page 81. The illustration shows a Prama IN post. Tighten the posts applying a maximum torque of 8–10 Ncm.



Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

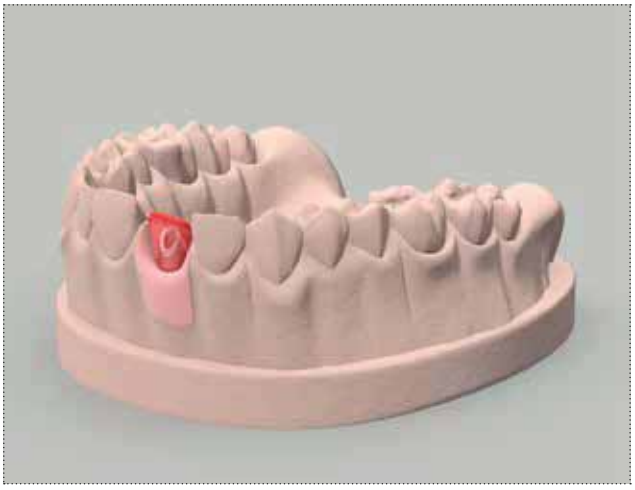
Model the post by reducing it in height and volume, as necessary. (**img. A**).

Note: if a Prama IN preparable post is used, it is possible to produce in the laboratory a margin in the palatal or lingual area of the post while maintaining a feather edge morphology in the vestibular part, as shown in the figure (**img. B**).

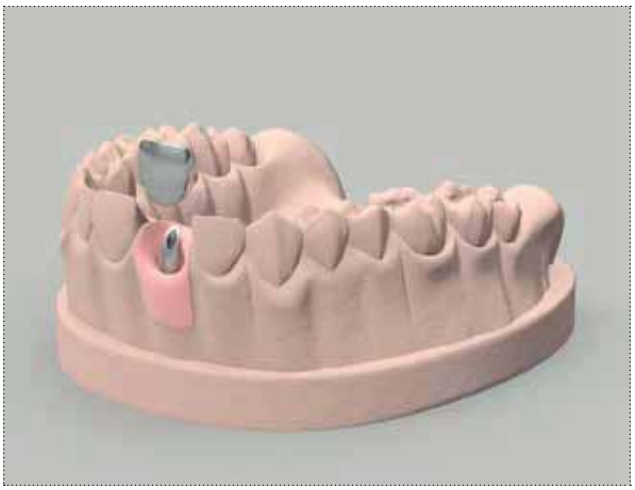


Important warning
If the head of the screw with conical support interferes with the standard head, it is possible to use the Full-Head screw (code L-VM-180).

Model the cap on the post in castable wax or resin, leaving sufficient space for the cement.



Fabricate the cap by casting or using CAD CAM technologies. Test the crown on the model to check that there is no roughness that could obstruct the correct positioning of the cap on the post, and correct it if necessary with a drill. Ceramize the definitive prosthesis as usual.



Position the post in the patient's mouth and tighten it with the supplied screw, applying a torque of 20–25 Ncm.

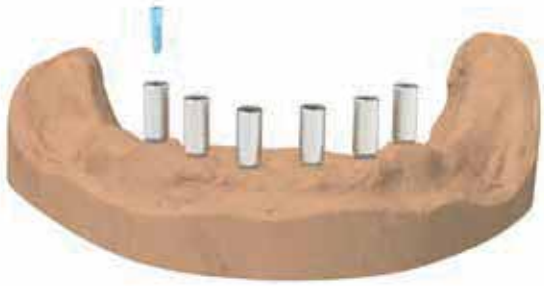
Cover the screw hole and cement the crown on the post, taking care to remove all the excess cement from the margin.

Note: if a Prama IN preparable post with a hybrid preparation is used, it is possible to employ an extraoral cementation technique which consists in applying a layer of cement inside the crown, insert it on a replica of the modelled post in resin and apply a slight pressure so as to remove all the excess cement from the margin. Remove the crown from the replica of the post and clean it from the cement in excess and proceed to intraoral final cementation.

Definitive full arch cemented rehabilitation with Prama IN preparable posts

Insert a preparable post onto each analog on the precision model, choosing among those available on page 81. Tighten the posts applying a maximum torque of 8–10 Ncm.

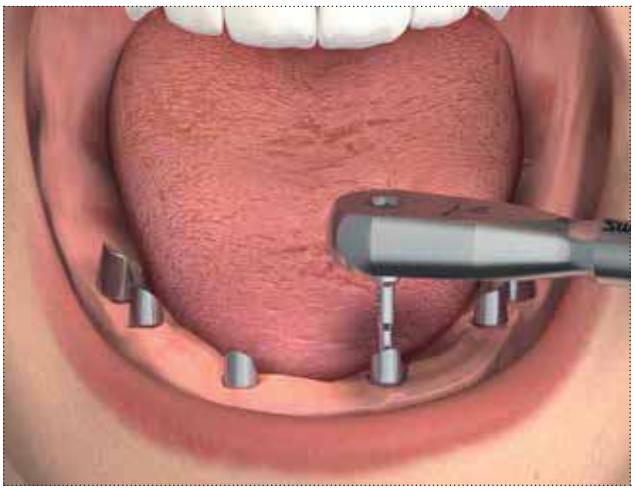
Importan warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



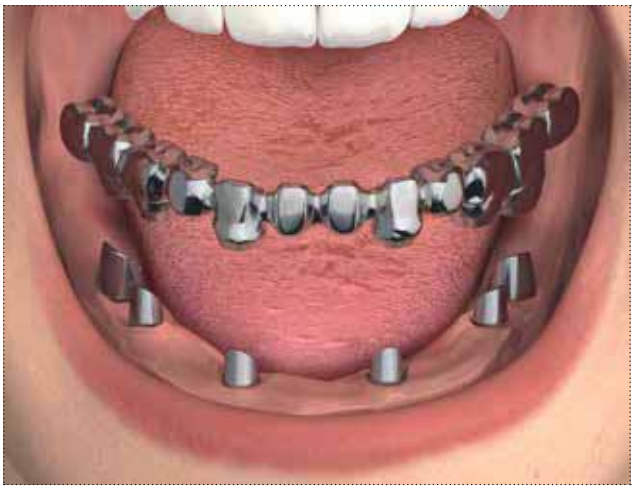
Model the posts by reducing them in height and volume, and correct any disparallelisms if necessary, with the assistance of a parallelometer.

Model the structure in wax or resin, leaving sufficient space for the cement, and proceed to casting or developing using CAD CAM technique. Test the structure on the model to check its passivation.

Tighten the prepared posts into the patient's mouth, taking care to respect the position of every single element, applying a torque of 20–25 Ncm.



Test the truss first in the patient's mouth to check that there is no roughness that could obstruct the correct positioning on the posts, and correct it if necessary with a drill.



Ceramize the final prosthesis as usual.
Cement the truss onto the posts, taking care to remove all the excess cement from the margin.

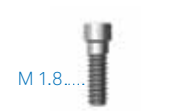
Definitive rehabilitation with Dynamic Abutments

The Dynamic Abutment* post is a patented solution that allows the creation of aesthetic prosthesis onto implants, moving the hole for the fixation screw to a palatal or lingual position, solving disparallelism problems, with a liberty of angulation up to 28°. This is made possible by the synergy between the non engaging castable sleeve on the head of the abutment and screwdriver with its specially designed hexalobular tip, which allows the head of the screw to be engaged even in the presence of extreme angulations.

The Dynamic Abutment is available with a base in cobalt chrome for overcasting and in total castable polymer, in engaging version for single crowns and non engaging for multiple structures.

**Dynamic Abutment posts are medical devices manufactured and patented by Talladium España S.L., Avenida Blondel, 54 3°, 25002 Lleida, Spain. Dynamic Abutment is a registered trademark of this company.*

Dynamic Abutments may not be released for sale in all markets.

description	code
Dynamic Abutment Engaging Cobalt chrome base for overcasting Fixation screw not included	**PD3PKH330/CC** 
Dynamic Abutment Non engaging Cobalt chrome base for overcasting Fixation screw not included	**PD3PKR330/CC** 
Dynamic Abutment Engaging Entirely castable Fixation screw not included	**PD3PKH330/P** 
Dynamic Abutment Non engaging Entirely castable Fixation screw not included	**PD3PKR330/P** 
Fixation screw for Dynamic Abutment Not included, can be ordered separately	**TPDH18L66** 

description	code
Screwdriver for Dynamic Abutment Length 24 mm Must be ordered separately	**DSPDCLH-24** 
Screwdriver for Dynamic Abutment Length 32 mm Must be ordered separately	**DSPDCLH-32** 

Recommended torque for the Dynamic Abutments: 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

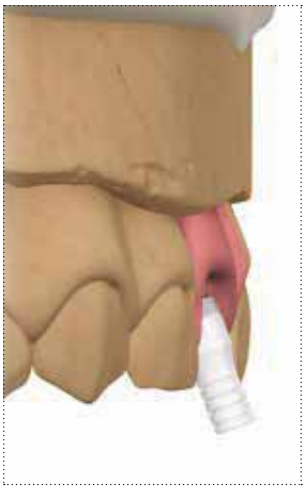
See technical characteristics of PMMA and cobalt-chrome on pages 240 and 243.

Definitive single screw retained rehabilitation with Dynamic Abutment

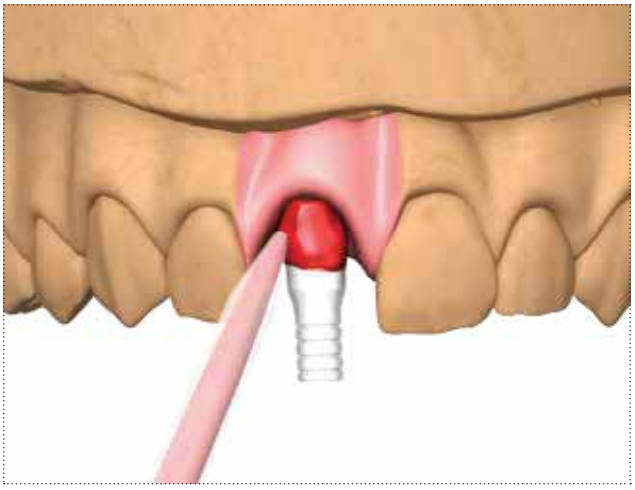
Screw the engaging Dynamic Abutment with a cobalt chrome base onto the analog on the precision model using the specific fixation screw with the screwdriver of the most suitable length between the ones available, of 24 or 32 mm. Apply a maximum torque of 8-10 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity. The fixation screw is not included, it must be ordered separately.

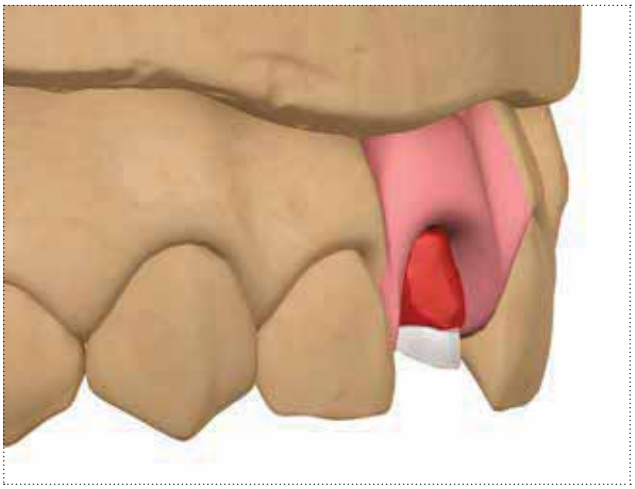
Manually guide the castable rotating portion of the abutment according to the prosthetic axis identified in the treatment plan.



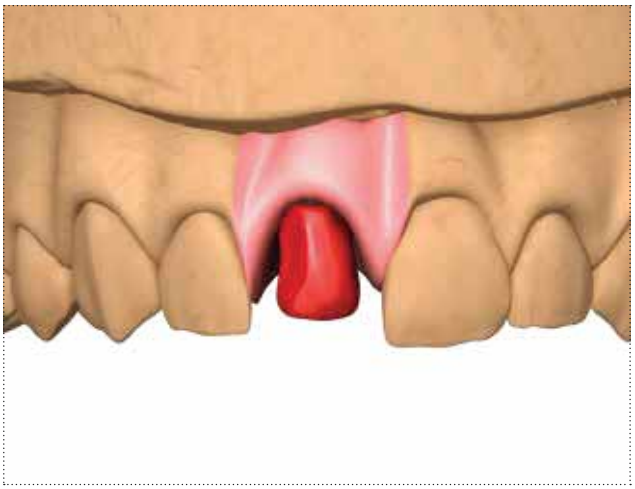
Fix the castable rotating portion in the desidered position with castable resin. If necessary, remove or reduce the metal part to obtain a profile without finishing line.



Reduce the castable sleeve to a size compatible with the patient's vertical dimension with an abrasive disk.

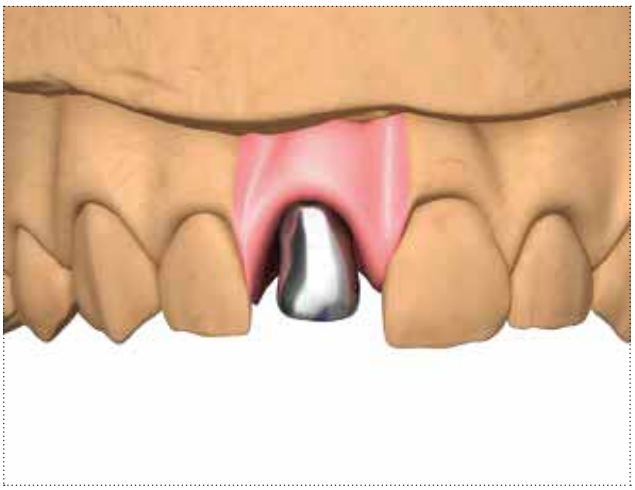


According to the standard protocol, model a crown in wax or resin and unscrew it taking advantage of the specific design of the screwdriver tip.



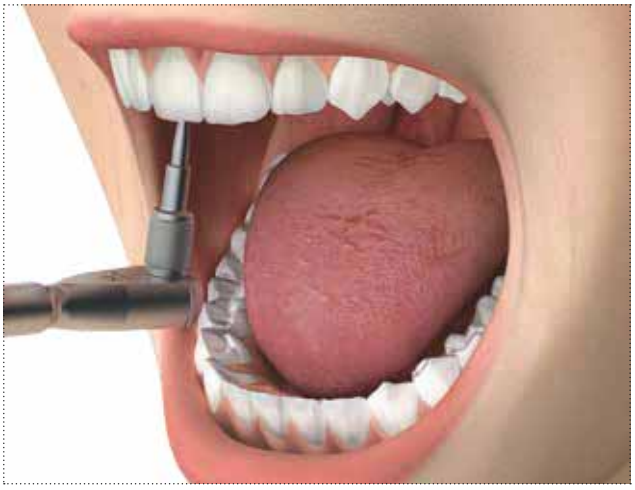
Overcast the structure as usual and finish the base, so as to avoid obstacles for soft tissues adaptation.

Check the crown on the model or in the patient's mounth for possible modifications. Ceramize as usual.



Assemble the dynamometric key (code CRI5) with the screwdriver for right angle and hexagonal connector for ratchet (code AVV-CA-DG-EX) and with the Dynamic Abutment screwdriver of the desired length (code DSPDCLH-24 or DSPDCLH-32).

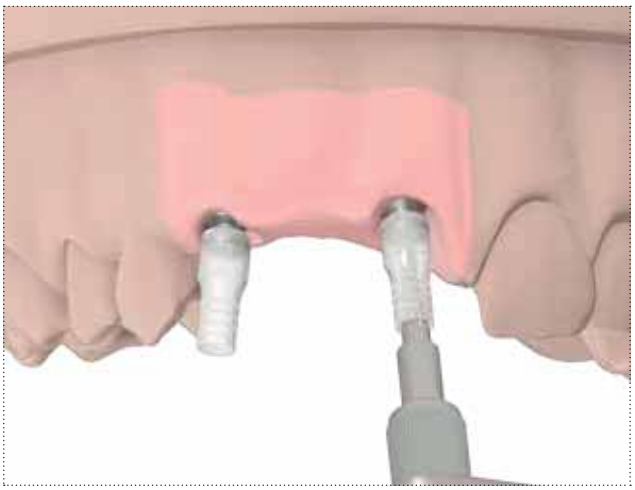
Tighten the structure in the patient's mouth applying a torque 20-25 Ncm and cover the screw hole with resin or composite.



Definitive multiple screw retained rehabilitation with Dynamic Abutments

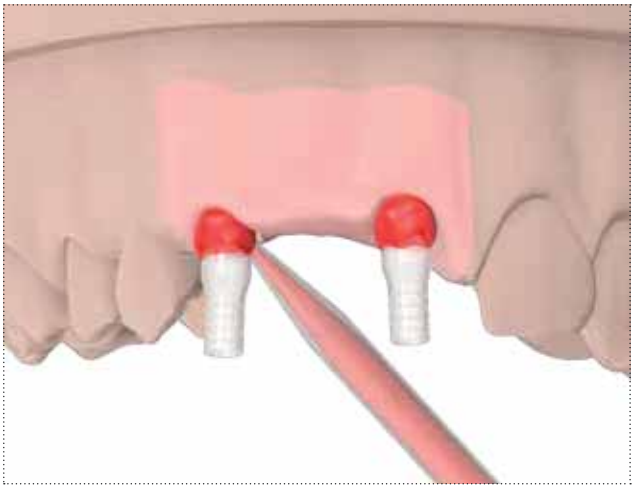
Screw the Dynamic Abutments onto the analogs on the precision model using the specific fixation screw with the screwdriver of the most suitable length between the ones available, of 24 or 32 mm. Apply a maximum torque of 8-10 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity. The fixation screw is not included, it must be ordered separately.



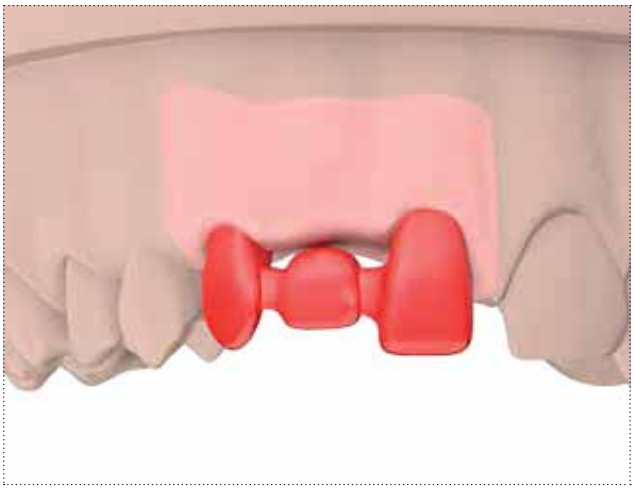
Manually guide the rotating portion of the abutments according to the prosthetic axis identified in the treatment plan.

Fix the rotating portion in the desidered position with castable resin.



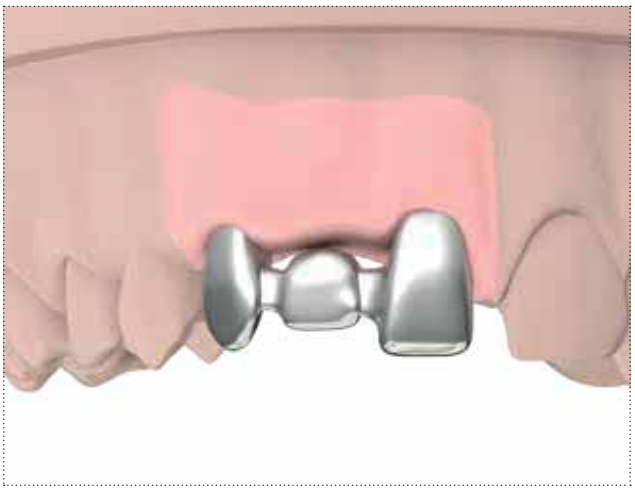
Reduce the castable sleeves to a size compatible with the patient's vertical dimension with an abrasive disk.

According to the standard protocol, model a bridge in wax or resin and unscrew it taking advantage of the specific design of the screwdriver tip.



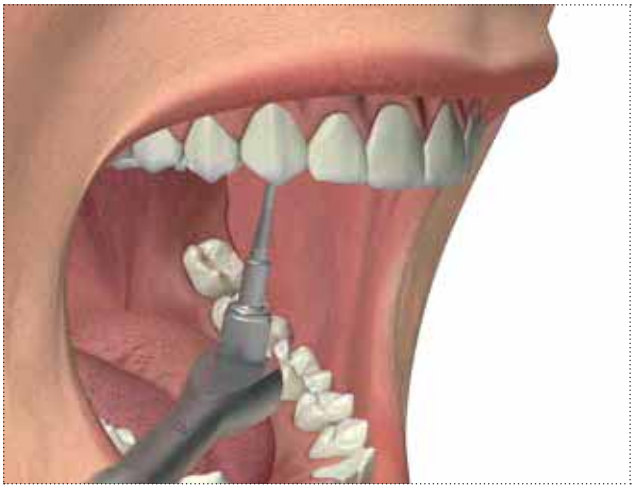
Overcast the bridge as usual and finish the base, so as to avoid obstacles for soft tissues adaptation.

Check the structure on the model or in the patient's mouth for possible modifications. Ceramize the bridge as usual.



Assemble the dynamometric key (code CRI5) with the screwdriver for right angle and hexagonal connector for ratchet (code AVV-CA-DG-EX) and with the Dynamic Abutment screwdriver of the desired length (code DSPDCLH-24 or DSPDCLH-32).

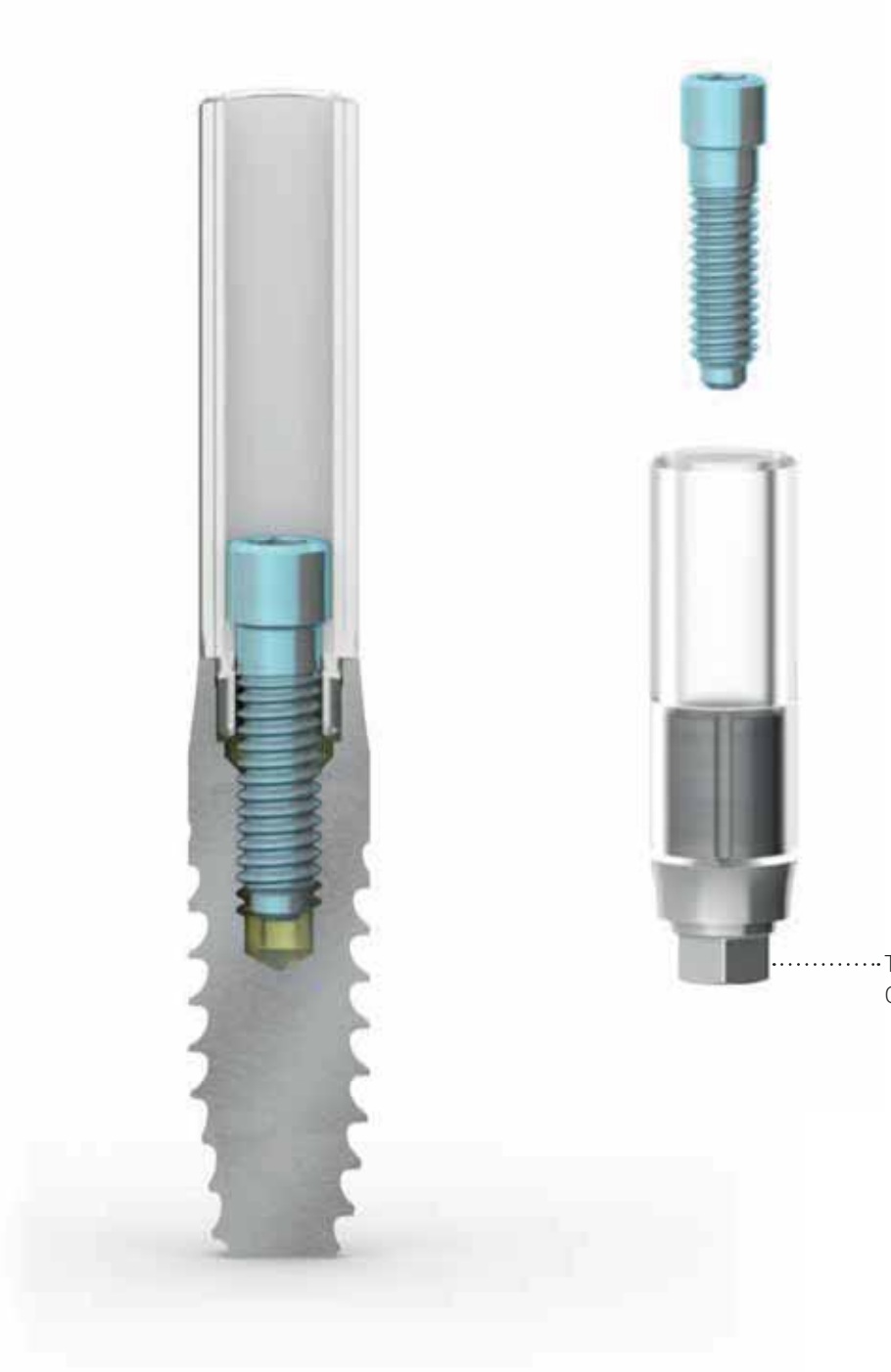
Tighten the structure in the patient's mouth applying a torque 20-25 Ncm and cover the screw holes with resin or composite.



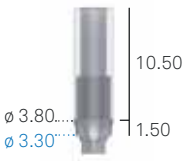
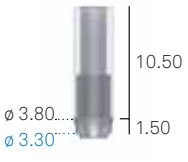
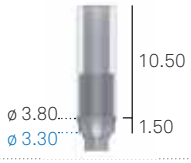
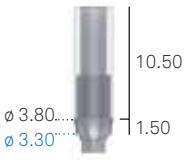
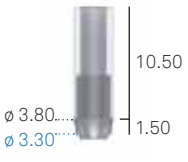
Standard castable posts with a metal base

Castable posts with a metal base combine the simplicity of castable solutions with a base of gold alloy, cobalt chrome or titanium, highly biocompatible materials. The melting point of the above mentioned alloys is such as to preserve the base against dimensional alterations at the time of overcasting the castable part.

The castable posts, available in engaging and non engaging version, allow for fabrication of single crowns without a profile or multiple screw retained structures as Toronto, that do not close on the implant's neck. See advices for overcasting base alloys on page 244.



The bases are available in gold alloy, Gr. 5 titanium and cobalt-chrome

description	code
Castable posts with a pre-made base in gold alloy “1” Engaging Anatomical emergence Standard fixation screw included	**A-UCR-330-EX** 
Castable posts with a pre-made base in gold alloy “1” Non engaging Anatomical emergence Standard fixation screw included	**A-UCR-330** 
Castable posts with a pre-made base in titanium Engaging Anatomical emergence Standard fixation screw included	**A-UCTR-330-EX** 
Castable posts with a pre-made base in cobalt chrome Engaging Anatomical emergence Standard fixation screw included	**A-UCRCO-330-EX** 
Castable posts with a pre-made base in cobalt chrome Non engaging Anatomical emergence Standard fixation screw included	**A-UCRCO-330** 
Spare castable sleeves for castable posts with alloy base Standard fixation screw not included	**A-CCUCR-330** 
Single pack Pack of 10 pieces Fixation screw for posts Supplied with the posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 

Recommended torque for castable posts with metal base: 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium, PMMA, gold alloy and cobalt chrome on pages 238, 240, 242 and 243.

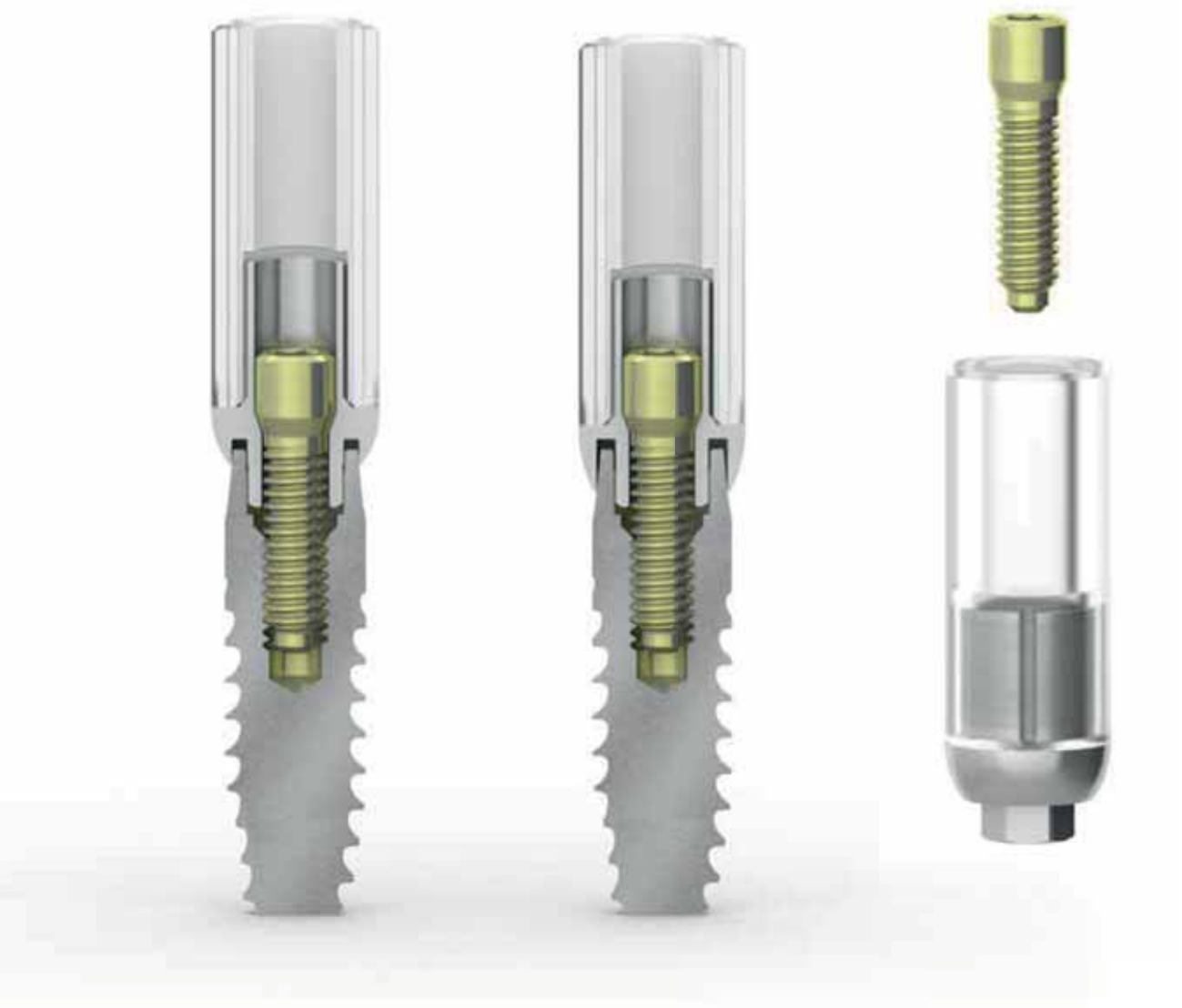
Definitive rehabilitation with Prama IN castable posts with a metal base

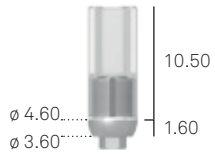
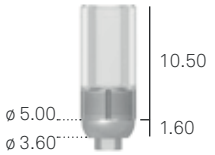
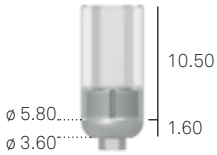
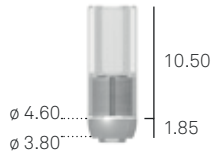
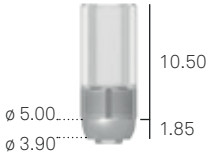
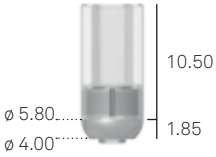
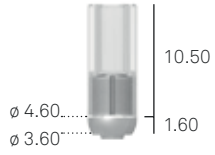
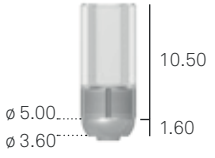
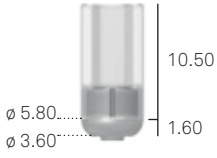
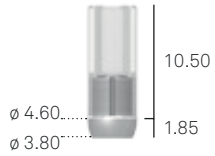
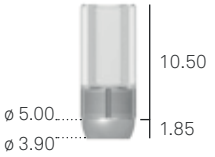
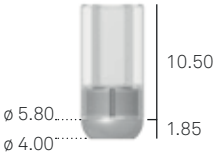
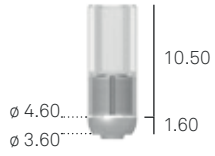
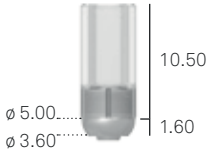
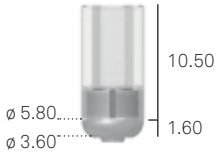
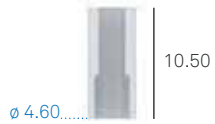
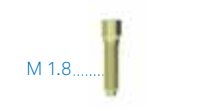
Prama IN castable posts in PMMA with cobalt chrome base are available in two different closing heights (0.50 mm and 1.50 mm), engaging and non engaging.

Prama IN castable posts in PMMA with gold alloy base are only available in non engaging version and with a closing height of 0.50 mm.

The recommended tightening torque for final fastening of posts or structures obtained after overcasting is 20–25 Ncm.

See advices for overcasting base alloys on page 244.



ø implant	3.80 mm	4.25 mm	5.00 mm
Prama IN castable posts with a pre-made base in cobalt chrome Closing of 0.50 mm Engaging Fixation screw with conical support included	**L-UCRCO-380-05** 	**L-UCRCO-425-05** 	**L-UCRCO-500-05** 
Prama IN castable posts with a pre-made base in cobalt chrome Closing of 1.50 mm Engaging Fixation screw with conical support included	**L-UCRCO-380-15** 	**L-UCRCO-425-15** 	**L-UCRCO-500-15** 
Prama IN castable posts with a pre-made base in cobalt chrome Closing of 0.50 mm Non engaging Fixation screw with conical support included	**L-UCRCO-380-05-ROT** 	**L-UCRCO-425-05-ROT** 	**L-UCRCO-500-05-ROT** 
Prama IN castable posts with a pre-made base in cobalt chrome Closing of 1.50 mm Non engaging Fixation screw with conical support included	**L-UCRCO-380-15-ROT** 	**L-UCRCO-425-15-ROT** 	**L-UCRCO-500-15-ROT** 
Prama IN castable posts with a pre-made base in gold alloy Closing of 0.50 mm Non engaging Fixation screw with conical support included	**L-UCR-380-05-ROT** 	**L-UCR-425-05-ROT** 	**L-UCR-500-05-ROT** 
Spare castable sleeves for castable posts with alloy base Fixation screw with conical support not included	**A-CCUCR-380** 	**A-CCUCR-425** 	**A-CCUCR-500** 
Single pack Pack of 10 pieces Fixation screw with conical support Supplied with castable posts, it can also be ordered separately as a spare	**L-VMS-180** **L-VMS-180-10** 	Use L-VMS-180	Use L-VMS-180
Single pack Pack of 10 pieces Full Head screw Not supplied with castable posts, available optionally*	**L-VM-180** **L-VM-180-10** 	Use L-VM-180	Use L-VM-180

Recommended torque for castable posts with metal base: 20-25 Ncm.

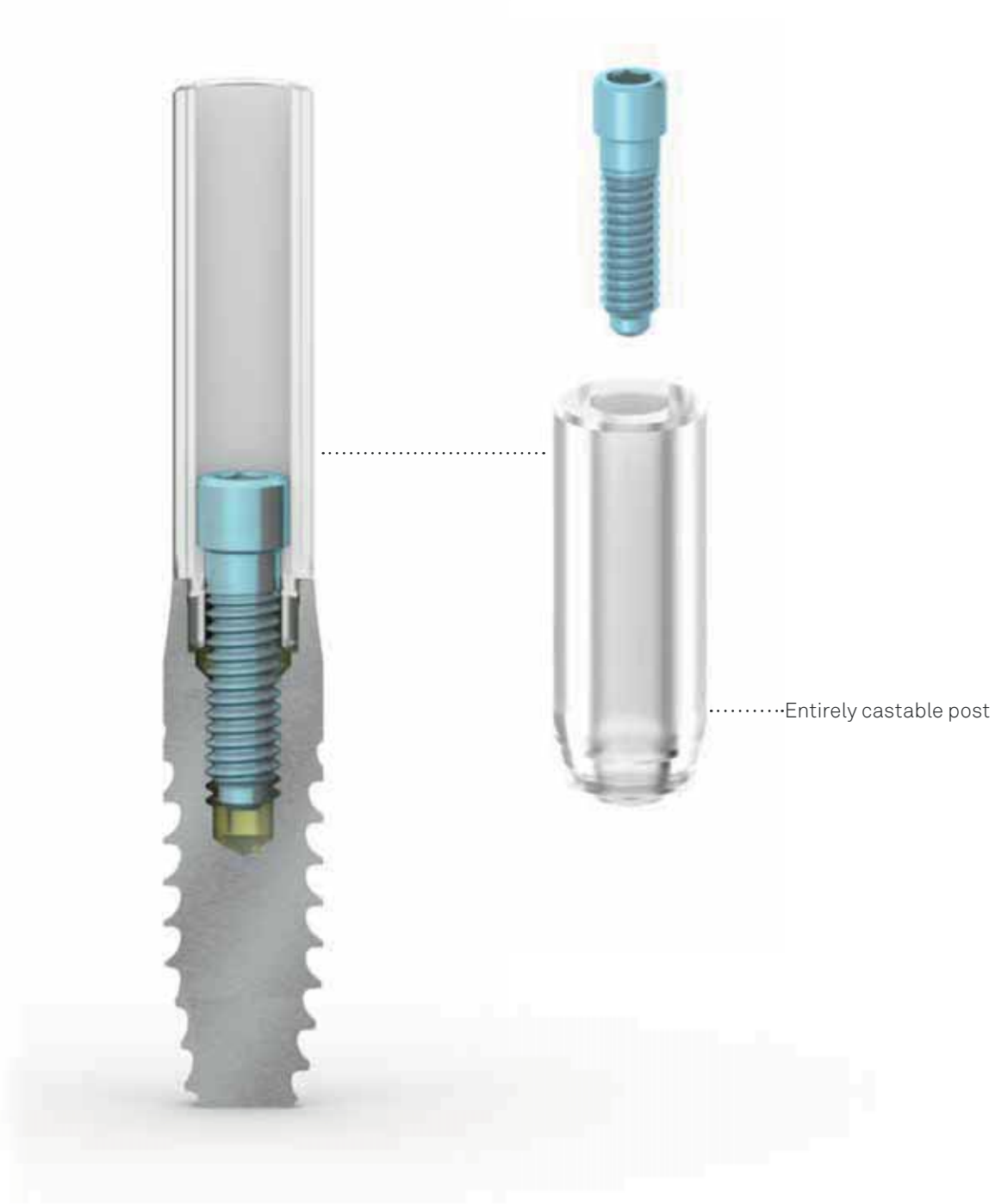
** The fixation screws with Full Head technology (L-VM-180) must be tightened with the appropriate drivers for screws with Full Head technology contained in the Prama surgical kit.*

See technical characteristics of PMMA, gold alloy and cobalt chrome on pages 240, 242 and 243.

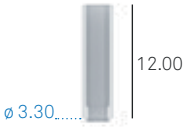
Entirely castable posts

The entirely castable posts are made through turning of PMMA, a material that does not leave any residue during the casting phase.

It must however be noted that if the casting process does not follow proper methods it may cause deformations that may compromise the precision of the coupling between the implant interface and the prosthetic interface at the level of the connection platform.



Entirely castable posts may not be released for sale in all markets.

description	code
Castable posts for casting Engaging Straight emergence Standard fixation screw included	**A-CC-330-EX** 
Castable posts for casting Non engaging Straight emergence Standard fixation screw included	**A-CC-330** 
Single pack Pack of 10 pieces Standard fixation screw Supplied with the castable posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 

Recommended torque for entirely castable posts: 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

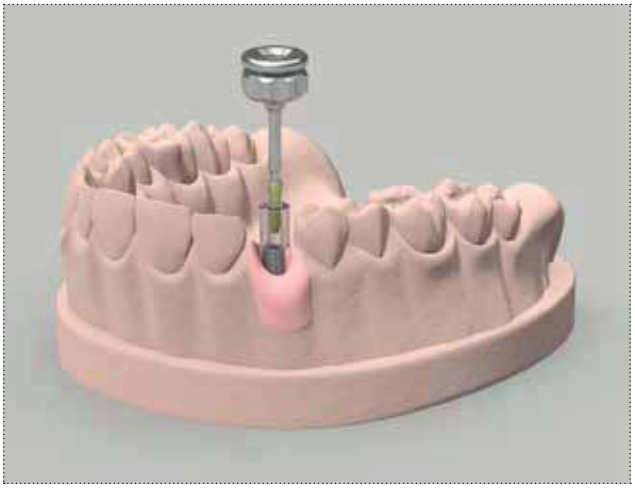
See technical characteristics of PMMA on page 240.

Definitive single screw retained rehabilitation with a castable post with a metal base

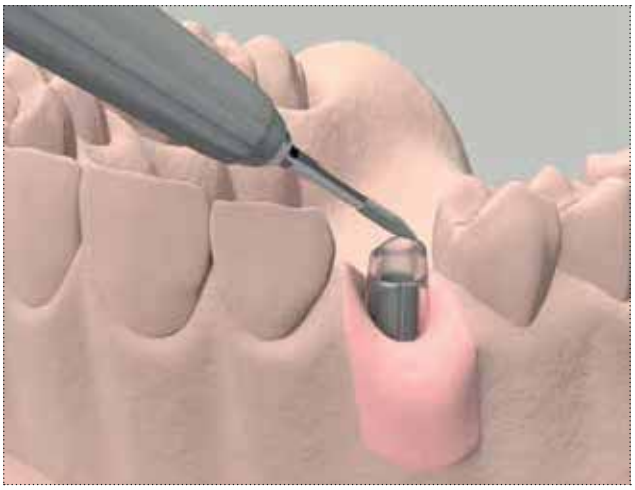
Note: the same procedure illustrated in the following images using castable posts with a metal base is also applicable when entirely castable posts are used.

Insert an engaging castable post with a metal base on the precision model. Tighten it with the specific fixation screw with a screwdriver from the HSM or L-HSM series, according to the chosen post, applying a maximum torque of 8-10 Ncm.

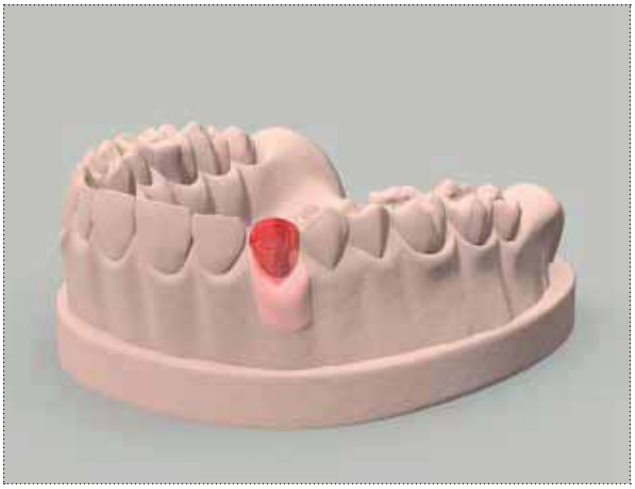
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



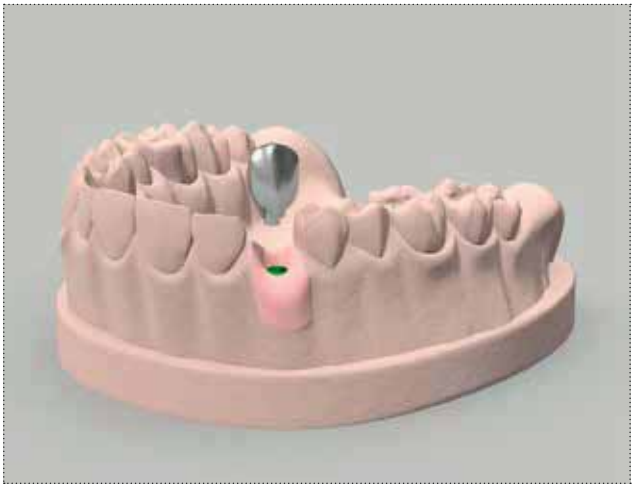
Model the post in height and volume, as necessary.



