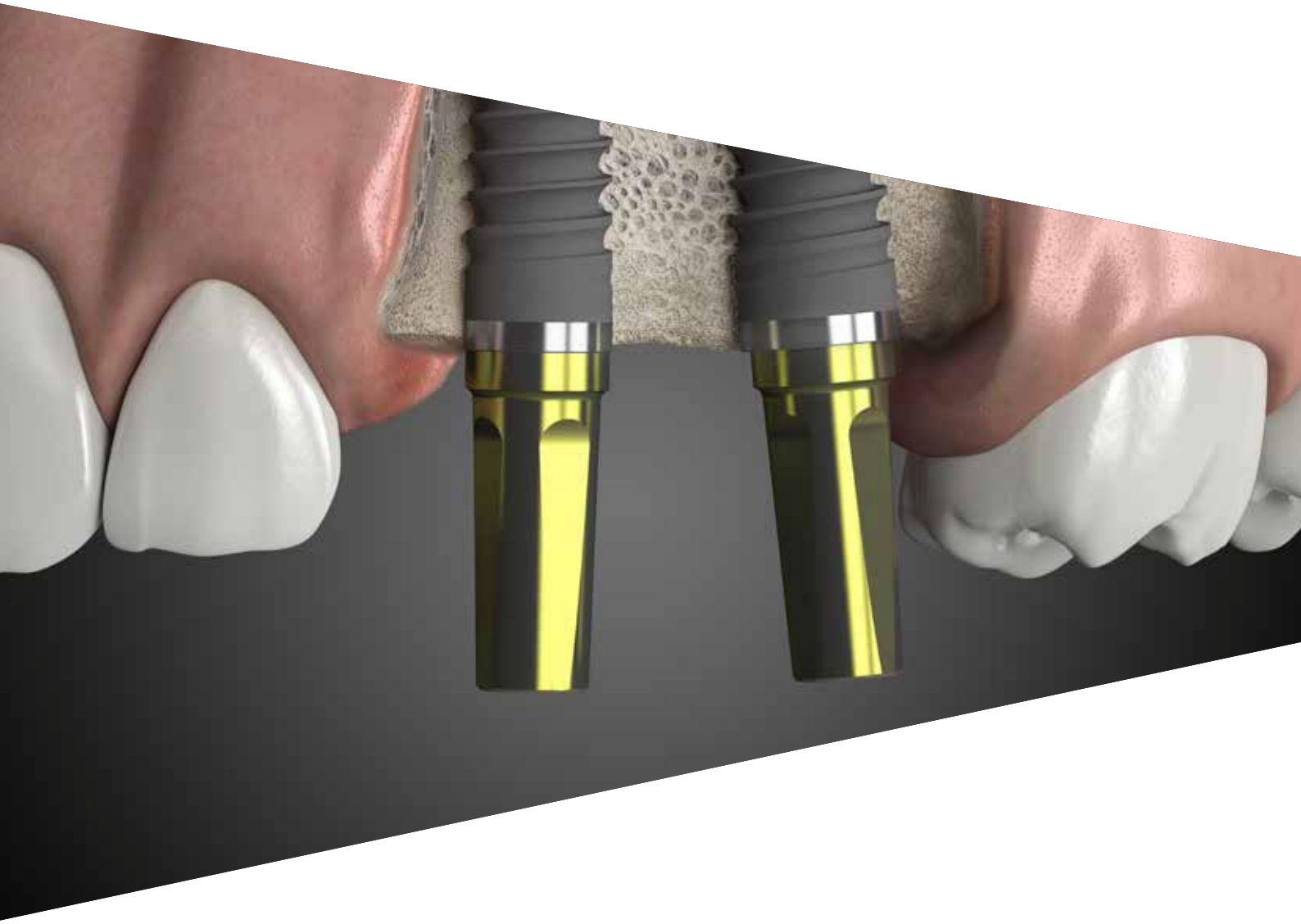
Prosthetic Manual

PREMIUM ONE
KOHNO ONE
SHELTA



sweden & martina

ATTENTION!

The Collex connection, documented since 1996, is characterized by an internal hexagon and by a collar that guides the prosthetic maneuvers.
Historically, Premium and Kohno implants with 4.25, 5.00 and 6.00 mm diameters had a thicker collar and a 2.50 mm hexagon key instead of the 2.30 mm hexagon key of the implants with 3.30 and 3.80 mm diameters.

PREVIOUS GENERATION

ø 3.30 mm ø 3.80 mm ø 4.25 mm ø 5.00 mm

Mechanical tests performed over the years showed that the collar and the hexagon of the 3.80 mm diameter connection are able to support the masticatory loadings of single crowns and multiple rehabilitation, also in implants with larger diameters.
For this reason, it was possible **to optimize the prosthetic selection by adopting this connection, named Collex One, for all the implants diameters**.

NEW GENERATION

ø 3.30 mm ø 3.80 mm ø 4.25 mm ø 5.00 mm

Considering this unification of the connection, this manual has been updated and it refers exclusively to implants with such Collex One connection.

For further details on previous generation of Premium and Kohno implants (with different connection according to the implant diameter) please refer to the prosthetic manuals for:
- “Crowns and bridges” (MP-IMP-SINPO-PKS-E rev. 04-17),
- “Overdenture” (MP-IMP-OVER-PREKOSH-E rev. 09-16) and
- “Full arch screw-retained rehabilitations” (MP-IMP-TOR-PREKOSH-E rev. 09-15).

Important warning
The ø 3.30 mm and 3.80 mm prosthetic components are compatible with both the implants of the previous generation and the current ones.
The prosthetic components of ø 4.25 mm and ø 5.00 mm on the implants of previous generation (2.50 mm hexagon and M 2.0 screw thread) is not compatible with the “One” implants, which should be used with the prosthesis with 2.30 mm hexagon and M 1.8 screw thread.

Prosthetic Manual

Premium One, Kohno One and Shelta

Guide to the sequence of use of prosthetic components

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preparable post (p. 76)

castable post with a metal base cast as a post (p. 118)

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modelling of crown

production of the crown by casting or CAD-CAM technology

finalization of crown

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reduction of posts

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tightening of posts in the mouth

intraoral cementation of the prosthesis on the posts

insertion of posts on model

adaptation of the sleeves, modelling of the posts and overcasting

modelling of the structure

finalization of the prosthesis

tightening of posts in the mouth

intraoral cementation of the prosthesis on the posts

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Multiple rehabilitation with T-Connect: luting technique

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Overdenture: indirect method

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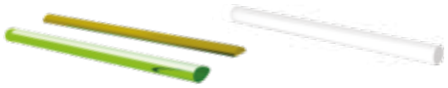

Overdenture realization and anchoring
on the bar attachment for overdenture

screwing of the bars on the P.A.D. and
positioning of the overdenture

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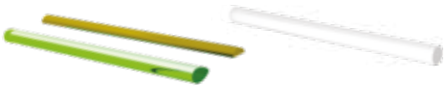
assembling and casting of the bars



overcasting of the bars

Realization of the overdenture and anchoring on the bar attachment

Screwing of the bars on the implants and positioning of the overdenture

impression with transfers for Plain abutments
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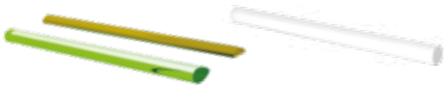
Plain abutments

insertion of the Plain abutments on the model

assembling and casting of the bars



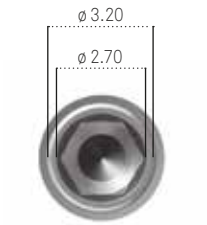
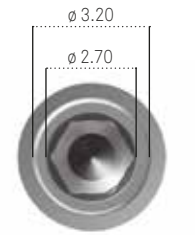
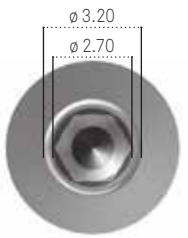
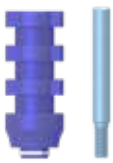
Overdenture realization and anchoring on the bar attachment for overdenture

Screwing of the bars on the Plain abutments and positioning of the overdenture

Overview of diameters, implant connections and colour codes

	Premium One	Premium One, Kohno One, Shelta
ø implant	**3.30**	**3.80**
colour code (on pack)		
maximum emergence ø main dimensions	ø 3.30	ø 3.80
external collar ø internal collar ø width across flats	ø 3.30 ø 2.70 **2.30**	ø 3.20 ø 2.70 **2.30**
implant analogs		
Pull-up transfers		
closed tray transfers		
Pick-up transfers		
fixation screw (thread and colour)	M 1.8	M 1.8

All measurements are in mm, unless otherwise indicated.

Premium One, Kohno One, Shelta		Shelta
4.25	5.00	6.00
ONE	ONE	
		
		
		
		
		
		
 M 1.8	 M 1.8	 M 1.8

Collex One connection

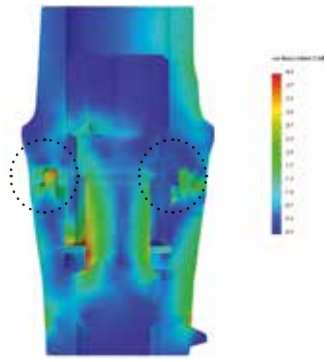
Premium One, Khono One and Shelta implants present the same Collex One connection in all the diameters of the implant system. The Collex One connection allows an optimization of the prosthetic and surgical phases, given that the same prosthetic components can be used with all the implants of the system.

Premium One implants

Kohno One implants

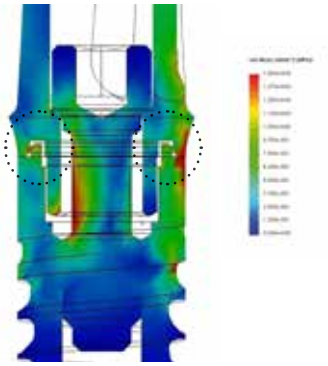
Shelta implants

The strength properties of the Collex connection are also documented by a study carried out by the group of prof. Covani, in which, comparing this connection with another internal hexagon connection but without the external prosthetic collar, the results highlighted values 25% higher in terms of robustness and prosthetic stability of the Collex compared to the connection without collar*.



Shelta

FEM analysis of a ø 3.80 mm Shelta and Premium One implants in connection with a ø 3.80 mm post: the results show how the collar of the Collex works correctly and is therefore extremely important for a correct distribution of the prosthetic load.



Premium One

* Covani U., Ricci M., Tonelli P., Barone A.
An evaluation of new designs in implant-abutment connections: a finite element method assessment
Implant Dentistry Volume 22, Number 3 3013

In all the prosthetic components, where possible, a laser mark has been affixed to visually distinguish between the prothesis of 4.25 or 5.00 mm diameters for Collex One connection (with 2.30 mm hexagon) and the previous one, which have different dimensions and characteristics (see warning on page 2). The label could be:

black on the post connection, in the case of titanium components

in different colour in the case of anodized pieces, such as Pick-up transfers and closed tray trasfers

replaced by a little groove, in the case of the titanium ring of the Pull-up transfer

Important warning
The entirely calcinable posts and the calcinable posts with base in cobalt-chrome or gold alloy don't allow, by their nature, to be laser-marked.
To overcome this problem the packages of this pieces are labelled with an **adhesive warning** so that they are easily recognizable and the codes of the compatible implants are immediately available to the technician.

Platform Switching: possible prosthetic mismatchings

	POSSIBLE COMBINATIONS OF THE	
implant ø 3.30	** 	-
implant ø 3.80	* 	** 
implant ø 4.25	* 	* 
implant ø 5.00	* 	* 
implant ø 6.00	-	* 

** Prosthetic components with ø 3.30 mm are used to create prosthetic Platform Switching with ø 3.80, 4.25, 5.00 implants. It is advisable to use them for single crowns in frontal sectors (excluding premolars) and to support multiple prostheses in distal sector.*

IMPLANTOPROSTHETIC DIAMETERS

	-
	-
** 	
* 	** 
* 	* 

*** The use of implants and prosthetic components with same diameter doesn't allow Platform Switching*

Surgical kits

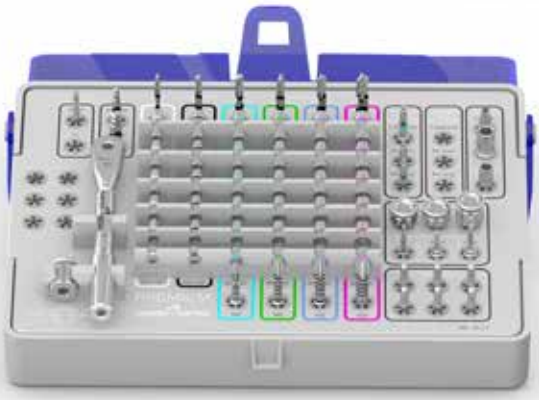
The surgical kits are designed for maximum simplicity of use and immediacy for the correct sequence of the instruments required. The surgical kits Premium One, Kohno One and Shelta, as well as the combined surgical kits for Premium Shelta and Premium Kohno contain the instruments for the surgical and prosthetic phases of the fixtures of both implant systems.
The intrument trays, made of autoclavable Radel, offer simplicity of use and immediacy in the sequence of instruments, with the help of a system of colour codes that follow the most suitable surgical procedures for the different implant diameters. The instruments descriptions are screen-printed on the tray to allow an easier identification and to correctly replace them after cleaning and sterilization procedure.
The surgical kits are supplied with X-ray templates for the graphic representation of all the Premium One, Kohno One and Shelta implant system measurements to allow choosing the most suitable implant diameters and lengths by means of radiographic or tomographic methods.

PREMIUM-SHELTA KIT

PREMIUM-KOHNO KIT

SHELTA KIT

KOHNO ONE KIT



PREMIUM ONE KIT

description	code
Surgical grommetless kit complete with the instruments necessary for Premium implants with One connection	**ZPREMIUM-ONE-INT**
Grommetless instrument cases made of Radel, empty	**A-TRAY-INT** 
Surgical grommetless kit complete with the instruments necessary for Kohno implants with One connection	**ZKHONO-ONE-INT**
Grommetless instrument cases made of Radel, empty	**K-TRAY-INT** 
Surgical grommetless kit complete with the instruments necessary for Shelta implants with One connection	**ZSHELTA-INT**
Grommetless instrument cases made of Radel, empty	**SH-TRAY-INT** 
Surgical grommetless kit complete with the instruments necessary for Premium and Kohno implants with One connection	**ZPREKOH-ONE-INT**
Grommetless instrument cases made of Radel, empty	**AK-TRAY-INT** 
Surgical grommetless kit complete with the instruments necessary for Premium and Shelta implants with One connection	**ZPRESH-INT**
Grommetless radel instrument cases made of Radel, empty	**AS-TRAY-INT** 

Drivers for fixation screws

All made of stainless steel for surgical use.
All drivers have the same tip design, and screwdrivers are therefore interchangeable.
Drivers differ in their total length and can be one-piece manual models, with an incorporated knob for easy gripping, fitted with a hexagonal connector compatible with the ratchet or with shank for contra-angle handpiece.
Regular checks must be made to ensure that this function has not been impaired due to wear on the tip.

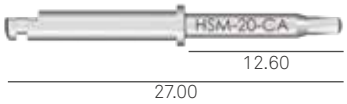
Important warning
Excessive torque may strip the wells of the fixation screws and wear away the edges of screwdrivers, causing intraoperative or prosthetic complications that may even be serious. The recommended torque values for the tightening of the various components are summarized in this chart:

surgical cover screws, transgingival healing abutments	8-10 Ncm
all prosthetic screws	20-25 Ncm
all prosthetic components screw retained directly onto an implant	25-30 Ncm
transfer fixation screws	8-10 Ncm

Given the importance of tightening torques, it is advisable to always use drivers with a hexagonal connector, controlling the torque applied using the ratchet. To facilitate the engagement of screws or other threaded parts of prosthetic components, insertion operations can however be started with manual drivers.

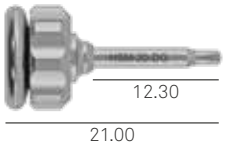
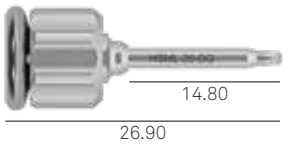
Driver for contra-angle handpiece

Both Screw Kits and surgical kits contain a driver with a shank for a contra-angle handpiece, an extremely practical accessory in both surgical and prosthetic phases when used with a micromotor with torque control, or a right angle manual driver with torque control. This driver can be used only to tighten posts with a screw hole no longer than 11.00 mm.

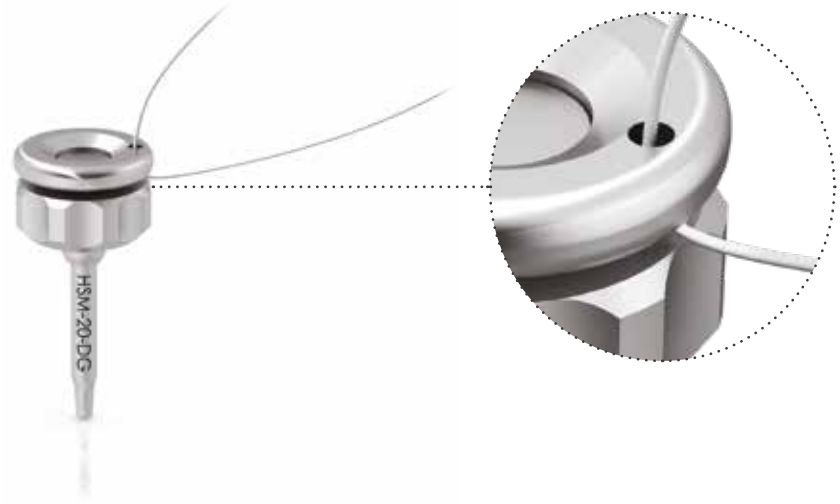
description	code	kit
Driver with shank for contra-angle handpiece	**HSM-20-CA** 	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT

Surgical screwdrivers

Their design makes them extremely practical during surgical phases and when uncovering and handling transgingival healing abutments. Surgical screwdrivers must not be used when working with definitive prostheses, as they do not allow tightening torque to be controlled. Some of these drivers are also included in the surgical kits of the Premium One, Kohno One and Shelta systems and in the combined surgical kits (see page 25).

description	code	kit
Driver for tap screws and fixation screws, digital, extra-short	**HSMXS-20-DG**  	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Driver for tap screws and fixation screws, digital, short	**HSM-20-DG**  	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Driver for tap screws and fixation screws, digital, long	**HSML-20-DG**  	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT

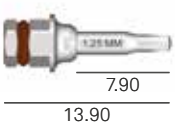
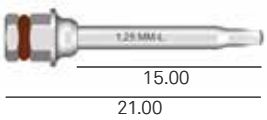
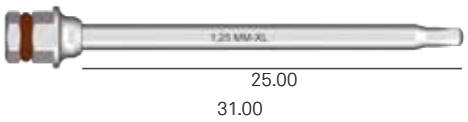
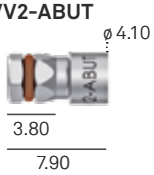
Important warning
It is advisable to pass a safety thread through the hole provided on the top of the knob to prevent it being dropped.



All measurements are in mm, unless otherwise indicated.

Prosthetic screwdrivers that can be used with the dynamometric key

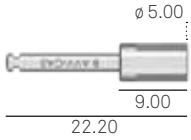
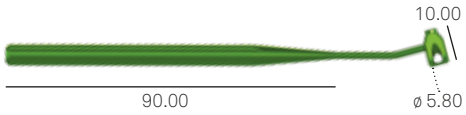
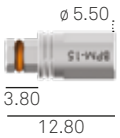
Drivers with an upper hexagonal connector are designed for use with the torque-control ratchet to provide torque control. The Screw Kit includes short and long versions, while the version for use when screw hole inside posts is longer than 13.00 mm is available optionally and can be purchased separately.
Please refer to the catalogues and surgical manuals of the single systems for full details.

description	code	kit
Driver for connecting screws, with hexagonal connector for dynamometric key or hand knob, short	**HSM-20-EX**  	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Driver for connecting screws, with hexagonal connector for dynamometric key or hand knob, long	**HSML-20-EX**  	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Driver for connecting screws, with hexagonal connector for dynamometric key or hand knob, extra-long	**HSMXL-20-EX**  	Not included in the surgical kit, available separately
Driver for straight P.A.D. abutments, with hexagonal connector for dynamometric key	**AVV2-ABUT**  	Not included in the surgical kit, available separately

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**.

Extensions and connectors

description	code	kit
Adaptor with shank for contra-angle handpiece for instruments with a hexagonal connector	**B-AVV-CA3** 	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Manual knob for drivers, hexagonal keys and manual drivers	**AVV3-MAN-DG** 	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT
Carrier for transport of angled P.A.D. abutments into the oral cavity, sterilizable and reusable. Must be fixed to abutments with screw PAD-VTRAL-140	**PAD-CAR** 	Not included in the surgical kit, available separately
Extension for hexagonal keys, drivers and manual drivers, with hexagonal connector for torque-control ratchet	**BPM-15** 	**ZPREMIUM-ONE-INT** ZKOHNO-ONE-INT ZSHELTA-INT ZPREKOH-ONE-INT ZPRESH-INT

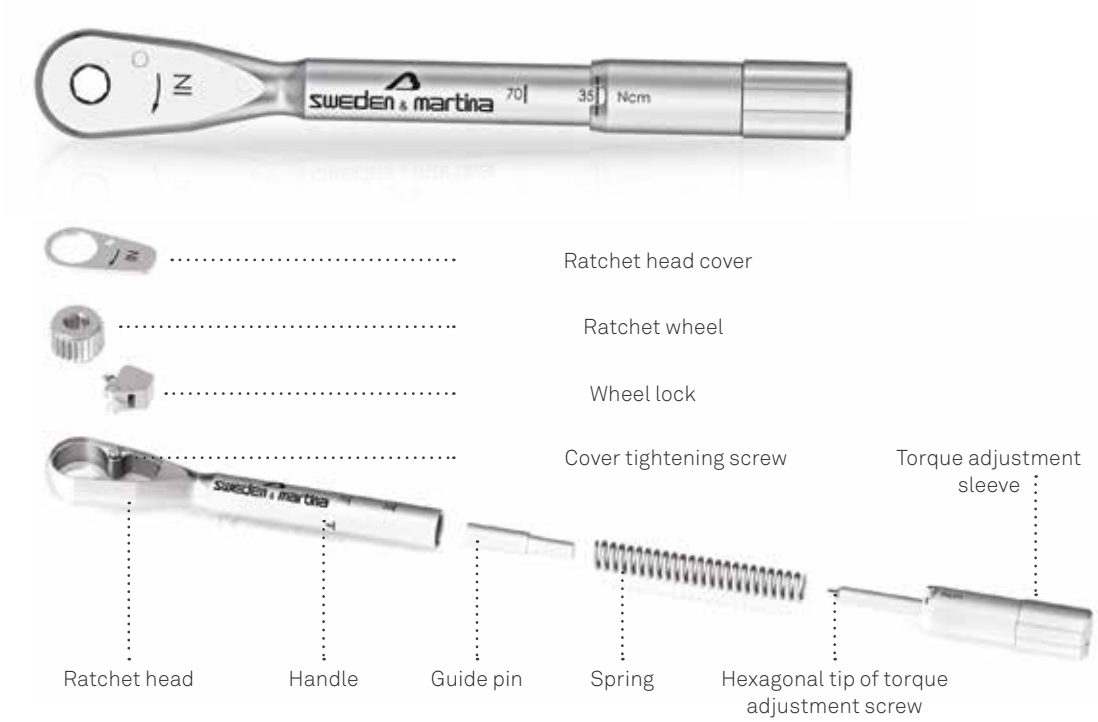
Bone profiler

description	3.30	3.80	4.25	5.00
Bone profiler with narrow flaring for PAD abutment	**A-PAD-PS330-S** 	**A-PAD-PS380-S** 	**A-PAD-PS425-S** 	**A-PAD-PS500-S** 
Bone profiler with wide flaring for P.A.D. abutment	**A-PAD-PS330-L** 	**A-PAD-PS380-L** 	**A-PAD-PS425-L** 	**A-PAD-PS500-L** 
Guide cylinder for bone profiler	**A-PAD-GUI-PS-230** 	Use A-PAD-GUI-PS-230	Use A-PAD-GUI-PS-230	Use A-PAD-GUI-PS-230

Bone profilers are optional instruments not included in the surgical kit, and can be ordered singularly for separate.

CRI5-KIT torque-control ratchet

The surgical kits of the Premium One, Kohno One and Shelta implant systems include 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 275. The CRI5-KIT 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 277. 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 the torque to a value below that previously used, the sleeve must be turned anticlockwise no less than two turns below the desired value and then proceed to screw in a clockwise direction until reaching the value of torque required.

Techniques for taking impressions and making models

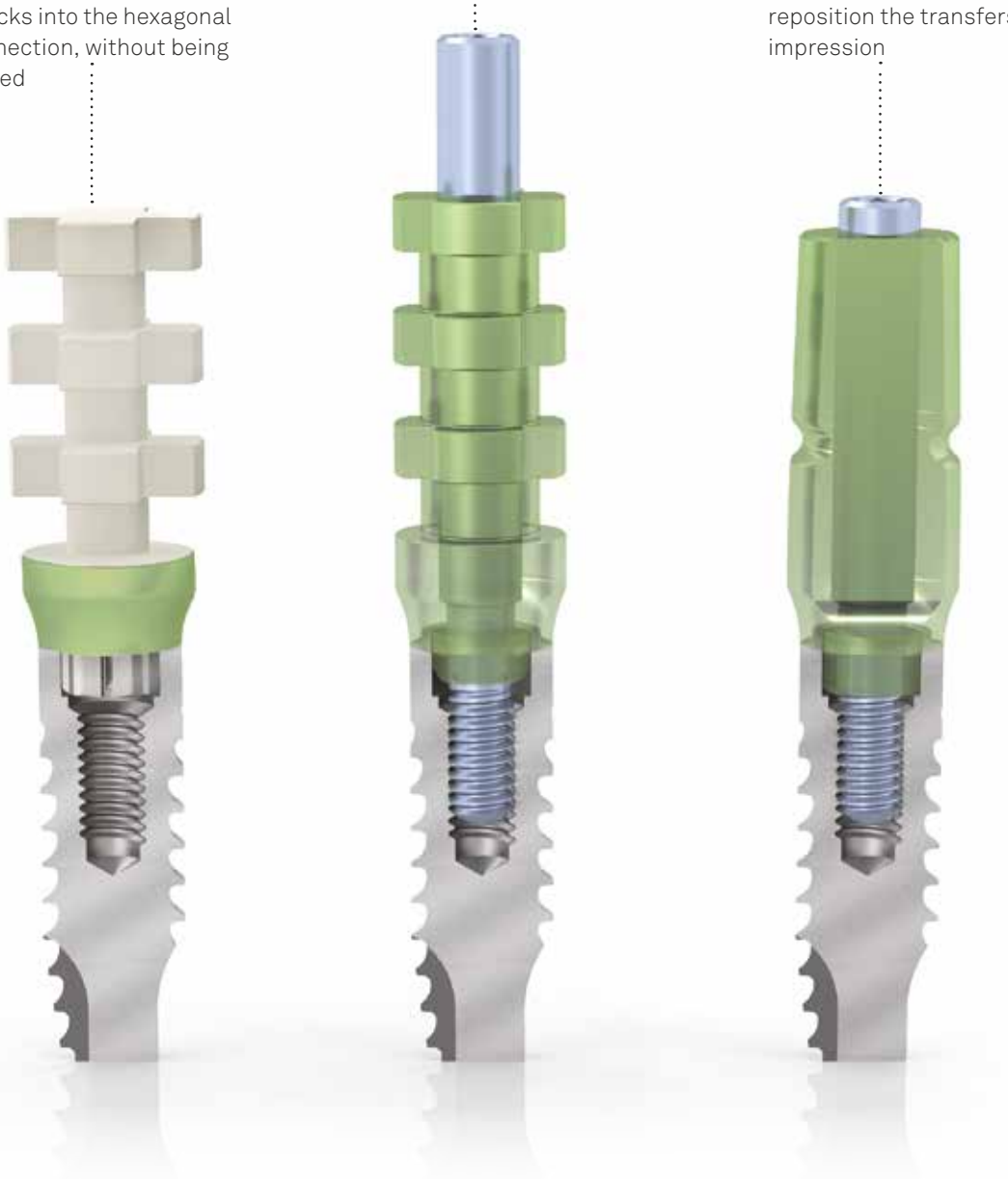
The correct taking of impressions is the key to success in any implant-prosthetic treatment plan, because if information with as few errors as possible is sent to the laboratory, this makes it possible to save working time and above all to produce prostheses without internal stresses that do not exert undesired strain on implants.
Impressions can be taken at various moments of surgery, depending on the adopted protocol.