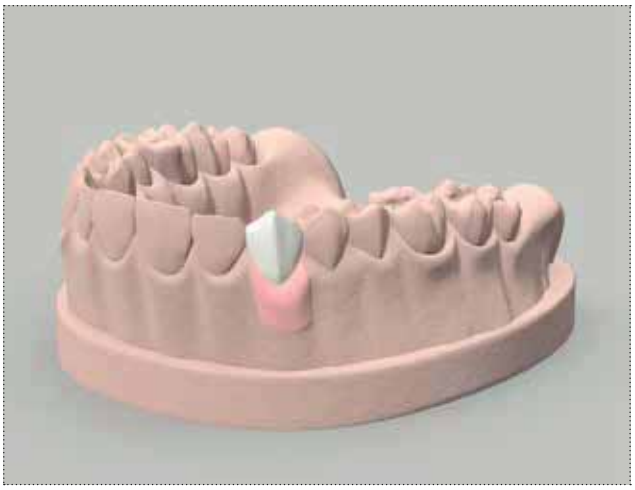
Model the screw retained crown on the post in castable resin.



Proceed with overcasting as usual.
Perform a test with the metallic structure on the model or in the patient's mouth to modify it, if necessary.



Ceramize as usual.



Position the screw retained crown on the implant and tighten it with the supplied screw, without exceeding a torque of 20–25 Ncm.

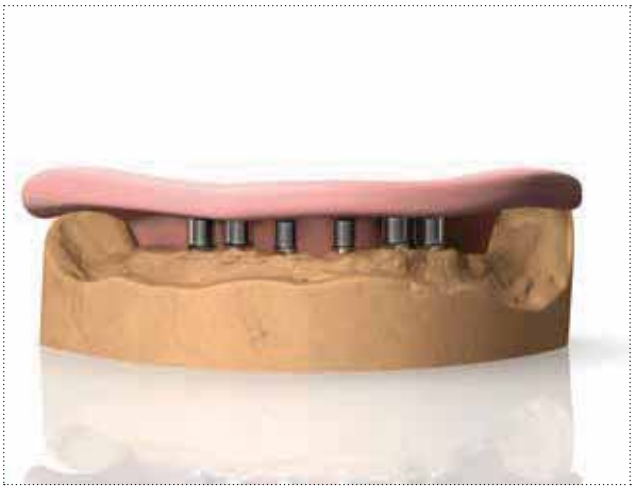
Definitive screw retained full arch rehabilitation with castable posts with a metal base

Note: the same procedure illustrated in the following images using castable posts with a metal base is also applicable when entirely castable posts are used.

Remove the temporary prosthesis from the patient's mouth and take the impression (see page 36 onwards). Replace the temporary prosthesis. After casting the model, tighten the posts onto the analogs using a screwdriver of the HSM or L-HSM series according to the chosen abutment, applying a maximum torque of 8–10 Ncm.

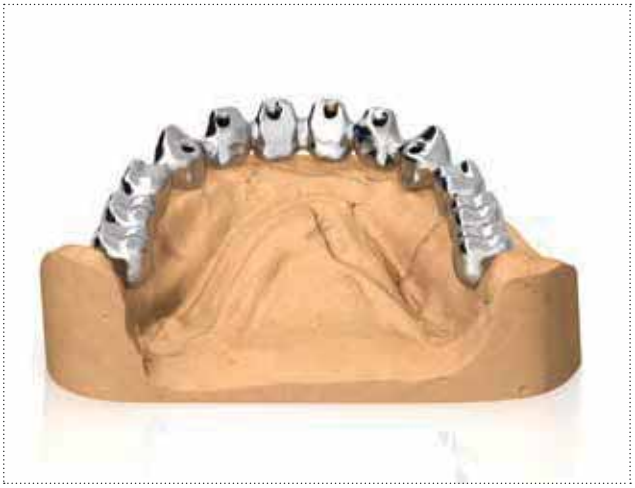
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

Adapt the castable sleeves to fit the patient's vertical dimension, using a silicone mask obtained from a preassembly, or by placing the structure in an articulator in relationship to the space left by the antagonist.



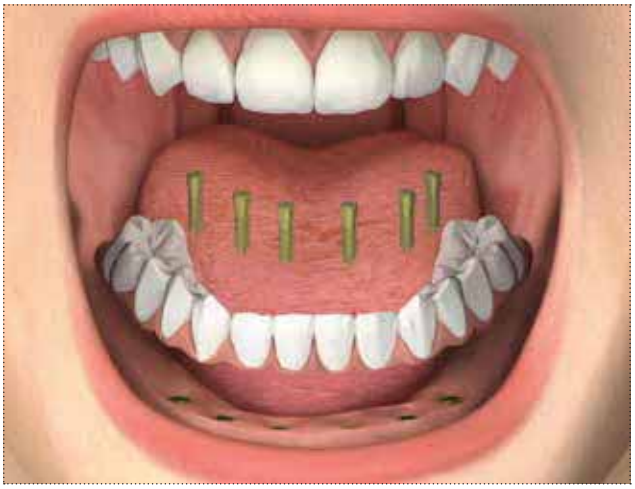
Model the castable structure, which will allow the metal framework of the final prosthesis to be obtained.

Create the structure using the standard protocol. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.



Ceramize the final prosthesis as usual.

Tighten the structure onto the implants, tightening the screws at a torque of 20–25 Ncm and checking for passivation and occlusal relationships. Preserve the screw heads and close the screw holes with a removable material, such as a composite or a resin.

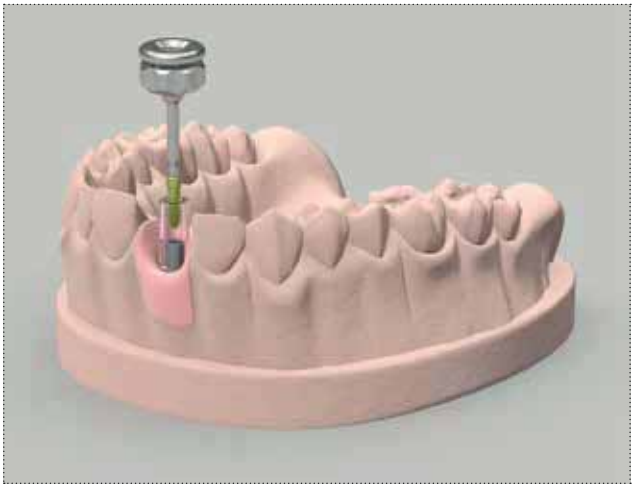


Definitive single cemented rehabilitation with a single post obtained by overcasting of a castable sleeve

Note: the same procedure illustrated in the following images using castable posts with a metal base is also applicable when entirely castable posts are used.

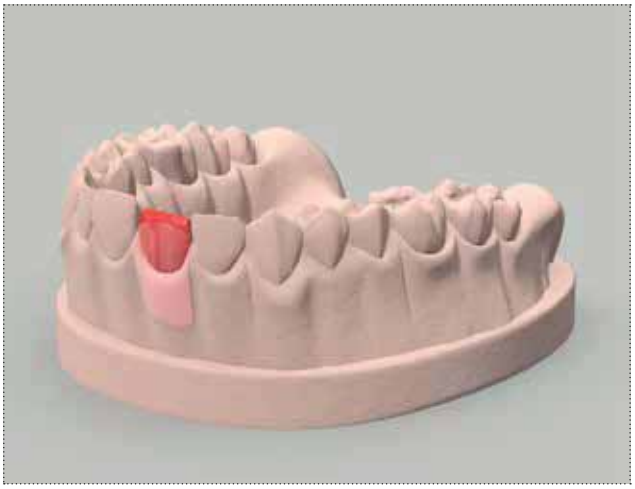
Insert an engaging castable post with a metal base on the precision model. Tighten it with the specific fixation screw with a screwdriver from the HSM or L-HSM series, according to the chosen post, applying a maximum torque of 8-10 Ncm.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

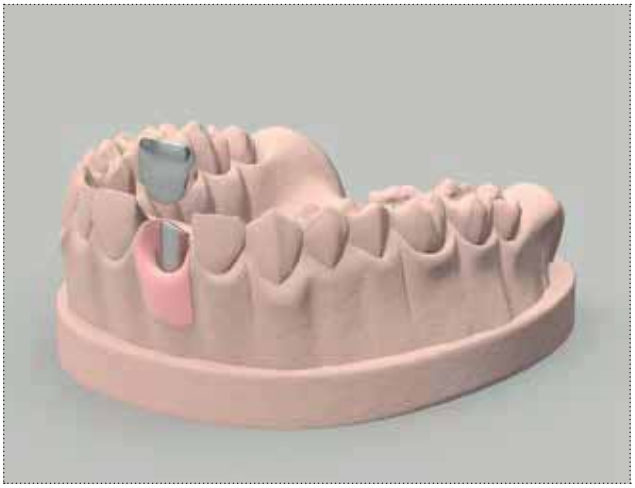


Model the post in height and volume, increasing the thicknesses if necessary. Then proceed to overcasting as usual.

Model the cap on the post in wax or resin, leaving sufficient space for the cement.



Fabricate the cap by casting or using CAD CAM technologies. Test the crown on the model to check that there is no roughness that could obstruct the correct positioning of the cap on the post, and correct it if necessary.
Ceramize the definitive prosthesis as usual.



Position the post in the patient's mouth and tighten it with the supplied screw, applying a torque of 20–25 Ncm.

Cover the screw hole and cement the crown on the post, taking care to remove all the excess cement from the margin.

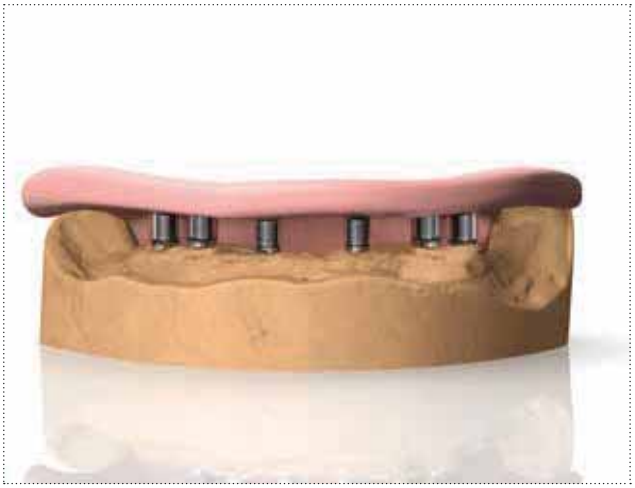
Definitive full arch cemented rehabilitation with single posts obtained by overcasting of castable sleeves

Note: the same procedure illustrated in the following images using castable posts with a metal base is also applicable when entirely castable posts are used.

Insert the engaging castable posts with a metal base on the precision model. Tighten them with the specific fixation screw with a screwdriver from the HSM series, applying a maximum torque of 8-10 Ncm.

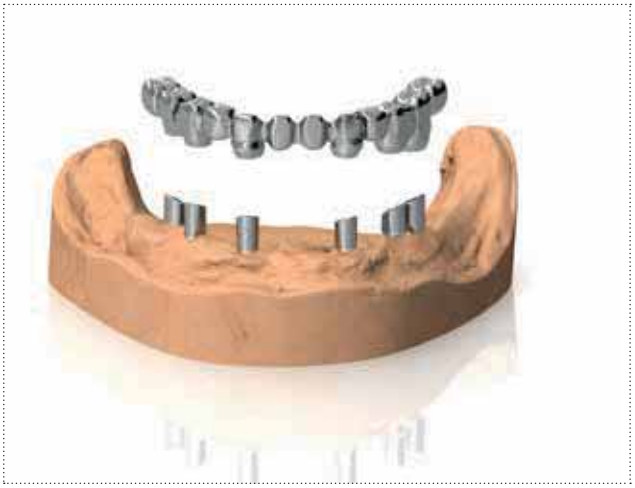
Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

Adapt the castable sleeves to fit the patient's vertical dimension, using a silicone mask obtained from a preassembly, or by placing the structure in an articulator in relationship to the space left by the antagonist; reduce or increase the thicknesses if necessary.

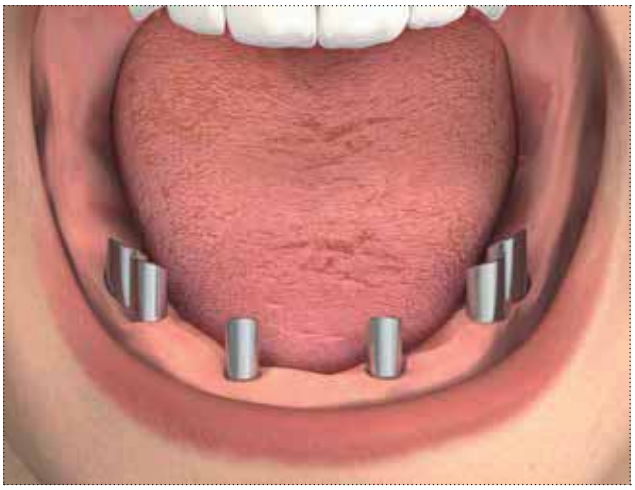


Proceed to the casting of the posts as usual.
Model the full arch structure on the post in wax or resin, leaving sufficient space for the cement.

Fabricate the full arch structure by casting or using CAD CAM techniques. Test the truss on the model and in the patient's mouth to check that there is no roughness that could obstruct its correct positioning on the posts, and correct if necessary.
Ceramize the definitive prosthesis as usual.



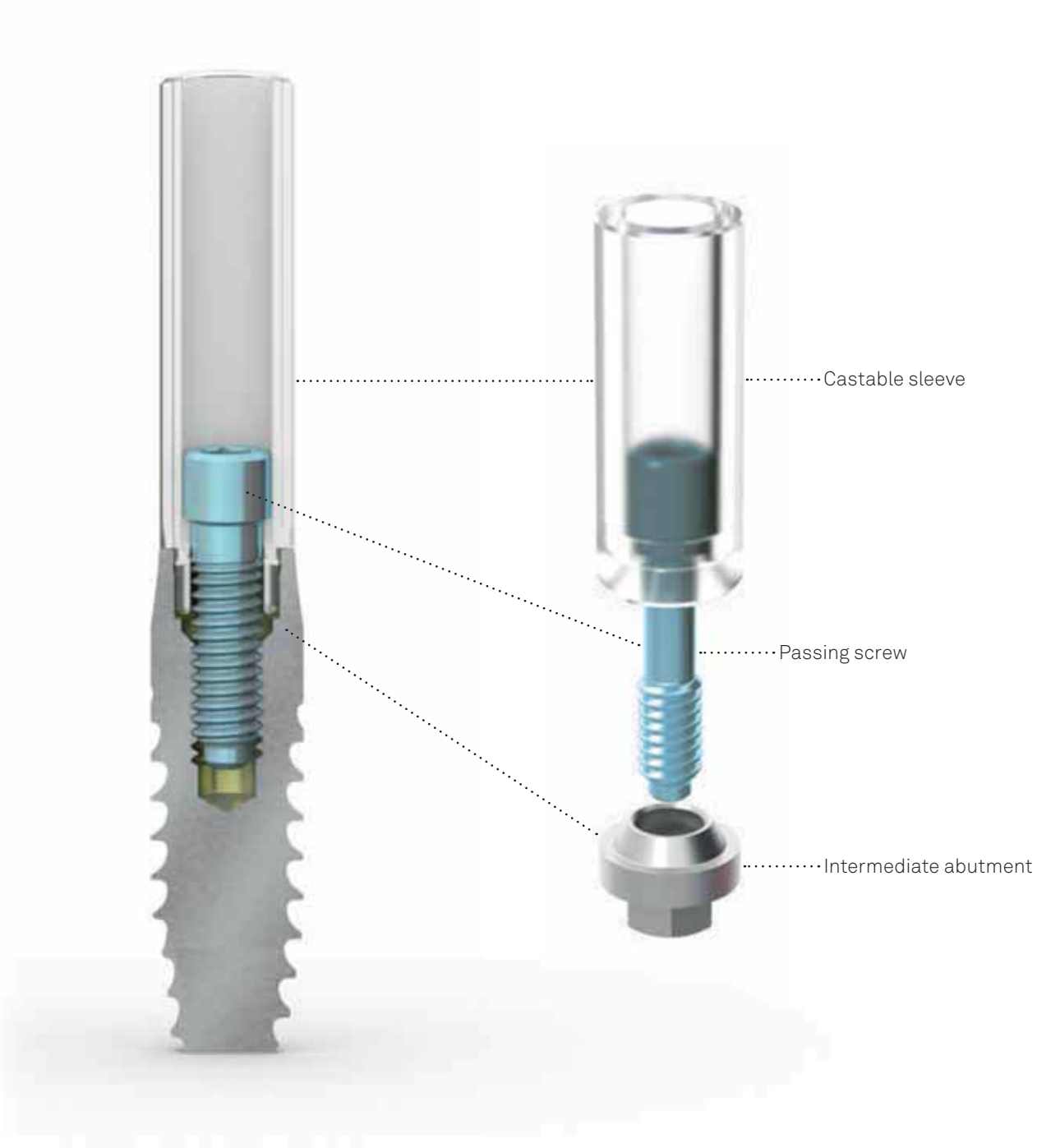
Position the posts in the patient's mouth, taking care to respect the position of every single element on the model and tighten them with the supplied screws with a torque of 20–25 Ncm.

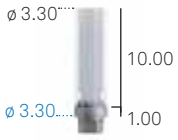
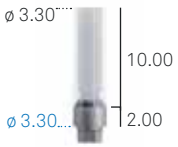


Cement the full arch structure onto the posts, taking care to remove all the excess cement from the margin.

Definitive rehabilitation with intermediate abutments

These abutments have a straight emergence profile and are composed of a repositionable base in titanium with a small upper cone with a height of 0.70 mm, which allows easy insertion and removal of the over-structures, even in case of slight disparallelisms. The abutment is supplied with the castable sleeves for modelling and casting the over-structure and with the passing screw for the “packet” fastening of the over-structure and abutments to the implants.



description	code	
Straight abutments with passing screw Engaging Transgingival h. 1.00 mm Fixation screw included	**A-ABU-330-1**	
Straight abutments with passing screw Engaging Transgingival h. 2.00 mm Fixation screw included	**A-ABU-330-2**	
Fixation screw for abutments Supplied with the abutments, it can also be ordered separately as a spare	**A-VABU-180**	
Single pack Spare castable sleeves in PMMA for intermediate abutments Fixation screw not included	**A-CCABU-330-ROT**	

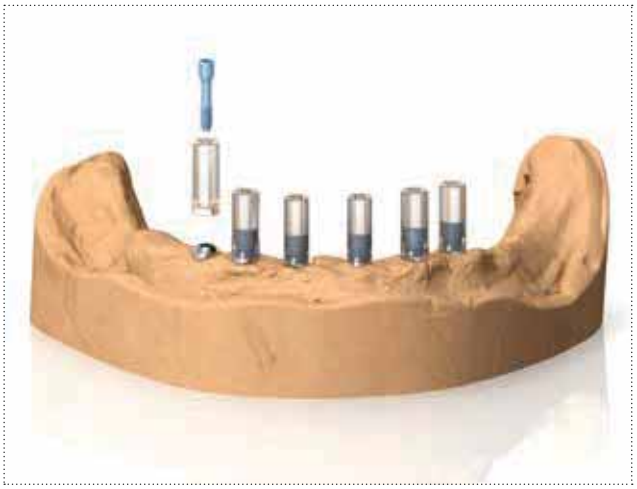
Recommended torque for intermediate abutments: 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

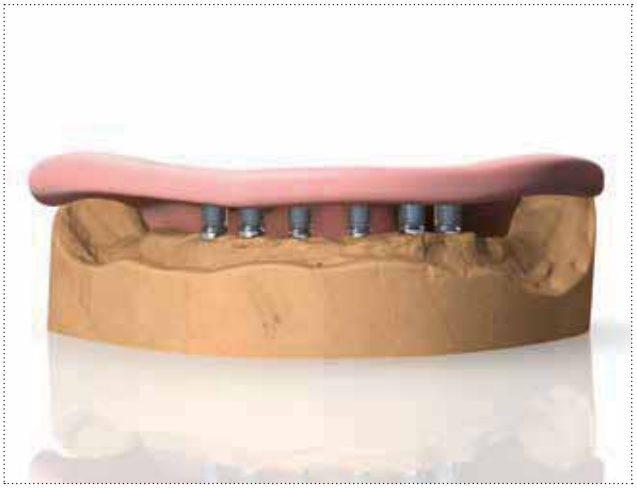
See technical characteristics of Gr. 5 titanium and PMMA on pages 238 and 240.

Production of a prosthesis with a reinforced structure: indirect protocol

Tighten the castable sleeves on the abutments positioned on the implant analogs using a screwdriver of the HSM series. The tightening torque is 8-10 Ncm. The prosthetic screw (code A-VABU-180) secures with a “packet” fastening the castable sleeve and the intermediate abutment.



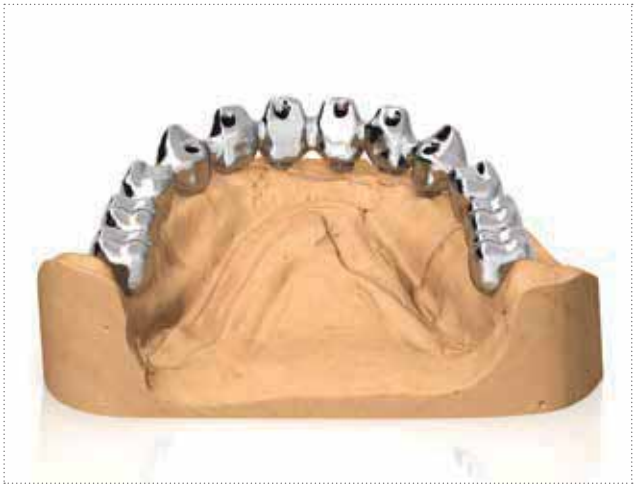
Reduce the castable sleeves to a size compatible with the patient’s vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.



Model the castable structure, which will allow the metal framework of the final prosthesis to be obtained.

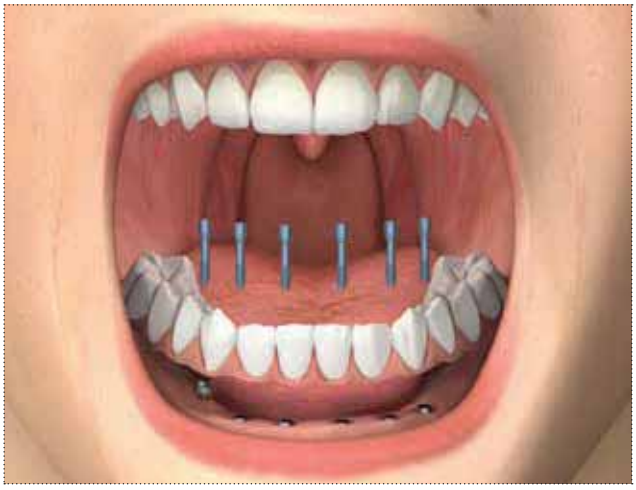
Cast the structure as usual. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. The recommended torque for tightening all the over-structures onto the intermediate abutments is 20–25 Ncm.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.



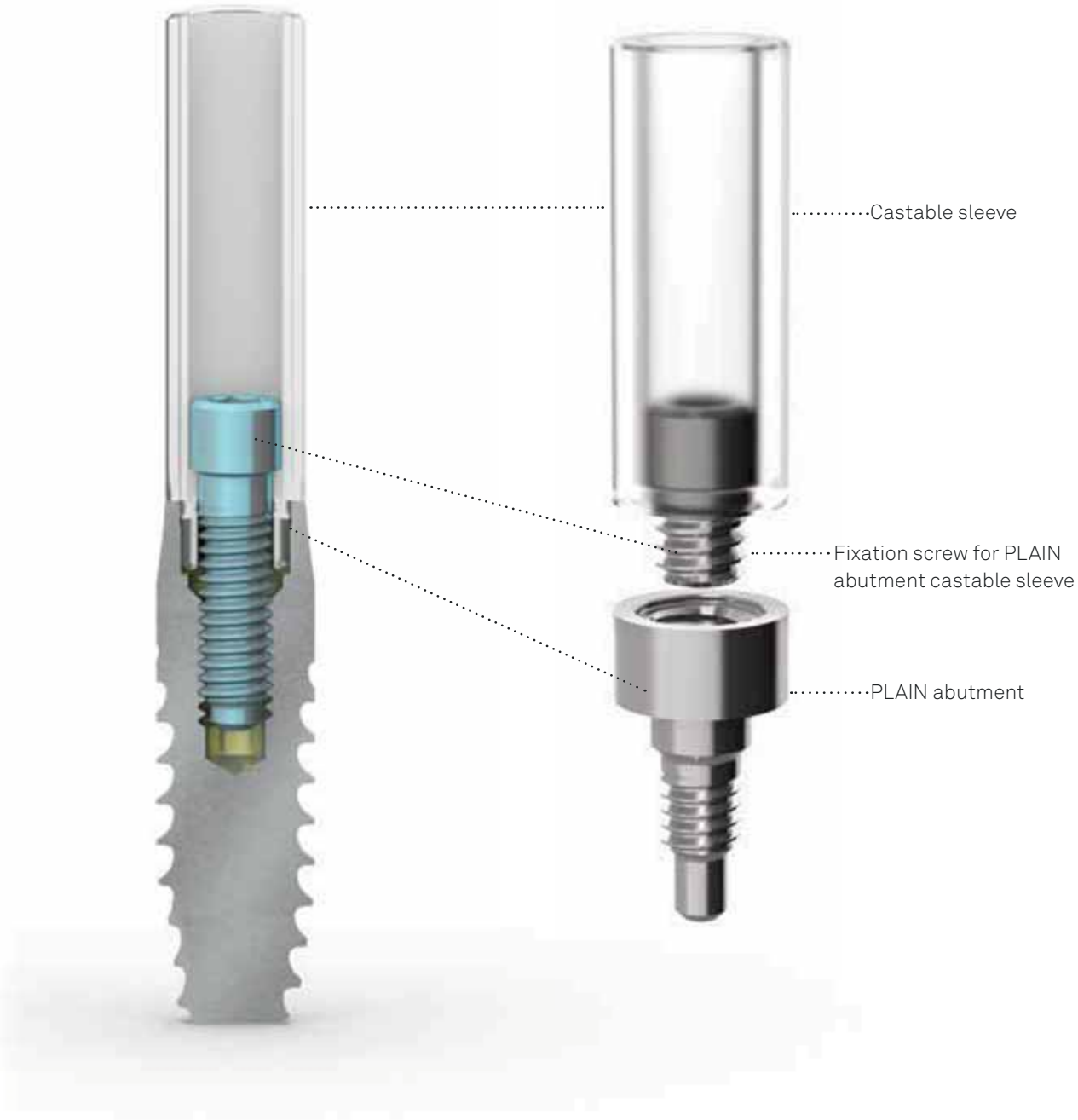
Ceramize the final prosthesis using normal methods. Remove the over-structure and the intermediate abutments beneath it from the model.

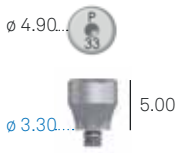
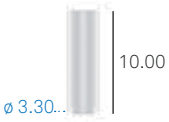
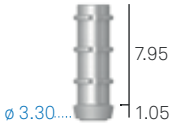
Place the abutments on the implants, engaging the connecting hexagon.
Tighten the full arch structure onto the intermediate abutments, using the specific screws and a screwdriver of the HSM series. The recommended torque must not exceed 20-25 Ncm.



Temporary and definitive rehabilitation with PLAIN abutments

The PLAIN abutments, whose peculiarity is the direct tightening to the implants, use the completely flat geometry of the upper section, which is coupled to the special castable sleeves by means of a small guide. The utility of these abutments is therefore that they maximize centring and repositioning operations with structures screw retained on multiple implants.
For the transport into the oral cavity, the screwing and the final fastening of PLAIN abutments, the standard screwdrivers from the HSM series contained in the Prama surgical kit must be used.
The insertion torque is 25-30 Ncm to screw the abutment to the implant and 20-25 Ncm to tighten the prosthetic screw.
Titanium sleeves are also available, for the production of temporary prosthesis.



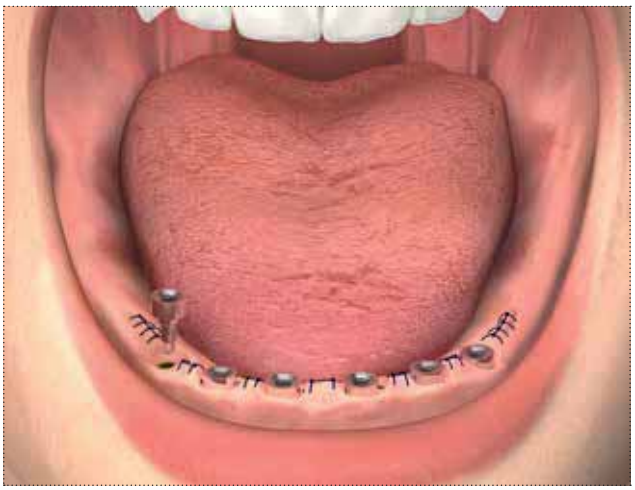
description	code	
Direct screw retained PLAIN abutment Transgingival h. 2.00 mm	**A-PLAIN-ABU330-2**	
Direct screw retained PLAIN abutment Transgingival h. 3.00 mm	**A-PLAIN-ABU330-3**	
Direct screw retained PLAIN abutment Transgingival h. 4.00 mm	**A-PLAIN-ABU330-4**	
Healing cap for PLAIN abutment	**A-PLAIN-CG330**	
Castable sleeve for PLAIN abutments Fixation screw included	**A-PLAIN-CC330**	
Single pack Pack of 10 pieces Fixation screw for castable sleeve for PLAIN abutments	**A-PLAIN-VP200** **A-PLAIN-VP200-10**	
Titanium post for PLAIN abutment Fixation screw included	**A-PLAIN-CT330**	
Analog for PLAIN abutment	**A-PLAIN-ANA-330**	
Transfer for PLAIN abutment Fixation screw included	**A-PLAIN-TRA-330**	
Spare screw for PLAIN transfer Supplied with the transfers for PLAIN abutments, it can also be ordered separately as a spare	**A-PLAIN-VTRA200**	

Recommended torque for the transfer screws and the healing caps: 8-10 Ncm.
Recommended torque for PLAIN castable sleeves: 20-25 Ncm.
Recommended torque for abtument PLAIN: 25-30 Ncm.

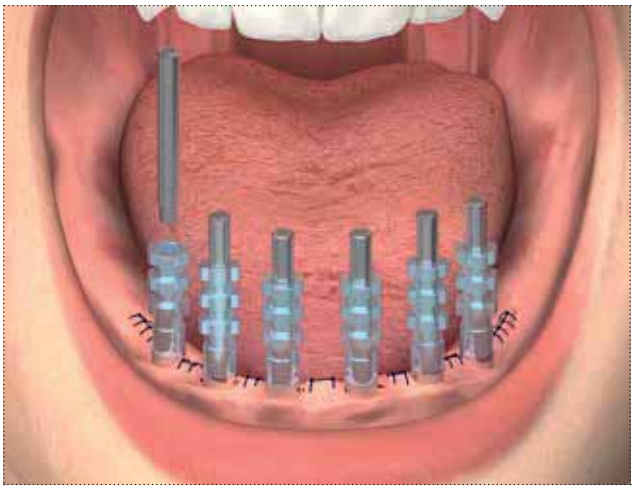
See technical characteristics of Gr. 5 titanium and PMMA on pages 238 and 240.

Impression and model phase

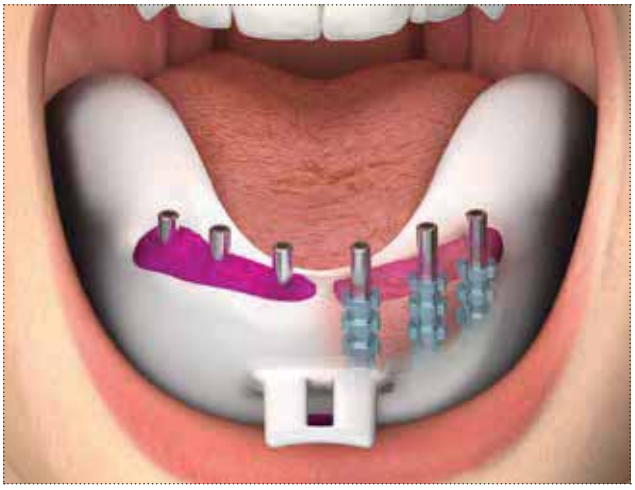
After inserting the implants, screw in the PLAIN abutments using a screwdriver of the HSM series. The tightening torque of PLAIN abutments onto implants is 25–30 Ncm.



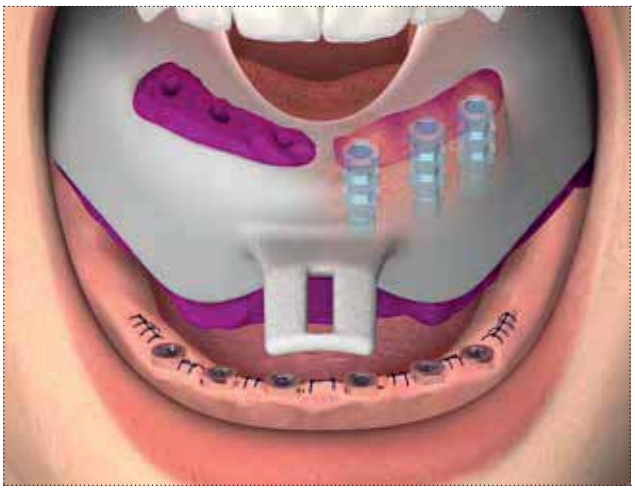
Screw a transfer of the series A-PLAIN-TRA-* onto every PLAIN abutment, using the supplied screw and a screwdriver of the HSM series. The tightening torque of the transfers on the PLAIN abutments is 8–10 Ncm.
If desired, fix the transfers together with wire and resin or composite, and wait for polymerization to be completed, as indicated by the manufacturer (e.g. SUN resin, code SUN-A2 or SUN-A3).



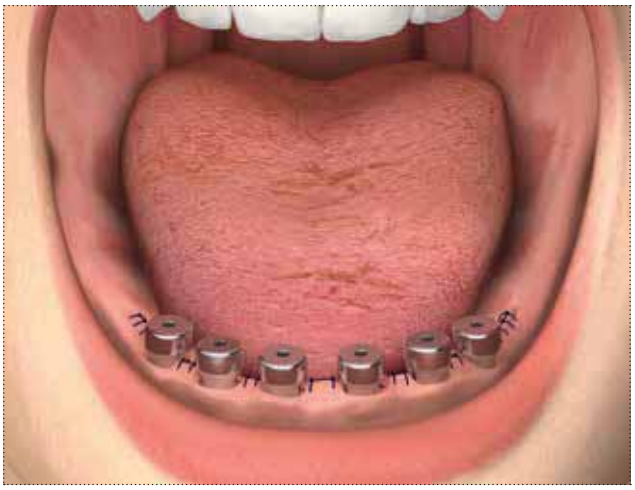
Check that the personalized tray, when placed in the mouth, contains the entire height of the transfers inside its walls, and that the summit of the transfer screws emerges for a suitable length from the respective holes in the tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers. Fill the impression tray with a more consistent material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) along the entire arch.
Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.



Unscrew the transfer screws and remove them from the impression to prevent them from accidentally falling into the patient's mouth when the impression tray is removed. Remove the tray: the Pick-up transfers remain incorporated in the impression.



Screw the titanium healing caps (code A-PLAIN-CG330) onto the PLAIN abutments using a screwdriver of the HSM series. The tightening torque for PLAIN healing caps on their respective abutments is 8–10 Ncm.

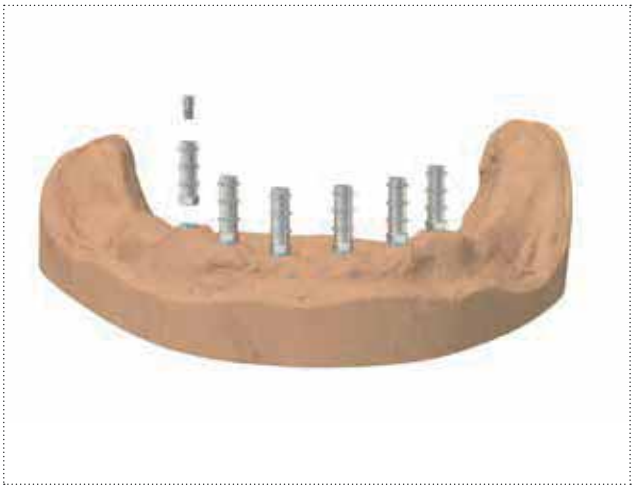


Screw the PLAIN analogs (code A-PLAIN-ANA-*) onto the transfers using the transfer screws, repositioned in the holes left by each screw in the impression material. Develop the model as usual.

Full arch temporary screw retained rehabilitation with PLAIN abutments: luting technique with titanium sleeves

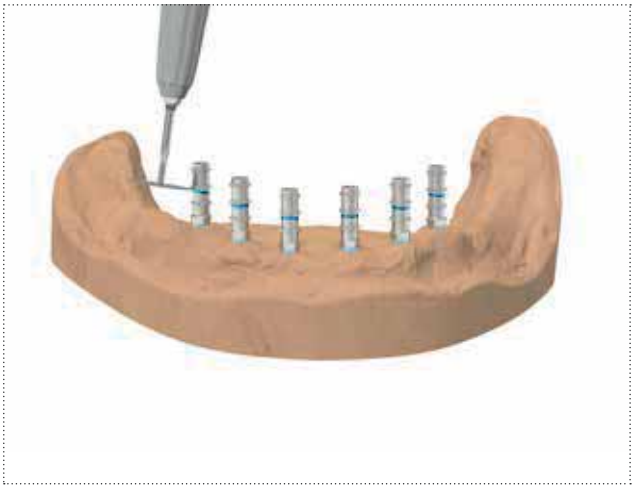
After taking the impression and casting the model according to the procedures previous indicated, screw all the A-PLAIN-CT330 titanium sleeves to the PLAIN abutments by using the A-PLAIN-VP200 fixation screws.

Important warning
During laboratory work, always use spare screws, available in single packs with code A-PLAINVP200 or in packs of 10 pieces with code A-PLAINVP200-10. Use the definitive screws only for final tightening in the patient's mouth.



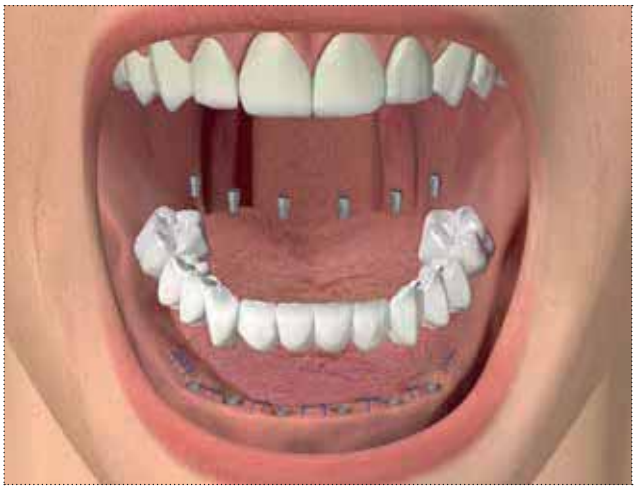
On the PLAIN titanium sleeves insert a pre-made pierced structure made in the laboratory so as to allow it to slide easily on the body of the sleeves. Mark the palatal and vestibular margin of the temporary structure on both sleeves, then reduce them appropriately.

Remove the temporary structure and cut the posts at the height marked, using an abrasive disk.

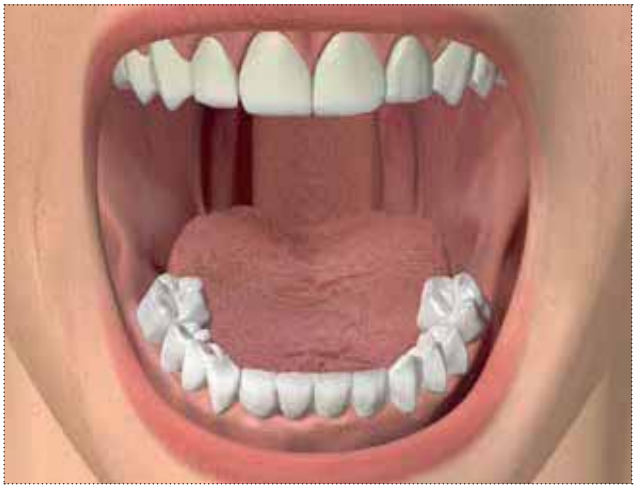


Lute the temporary bridge onto the PLAIN titanium sleeves, waiting for polymerization as indicated by the instructions.

When polymerization is complete, unscrew the temporary prosthesis from the model and tighten it onto the PLAIN abutments, taking care to keep the flaps of soft tissues away from the connection during insertion procedures and suturing them around the emergence of the posts to permit adequate conditioning. The temporary prosthesis must be tightened on using the specific screws and a screwdriver from the HSM series. A tightening torque of 20-25 Ncm must not be exceeded.



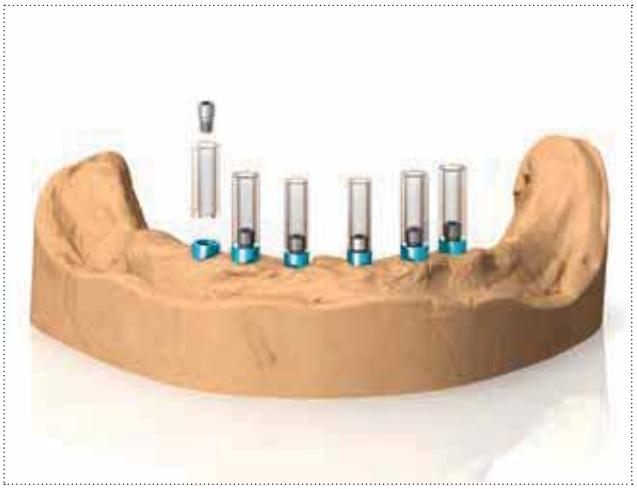
Insert teflon, gutta-percha or soft cement into the screw hole of the PLAIN sleeves and close the top with resin or a composite material.
The temporary prosthesis will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.



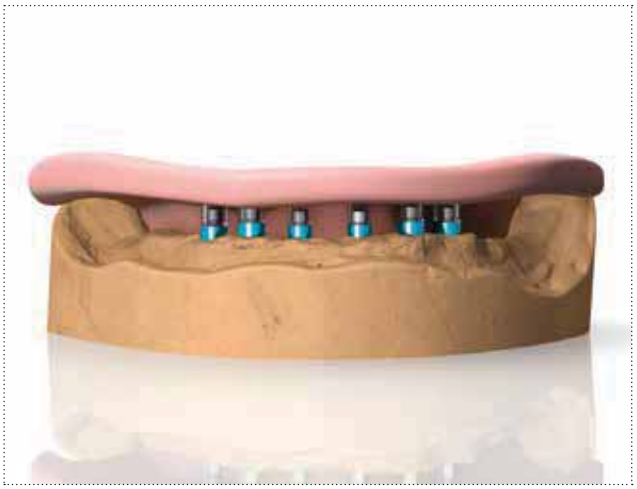
Full arch definitive screw retained rehabilitation with PLAIN abutments: total casting technique with castable sleeves

Screw the castable sleeves onto the PLAIN analogs on the precision model, using the supplied fixation screw A-PLAIN-VP200, leaving them initially at the original length. The recommended torque is 8-10 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



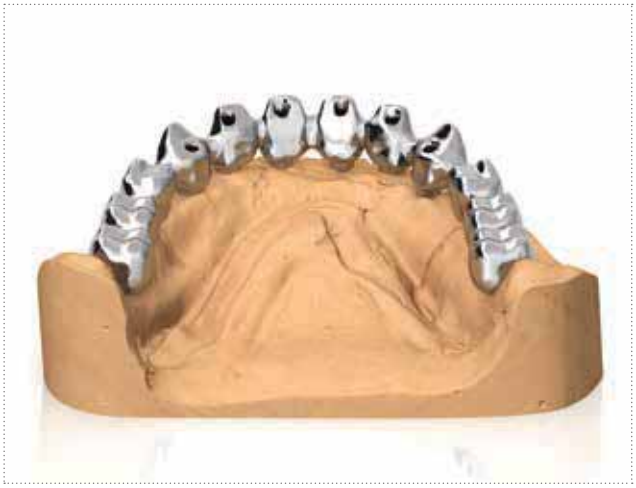
Reduce the castable sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.



Make a castable structure, which will allow the metal framework of the final prosthesis to be obtained.

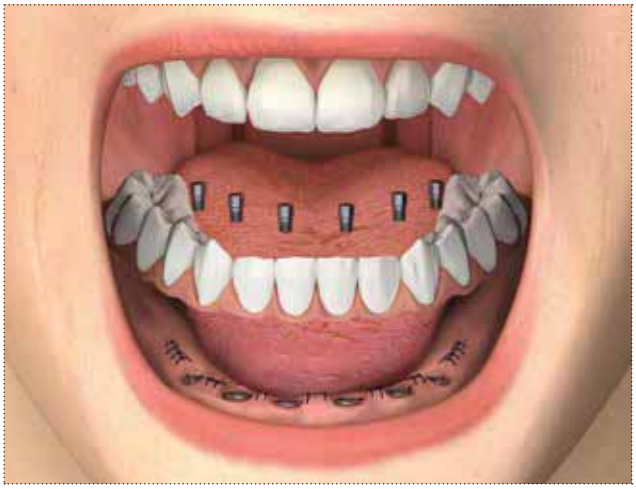
Cast the structure according to the standard protocol. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. The recommended torque for tightening all over-structures onto abutments is 20–25 Ncm.

Important warning
If the structure is not completely passive, even though the normal checking protocol has been followed, adjust it as usual.



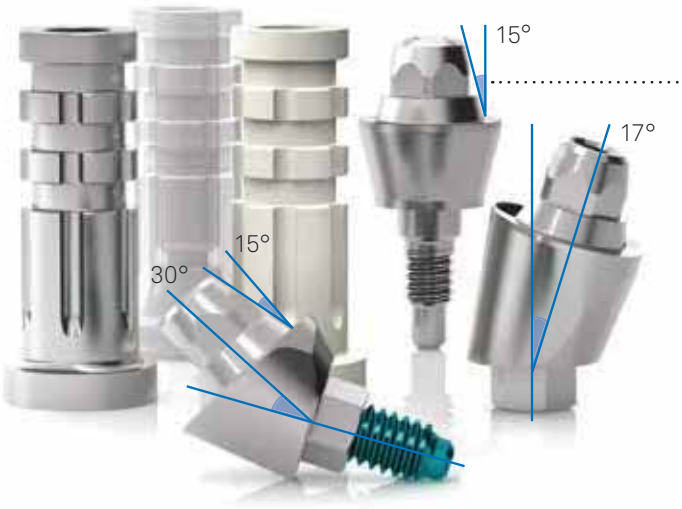
Ceramize the final prosthesis as usual.
Remove the over-structure from the model.

Unscrew the PLAIN healing caps and tighten the over-structure on the PLAIN abutments, applying a torque of 20-25 Ncm. Check for passivation and occlusal relationships. Preserve the screw heads and cover the screw holes with a removable material.



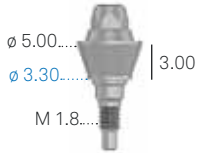
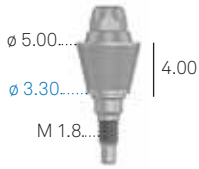
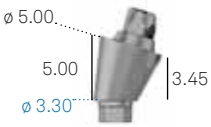
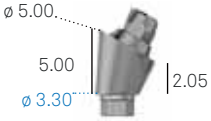
Temporary and definitive rehabilitation with P.A.D. abutments

The P.A.D. system has been developed to facilitate the production of multiple screw retained prostheses. The different versions available, with angles of 17° and 30°, make the prosthetic repositioning of connections possible even in case of particularly divergent and disparallel implants. This characteristic is enhanced by an additional 15° cone positioned above the P.A.D. platform, which further facilitates the insertion of multiple structures.
Angled P.A.D. abutments must be transported into the patient's mouth using the specific transfer screw for manual screwing PAD-VTRAL-140-MAN or the PAD-CAR transporter with a transfer screw, also made of titanium, to fix the abutment to the instrument.
Before being used clinically, the components must be sterilized in an autoclave.



The cone on the top of the abutments allows an additional prosthetic correction of 15°

The upper cone allows the prosthetic structure to be up to 15° on each side, which in the case of angled P.A.D. abutments is added to the inclination of 17° or 30°. This characteristic allows disparallelisms of up to 45° to be easily managed

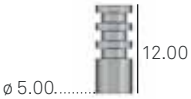
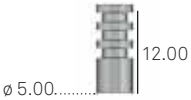
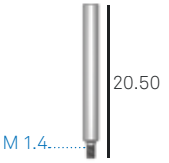
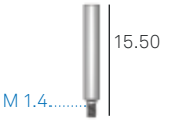
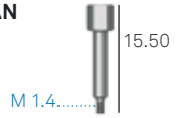
description	code	
Straight P.A.D. abutments Direct screw retained Transgingival h. 1.50 mm	**A-PAD-AD330-15**	
Straight P.A.D. abutments Direct screw retained Transgingival h. 3.00 mm	**A-PAD-AD330-30**	
Straight P.A.D. abutments Direct screw retained Transgingival h. 4.00 mm	**A-PAD-AD330-40**	
P.A.D. abutment angled at 17° Transgingival h. 3.00 mm Fixation screw included	**A-PAD-AA330-173**	
P.A.D. abutment angled at 17° Transgingival h. 5.00 mm Fixation screw included	**A-PAD-AA330-175**	
P.A.D. abutment angled at 30° Transgingival h. 3.00 mm Fixation screw included	**A-PAD-AA330-303**	
P.A.D. abutment angled at 30° Transgingival h. 5.00 mm Fixation screw included	**A-PAD-AA330-305**	
Single pack Pack of 10 pieces Fixation screw for angled P.A.D. Supplied with angled P.A.D. abutments, it can also be ordered separately as a spare	**PAD-VM-180** **PAD-VM-180-10**	
Screwdriver for straight P.A.D. abutments, with hexagonal connector for dynamometric key	**AVV2-ABUT**	
Carrier for transferring angled abutments into the oral cavity, sterilisable and reusable It must be fixed to abutments with the screw PAD-VTRAL-140	**PAD-CAR**	

Recommended torque for straight P.A.D. abutments: 25-30 Ncm.
Recommended torque for angled P.A.D. abutments: 20-25 Ncm.

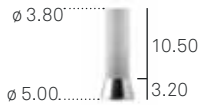
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium on page 238.

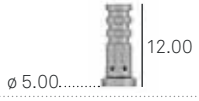
P.A.D. components for over-structures

description	code
Protection caps for P.A.D. abutments in Gr. 5 titanium Fixation screw included (code PAD-VP-140)	**PAD-CG** 
Protection caps for P.A.D. abutments in PEEK Fixation screw included (code PAD-VP-140)	**PAD-CGP** 
Rotating caps in POM for direct impression taking on P.A.D. abutments Non engaging	**PAD-CAP** 
Non rotating caps in POM for direct impression taking on P.A.D. abutment, with hexagon Engaging	**PAD-CAP-EX** 
Pick-up transfer in Gr. 5 titanium for P.A.D. abutments Rotating Long transfer screw included (code PAD-VTRAL-140)	**PAD-TRA** 
Pick-up transfer in Gr. 5 titanium for P.A.D. abutments, with hexagon, non rotating Long transfer screw included (code PAD-VTRAL-140)	**PAD-TRA-EX** 
Spare screw for P.A.D. abutment transfer Supplied with the transfers, it can be ordered separately as a spare	**PAD-VTRAL-140** 
Spare screw for P.A.D. transfers Supplied with transfers and also available separately as a spare	**PAD-VTRA-140** 
P.A.D. transfer screw for manual screwing Not included with transfers, it can be ordered separately	**PAD-VTRAL-140-MAN** 
Analog for P.A.D. abutment in Gr. 5 titanium	**PAD-ANA** 
Castable sleeves in PMMA for P.A.D. abutments, rotating Fixation screw included (code PAD-VP-140)	**PAD-CC** 

Recommended torque for transfer screws: 8-10 Ncm.

description	code
Castable sleeves in PMMA for P.A.D. abutments, with hexagon, non rotating Fixation screw included (code PAD-VP-140)	**PAD-CC-EX** 
Castable posts in PMMA with a pre-made base in gold alloy type “1”, rotating, non engaging, for overcasting on P.A.D. abutments Fixation screw included (code PAD-VP-140)	**PAD-UC** 
Castable posts in PMMA with a pre-made base in cobalt chrome, rotating, not engaging, for overcasting on P.A.D. abutments Fixation screw included (code PAD-VP-140)	**PAD-UCRCO** 
Spare screw for P.A.D. abutment prosthetic components Supplied with all the components for making the over-structure and also available as a spare May also be bought in packs of 10 pieces (code PAD-VP-140-10)	**PAD-VP-140** 

P.A.D. components for relining and luting technique

description	code
Sleeves in PEEK, for P.A.D. abutments, rotating, for the relining of existing prosthesis Fixation screw included (code PAD-VP-140)	**PAD-CP** 
Sleeves in PEEK,for P.A.D. abutments, with hexagon, non rotating, for the relining of existing prosthesis Fixation screw included (code PAD-VP-140)	**PAD-CP-EX** 
Sleeves in Gr. 5 titanium for P.A.D. abutments, rotating, for the relining of existing prosthesis Fixation screw included (code PAD-VP-140)	**PAD-CT** 
Sleeves in Gr. 5 titanium for P.A.D. abutments, with hexagon, non rotating, for the relining of existing prosthesis Fixation screw included (code PAD-VP-140)	**PAD-CT-EX** 
Castable sleeves in PMMA for cementing techniques on Gr. 5 titanium sleeves	**PAD-CCEM** 
Spare screw for P.A.D. abutment prosthetic components Supplied with all the components for making the over-structure and also available as a spare May also be bought in pack of 10 pieces (code PAD-VP-140-10)	**PAD-VP-140** 

Recommended torque for fixing protection caps: 8-10 Ncm.
Recommended torque for securing the prosthetic screws: 20-25 Ncm.

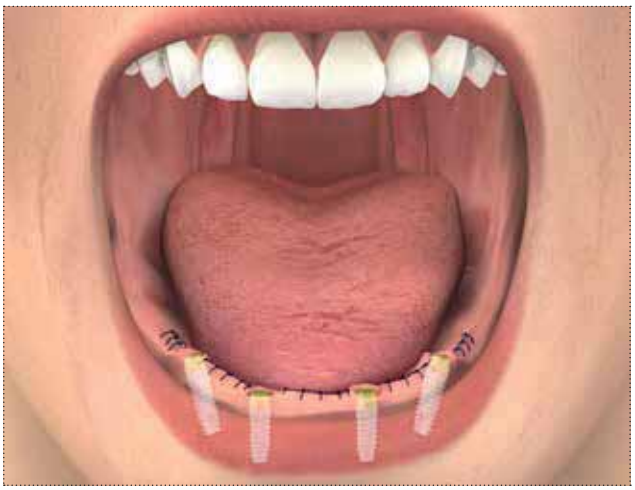
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium, PMMA, POM and gold alloy “1” on pages 238, 240, 241 and 242.

Insertion of straight P.A.D. abutments

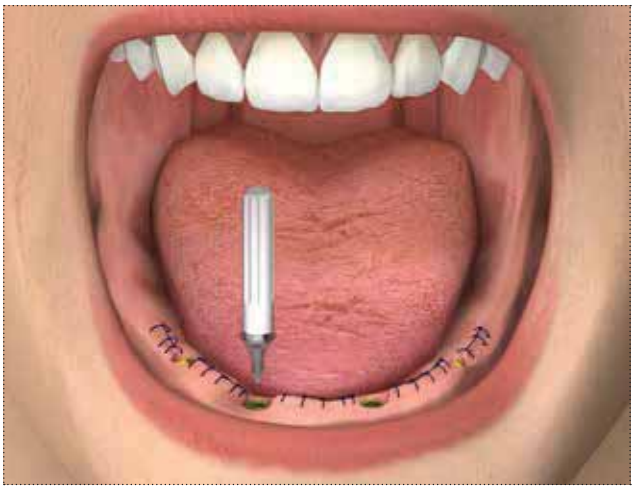
The following pages illustrate the insertion of straight and angled P.A.D. abutments.
For purely explanatory purposes, the images show a lower arch with fixtures positioned with the All-on-Four* protocol, so as to illustrate the use of both straight and angled abutments. The same insertion procedures are applicable even if rehabilitation envisages the use of a greater number of implants.

* The name of the "All-on-Four" technique, developed by Dr Paulo Maló, is a registered trademark owned by Nobel Biocare.

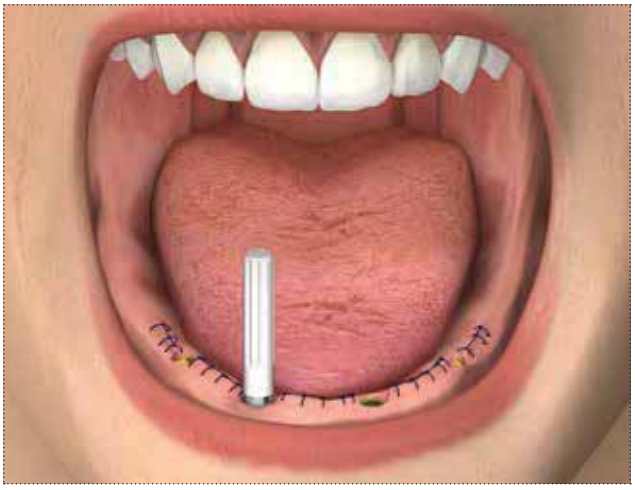


Use the AVV-ABUT-DG abutment carrier supplied to transport straight P.A.D. abutments into the patient's mouth. The carrier engages the upper hexagon of the P.A.D. abutment, and it is therefore not necessary to fully insert it to obtain the correct retention.

Important warning
Straight P.A.D. abutments are supplied in non-sterile packs. Before being used clinically, titanium abutments only must be sterilized in an autoclave. The AVV-ABUT-DG carrier is made in POM, and can therefore not be sterilized in an autoclave.
The carrier must therefore be cold-sterilized before being used to transport an abutment into the patient's mouth.



Insert the P.A.D. abutment into the implant connection, identify the correct engagement between the abutment thread and the socket thread, and screw in for a few turns. Remove the carrier from the P.A.D. abutment with a slight lever movement.



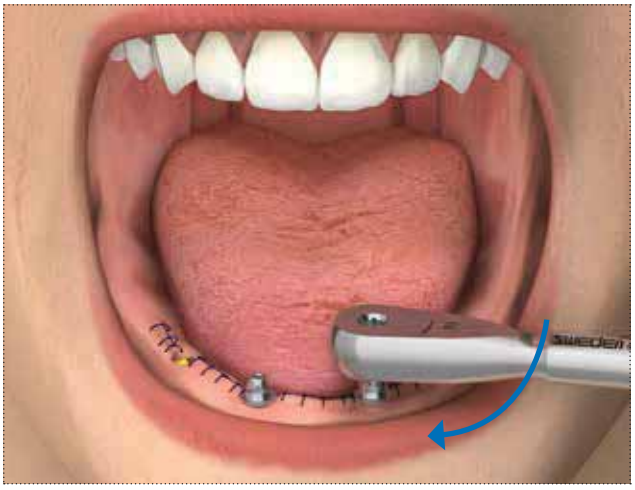
The screwing operation can be completed with the specific hexagonal key (code AVV2-ABUT), which must be purchased separately. This hexagonal key must be connected to the torque-control ratchet (CRI5).

If necessary, an extension can be used (BPM-15), to be fitted between the hexagonal key and the head of the ratchet.

Important warning
To guarantee the correct operation of instruments, periodic checks must be made to ensure that the retention of the rubber O-rings is adequate, replacing any that may be worn.

To stabilize the working axis of the ratchet and the instruments fitted to it, it is advisable to rest the index finger of the free hand on the ratchet wheel on the head of the ratchet.

Important warning
The maximum tightening torque for straight P.A.D. abutments, when directly screw retained is 25–30 Ncm. As it is difficult to control the insertion torque of prosthetic components manually, the procedure must always be completed using the torque-control ratchet.



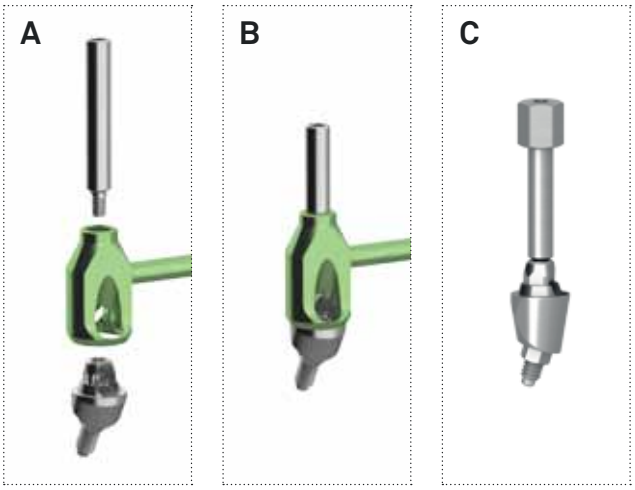
Insertion of angled P.A.D. abutments

Use the HSM-20-DG driver to engage the connection screw (code PAD-VM-* depending on the implant connection): the special design of the instrument makes it possible to exercise a light grip inside the screw head, so that it can be transported and inserted in the hole in the side of the P.A.D. abutment.

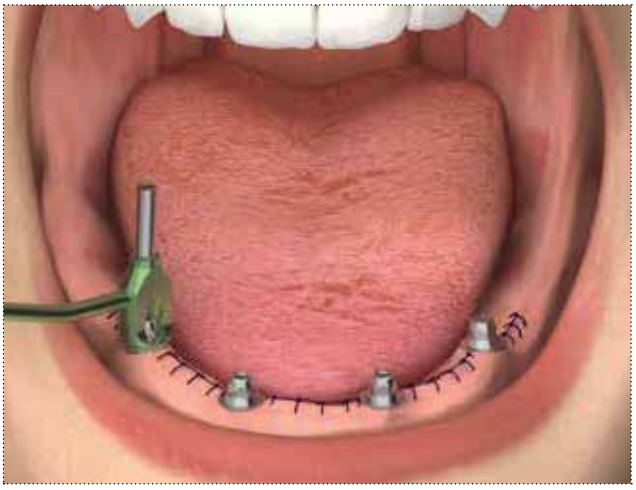
Important warning
Angled P.A.D. abutments must be transported into the patient's mouth using the specific PAD-CAR transporter and a transfer screw, also made of titanium, to fix the abutment to the instrument. Before being used clinically, the components must be sterilized in an autoclave.

Position the angled P.A.D. abutment in the lower part of its specific carrier (code PAD-CAR), so that the screw hole of the abutment coincides with one of the two side holes in the carrier, depending on the orientation made necessary by the side of the mouth being operated on (**img. A**). Insert the transfer screw in the upper hole of the carrier (code PAD-VTRA-140) and tighten it onto the angled P.A.D. abutment (**img. B**).

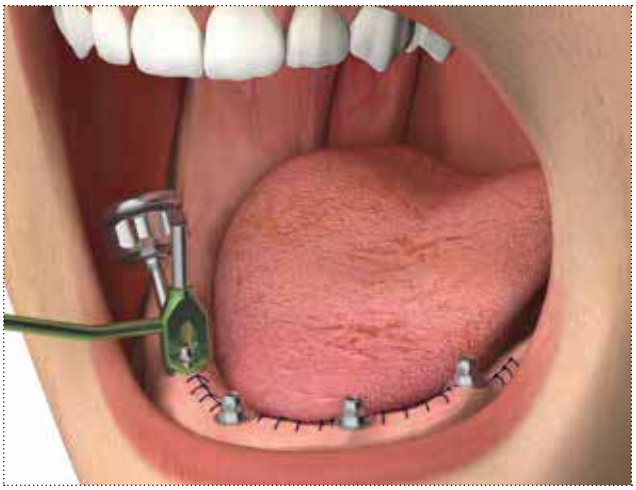
Note: the transfer screw is not supplied together with the carrier. It can be ordered separately in a single pack. If there is not sufficient vertical space, the transfer screw for manual screwing PAD-VTRAL-140-MAN can be used as a carrier, without PAD-CAR, screwing it directly into the prosthetic hole (**img. C**).



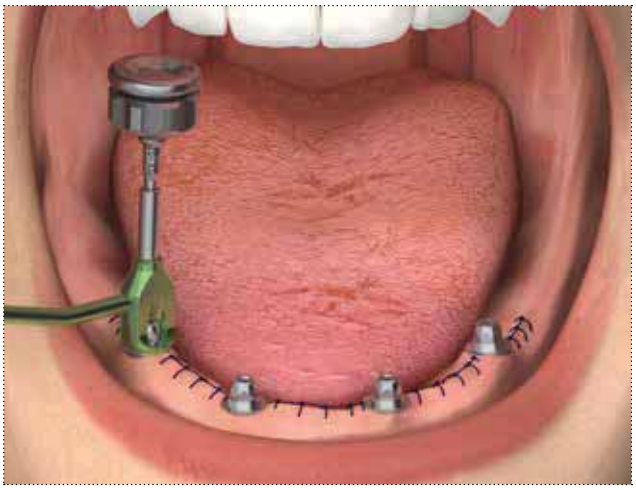
Position the transfer screw-carrier-angled P.A.D. assembly on the implant connection.



Keeping the abutment in place with the carrier, screw the connection screw fully.

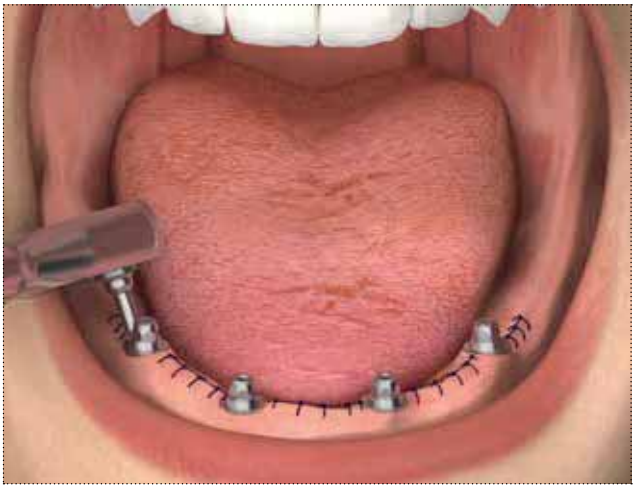


Use the same driver of the HSM series to unscrew the transfer screw, and then extract the carrier.



Check for correct manual tightening torque again fitting a screwdriver of the HSM series into the ratchet (code CRI5).

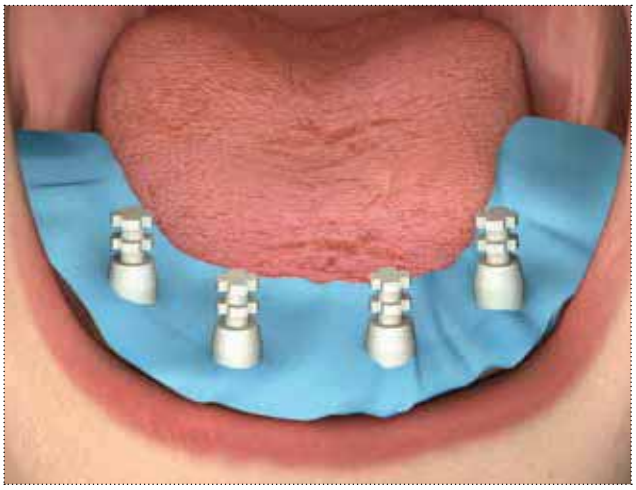
Important warning
The maximum tightening torque for angled P.A.D. abutments, fixed with through screw, is 20–25 Ncm. As it is difficult to control the insertion torque of prosthetic components manually, the procedure should always be completed using the torque-control ratchet. It is advisable to keep the ratchet in a perpendicular position during screwing operations, keeping the index finger of the free hand on the ratchet wheel to prevent swaying movements that could damage instruments and compromise the correct positioning of the abutments.



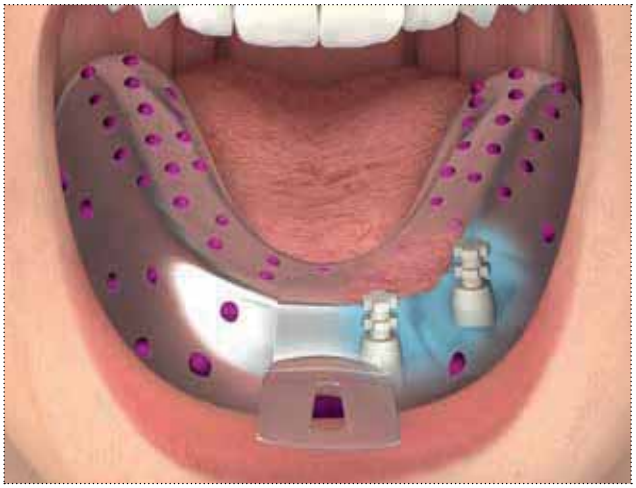
Immediate loading on 4 or 6 implants: luting technique

Impression on P.A.D. abutments with POM caps

After inserting the P.A.D. abutments in the implant connections, insert the POM caps (code PAD-CAP) with a slight pressure for the closed tray technique. No screws are used, because these caps directly grip the cone of the abutment. They are particularly indicated for cases of slight disparallelism of emergence platforms.
See page 241 for the technical characteristics of POM.



If necessary, reduce the caps to fit the patient's vertical dimension removing one of the two ritentive tabs. Position the closed impression tray on the caps, attempting to avoid lateral movements that may cause them to move accidentally. Leave the impression material following the manufacturer's instructions, and lift the tray vertically.



If the abutments are not to be immediately loaded and must be protected while they remain in the oral cavity, they can be covered with the specific PAD-CG titanium protection cap (**img. A**), or with the PAD-CGP caps in PEEK (**img. B**), which are smaller and can therefore be more easily hidden by a temporary prosthesis. These caps must be fitted onto the abutments using the screws provided. The recommended torque for tightening protection caps screws is 8–10 Ncm.

Important warning
Both types of protection cap are sold in non-sterile packs, and they must therefore be sterilized in an autoclave before clinical use, following the instructions given on page 250.

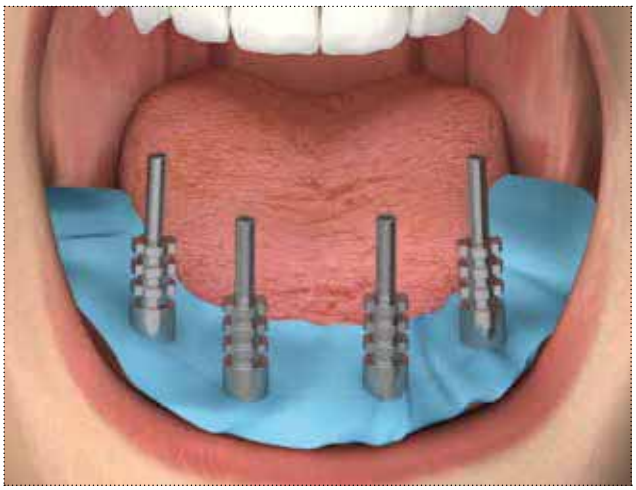
Position the analogs (code PAD-ANA) in the impression tray, engaging them in the rotating caps.

Develop the model as usual.

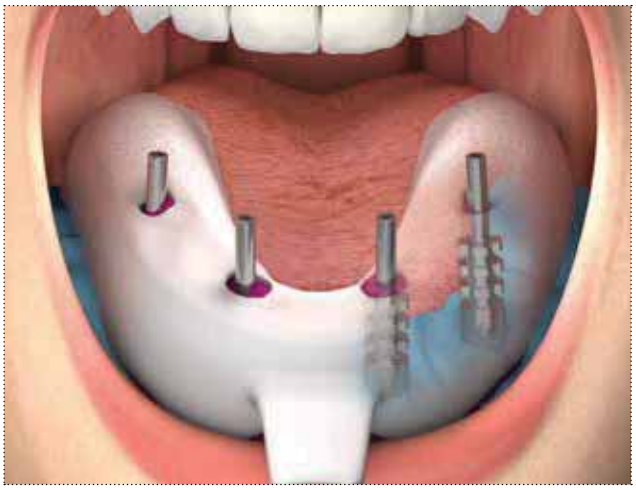
Impression on P.A.D. abutments with Pick-up transfers

After inserting the P.A.D. abutments into the implant connections, screw the Pick-up transfers with the supplied long screw PAD-VTRAL-140, suitable for taking the impression with an individual open tray.

If desired, fix the transfers together with wire and resin or composite, and wait for polymerization to be completed, as indicated by the manufacturer.



Position the individual open tray on the transfers. The screw will protrude from the specifically created holes in the individual tray. When the impression material is completely hardened, unscrew the transfer screws and remove the impression tray.

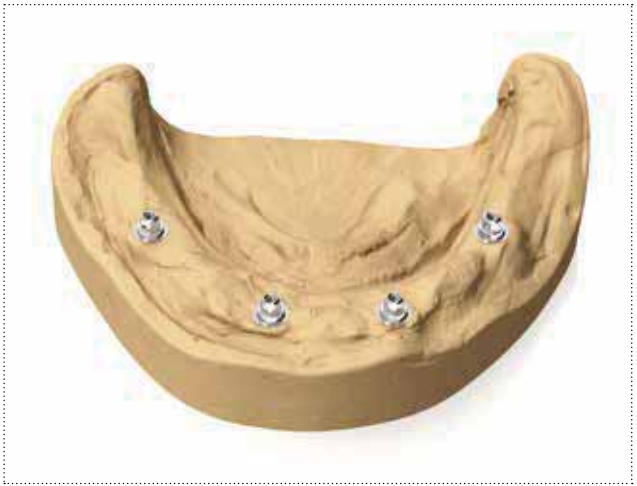


If the abutments are not to be immediately loaded and must be protected while they remain in the oral cavity, they can be covered with the specific PAD-CG titanium protection cap (**img. A**), or with the PAD-CGP caps in PEEK (**img. B**), which are smaller and can therefore be more easily hidden by a temporary prosthesis. These caps must be fitted onto the abutments using the screws provided. The recommended torque for tightening protection caps screws is 8–10 Ncm.

Important warning
Both types of protection cap are sold in non-sterile packs, and they must therefore be sterilized in an autoclave before clinical use, following the instructions given on page 250.

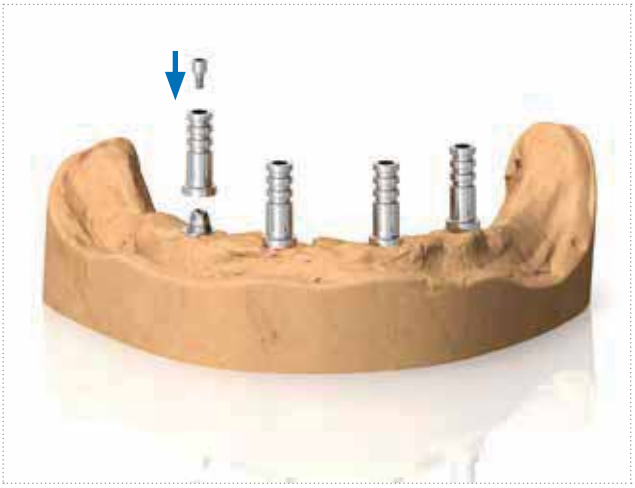
Screw the laboratory analogs (code PAD-ANA) to the transfers and fix the screws replaced in the holes left by them in the impression material.

Develop the model as usual.

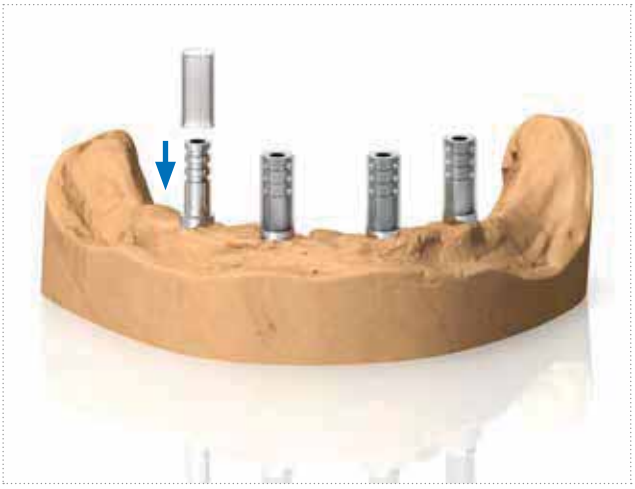


Production of a prosthesis with a reinforced structure: luting technique

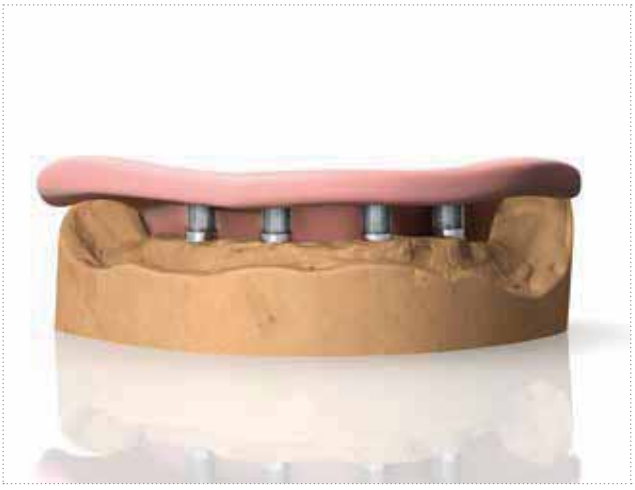
Using the specific screws supplied (code PAD-VP-140), screw on each P.A.D. analog a rotating titanium sleeve (code PAD-CT).



Insert on each titanium sleeve a castable cylinder in PMMA (code PAD-CCEM).



Reduce the titanium sleeves and the castable cylinders to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.



Model a resin truss that incorporates the castable sleeves.

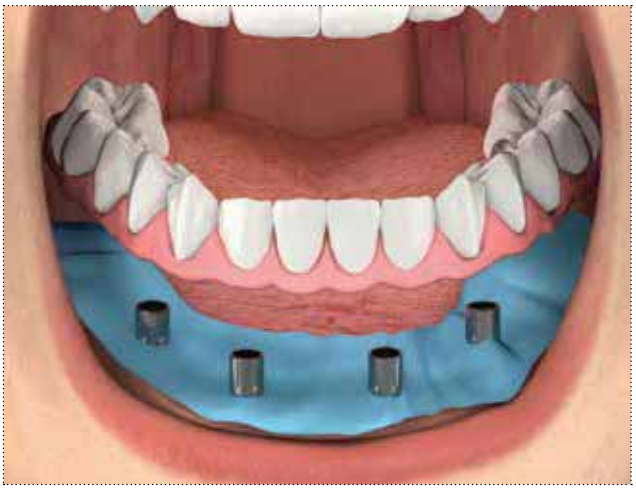
Remove the structure from the model and proceed with casting or a replica using CAD CAM techniques. The titanium sleeves remain tightened onto the P.A.D. analogs.

Fabricate the aesthetic part of the prosthesis, as usual. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.

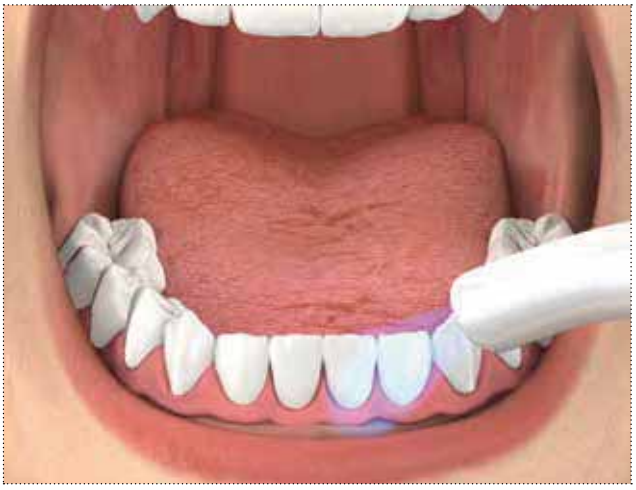
IN THE SURGERY: invert the temporary prosthesis and insert resin cement between the cast truss and the titanium sleeves.

Fit the temporary prosthesis onto the titanium sleeves, previously replaced in the patient's mouth, and tightened with the respective screws.

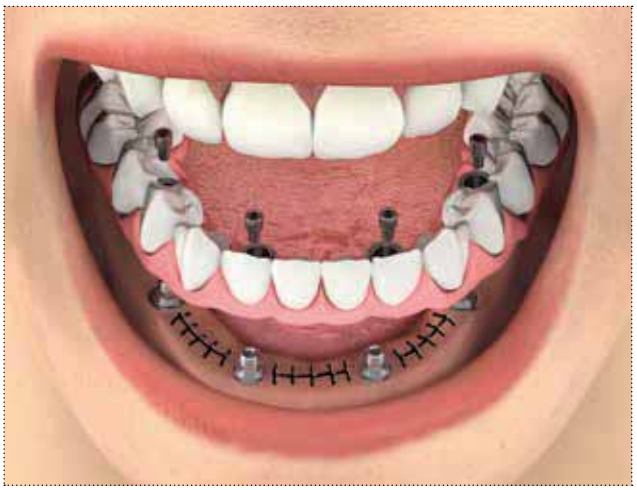
Note: take great care to correctly position the titanium sleeves the patient's mouth, following the order of the model, so as to avoid creating discomfort and functional difficulties. Soft tissues can be protected by inserting a suitable shaped rubber dam to prevent sutures from being incorporated in the cement.



Polymerize the cement following the manufacturer's instructions.



Unscrew the temporary prosthesis and trim the base: the titanium sleeves will remain incorporated by the cement inside the prosthesis, while the P.A.D. abutments will remain tightened onto the implants. After polishing the base, screw the temporary prosthesis onto the P.A.D. abutments with a torque of 20–25 Ncm. Check for occlusal relationships and for the absence of stresses. Preserve the screw heads and close the screw holes with a removable material, such as a composite or a resin. You should also instruct to turn the prosthesis over and fill in any gaps that the cement might have missed on the bottom side of the prosthesis



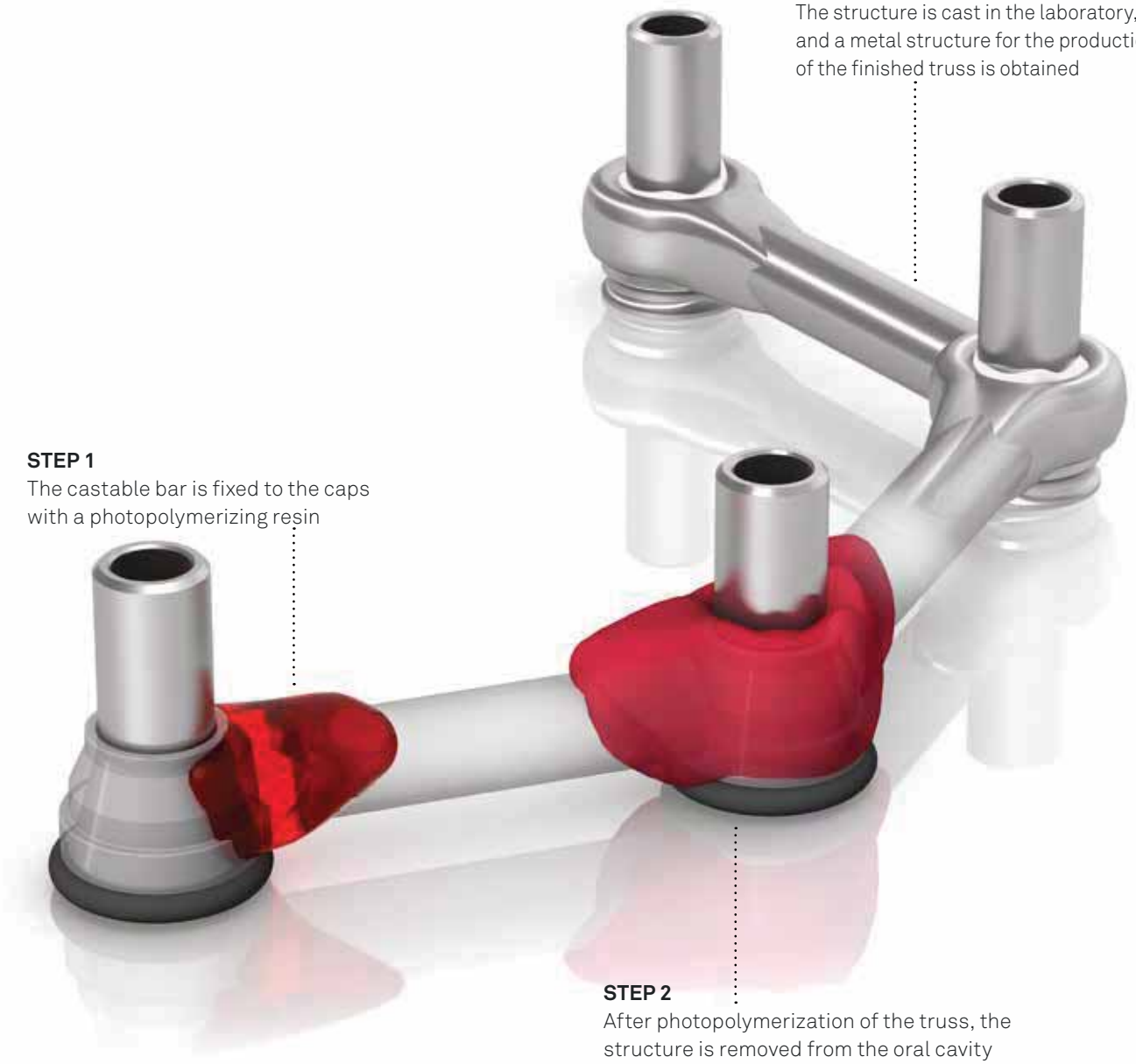
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

Important warning
For patients already fitted with an overdenture, a temporary prosthesis anchored on implants can be created, using the same PAD-CT titanium sleeves or the version in PEEK (code PAD-CP). In this case, the existing prosthesis must be perforated at the positions of the implants, and then glued/cemented onto these sleeves, relining directly in the patient's mouth. The excess parts of sleeves must then be cut away, to avoid discomfort and functional problems.

Immediate loading on 4 or 6 implants: Direct Prosthetic Framework (D.P.F.) technique

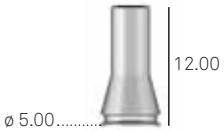
D.P.F. components were specifically developed to facilitate impression protocols and the transfer to a laboratory of multiple rehabilitations with P.A.D. abutments, regardless of their number. The intraoral cementation of the metal truss obtained subsequently by casting makes it possible to reduce insertion times for a reinforced temporary prosthesis to 8 hours after the completion of surgery, at the same time conserving all the important requirements of resistance and passivity during the initial phase of implant loading.

STEP 3
The structure is cast in the laboratory, and a metal structure for the production of the finished truss is obtained



STEP 1
The castable bar is fixed to the caps with a photopolymerizing resin

STEP 2
After photopolymerization of the truss, the structure is removed from the oral cavity

description	code
Complete pack of all the prosthetic components for the “D.P.F.” technique on a single P.A.D. abutment The pack includes the titanium sleeve (PAD-CT-LV), the castable centring device (PAD-CC-LV), the anti-escape plug (PAD-TR-LV), the protective O-ring (PAD-ORING-LV) and the fixation screw (PAD-VP-140)	**PAD-LV** 
Spare titanium sleeve for the “D.P.F.” technique The pack does not include the fixation screw	**PAD-CT-LV** 
Spare castable centring device for the “D.P.F.” technique	**PAD-CC-LV** 
Spare anti-escape plug for the “D.P.F.” technique	**PAD-TR-LV** 
Spare O-ring for the “D.P.F.” technique	**PAD-ORING-LV** 
Single pack Pack of 10 pieces Spare screw for P.A.D. abutment prosthetic components	**PAD-VP-140** 
Castable bar, L. 5.00 cm, ø 2.20 mm	**BARC**

Recommended torque for P.A.D. abutments screws: 20-25 Ncm.

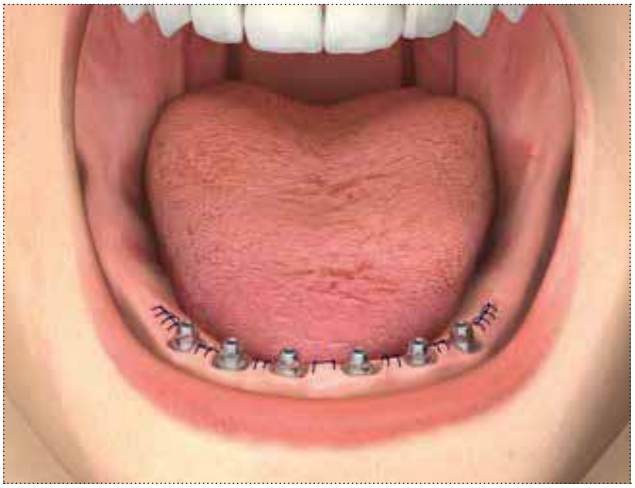
See technical characteristics of PMMA on page 240.

Immediate loading on 4 or 6 implants: Direct Prosthetic Framework (D.P.F.) technique

Production of a prosthesis with a reinforced structure

Before suturing the surgical wound, screw a P.A.D. abutment onto every implant, with a suitable transgingival height for the thickness of the patient's soft tissues. Then apply sutures as required by clinical indications.