Impressions can be taken on Premium One, Kohno One and Shelta implants with three different protocols:
- open tray with Pick-up transfer;
- closed tray with closed tray transfer;
- closed tray with Pull-up transfer.

Pull-up transfer: the connection with tabs clicks into the hexagonal implant connection, without being screw retained

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

Closed tray transfer: a flat face makes it possible to rapidly reposition the transfers in the impression



In addition to these possibilities, some prosthetic protocols with special components also envisage the transfer onto the laboratory model not of the implant connection, but instead of the intermediate prosthetic platforms. Therefore, specific transfers and analogs are available: consult the different protocols of use for the specific instructions.

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, especially in the case of multiple structures.

Analogs

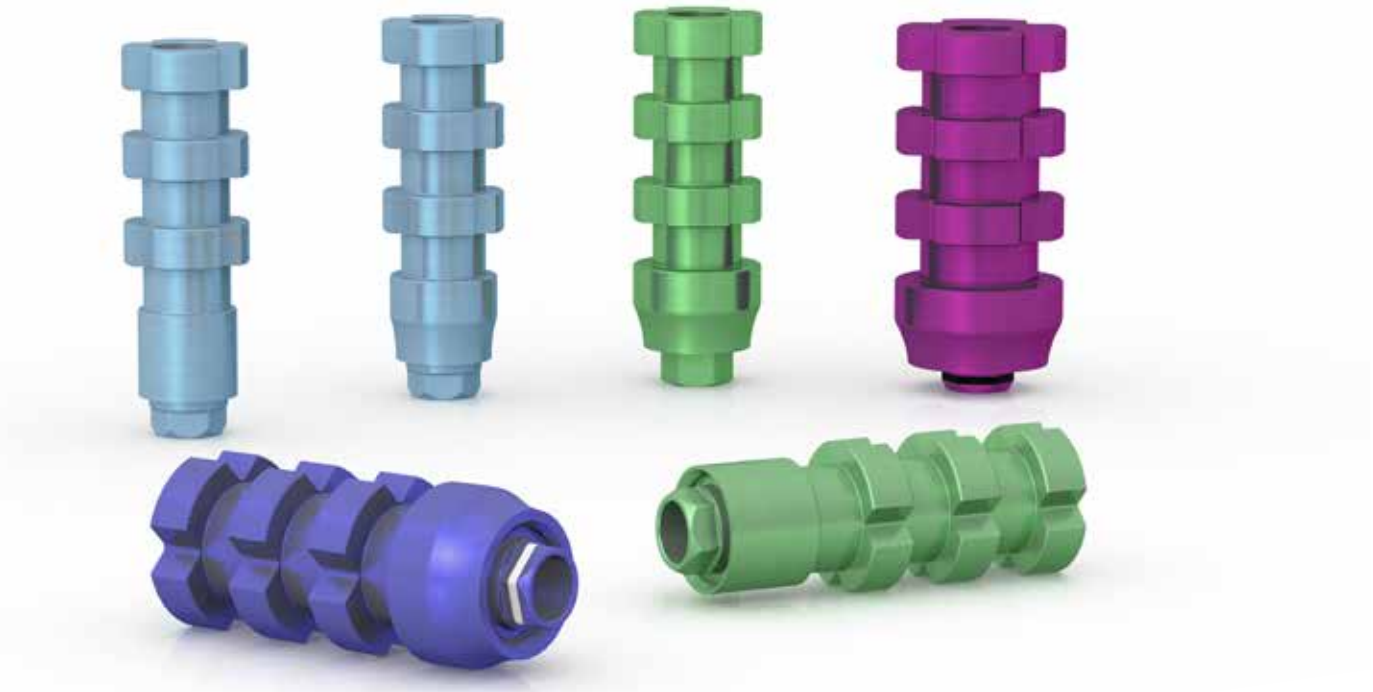
Components for impressions and for the production of models are manufactured with the same machines used to make implants, ensuring the same high level of precision for tolerances and for the accurate reproduction of clinical situations. Analogs are anodized following a colour code, making it easier to recognize implant diameters and simplifying laboratory work.

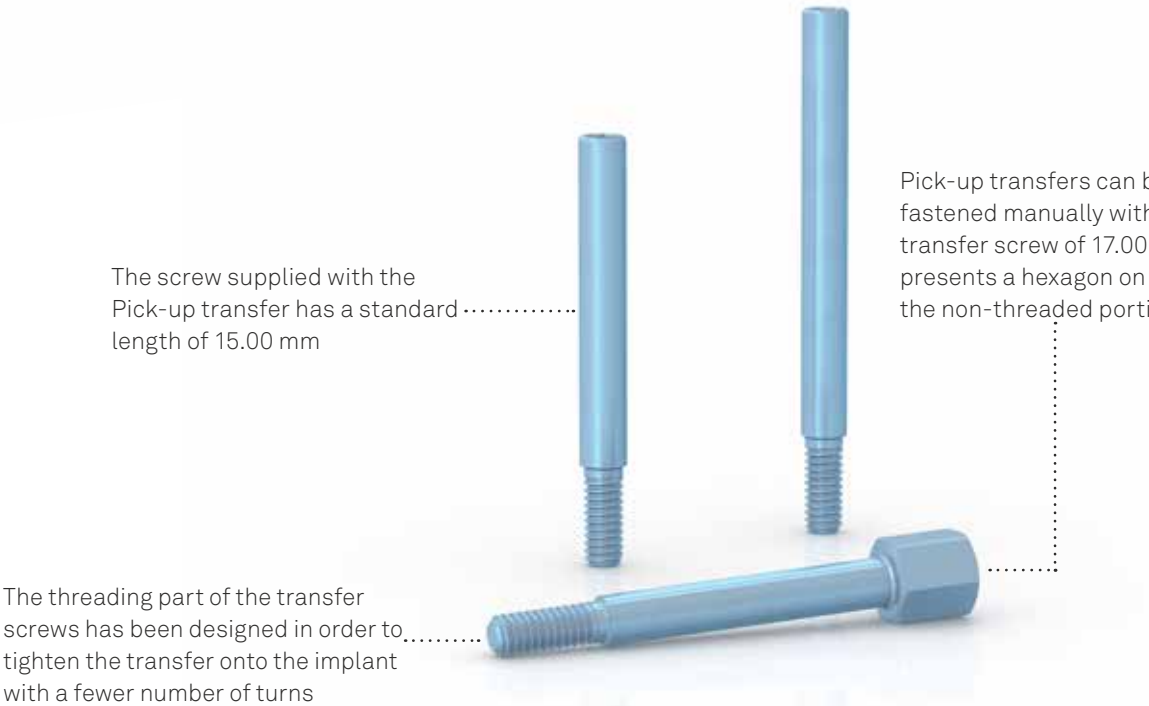
implant ø	3.30	3.80	4.25	5.00	6.00
Analogs for Premium One, Kohno One and Shelta implants	**A-ANA-330** ø 3.30 12.00	**A-ANA-380** ø 3.80 12.00	**SH-ANA-425** ø 4.25 12.00	**SH-ANA-500** ø 5.00 12.00	**SH-ANA-600** ø 6.00 12.00

See technical characteristics of Gr. 5 titanium on page 264.

Open tray impression

The open tray impression requires the use of a personalized impression tray, made in a laboratory on a preliminary model with access apertures for the transfer screws at positions corresponding to the implants. It is advisable to use the short driver with a hexagonal connector for ratchet HSM-20-EX, or extra-short manual driver HSMXS-20-DG, both specifically developed to reduce the vertical space required and to facilitate inserting and removing torque-control operations for the transfer screws in the oral cavity.



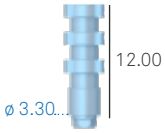
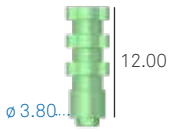
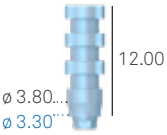
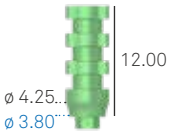
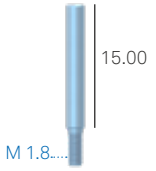
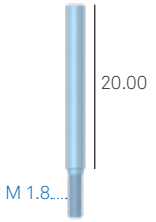
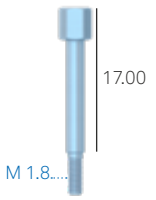


The screw supplied with the Pick-up transfer has a standard length of 15.00 mm

Pick-up transfers can be also fastened manually with the specific transfer screw of 17.00 mm, which presents a hexagon on the top of the non-threaded portion

The threading part of the transfer screws has been designed in order to tighten the transfer onto the implant with a fewer number of turns

Pick-up transfers

prosthetic component ø	3.30	3.80	4.25	5.00 *
Pick-up transfers Straight emergence Fixation screw included	**A-TRA-330** 	**A-TRA-380** 	**AS-TRA-425** 	**AS-TRA-500** 
Pick-up transfers Anatomical emergence Fixation screw included	**A-TRAR-330** 	**A-TRAR-380** 	**AS-TRAR-425** 	**AS-TRAR-500** 
Single pack Fixation screw for Pick-up transfer, 15.00 mm long. Supplied with the transfers, it can also be ordered separately as a spare	**VTRA2-180-15** 	Use VTRA2-180-15	Use VTRA2-180-15	Use VTRA2-180-15
Single pack Fixation screw for Pick-up transfer, 20.00 mm long. Not supplied with transfer, available separately	**VTRA2-180-20** 	Use VTRA2-180-20	Use VTRA2-180-20	Use VTRA2-180-20
Single pack Fixation screw for Pick-up transfer, 17.00 mm long. For manual screwing Not supplied with transfer, available separately	**VTRA2-180-MAN** 	Use VTRA2-180-MAN	Use VTRA2-180-MAN	Use VTRA2-180-MAN

Recomended torque for Pick-up transfers: 8-10 Ncm.

**For the impression on Shelta implants of 6.00 mm diameters, use the transfers with 5.00 mm diameters, paying attention in laboratory to select the correct match with the SH-ANA-600 analog.*

See technical characteristics of Gr. 5 titanium on page 264.

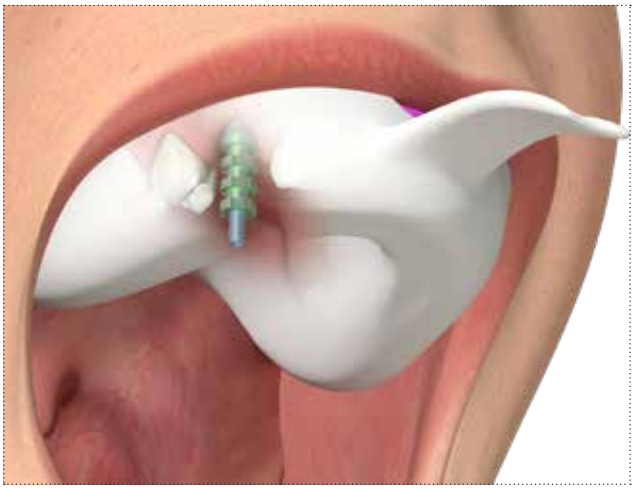
Open tray impression with Pick-up transfer - single crown

Expose the implant connection if a protocol with a double surgical phase has been adopted, or remove the healing abutment.

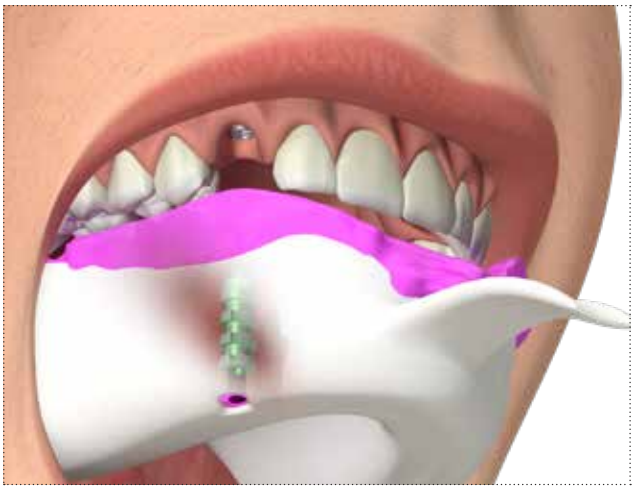
Tighten the Pick-up transfer with the specific supplied screw and the most suitable screwdriver from the HSM series, without exceeding a torque of 8–10 Ncm (**img. A)**, or tighten the Pick-up transfer with the screw for manual insertion, available optionally (**img. B**).

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 length 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, code SKY14) around the transfer.

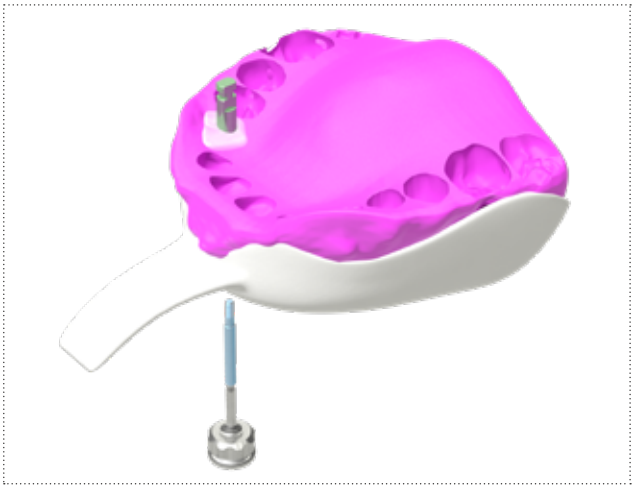
Fill the impression tray with a more consistant impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch. Then position the tray *in situ* and wait for the hardening times as indicated by the instructions.



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 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.



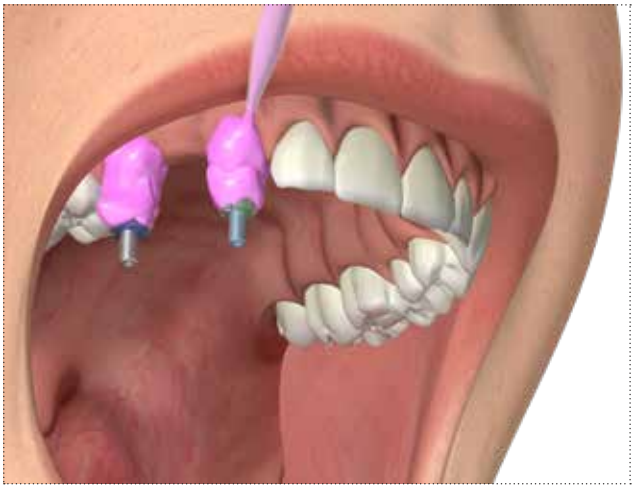
Open tray impression with Pick-up transfer - multiple

Expose the implant connections if a protocol with a double surgical phase has been adopted, or remove the healing abutments.

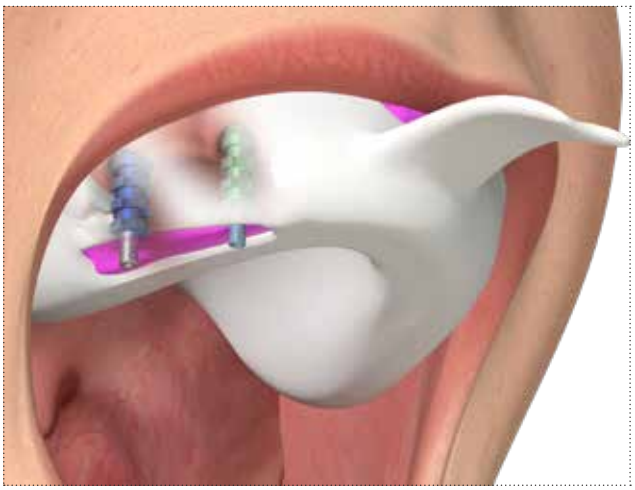
Tighten the Pick-up transfers with the specific screw supplied and the most suitable screwdriver from the HSM series, without exceeding a torque of 8–10 Ncm (**img. A**), or tighten the Pick-up transfers with the screw for manual screwing, available optionally (**img. B**).

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).

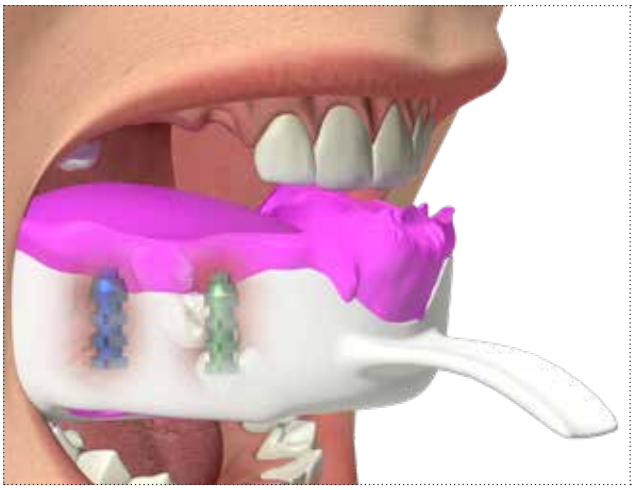
Check that the personalized tray, when placed in the mouth, contains the entire height of the transfers inside its walls, and that the summit of the transfer screws emerges for a suitable length from the respective hole in the tray. If necessary, the transfers can be shortened by one or two notches.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



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.



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.



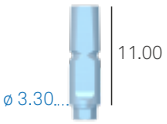
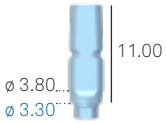
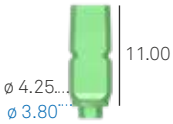
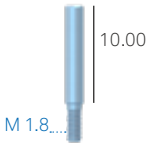
Screw the laboratory analogs onto the transfers using the transfer screws, replaced in the holes left by them in the impression material.
The recommended torque is 8–10 Ncm.
Develop the model as usual.

Closed tray impression

The closed tray transfers are made of Gr. 5 titanium, anodized according to the colour code of the corresponding connection platform to facilitate the repositioning of the analog during the laboratoy phases.

The closed tray transfers present a wide repositioning face ensuring a precise impression. They have an anatomical emergence that exactly repeats that of the transgingival healing abutments. For diameter 3.30 a version with straight emergence is also available, very useful for single rehabilitations in the front sector, where it is usually more practical to use components with limited bulk.

Closed tray transfers

prosthetic component ø	3.30	3.80	4.25	5.00 *
Closed tray transfer Straight emergence Fixation screw included	**A-TRAS-330** 	-	-	-
Closed tray transfer Anatomical emergence Fixation screw included	**A-TRARS-330** 	**A-TRARS-380** 	**AS-TRARS-425** 	**AS-TRARS-500** 
Single pack Fixation screw for closed tray transfer. Supplied with the transfers, it can also be be ordere separately as a spare	**VTRA2-180-10** 	Use VTRA2-180-10	Use VTRA2-180-10	Use VTRA2-180-10

Recommended torque for transfer screws: 8-10 Ncm.

**For the impression on Shelta implants of 6.00 mm diameters, use the transfers with 5.00 mm diameters, paying attention in laboratory to select the correct match with the SH-ANA-600 analogue..*

See technical characteristics of Gr. 5 titanium on page 264.

Closed tray impression with closed tray transfer - single crown

Expose the implant connection if a protocol with a double surgical phase has been adopted, or remove the healing abutment.

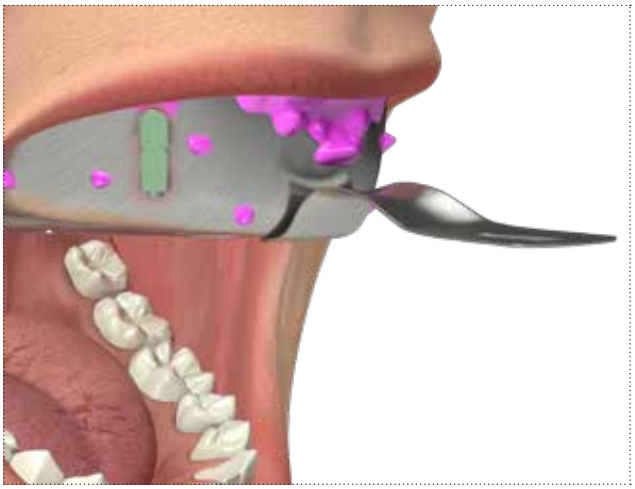
Tighten the closed tray transfer with the specific screw supplied and the most suitable screwdriver from the HSM series, without exceeding a torque of 8-10 Ncm. Close the screw hole with wax to preserve it from the entrance of impression material, removing the exceeding wax in order to not compromise the precision of the impression.

Note: The surgical screwdriver for surgical cover screws and fixation screws is available with several shank lengths to satisfy different clinical needs. A version with a hexagonal connector for a torque-control ratchet is also available, or with a shank for a ratchet.
See pages 27-28 for technical details on these screwdrivers.

Choose a tray of suitable dimensions, so that the height of the transfer is contained inside the walls of the impression tray.

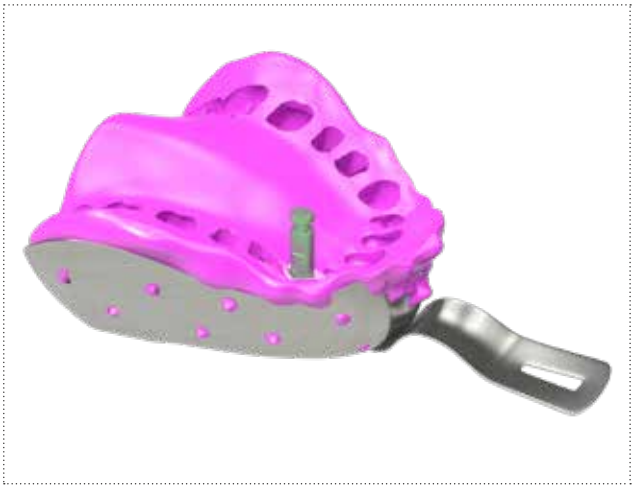
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) around the transfer and fill the impression tray with a more consistant impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.

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



Remove the tray: the closed tray transfer remains tightened to the implant. Remove the wax from the head of the screw and unscrew it to remove the transfer.

Screw the laboratory analog onto the transfer using the transfer screw and reposition it in the hole left by the impression material, coupling correctly the flat face that acts like a repositioning index. The recommended torque is 8-10 Ncm.
Develop the model as usual.

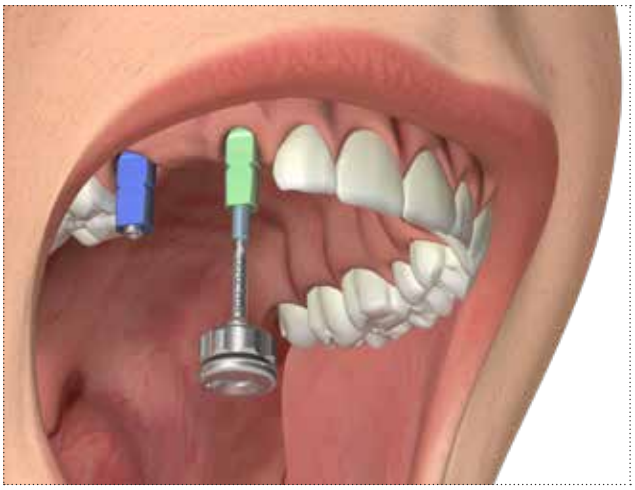


Closed tray impression with closed tray transfer - multiple

Expose the implant connections if a protocol with a double surgical phase has been adopted, or remove the healing abutments.

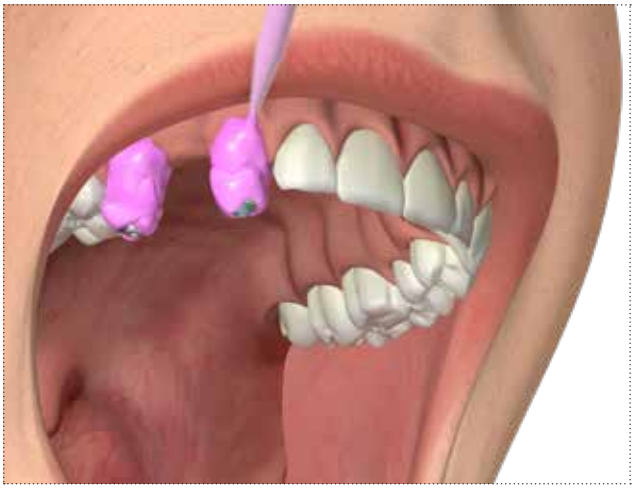
Tighten the closed tray transfers with the specific screw supplied and the most suitable screwdriver from the HSM series, without exceeding a torque of 8–10 Ncm. Close the screws hole with wax to preserve them from the entrance of impression material, removing the exceeding wax in order to not compromise the precision of the impression.

Note: The surgical screwdriver for surgical cover screws and fixation screws is available with several shank lengths to satisfy different clinical needs. A version with a hexagonal connector for a torque-control ratchet is also available, or with a shank for a ratchet.
See pages 27-28 for technical details on these screwdrivers.

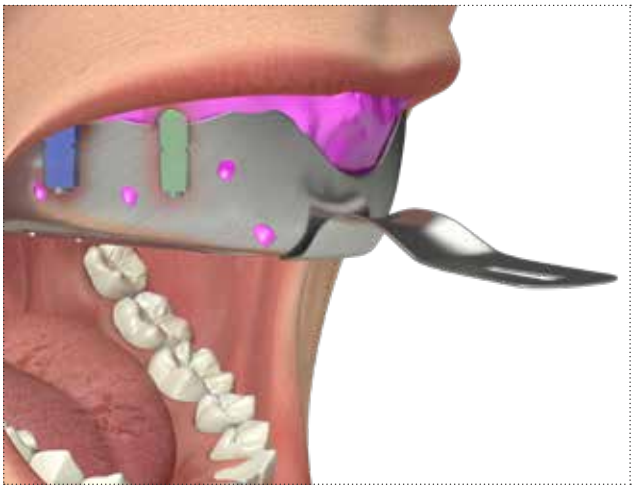


Choose a tray of suitable dimensions, so that the height of the transfers is contained inside the walls of the impression tray.

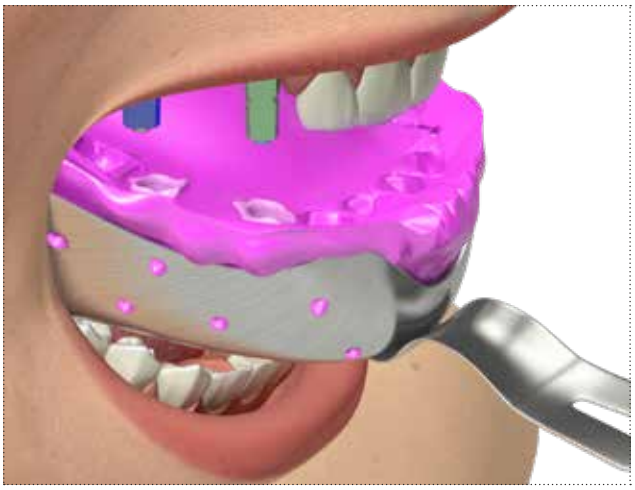
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) around the transfers and fill the impression tray with a more consistant impression material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.



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



Remove the tray: the closed tray transfers remain tightened to the implants. Remove the wax from the head of the screws and unscrew them to remove the transfers.