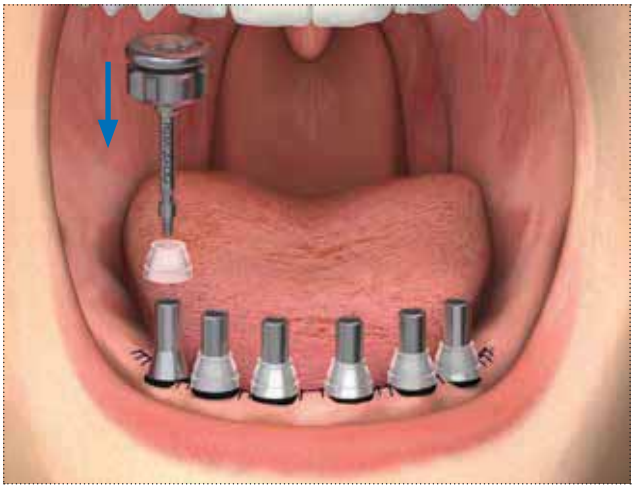
Important warning
Straight P.A.D. abutments are supplied in non-sterile packs. Before being used clinically, they must be sterilized. Abutments are made in titanium, and can therefore be sterilized in an autoclave. The AVV-ABUT-DG carrier is made in POM, and can therefore not be sterilized in an autoclave, but must instead be cold-sterilized before being used to transport an abutment into the patient's mouth.



Push the black O-ring down to the base of the sleeve, until it rests in the groove provided. A probe can be used to facilitate this operation.

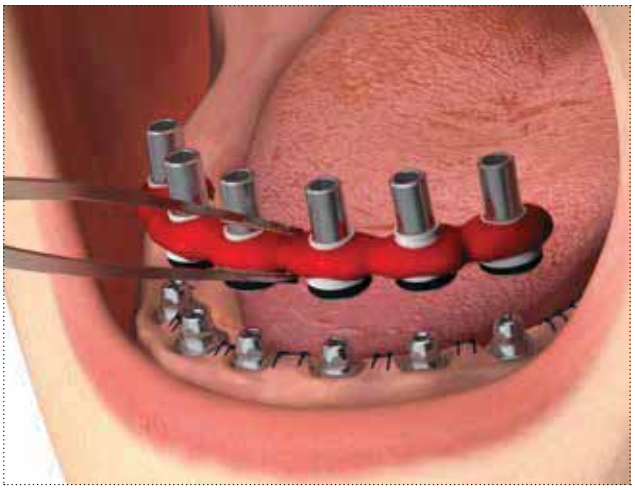
Using the specific screw provided, screw a titanium sleeve for the D.P.F. technique (code PAD-CT-LV) fitted with its black O-ring (code PAD-ORING-LV) onto every P.A.D. abutment. Then fit a castable centring device (code PAD-CC-LV) onto every sleeve.

Important warning
Components for the D.P.F. technique are sold in non-sterile packs, with a kit for every single P.A.D. abutment. Every kit contains all necessary components, as indicated on page 136. Before being used clinically, components must be sterilized in an autoclave. It is advisable to also coldsterilize the silicone O-ring and the castable centring device before inserting them in the patient's mouth.



Create a castable resin structure on the PAD-CC-LV elements using preformed segments (code BARC) and a liquid photopolymerizing resin (**img. A**). Finally thicken the truss with another layer of resin (**img. B**).

When polymerization is complete, unscrew the PADVP-140 screws and remove the entire resin structure with the PAD-CT-LV sleeves still inserted.

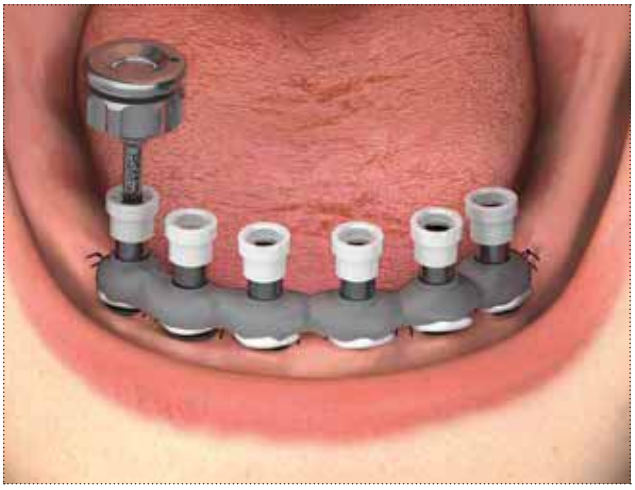


IN THE LABORATORY: if necessary thicken the structure even further. Remove the titanium sleeves and their respective screws before casting the truss.

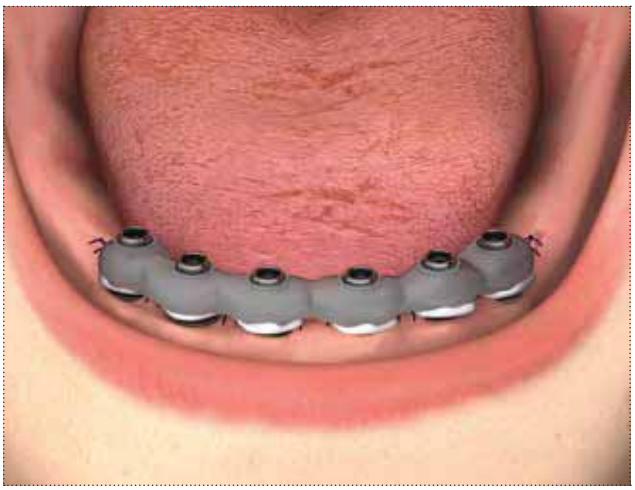
Cast the structure using the standard protocol. Test the structure in the patient's mouth, checking for its complete passivity.
The recommended torque for tightening all over-structures obtained by casting onto P.A.D. abutments is 20–25 Ncm.
Replace the titanium sleeves in the truss, which is kept in the correct position by the specific anti-escape plugs.
Insert the PAD-VP-140 screws again from the top of the sleeves, and inject a small quantity of petroleum jelly into the sleeves, to prevent the screws from escaping during transport to the surgery.

IN THE SURGERY: invert the structure received from the laboratory and insert resin cement resin cement between the cast truss and the titanium sleeves.

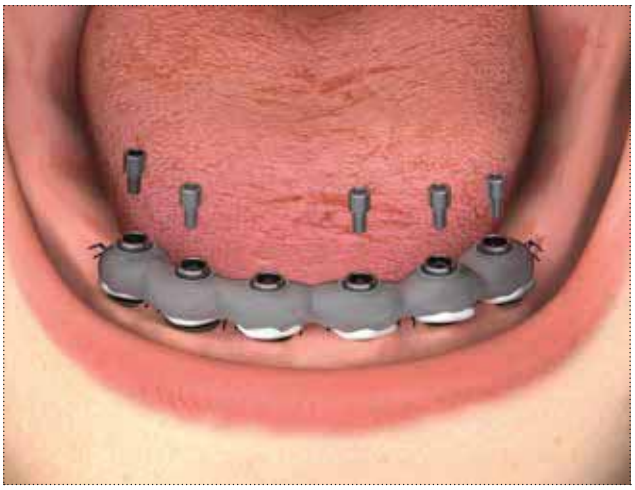
Screw the structure onto the P.A.D. abutments with a torque of 20–25 Ncm, and polymerize the cement.



If necessary, the technician can shorten the sleeves to conform to the patient's vertical dimension.

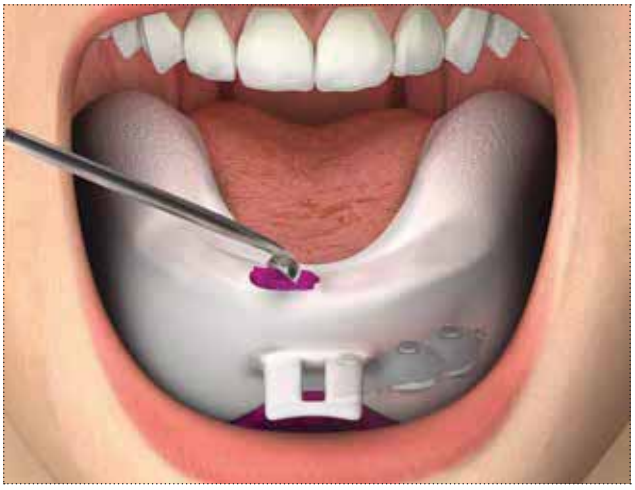


Remove all the PAD-VP-140 screws, except for one in a mesial position.

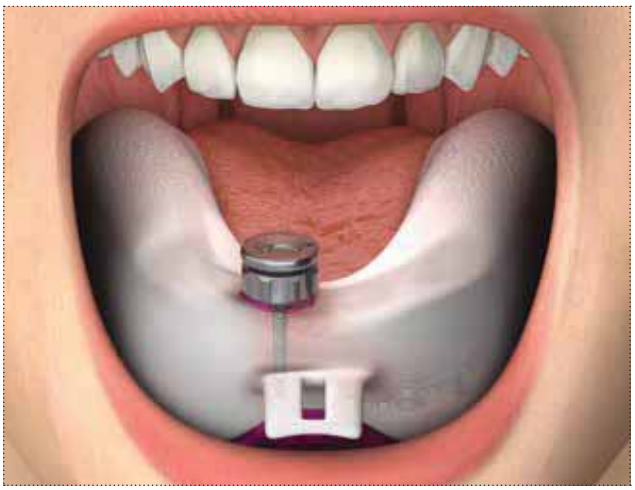


Using an individual tray, perforated at the position of the screw left in place, take an impression that incorporates the cast truss, fixed previously to the titanium sleeves. Then excavate the impression at the position of the screw.

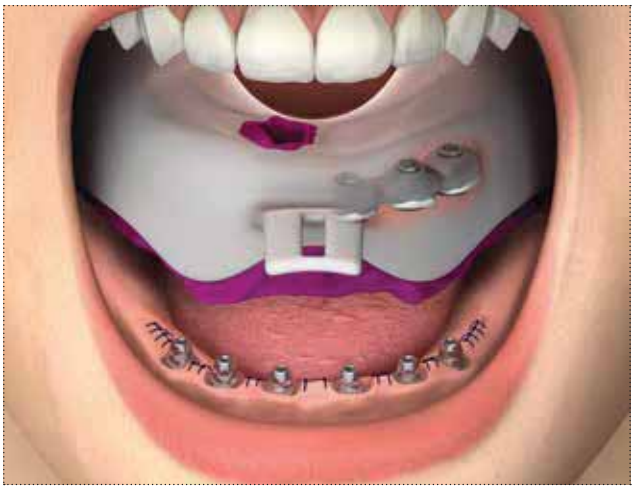
Note: the PAD-VP-140 screw can be substituted with a PADVTRAL-140 transfer screw. In this way, it will no longer be necessary to excavate the impression, but it will be sufficient to unscrew the screw by turning it from the end projecting from the tray.



Unscrew the PAD-VP-140 screw or the transfer screw.



Lift the impression tray, inside which the truss will be incorporated.



Position the P.A.D. analogs (code PAD-ANA) in the impression tray, engaging them at the base of the cast structure.

Cast the model and free the truss from the impression, then screwing it back onto the analogues of the P.A.D. abutments.

Produce temporary resin prosthesis using normal methods, and trim the base to ensure greater comfort for the patient.

Screw the temporary prosthesis into the patient's mouth and close the holes with temporary cement.

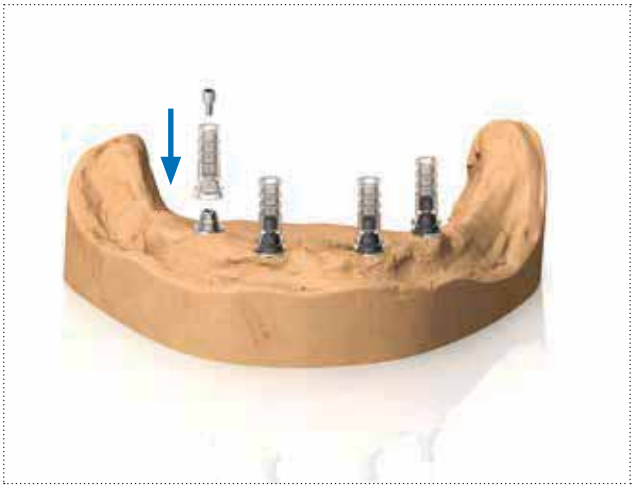
Deferred loading on 4 or 6 implants

Production of a definitive prosthesis by casting or using CAD CAM technique

Remove the temporary prosthesis and take a definitive impression on the P.A.D. abutments with Pick-up transfers and an individual tray, following the same procedures indicated on page 42, and then cast the model. Reposition the temporary prosthesis in the patient's mouth.

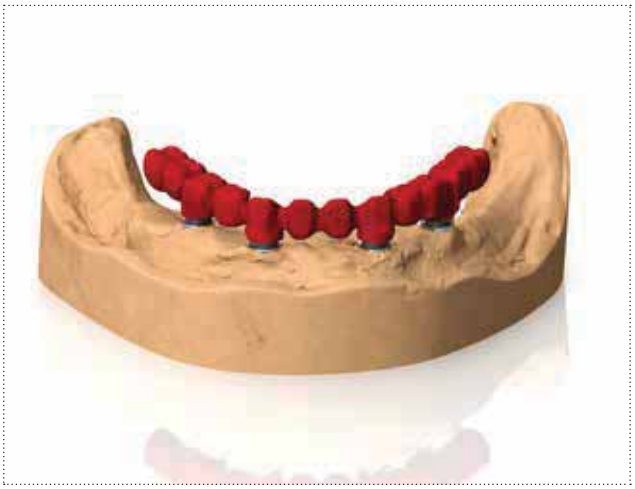
Screw the castable sleeves (code PAD-CC) onto the abutments. Care must be taken during laboratory work, before casting, to avoid tightening totally castable sleeves onto models with a torque greater than 8–10 Ncm, because polymers are weaker than metal. See page 240 for the technical characteristics of PMMA.

Important warning
During laboratory work, always use spare screws, available in single packs with codes PAD-VP-140. Use the definitive screws only for final tightening in the patient's mouth.



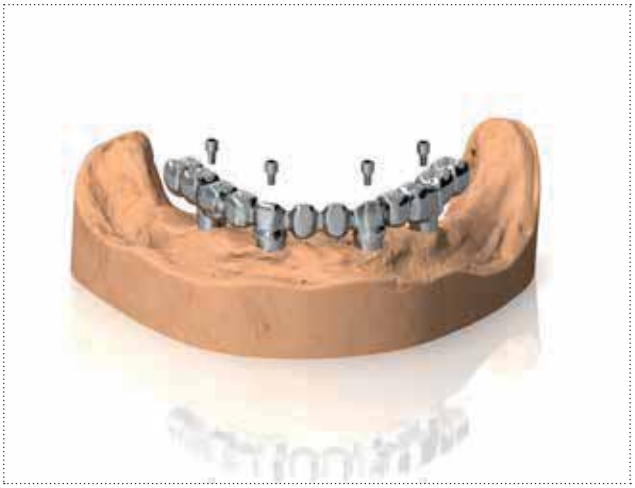
Reduce the castable sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.

Make a castable structure, which will allow the metal framework of the final prosthesis to be obtained. Starting from the same wax-up, the structure can also be produced by duplication using CAD CAM technology.



Cast the structure or fabricate it by using CAD CAM technology. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.

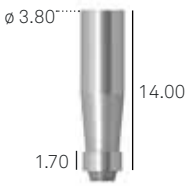
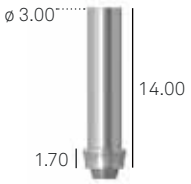
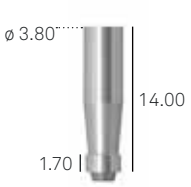
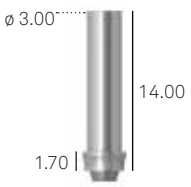
Important warning
If the structure is not completely passive, even after following the normal checking protocol before casting, adjust it as usual.



Ceramize the definitive prosthesis as usual, and tigthen it onto the P.A.D. abutments in the patient's mouth. Preserve the screw heads and close the screw holes with a removable material, such as composite or a resin. The recommended torque for tightening all over-structures obtained by casting onto abutments is 20–25 Ncm.

Temporary rehabilitation with sleeves for multiple screw retained structures

These sleeves have been developed to be used in cases of multiple screw retained prostheses, since thanks to their length guarantee an excellent support to the prosthesis. The sleeves are available in cobalt-chrome and Gr. 5 titanium, making it possible to fabricate prostheses using various techniques such as casting, overcasting, luting and welding. In order to tighten these sleeves, screws with conical support must be used, or alternatively screws with Full Head technology, in the table in the next page.

description	code
Gr. 5 titanium sleeves Non engaging H. 14.00 mm Straight emergence Fixation screw with conical support included	**L-CT-340-ROT** 
Gr. 5 titanium sleeves Non engaging H. 14.00 mm Anatomical emergence Fixation screw with conical support included	**L-CTR-340-ROT** 
Cobalt-chrome sleeves Non engaging H. 14.00 mm Straight emergence Fixation screw with conical support included	**L-CCRCO-340-ROT** 
Cobalt-chrome sleeves Non engaging H. 14.00 mm Anatomical emergence Fixation screw with conical support included	**L-CCRCOR-340-ROT** 
Single pack Pack of 10 pieces Fixation screw with conical support Supplied with sleeves, it can also be ordered separately as a spare	**L-VMS-180** **L-VMS-180-10** 
Single pack Pack of 10 pieces Full Head screw Not supplied with sleeves, available optionally*	**L-VM-180** **L-VM-180-10** 

Recommended torque for titanium sleeves: 20-25 Ncm.
**The fixation screws with Full Head technology (L-VM-180) must be tightened with the appropriate drivers for screws with Full Head technology contained in the Prama surgical kit.*

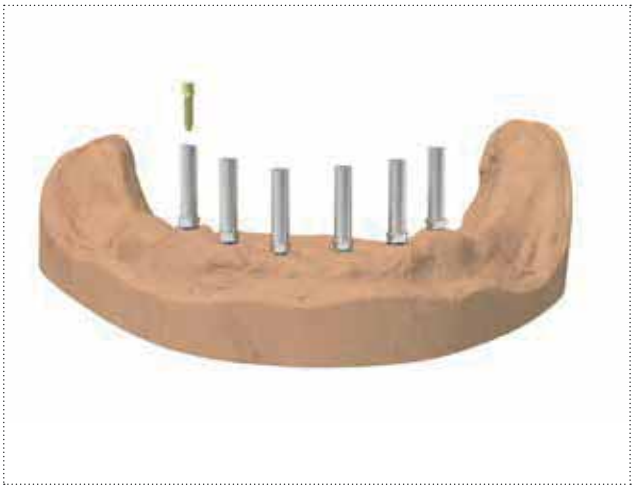
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity

Important warning
It is recommended not to use standard fixation screws (code VM2-180) with these posts because standard screws do not have the conical support, so they do not interface exactly with the seat of the screw head inside these prosthetic components. Failure to observe this warning leads to the risk of unscrewing or breaking of the screw.

See technical characteristics of Gr. 5 titanium and cobalt chrome on pages 238 and 243.

Temporary full arch rehabilitation with sleeves for multiple screw retained structures: luting technique

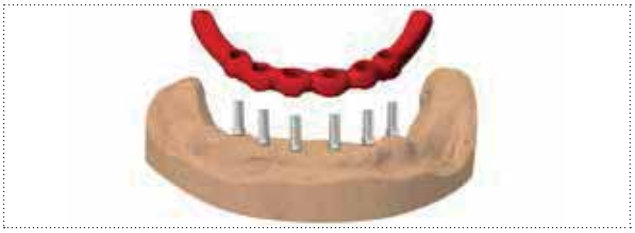
Starting from the precision model, tighten a sleeve on each analog with the supplied screw by using a screwdriver of the HSM series.

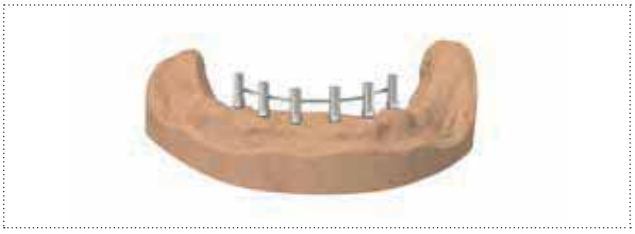


Reduce the sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a previous assembly or by placing the structure in an articulator in relation to the space left by the antagonist.

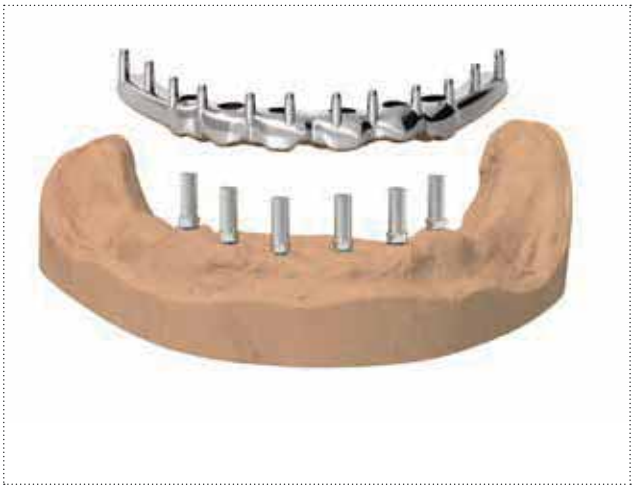
Make a castable structure, which will allow the metal framework of the final prosthesis to be obtained.

Note: if necessary, it is possible to product a reinforced structure by extraoral welding of the sleeves using one of the various methods of welding.



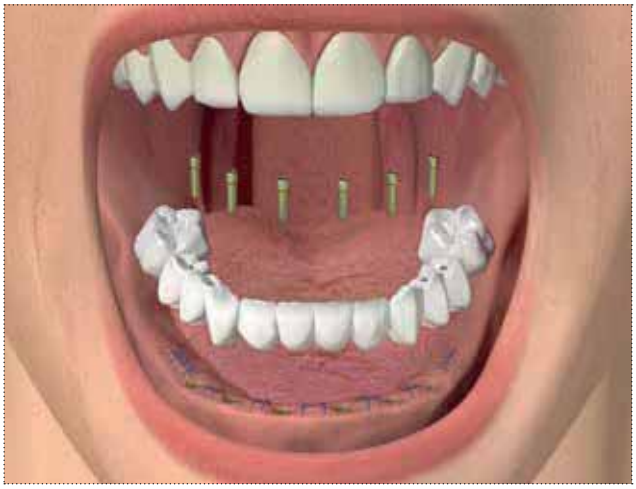


Cast the previously modelled structure around the sleeves. Test the truss on the model to check that there is no roughness that could obstruct correct positioning on the posts, and correct it if necessary with a drill.



Include the cast or welded structure inside a temporary resin prosthesis loaded in an adequate manner to ensure the patient's comfort.

When polymerization is complete, unscrew the temporary structure from the model and tighten it onto the implants, taking care to keep the flaps of the soft tissue away from the connection during insertion procedures and suturing them around the emergence of the posts to allow adequate conditioning. The temporary structure must be tightened on using a driver from the HSM series. A tightening torque of 20-25 Ncm must not be exceeded.



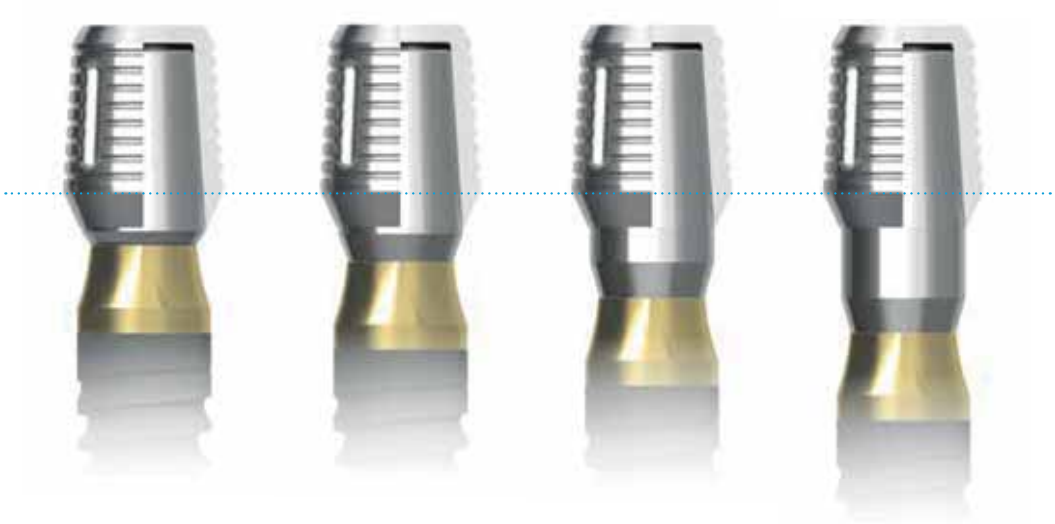
Temporary and definitive rehabilitation with Conoweld conometric technique

These abutments are made of Gr. 5 titanium for the purpose of using the Conoweld conometric technique. This technique embraces the advantages of two protocols already widely established in implantoprosthesis: intraoral welding and conometric retention, both for temporary and final solution, employing cement-less prosthetic components and removable by the clinician.

Conoweld prosthetic components may not be released for sale in all markets. For the USA consult the manual MP-IMP-CONICO-USA.

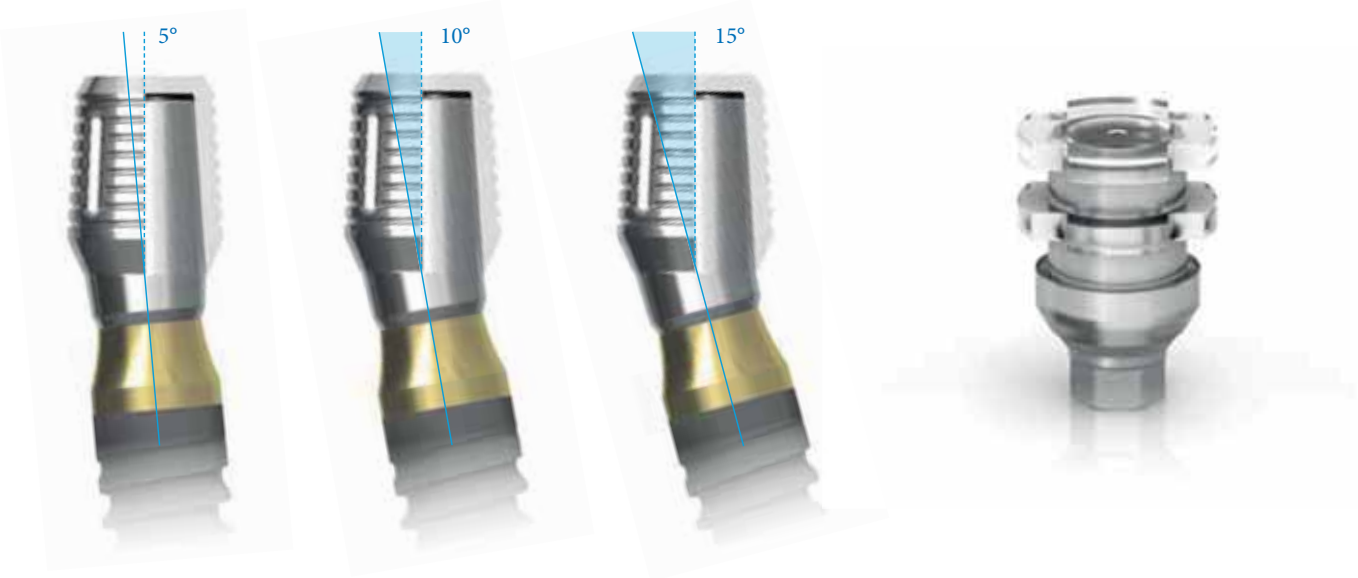
Conoweld conometric caps

The Conoweld range includes three different caps: this is due to the fact that conometric retention is in the most coronal portion of the post, which always has the same dimensions.

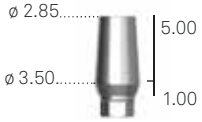
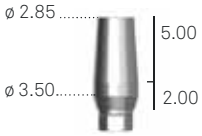
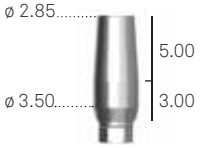
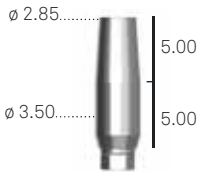
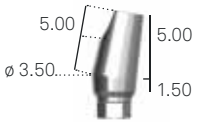


The two titanium caps differ in thickness: the cap designed for the construction of a welded structure intraorally for the temporary stage is thicker in order to withstand the welding with the titanium bars, without bonding with the underlying post, while the cap designed to anchor the final prosthesis glued on is thinner, in order to reduce the impact on the anatomical morphology of the prosthesis; it should not, therefore, be used for the welding.

A cap in PMMA is also available, which allows a precise impression to be taken even when working without a intraoral welding machine and which can be used for modelling and casting a structure entirely in cobalt chrome or other alloys, when the decision has been taken not to use luting techniques for assembly.



Conoweld posts for Prama implants

description	code
Conoweld post in Gr. 5 titanium Straight Transgingival h. 0.50 mm Fixation screw included	**A-MD-TS-EX230-05** 
Conoweld post in Gr. 5 titanium Straight Transgingival h. 1.00 mm Fixation screw included	**A-MD-TS-EX230-1** 
Conoweld post in Gr. 5 titanium Straight Transgingival h. 2.00 mm Fixation screw included	**A-MD-TS-EX230-2** 
Conoweld post in Gr. 5 titanium Straight Transgingival h. 3.00 mm Fixation screw included	**A-MD-TS-EX230-3** 
Conoweld post in Gr. 5 titanium Straight Transgingival h. 5.00 mm Fixation screw included	**A-MD-TS-EX230-5** 
Conoweld post in Gr. 5 titanium Angled at 5° Fixation screw included	**A-MA05-TS-EX230** 
Conoweld post in Gr. 5 titanium Angled at 10° Fixation screw included	**A-MA10-TS-EX230** 
Conoweld post in Gr. 5 titanium Angled at 15° Fixation screw included	**A-MA15-TS-EX230** 
Single pack Pack of 10 pieces Fixation screw for Conoweld posts Supplied with the posts and also available separately as a spare	**VM2-180** **VM2-180-10** 

Recommended torque for Conoweld posts: 20-25 Ncm.

Components for Conoweld technique

description	code
Temporary cap for intraoral welding	**CAP-TS-PRO** 
Final cap for luting	**CAP-TS-DEF** 
Cap for impression taking	**CAP-TS-IMP** 
Analog of the Conoweld	**ANA-TS** 
Package of 5 pieces Bar in Gr. 2 titanium, L. 150 mm, ø 1.20 mm	**DW-BARRA1.2** 
Package of 5 pieces Bar in Gr. 2 titanium, L. 150 mm, ø 1.50 mm	**DW-BARRA1.5** 
Package of 5 pieces Bar in Gr. 2 titanium, L. 150 mm, ø 1.80 mm	**DW-BARRA1.8** 

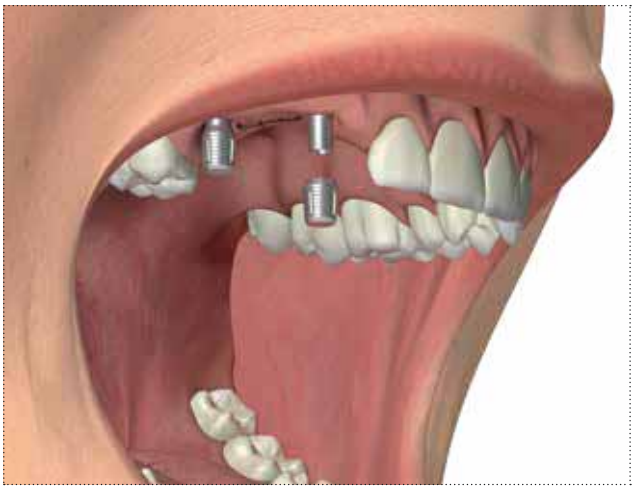
See technical characteristics of Gr. 2 titanium, Gr. 5 titanium and PMMA on pages 236, 238 and 240.

Temporary multiple rehabilitation with intraoral welding on Conoweld caps

Position the Conoweld posts on the implants, choosing the transgingival height that is the most suitable and the angle that is most appropriate in the case of disparallel implants. Tighten with the fixation supplied screws using one of the HSM drivers.
The torque must not exceed 20-25 Ncm.

Position the temporary Conoweld caps (code CAP-TS-PRO) on the abutments, gently applying manual pressure.
Take a Gr. 2 titanium bar for intraoral welding of the most suitable thickness and curve it manually in line with the arch to be rehabilitated.

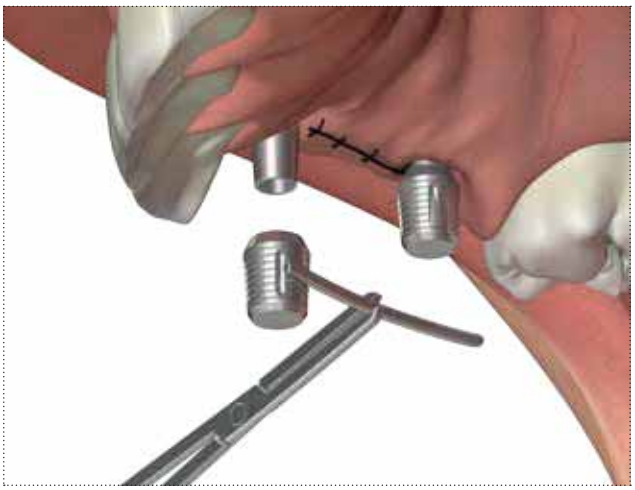
Note: avoid cutting the bar to measure at the outset, as the excess segment makes removal and repositioning easier to handle until the welding of the caps is complete.



Line up the segment of the bar with one of the two caps and carry out welding with the special intraoral welding machine, following the manufacturer's instructions.

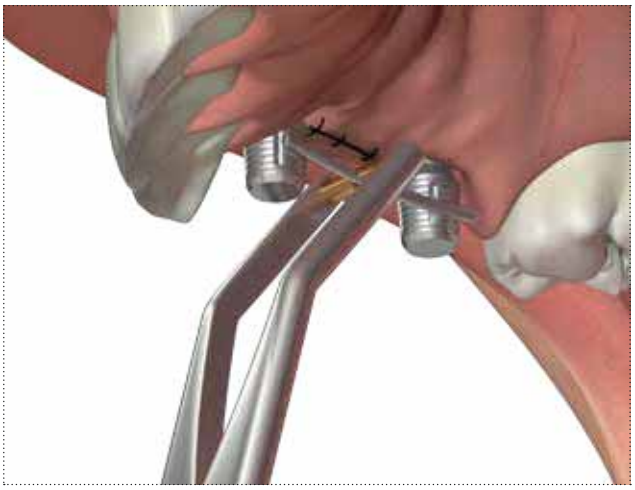
Important warning
To set the operating parameters for the welding machine and for the relevant information and warnings, read and follow the instructions in the manual issued by the manufacturer of the equipment.

In order to establish that the procedure has been carried out correctly, it is advisable after each welding, and before the next, to remove the bar and caps that have been fixed up until that point.
This helps to establish that the wall of the cap and the underlying post have not bonded and to be sure that a passive structure is being built.

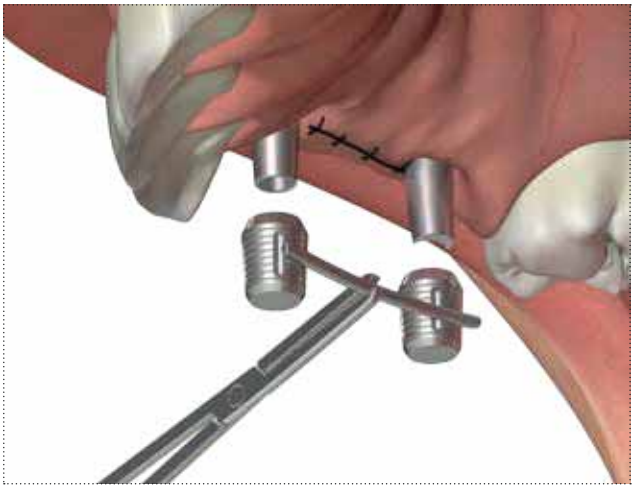


Having positioned the first cap back on its post, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.

Note: in order to further increase the passive nature of the structure and eliminate any residual stress, welding is advisable at a halfway point along each segment of free titanium along the bar.

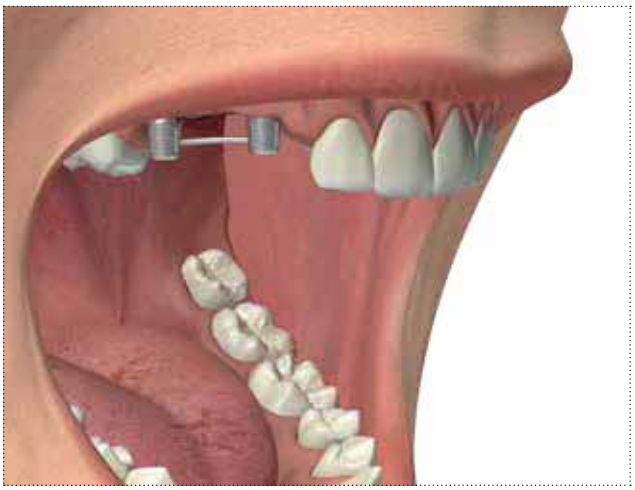


Remove the structure made up of the bar and the first two caps welded to it in order to establish that that the wall of this second cap and the underlying post have not bonded and to establish that the structure is passive.



Direct protocol: production of an immediate temporary prosthesis

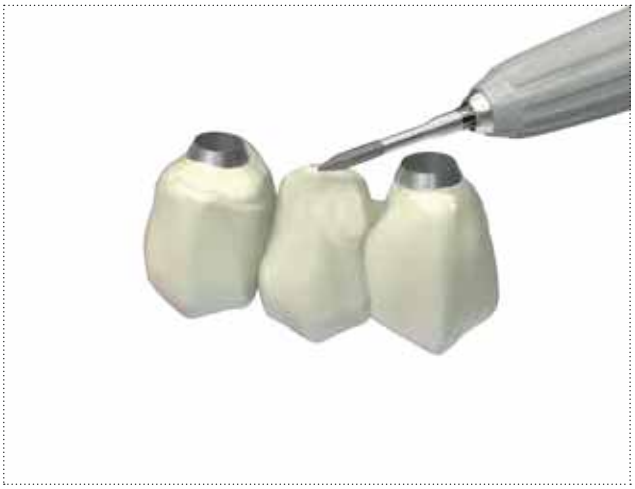
The temporary prosthesis for immediate loading can be produced both in the laboratory or chair-side, relining a pre-made prosthesis. The resin will incorporate the welded structure, making easier the cleaning operations of the patient.



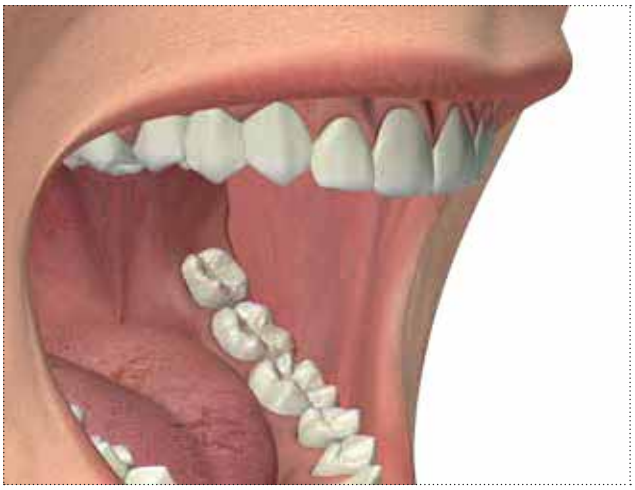
Remove the structure composed of the bar and the two caps: check the space occupied from the structure in the pre-made prosthesis made in the laboratory.

Position the structure composed of the bar and the two caps in the patient's mouth and proceed to a direct relining using the pre-made prosthesis filled with resin, removing the excess material.

Remove the relined temporary prosthesis, finish and polish it. Then, proceed to the immediate positioning on the Conoweld posts: the interaction via conometry between the posts and the Conoweld caps will give the structure an excellent retention, which will allow the dentist to remove the temporary prosthesis at any time, but it will not permit the patient to remove it himself.



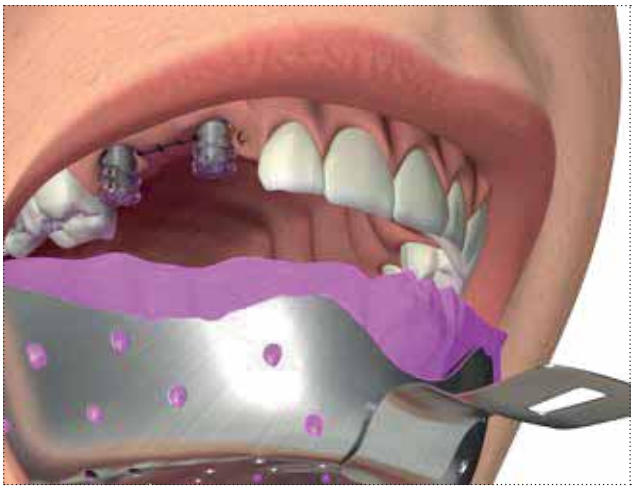
This particular feature of conometric rehabilitation ensures solid splinting throughout the entire osseointegration period, limiting the micromovements of the implants, even where the bone is only slightly mineralised.



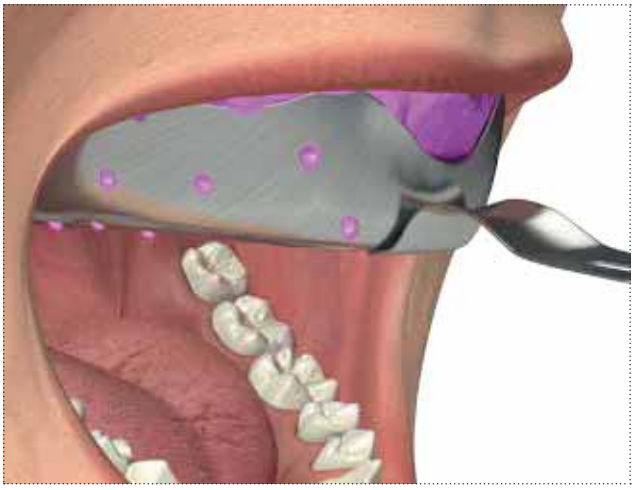
Indirect protocol: impression on transfer Conoweld caps in PMMA

As an alternative, the impression can be taken directly on the welded structure or using the special Conoweld caps in PMMA (code CAP-TS-IMP), as illustrated.
Insert the caps in PMMA on the Conoweld posts and gently applying manual pressure.
If desired, fix the caps between each other using resin and wire or composite.

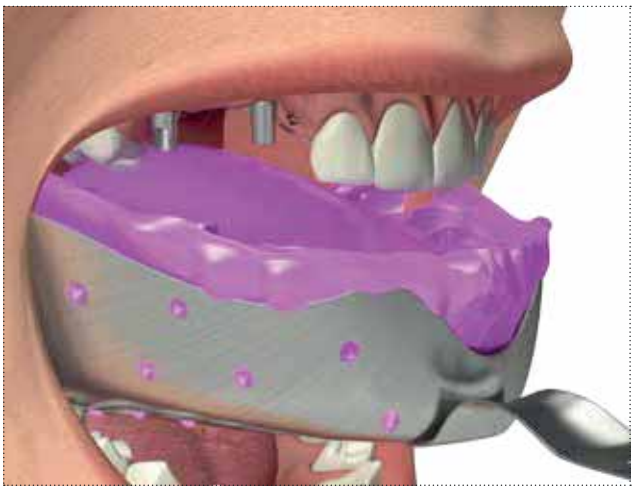
Choose a tray of suitable dimensions, so that the vertical portion of the caps and the posts is contained inside the walls of the impression tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) around the caps. Fill the impression tray with a more consistant impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.



Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.



Lift the tray vertically: the PMMA caps will remain incorporated in the impression material.



Place the Coloweld post analogs into the caps in the impression material and send the impression to the laboratory together with the intraorally welded structure. Cast the model as usual.

On the model create a support structure for the temporary prosthesis welded in the laboratory or obtained with the traditional techniques, exploiting the conometric components of the system. Check it on the model for its complete passivity, whether it has been realized intraorally or in the laboratory.

Produce a temporary prosthesis in resin as usual and send it again to the laboratory for the positioning in the patient's mouth.

Definitive multiple rehabilitation with conometric technique

Luting technique of a cast structure on titanium caps

Insert the final titanium caps (code CAP-TS-DEF) on the precision model on the posts applying a slight manual pressure.

Make a wax-up of the structure, interposing a lab spacer in order to passivate the final prosthesis and facilitate the successive luting of the caps. The caps will only be in direct contact with the structure on the flat occlusal surface, making a precise re-seat of the structure possible on the model in the laboratory as well as during the various intraoral tests.

Cast only the structure made of wax, leaving the Conoweld caps on the model.

Finish the base of the structure and proceed to ceramization.

Lute the ceramized structure on the caps: for this purpose it is useful to use a small layer of primer, such as ZPrime, before cementing with a cement such as Bis-Cem.

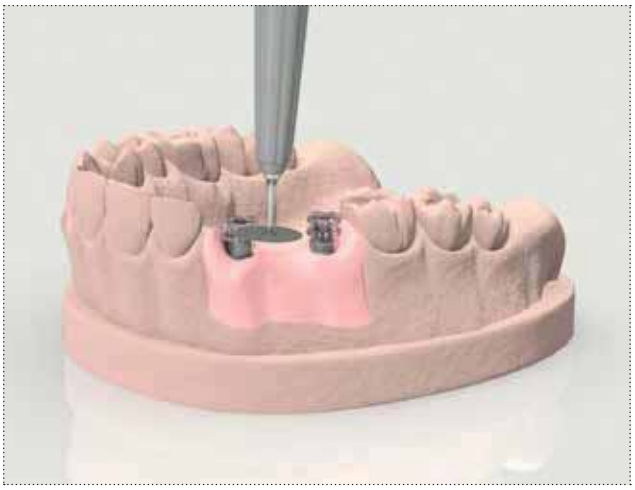
Important warning
To obtain the best results in terms of precision and passivity, it is advisable that the caps be luted intraorally. Luting cannot be carried out before ceramic is applied, as the temperatures used in firing the ceramic are incompatible with all cement types.

Position the ceramic bridge on the Conoweld posts: the interaction via conometry between the posts and the Conoweld caps will give the structure an excellent retention, which will allow the dentist to remove the temporary prosthesis at any time, but it will not permit the patient to remove it himself.

Complete casting technique with castable caps

Insert the Conoweld PMMA caps (code CAP-TS-IMP) on the precision model onto the Conoweld analogs applying a slight manual pressure.

Reduce the castable caps to a size compatible with the patient's vertical dimension with an abrasive disk.



Fabricate a structure in wax or resin, that incorporates the Conoweld castable caps.

Cast the modelled structure with the castable Conoweld caps inside.

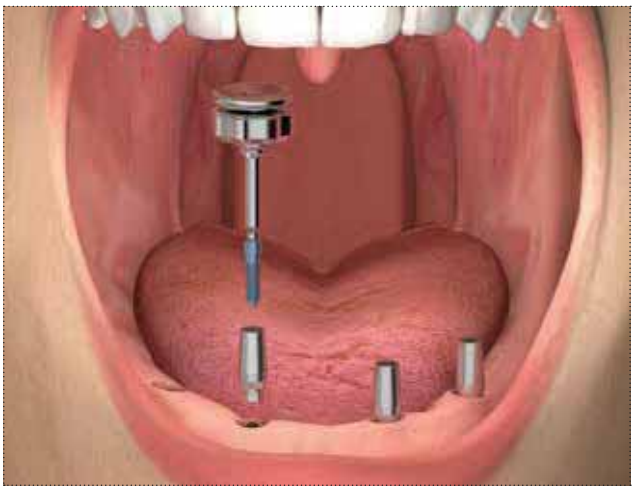
Finish the base of the structure and proceed to the ceramic coating.

Important warning
Structures produced by bonding the castable caps may require temporary cement in order to be fixed intraorally: given its own limitations, casting makes it difficult to achieve the same fit as with the standard caps for luting.

Position the bridge on the Conoweld posts; the interaction via conometry between the posts and the Conoweld caps will give the structure an excellent retention, which will not permit the patient to remove it himself.

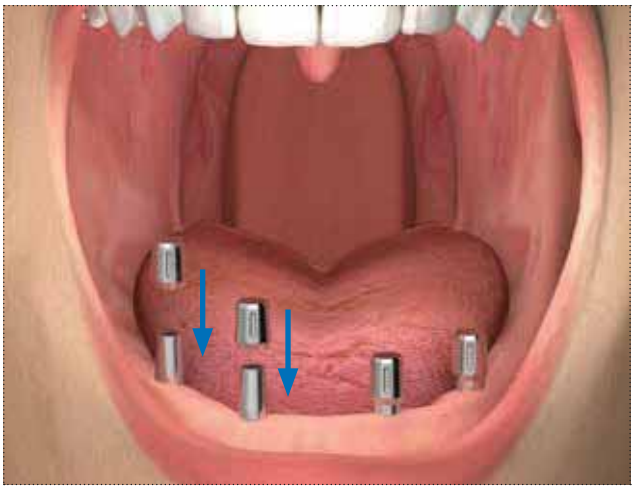
Fixing stage - endoral welding on Conoweld caps for immediate loading

Position the Conoweld posts on the implants, accurately assessing the transgingival height that is the most suitable and the angle that is most appropriate in the case of disparallel implants. Tighten the connecting screws using one of the HSM drivers at a torque of no more than 25-30 Ncm.



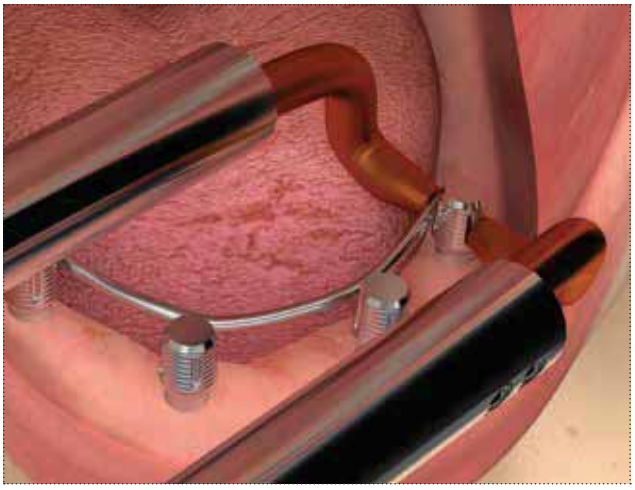
Position the temporary Conoweld caps on the abutments, gently applying manual pressure. Take a titanium bar for intraoral welding of the most suitable thickness and curve it manually in line with the arch to be rehabilitated.

Note: avoid cutting the bar to measure at the outset, as the excess segment makes removal and repositioning easier to handle until the welding of the caps is complete.

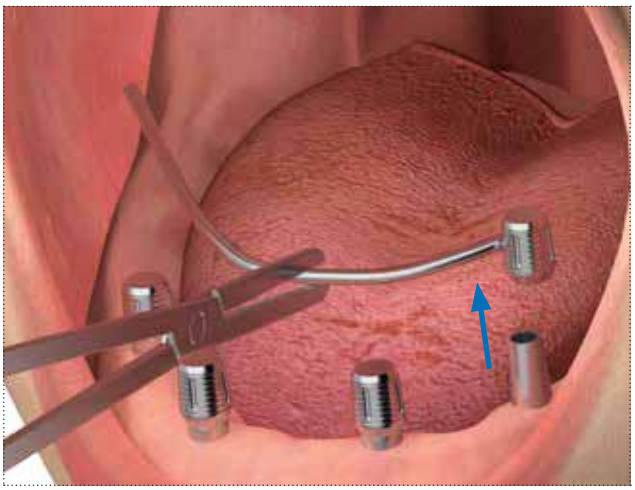


Line up the first segment of the bar with one of the two distal caps and carry out welding with the special intraoral welding machine, following the manufacturer's instructions.

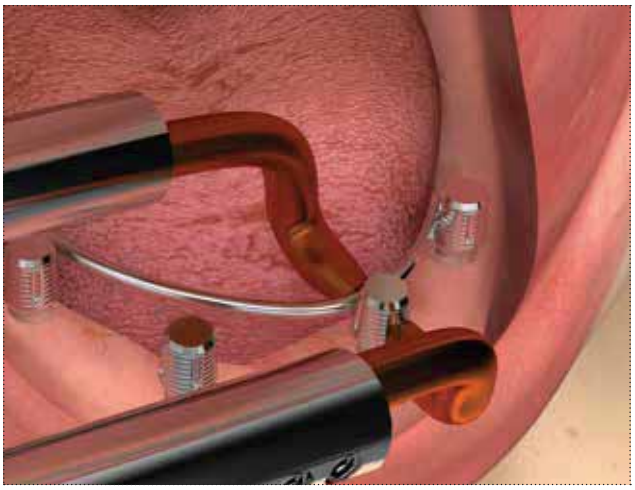
Important warning
To set the operating parameters for the welding machine and for the relevant information and warnings, read and follow the instructions in the manual issued by the manufacturer of the equipment.



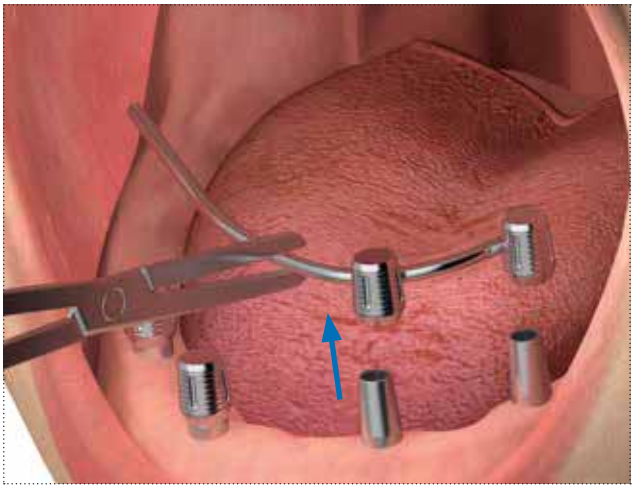
In order to establish that the procedure has been carried out correctly, it is advisable to remove the bar and caps that have been fixed up until that point after each welding and before the next. This helps to establish that the wall of the cap and the underlying post have not bonded and to be sure that a passive structure is being built.



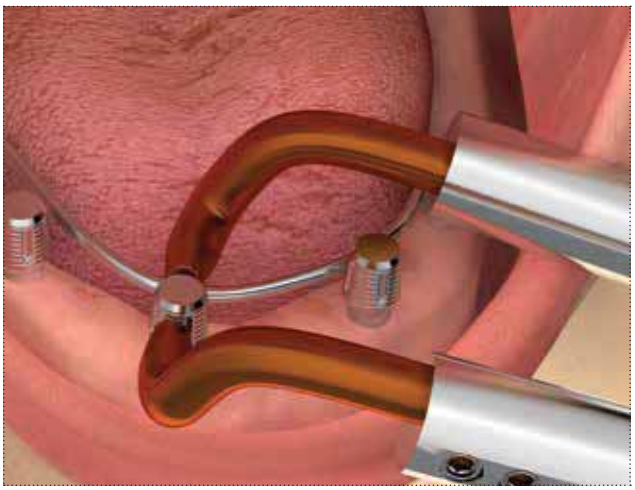
Having positioned the first cap back on its post, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.



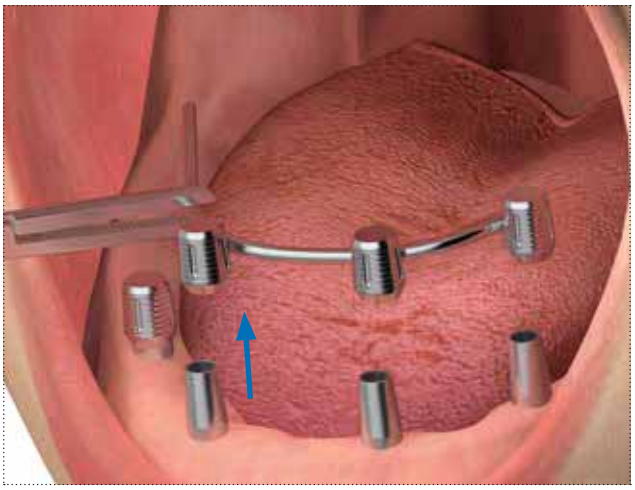
Remove the structure made up of the bar and the first two caps welded to it in order to establish that that the wall of this second cap and the underlying post have not bonded and to establish that the structure is passive.



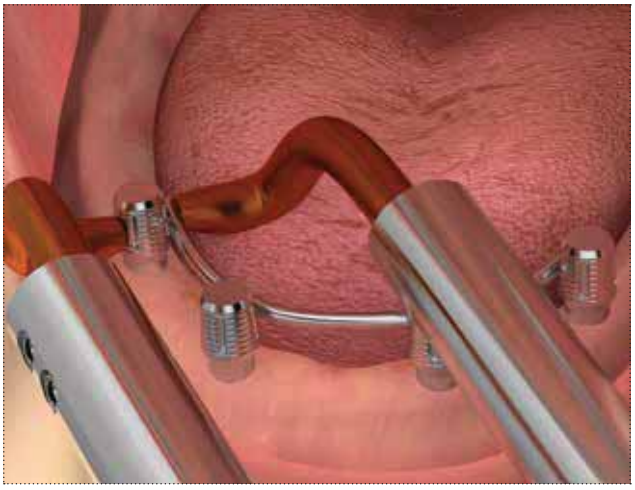
Having positioned the first and second caps back on their posts, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.



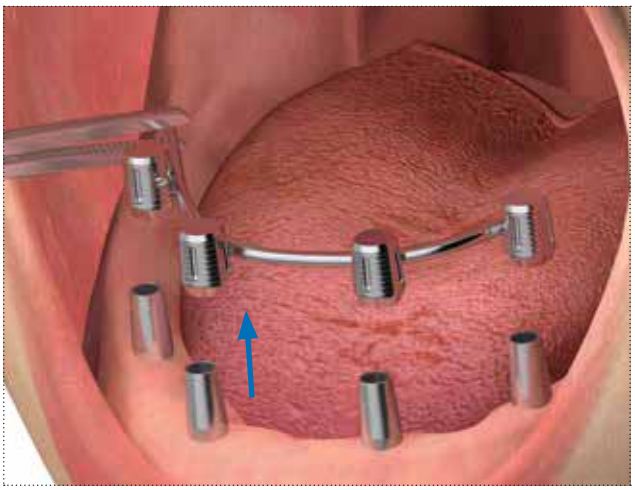
Remove the structure made up of the bar and the three caps welded to it in order to establish that that there is no casting between the wall of this third cap and the underlying post and to establish that the structure is passive.



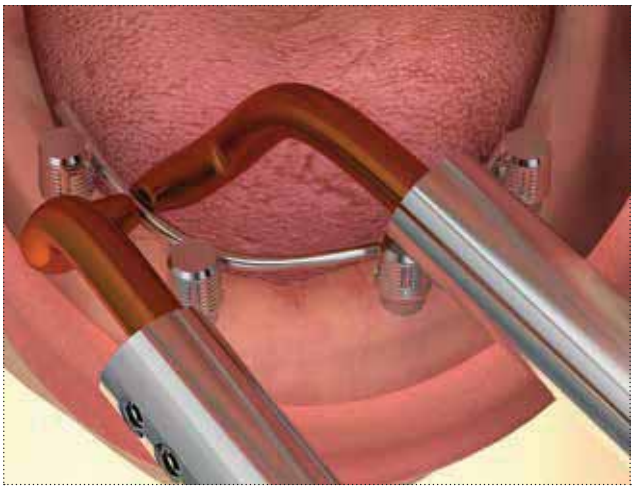
Having positioned the three caps back on their posts, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.



Remove the entire structure made up of the bar and the four caps welded to it in order to establish that that the wall of the last cap and the underlying post have not bonded and to establish that the structure is passive.



In order to further increase the passive nature of the structure and eliminate any residual stress, welding is advisable at a halfway point along each segment of free titanium along the bar.

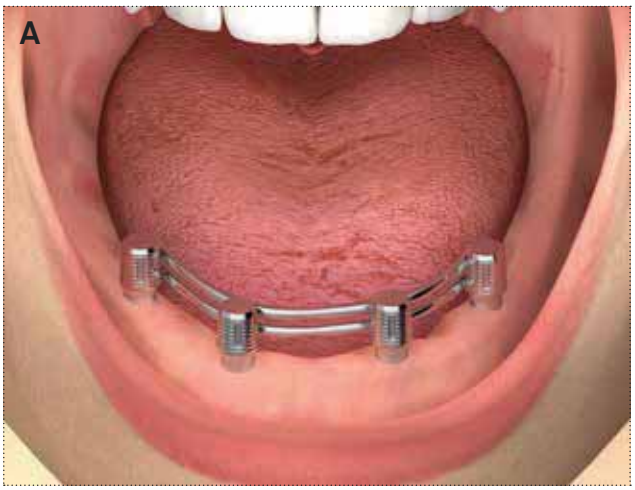


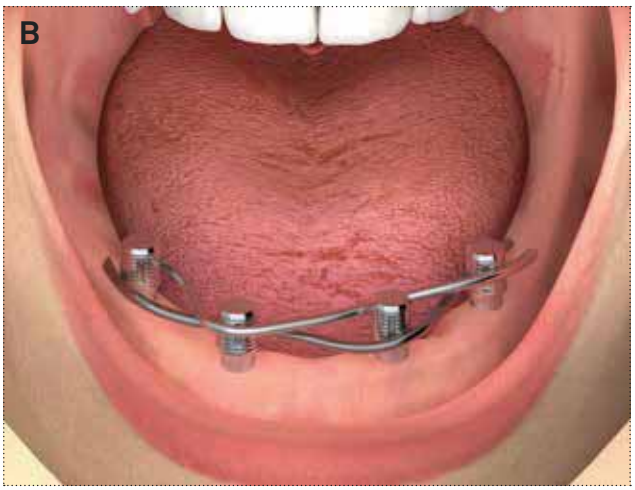
Possible positioning of intraoral welding bars

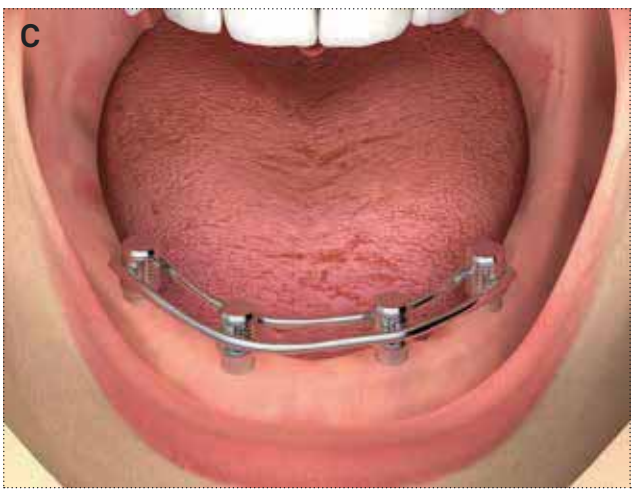
If a more rigid structure is required or if titanium bars with a thin diameter are being used, an additional bar can be welded onto the caps, following the exact same procedure as for the first bar, i.e. one cap at a time, removing the structure after each welding. The preferable positioning is the 'gun barrel' style (**img. A**), i.e. two parallel bars, one sitting above the other. There are other solutions, however, such as crossed bars (**img. B**) and bars forming a rail (**img. C**) i.e. parallel horizontally. This type of structure is particularly useful where the caps descend 1.5 mm into the sulcus, leaving only 4 mm of wall available for welding. This arrangement is, however, only suggested in the distal sectors, where problems are not usually encountered with thickness. Whilst the additional bar should not be capable of generating traction, here too the free segments can be passivated with a welding point. Where the bars are positioned to form a rail, welding is carried out by inclining the forceps vertically in order that only one segment is gripped between the two electrodes.

Note: whilst it is advisable for both bars to have the same thickness (usually two bars of 1.50 mm), different diameters can also be used.

Important warning
Do not attempt to passivate both segments at the same time. As the welded structure would in any event close the circuit, the bars would soften and deform under the pressure of the forceps, creating additional stress and weakening the structure instead of passivating it.

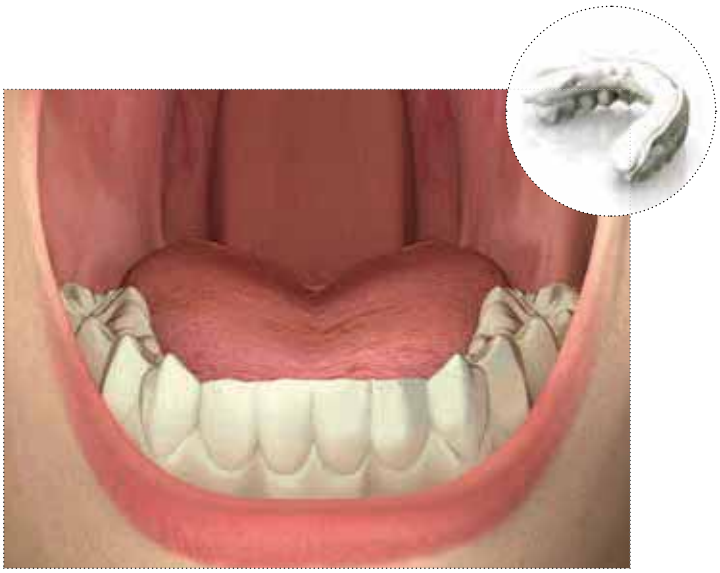






Creation of the temporary prosthesis: direct protocol

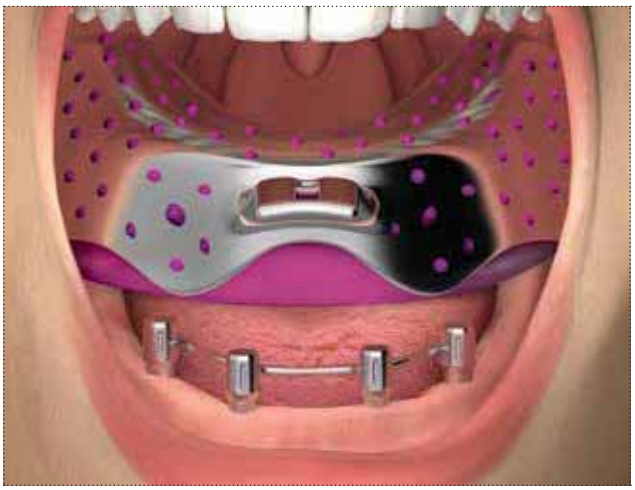
The temporary prosthesis for immediate loading can be made in the laboratory or chair-side, relining a ready-made moulded prosthesis. The resin will incorporate the welded structure entirely, which also makes it easier for the patient to clean it at home.



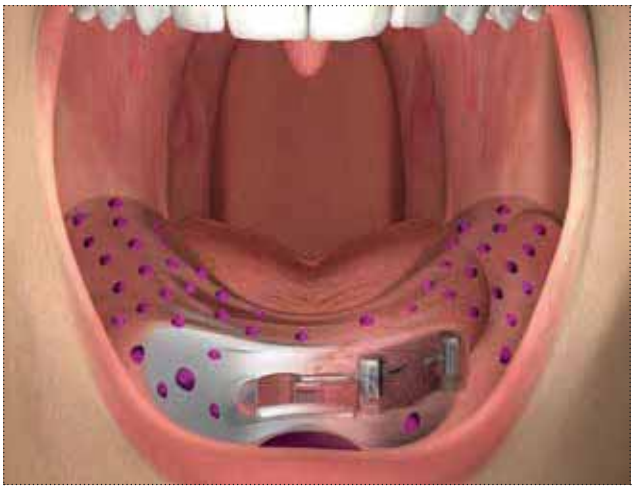
Once the base of the temporary prosthesis has been smoothed, it can be positioned onto the Conoweld posts immediately: the interaction via conometry between the posts and the Conoweld caps will mean that, in terms of retention, the dentist will be able to remove the temporary prosthesis at any time, but the patient will not be able to remove it himselves. This particular feature of conometric rehabilitation ensures solid splinting throughout the entire osseointegration period, limiting the micromovements of the implants, even where the bone is only slightly mineralised.

Indirect protocol: impression on the welded structure

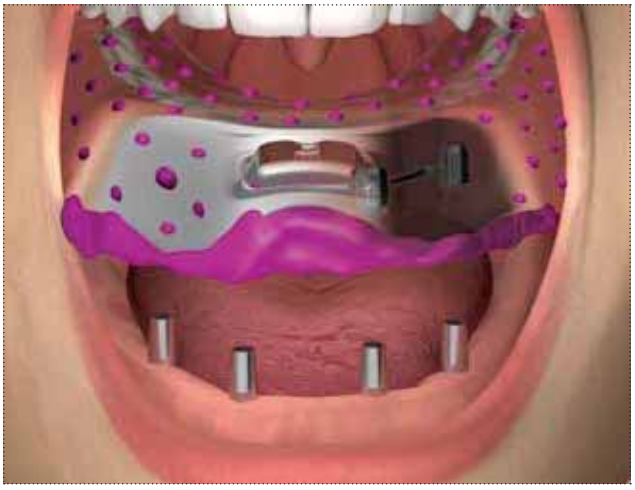
The structure including the temporary Conoweld caps welded onto the titanium bars forms an accurate and reliable impression key. The impression can therefore be taken incorporating the entire structure within the material inside the tray. As the caps rub against the posts as a result of conometry, it is advisable to use hard impression material for edentulism.



Push the impression tray onto the welded structure so that, despite its fairly rigid consistency, the impression material incorporates the bar and the caps welded onto it completely.



Lift the tray vertically: the entire welded structure will remain incorporated in the impression material.



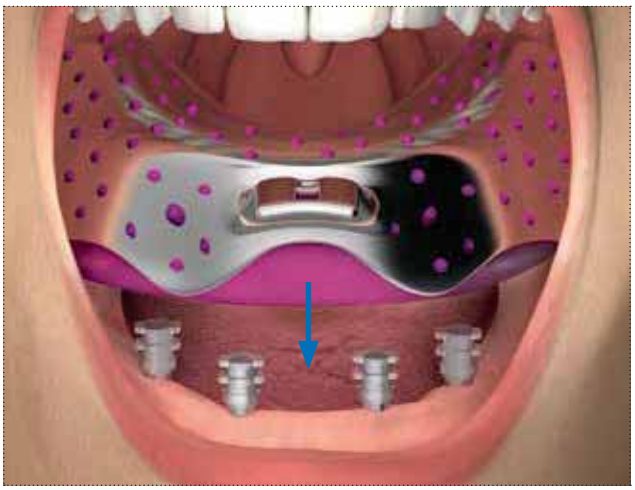
One by one, reposition the analogs in the metallic caps.
Send the impression to the laboratory.
Cast the model in the usual way.

Release the structure from the impression material, taking care not to create distortions, and position it on the model in order to check that it is completely passive.

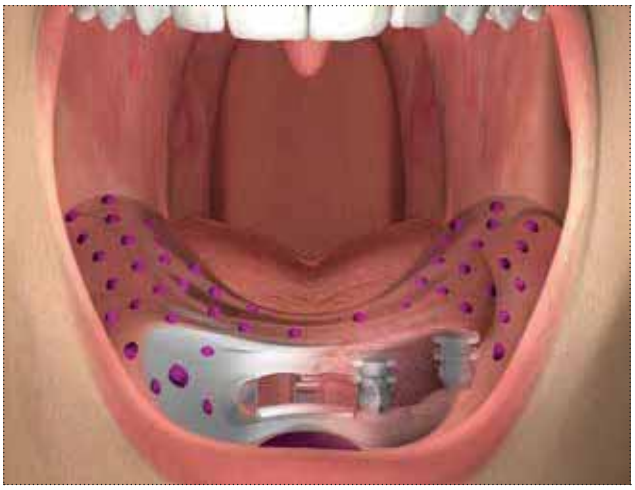
On the structure, build a temporary prosthesis in resin, and then return to the patient in order to position this in the mouth.

Indirect protocol: impression with Conoweld transfer caps in PMMA

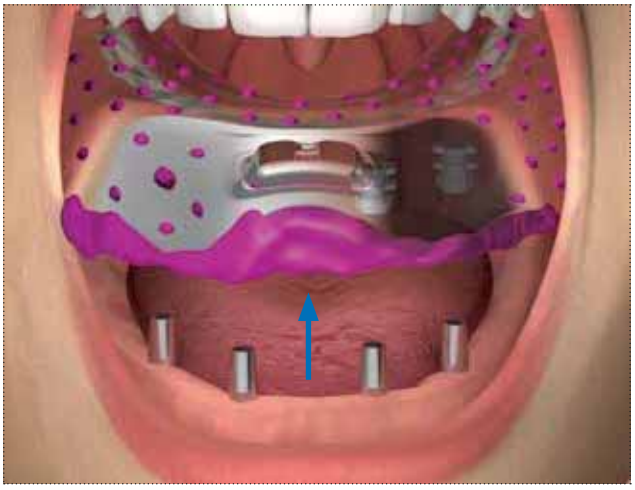
As an alternative, the impression can be taken using the special Conoweld caps in PMMA, inserting them on the Conoweld posts and gently applying manual pressure. Fix the caps between each other using resin and wire, if desired.



Take a closed tray impression, ensuring that, vertically, the caps and posts are included in the impression material in their entirety. Leave to harden for the amount of time indicated by the manufacturer.



Lift the impression tray: the PMMA caps will remain securely incorporated in the hardened material.



Reposition the Conoweld analogs in the caps, now incorporated into the impression material, and send the impression to the laboratory together with the intraorally welded structure.
Cast the model in the usual way.

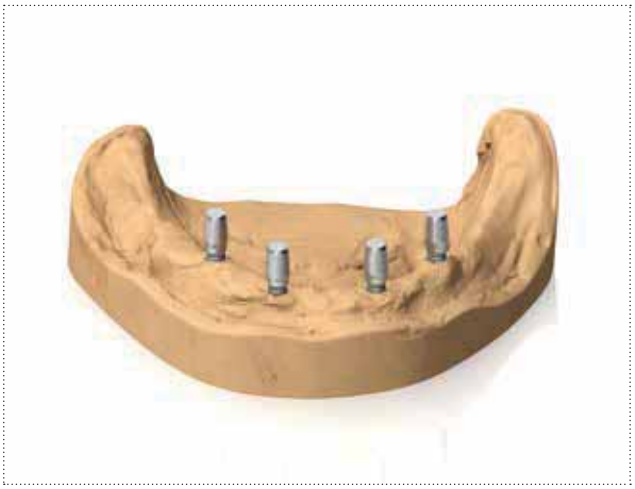
The resulting model can be used to build over it a reinforcement for the temporary prosthesis, which is welded in the laboratory or obtained via traditional techniques using the locker taping components of the system. Test the passivity of the structure on the model, whether created intraorally or in the laboratory.

On the structure, build a temporary prosthesis in resin, and then return to the patient in order to position this in the mouth.

Creation of final conometric prosthesis

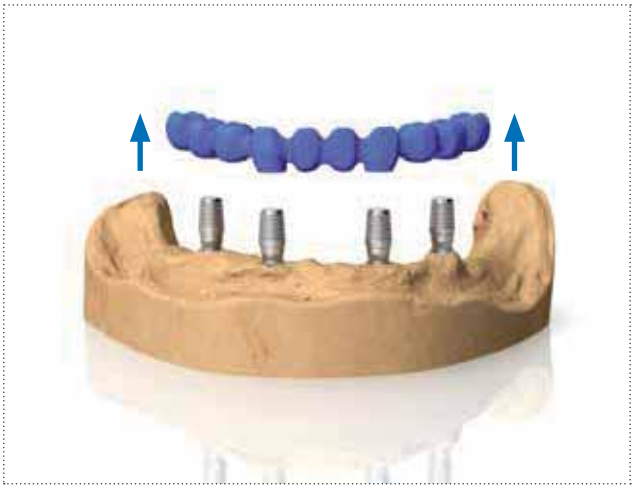
Technique for luting cast structure onto titanium caps

Take a precise impression in accordance with the protocol set out on pages 170. Position the final titanium caps on the posts, gently applying manual pressure.



Wax the structures, interposing a lab spacer in order to passivate the final prosthesis and facilitate the gluing of the caps that is to follow.
The caps will only be in direct contact with the structure on the flat occlusal surface, making a precise reset of the structure possible on the model in the laboratory as well as during the various intraoral tests.

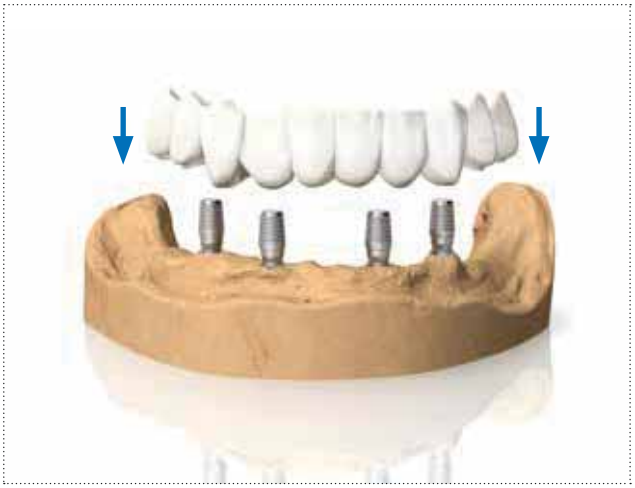
Cast only the structure made in wax, leaving the Conoweld caps on the model.



Smooth the base of the structure and complete the coating in ceramic.

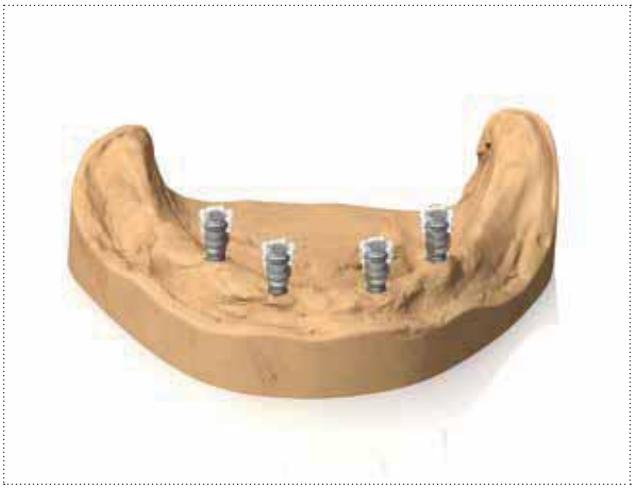
Lute the caps onto the base of the cast structure, each one being housed within one of the respective spaces. It can help here to spread small layer of primer before cementing.

Important warning
To obtain the best results in terms of precision and passivity, we advise that the caps be glued intraorally. Luting cannot be carried out before ceramic is applied, as the temperatures used in firing the ceramic are incompatible with all cement types.



Technique for complete casting with castable caps

Position the Conoweld caps in PMMA on the Conoweld plaster analogs, gently applying manual pressure.



If necessary, reduce the castable caps appropriately to fit within the silicone mask or with the spaces defined by the articulator.

Complete a wax-up of the final structure that incorporates the Conoweld castable caps.

Cast the structure made in wax that has the Conoweld castable caps inside it.

Finish the base of the structure and complete the coating in ceramic.

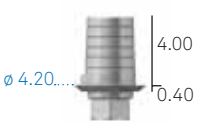
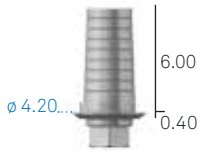
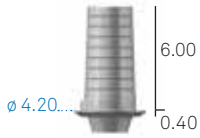
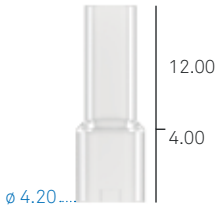
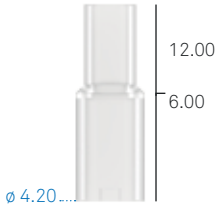
Important warning
Structures produced by bonding the castable caps may require a minimal quantity of cement in order to be fixed intraorally: given its own limitations, casting makes it difficult to achieve the same fit as with the standard caps for luting.

Definitive rehabilitation with T-Connect

T-Connect supports are made of Gr. 5 titanium and present a conical body with grooves to facilitate the luting both of crowns and multiple structures made in the laboratory. The cementing cone of the T-Connect is available in the heights of 4 and 6 mm.
In the T-Connect range sleeves for wax-up are also available, respecting the volumes of the T-Connect: the entire height is 12 mm and helps to preserve the screw hole from accidental obstructions.
T-Connect supports make it possible to create integral crowns, posts and multiple structures using a luting technique and different materials, with all open CAD-CAM systems, including Echo by Sweden & Martina, without sacrificing the micrometric precision in coupling between platforms that can be obtained with conventional components.
The Milling Center Echo by Sweden & Martina delivers the milled prosthesis, whether it is made of zirconia, lithium disilicate, cobalt chrome or other material, separated from the T-Connect support: the two parts can be luted together on the bench using an anaerobic cement.

Castable sleeve for wax-up modelling

T-Connect in Gr. 5 titanium

description	code
T-Connect Engaging Cementing cone h. 4.00 mm Fixation screw included	**A-BASTZR-S-330-4** 
T-Connect Engaging Cementing cone h. 6.00 mm Fixation screw included	**A-BASTZR-S-330-6** 
T-Connect Non engaging Cementing cone h. 4.00 mm Fixation screw included	**A-BASTZR-M-330-4** 
T-Connect Non engaging Cementing cone h. 6.00 mm Fixation screw included	**A-BASTZR-M-330-6** 
Sleeve for wax-up modelling on T-Connect supports with cone h. 4.00 mm	**A-CCBAS-330-4** 
Sleeve for wax-up modelling on T-Connect supports with cone h. 6.00 mm	**A-CCBAS-330-6** 
Single pack Pack of 10 pieces Standard fixation screw Supplied with the T-Connect, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 

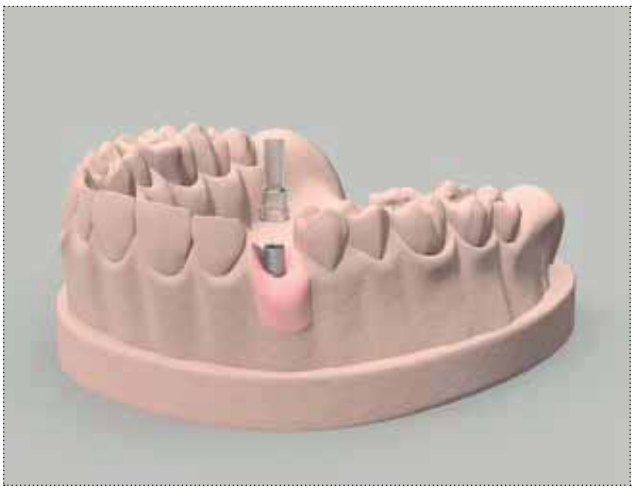
Recommended torque for T-Connect: 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

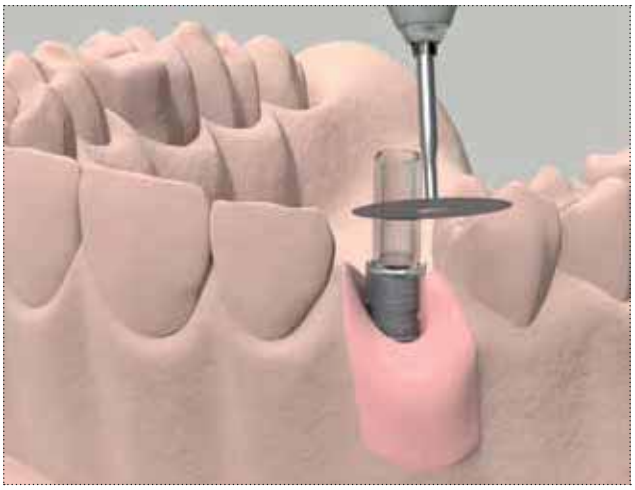
See technical characteristics of Gr. 5 titanium and PMMA on pages 238 and 240.

Definitive single screw retained rehabilitation with T-Connect: luting technique

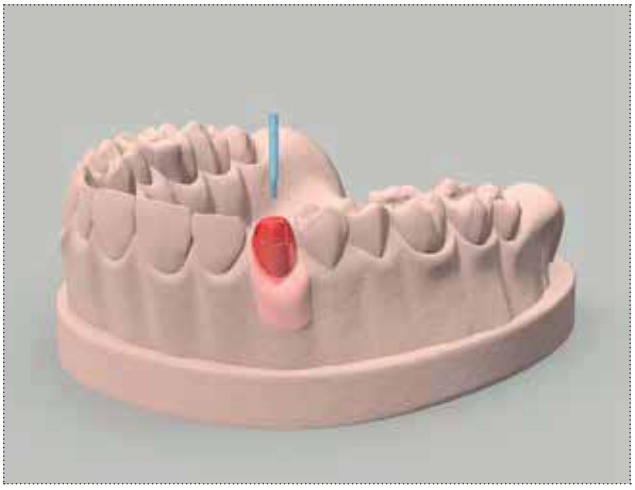
Screw the engaging T-Connect support on the precision model onto the analog using a screwdriver of the HSM series. Insert a castable sleeve of the same height of the cementing cone of the T-Connect, of 4.00 or 6.00 mm.



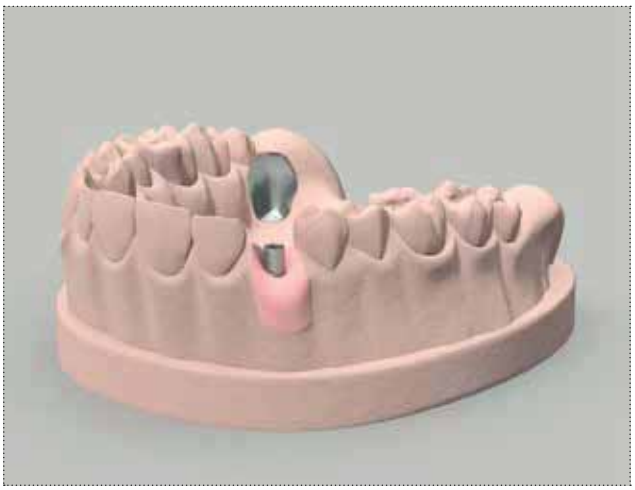
Reduce the castable sleeve to a size compatible with the patient's vertical dimension using an abrasive disk.



Model a crown in wax or resin on the castable sleeve and use a screw to keep the screw hole free.



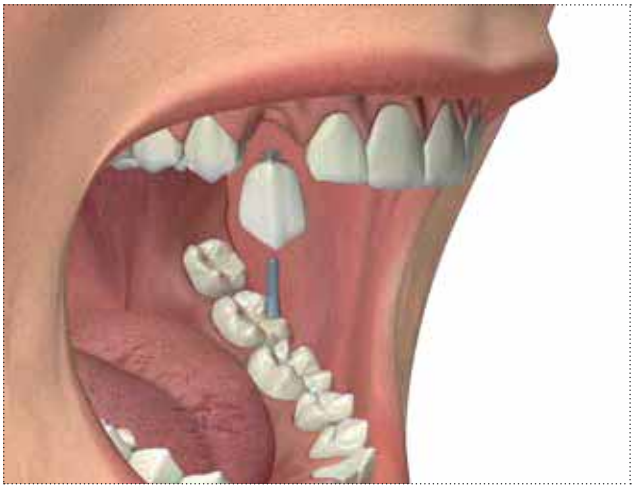
Cast the crown in wax or resin together with the reduced castable sleeve incorporated inside.



Ceramize the cast crown and lute it on the model: turn the crown upside down and insert a resin cement in the hole to lute the T-Connect. Polymerize following the manufacturer's instructions.

Tighten the crown onto the implant with the supplied screw, applying a maximum torque of 20-25 Ncm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



Definitive multiple screw retained rehabilitation with T-Connect: luting technique

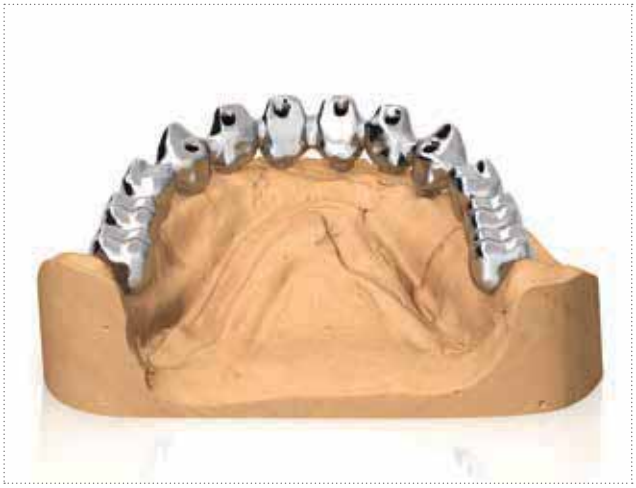
Screw the engaging T-Connect support on the precision model onto the analog using a screwdriver of the HSM series. Insert a castable sleeve of the same height of the cementing cone of the T-Connect, of 4.00 or 6.00 mm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

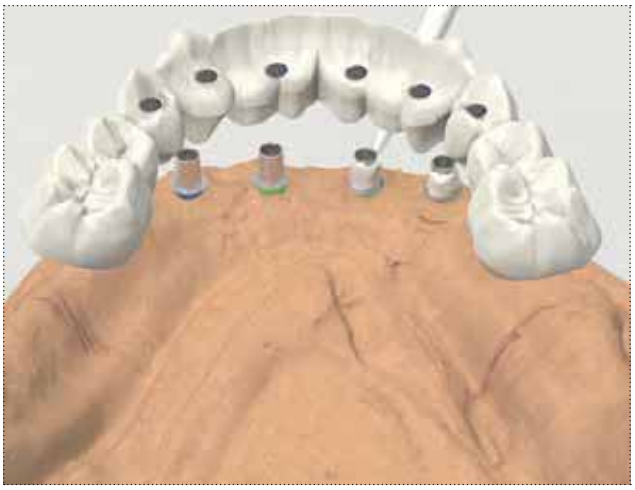
Reduce the castable sleeve to a size compatible with the patient's vertical dimension using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.