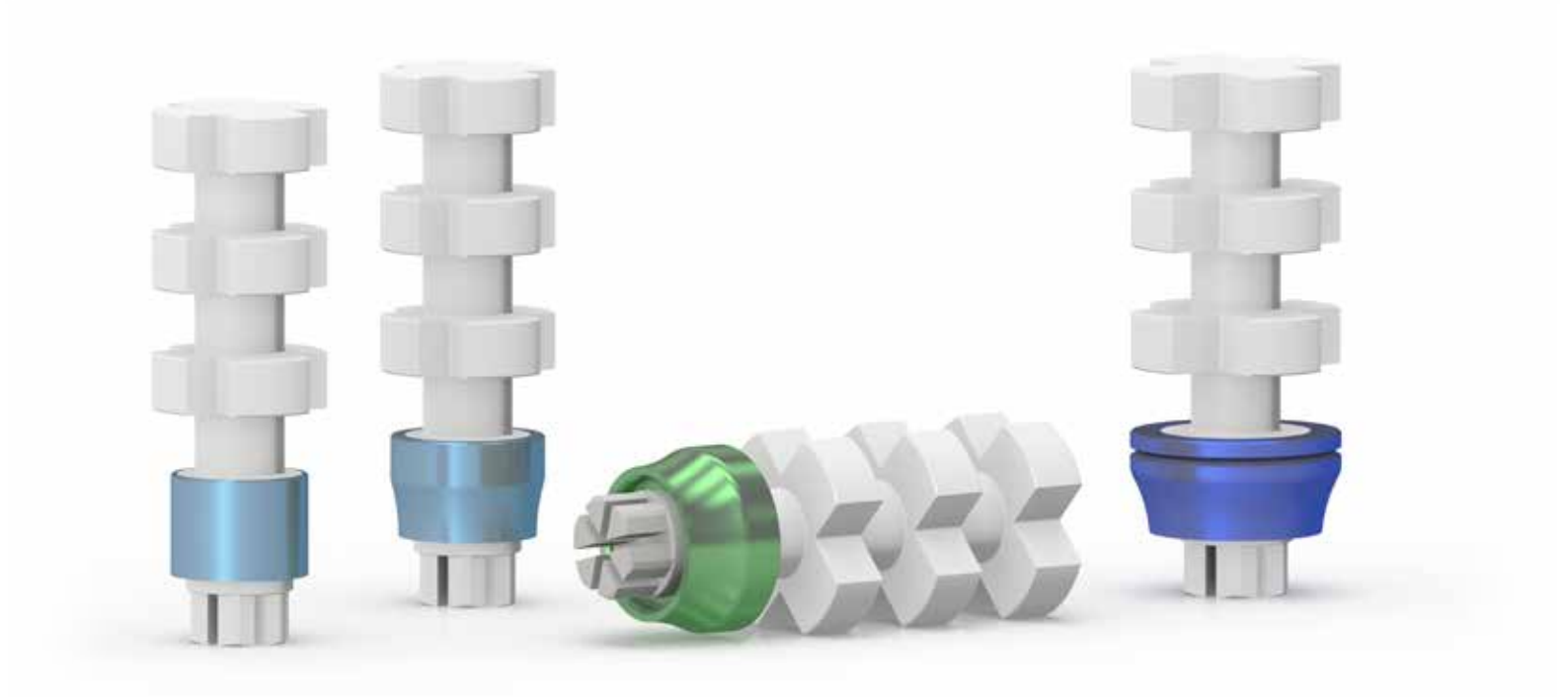


Screw the laboratory analogs onto the transfers using the transfer screws and reposition them in the hole left by the impression material, coupling correctly the flat face that acts like a repositioning index. The recommended torque is 8-10 Ncm. Develop the model as usual.

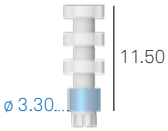
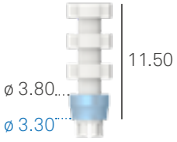
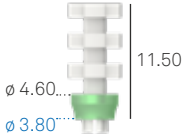
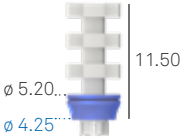
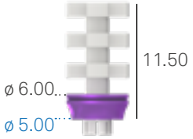
Pull-up impression

The Pull-up technique has been developed by Sweden & Martina to make it easier to take impressions in cases in which the limited oral opening of the patient makes it difficult to screw in and unscrew transfer screws. Pull-up transfers are made completely of PEEK with a titanium ring around the base, anodized according to the colour code of the reference platform, which facilitates the recognition and the verification of the proper seating in the implant platform with an X-ray. Pull-up transfers have a connection shaped in a way that allows them to be clicked inside the connection hexagons without needing to be fixed with a screw, but instead exploiting the stabilization capacity of the Collex connection. They are extremely practical for taking positioning impressions, for example for the production of a model on which the individual tray can be developed, since they are easy and quick to use.

They can also be used in combination with Pick-up transfers, for example in distal sectors, in situations in which the mesial elements have sufficient space for screwing and unscrewing operations on the transfer screw, while the distal elements present anatomical difficulties. They are the ideal solution for taking quick impressions between converging implants because they can be easily shortened by using a disk blade to remove one or two of the vertical modules, or to remove portions of horizontal retention arms that may cause interference.



Pull-up transfers

prosthetic component ø	3.30	3.80	4.25	5.00 *
Pull-up transfer in PEEK and Gr. 5 titanium ring. Straight emergence	**A-TRAP-330** 	-	-	-
Pull-up transfer in PEEK and Gr. 5 titanium ring. Anatomical emergence	**A-TRARP-330** 	**A-TRARP-380** 	**AS-TRARP-425** 	**AS-TRARP-500** 

***For the impression on Shelta implants of 6.00 mm diameters, use the transfers with 5.00 mm diameters, paying attention in laboratory to select the correct match with the SH-ANA-600 analog.*

Important warning
As the Pull-up transfers are made of polymer material, to guarantee precision it is recommended to use new transfers for taking each impression.

See technical characteristics of Gr. 5 titanium and PEEK on pages 264 and 265.

Impression with Pull-up transfer - single crown

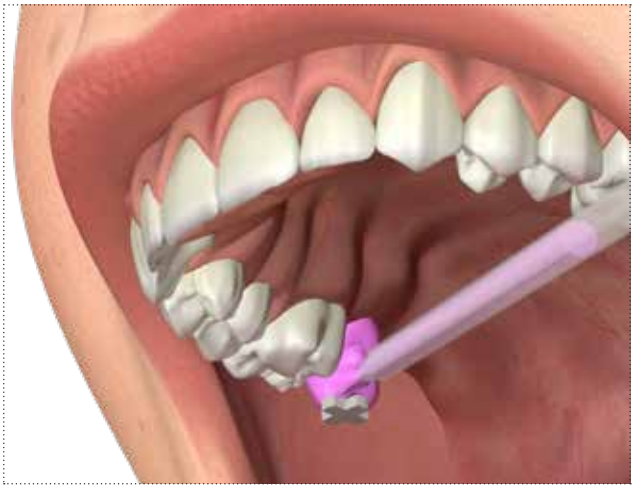
Expose the implant connection if a protocol with a double surgical phase has been adopted, or remove the healing abutment.

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

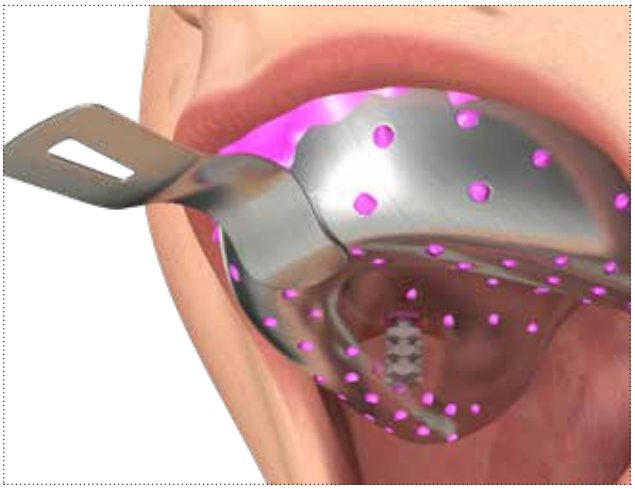
Important warning
In case of poor visibility or doubts on complete coupling between the transfer and the implant, carry out a radiographic check. The titanium ring at the base of the transfer makes it visible with an X-ray.

Position the tray and check that the entire height of the transfer is contained inside the walls of the impression tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfer.

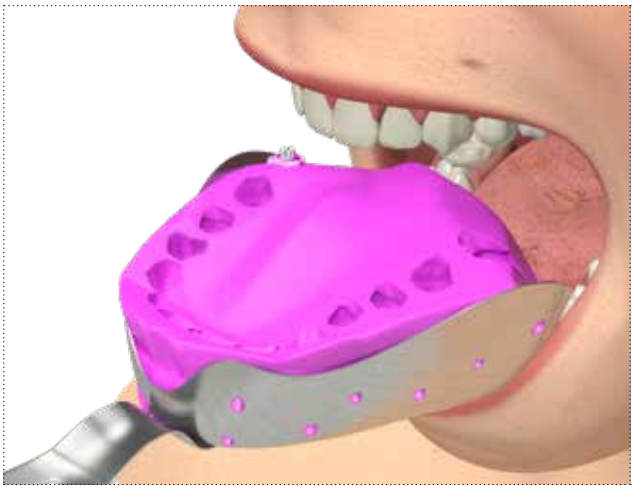
Important warning
If necessary, the height of Pull-up transfer can be reduced by cutting away one or two vertical modules or removing the portions of the horizontal tabs creating interference.
The retention of the remaining portion of the transfer in the impression material will be sufficient to ensure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



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.



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



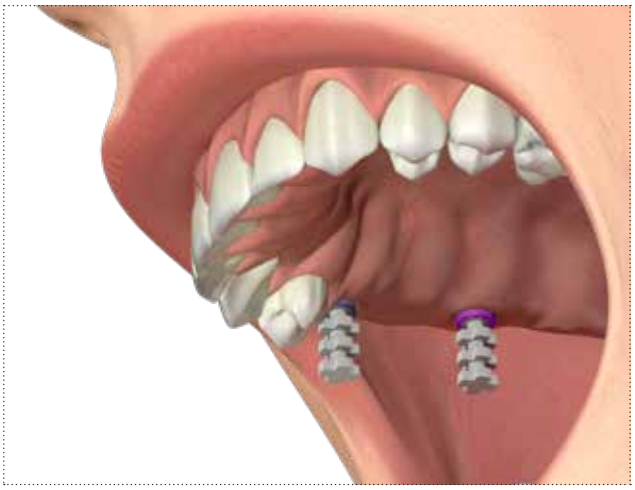
Couple the transfer with a laboratory analog of a corresponding diameter. The characteristic click of the transfer tabs indicates that the analog has been correctly inserted. Develop the preliminary model and create an individual impression tray using normal methods.

Impression with Pull-up transfer - multiple

Expose the implant connections if a protocol with a double surgical phase has been adopted, or remove the healing abutments.

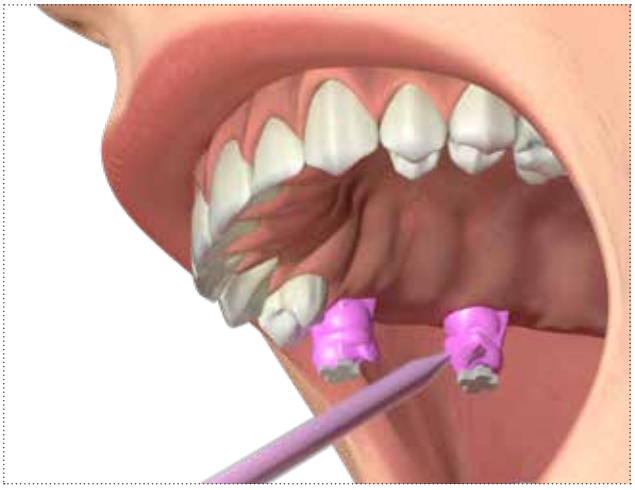
Position the Pull-up transfers and fix them by simply applying pressure with the hand, without needing to use instruments. The characteristic click of the transfer tabs indicates that the transfers have been correctly inserted in the implant connection.

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

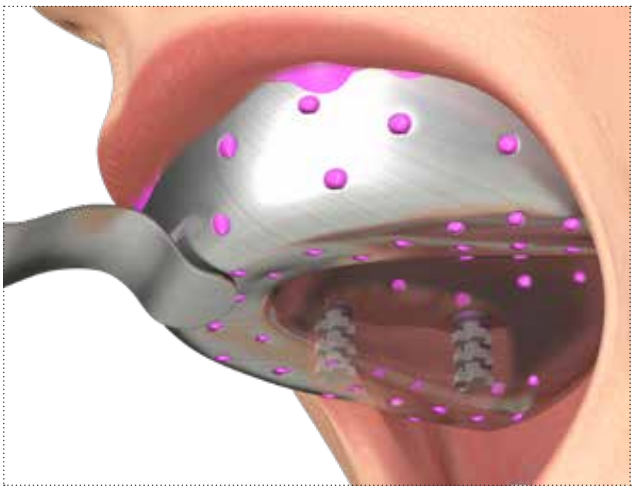


Position the tray and check that the entire height of the transfers is contained inside the walls of the impression tray. Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the transfers.

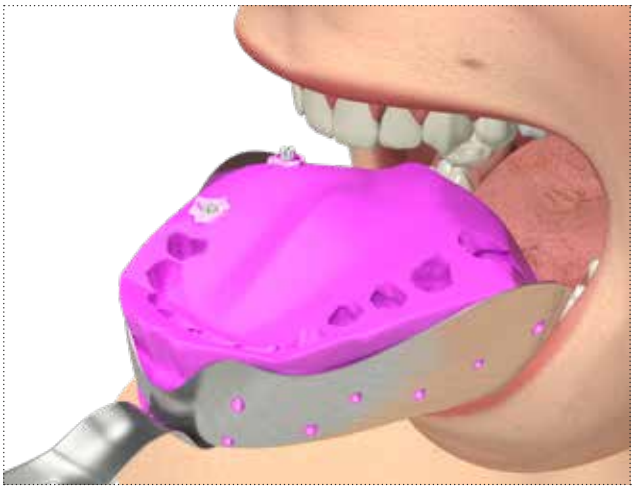
Important warning
If necessary, the height of Pull-up transfers can be reduced by cutting away one or two vertical modules or removing the portions of the horizontal tabs creating interference.
The retention of the remaining portion of the transfers in the impression material will be sufficient to ensure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



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.



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



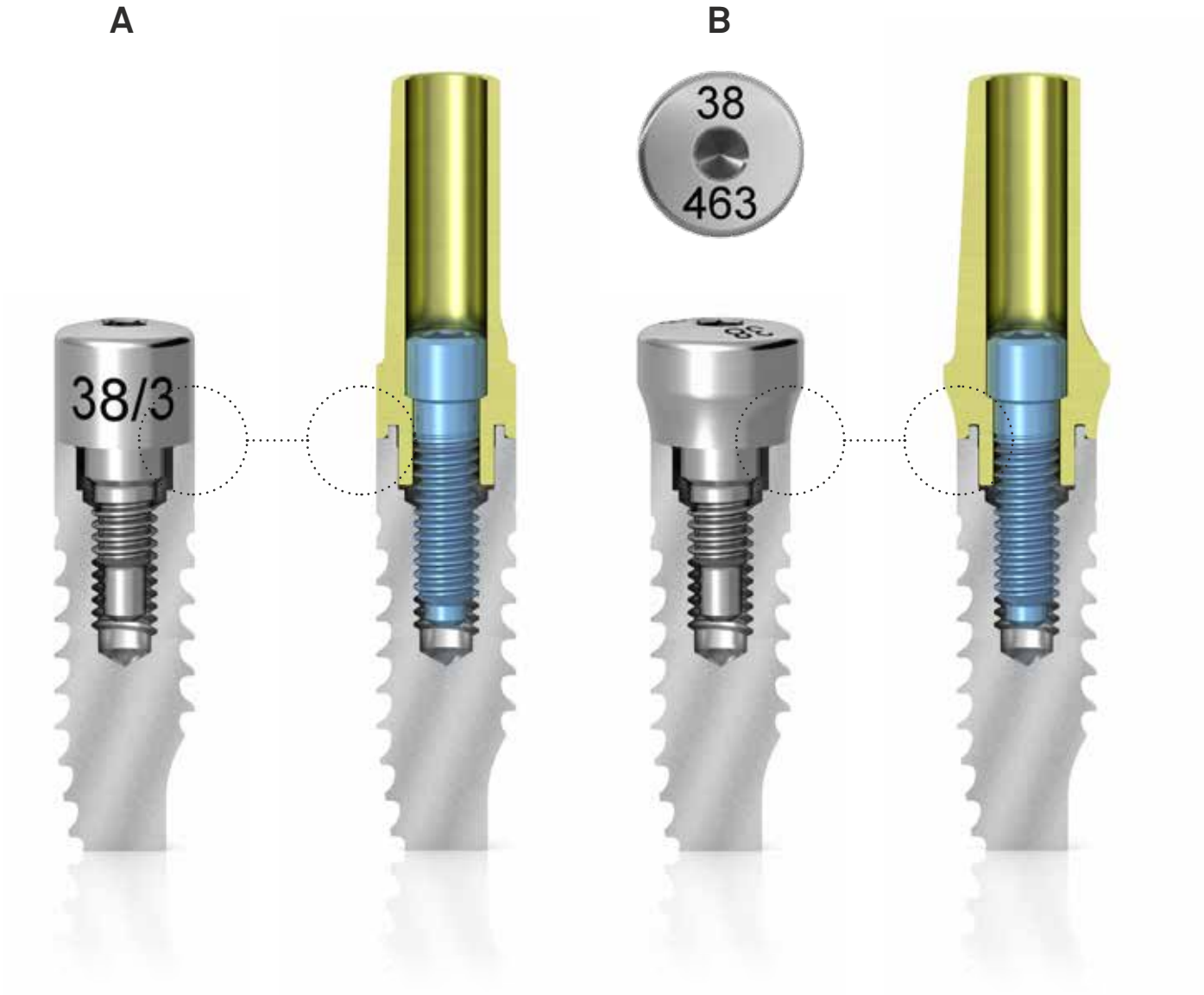
Couple each of the transfers with a laboratory analog of a corresponding diameter. The characteristic click of the transfers tabs indicate that the analogs have been correctly inserted.
Develop the preliminary model and create an individual impression tray using normal methods.

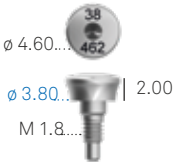
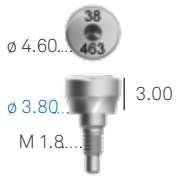
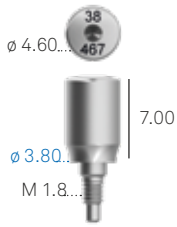
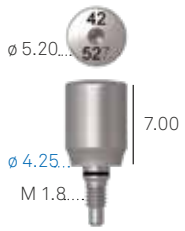
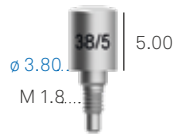
Soft tissues conditioning with healing abutments

To permit the rehabilitation of tissues according to the different anatomical needs of patients, posts with both a straight profile and with an anatomic profile are available, according to the prosthetic protocol adopted.

Healing abutments must be chosen with a transgingival height of one millimetre higher than that of the post to be used for the final rehabilitation, so as to pass through the transgingival portion and to then allow posts to be inserted more easily.

The healing abutments with a straight profile (**img. A**) present a laser marking on one side which reports the platform diameter and the height, the healing abutments with an anatomical profile (**img. B**) present a laser marking on the upper surface reporting the connection diameter, the maximum flare of the healing abutment and the transgingival height.



prosthetic component ø	3.30	3.80	4.25	5.00
Healing abutments Anatomical emergence Transgingival h 2.00 mm	**A-TMGR-330-2** 	**A-TMGR-380-2** 	**AS-TMGR-425-2** 	**AS-TMGR-500-2** 
Healing abutments Anatomical emergence Transgingival h 3.00 mm	**A-TMGR-330-3** 	**A-TMGR-380-3** 	**AS-TMGR-425-3** 	**AS-TMGR-500-3** 
Healing abutments Anatomical emergence Transgingival h 5.00 mm	**A-TMGR-330-5** 	**A-TMGR-380-5** 	**AS-TMGR-425-5** 	**AS-TMGR-500-5** 
Healing abutments Anatomical emergence Transgingival h 7.00 mm	-	**A-TMGR-380-7** 	**AS-TMGR-425-7** 	**AS-TMGR-500-7** 
Healing abutments Straight emergence Transgingival h 2.00 mm	**A-TMG-330-2** 	**A-TMG-380-2** 	-	-
Healing abutments Straight emergence Transgingival h 3.00 mm	**A-TMG-330-3** 	**A-TMG-380-3** 	-	-
Healing abutments Straight emergence Transgingival h 5.00 mm	**A-TMG-330-5** 	**A-TMG-380-5** 	-	-
Healing abutments Straight emergence Transgingival h 7.00 mm	**A-TMG-330-7** 	-	-	-

Recommended torque for healing abutments: 8-10 Ncm.

See technical characteristics of Gr. 5 titanium on page 264.

Soft tissues conditioning with healing abutments - single crown

Healing abutment must be inserted using screwdrivers from the HSM series. It is necessary to tighten the healing abutment with the CRI5-KIT, which guarantees the control of the tightening torque of 8–10 Ncm.

Suture the flaps around the healing abutment, respecting the original conformation of the papillae of the adjacent teeth.

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

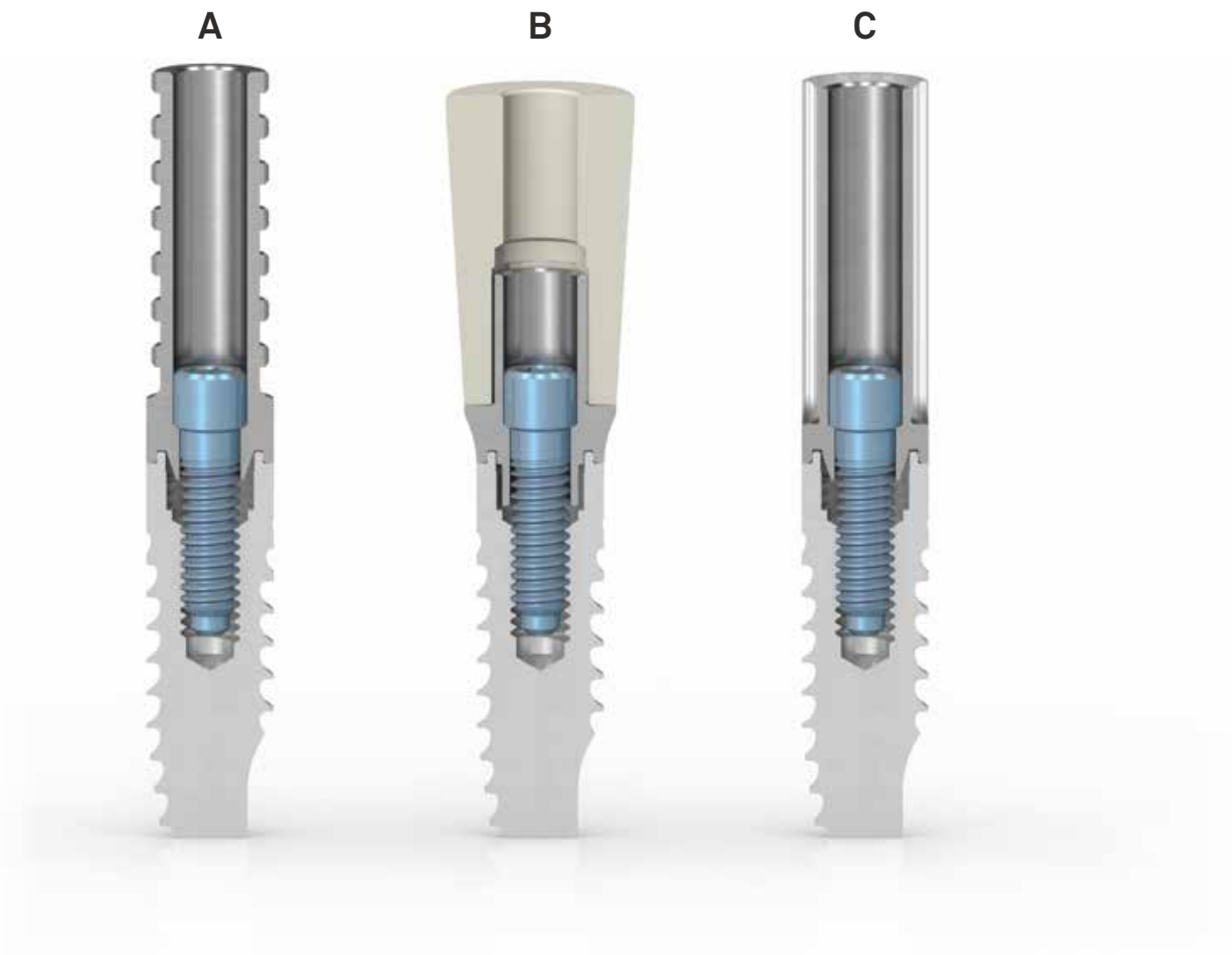
Soft tissues conditioning with healing abutments - multiple

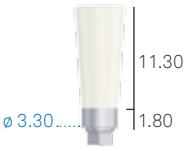
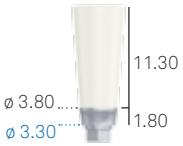
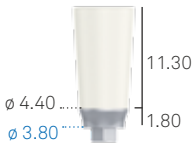
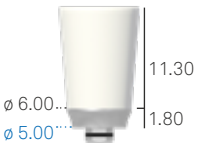
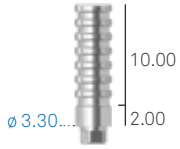
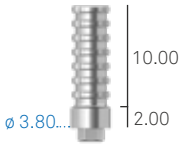
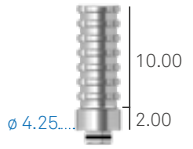
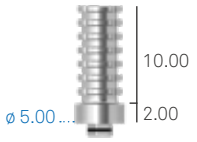
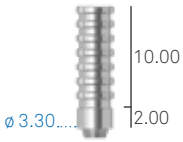
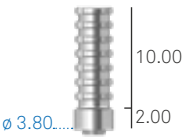
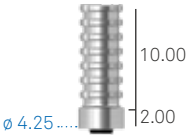
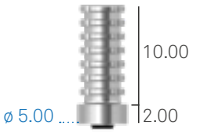
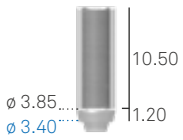
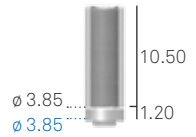
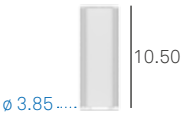
It is necessary to tighten the healing abutments with the CRI5-KIT, which guarantees the control of the tightening torque of 8–10 Ncm.
Suture the flaps around the healing abutments.

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

Soft tissues conditioning with temporary rehabilitations

The SIMPLE prosthetic protocol offers practical and simple solutions for the production of both single and multiple screw retained or cemented prosthetic structures. These prostheses can be used conventionally during the bone healing period, or immediately after the surgical insertion of implants, if the conditions for immediate loading are present. The titanium sleeves, given the different morphologies, can be adapted to suit any anatomy.
SIMPLE post with straight emergence (**Img. A**) is available both with a centring cone for multiple structures to be tightened directly onto the implants even in presence of accentuated disparallelism or both with a repositioning hexagon for single crowns. The post in PEEK with a titanium base can be prepared chairside, making it possible to create cemented single crowns or multiple prosthesis (**Img. B**). Specific posts with castable sleeves are available for the production of temporary full arch prosthesis with luting technique (**Img. C**).



prosthetic component ø	3.30	3.80	4.25	5.00
SIMPLE temporary posts in PEEK with a titanium base Engaging Straight emergence Fixation screw included	**A-MPSC-330** 	Use A-MPSC-330	-	-
SIMPLE temporary posts in PEEK with a titanium base Engaging Anatomical emergence Fixation screw included	**A-MPSCR-330** 	**A-MPSCR-380** 	**AS-MPSCR-425** 	**AS-MPSCR-500** 
SIMPLE temporary posts in titanium Engaging Straight emergence Fixation screw included	**A-MPSCI-330-EX** 	**A-MPSCI-380-EX** 	**AS-MPSCI-425-EX** 	**AS-MPSCI-500-EX** 
SIMPLE temporary posts in titanium Non engaging Straight emergence Fixation screw included	**A-MPSCI-330** 	**A-MPSCI-380** 	**AS-MPSCI-425** 	**AS-MPSCI-500** 
Titanium temporary posts with sleeve Non engaging Straight emergence Castable sleeve and fixation screw included	**A-CTI-330** 	**A-CTI-380** 	Use A-CTI-380	Use A-CTI-380
Castable spare sleeve for titanium post Fixation screw not included	**A-CCI-S** 	Use A-CCI-S	Use A-CCI-S	Use A-CCI-S
Single pack Pack of 10 pieces Fixation screw Supplied with the posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

Recommended torque for temporary posts: 20-25 Ncm.

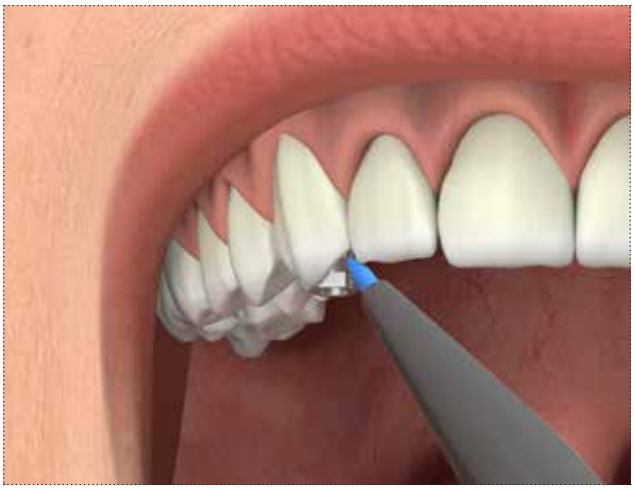
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium, PEEK and PMMA (castable) on pages 264, 265 and 266.

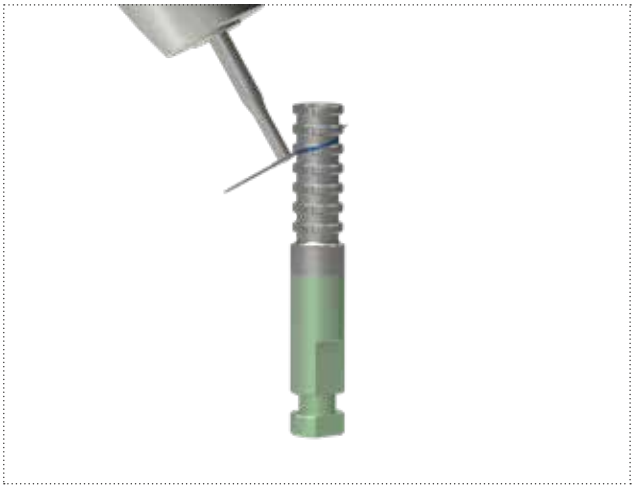
Temporary single screw retained rehabilitation with SIMPLE titanium sleeve

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

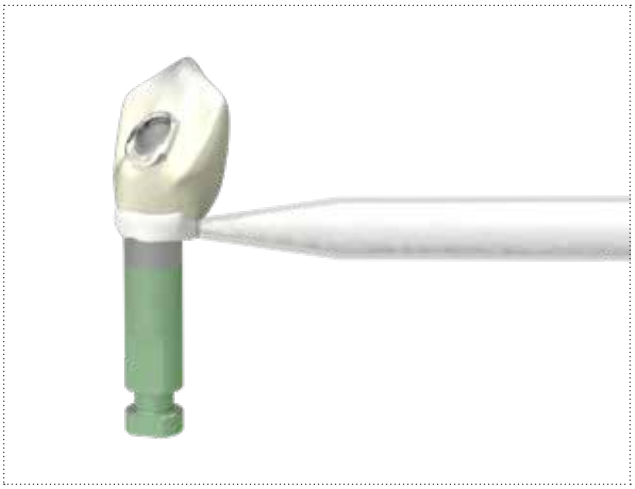
Insert a pre-made crown produced in the laboratory pierced so as to allow it to slide easily on the body of the post. Mark the palatal and vestibular margin of the temporary crown, so as to reduce the titanium sleeve appropriately.



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.

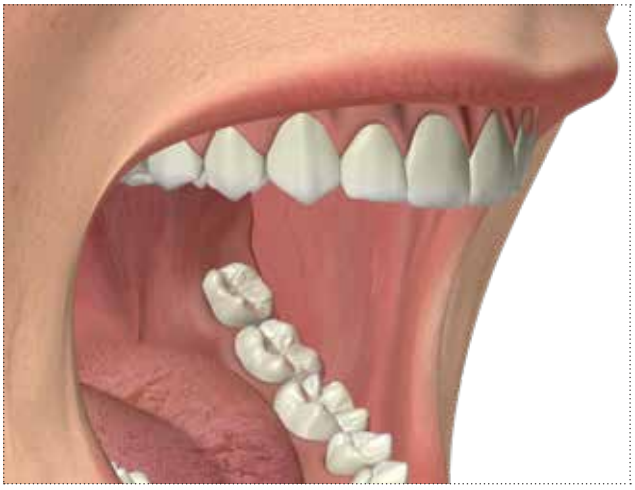


Lute the temporary crown to the SIMPLE temporary post, waiting for polymerization as indicated by the instructions. Then finish the base of the structure.



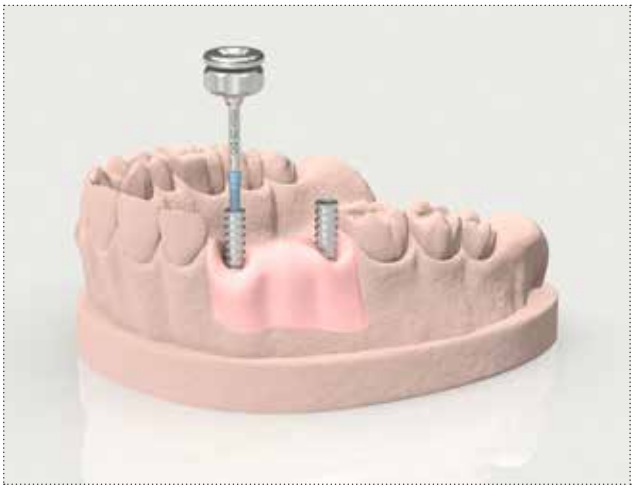
When polymerization is complete, tighten the temporary post to the implant, taking care to keep the flaps of soft tissue away from the connection during inserting procedures. The temporary post must be tightened with the respective screw and a screwdriver from the HSM series. The recommended torque is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



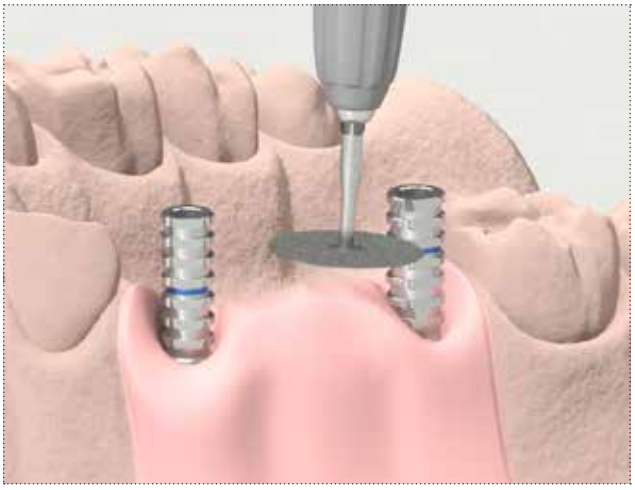
Temporary multiple screw retained rehabilitation with SIMPLE titanium sleeves

Choose non engaging SIMPLE temporary posts in Gr. 5 titanium with the most suitable emergence profile and tighten them to the analogs on the model, leaving them initially at the original length.
The recommended torque is 8-10 Ncm.



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

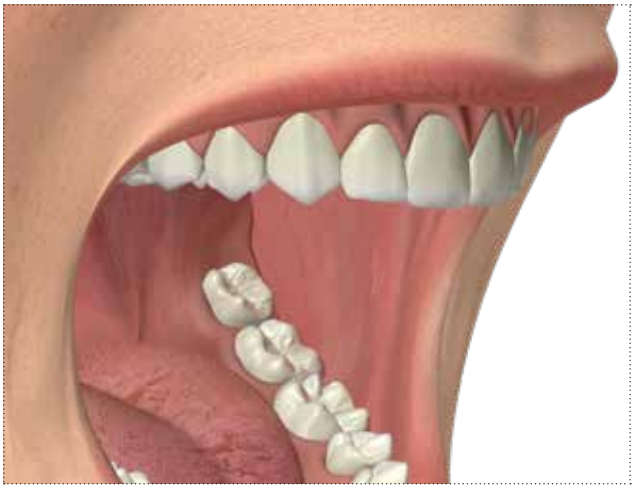
Remove the pre-made bridge and cut the posts on the model at the marked height, using an abrasive disk.



Lute the temporary bridge to the SIMPLE temporary posts, waiting for polymerization as indicated by the instructions.
Clean off any excess luting material.

When polymerization is complete, unscrew the temporary bridge from the model and tighten it onto the implants, 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 bridge must be tightened using the specific screws and a screwdriver from the HSM series.
A tightening torque of 20-25 Ncm must not be exceeded.

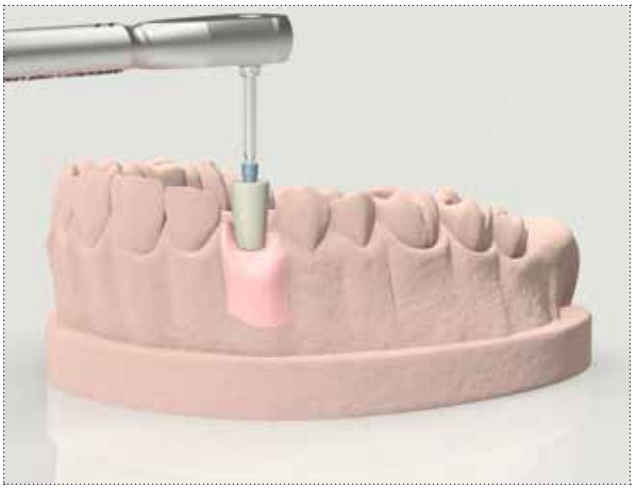
Insert teflon, gutta-percha or soft cement into the screw hole of the SIMPLE temporary posts and close the top with resin or a composite material to preserve the head of the screw. The temporary bridge will help not only to ensure an adequate quality of life for the patient while waiting for the definitive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



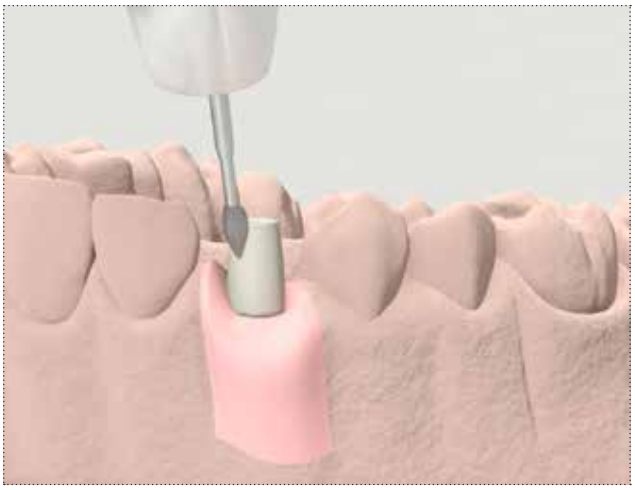
Temporary single cemented rehabilitation with SIMPLE post in PEEK with a titanium base

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.

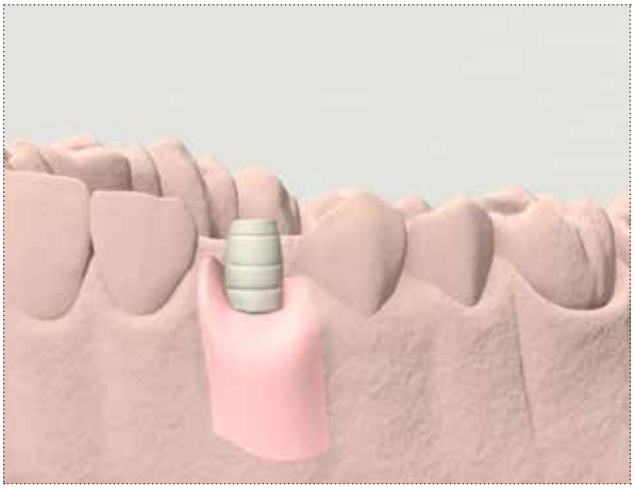
Important warning
It is always advisable to mill the post outside the oral cavity, screwing it on the model or even to an analog, to prevent vibrations from compromising the primary stability of the implant, especially in case of immediate loading.



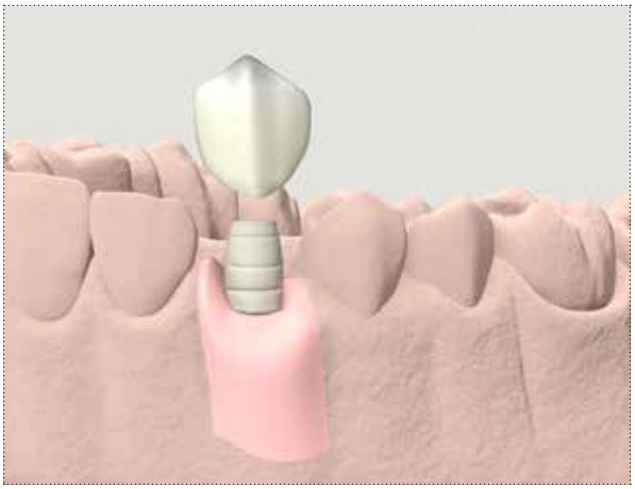
Reduce the height and diameter of the post, taking care to leave the screw head unaltered, to avoid the risk of modifying it and causing mechanical problems during screwing or unscrewing procedures.



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

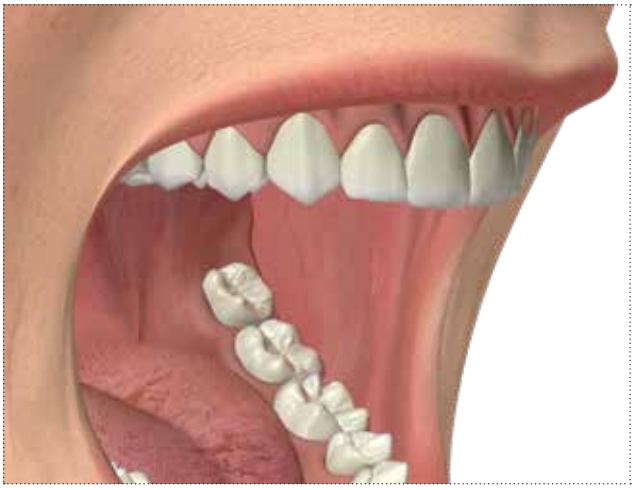


Define the morphology, volume and occlusion, preparing a wax-up and creating the temporary crown using the preferred method.



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.

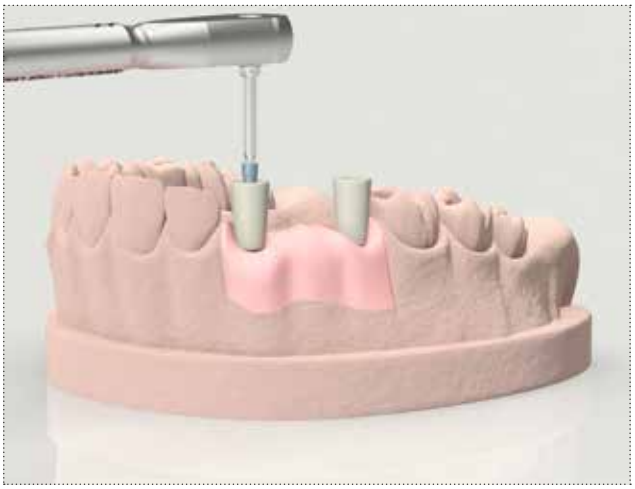
The temporary crown will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.



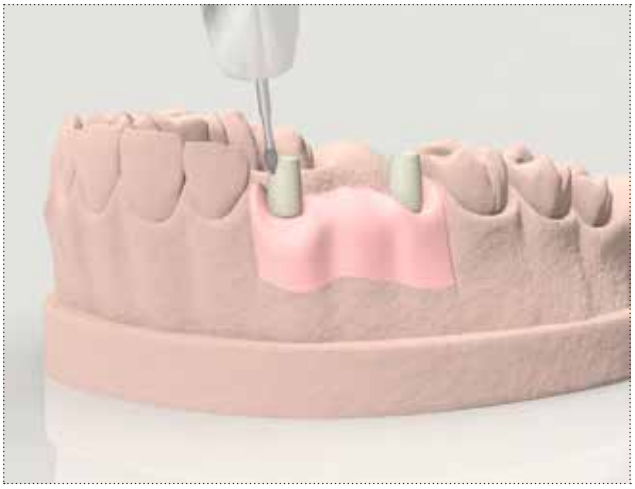
Temporary multiple cemented rehabilitation with SIMPLE posts in PEEK with a titanium base

Screw the SIMPLE temporary posts 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.

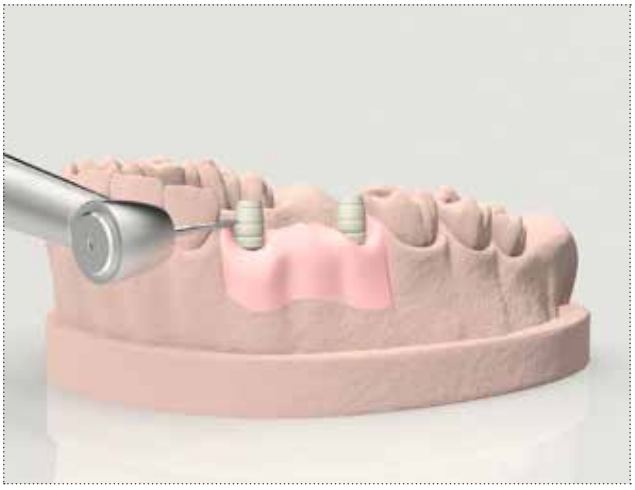
Important warning
It is always advisable to mill the post outside the oral cavity, screwing it on the model or even to an analog, to prevent vibrations from compromising the primary stability of the implant, especially in case of immediate loading.



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



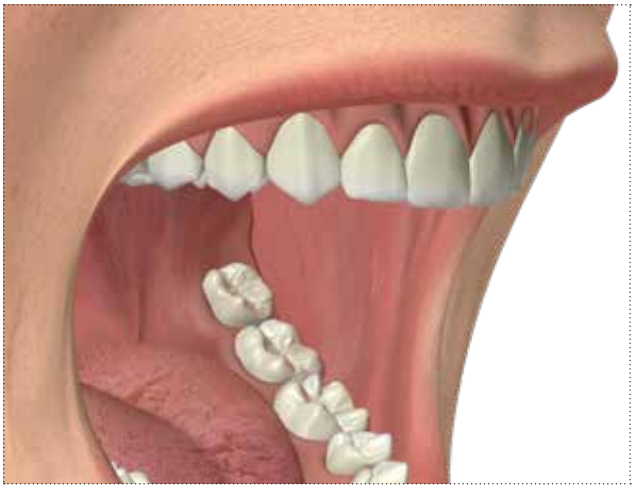
Create holes or retentive grooves on the PEEK body of the posts to facilitate the cementation of the temporary bridge.



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

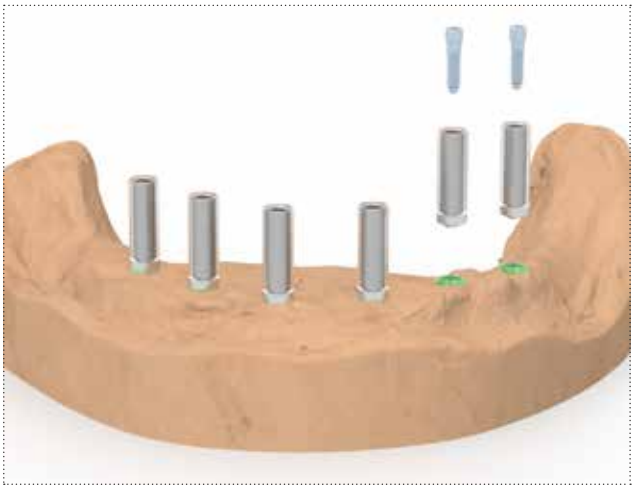
Screw the posts in PEEK onto the implants using the appropriate screwdriver from the HSM series.
The tightening recommended torque is 20-25 Ncm.
Cover the screw holes and cement the bridge on the posts.

The temporary bridge 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.

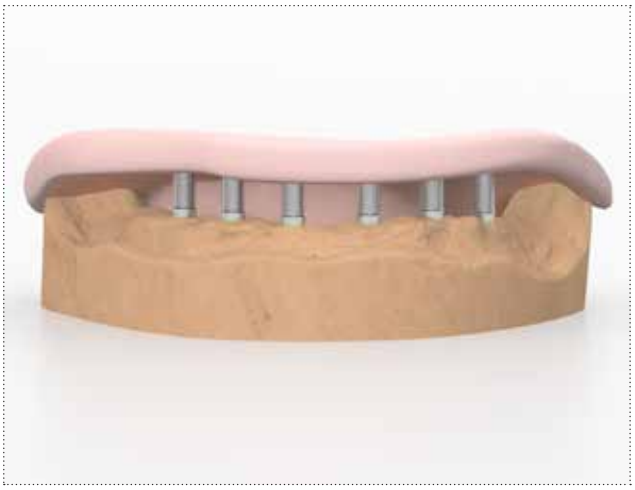


Temporary multiple reinforced luted rehabilitation with temporary titanium posts

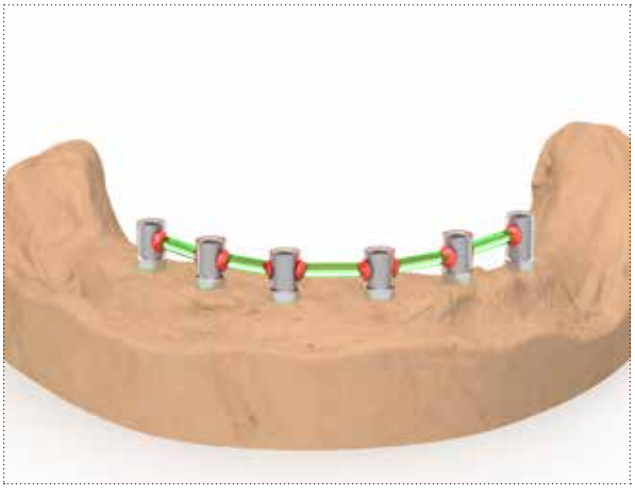
Position the abutments A-CTI-380 onto the analogs in the precision model using the driver of the HSM series. Insert on each post a sleeve A-CCI-S supplied.



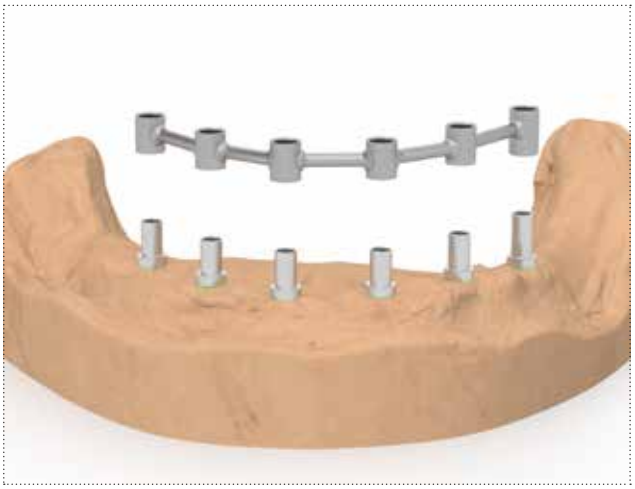
Reduce the posts to a size compatible with the patient's vertical dimension, using the silicone mask.



Create a castable resin structure, with the aid, eventually, of preformed segments (code BARC, see page 253).

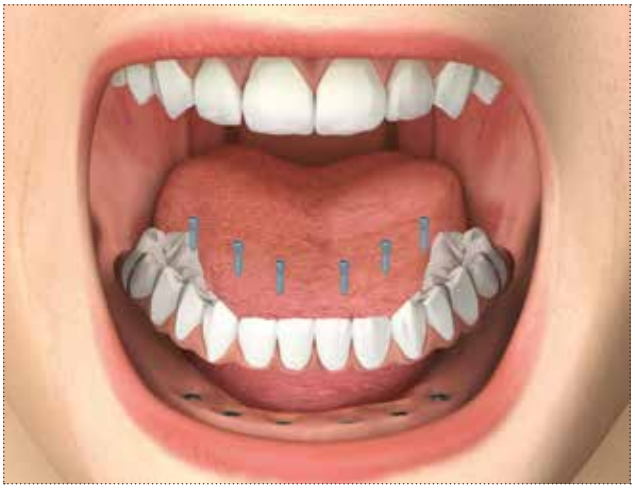


Remove the castable framework joined with the sleeve A-CCI-S from the posts and cast the structure using the standard protocol or duplicate it with CAD-CAM technique. Test the structure on the posts of the model checking for its complete passivity.



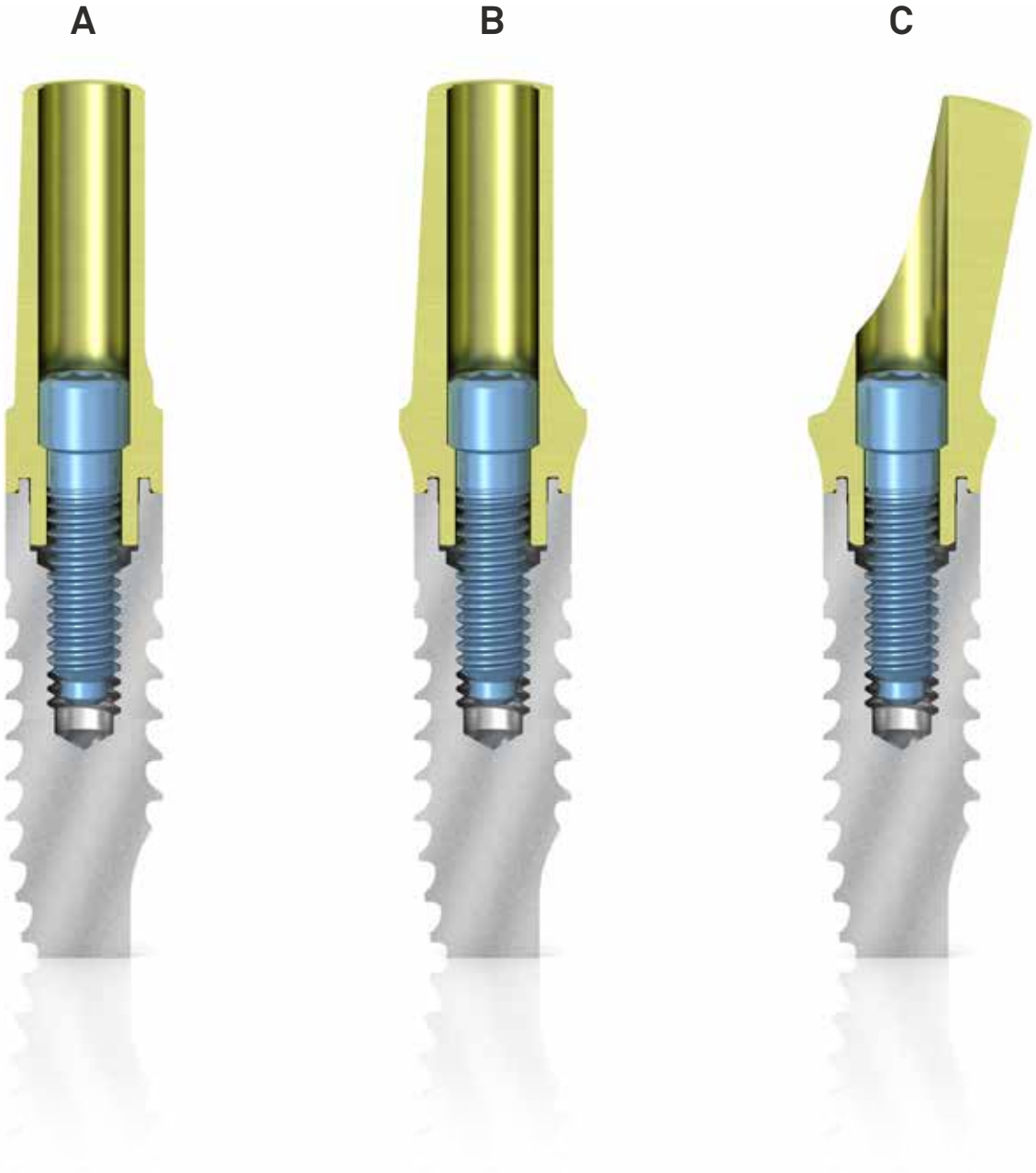
Insert a pre-made crown produced in the laboratory and fasten with cement or resin, taking care to not obstruct the posts hole. May be useful to this purpose to fill the hole with wax. Then finish the base of the temporary prosthesis.