Model a full arch structure in wax or resin incorporating the sleeves.

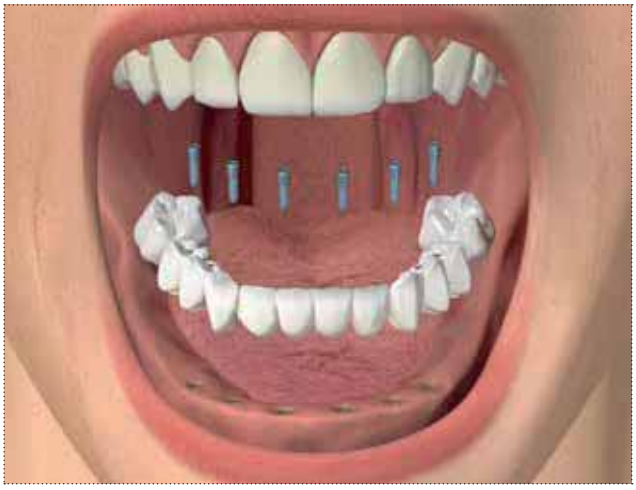
Cast the structure in wax or resin together with the reduced castable sleeves incorporated inside.



Ceramize the structure and lute it on the model: turn it upside down and insert a resin cement in the hole to lute the T-Connect. Polymerize following the manufacturer's instructions.



When polymerization is completed, unscrew the structure from the model and tighten it onto the implants with the supplied screw, applying a maximum torque of 20-25 Ncm.



Anchoring with Locator Abutments

Locator Abutments* are a patented and versatile prosthetic solution for easily and safely attaching overdentures to dental implants. The Locator system allows easily correcting misalignment of divergent implants by up to 40° (20° for each implant) in limited occlusal spaces. Given the limited amount of space occupied, is perfect for all patients with a removable prosthesis. The abutments are made Gr. 5 titanium and are available in different transgingival heights. The Locators must be tightened at 25-30 Ncm, using the special Driver provided in the Screw Kit and also available separately on request (code 8926-SW, short, and code 8927-SW, long).

Titanium or steel cap

Nylon retainer

Locator Abutment

The self-guiding design of the head of the Locator Abutment allows easy insertion of the prosthesis. The self-alignment of the prosthesis reduces deterioration of the pieces and increases the life of the device

The Locator system has a practical steel or titanium cap where the retainer lodges inside the prosthesis. When it loses retentiveness, it can be easily replaced because there is no need to extract it from the resin by removing material from the prosthesis, but it can be simply extracted from the metal cap, which remains attached to the prosthesis

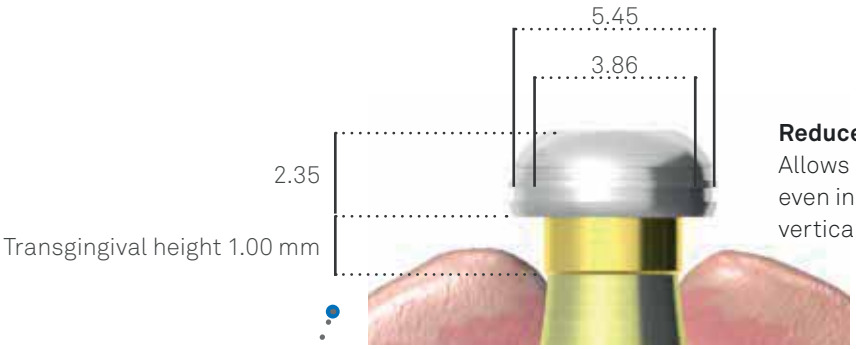
description	code
Locator abutment Straight emergence Transgingival h. 1.00 mm	**1670** 
Locator abutment Straight emergence Transgingival h. 2.00 mm	**1671** 
Locator abutment Straight emergence Transgingival h. 3.00 mm	**1672** 

Recommended torque for Locator Abutments: 25-30 Ncm.

**Locator abutments are medical devices manufactured and patented by Zest Anchors, Inc., 2061 Wineridge Place, Escondido, CA 92029, USA. Locator is a registered trademark of Zest Anchors, Inc. The European Agent for the purposes of MDD 93/42/EEC is Ventura Implant and Attachment Systems, 69 The Avenue, Ealing, London W13 8JR, England.*

See technical characteristics of Gr. 5 titanium on page 238.

Main characteristics

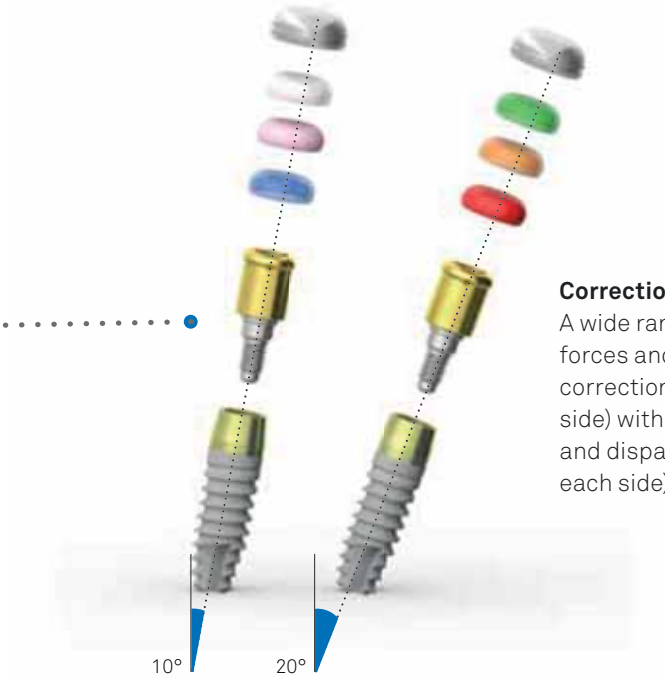


Reduced vertical height
Allows anchoring of the prosthesis even in clinical situations with a short vertical dimension

Self-guiding design
The design of the abutment head is naturally centred in the cap sunk into the resin, even before the complete coupling between the two elements. This characteristic makes the daily manoeuvres of inserting and removing the prosthesis very simple for the patient

Availability of different transgingival heights
The possibility of choosing transgingival heights from 1.00 to 4.00 mm ensures the mucosal resting surface for the overdenture and therefore less stress on the implants

**Image by kind permission of Zest Anchors, Inc., 2875 Loker Avenue East, Carlsbad, CA 92010, USA.*



Correction of disparallelisms up to total 40°
A wide range of retainers with different retentive forces and two different designs allow the correction of disparallelisms from 0 to 20° (10° each side) with the series provided with a central stem, and disparallelisms from 20° to 40° (from 10° to 20° each side) with the series without a stem

Pivot technology
The Locator Abutment acts as a pivot inside the cap anchored to the resin, and provides a real resilient connection, in which the abutment acts as the male in a static connection with the female cavity, while the cap sunk in the resin has ample possibility for rotating movement on the male

Quick and easy chair-side maintenance
When the retention of the caps decreases it is not necessary to adjust the prosthesis, it is sufficient to replace the nylon retainers with a single tool. The self-alignment of the prosthesis and the double retention exerted by the nylon cap reduce deterioration of the parts and increase the life of the device

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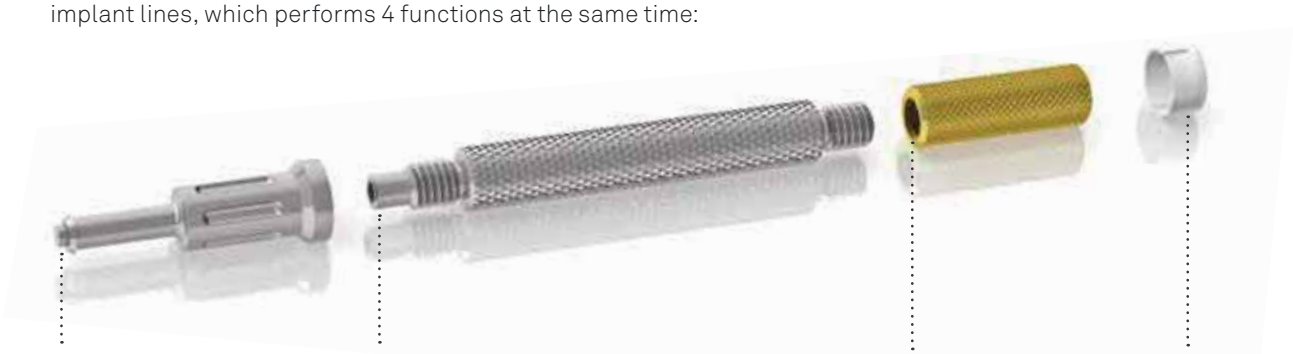
Locator core tool 8393

The entire Locator prosthetic protocol contemplates the use of a single instrument, common to all implant lines, which performs 4 functions at the same time:



8397: REMOVAL
The male removal tip has a pointy end useful for gripping and removing the retainers of the metal caps incorporated in the overdenture

INSERTION
The central part of the Locator core tool, once detached from the tip, has a cylindrical end specially designed for inserting the retainers in the metal caps

8390: SCREWING
This end of the Locator core tool, with the special retention jacket, acts as a driver for carrying the Locator Abutment into the oral cavity and as a hand driver for fixing it to the implant

8394: RETENTION
The retainer made of polymer material allow the abutments to be transported into the patient's mouth. Without these components the driver 8390 cannot be used as a carrier

Important warning
Code 8393 includes the entire steel Locator core tool composed of a tip (code 8397) for inserting the retainers in the caps, a handle, a hand driver (code 8390) for screwing the Locator abutments and a retention jacket (8394 pack of 4 pieces) for the driver. Only codes 8397, 8390 and 8394 can be reordered as spares, whereas if a new handle is required you must reorder the whole instrument.

This instrument has been designed so as to perform all the functions necessary both for carrying and inserting the abutments (gold colour portion, code 8390, with cap 8394: for use see pages 192 and following), and for replacing the different retainers available. In particular the tip (code 8397) alone or partly unscrewed from the central body of the Locator Core Tool attaches to the nylon retainers and allows them to be removed from the metal caps, while, when completing scrwing, it extrudes a small cylindrical piston which releases the retainer from the tip profile.

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Spacer ring

In the phases of taking the impression and relining the prosthesis, it is useful to use silicone rubber spacer rings (code 8514), which allow correct resilience of the prosthesis and help prevent running of the resin or silicone material. The ring must be positioned at the base of the groove which marks the head of the abutment, so as not to hinder fitting of the metal caps or of the transfers.

Nylon retainers

The nylon retainers for metal caps differ according to their capacity for correcting the axis of insertion of the implant and according to their retentive capacity. Those able to correct disparallelisms between 0° and 10° on each side (total 20°) have a central peduncle which engages the centre of the head of the Locator abutment, increasing its retentive capacity, while those for disparallelisms between 10° and 20° on each side (total 40°) do not have a peduncle to facilitate inserting the prosthesis. Sets 8519-2, 8540-2 and 8550-2 include two pieces of steel or titanium caps as well as two pieces of black, white, pink and blue retainers, or black, green, orange and red, depending on the degree of disparallelism of the implants. Each set allows the execution of a complete case on two implants: if the overdenture is anchored to 4 implants it is necessary to order two sets. As well as titanium caps there are also steel caps for casting-on, these are very useful if you have to anchor prostheses reinforced with a metal framework of stellite or other non-precious alloys.

1.5 lb
680 gr

3.0 lb
1361 gr

5.0 lb
2268 gr

1.0 lb
453 gr

2.0 lb
907 gr

4.0 lb
1814 gr

Image by kind permission of Zest Anchors, Inc., 2875 Loker Avenue East, Carlsbad, CA 92010, USA.

Drivers for Locator abutments

After having put the Locators in place with the driver 8390, to complete screwing it to the recommended torque of 25-30 Ncm it is necessary to use the Gr. 5 titanium drivers with attachment compatible with the dynamometric ratchet CRI5 produced directly by Sweden & Martina for this purpose. The availability of a short version, as well as the long one, makes this operation easy even in distal sectors.

Impression taking on Locator abutments

For the indirect technique transfers (code 8505) and analogs (code 8530) are available which can reproduce the exact position of the Locator abutments on the model. Since the head of the abutments is standard and always the same irrespective of the diameter of the implant connection, there is only one transfer and one analog. The transfers must always be used with the black nylon retainer, dedicated for taking impressions. Each transfer is supplied complete with a black retainer; if necessary, black retainers can also be ordered as spares (code 8515). For the use of the components see pages 192 and 193.

Measuring the parallelism of implant axes

Since correct retention of the overdenture on the Locator abutment depends on the use of the appropriate retainers, it is fundamental to define the implant axes correctly, which determine whether to choose retainers with or without a central pivot. For this purpose a steel plate is available (code 9530), to be used for measuring the angles of the black polyethylene parallelism pins (code 8517), which are meant to be inserted on the head of the Locator abutments.
For the use of the components see pages 192 and 193.

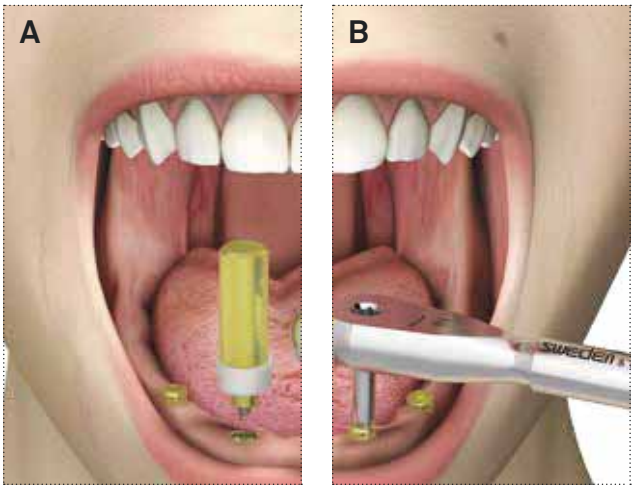
Accessories for overdenture on Locator

description	code
Kit containing 2 Gr.5 titanium caps, 2 spacer rings in silicon rubber, 2 black polyethylene retainers (LDPE 993I) with low retention capacity for impression taking and 2 nylon retainers for each of the 4 different retention capacities	**8519-2** 
Kit containing 2 Gr.5 titanium caps, 2 spacer rings in silicon rubber, 2 black polyethylene retainers (LDPE 993I) with low retention capacity for impression taking and 2 nylon retainers for each of the 4 different retention capacities, designed for severe disparallelism	**8540-2** 
Kit containing 2 steel caps, 2 spacer rings in silicon rubber, 2 black polyethylene retainers (LDPE 993I) with low retention capacity for impression taking and 2 nylon retainers for each of the 4 different retention capacities	**8550-2** 
Pack of 20 spacer rings in silicon rubber, for the prosthesis relining phase	**8514**
Pack of 4 black polyethylene retainers (LDPE 993I) with low retention capacity for impression taking	**8515** 
Pack of 4 transparent nylon retainers, retention 5 lb corresponding to 2268 g	**8524** 
Pack of 4 pink nylon retainers, retention 3 lb corresponding to 1361 g	**8527** 
Pack of 4 blue nylon retainers, retention 1.5 lb corresponding to 680 g	**8529** 
Pack of 4 green nylon retainers, retention 4 lb corresponding to 1814 g	**8547** 
Pack of 4 red nylon retainers, retention 1 lb corresponding to 450 g	**8548** 
Pack of 4 orange nylon retainers, retention 2 lb corresponding to 907 g	**8915** 

Anchoring with Locator Abutments - clinical indications

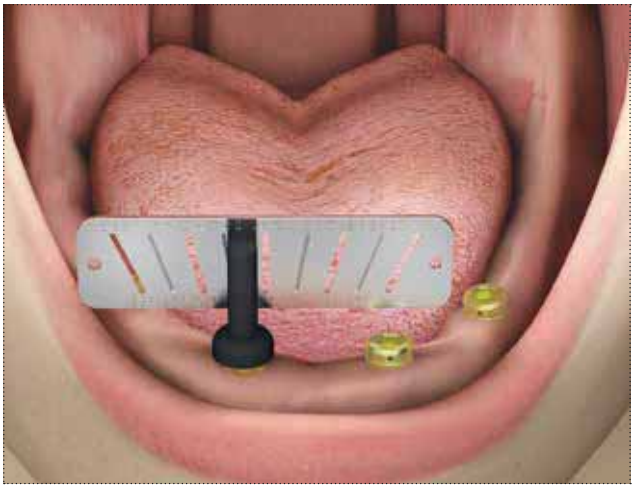
Direct method: chair-side phases

Expose the implants, or remove the transgingival healing screws, depending on whether a protocol with a double or single surgical phase was adopted. Depending on the thickness of the soft tissues, choose the Locator abutment with the most suitable transgingival height and insert the Locator abutments in the implant connection with the Locator driver (gold colour end portion of the instrument 8393, which can also be ordered separately with code 8390). The abutments can be engaged and carried safely into the oral cavity thanks to the retainer 8394, inserted on the end of the instrument 8390 (**img. A**). Insert the abutment thread in the well of the implant and screw it in a preliminary manner for a few turns, then remove the instrument 8390 and complete screwing with the dynamometric ratchet CRI5 together with the driver 8926-SW or 8927-SW, depending on the space available (**img. B**). It is recommended to tighten the abutments at 25-30 Ncm.

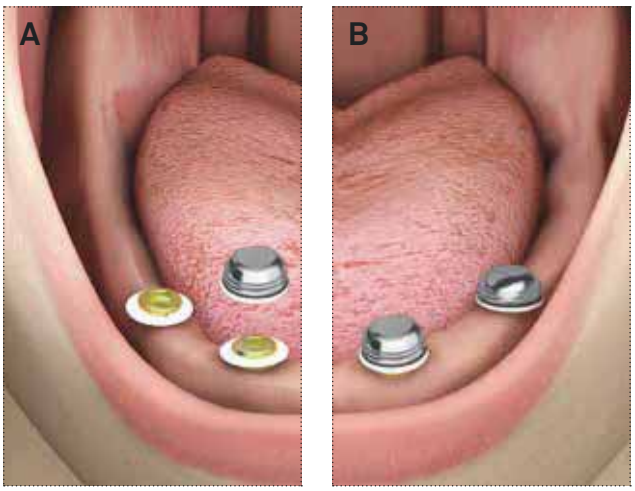


Fit the plastic pins (code 8517) onto the Locator Abutments and use the plate 9530 to check the degree of divergence between the axes of the implants. Different nylon retainers will be used depending on the disparallelism:

divergence <10° per side		divergence <20° per side	
8529 rit. 1.5 lb (680 g)		**8545** rit. 1 lb (453 g)	
8527 rit. 3 lb (1361 g)		**8915** rit. 2 lb (907 g)	
8524 rit. 5 lb (2268 g)		**8547** rit. 4 lb (1814 g)	

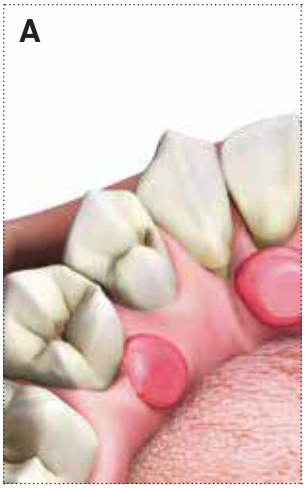


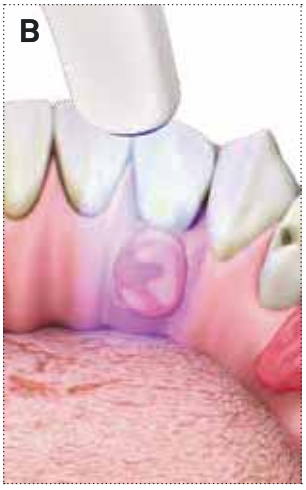
Remove the pins and position the white spacer ring around the head of each Locator abutment (**img. A**). Insert the black retainer in each metal cap, position the cap on the Locator abutment leaving the white spacer ring below it (**img. B**). The spacer ring also performs the function of protecting the mucous in the peri-implant area, which in this way does not come in contact with the resin. The black retainer will keep the prosthesis within the upper limit of its vertical elasticity during the procedure.



Pierce the prosthesis close to the attachments, create sufficiently large holes to allow the injection and exit of the acrylic resin. Position the overdenture on the metal caps.

Inject the resin (**img. A**) and proceed to polymerise the material following the manufacturer's instructions (**img. B**). Then lift the prosthesis: the black retainers will remain inside the metal caps. Polish the base of the overdenture.

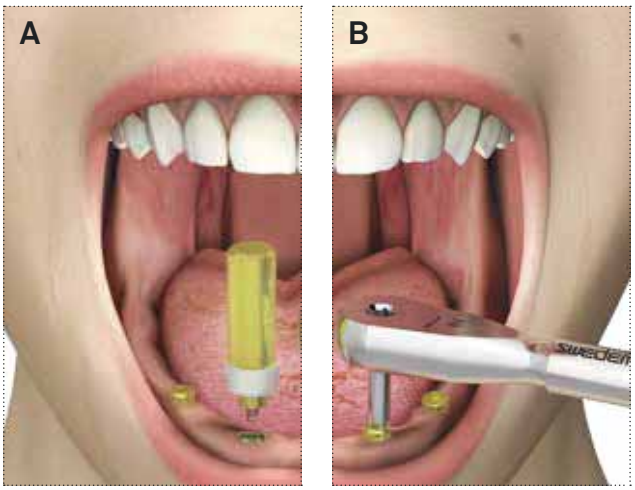




Slacken the end of the instrument 8393, unscrewing the piece for two complete turns (counterclockwise): this will allow the small piston on the tip to retract completely (**img. A**) and the sharp edge of the tip to engage the edge of the black retainer to extract it from the metal cap. Screw the end of the Locator Core Tool back on, so that the piston comes out and ejects the black retainer. Use the tip of the intermediate portion of the Locator Core Tool to push into the cap the retainer suitable for the degree of disparallelism between the implants (**img. B**). Check carefully that the retainer is completely housed in the metal cap and that its edge is at the same level as that of the cap.

Indirect method: chair-side phases

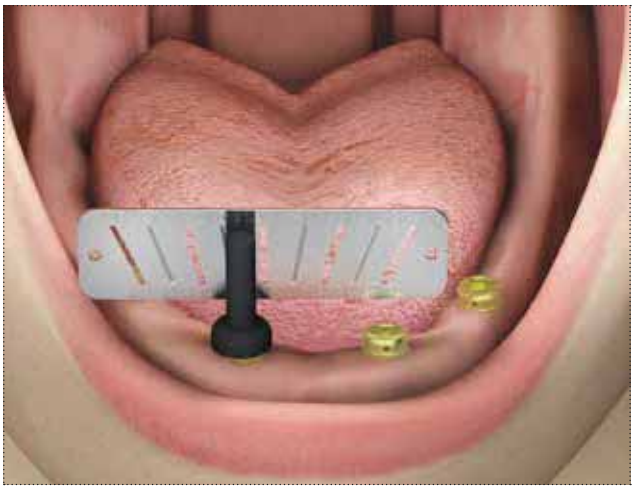
Expose the implants, or remove the transgingival healing screws, depending on whether a protocol with a double or single surgical phase was adopted. Depending on the thickness of the soft tissues, choose the Locator abutment with the most suitable transgingival height and insert the Locator abutments in the implant connection with the Locator driver (gold colour end portion of the instrument 8393, which can also be ordered separately with code 8390). The abutments can be engaged and carried safely into the oral cavity thanks to the retainer 8394, inserted on the end of the instrument 8390 (**img. A**). Insert the abutment thread in the well of the implant and screw it in a preliminary manner for a few turns, then remove the instrument 8390 and complete screwing with the dynamometric ratchet CRI5 together with the driver 8926-SW or 8927-SW, depending on the space available (**img. B**). It is recommended to tighten the abutments at 25-30 Ncm.



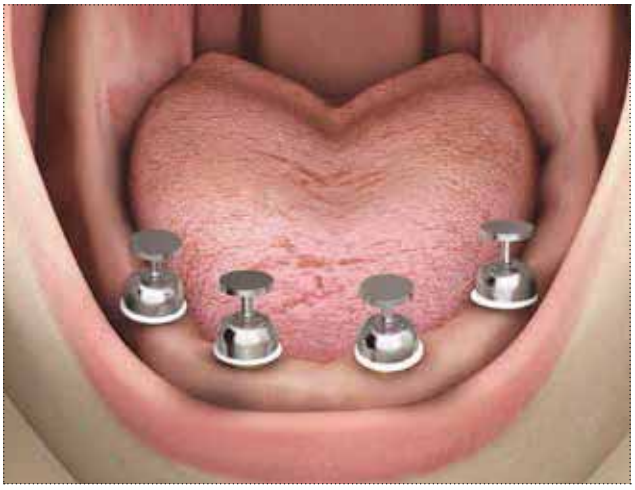
Fit the plastic pins (code 8517) onto the Locator Abutments and use the plate 9530 to check the degree of divergence between the axes of the implants. Different nylon retainers will be used depending on the disparallelism:

divergenza <10° per lato		divergenza <20° per lato	
8529 rit. 1.5 lb (680 g)		**8545** rit. 1 lb (453 g)	
8527 rit. 3 lb (1361 g)		**8915** rit. 2 lb (907 g)	
8524 rit. 5 lb (2268 g)		**8547** rit. 4 lb (1814 g)	

Note: in the indirect method this phase can also be performed on the model in the laboratory.



Remove the pins and fit the white spacer rings on the Locator abutments, to prevent undesired running of implant material. With a simple finger pressure, insert the Locator 8505 transfers, in which the black plastic retainer for taking the impression (8585) have already been inserted.



Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers and at the same time fill the impression tray with a more consistent material (i.e. SKY IMPLANT HEAVYMIX, code SKY04) on the whole arch. Put the closed tray in place and wait for the hardening times according to the instructions. The particular conformation of the Locator transfers allows the maximum of retentiveness to be obtained in the minimum vertical space.

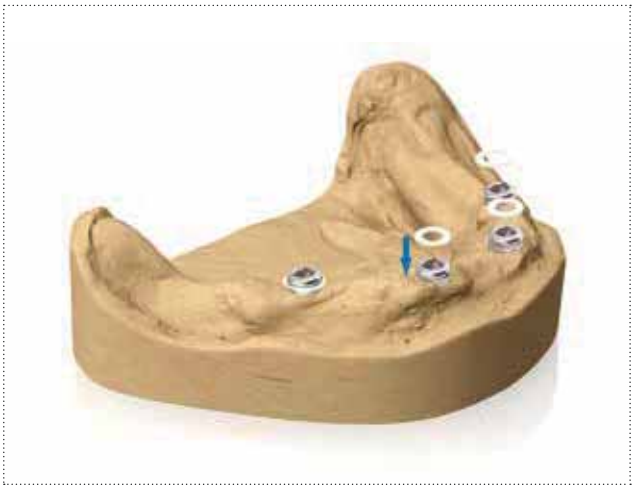
Lift the impression tray vertically: the Locator transfers will remain enclosed into the impression.

Insert a Locator analog 8530 in each Locator transfer and send the impression to the laboratory. Since the head of the Locator abutments which interfaces with the retainers is always the same for all implant platforms, there is only one transfer and only one analog.

Anchoring with Locator Abutments - clinical indications

Indirect method: laboratory phases

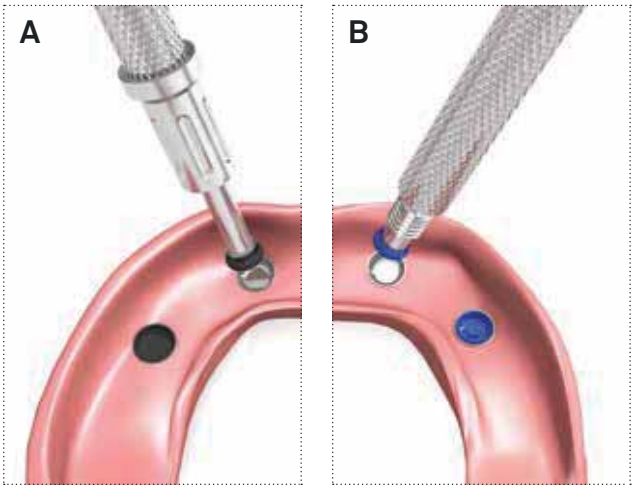
Box the impression with wax or resin and cast the model: the Locator analog will exactly reproduce the position of the head of the Locator abutment. In the model, insert in each analog a spacer ring 8514, 0.50 mm thick, which will create the space necessary to obtain full resilience of the metal cap enclosed in the prosthesis which rotates on the head of the Locator abutment.



Position the metal caps with the preassembled black retainers on the head of the Locator analog. The black retainer will keep the overdenture within the upper limit of its vertical resilience capacity during the work phases, so it is necessary to check that it is completely inserted inside the metal cap.

Make the overdenture with the usual protocols, checking that the overall dimensions of the abutment and the metal cap are completely included in the prosthesis. To enclose the metal caps correctly into the structure, possibly pierce the structure at the level of the Locator abutments and position it on the model.

Slacken the end of the instrument 8393, unscrewing the piece for two complete turns (counterclockwise): this will allow the small piston on the tip to retract completely (**img. A**) and the sharp edge of the tip to engage the edge of the black retainer to extract it from the metal cap. Screw the end of the Locator Core Tool back on, so that the piston comes out and ejects the black retainer. Use the tip of the intermediate portion of the Locator Core Tool to push into the cap the retainer suitable for the degree of disparallelism between the implants (**img. B**). Check carefully that the retainer is completely housed in the metal cap and that its edge is at the same level as that of the cap.



Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the self-centring design of the Locator abutments has been conceived especially to facilitate these operations.
Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace any retainers that may be badly inserted or worn.

Maintenance and relining

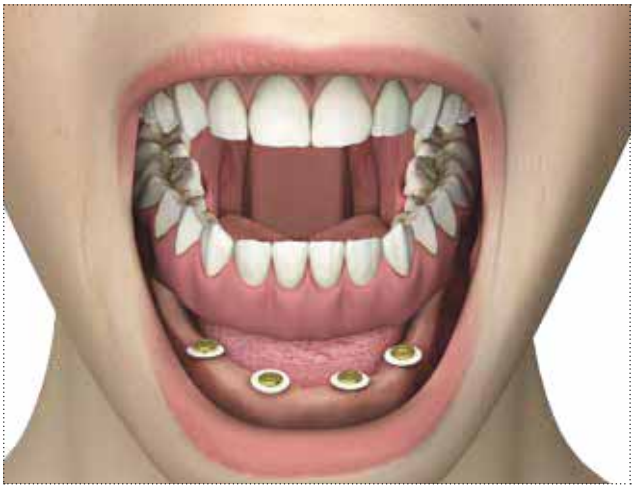
Maintenance

Good oral hygiene is essential both for the duration of the components of the Locator anchoring system and for the long-term success of implant therapy. The Locator metal component is made Gr. 5 titanium, so it does not require any particular precautions for cleaning or maintenance. However, to avoid the formation of plaque and the stagnation of abrasive residue in the abutment well, which could spoil the two interfaces in contact, it is recommended to brush the removable prosthesis, the abutments and the nylon retainers daily with a soft brush under running water, so that aggressive cleaning substances cannot limit the duration of these components, though they are replaceable. Also the use of ultrafloss around the abutments can help to keep the peri-implant area in good condition, and consequently the attachments too.
Patient follow-up at least every six months is recommended, at the same time checking the retentiveness and if necessary replacing any spoiled nylon retainers, or upgrading them if the patient needs a higher level of retention. During follow-up it is also recommended to check that the abutments are correctly fixed on the implants, tightening them if necessary with a torque of 25-30 Ncm. During hygiene sessions it is recommended to use only plastic instruments for scaling operations on the abutments. It is preferable to avoid using metal instruments which could scratch the surface of the abutments.

Periodic relining of the overdenture

Remove the retainers from the metal caps following the indications on page 192 and temporarily replace them with black retainers, so as to maintain a correct vertical ratio during relining. Drill any areas of compression. Apply the relining material on the inside of the prosthesis, whether it is resin or silicone, taking care to avoid the retainers.

Take a relining impression using the existing prosthesis as the impression tray. It is recommended to protect the Locators with the special silicone rubber spacer rings.



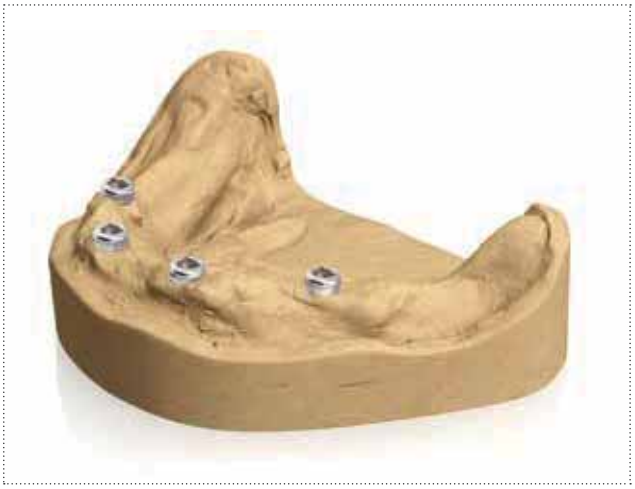
The retainer will engage the head of the Locator Abutment and keep the prosthesis in position during taking of the impression and hardening of the material. When the impression is removed, the retainers will remain inside the metal caps.

Insert a Locator analog (code 8530) in each metal cap coupled with the retainer and make the model with the customary procedure.

Important warning
Direct relining in the patient's mouth could cause problems linked to the stoichiometric difference between the structural resin of the overdenture, hot-cured under pressure, and the relining resin, cold-cured without pressure. Moreover the difficulty of controlling the material, which could get stuck under the attachments, the difference in colour, the shorter duration of the relining and the discomfort linked to the presence of resin in the patient's mouth, all mean that this option is not advisable.

Carry out the final relining of the prosthesis in the laboratory and perform tests accurately with the patient to choose a suitable new retainer.

Important warning
Should the patient present substantial modifications of his or her oral anatomy (for example after losing a lot of weight), it is necessary to perform not a simple relining but a new repositioning of the metal caps inside the overdenture. To do this the caps must be removed from the resin structure with a small burr and repositioned as described on page 192 and following.



Anchoring with ball attachments

The anchoring system with ball attachments, also known as ball joints, is composed of a Gr. 5 titanium post with spherical top with a diameter of 2.20 mm and of a selection of many anchoring matrices that can be directly incorporated into the removable prosthesis.
The ball attachments have a small hexagon at the base of the ball for attaching the driver, compatible with the system's dynamometric ratchet.

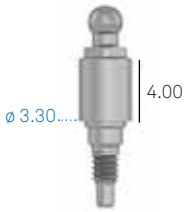
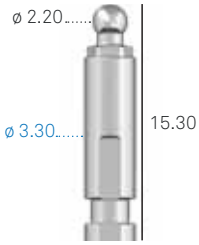
Conditions and indications for anchoring with ball attachments

The standard prosthetic protocol with ball attachments contemplates the support of two implants, positioned preferably 22.00 mm from each other, so that the axis of rotation between the two posts allows the overdenture a certain degree of vertical movement. Absolute parallelism between the two implants is not an indispensable condition for the success of the rehabilitation, as the spherical head intrinsically allows a certain degree of correction. However, the presence of any disparallelisms may present risks of fracture, particularly for the ball attachments, in heavy load conditions, so the rehabilitation with ball attachments is preferable exclusively between parallel implants.

The long-term stability and duration of the ball attachment/cap complex is determined by various factors, including the following:

- three-dimensional alignment of the occlusal surfaces of implants and prosthesis;
- adequate positioning of the prosthetic interface (cap or ring, matrix) so that the ball does not touch the prosthesis in its most occlusal part;
- vertical dimension of the prosthesis such as to ensure that the cap is surrounded on all sides by an adequate layer of resin.

Since the ball must work free from restraints to guarantee the correct mucosal resting surface for the overdenture, abutments with ball attachment are available in different transgingival heights

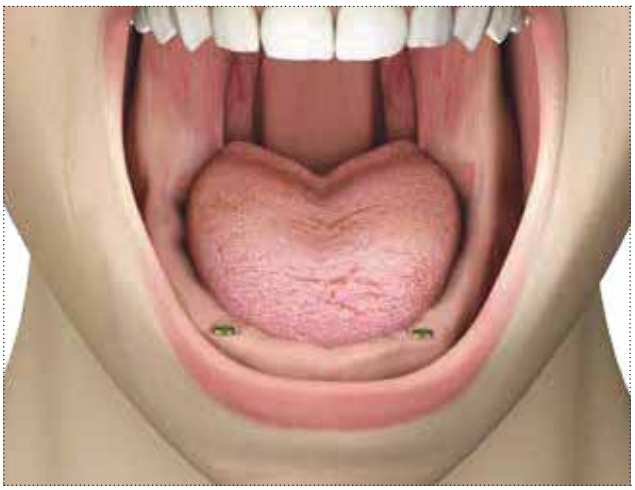
description	code	
Ball attachments Straight emergence Transgingival h. 1.00 mm	**A-AS-330-1**	
Ball attachments Straight emergence Transgingival h. 2.00 mm	**A-AS-330-2**	
Ball attachments Straight emergence Transgingival h. 4.00 mm	**A-AS-330-4**	
Analog of the ball attachment	**ANAS**	
Steel driver for ball attachments, with connector for dynamometric ratchet or digital connector	**BASCC-EX**	

Recommended torque for ball attachments: 25-30 Ncm.

See technical characteristics of Gr. 5 titanium on page 238.

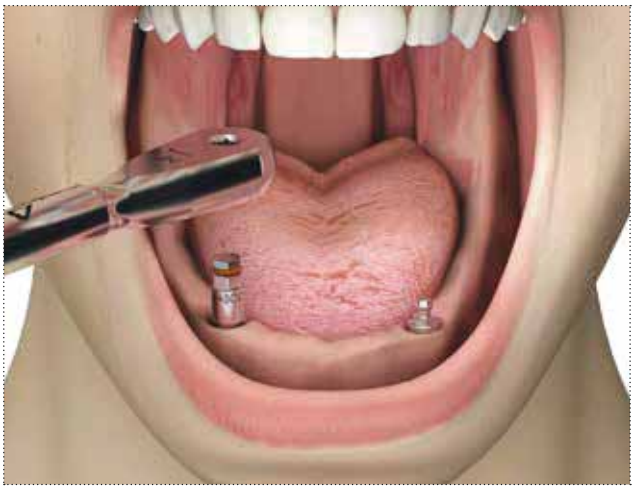
Impression and model

Expose the implants, or remove the transgingival healing screws, depending on whether a protocol with a double or single surgical phase was adopted. Depending on the thickness of the soft tissues, choose the ball attachment with the most suitable transgingival height. For the heights available see the table on page 201.



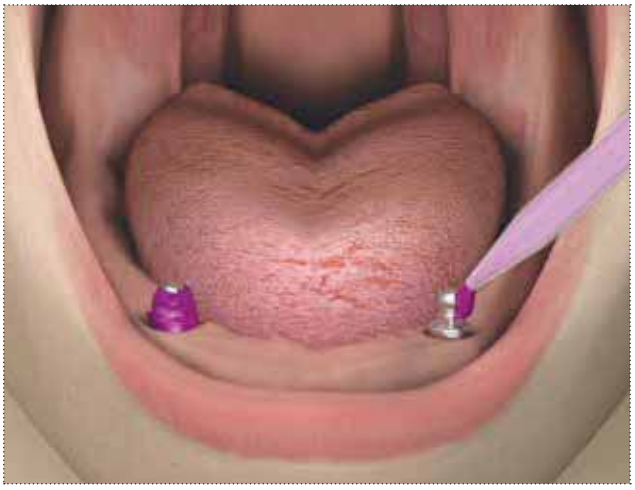
Engage the small hexagon at the base of the ball with the driver BASCC-EX and connect the other end to the dynamometric ratchet CRI5. Screw the posts into the connection of the implants with a torque of 25-30 Ncm.

Note: the driver is not contained in the surgical kits and must be requested separately, with code BASCCEX. Instead it is included in the Screw Kit. This driver is compatible with the system's dynamometric ratchet.

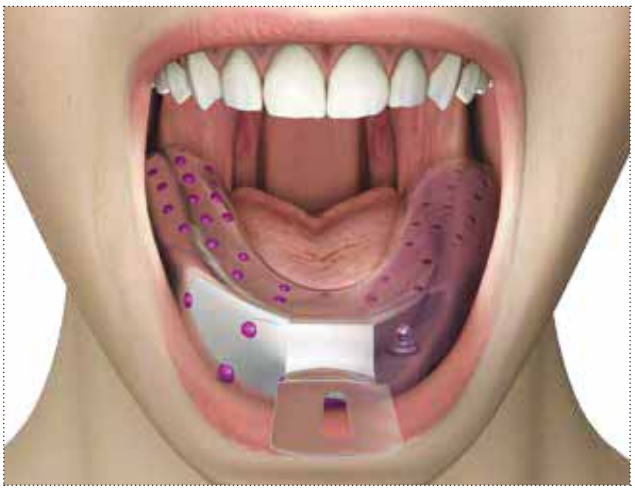


Position the closed tray and check that the whole height of the ball attachment is contained within the walls of the impression tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the spherical heads of the posts and at the same time fill the impression tray with a more consistent material (i.e. SKY IMPLANT HEAVYMIX, code SKY04) on the whole arch.

Important warning
As you are accustomed, it is advisable to insert a suitably perforated piece of latex or dam to prevent silicone infiltrating the peri-implant sulcus.

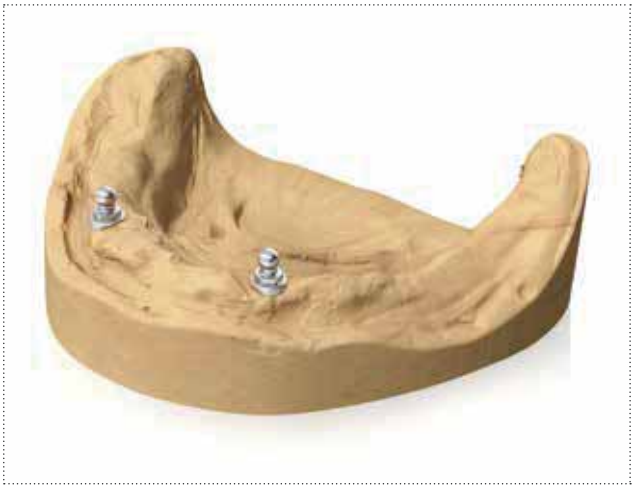


Then put the tray in place and wait for the hardening times according to the manufacturer's instructions. Lift the impression tray vertically.



Insert the analogs of the ball attachments (code ANAS) in the empty spaces left by the retaining balls of the attachments. Since the spherical head is always the same for all implant platforms, there is only one analog.

Develop the model according to usual techniques, incorporating the analogs of the ball attachments (code ANAS) in the chosen material.



Matrices for ball attachments

Titanium Cap CAP-TIT-1

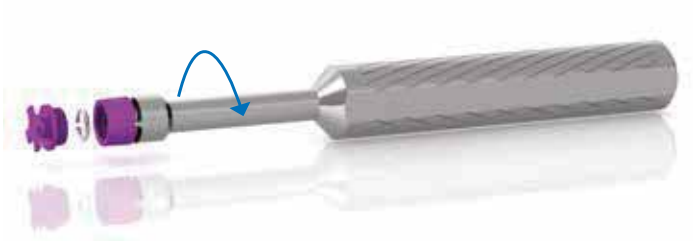
The matrix consists of a Gr. 5 titanium cap, in two parts complete with, titanium retention spring and plastic mounting ring.
Each pack contains the medium version of the retention spring (MOL1-CAP-TIT-1), but a softer spring is also available for progressive adaptation, which can
be ordered separately with the code MOL2-CAP-TIT-1. Both the springs and the plastic mounting ring are also available as spares, with the codes shown in the table at the side. A special driver is available for removing and reassembling the titanium cap; it allows rapid replacement of the retention spring and simplifies the use of the plastic relining ring, as explained in the work steps.

description	code
Titanium cap complete with cap in two parts, titanium retention spring, and plastic mounting ring for ball attachments ø 2.20 mm. The total height is 3.20 mm	**CAP-TIT-1** 
Spare plastic ring for titanium cap h. 2.20 mm	**AN-CAP-TIT-1** 
Spare retention spring for titanium caps, average hardness, steel, ø 3.20 mm	**MOL1-CAP-TIT-1** 
Spare retention spring for titanium cap, soft, for progressive adaptation of the prosthesis, steel, ø 3.20 mm	**MOL2-CAP-TIT-1** 
Driver for mounting and maintenance of the titanium cap CAP-TIT-1	**AVV-CAP-TIT-1** 

See Gr. 5 titanium technical characteristics on page 238.

Assembly of the titanium cap for work phases:

The titanium cap is supplied assembled on the spring with the final titanium ring. Before starting the direct protocol of anchoring the overdenture it is necessary to unscrew the preassembled titanium ring with the aid of the driver AVV-CAP-TIT-1 and set it aside with the spring.