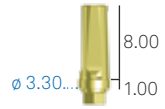
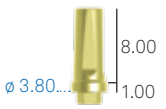
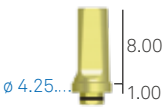
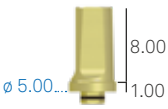
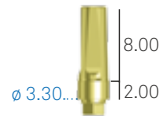
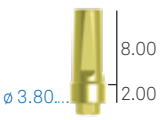
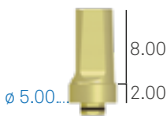
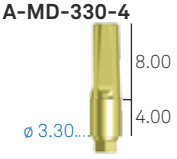
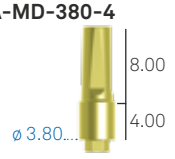
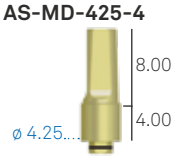
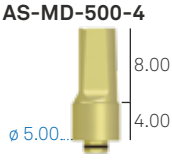
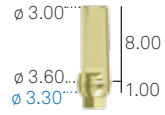
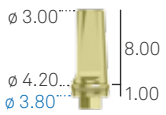
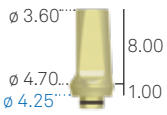
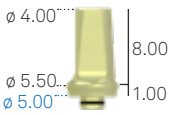
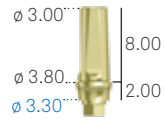
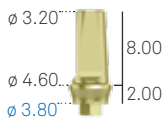
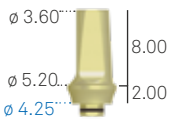
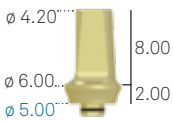
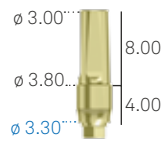
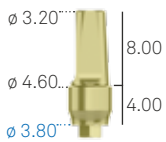
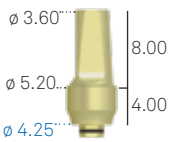
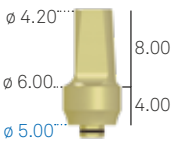
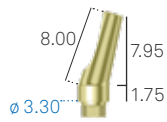
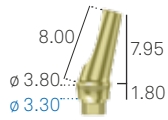
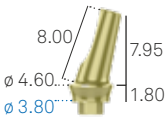
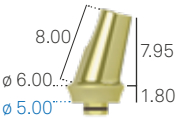
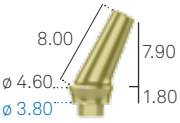
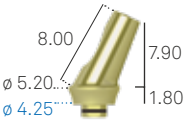
Screw the provvisory structure in patient's mouth and close the top with a composite material, applying a torque of 20-25 Ncm.



Definitive rehabilitation with pre-made posts

Pre-made posts are made of Gr. 5 titanium and are subjected to a process of controlled passivation that changes their colour to a characteristic golden pale yellow. This colour is the result of an oxidation process, therefore without any kind of coating, thereby guaranteeing the use of a highly biocompatible surface.
The straight pre-made posts are available both with straight emergence (**Img. A**), ideal in cases of limited adiacent spaces, and with anatomical emergence (**Img. B**). The angled posts with repositioning hexagon are available with angles of 15° and 25° (**Img. C**).



prosthetic component ø	3.30	3.80	4.25	5.00
Pre-made posts Engaging Straight emergence Transgingival h 1.00 mm Fixation screw included	**A-MD-330-1** 	**A-MD-380-1** 	**AS-MD-425-1** 	**AS-MD-500-1** 
Pre-made posts Engaging Straight emergence Transgingival h 2.00 mm Fixation screw included	**A-MD-330-2** 	**A-MD-380-2** 	**AS-MD-425-2** 	**AS-MD-500-2** 
Pre-made posts Engaging Straight emergence Transgingival h 4.00 mm Fixation screw included	**A-MD-330-4** 	**A-MD-380-4** 	**AS-MD-425-4** 	**AS-MD-500-4** 
Pre-made posts Engaging Anatomical emergence Transgingival h 1.00 mm Fixation screw included	**A-MDR-330-1** 	**A-MDR-380-1** 	**AS-MDR-425-1** 	**AS-MDR-500-1** 
Pre-made posts Engaging Anatomical emergence Transgingival h 2.00 mm Fixation screw included	**A-MDR-330-2** 	**A-MDR-380-2** 	**AS-MDR-425-2** 	**AS-MDR-500-2** 
Pre-made posts Engaging Anatomical emergence Transgingival h 4.00 mm Fixation screw included	**A-MDR-330-4** 	**A-MDR-380-4** 	**AS-MDR-425-4** 	**AS-MDR-500-4** 
Pre-made posts Angled at 15° Engaging Straight emergence Transgingival h 1.75 mm Fixation screw included	**A-MA15-330** 	-	-	-
Pre-made posts Angled at 15° Engaging Anatomical emergence Transgingival h 1.80 mm Fixation screw included	**A-MAR15-330** 	**A-MAR15-380** 	**AS-MAR15-425** 	**AS-MAR15-500** 
Pre-made posts Angled at 25° Engaging Anatomical emergence Transgingival h 1.80 mm Fixation screw included	-	**A-MAR25-380** 	**AS-MAR25-425** 	-
Single pack Pack of 10 pieces Fixation screw Supplied with the posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

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

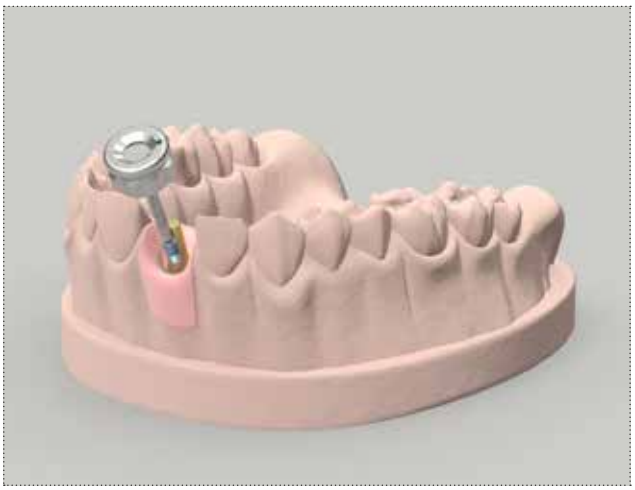
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium on page. 264.

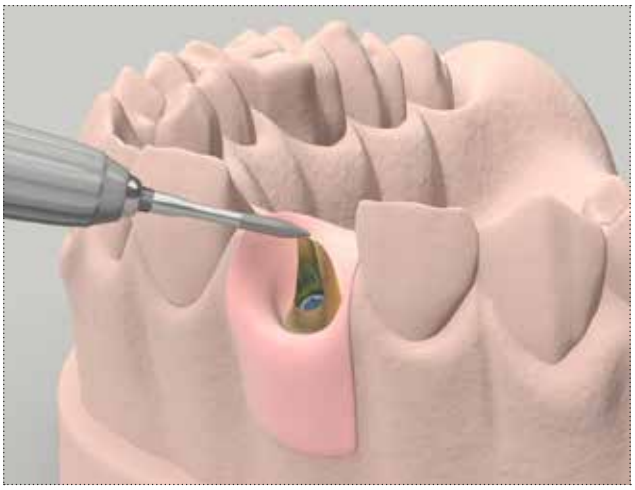
Definitive single cemented rehabilitation with pre-made post

Insert a pre-made engaging post on the precision model, choosing the most suitable transgingival height and any necessary angle at 15° or 25°.
Tighten the post with the specific screw at a maximum torque of 8-10 Ncm.

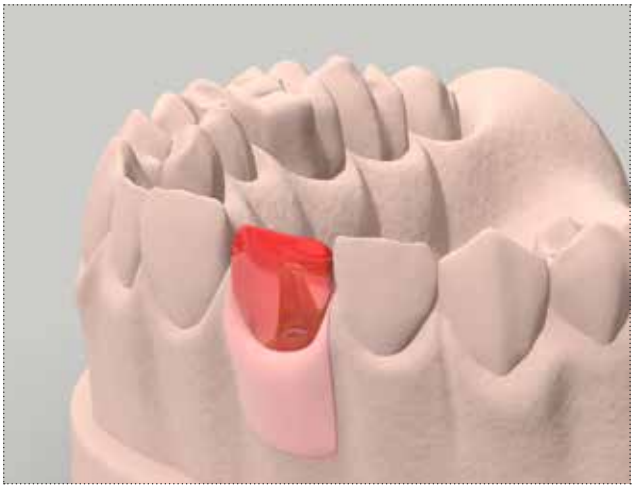
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



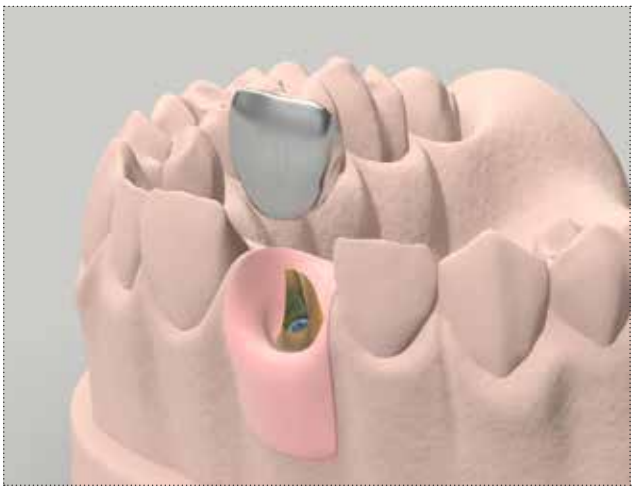
Reduce the height of the post if necessary, and correct its inclination with a suitable drill, without altering the screw head.



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 with a drill.



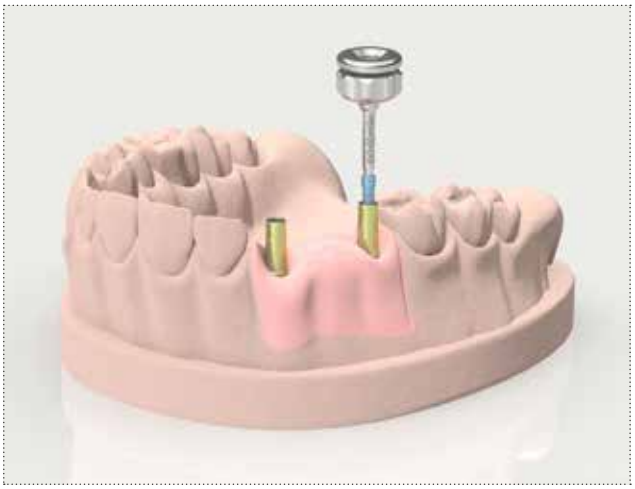
Position the post in the patient's mouth and tighten it with the supplied screw, applying a torque of 20–25 Ncm.

Cover the screw hole, ceramize the final prosthesis as usual and cement the crown on the post, taking care to remove all the excess cement from the margin.

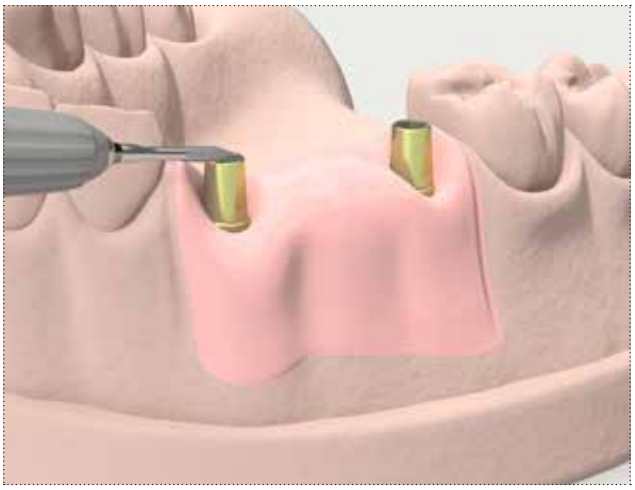
Definitive multiple cemented rehabilitation with pre-made posts

Insert pre-made posts for direct screwing or pre-made engaging posts on the precision model, choosing the most suitable transgingival height and any necessary angle at 15° or 25°.
Tighten the posts with the specific screw at 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.



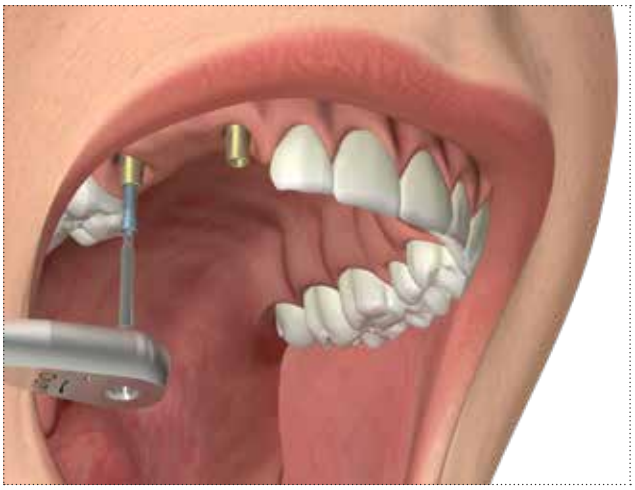
Reduce the height of the posts if necessary, and correct their inclination with a suitable drill, without altering the screw head.



Model the structure on the posts in wax or resin, leaving sufficient space for the cement.

Fabricate the bridge by casting or using CAD-CAM technologies. Test the structure on the model to check that there is no roughness that could obstruct the correct positioning of the bridge on the posts, and correct it if necessary with a drill.

Position the posts in the patient's mouth and tighten them with the supplied screw, applying a torque of 20-25 Ncm in case of engaging posts, and of 25-30 Ncm in case of posts for direct screwing.



Cover the screw holes, ceramize the final prosthesis as usual and cement the bridge on the posts, taking care to remove all the excess cement from the margin.

Definitive rehabilitation with preparable posts

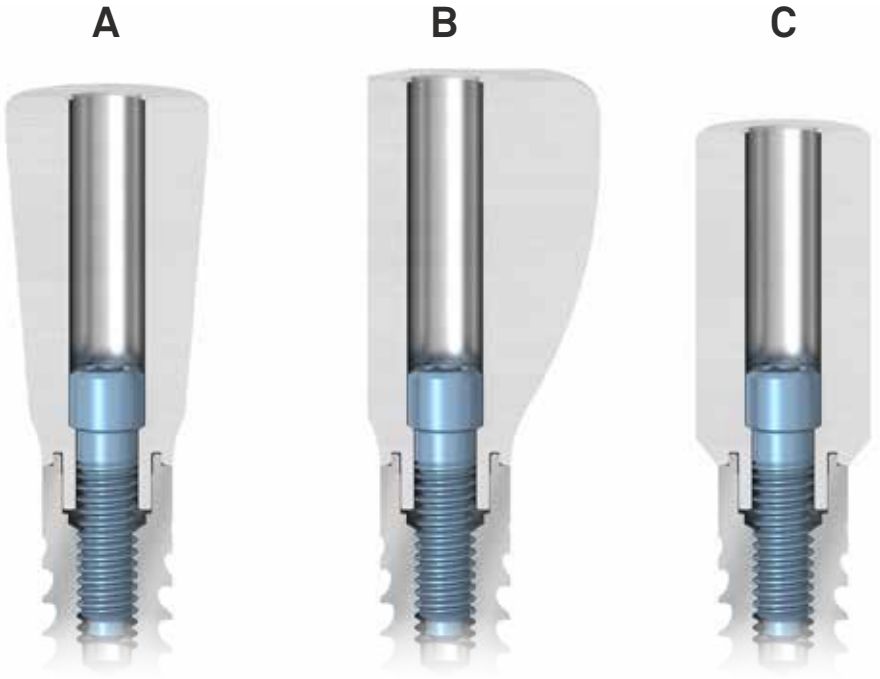
Preparable posts allow for fabrication of cemented protocols both on single crowns and multiple structures, and have been designed in order to satisfy complex anatomical needs in terms both of prosthetic spaces and disparallel implants, thanks to its preparable design.

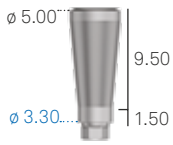
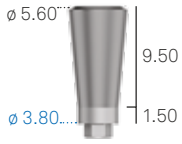
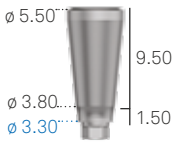
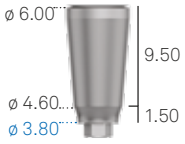
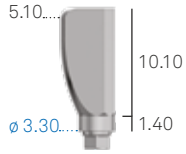
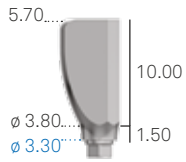
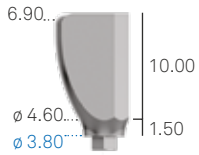
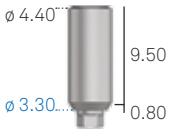
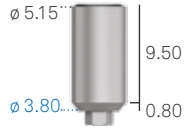
A characteristic profile in the shape of an inverted cone makes these posts ideal for angles of up to 10° and small profiles

SIMPLE posts can be adapted to any anatomy obtained with SIMPLE temporary posts

The geometry of pre-cut preparable posts permits very pronounced angles to be reached, up to 25°, limiting the time of preparation

The preparable posts are available in three different morphologies:
- Straight preparable posts (**img. A**);
- Pre-cut preparable posts (**img. B)**;
- SIMPLE preparable posts (**img. C**);



prosthetic component ø	3.30	3.80	4.25	5.00
Straight preparable posts Engaging Straight emergence Fixation screw included	**A-MF-330** 	**A-MF-380** 	**AS-MF-425** 	**AS-MF-500** 
Straight preparable posts Engaging Anatomical emergence Fixation screw included	**A-MFR-330** 	**A-MFR-380** 	**AS-MFR-425** 	**AS-MFR-500** 
Pre-cut preparable posts Engaging Straight emergence Fixation screw included	**A-MFP-330** 	-	-	-
Pre-cut preparable posts Engaging Anatomical emergence Fixation screw included	**A-MFPR-330** 	**A-MFPR-380** 	**AS-MFPR-425** 	**AS-MFPR-500** 
Simpre preparable posts Engaging Very wide emergence Fixation screw included	**A-MFS-330** 	**A-MFS-380** 	**AS-MFS-425** 	**AS-MFS-500** 
Single pack Pack of 10 pieces Fixation screw Supplied with the posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

Recommended torque for preparable posts: 20-25 Ncm.

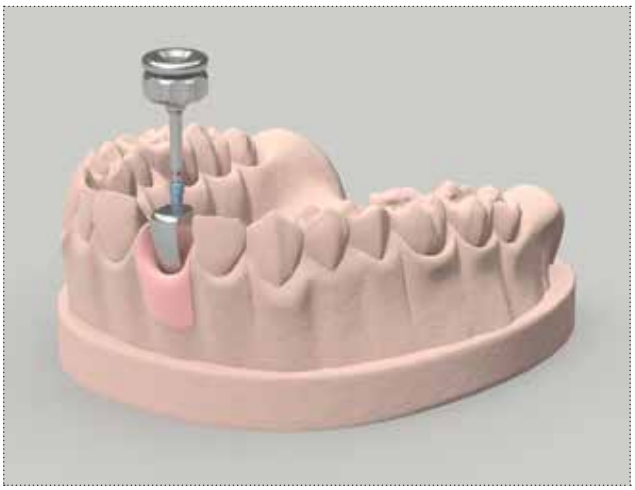
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium on page. 264.

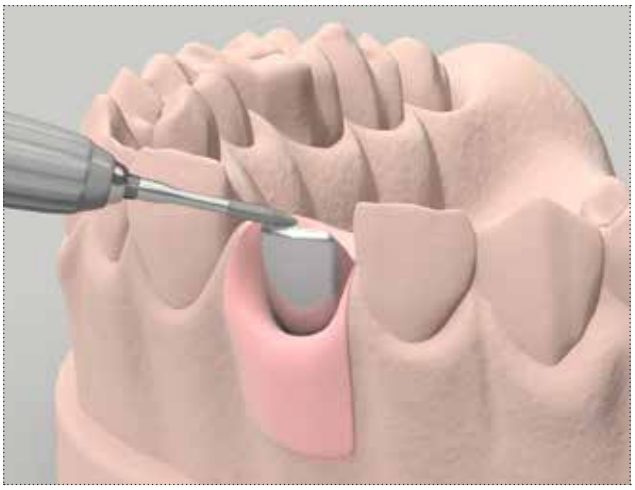
Definitive single cemented rehabilitation with preparable posts

Insert a preparable post on the precision model of the most suitable morphology among the ones available on page 75. The image reports a pre-cut preparable post, which helps to compensate for the natural angle of the maxillary bone. Tighten the post with the specific screw, applying a maximum torque of 8-10 Ncm.

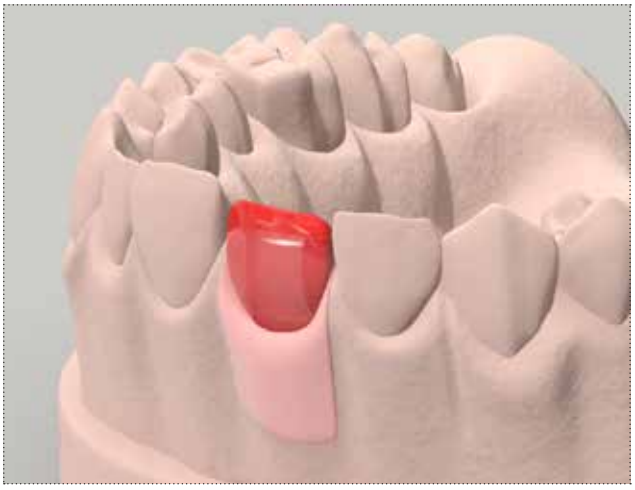
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



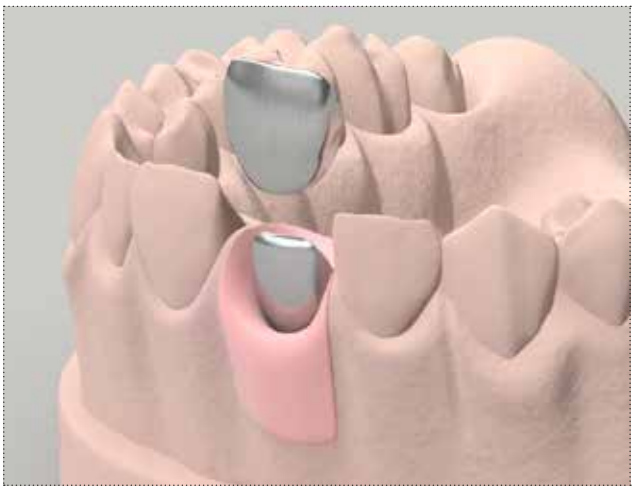
Model the post by reducing it in height and volume, as necessary.



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 with a drill.



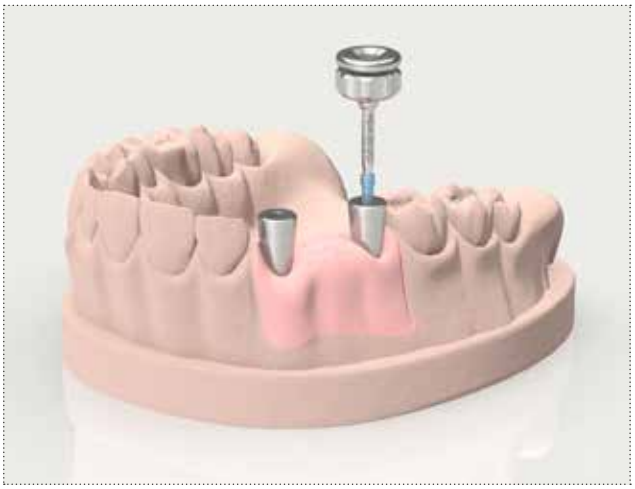
Position the post in the patient's mouth and tighten it with the supplied screw, applying a torque of 20-25 Ncm.

Cover the screw hole, ceramize the final prosthesis as usual and cement the crown on the post, taking care to remove all the excess cement from the margin.

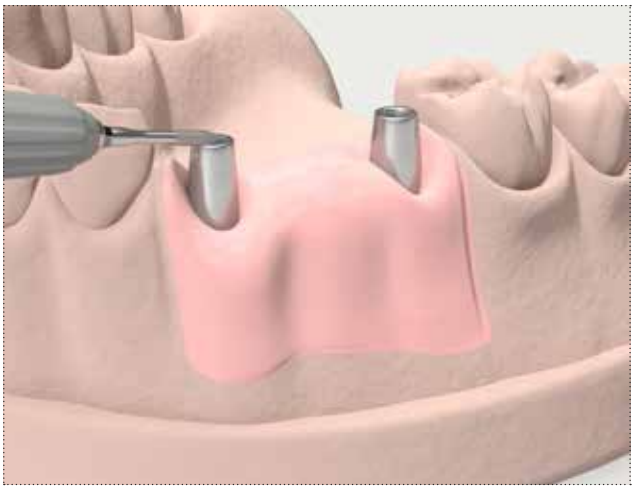
Definitive multiple cemented rehabilitation with preparable posts

Insert the preparable posts on the precision model of the chosen morphology among the ones available on page 75. The image shows the use of straight posts with anatomical emergence.
Tighten the post with the specific screw, applying 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.



Model the posts, reducing them in height and volume, and correct, if necessary, eventual disparallelisms with a parallelometer.



Model the structure on the posts in wax or resin, leaving sufficient space for the cement.

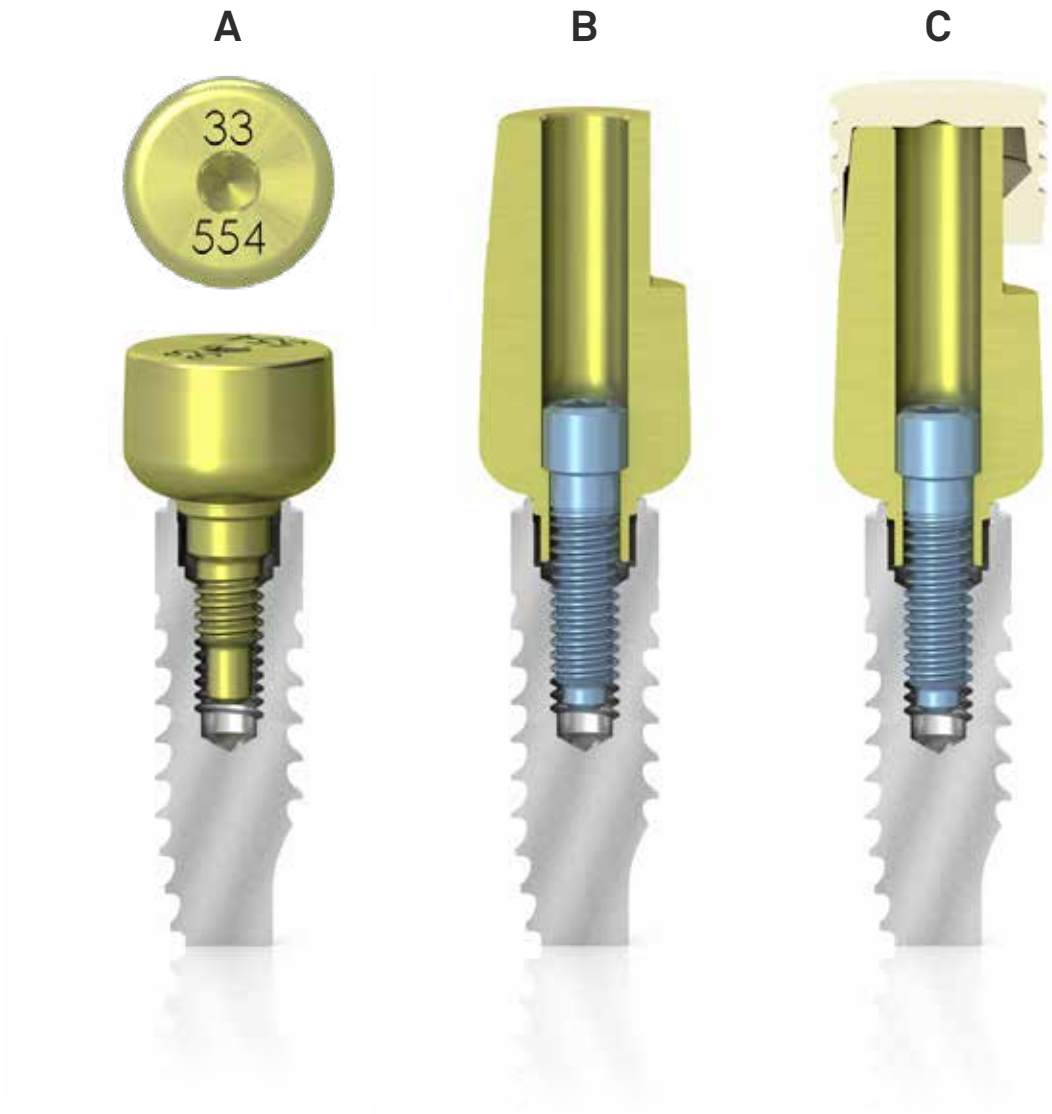
Fabricate the bridge by casting or using CAD-CAM technologies. Test the structure on the model to check that there is no roughness that could obstruct the correct positioning of the bridge on the posts, and correct it if necessary with a drill.

Position the posts in the patient's mouth and tighten them with the supplied screw, applying a torque of 20-25 Ncm.

Cover the screw holes, ceramize the final prosthesis as usual and cement the bridge on the posts, taking care to remove all the excess cement from the margin.

Temporary and definitive rehabilitation with vertical technique

The principles of the vertical technique have been transferred to implantoprosthesis thanks to the fabrication of different prosthetic components, such as the healing abutments, the aesthetic healing abutments, the temporary posts in REEF* resin and the vertical technique posts.
The vertical technique posts are available in a single diameter dimension for Premium One, Kohno One and Shelta implants : the decision to simplify the range has been also supported by the excellent clinical results of the Platform Switching protocols reported in the literature.
For the soft tissues conditioning during the healing phase healing abutments (**img. A**), aesthetic healing abutments and temporary posts in REEF resin are available, whose particular nanostoichiometric conformation allows high resistance to attack by bacteria and to plaque adhesion, facilitating the healing phase. The standard healing abutments present a laser marking on the upper surface which reports the connection diameter, the flare of the healing abutment and the transgingival height. Preparable posts for the definitive rehabilitation are available (**img. B**) on which it is possible to take the impression using a cap, the same for all the systems and diameters (**img. C**). The head of the post mates at the end with the cap, allowing maximum fit and repositioning of the posts in the impression for the development of the model.



**REEF resin may not be released for sale in all markets.*

According to the principles of the vertical technique a simplified line has been developed that allows you to have only one posts for Premium One, Kohno One and Shelta platforms. This is possible thanks to the particular design of the connection, different from the classic connection, which allows it to rest safetly on the platform of the centring collar.

Shelta ø 3.80

Shelta ø 4.25

Shelta ø 5.00

Shelta ø 6.00

Premium One ø 3.30

Premium One ø 3.80
Kohno One ø 3.80

Premium One ø 4.25
Kohno One ø 4.25

Premium One ø 5.00
Kohno One ø 5.00

prosthetic component hexagon	2.30
Vertical technique healing abutments	**A-TMG-MEFL-330** 
Temporary posts in REEF resin Engaging Fixation screw included	**A-PPF-330-EX** 
Temporary posts in REEF resin Non engaging Fixation screw included	**A-PPF-330** 
Vertical technique preparable posts in titanium Fixation screw included	**A-MEFL-330** 
Pack of 5 pieces Cap for vertical technique taking impressions	**CAP-MEFL-5** 
Single pack Pack of 10 pieces Fixation screw Supplied with the posts, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 

Recommended torque for vertical technique healing abutments and REEF resin posts: 8-10 Ncm.
Recommended torque fortitanium vertical technique posts: 20-25 Ncm.

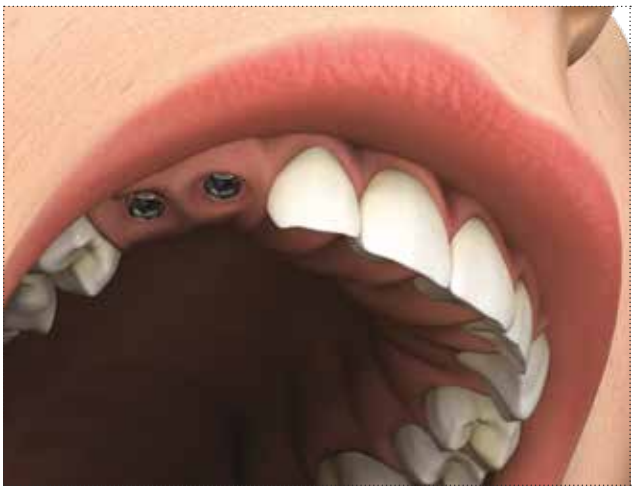
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

 See technical characteristics of Gr. 5, PEEK and REEF on pages 264 and 265.

Tissues conditioning with healing abutments

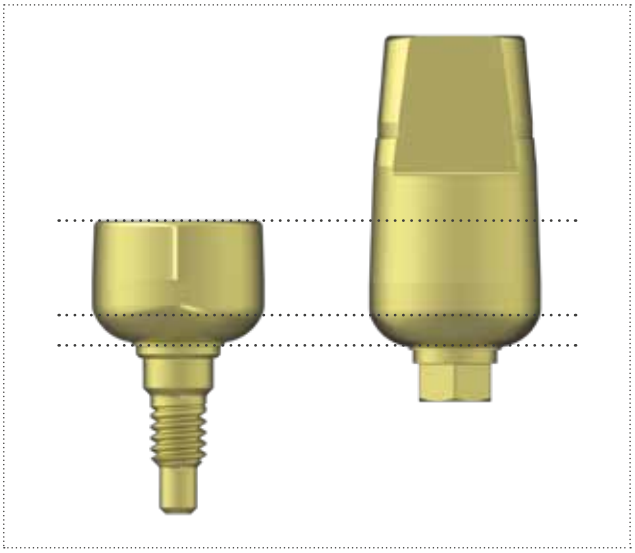
When inserting the implants, if the treatment plan allows it, it is opportune to allow the tissues to take shape around anatomically studied morphologies to maximise the amount of keratinised tissue adhering to the prosthesis.

It is possible to condition the soft tissues around the implants in the post-operative stage with vertical technique healing abutments that redefine the emergence of the vertical technique posts and thus keep the gum in a favourable position for them to adapt to the final post.



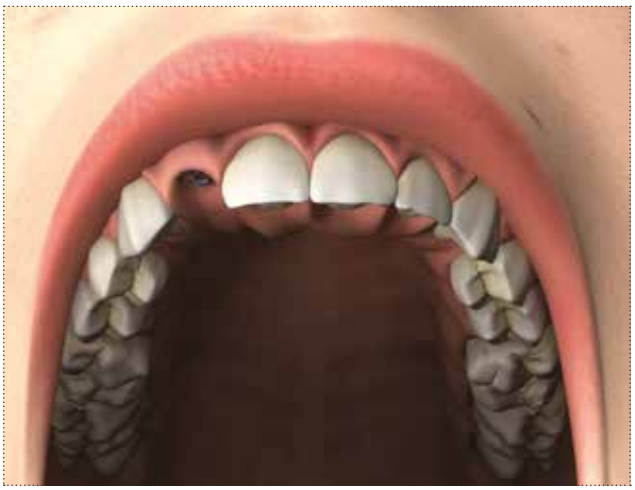
The vertical technique healing abutments are screw retained onto the implant with a screwdriver of the HSM series.
The recommended torque is 8-10 Ncm.

The vertical technique healing abutments are available with height of 4.00 mm. The shape of the profile, which is convex, makes them adaptable to all the different thicknesses of soft tissues. The subsequent centric reduction of the post will allow the mucosae to also occupy the additional space at their disposal, avoiding phenomena of excessive compression or tissues ischemia.



Temporary single screw retained rehabilitation - direct method

Vertical technique temporary posts in REEF resin are available with a reduced size, on which a moulded prosthesis made in the laboratory can be easily fixed chair-side. The advantages are the bond of acrylic on acrylic and the absence of dyschromia due to metal cylinders.



Screw the temporary vertical technique post in REEF resin onto the implant and leaving it initially at the original length.
The recommended torque is 8-10 Ncm.

Insert on the 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 temporary crown to the vertical technique post and wait for polymerization as indicated by the instructions.

Once polymerization is completed proceed to the filling with resin of the whole space between the pre-made crown and the in REEF resin temporary post.

Finish the temporary prosthesis both in its occlusal portion, eliminating the excess of the temporary post, and in the apical portion, according to the shapes of the emergence profiles.

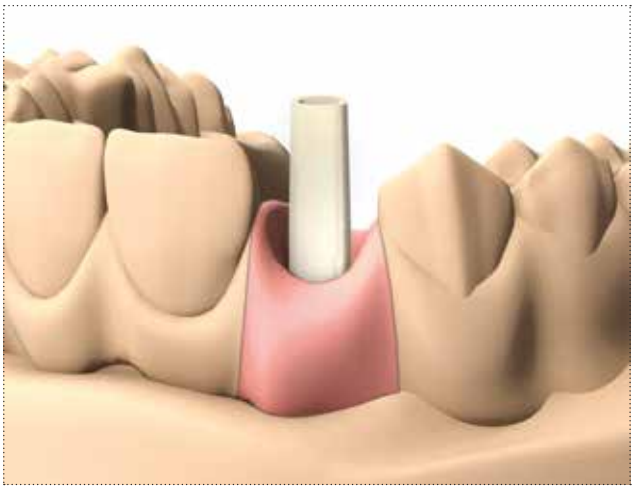
Screw the temporary prosthesis with the supplied screw and a screwdriver of the HSM series. The recommended torque must not exceed 8-10 Ncm.

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.

Temporary single screw retained rehabilitation - indirect method

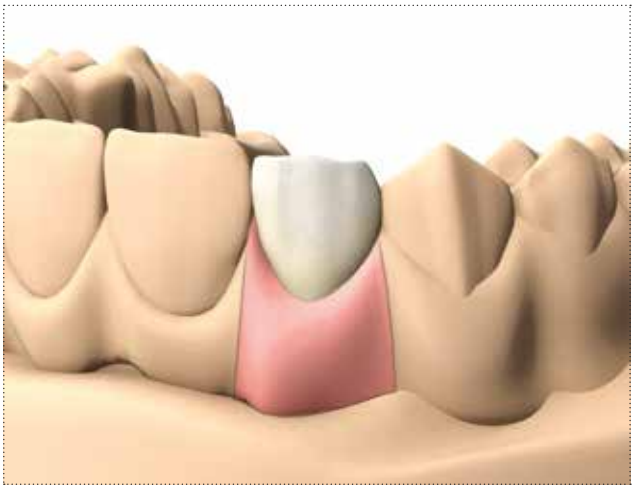
The fabrication of the temporary prosthesis can take also place in the laboratory, on the model.

Insert the engaging vertical technique temporary post in REEF resin on the model.



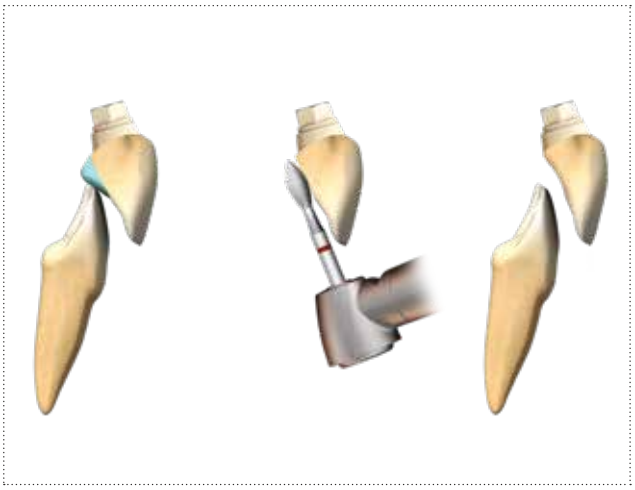
Reduce the post to a size compatible with the patient's vertical dimension with an abrasive disk.

Produce the screw retained crown according to the traditional procedures.



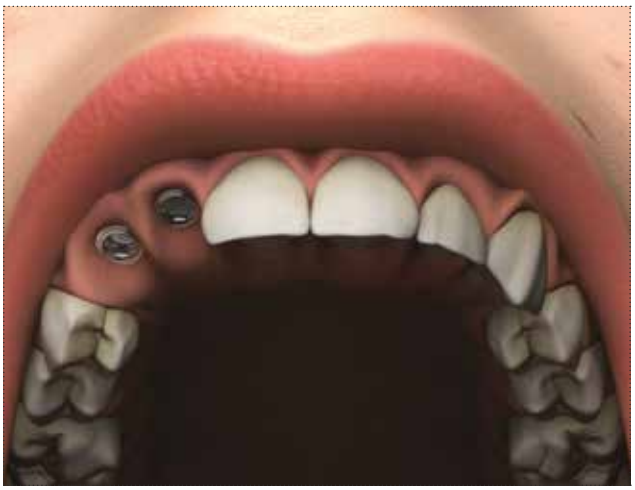
Reduce the finished element, to prevent it causing occlusal interference when it is inserted in the patient's mouth.

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



Temporary multiple screw retained rehabilitation - direct method

For bridges in the frontal sectors, where the spaces are limited but the need for an aesthetic temporary post is even greater, vertical technique temporary posts in REEF resin are available with a reduced size, on which a moulded prosthesis made in the laboratory can be easily fixed chair-side. The advantages are the bond of acrylic on acrylic and the absence of dyschromia due to metal cylinders.

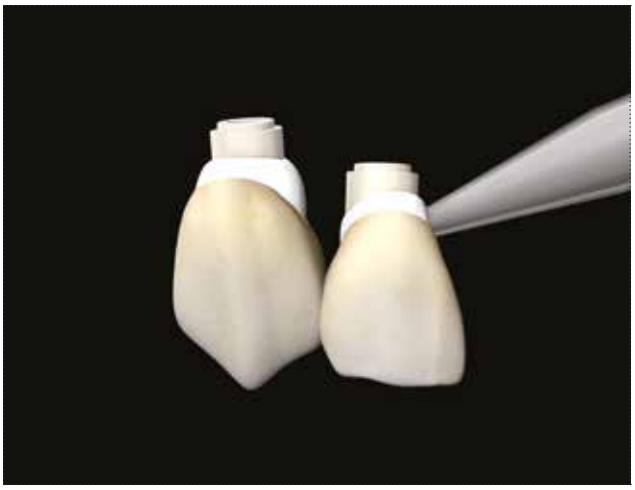


Screw the temporary vertical technique posts in REEF resin onto the implants. The recommended torque is 8-10 Ncm.

Insert on the posts a pre-made bridge made in the laboratory and pierced so as to allow it to slide easily on the cylinder body in resin. In the case of undercuts or difficulties in insertion, it is recommended to widen the access hole, possibly avoiding intervention on the vertical dimension of the posts.

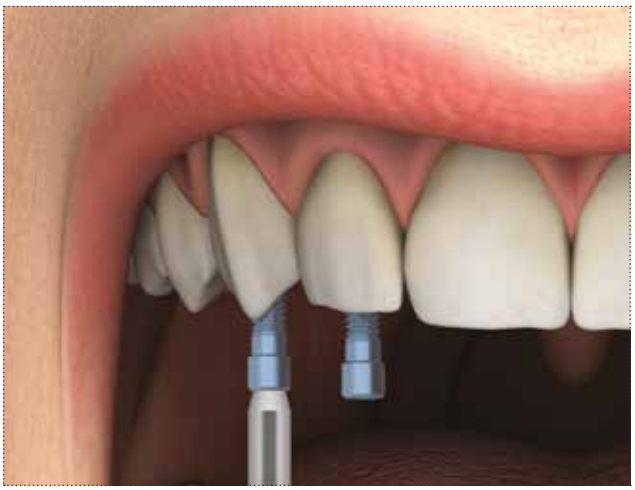
Fix with resin the pre-made bridge to the vertical technique temporary posts and wait for polymerization as indicated by the instructions.

Remove the pre-made bridge including the temporary posts in REEF resin and proceed to fill with resin the whole space between the pre-made bridge and the posts.



Finish the temporary prosthesis both in its occlusal portion, eliminating the excess of the temporary post, and in the apical portion, according to the shapes of the emergence profiles.

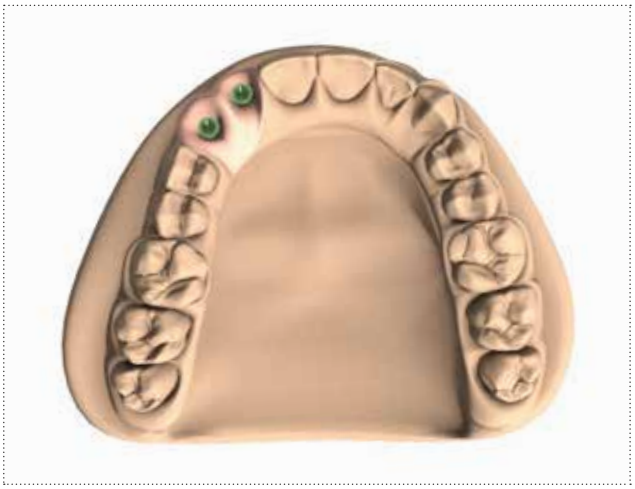
Screw the temporary prosthesis with the supplied screw and a screwdriver of the HSM series. The recommended torque must not exceed 8-10 Ncm.



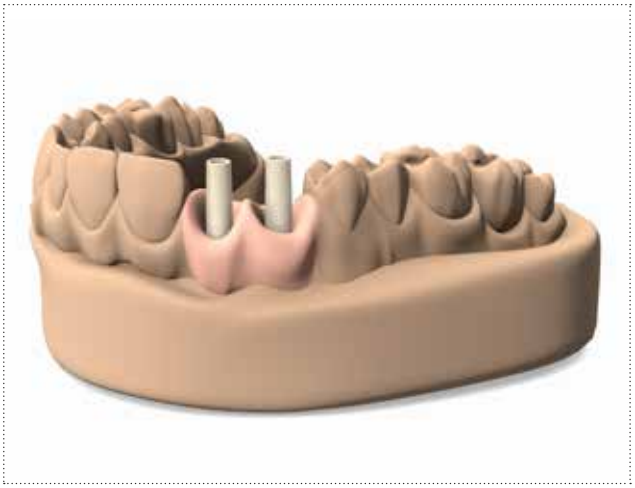
The temporary bridge will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation of the soft tissues that will later receive the definitive prosthesis with excellent aesthetic results.

Temporary multiple screw retained rehabilitation - indirect method

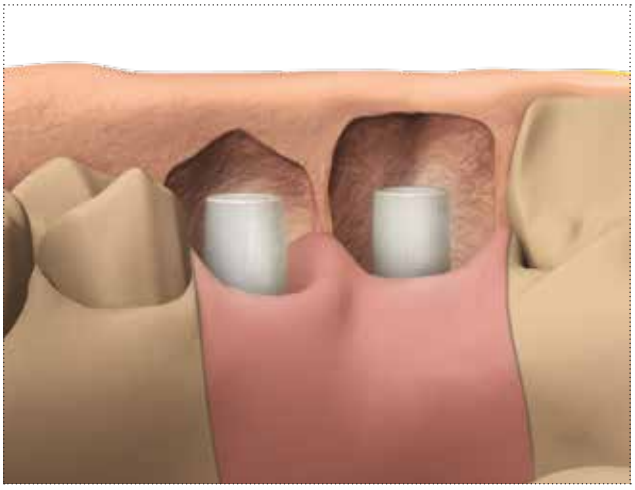
The fabrication of the temporary prosthesis can take also place in the laboratory, on the model.



Insert the vertical technique temporary posts in REEF resin on the model.



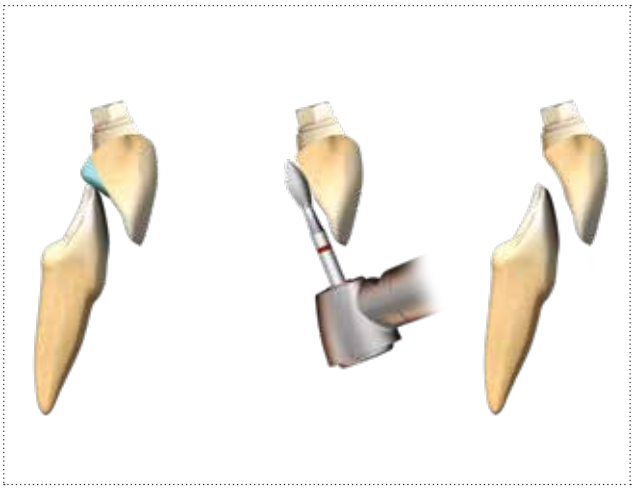
Reduce the posts to a size compatible with the patient's vertical dimension with an abrasive disk.



Produce the crowns or the bridge according to the traditional procedures.

Reduce the finished elements, to prevent them causing occlusal interference when they are 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.



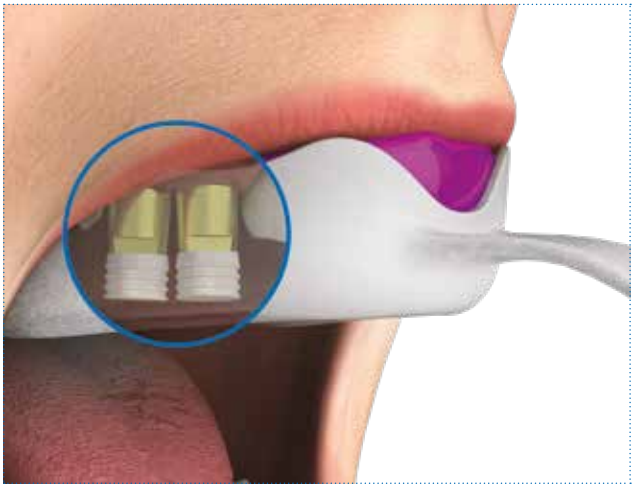
Impression phase on vertical technique post

Remove the vertical technique healing abutments and screw the vertical technique preparable posts in the patient's mouth, using a screwdriver of the HSM series.

Position the caps CAP-MEFL-5 for taking the impression on the top of vertical technique posts with a light pressure, until feeling the end stop. The caps mate accurately, so the impression is very precise and prevent silicone getting into the hole for the passing screw, therefore it is not necessary to use wax to close the passage.

Inject an impression material around the vertical technique posts.

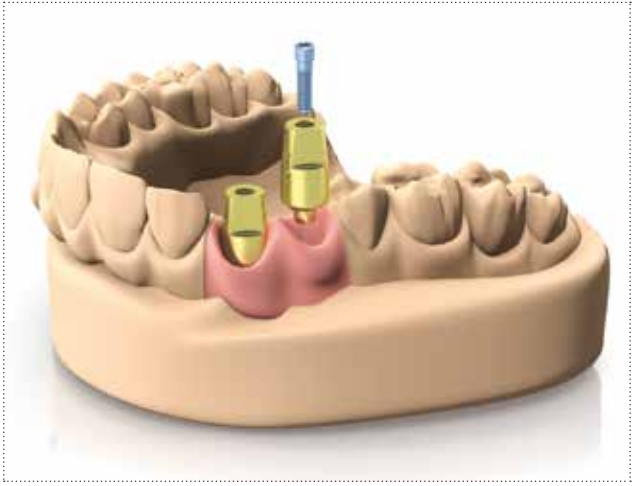
Fill the impression tray with a more consistant impression material and then position it in place: check that the entire vertical section of the vertical technique preparable posts is contained in the impression material.



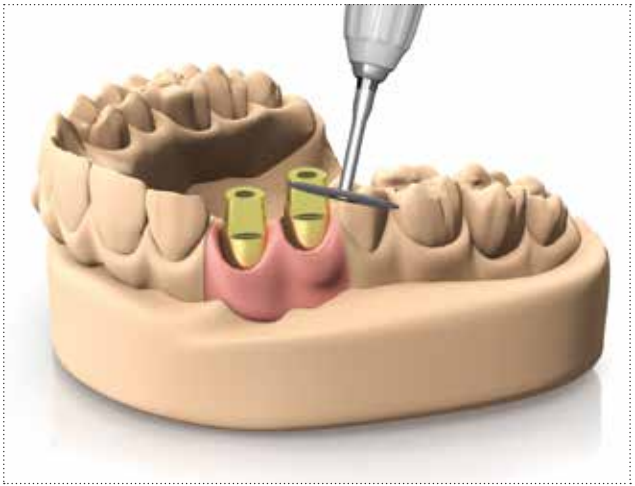
Wait for the hardening times as indicated by the instructions. Remove the tray: the vertical technique caps will remain in the impression material.

Reposition the vertical technique posts tightened to the implant analogs inside the caps, guiding them along the repositioning face as far as the end stop.
The repositioning faces and the exact end stop on the top of the posts will allow all the information collected by the impression to be reported correctly to the laboratory.
Develop the model as usual.

Tighten the vertical technique posts on the model with the specific screw.



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



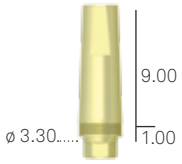
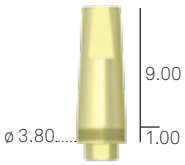
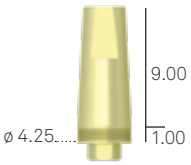
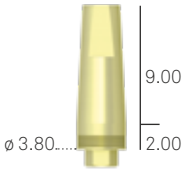
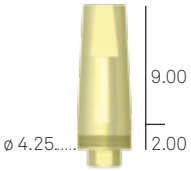
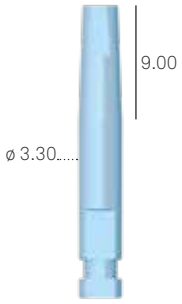
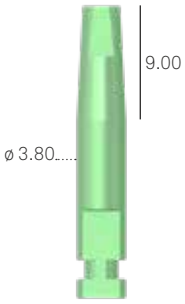
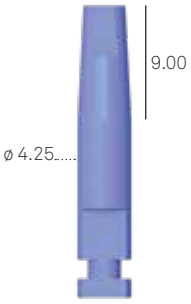
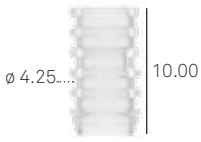
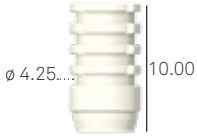
Proceed to modelling and finalization of the prosthetic restoration, whether it is a crown or a bridge.

Important warning
It is recommended to use a new screw for fixing the prosthesis in the patient's mouth. The recommended tightening torque is 20-25 Ncm.

XA abutments for cemented restorations

XA abutments for cemented restoration, made of Gr. 5 titanium, are designed for cemented restorations according to the One Abutment-One Time technique, in which the XA abutments are tightened into the patient's mouth. Their form and position are reproduced in the laboratory model with great precision, thanks to a transfer and a dedicated analog.
XA abutments are available with diameters of 3.30, 3.80 and 4.25 to permit Platform Switching on in all available prosthetic platforms.

XA abutments for cemented restorations

prosthetic component ø	3.30	3.80	4.25
Premade XA abutment Engaging Transgingival h 1.00 mm Fixation screw included	**SH-MD-F-330-1** 	**SH-MD-F-380-1** 	**SH-MD-F-425-1** 
Premade XA abutment Engaging Transgingival h 2.00 mm Fixation screw included	**SH-MD-F-330-2** 	**SH-MD-F-380-2** 	**SH-MD-F-425-2** 
Single pack Pack of 10 pieces Fixation screw with conical support	**L-VMS-180** **L-VMS-180-10** 	Use L-VMS-180	Use L-VMS-180
Analog for premade XA abutments for cemented restorations	**SH-ANA-MD-F-330** 	**SH-ANA-MD-F-380** 	**SH-ANA-MD-F-425** 
Transfer for premade XA abutments for cemented restorations	**SH-TRA-MD-F-330** 	**SH-TRA-MD-F-380** 	**SH-TRA-MD-F-425** 
PEEK cap for premade XA abutments for cemented restorations	**SH-CP-MD-F-330** 	**SH-CP-MD-F-380** 	**SH-CP-MD-F-425** 

Recommended torque for definitive fastening of fixation screws: 20-25 Ncm.

Note: *The ø 3.30 mm prosthetic components allow prosthetic Platform Switching with ø 3.80 mm implants. It is recommended to use these posts exclusively for single crowns in front sectors (excluding premolars), and only as a support for multiple restorations in distal sectors. The ø 3.80 mm prosthetic components are compatible with ø 3.80 mm, ø 4.25 mm and ø 5.00 mm implants. They do not allow prosthetic Platform Switching on ø 3.80 mm implants; they allow prosthetic Platform Switching on ø 4.25 mm and ø 5.00 mm implants.*

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 and PEEK at pages 264, 265 and 266.