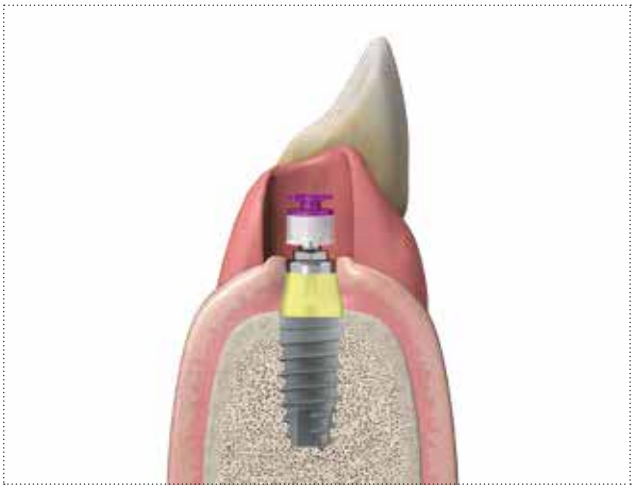


With the same driver screw the elastomeric plastic mounting ring onto the top of the titanium spring, without inserting a spring. The retention exerted by the plastic ring is minimum, but sufficient for the assembly phases.

Titanium Cap CAP-TIT-1: direct method

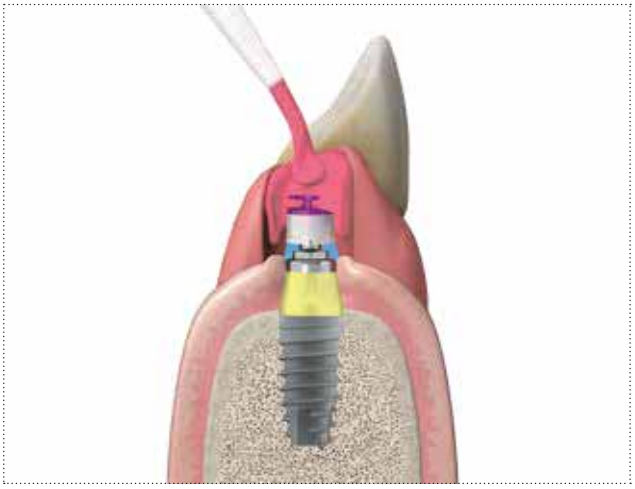
Position the caps assembled on the elastomeric plastic ring on the spherical head of the abutments. Totally pierce the prosthesis for a radius of about 5.50 mm and put it in place to check the dimensions. The retention of the elastomeric ring is minimum, but sufficient for the work phases.

Note: depending on the type of resin it may be useful to apply a light layer of Vaseline or wax around the transparent plastic ring to make its removal easier after its inclusion into the resin.



Fill the cavities with resin in such a way as to enclose the caps entirely and polymerise according to the manufacturer's instructions.

Important warning
Should it be necessary, protect any undercuts (highlighted in blue in the image) with impression plaster, wax, dam or other materials habitually used for this purpose.

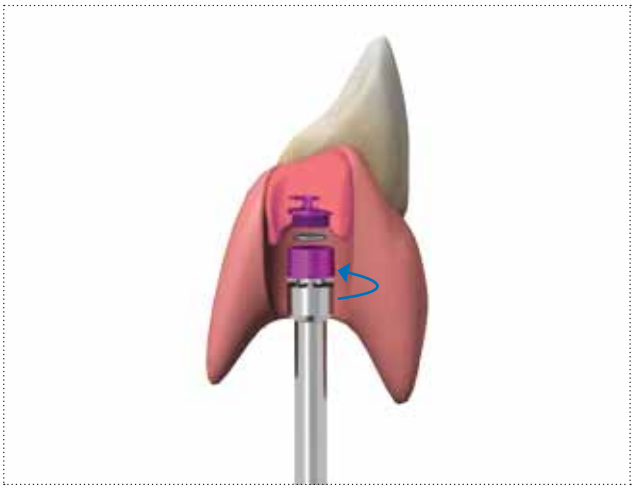


Intraoral view.

Unscrew the plastic ring with the driver AVV-CAP-TIT-1. The space left by the plastic ring is calculated so as to allow easy insertion of the titanium ring.

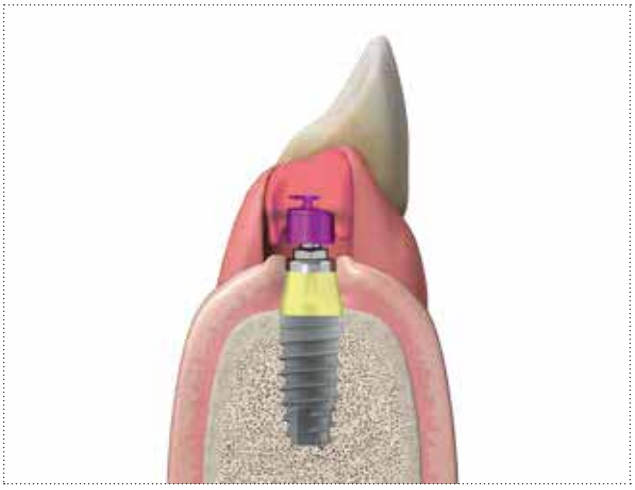
Screw the titanium ring onto the top of the cap, in which you have first inserted the retention spring. Always insert the spring at the threaded end.

Important warning
Should the initial retention be excessive for the patient, replace the spring provided with the gold coloured one which can be bought separately with code MOL2-CAPTIT-1.



Polish the base of the overdenture and put the prosthesis in place, exerting vertical pressure until you hear the characteristic click which indicates the correct engagement of the head of the ball attachment on the retention spring.

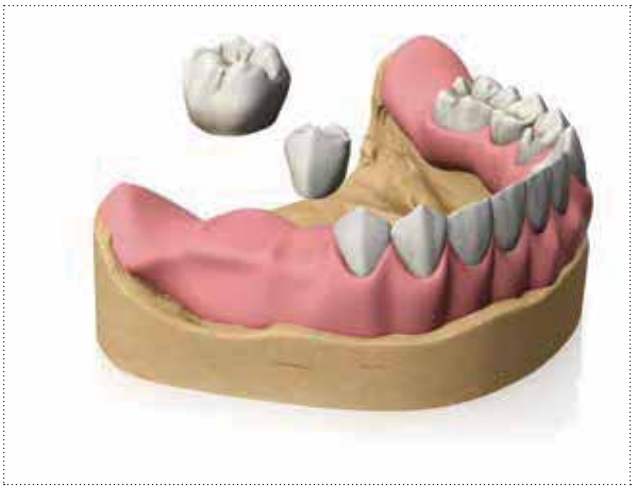
Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the spring or the ball attachments that may be badly inserted or worn.



Titanium Cap CAP-TIT-1: indirect method

Position the caps assembled on the elastomeric plastic ring on the spherical head of the analogs, taking care to keep the insertion axis at a right angle to that of the analogs. Should it be necessary, relieve any undercuts with impression plaster, wax, dam or other materials habitually used for this purpose.

Make the overdenture with the customary protocols, checking that the overall dimensions of the ball attachment and the metal cap are completely included in the prosthesis.



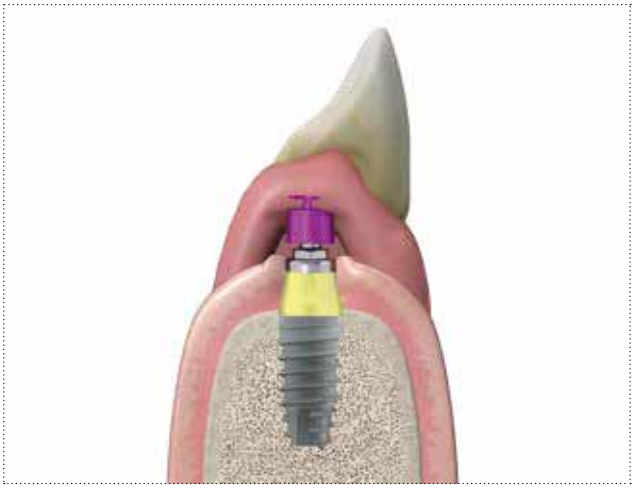
Unscrew the plastic ring with the driver AVV-CAP-TIT-1. The space left by the plastic ring is calculated so as to allow easy insertion of the titanium ring.

Screw the titanium ring onto the top of the cap, in which you have first inserted the retention spring. Always insert the spring at the threaded end.

Important warning
Should the initial retention be excessive for the patient, replace the spring provided with the gold coloured one which can be bought separately with code MOL2-CAPTIT-1.

Polish the base of the overdenture and put the prosthesis in place, exerting vertical pressure until you hear the characteristic click which indicates the correct engagement of the head of the ball attachment on the retention spring.

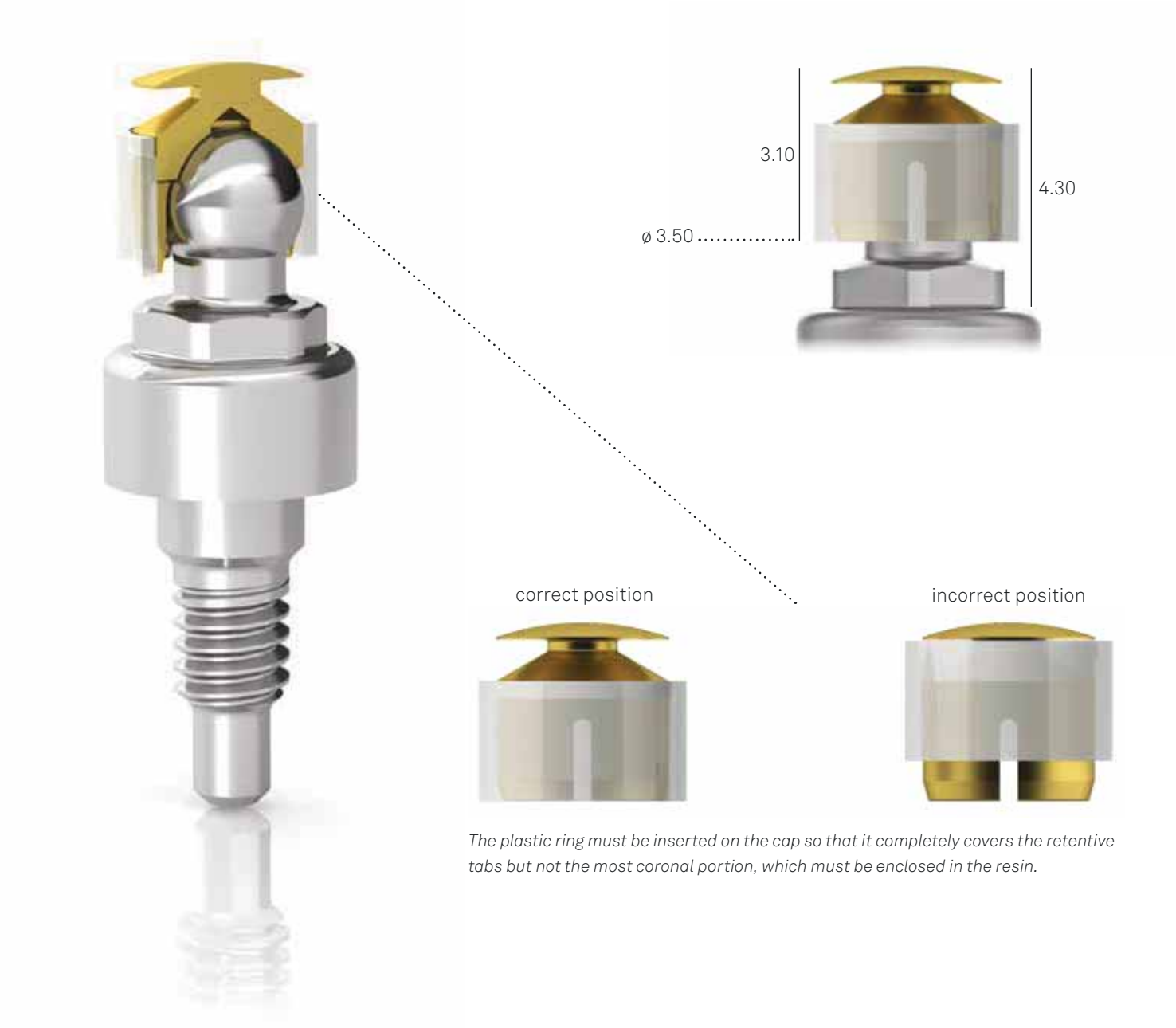
Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the spring or the ball attachments that may be badly inserted or worn.



Matrices for ball attachments

Cap in gold alloy CAP-1

The matrix consist of a gold alloy cap characterised by 4 tabs with a particular retentive design which is supplied along with three transparent elastomeric rings and a laboratory tin spacer. The rings help maintain the elasticity of the gold alloy tabs, which otherwise would lose their retentive capacity after a brief use. For this reason it is important for the two components to be correctly positioned one on top of the other, as shown in the image at the foot of the page.

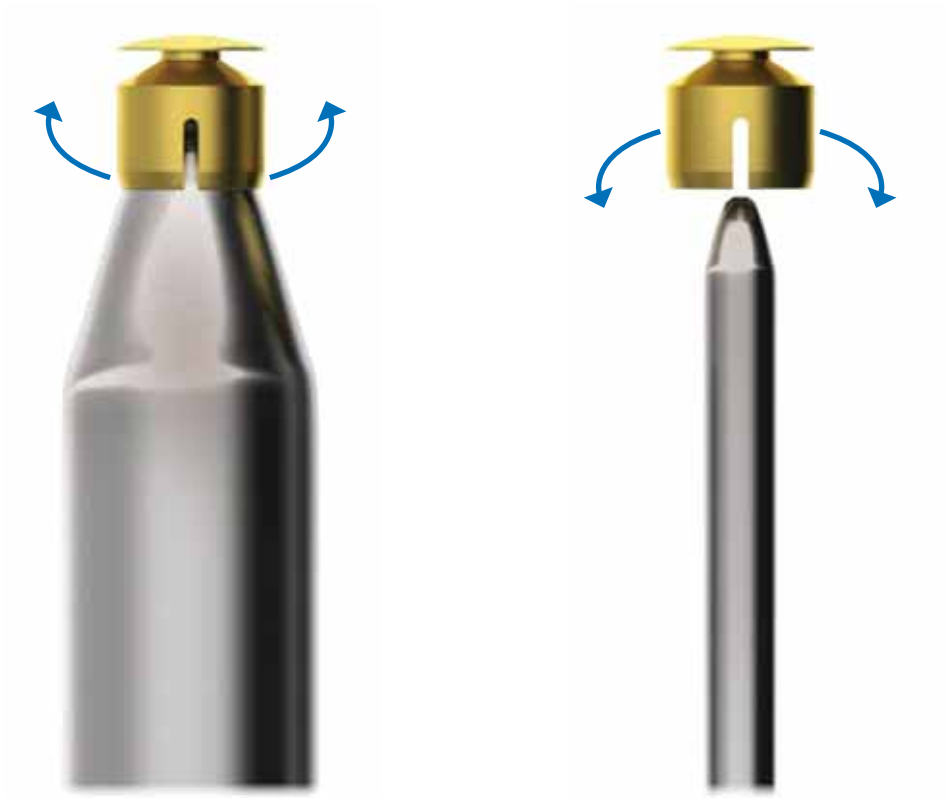


The plastic ring must be inserted on the cap so that it completely covers the retentive tabs but not the most coronal portion, which must be enclosed in the resin.

description	code
Cap in gold alloy 2, complete with plastic positioning ring for ball attachments ø 2.20 mm. The total height is 3.10 mm, and the outside diameter is 3.50 mm	**CAP-1** 

Adjusting retention

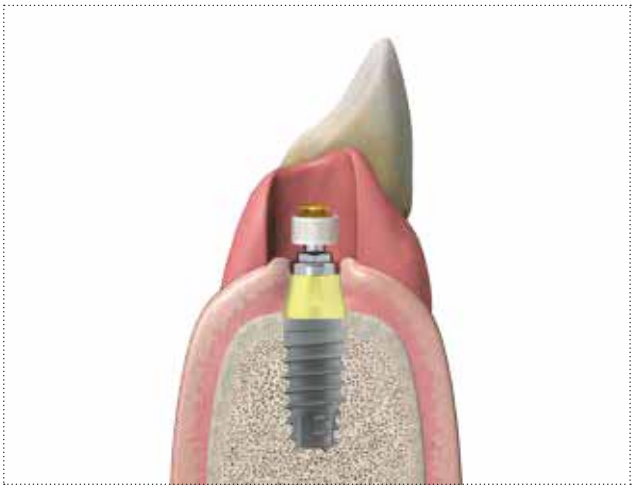
Should the alloy matrix be too difficult for the patient to remove, it is possible to slacken the retentive force of the tabs by inserting in the cap a tapered point with a growing diameter which will gradually spread the tabs. On the other hand, should the matrix lose its retentiveness it is possible to reactivate the tabs by simply inserting in the cap a point with a diameter smaller than 2.20 mm which will cause the four retentive walls to converge towards the centre. These operations must be performed gently, taking care not to detach the female from the resin.



The standard retention of the gold alloy cap is about 200 g, which is also the minimum value that can be obtained. The maximum value is about 1200 g. In the event of lack of retention despite activation, check that the female part is properly positioned; repolymerise if necessary.
During any operations of modifying and relining the prosthesis it is preferable to remove the original female.

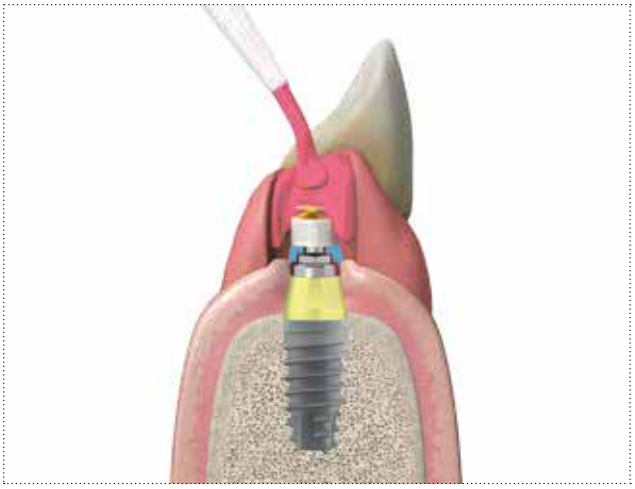
Cap in gold alloy CAP-1: direct method

Position the caps assembled on the plastic ring on the spherical head of the abutments. Pierce the prosthesis for a radius of about 5.50 mm and put it in place to check the dimensions.



Insert a mass of resin in the hole so that it encloses the top of the cap, provided with a special peduncle that facilitates retention in the material, once it has been polymerised.

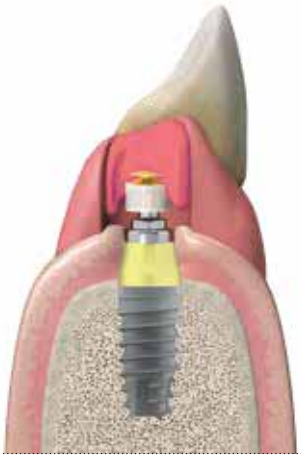
Important warning
Should it be necessary, protect any undercuts (highlighted in blue in the image) with impression plaster, wax, dam or other materials habitually used for this purpose.



Intraoral view.

Once polymerisation is ended, lift the prosthesis and polish the base of the overdenture.

Test the retentive capacity of the gold alloy caps and put the overdenture into place. If necessary, adjust retentiveness with the operations described on page 211.

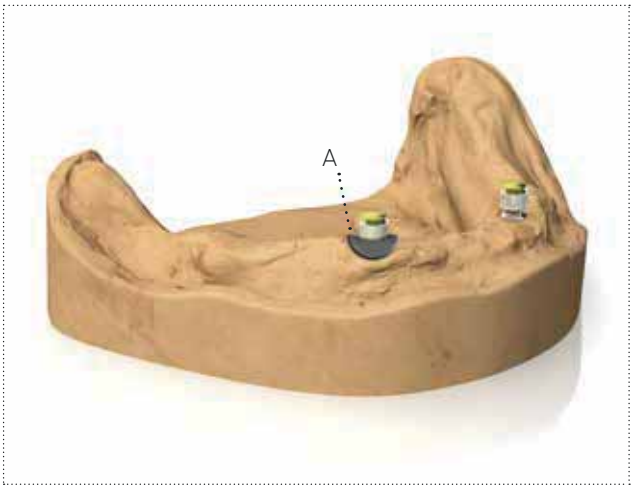


Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace any ball attachments that may be badly inserted or worn.

Cap in gold alloy CAP-1: indirect method

Position the caps assembled on the plastic ring on the spherical head of the analogs, taking care to keep the insertion axis at a right angle to that of the analogs. Should it be necessary, relieve any undercuts with impression plaster, wax, dam or other materials habitually used for this purpose.

Important warning
A tin spacer disc (A) is provided which allows optimum vertical resilience to be obtained. It can be positioned only on the model before insertion of the resin and adapted on the entire peri-implant surface, to be eliminated only after having completed the resin product. It must not be placed in the mouth. As an alternative a piece of dam can be used.

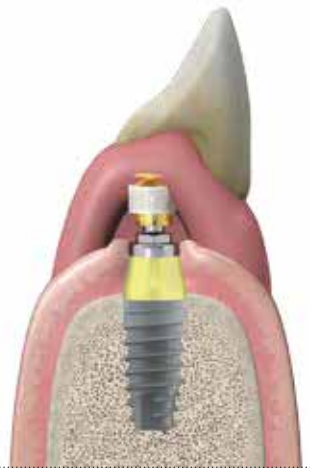


Make the overdenture with the customary protocols, checking that the overall dimensions of the ball attachment and the alloy cap are completely included in the prosthesis.

Once polymerisation is ended, lift the prosthesis and polish the base of the overdenture.

Test the retentive capacity of the gold alloy caps and put the overdenture into place. If necessary, adjust retentiveness with the operations described on page 211.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace any ball attachments that may be badly inserted or worn.



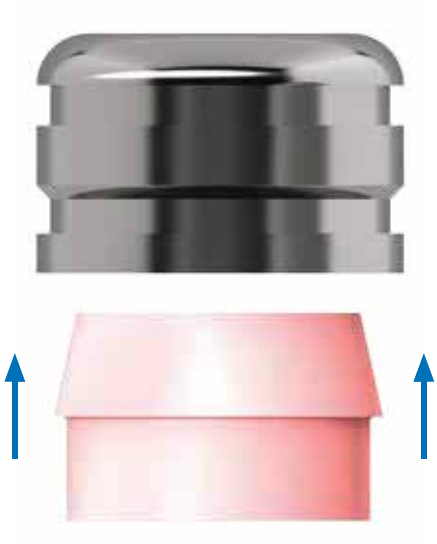
Matrices for ball attachments

Polyamide cap CAP-TFL-1

The anchoring system with polyamide cap consists of a steel container with grooves for optimal anchoring in the resin, and a polyamide retainer which can be replaced chair-side without having to adjust the structure of the overdenture.If there is not enough space, the polyamide retainer can also be used without the metal container, however in this case it must also be considered that the cap undergoes greater wear in a shorter time, and the replacement becomes more invasive with respect to the prosthesis.

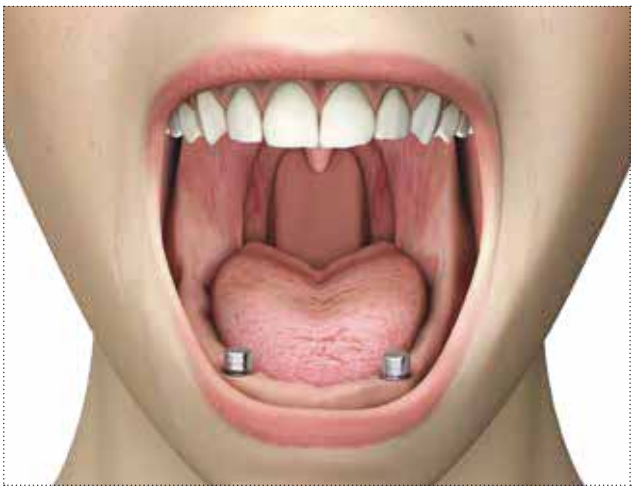
description	code
Polyamide cap for ball attachments ø 2.20 mm	**CAP-TFL-1** 
Steel container for polyamide cap with outer ø 4.80 mm The total height is 3.20 mm	**CONT-CAP-TFL-1** 

No particular instruments are required to insert the polyamide retainer in the steel cap, which can be done by hand.



Polyamide cap CAP-TFL-1: direct method

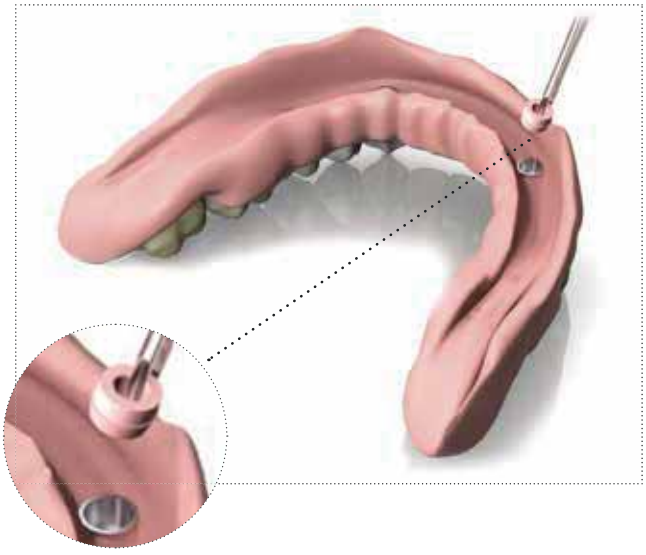
Manually insert the polyamide cap in the steel container exerting simple pressure. Position the assembled caps on the spherical head of the abutments.



Important warning
Should it be necessary, protect any undercuts with impression plaster, wax, dam or other materials habitually used for this purpose.

Pierce the prosthesis, existing or new, for about 5.50 mm in the area of the ball attachment, to create the seat for the matrix. Try the overdenture on the edentulous crest to check the vertical dimension of the matrices in the spaces specially created.
Fill the cavities with resin so as to enclose the matrices completely, which should remain at the same level as the resin. Polymerise according to the manufacturer's instructions. Polish the base of the overdenture.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the caps or the ball attachments that may be badly inserted or worn. The polyamide caps can be replaced manually chair-side, using only forceps.



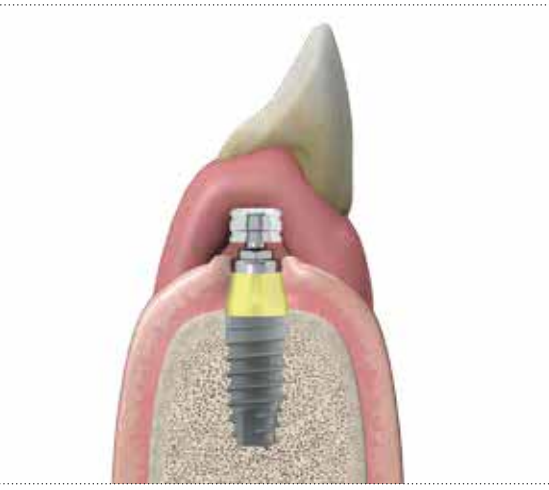
Polyamide cap CAP-TFL-1: indirect method

Manually insert the polyamide cap in the steel container exerting simple pressure. Position the assembled caps on the spherical head of the analogs. Should it be necessary, relieve any undercuts with impression plaster, wax, dam or other materials habitually used for this purpose.

Make the overdenture with the customary protocols, checking that the overall dimensions of the ball attachment and the metal cap are completely included in the prosthesis.

Once polymerisation is ended, lift the prosthesis and polish the base of the overdenture.

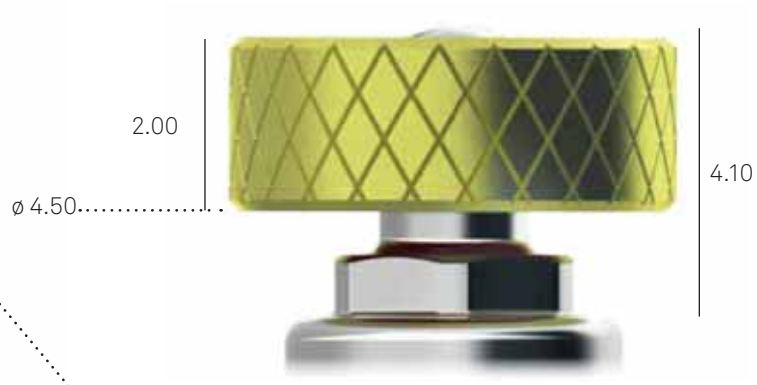
Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the ball attachments that may be badly inserted or worn. The polyamide caps can be replaced manually chair-side, using only forceps.



Matrices for ball attachments

O-ring retention system

The matrix consists of a metal container in the shape of a ring, with an embossed pattern on the outside which facilitates its retention in the resin, inside which is fitted an O-ring of natural rubber. Three different O-rings are available with progressive hardness, to allow progressive adaptation of the prosthesis.
The three O-rings are also available as spares, with the codes shown in the table on the next page.



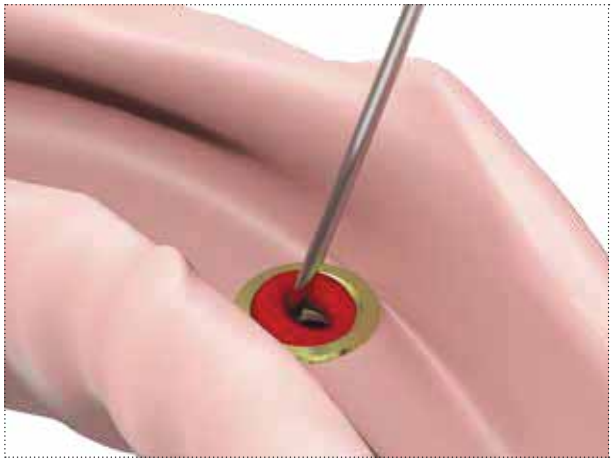
The three rings available allow differentiated retention for the laboratory phase and for intraoral functioning. Although the vertical bulk is very compact, an empty space must be left over the head of the abutment to avoid wear of the top of the ball

description	code	
Pack of 6 pieces Metal container in the shape of a ring for rubber O-rings. For ball attachments ø 2.20 mm. The total height is 1.50 mm and the outside diameter is 4.50 mm	**99-440044***	
Pack of 12 pieces Red ring in silicon for laboratory use, outside ø 4.50 mm h 1.50 mm	**99-443034***	
Pack of 12 pieces White ring in natural rubber, soft, outside ø 4.50 mm h 1.50 mm	**99-443035***	
Pack of 12 pieces Black ring in natural rubber, hard, outside ø 4.50 mm h 1.50 mm	**99-443036***	

**The retention O-rings for ball attachments are manufactured by Implant Direct Sybron International, 27030 Malibù Hills Road, Calabasas Hills, 91301 U.S.A. The European Agent for the purposes of MDD 93/42/EEC is Kerr Italia S.r.l., via Passanti 332, 84018 Scafati (SA) Italy.*

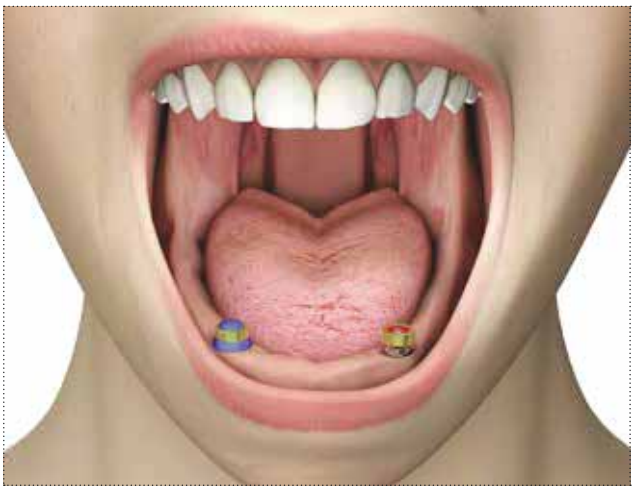
Important warning

It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the retention rings or the ball attachments that may be badly inserted or worn. The O-rings, whether of silicone or natural rubber, can lose their retentive capacity over time, requiring replacement. To remove an O-ring and replace it with a harder one it is sufficient to lever with a probe. The new O-ring can be inserted manually or with the aid of surgical forceps.

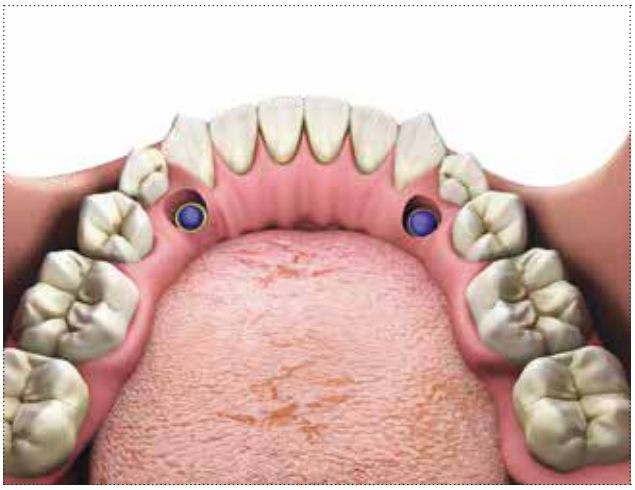


O-ring retention system: direct method

Insert the red silicone O-ring with low retention in the metal ring with the aid of a probe and fit the assembly on the spherical head of the abutment, filling any undercuts with a layer of wax. This precaution will avoid undesired movements of the O-ring matrix at the moment of fixing it in the prosthesis. Moreover the wax will create a small vacuum at the top of the ball, so that it does not come in contact with the resin of the prosthesis, which could be fractured during stress due to masticatory forces.



Pierce the prosthesis, existing or new, for about 5.50 mm in the area of the ball attachment, to create the seat for the O-ring matrix. Put the overdenture in place.

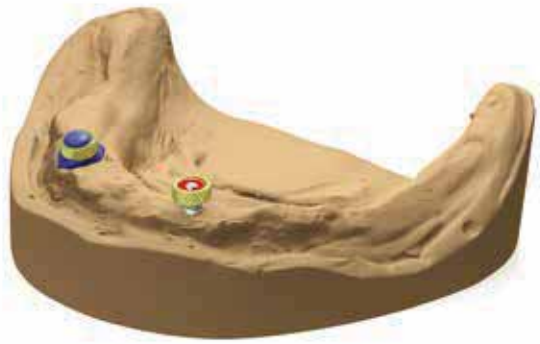


Fill the cavities with resin so as to enclose the matrices completely, which should remain at the same level as the equator of the attachment. Polymerise according to the manufacturer's instructions and finish off.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the retention rings or the ball attachments that may be badly inserted or worn.

O-ring retention system: indirect method

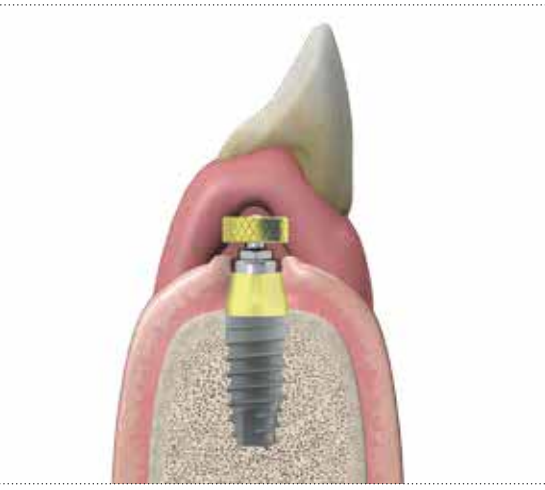
Insert the red laboratory silicone O-ring in the metal ring with the aid of a probe and fit the assembly on the spherical head of the analog, relieving any undercuts with a layer of wax. This precaution will avoid undesired movements of the O-ring matrix at the moment of fixing it in the prosthesis. Moreover the wax will create a small vacuum at the apex of the ball, so that it does not come in contact with the resin of the prosthesis, which could be fractured during stress due to masticatory forces.



Make the overdenture with the customary protocols, checking that the overall dimensions of the ball attachment and the O-ring are completely included in the prosthesis.

Once polymerisation is ended, lift the prosthesis and polish the base of the overdenture.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the attachments, so as to allow the operator to perform prompt maintenance or replace the retention rings or the ball attachments that may be badly inserted or worn.



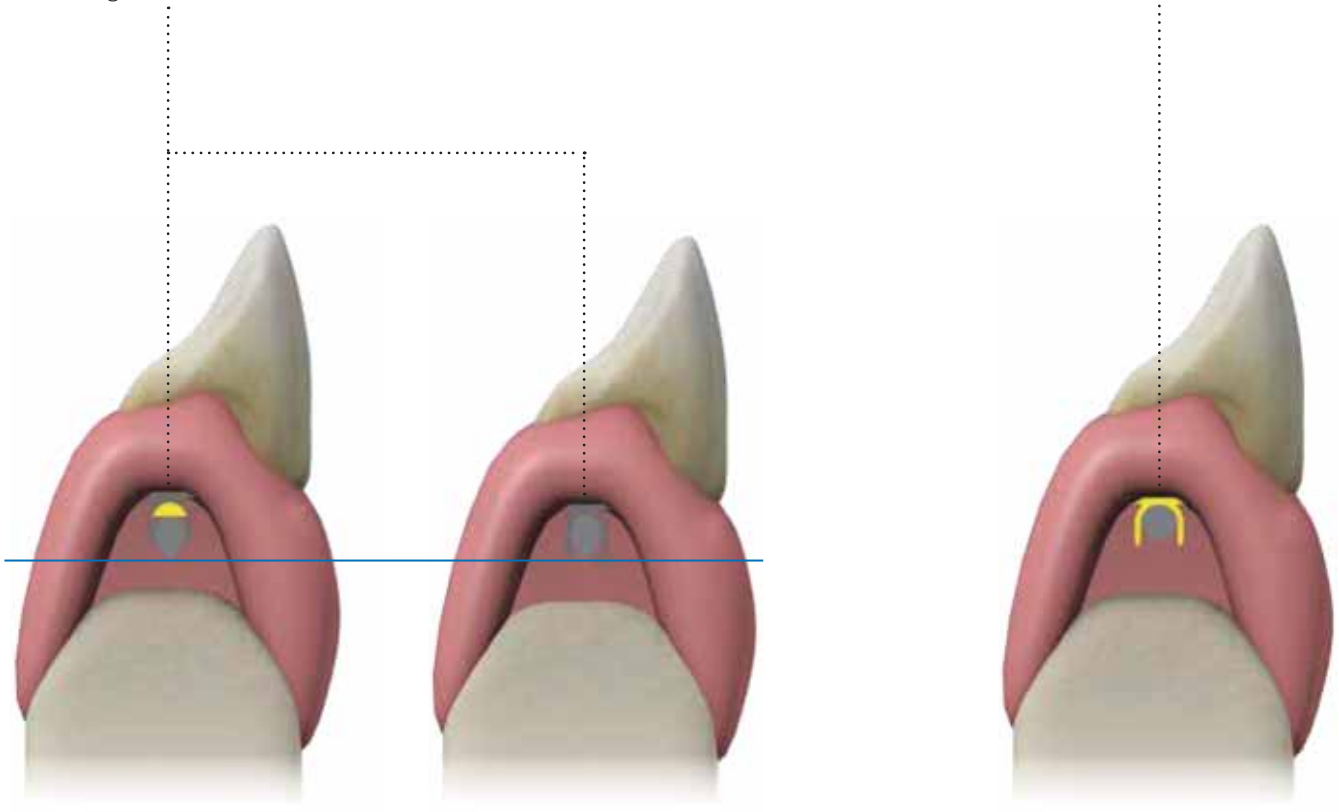
Cast or welded bars*

Rehabilitation on bars is an overdenture anchoring method that has the advantage of fixing the implants together. However, if the structure is not made in a precise manner there is the risk that the stresses that it generates may cause reabsorption and compromise the long-term duration of the implant prosthetic rehabilitation, so it is advisable to take the greatest care in checking that the fit between the bar and the implant platforms is adequate.

Two different bars are available, one with a round and the other with an ovoid section, which must be used with their respective bar attachments:

Dolder bar: bar with an asymmetrical ovoid section. Limits antero-posterior tilting movements. To allow correct resilience, it is supplied complete with a spacer to be used when fixing the bar attachments in the overdenture, to ensure a correct mucosal resting surface

Ackermann bar: bar with a round section allowing antero-posterior tilting



If you want to use bars with different sections from those present in the Sweden & Martina program, for example a rigid Dolder bar, these can be found on the market and used according to the manufacturer's instructions; the use of the posts to which they are joined is unvaried with respect to the one illustrated in this protocol.

***Note**: all the posts presented in the following pages can be modelled, customised and cast separately, then joined to the bar by welding. For the technical procedures, refer to the indications supplied by the manufacturers of the alloys used.

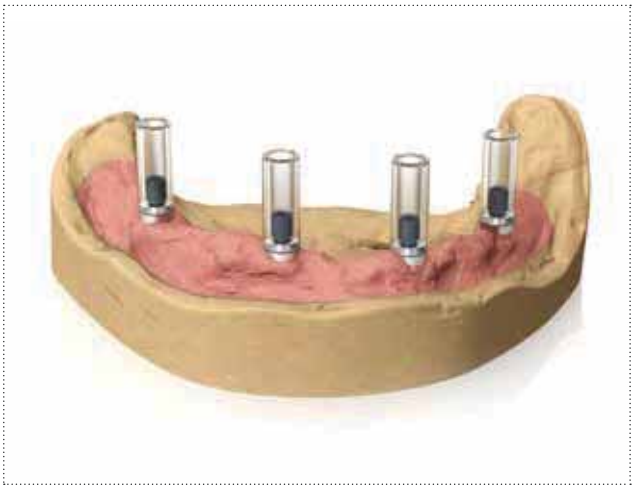
description	code
Castable bar, L. 5.00 cm, h. 3.00, thickness 2.20 mm Ovoid-shaped profile with spacer	**BAR-CAV-TIT** 
Divisible bar attachment in titanium for oval bars, h. 3.00 mm, thickness 2.20 mm	**CAV-TIT** 
Castable bar, L. 5.00 cm, ø 2.20 mm	**BARC**
Bar attachment in gold alloy 3, for round bars ø 2.20 mm	**CAV-375** 

Important warning
For a correct design of the bar it is preferable to follow an indirect protocol since the laboratory model allows a precise measurement of the orthogonality of the structure. For the impression taking protocols see pages 36 and following.

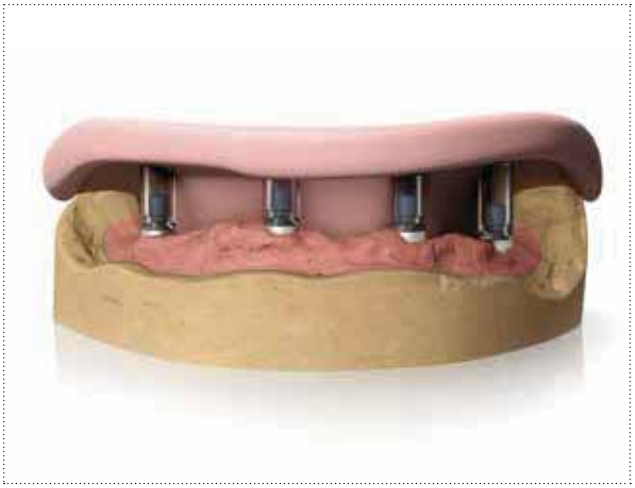
Bar on an intermediate abutment: indirect method

Once the model has been made according to the standard procedures, tighten the abutments onto the analogs using a screwdriver of the HSM series. The prosthetic screw will make a fastening of the sleeve and the abutment to the implant.

Important warning
Always use spare screws for work in the laboratory, these are available in a single pack with codes A-VABU-180. Use the final screws only for the final fastening in the patient's mouth.

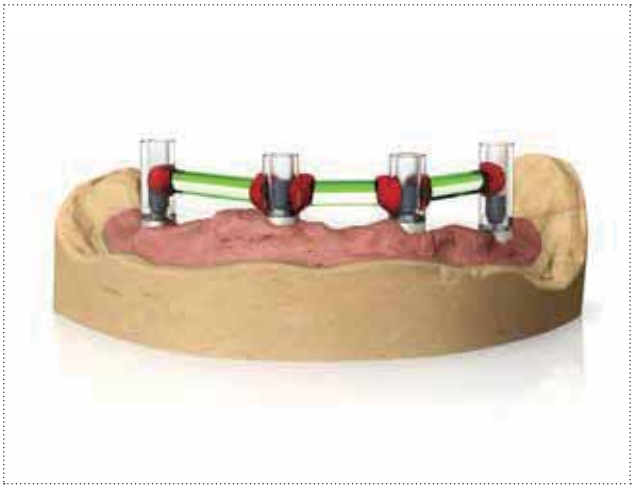


Reduce the castable sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.



Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable sleeves with resin.

Important warning
When the structure is unscrewed to go to casting, the lenticular abutments must remain on the model and the fixation screws can be put away. It is recommended to send only castable parts for casting.



Fabricate the bar by casting or using CAD CAM technology. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. If necessary, correct the eventual tensions.

Position on each segment bar an ovoid-shaped spacer, so as to ensure an adeguate resilience (in case of Ackermann bar with round section see page 224 do not take into consideration this passage).
Then insert a portion of the bar attachment on each segment of the bar. Bar attachments are sold in sticks of 5 elements, which must be separated and eventually reduced to the desired lenght. They must be at least 1.00 mm shorter than the lenght of the bar segment.

Fabricate the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

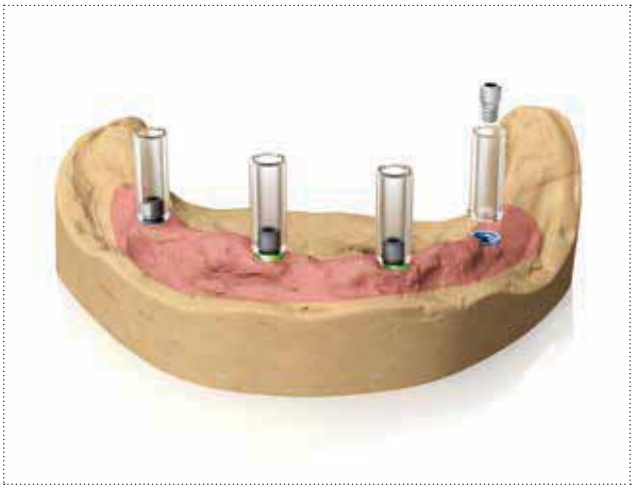
Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments, hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific attachment, since the sections of the bars are different and are not compatible.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the bar attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the bar attachments.

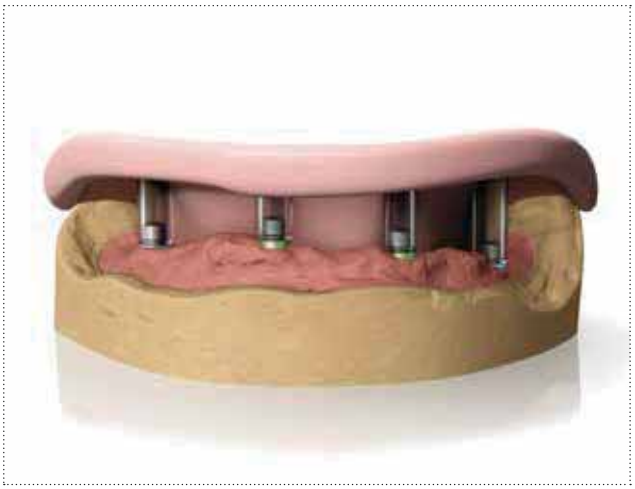
Bar on PLAIN abutments: indirect method

Once the model has been made according to the standard procedures, tighten the PLAIN abutments onto the analogs using a screwdriver of the HSM series. The final tightening torque of PLAIN abutments is 20-25 Ncm. Then fix all the castable sleeves A-PLAIN-CC* onto the PLAIN abutments by means of the fixation screws A-PLAIN-VP200 included in the pack for each sleeve. For the technical specifications of PMMA, refer to page 240.

Important warning
Always use spare screws for work in the laboratory, available in a single pack with code A-PLAIN-VP200. Use the final screws only for the final fastening in the patient's mouth.

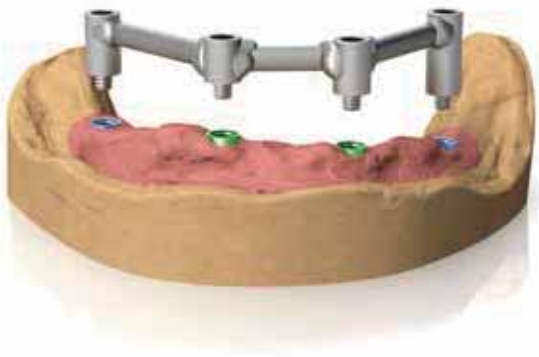


Reduce the castable sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.



Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable sleeves with resin.

Fabricate the bar by casting or using CAD CAM technology. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. The recommended torque for the final fastening of the over-structures obtained by casting to the abutments is 20-25 Ncm.



In the case of the bar with an ovoid profile, insert a segment of the spacer bar (included in the pack) between the bar attachment and the cast bar before including the attachments at the base of the overdenture: this step will ensure correct resilience of the prosthetic rehabilitation.

Fabricate the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

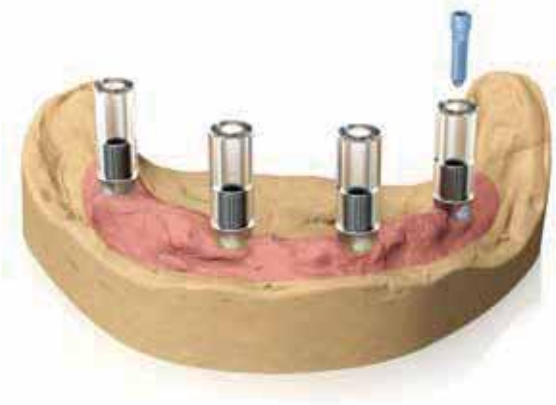
Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments, hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific bar attachment, since the sections of the bars are different and are not compatible.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the bar attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the bar attachments.

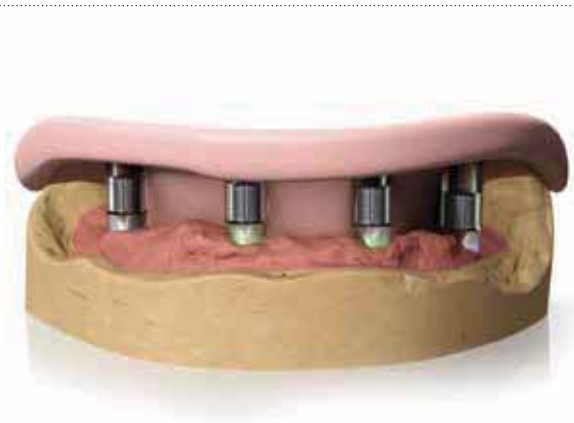
Bar obtained with castable posts with a metal base: indirect method

Once the model has been made according to the standard procedures, tighten the castable posts with a metal base onto the analogs using a driver from the HSM or L-HSM according to the chosen post. The final tightening torque for prosthetic products on castable posts with a metal base is 20-25 Ncm.

Important warning
It is advisable to always use test screws for laboratory work, keeping the new screws supplied for definitive fixing in the patient's mouth.

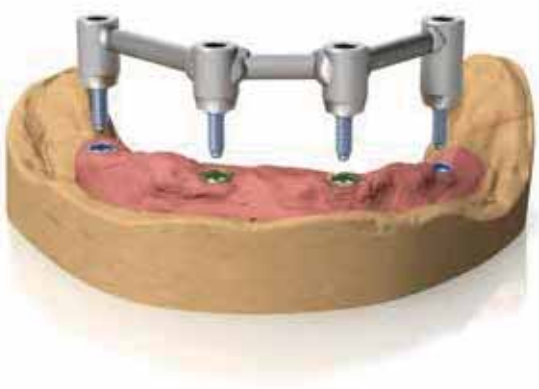


Reduce the castable sleeves to a size compatible with the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.



Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable sleeves with resin.

Fabricate the bar by casting or using CAD CAM technology. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity. The recommended torque for the final fastening of the over-structures obtained by casting to the abutments is 20-25 Ncm.



In the case of the bar with an ovoid profile, insert a segment of the spacer bar (included in the pack) between the bar attachment and the cast bar before including the attachments at the base of the overdenture: this step will ensure correct resilience of the prosthetic rehabilitation.

Fabricate the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

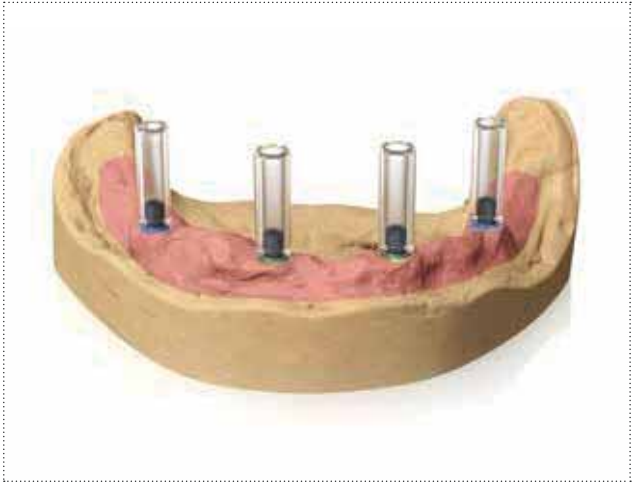
Important warning
Make the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the bar attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the bar attachments.

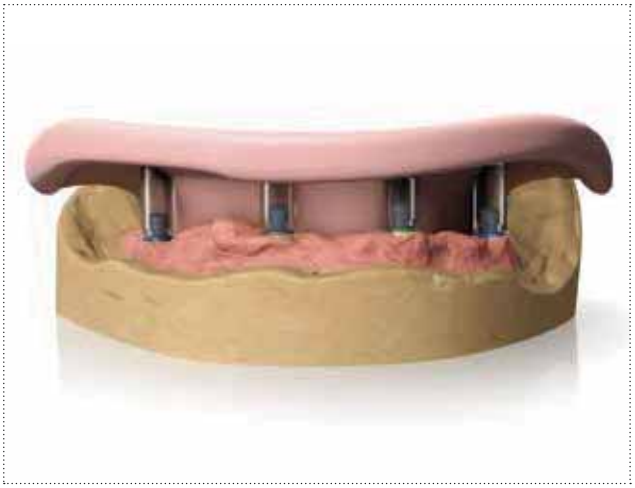
Bar obtained with entirely castable posts: indirect method

Once the model has been made according to the standard procedures, tighten the castable posts onto the analogs using a screwdriver of the HSM series. Before casting, care must be taken in the laboratory to ensure that the entirely castable posts are not fastened onto the models with a torque exceeding 8-10 Ncm, because polymers are not as resistant as metal. For the technical specifications of PMMA, refer to page 240.

Important warning
Always use spare screws for work in the laboratory, these are available in a single pack with codes VM2-180. Use the final screws only for the final fastening in the patient's mouth.

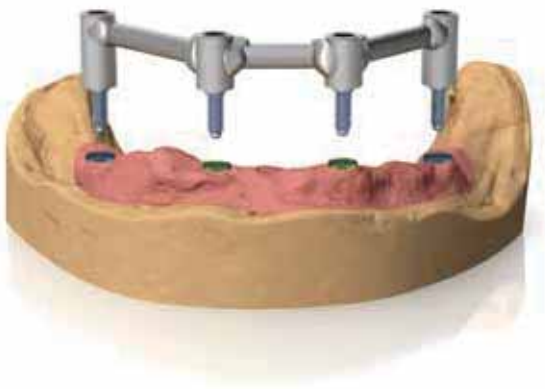


Reduce the castable sleeves to a dimension suited to the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.



Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable posts with resin.

Cast the structure according to the standard protocol. Try out the structure first on the model and then in the patient's mouth to check its complete passivity. The recommended tightening torque for all the over-structures obtained by casting to the abutments is 20-25 Ncm.



In the case of the bar with an ovoid profile, insert a segment of the spacer bar (included in the pack) between the bar attachment and the cast bar before including the attachments at the base of the overdenture: this step will ensure correct resilience of the prosthetic rehabilitation.

Fabricate the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

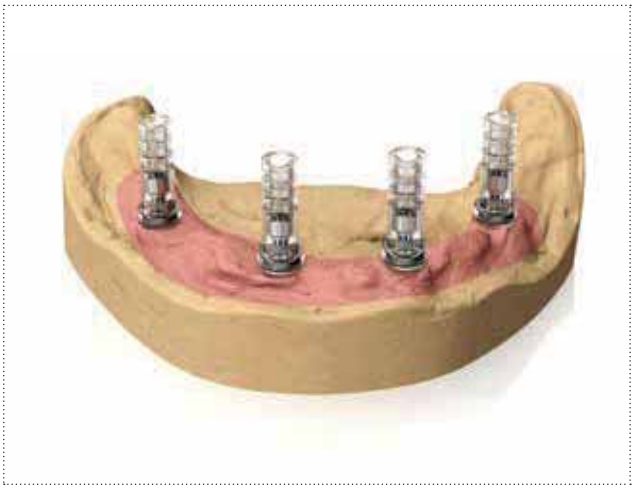
Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments, hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific bar attachment, since the sections of the bars are different and are not compatible.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the bar attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the bar attachments.

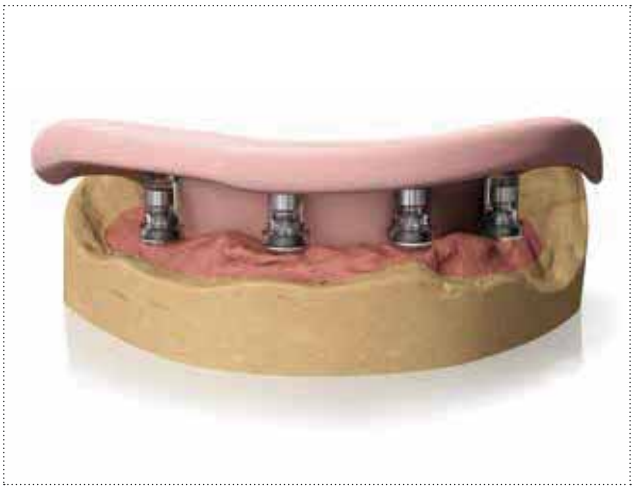
Bar on P.A.D. with castable sleeves: indirect method

Once the model has been made according to the standard procedures (as indicated from page 124 and following) tighten the castable sleeves PAD-CC onto the abutments analogs. Before casting, care must be taken in the laboratory to ensure that the entirely castable posts are not fastened onto the models with a torque exceeding 8-10 Ncm, because polymers are not as resistant as metal. For the technical specifications of PMMA, refer to page 240.

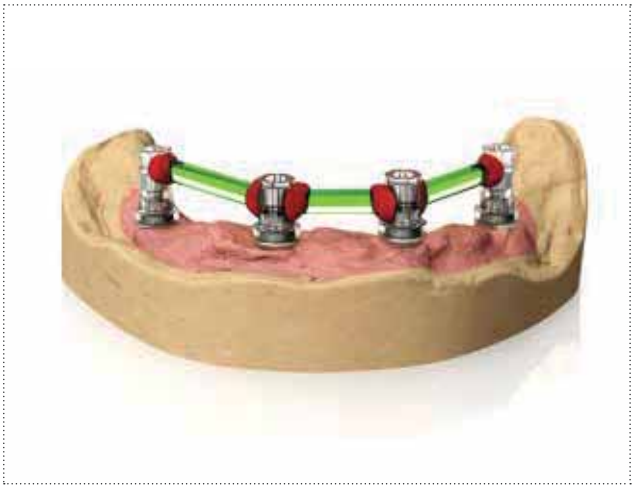
Important warning
Always use spare screws for work in the laboratory, these are available in a single pack with codes PAD-VM-180. Use the final screws only for the final fastening in the patient's mouth.



Reduce the castable sleeves to a dimension suited to the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.

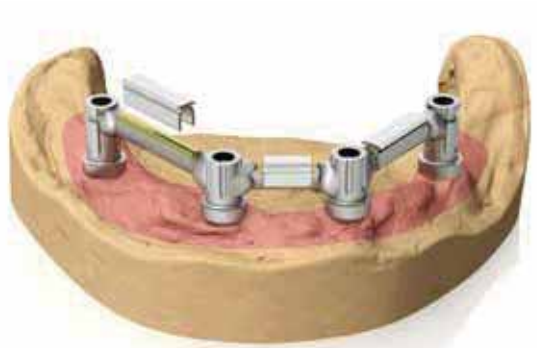


Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable sleeves with resin.



Cast the structure according to the standard protocol. Try out the structure first on the model and then in the patient's mouth to check its complete passivity. The recommended tightening torque for all the over-structures obtained by casting to the abutments is 20-25 Ncm.

In the case of the bar with an ovoid profile, insert a segment of the spacer bar (included in the pack) between he bar attachment and the cast bar before including the attachments at the base of the overdenture: this step will ensure correct resilience of the prosthetic rehabilitation.



Fabricate the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments, hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific bar attachment, since the sections of the bars are different and are not compatible.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practise these simple manoeuvres. Patients must also be urged to report any discomfort of the prosthesis, including the loss of retention of the bar attachments, so as to allow the operator to perform prompt maintenance or replace the retainers or the bar attachments.

Composition of the materials

Gr. 2 titanium* ASTM F67-13, ISO 5832-2:2012

chemical composition	maximum allowed values (%)	tolerance
nitrogen	0.03	+/- 0.02
carbon	0.08	+/- 0.02
hydrogen	0.015	+/- 0.002
iron	0.30	+/- 0.10 (%<0.25) +/- 0.15 (%>0.25)
oxygen	0.25	+/- 0.02 (%<0.20) +/- 0.03 (%>0.20)
titanium	remainder	-

**This technical information complies with the express specifications of the regulations in force on the use of titanium Gr. 2 in in implantology.*

Gr. 4 titanium (cold worked)* ASTM F67-13, ISO 5832-2:2012

chemical composition	maximum allowed values (%)	tolerance
nitrogen	0.05	+/- 0.02
carbon	0.10	+/- 0.02
hydrogen	0.015	+/- 0.002
iron	0.25	+/- 0.10 (%<0.25) +/- 0.15 (%>0.25)
oxygen	0.20	+/- 0.02 (%<0.20) +/- 0.03 (%>0.20)
titanium	remainder	-

**This technical information complies with the express specifications of the regulations in force on the use of Gr. 4 titanium in implantology:*

- *ASTM F67-13: Standard Specification for unalloyed titanium, for surgical implant applications.*
- *ISO 5832-2: 2012: Implant for surgery - Metallic materials - Part 2: Unalloyed titanium.*

Please note: *the use of* ***cold worked*** *Gr. 4 titanium bars for the production of Sweden & Martina implants allows the exploitation of mechanical characteristics higher than those required by applicable standards. Furthermore, the excellent results documented* ***since 1996*** *corroborate the choice of the cold-working production process and of* ***ZirTi surface treatments****, which express and enhance the raw material potential selected by Sweden & Martina.*

Gr. 5 titanium* ASTM F136-13, ISO 5832-3:2012

chemical composition:	maximum allowed values (%)	tolerance
nitrogen	0.05	+/- 0.02
carbon	0.08	+/- 0.02
hydrogen	0.012	+/- 0.002
iron	0.25	+/- 0.10
oxygen	0.13	+/- 0.02
alluminio	5.5÷6.5	+/- 0.40
vanadio	3.5÷4.5	+/- 0.15
titanium	remainder	-

**This technical information complies with the express specifications of the regulations in force on the use of Gr. 5 titanium in implantology:*

- *ASTM F 136-13: Standard Specification for wrought Titanium-6 Alluminium-4 Vanadium Eli (Extra low interstitial) Alloy for surgical applications;*
- *ISO 5832-3:2012: Implant for surgery - Metallic materials - Part 3: wrought Titanium-6 Alluminium-4 Vanadium Alloy.*

REEF resin

REEF resin	
description	acrylic material resistant to bacterial colonization
colour	translucent white

physical and mechanical properties	
hardness (ASTMD92/ISO 6507)	17.5 +/- 0.5 Vickers
tensile strength	28.3 +/- 3.8 Mpa
compressive strength (ASTM D3410)	404.2 +/- 22 Mpa
bending strength (ASTM D790M)	67.5 +/- 15.3 Mpa

PEEK

PEEK	
chemical designation	polyether ether ketone
colour	opaque white cream

physical and mechanical properties	
density	1.14 g/cm^3
modulus of elasticity in tension (DIN EN ISO 527-2)	4100 MPa
yield strength (DIN EN ISO 527-2)	>90 MPa
yield strength at 0.2% (DIN EN ISO 527-2)	>70 MPa
elongation at 0.2 % (DIN EN ISO 527-2)	5 %
elongation at break (DIN EN ISO 527-2)	13 %
flexural strength (DIN EN ISO 178)	174 MPa
modulus of flexural elasticity (DIN EN ISO 178)	4000 MPa
modulus of compressibility (EN ISO 604)	3500 MPa

thermal properties	
glass transition temperature	150 °C
maximum temperature for short-term use	300 °C
maximum temperature for continuous use	260 °C

chemical properties	
absorption at 23°C in 24/96 hours (DIN EN ISO 62)	0.02/0.03%

PMMA

PMMA	
chemical designation	polymethylmethacrylate
colour	transparent

physical and mechanical properties	
density	1.19 g/cm^3
yield strength (DIN EN ISO 527-2)	80 MPa
elongation at break (DIN EN ISO 527-2)	5.5 %
modulus of elasticity in tension (DIN EN ISO 527-2)	3300 MPa
hardness ball falling (ISO 2039-1)	175 MPa
impact strength (Charpy) (DIN EN ISO 179-1eU)	15 kJ/m^2

thermal properties	
maximum temperature for continuous use	80 °C
maximum temperature for short-term use	85 °C
coefficient of linear thermal expansion (0-50 °C, long) (DIN 53752-A)	7x10^{-5} 1/K
thermal conductivity (DIN 52612)	0.19 W/(K*m)
Heat Deflection Temperature (HDT-B) a 0.46 MPa (DIN ISO 75)	113 °C
Heat Deflection Temperature (HDT-A) a 1.80 MPa (DIN ISO 75)	105 °C

POM

POM	
chemical designation	polyoxymethylene (copolymer)
colour	opaque white

physical and mechanical properties	
density	1.41 g/cm^3
yield strength (DIN EN ISO 527-2)	67 MPa
elongation at break (DIN EN ISO 527-2)	32%
modulus of elasticity in tension (DIN EN ISO 527-2)	2800 MPa
hardness ball falling (ISO 2039-1)	165 MPa
impact strength (Charpy) (DIN EN ISO 179-1eU)	Non rotto

thermal properties	
melting point (DIN 53765)	166 °C
maximum temperature for continuous use	100 °C
maximum temperature for short-term use	140 °C
specific thermal capacity	1,4 J/(g*K)
thermal expansion (CLTE) 23°C-60°C (DIN EN ISO 11359-1;2)	13x10^{-5} 1/K
thermal expansion (CLTE) 23°C-100°C (DIN EN ISO 11359-1;2)	14x10^{-5} 1/K

chemical properties	
absorption (DIN EN ISO 62) 24h/96h (23 °C)	0.05/0.1%

Gold alloy

gold alloy	gold alloy 1	gold alloy 2
designation	gold alloy 1	gold alloy 2
colour	white	yellow

composition	% of reference	
Au	60 %	> 68.60 %
Pt	24 %	2.45 %
Pd	15 %	3.95 %
Ir	1 %	0.05 %
Ag	-	11.85 %
Cu	-	10.60 %
Zn	-	2.50 %
Au+Pt group metals	-	75.35 %
Ru	-	-

physical and mechanical properties		
density	18.1 g/cm^3	15.0 g/cm^3
melting range	1400 ÷ 1460 °C	880 ÷ 940 °C
modulus of elasticity in tension	115 GPa	97 GPa
Vickers hardness HV5 (gold alloy 2)	160 (annealed) 250 (tempered) 220 (after deformation) 240 (after casting)	> 240
limit of elasticity	400 MPa (annealed) 700 (after deformation) 800 (after casting))	> 710 MPa
elongation	20 % (annealed) 15 % (after deformation) 1 % (after firing)	> 4 %

- *Gold alloy "1": all castable posts with a premade alloy base.*
- *Gold alloy "2": CAP-1 cap for ball attachments in gold alloy.*

Cobalt chrome alloy

chemical composition	maximum allowed values (%)
C	0.10
Mn	1.00
Cr	26.00 ÷ 30.00
Ni	1.00
Mo	5.00 ÷ 7.00
N	0.25
Fe	0.75
Co	remainder

physical and mechanical properties	
density	8.27 g/cm^3
modulus of elasticity in tension	241 GPa
yield strength (0.2%)	585 MPa
tensile stress	1035 MPa
elongation at yield	25 %
section reduction	23 %
hardness	30 HTc

thermal properties	
melting range	1400 ÷ 1450 °C
coefficient of thermal expansion at 500 °C	14.15
coefficient of thermal expansion at 600 °C	14.47
thermal conductivity at 600 °C	25.76W/mK

Advice for overcasting with base alloys

By Loris Zamuner, dental clinician

Casting with base alloys, which is less predictable than casting with precious alloys, increases the difficulty of maintaining precision at the level of the prosthetic connection, because apart from the factors involving intimate contact between the alloys and mechanical resistance, problems of corrosion may also emerge, as dental technicians are well aware.
As these alloys are oxidized when heated, additional precautions must be adopted when preparing models and during coating and casting procedures, to avoid not only mechanical but also biological complications (e.g. gingival tattoos, namely the blackish marks caused by the redox reaction of prosthesis metals, which are extremely difficult to treat and remove).
With regard to this we would like to offer some advice, which although it may not completely eliminate these problems, may be useful in the laboratory for the correct use of castable posts with a cobalt chrome base:

- Remove the castable sleeve from the base and seal the interstitial space with wax or castable resin, to prevent the possible formation of cracks.
- Apply a layer of deoxidizing solution (e.g. flux) to the metal surface before repositioning and fixing the castable sleeve. This may reduce the quantity of oxides produced during heating of the alloy.
- Modelling must very clearly delimit the area of the junction between the castable sleeve and the prefabricated base with a well-defined closure edge, so as to prevent the overcast alloy from penetrating the base of the post.
- The formation of pins for the creation of cylinders must be carried out in an area with an adequate surrounding volume, to prevent the injected alloy from cooling before it has completely filled the final form. Do not position casting pins in thin areas, to avoid deformations caused by the heat of the molten alloy.
- The expansion of the refractory casting coating must be limited to a minimum, to prevent the formation of spaces between the metal base and the coating caused by the different expansion of the two layers. If the coating and the metal base are not in intimate contact, a thin film of metal could form on the prefabricated base, which if it reaches the connection platform between the implant and the prosthesis could affect precision, giving rise to evident biomechanical and biological problems.
- All parts of the cylinder must be heated uniformly. Since internally it incorporates the prefabricated metal components, which by their very nature absorb heat, it is advisable to maintain the final heating temperature for an extended time, then raising it by about 20–30 °C higher than the temperature recommended by the manufacturer of the alloy.
- When choosing the alloy for overcasting, its fusion temperature must be attentively considered with respect to the fusion temperature of the component to be overcasted, which must be around 80–100 °C higher, to avoid deformations but at the same time to ensure correct bonding between the two alloys.
- After casting, leave the cylinder to cool slowly, to prevent the formation of stresses between the two alloys.
- Avoid contact between the ceramic and the base alloy while firing the ceramic, because the different thermal expansion coefficients may cause cracking in the coating layer.
- Where possible (in non-aesthetic areas) keep the area of interface between the prefabricated base and the overcast structure out of the gingival sulcus.
- With composite screw retained prostheses, incorporate the interface line between the prefabricated base and the overcast structure inside the aesthetic coating.
- Use the same type of alloy for the entire prosthetic reconstruction, to avoid partial weakenings, breakages and the incorrect distribution of forces on the implants.

Remember that this technique may be subject to the problems of mechanical resistance, corrosion and galvanic reactions typical of precious alloys, which are therefore present to a greater extent in base alloys.

General clinical indications

Modern implant prosthetics, for both immediate or deferred loading, is a widely experimented and reliable discipline that is able to resolve virtually all problems of functional or aesthetic edentulism. An implant prosthesis may replace a single tooth (implant-supported crown), a group of adjacent teeth (implant-supported bridge), or an entire dental arch.
This manual addresses the production screw-retained prostheses for the rehabilitation of cases of total edentulism.

- Implant-prosthetic rehabilitation must respect several fundamental criteria:
- the presence of a certain quantity of bone;
- the primary stability of the inserted implants;
- good periodontal (gingival) support;
- the absence of bruxism (tooth grinding) and serious malocclusions;
- the presence of good occlusal balance (correct masticatory occlusal plane).

Warnings and contraindications

When assessing patients, in addition to considering their suitability for implant-prosthetic rehabilitation, it is usually necessary to take into account the contraindications applicable to all operations of dental surgery.

These may include:
- clotting disorders, anticoagulant therapies in progress;
- healing or bone regeneration disorders;
- decompensated diabetes mellitus;
- metabolic or systemic diseases that compromise tissue regeneration, and with effects in
- particular on tissue healing and bone regeneration;
- alcohol abuse, smoking and use of drugs;
- immunosuppressive therapy, such as chemotherapy and radiotherapy;
- infections and inflammations, such as periodontitis and gingivitis;
- poor oral hygiene;
- insufficient motivation;
- occlusion and/or articulation disorders, and also inadequate interocclusal space;
- inadequate alveolar process.

It is contraindicated to fit implants and implant restorations in patients with poor general or oral health, those who are unable to monitor their general conditions properly or those who have had organ transplants. Psychologically unstable patients, alcohol or drug abusers and poorly motivated or uncooperative patients should also be considered unsuitable for this kind of treatment. Patients with poor periodontal health should first be treated and allowed to recover. In the presence of a lack of bone substance or poor quality of the receiving bone, such as to compromise the stability of the implant, suitable guided tissue regeneration must be performed prior to implant treatment and bone grafting procedures. Contraindications can also include: allergies to titanium, acute or chronic infectious diseases, sub-acute chronic maxillary osteitis, systemic diseases, endocrine disorders, diseases resulting in microvascular disorders, pregnancy, breastfeeding, previous exposure to radiation, haemophilia, granulocytopenia, use of steroids, diabetes mellitus, kidney failure and fibrous dysplasia. The normal contraindications common to all oral surgery must also be observed. Patients following anti-coagulant, anticonvulsant and immunosuppressant therapies, with active inflammatory-infective processes of the oral cavity, and patients with BUN and creatinine values outside the norm, must not be subjected to surgery. Patients with cardiovascular disease, hypertension, thyroid or parathyroid diseases, malignant tumours found in the five years preceding the operation or nodular swellings must also be assessed with particular attention. Chemotherapies reduce or eliminate the ability of osseointegration, and patients undergoing these treatments must therefore be carefully screened before being rehabilitated with oral implant prostheses. Numerous cases of bisphosphonate-associated peri-implant osteonecrosis of the mandible have been reported in literature. This problem applies in particular to patients receiving intravenous treatments.

Prostheses must always be planned in advance. Prosthetic planning must be carried out in collaboration with the dental technician. Guided prosthetic insertion of implants facilitates the work of the practitioner, and offers greater guarantees of longer prosthesis lifespan. Complete clinical, radiological and radiographic documentation should be collected and stored on file
Every product pack shows the product code, a description of contents and the batch number. These details are also indicated on the labels to be attached to the patient's records, and must always be cited by the practitioner in any correspondence regarding the products. When handling these medical devices, both during actual use and during cleaning and sterilization procedures, surgical gloves must always be worn for individual protection against bacterial contamination. Failure to follow this precaution may expose the patient to infection.
Packaging conforms to European standards.

Information on applicable standards

The medical devices addressed by this instruction manual have been designed and manufactured in accordance with the most recent directives and harmonized standards applicable to the materials used, production processes, the information supplied and packaging.

Every product pack shows the product code, a description of contents and the batch number. These details, which are also indicated on labels included in packs, must always be cited by the practitioner in any correspondence regarding the products.
The prosthetic components and instruments manufactured by Sweden & Martina contains no materials or human or animal origin, and are free from phthalates. Patients must be asked if they are allergic to any of the materials used.
Although titanium allergies are possible, these are very rare. Patients should therefore always be asked if they have allergies of this type.
Refer to pages 84–90 for technical details on all materials used, for checks on the respective chemical compositions, and for physical and mechanical characteristics.

Identification of the manufacturer

Manufacturer of the prosthetic components and instruments described in this manual:

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Intended use and risk classes

In accordance with Directive 93/42/EEC adopted in Italy with Law Decree 46/97 dated 26 March 1997, Annex IX, Sweden & Martina identifies the prosthetic components and instruments described in this manual as medical devices, and identifies their risk class as indicated in the following chart.
In particular, the prosthetic components described are medical devices intended for use in the oral cavity. The prosthetic components have the following functions:

- reconditioning of the gingiva (healing abutments, long-term devices);
- taking of impressions (transfers and respective fixing screws, temporary devices, with a certified duration of no more than 60 consecutive minutes;
- anchorage to dental implants for the support of dental prostheses (temporary and definitive posts, their respective fixing screws, long-term devices).

The prosthetic components are disposable. “Disposable” is taken to mean that every single device must be used only for a single patient.
It is routine practice for a prosthetic component to be tested several times in the patient’s mouth and then sent to the dental technician for completion of the prosthesis. This is acceptable practice, and does not compromise the concept of “disposable”, on condition that the same prosthetic component is used always and only for the same patient. In the case of multiple prostheses, it is essential for the same component to be used always and only in the same position and in association with the same implant, meaning that components must not be interchanged during the same rehabilitation procedure.
Failure to respect these instructions may compromise the precision of the components.
Any reuse for different patients must be considered to be an “off-label” use, and in these cases, Sweden & Martina SpA declines all liability.
The instruments are reusable medical devices intended for temporary use in the oral cavity (no more than 60 consecutive minutes). The function of the instruments is to tighten and unscrew all connection screws (surgical cover screws, healing abutments, screws for posts and abutments, prosthetic screws, transfer screws, etc).

device	classification	pack	annex IX rule DDM 93/42	risk class
Healing abutments	Invasive long-term surgical devices	Disposable, non-sterile pack	8	2B
Transfers	Invasive short-term surgical devices	Disposable, non-sterile, complete with respective fixing screws	7	2A
Caps for taking impressions on P.A.D. abutments	Invasive short-term surgical devices	Disposable, non-sterile	7	2A
Transfer screws	Short-term accessories for invasive surgical medical devices	Disposable, non-sterile	5	2A
Abutment and components for screw-retained prostheses, conventional type or for the P.A.D. technique	Invasive long-term surgical devices	Disposable, non-sterile, complete with fixing screws	8	2B
Castable with a metal base	Long-term non-surgical invasive devices intended for the oral cavity	Disposable, non-sterile, complete with fixing screws	5	2A
Tightening screws for posts, abutments and overstructures (post and prosthesis screws)	Long-term accessories for invasive surgical medical devices intended for the oral cavity	Disposable, non-sterile. Supplied together with the respective posts or individually, in single or multiple packs	5	2A
Analogs	Medical device, non-invasive	Disposable, non-sterile	1	1
Spare castable sleeves	Medical device, non-invasive	Disposable, non-sterile without fixing screws	5	1
Drivers, drivers/screwdrivers and extension with shank for ratchet	Reusable invasive surgical instruments for temporary use (for less than 60 consecutive minutes) intended for fitting to an active medical device	Reusable, non-sterile	6	2A
Drivers/screwdrivers, drivers, hexagonal keys, manual drivers, parallelism pins for manual use	Invasive surgical instruments for temporary use (for less than 60 consecutive minutes) intended for fitting to an active medical device	Reusable, non-sterile	6	1

All the devices listed, even though they are intended for use in all patients with suitable therapeutic indications, must be used only by professional medical personnel with the necessary qualifications and training, and by dental technicians in the context of the preparation of prostheses.

Special warnings

When tightening healing abutments and definitively tightening screws for posts or prostheses, the following tightening torques must be respected:

description	recommended torque
Healing abutments	8-10 Ncm
Transfer screws	8-10 Ncm
Through screws for tightening posts and abutments onto implants	20-25 Ncm
Through screws for tightening prosthetic overstructures onto abutments	20-25 Ncm
Components screwed directly onto implants (e.g. straight P.A.D. and PLAIN abutments without a fixation screw form a solid body with the screw)	25-30 Ncm
Through screws for tightening overstructures screwed directly onto implants (without using intermediate abutments)	25-30 Ncm

Excessive tightening torques may weaken the mechanical structure of screws and compromise prosthetic stability, with possible damage to the implant connection. Totally castable posts must be screwed onto models manually and/or with a torque not exceeding 8-10 Ncm.

Maintenance

Complications associated with implant prostheses have been reported in literature. These complications may lead to a loss of osseointegration and to implant failure. Correct maintenance by the patient, satisfactory home dental hygiene and regular check-ups during professional hygiene sessions increase the lifespan of the device. Complications such as for example the slackening of the screws fixing posts to implants can be easily avoided with regular check-ups. If post screws need to be tightened, this must be done by the clinician, using suitable instruments with control over tightening torque. The calibration of these instruments should be checked regularly. If patients become aware that maintenance may be required, they should contact their clinician as soon as possible, so that the necessary work to restore correct orthodontic functionality can be carried out. Delays in consulting the clinician may lead firstly to the fracture of the connection screw or of the prosthesis, and secondly to the loss of the implant, thereby compromising rehabilitation results. Clinicians must make this clear to their patients. Complications may be biological (impaired integration) or mechanical (fracture of a component due to excessive loads). If there are no complications, the lifespan of devices and of the entire prosthetic apparatus depends on its mechanical resistance according to the fatigue that accumulates in the device. Any decementation of definitively cemented crowns or bridges that may allow impact shocks to be transmitted to implant structures may cause fractures to these structures. Sweden & Martina SpA has subjected implant/post/fixation screw assemblies to the required cycle of 5,000,000 fatigue resistance tests. The assemblies passed these tests with positive results. The fatigue resistance tests were carried out in compliance with specific requirements, and were further validated using finite element calculations.

Cleaning / sterilization / conservation of prosthetic components and instruments

Caution! All prosthetic components and instruments for dental implants are supplied as NON-STERILE. Before use, all devices must be cleaned, disinfected and sterilized using the following procedures validated by Sweden & Martina SpA. These procedures must be performed before intraoral use of the devices, meaning before every use in testing and trial operations and compulsorily before definitive prosthetic loading. The repetition of the processes described in this sections does not modify the characteristics of these devices.
Failure to follow these instructions may cause cross-infections.

a. Sterilization: In a vacuum autoclave, sterilizing as follows:
- autoclave (dynamic air removal cycle) at the temperature of 132°C with minimum exposure o 4 minutes and drying cycle of 20 minutes.

b. Storage: after sterilization, the product must remain in the sterilization bags. Bags must only be opened immediately before use.
In normal conditions, sterilization bags are usually able to maintain the sterility of their contents, unless the wrapping is damaged. Do not therefore use components if the bags in which they were kept are damaged, and resterilize them in new bags before using again. The storage time of products sterilized in bags must not exceed the time recommended by the manufacturer of the bags.
Products must be stored in a cool and dry place, away from sunlight, water and heat sources.

Cleaning, sterilization and storage of the CRI5 torque control ratchet

The processes described below must be performed before the first use and before each subsequent operation. The repetition of the processes described in this section does not significantly modify the characteristics of these devices.
Failure to follow these instructions may cause cross-infections. Containers and transports to be used for washing: no special requirements.
As soon as possible after each use, the ratchet must be placed in a container filled with a disinfectant/cleansing solution and totally covered with a cloth. This prevents the drying out of contaminants from the patient, dissolving them and making later cleaning easier and more effective.
Totally dismantle the key as indicated below:

Completely unscrew the torque adjustment screw and remove the spring inside the ratchet body handle. Do not separate the spring from the pin that acts as a stop.

Use the hexagonal tip at the end of the torque adjustment screw to unscrew and completely extract the tightening screw of the cover on the side marked OUT. Use only light pressure to avoid damaging the hexagonal tip.

After removing the cover, extract the toothed ratchet wheel and the wheel lock from inside the head of the ratchet.

In case of manual cleaning, clean the outer and inner surfaces of the instrument mechanically under hot water with a soft bristle brush. Rinse the difficultly accessible holes of the head and the area around the ratchet wheel and the wheel lock by injecting hot water with a needleless syringe. If necessary, proceed in the same way for the inside of the handle and of the torque adjustment device. Use a suitable neutral detergent and follow the manufacturer's instructions. Using the brush, apply the detergent to all surfaces. Rinse with distilled water for at least four minutes. Make sure the running water passes abundantly through the passages. In case of automated ultrasound cleaning, use an ultrasound bath with a suitable detergent solution.
Use only neutral detergents. Follow the manufacturer's instructions for detergent concentrations and washing times. Use demineralized water to prevent the formation of stains and marks. During this operation, avoid contact between components, as this causes the deterioration of machined surfaces, and consequently the loss of precision in torque measurements. When draining washing water, check that all residues have been removed from devices, holes, etc. If necessary, repeat the operation or clean manually.

Observation: Residues of blood and other deposits reduce the effectiveness of the sterilization process, and it is therefore essential to clean the ratchet thoroughly. During cleaning operations, avoid splashes or sprays of liquids, and always work wearing suitable protection equipment. Avoid contact between this instrument and other nickel-plated instruments. Components must be reassembled before sterilization. Dry the components, lightly lubricate functional areas and reassemble the key as shown in the illustrations below. Excessive lubricant may spread to the surface of the instrument during sterilization. Use only the lubricant supplied.

After lubricating the parts shown in the illustration, insert the two components of the ratchet head, with first the ratchet wheel and then the wheel stop.

Lubricate the contact areas between the ratchet wheel and the pin of the wheel stop.

After inserting and lubricating components 2 and 3 in the head of the ratchet, position the cover and turn the ratchet from the side marked OUT. Tighten the screw with the hexagonal tip of the torque adjustment screw.

Lubricate the spring inside the ratchet handle as shown in the illustration. Assemble the torque adjustment screw, checking the instrument for correct operation and manually activating the ratchet wheel.

Sterilization: in a vacuum autoclave, proceeding as follows:

- autoclave (dynamic air removal cycle) at the temperature of 132°C with minimum exposure o 4 minutes and drying cycle of 20 minutes.

This procedure is essential to maintain the precision of the instrument within a tolerance range of ± 3.5 Ncm. Operate the torque and insertion mechanism to check its correct operation. Remove all traces of lubricant from the external surfaces of the key. Place the device in a suitable sterilization bag. Disassembly and reassembly operations must be carried out following the instructions provided.

Responsibility for defective products and warranty terms

Optimal care of the patients and attention to their needs are necessary conditions for the success of implant procedures, and they must therefore be carefully selected and informed of the associated risks and obligations associated with the treatment, and encouraged to cooperate with the dentist to ensure the success of the treatment. The patient must therefore practise good oral hygiene, which should be confirmed during regular check-ups. This must always be verified and documented, and similarly, all indications and instructions of the clinician must also be observed and documented. The warranty covers manufacturing defects only, on condition that the faulty product is identified by the article code and batch number and returned within the period of validity of the warranty.

The guarantee terms are accessible at
www.sweden-martina.com

Warning – Limitations of guarantee

The prosthetic components manufactured by Sweden & Martina are intended for use with dental implants and prosthetic instruments also manufactured by Sweden & Martina.
The use of non-original components limits the liability of Sweden & Martina SpA and invalidates the product guarantee.
The prosthetic components must be tightened onto implants using specific instruments. It is advisable to use only instruments manufactured by Sweden & Martina for screwing operations.
No liability can be accepted if non-original instruments are used.
The instruments manufactured by Sweden & Martina are intended for use with dental implants and prosthetic components also manufactured by Sweden & Martina.
The use of instruments for operations with implants other than those manufactured by Sweden & Martina limits the liability of Sweden & Martina and invalidates the product guarantee.
No liability can be accepted if non-original instruments are used.

Disposal

If removed from the oral cavity due to biological or mechanical failure, prosthetic components must be disposed of as biological wastes. Instruments are made from small components, usually in metal. They may therefore be disposed of as metal wastes. If dirty, they must be disposed of as biological wastes. In general, local regulations on waste disposal must be followed.

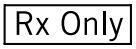
Key to symbols used on implant packs:

description	symbol
Caution! See instruction for use	
Batch number	
Code	
Manufacturer	
Consult instruction for use	
CE conformity mark for class IIa and IIb products	 0476
American federal law restricts this device to sale by or by order of a professional practitioner	Rx Only
Do not resterilize	
Disposable product, do not reuse	
Do not use if the packaging in damaged	
Sterilized with ionizing radiation	STERILE R
Expiry date after which the product must not be used	

Key to symbols used on surgical instrument packs:

description	symbol
Caution! See instruction for use	
Batch number	
Code	
Manufacturer	
Consult instruction for use	
CE conformity mark for class IIa and IIb products	 0476
CE conformity mark for class I products	
American federal law restricts this device to sale by or by order of a professional practitioner	Rx Only
Non-sterile product	

Key to symbols used on prosthesis packs:

description	symbol
Caution! See instruction for use	
Batch number	
Code	
Manufacturer	
Consult instruction for use	
CE conformity mark for class IIa and IIb products	
CE conformity mark for class I products	
American federal law restricts this device to sale by or by order of a professional practitioner	
Disposable product, do not reuse	
Non-sterile product	

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For older pubblications please consult “Scientifica – Implantology Bibliographic Review”

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