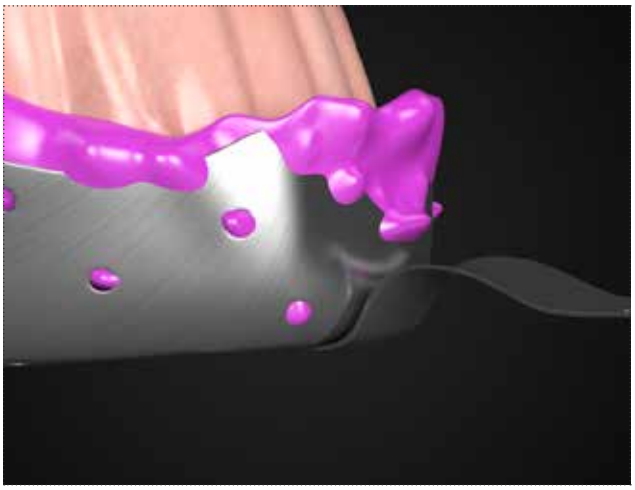
Prosthetic protocol for XA cemented restorations

Immediately after the surgical placement or after a suitable bone healing time, XA abutments are tightened to the implants at 20-25 Ncm.

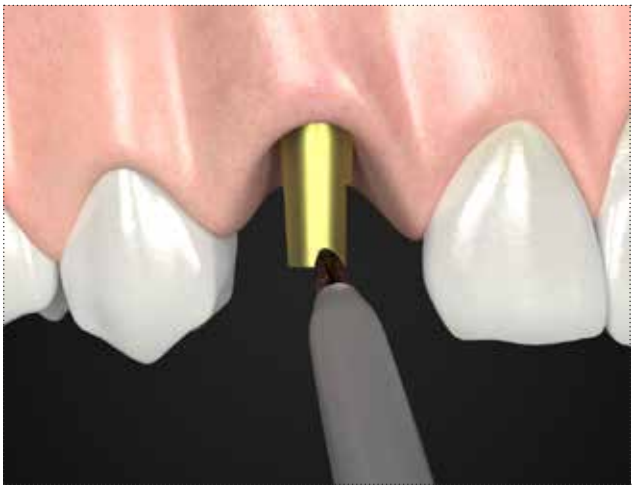
Important warning
XA abutments are supplied in non-sterile packs. Before being used clinically, they must be sterilized.

Insertion of the PMMA SH-TRA-MD-F sleeve guiding it on the flat face of the abutment.

Closed tray impression is taken completely including the PMMA sleeve. Alternatively, the impression can be taken directly onto the abutment, as it was a natural tooth. In this case the use of silicon is highly recommended, as polyether could be too hard at the moment of the tray removal.



If necessary, the abutment can be reduced to a size compatible with the patient's vertical dimension: the abutment can be cut either into the patient's mouth, if the clinical conditions allow it, or in an analog used as holder for the cutting phase. In this case, mark the desired height, unscrew the the abutment from the implant and fasten it to the analog-holder.

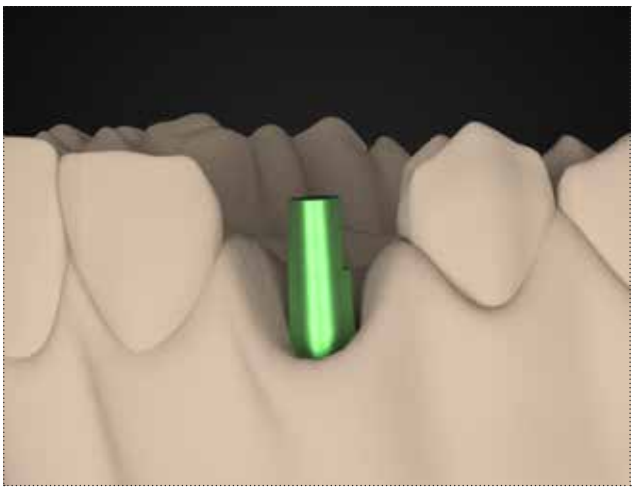


When the abutment is cut extraorally, it is much easier to cut it precisely and to refine the edges in order to eliminate possible remnants.
A new PMMA sleeve is carefully positioned onto the abutment and reduced accordingly, either into the patient's mouth or extraorally.
This way it will be useful as a cutting template for the laboratory.

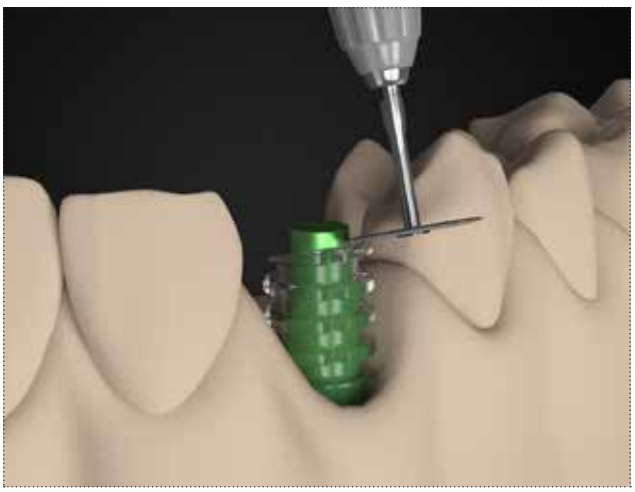
During the healing phase a direct provisional crown made by the laboratory can be temporarily cemented to the abutment.
Otherwise a PEEK sleeve SH-CP-MD-F is available to be luted to a hollowed crown, with the same post diameter.

The laboratory receives the impression, which includes the first
PMMA sleeve well retained into the impression material, the analog of the abutment and the cutting template, that is the second PMMA sleeve previously cut.

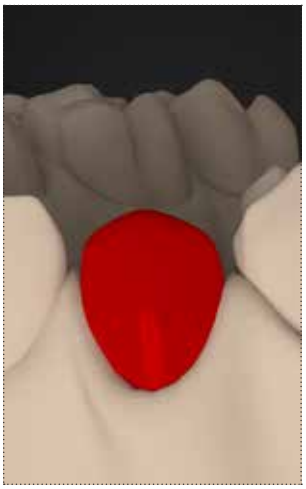
The model is cast, with the analog of the abutment accurately placed inside the PMMA sleeve.



The analog of the abutment is accurately reduced with the aid of the PMMA template.



If the impression was taken without the aid of the PMMA sleeve, epoxy resin is highly recommended to cast the model.
The wax up for the final crown is built up onto the PMMA template. The crown margin should be placed below the soft tissue margin (average 1 mm). This can be easily achieved by ditching 1 or more mm of resin around the abutment.



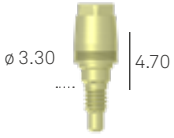
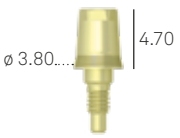
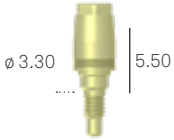
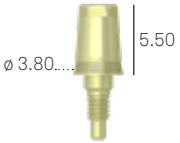
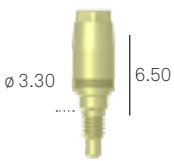
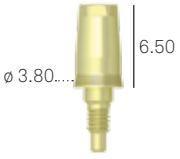
The wax up is cast or duplicated by CAD-CAM methods as per abitual procedure, tried in the mouth and the crown finalized.

The crown can be cemented onto the XA abutment, left in the patient's mouth during the healing and maturing process of soft tissues.

XA abutments for screw retained restorations

XA abutments, with a feather-edge morphology, offer several prosthetic possibilities of exploiting the biological benefits of the XA concept, from temporary to final restorations. As with the range of cemented abutments, the ones for screw retained procedures should be used according to the One Abutment-One Time technique, in which the XA abutments are tightened into the patient's mouth without being removed.
Their form and position is reproduced in the laboratory model with great precision, thanks to a transfer and a dedicated analog.
With the posts of 3.30 and 3.80 diameter is possible to obtain Platform Switching onto all the platforms with wider diameter and simpllify the prosthetic procedures.

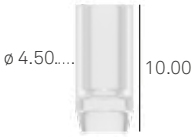
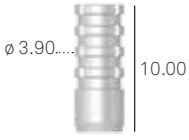
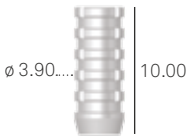
XA abutments for screw retained restorations

ø prosthetic component	3.30 mm	3.80 mm
for implants ø	3.30 - 3.80	3.80 - 4.25 - 5.00
Intermediate abutment XA h. 4.50 mm	**A-ABU-F-TS-330-4** 	**SH-ABU-F-TS-380-4** 
Intermediate abutment XA h. 5.50 mm	**A-ABU-F-TS-330-5** 	**SH-ABU-F-TS-380-5** 
Intermediate abutment XA h. 6.50 mm	**A-ABU-F-TS-330-6** 	**SH-ABU-F-TS-380-6** 

Recommended torque for intermediate abutment XA: 25-30 Ncm.

XA abutments for screw retained restorations

description	code
Analog for XA intermediate abutments	**SH-ANABU-F-380** 
Transfer for XA intermediate abutments Transfer screw included	**SH-TRABU-F-380** 
Single pack Transfer screw	**SH-VTRABU-F-200** 
Healing cap in PEEK for XA intermediate abutments	**SH-CG-ABU-F-380** 

description	code
Castable sleeve for XA abutments Engaging Fixation screw included	**SH-CCABU-F-380** 
Castable sleeve for XA abutments Non engaging Fixation screw included	**SH-CCABU-F-380-ROT** 
Titanium sleeve for XA abutments Engaging Fixation screw included	**SH-CTABU-F-380** 
Titanium sleeve for XA abutments Non engaging Fixation screw included	**SH-CTABU-F-380-ROT** 
Prosthetic screw for XA superstructures	**A-PLAIN-VP200** 
Conoweld cap for luting technique	**CAP-TS-DEF** 

Recommended torque for structures on abutments for direct screwing: 20-25 Ncm

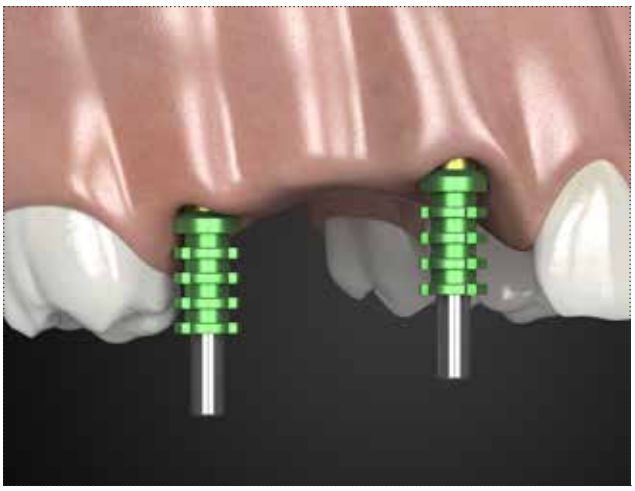
See technical characteristics of Gr. 5 titanium, PMMA and PEEK at pages 264, 265 and 266.

Screwed bridge with XA abutments: impression and temporary prosthesis

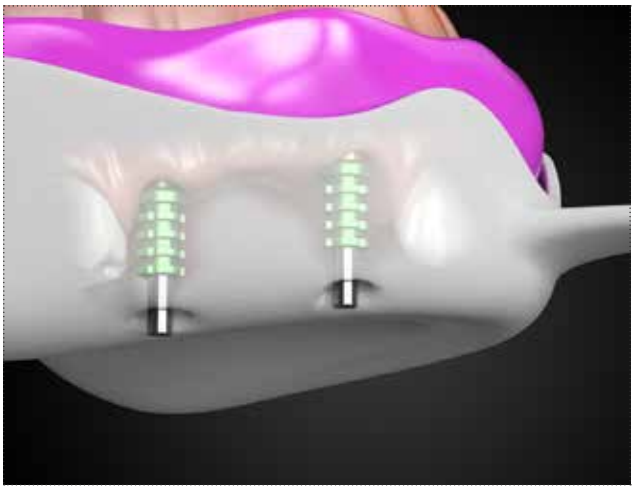
Immediately after the surgical placement or after a suitable bone healing time, XA abutments for screw retained restorations are tightened to the implants at 25-30 Ncm, using a screwdriver of the HSM series (see pages 27-28).
Please, pay attention and choose the proper height (4.50 - 5.50 - 6.50 mm) as these abutments must not be cut or modified.

Important warning
XA abutments are supplied in non-sterile packs.
Before clinical use they must be sterilized in an autoclave.

SH-TRABU-F-380 transfers are fixed onto the abutments and tightened through the screw SH-VTRABU-F-200.

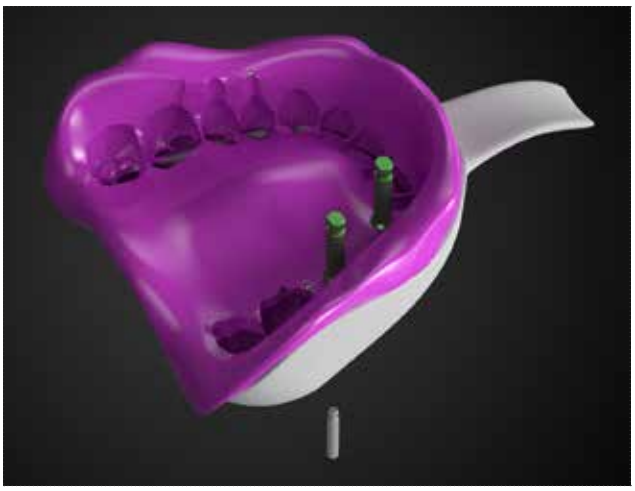


Impression is taken with an open tray, properly customized by the laboratory.



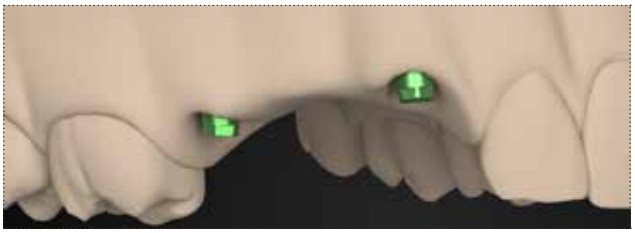
While waiting for the temporary or final bridge to be delivered, the abutments must be protected by PEEK caps (cod. SH-CG-ABU-F-380), fastened with the screw and tightened with a torque of 8-10 Ncm.

The laboratory receives the impression tray and the analogs of the abutments. These are positioned properly and fastened with the SH-VTRABU-F-200 screw to the transfers before pouring the model.

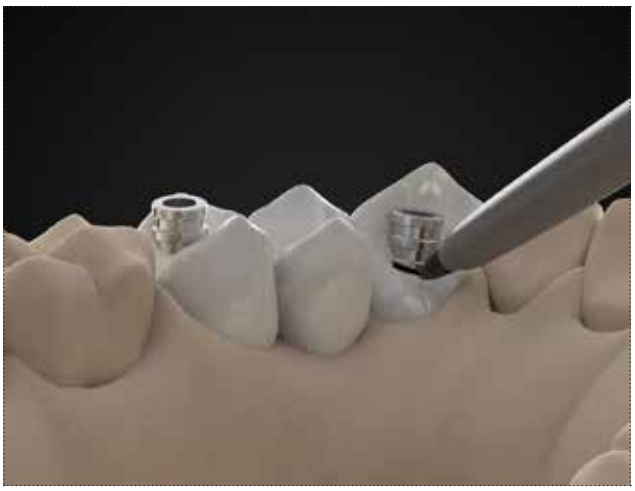


For the temporary bridge production, titanium temporary abutments SH-CTABU-F-380-ROT are tightened to the analogs by means of the A-PLAIN-VP200 screws.
The recommended torque is 8-10 Ncm.

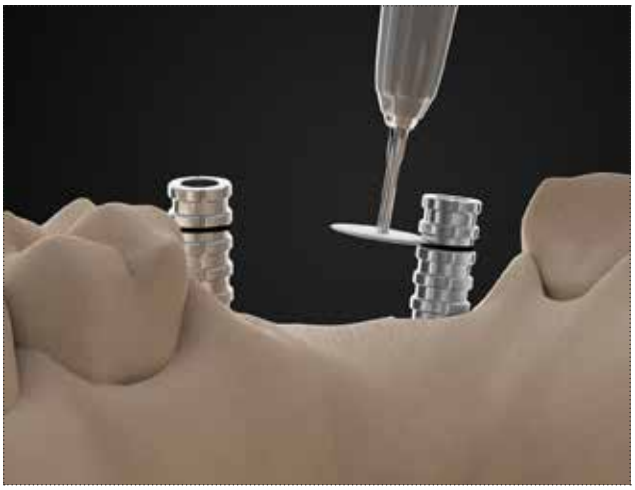
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



On the temporary abutments a pre-made pre-holed resin bridge is inserted. Mark the palatal and the vestibular margin on the titanium sleeves in order to shorten them, if necessary.



Remove the temporary bridge and cut the titanium sleeves to an adequate height, using a cutting disc or any other suitable tool.



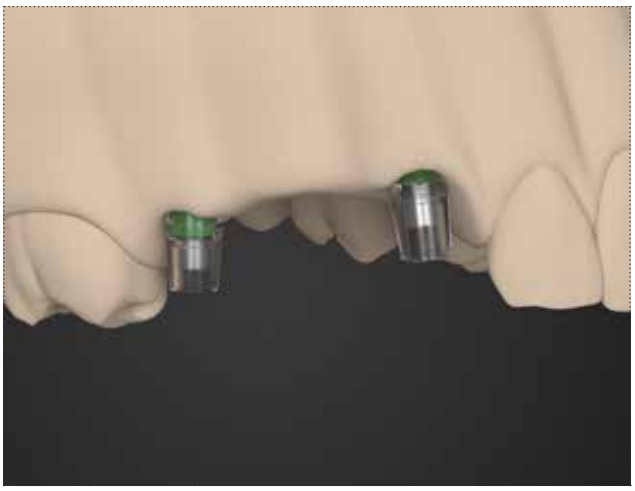
Reline the pre-made bridge to the titanium sleeves.

Now the temporary bridge can be assembled to the XA abutments into the patient's mouth, fastening the screws at 20-25 Ncm.

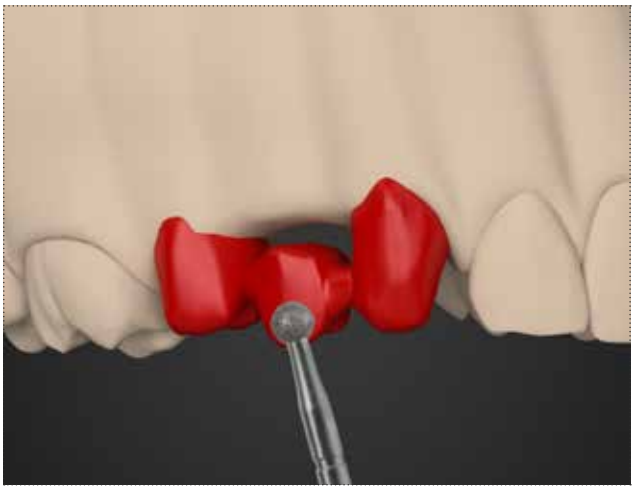
Screw retained bridge with XA abutments: final prosthesis

SH-CCABU-380-ROT rotating castable sleeves are fixed at 8-10 Ncm on top of the abutments with A-PLAIN-VP200 screws.

The castable sleeves are remodelled as needed.



The wax up for the final bridge is built up on to the reduced sleeves. To maximize the esthetic outcome the margin should be placed below the soft tissue margin (1 mm average).
This can be easily achieved by ditching 1 mm of resin around the abutment.



The wax up is cast or duplicate with CAD-CAM methods as per normal procedure.
Then the bridge is checked into the patient's mouth.

After verifying that the framework fits passively, the bridge can be finalized assembling it to the XA abutment left in the patient's mouth during the healing and maturing process of soft tissues, and fastening the screws at 20-25 Ncm.

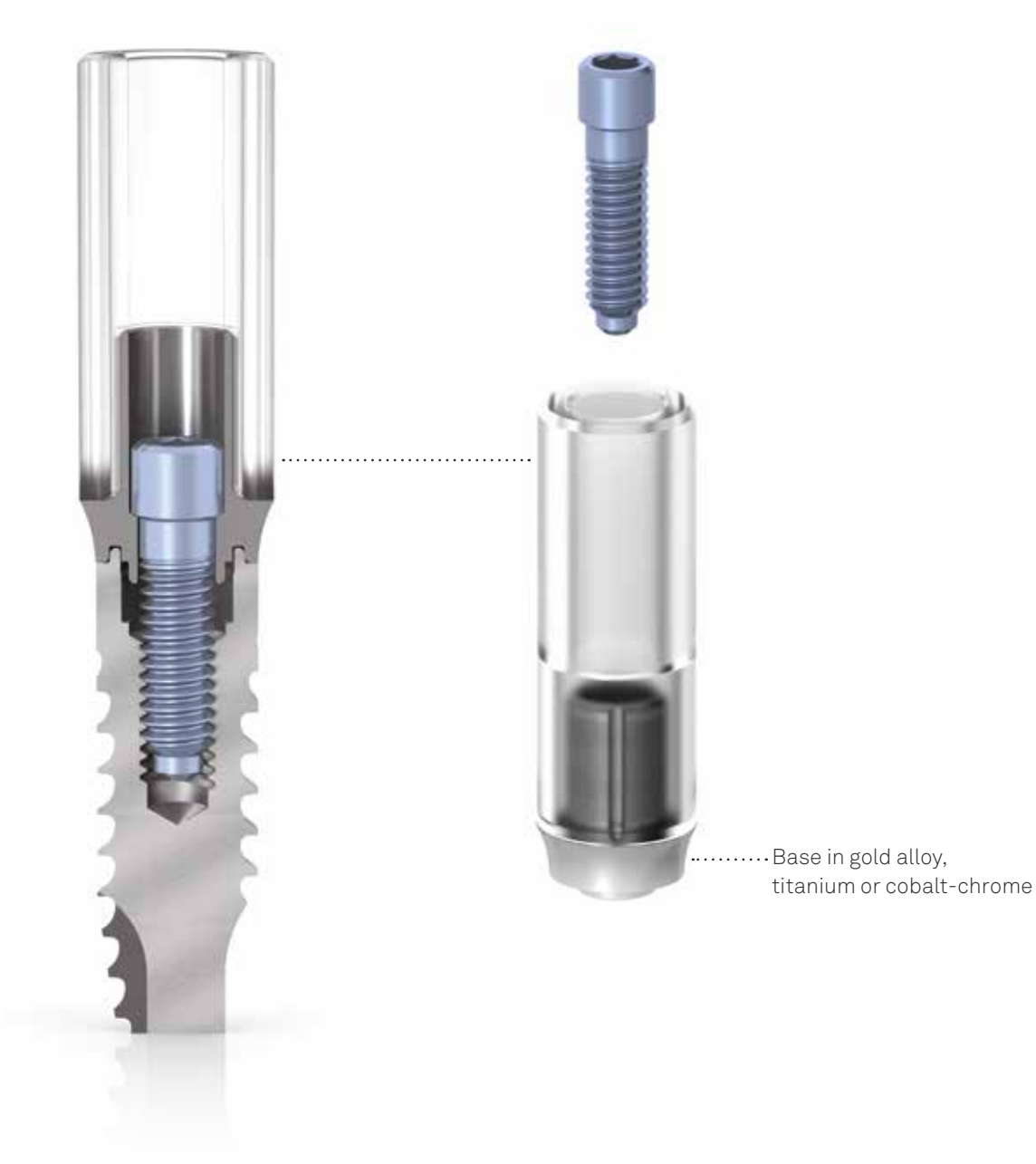
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

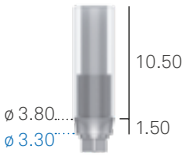
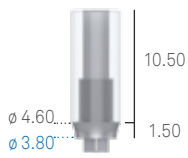
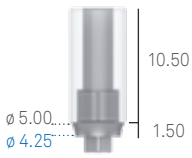
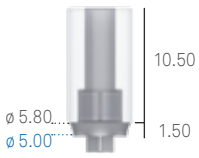
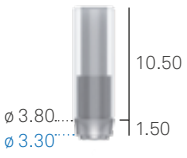
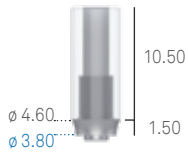
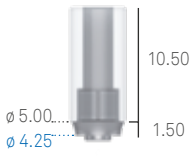
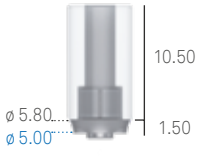
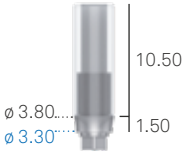
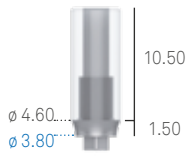
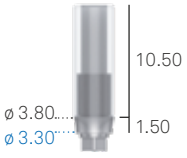
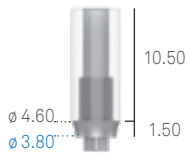
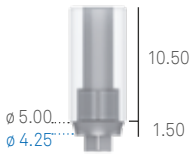
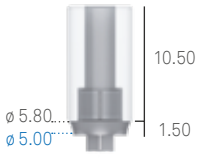
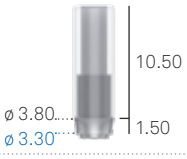
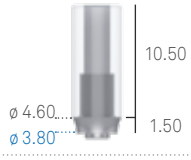
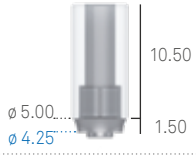
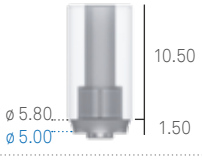
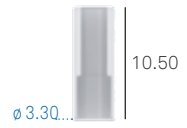
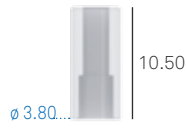
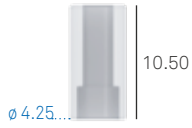
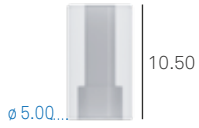
Definitive rehabilitation with castable posts with a metal base

Sweden & Martina produces posts of various types with a castable portion and a metal base for overcasting, suitable for the production of prosthetic solutions for single crowns, screw retained Toronto bridges and conventional Implant bridges, depending on the vertical height to be recovered:

- Castable posts in PMMA with base in gold alloy;
- Castable posts in PMMA with base in titanium;
- Castable posts in PMMA with base in cobalt-chrome.

The castable posts in PMMA with a metal base allow for the production of single crowns or bridges by overcasting (see advices for overcasting base alloys on page 270).
The recommended torque for the final fastening of the posts after the casting and the overcasting is 20-25 Ncm.



prosthetic component ø	3.30	3.80	4.25	5.00
Castable posts with a pre-made base in **gold alloy "1"** Engaging Anatomical emergence Fixation screw included	**A-UCR-330-EX** 	**A-UCR-380-EX** 	**AS-UCR-425-EX** 	**AS-UCR-500-EX** 
Castable posts with a pre-made base in **gold alloy "1"** Non engaging Anatomical emergence Fixation screw included	**A-UCR-330** 	**A-UCR-380** 	**AS-UCR-425** 	**AS-UCR-500** 
Castable posts with a pre-made base in **titanium** Engaging Anatomical emergence Fixation screw included	**A-UCTR-330-EX** 	**A-UCTR-380-EX** 	Use A-UCTR-380-EX	Use A-UCTR-380-EX
Castable posts with a pre-made base in **cobalt-chrome** Engaging Anatomical emergence Fixation screw included	**A-UCRCO-330-EX** 	**A-UCRCO-380-EX** 	**AS-UCRCO-425-EX** 	**AS-UCRCO-500-EX** 
Castable posts with a pre-made base in **cobalt-chrome** Non engaging Anatomical emergence Fixation screw included	**A-UCRCO-330** 	**A-UCRCO-380** 	**AS-UCRCO-425** 	**AS-UCRCO-500** 
Spare castable sleeves for castable posts with a metal base Fixation screw not included	**A-CCUCR-330** 	**A-CCUCR-380** 	**AS-CCUCR-425** 	**AS-CCUCR-500** 
Single pack Pack of 10 pieces Fixation screw Supplied with the posts and also available separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

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

Note: *Given the impossibility of laser marking the gold alloy and the cobalt chrome, it was not possible to place a label at the base of the posts with ø 4.25 and 5.00 mm. It is advisable to not unwrap the pieces until time of use, so as to distinguish the components with One connection from those with a hexagon connection of 2.50 mm.*

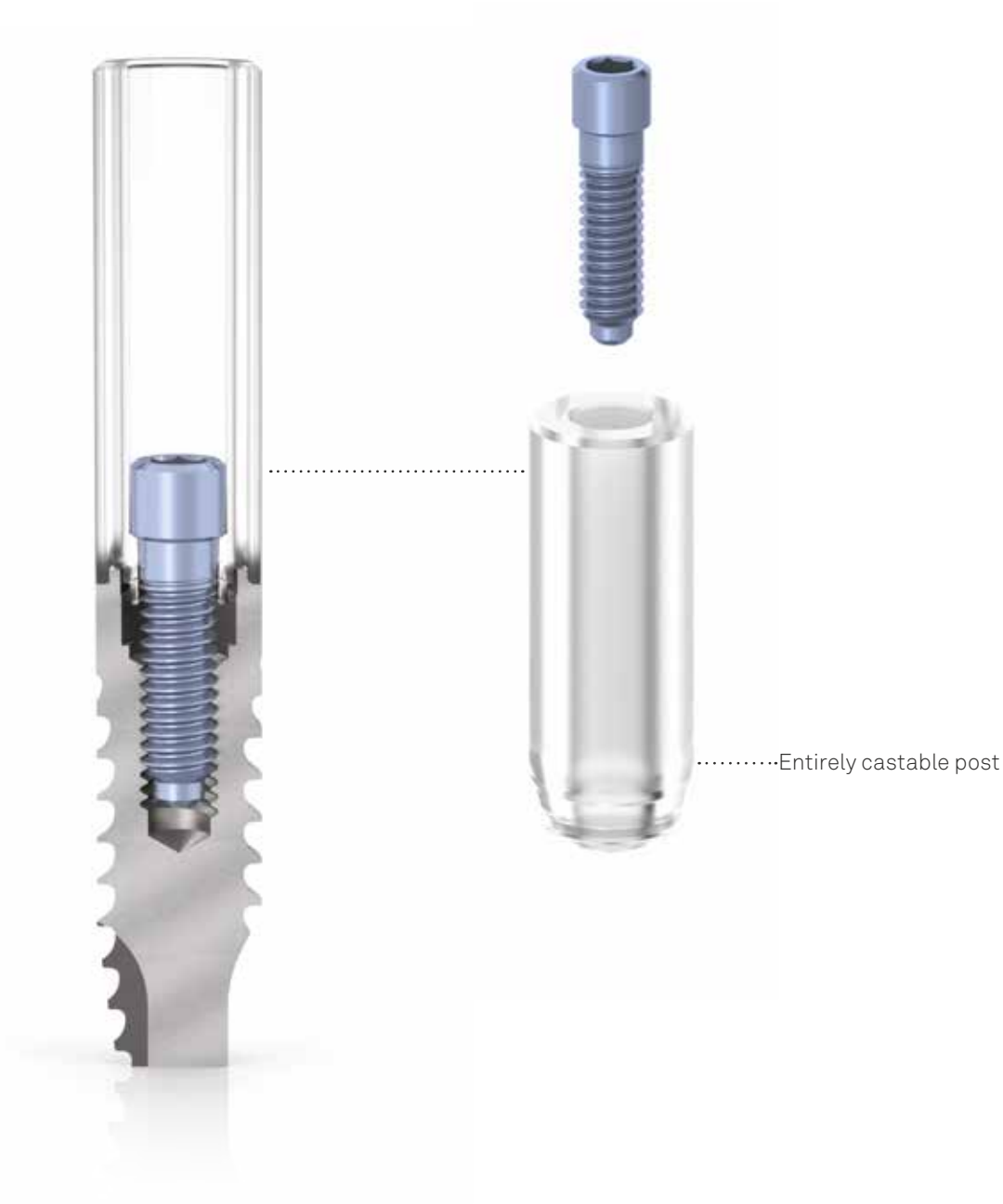
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium, PMMA, cobalt-chrome and gold alloy on pages 264, 266 and 268.

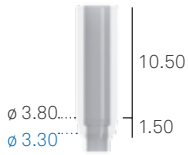
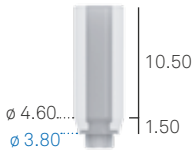
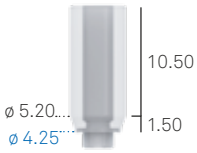
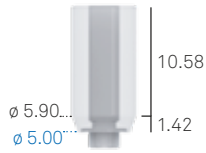
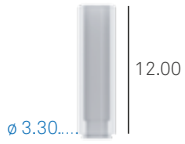
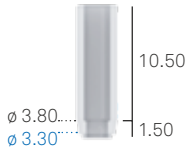
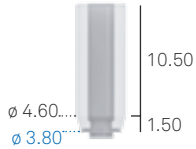
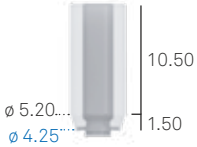
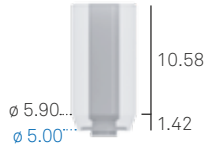
Definitive rehabilitation with entirely castable posts*

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

Note: the casting of entirely castable posts, for its own limits, hardely mantains the same micrometric tolerances obtainable by milling of castable posts with a metal base



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

prosthetic component ø	3.30	3.80	4.25	5.00
Castable posts in PMMA for casting Engaging Straight emergence Fixation screw included	**A-CC-330-EX** 	**A-CC-380-EX** 	Use A-CC-380-EX	Use A-CC-380-EX
Castable posts in PMMA for casting Engaging Anatomical emergence Fixation screw included	**A-CCR-330-EX** 	**A-CCR-380-EX** 	**AS-CCR-425-EX** 	**AS-CCR-500-EX** 
Castable posts in PMMA for casting Non engaging Straight emergence Fixation screw included	**A-CC-330** 	**A-CC-380** 	Use A-CC-380	Use A-CC-380
Castable posts in PMMA for casting Non engaging Anatomical emergence Fixation screw included	**A-CCR-330** 	**A-CCR-380** 	**AS-CCR-425** 	**AS-CCR-500** 
Single pack Pack of 10 pieces Fixation screw Supplied with the posts and also available separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

Recommended torque for posts obtained from the casting of the entirely castable posts: 20-25 Ncm
Before the casting,the maximum torque shall not exceed 8-10 Ncm.

Note: *Given the impossibility of laser marking the PMMA, it was not possible to place a label at the base of the posts with ø 4.25 and 5.00 mm. It is advisable to not unwrap the pieces until time of use, so as to distinguish the components with One connection from those with hexagon connection of 2.50 mm.*

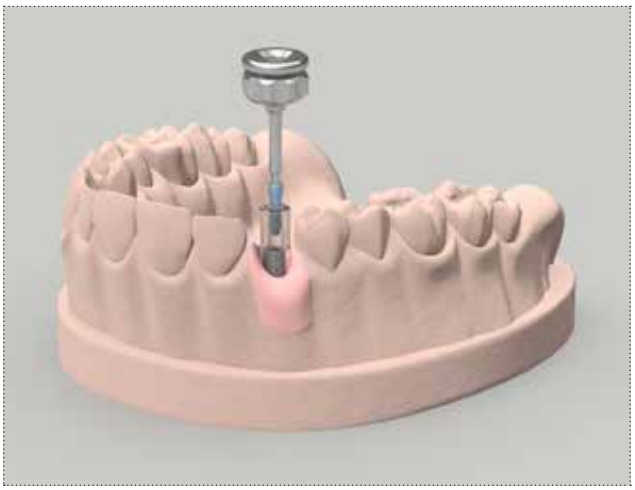
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of PMMA on page 266.

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

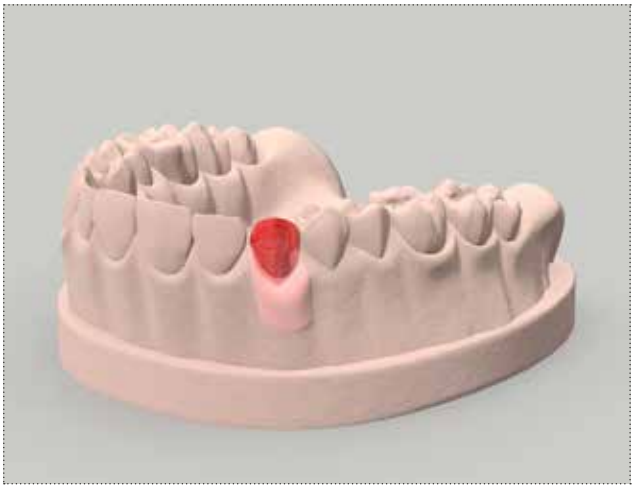
Insert a castable engaging post with a metal base on the precision model. Tighten the post with the specific fixation screw with a screwdriver of the HSM series, applying a maximum torque of 8-10 Ncm.

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.

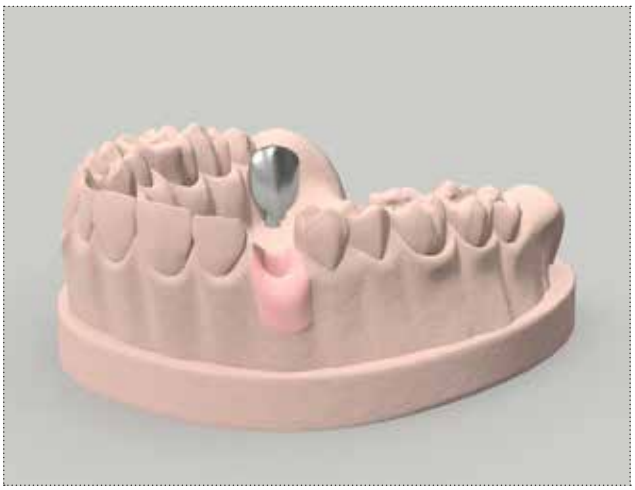


Model the post by reducing it in height and volume, as necessary.

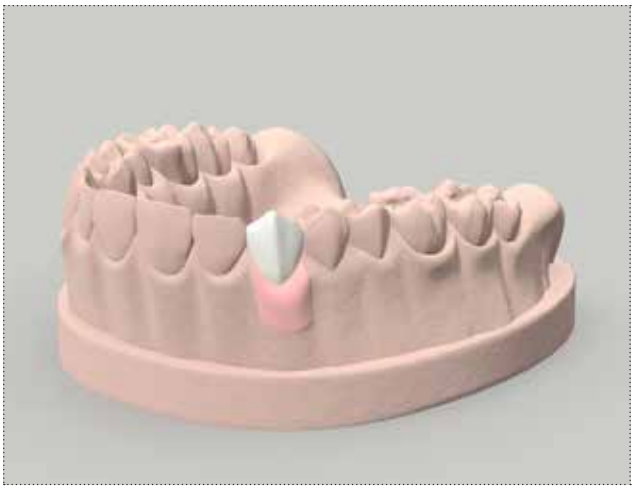
Model the screw retained crown on the post in castable resin.



Proceed with overcasting as usual. See page 270 for advice on the correct procedure for casting alloys. Perform a test with the metallic structure on the model or in the patient's mouth to modify it, if necessary.



Ceramize as usual.

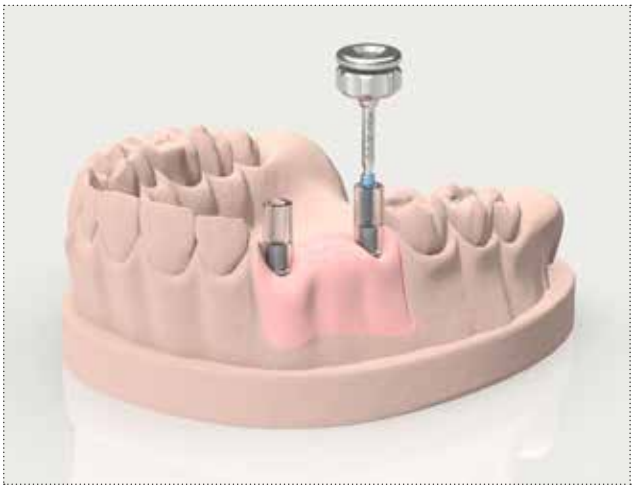


Position the screw retained crown on the implant and tighten it with the supplied screw, without exceeding a torque of 20–25 Ncm.

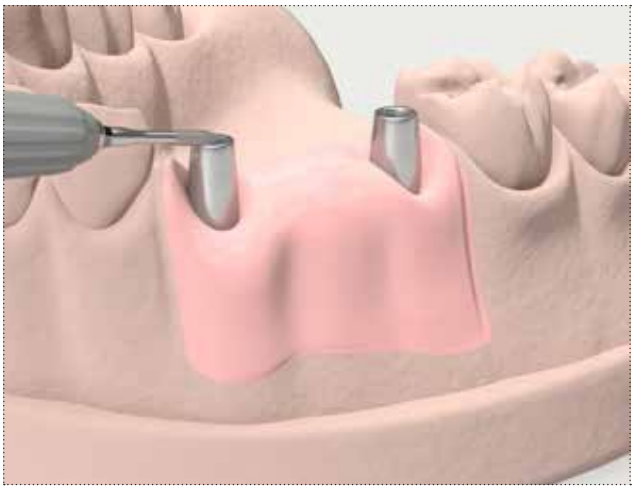
Definitive multiple screw retained rehabilitation with castable posts with a metal base

Insert the castable non engaging posts with a metal base on the precision model. Tighten the posts with the specific fixation screw with a screwdriver of the HSM series, applying 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.

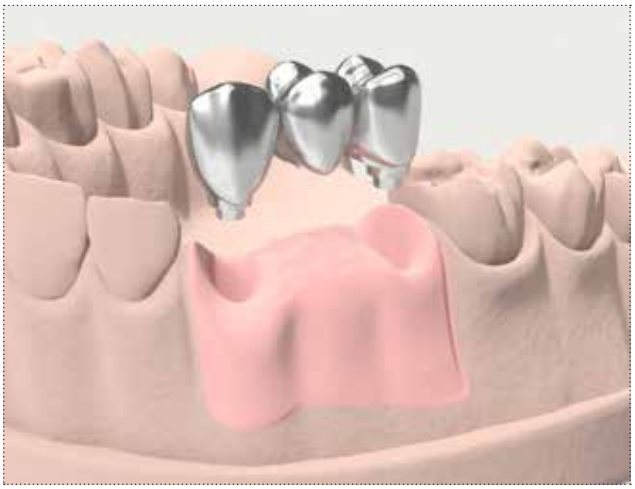


Model the posts by reducing them in height and volume, as necessary.

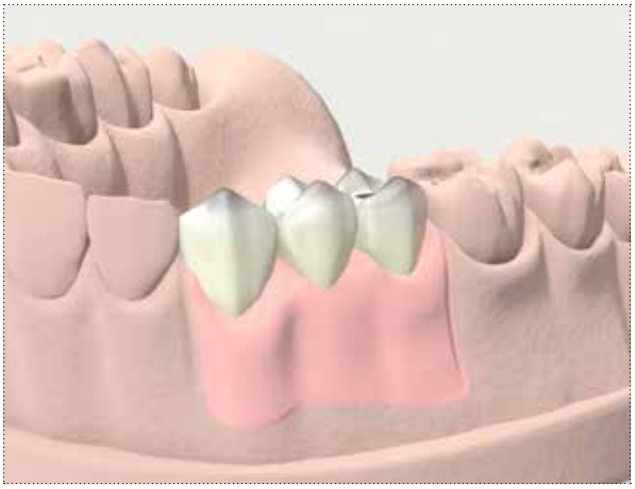


Model the screw retained bridge on the posts in castable resin.

Proceed with overcasting as usual. See page 270 for advice on the correct procedure for casting alloys. Perform a test with the metallic structure on the model or in the patient's mouth to modify it, if necessary.



Ceramize as usual.

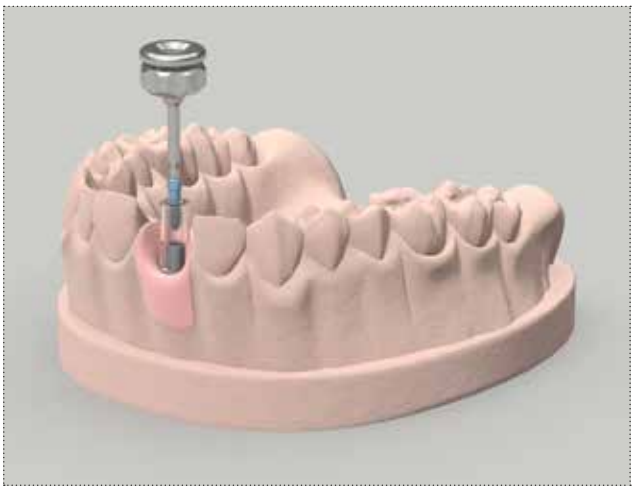


Position the screw retained bridge on the implants and tighten it with the supplied screw, without exceeding a torque of 20-25 Ncm.

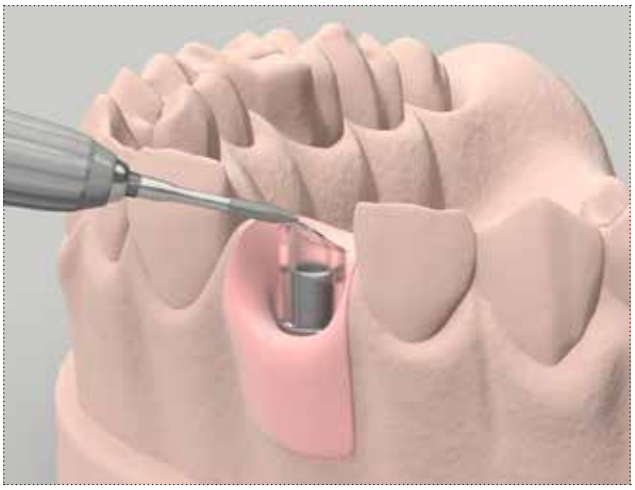
Definitive single cemented rehabilitation with a single post obtained by the overcasting of a castable sleeve

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 series, applying a maximum torque of 8-10 Ncm.

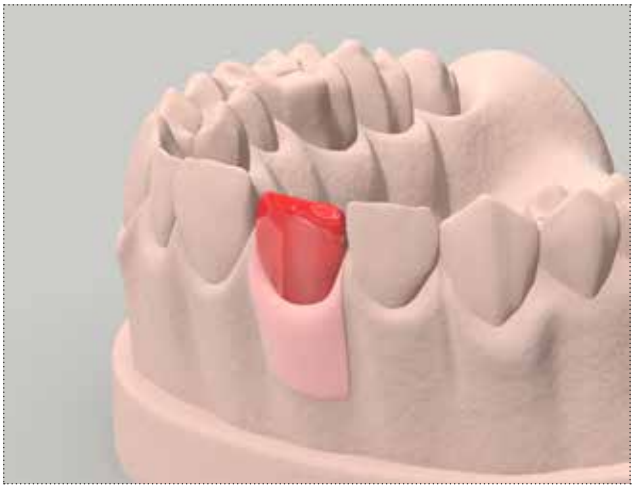
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



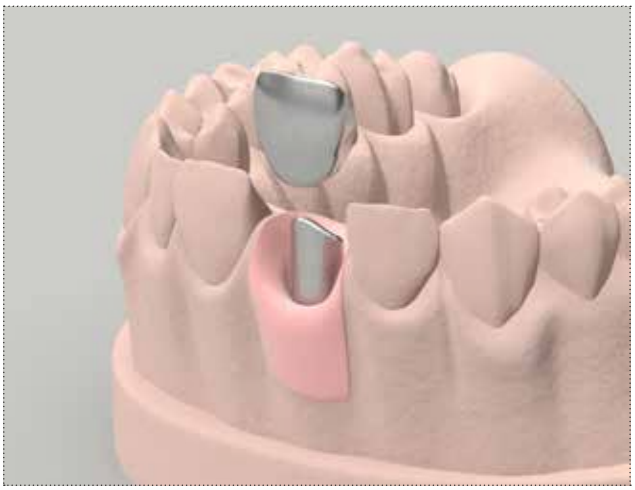
Model the post in height and volume, increasing the thicknesses if necessary. Then proceed to overcasting as usual.



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.



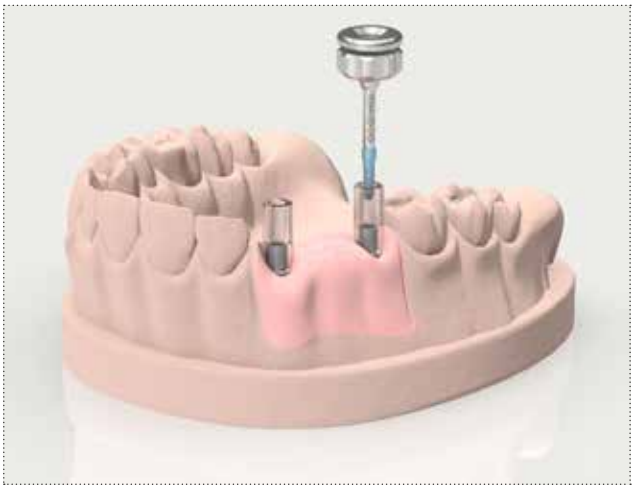
Position the post in the patient's mouth and tighten it with the supplied screw, applying a torque of 20–25 Ncm.

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

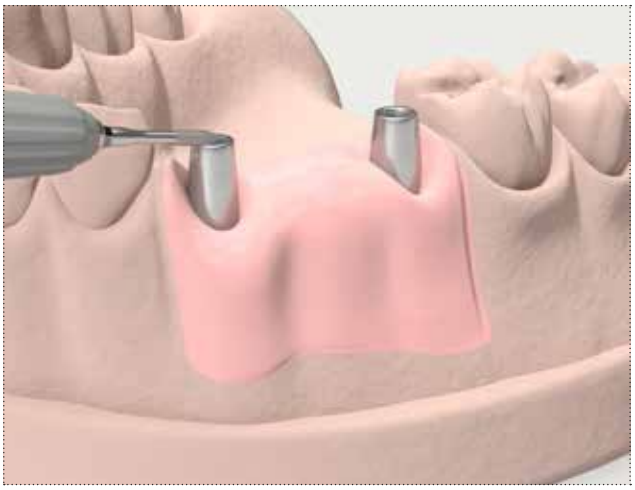
Definitive multiple cemented rehabilitation with single posts obtained by overcasting of castable sleeves

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 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.



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



Model the bridge on the posts in wax or resin, leaving sufficient space for the cement.

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

Position the posts in the patient's mouth and tighten them with the supplied screw, applying a torque of 20-25 Ncm.

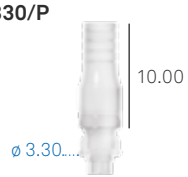
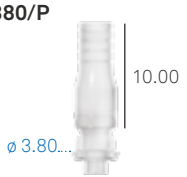
Cover the screw holes and cement the bridge on the posts, taking care to remove all the excess cement from the margin.

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 (**Img. A**) and in total castable polymer (**Img. B**), in engaging versions 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. 3.0 Dynamic Abutment is a registered trademark of this company. Dynamic Abutments may not be released for sale in all markets.*

prosthetic component ø	3.30	3.80
Dynamic Abutment Engaging Cobalt-chrome base for overcasting Fixation screw not included	**PD3PKH330/CC** 	**PD3PKH380/CC** 
Dynamic Abutment Non engaging Cobalt-chrome base for overcasting Fixation screw not included	**PD3PKR330/CC** 	**PD3PKR380/CC** 
Dynamic Abutment Engaging Entirely castable Fixation screw not included	**PD3PKH330/P** 	**PD3PKH380/P** 
Dynamic Abutment Non engaging Entirely castable Fixation screw not included	**PD3PKR330/P** 	**PD3PKR380/P** 
Fixation screw for Dynamic Abutment Not included, can be ordered separately	**TPDH18L66** 	Use TPDH18L66

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

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

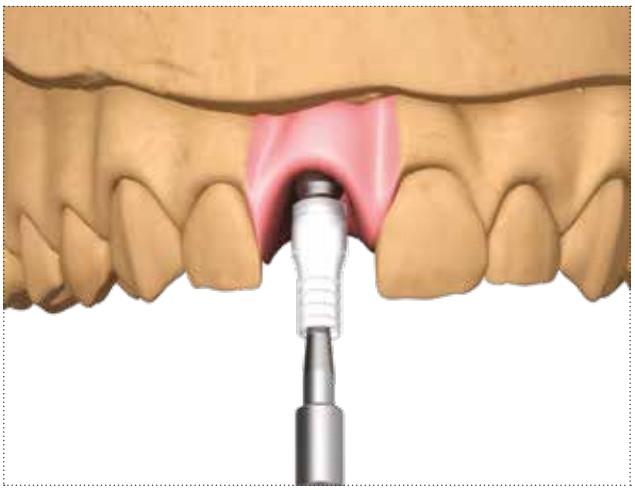
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of PMMA and cobalt-chrome on pages 266 and 269.

Definitive single screw retained rehabilitation with Dynamic Abutment

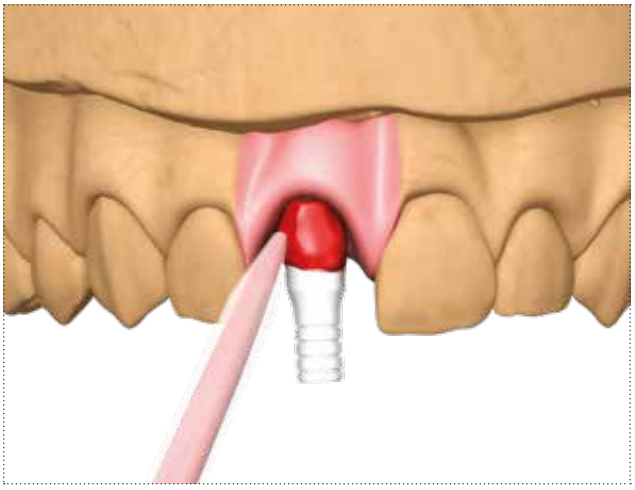
Screw the engaging Dynamic Abutment in with a cobalt chrome base onto the analog on the precision model using the specific fixation screw with the screwdriver of the most suitable length between the ones available, of 24 or 32 mm.

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.

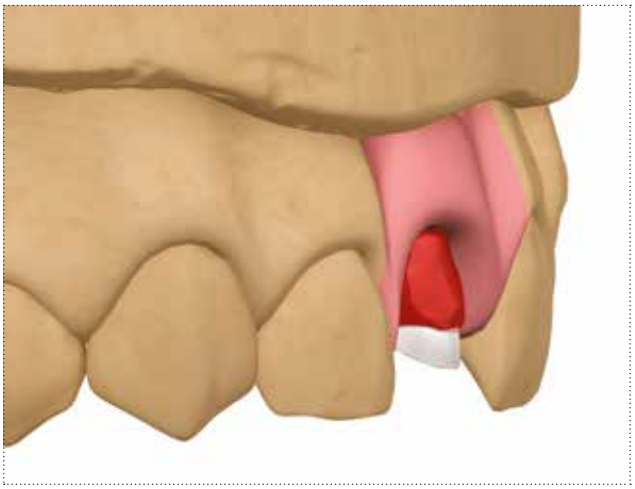


Manually guide the castable rotating portion of the abutment according to the prosthetic axis identified in the treatment plan.

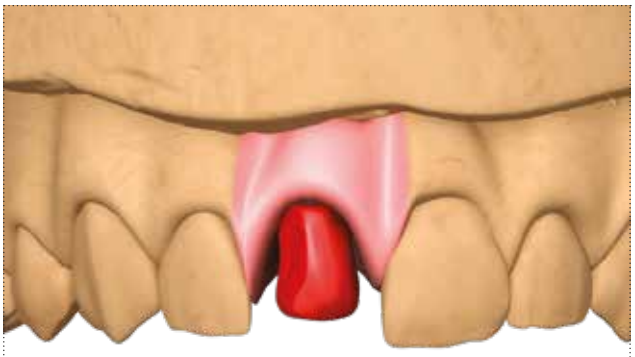
Fix the castable rotating portion in the desidered position with castable resin. If necessary, remove or reduce the metal part to obtain a profile without finishing line.



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

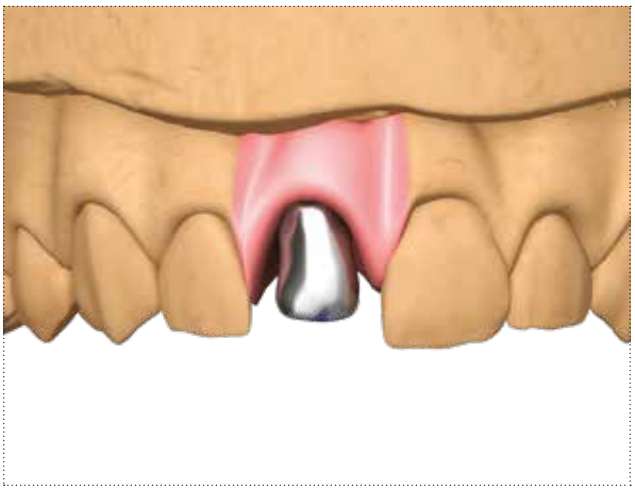


According to the standard protocol, model a crown in wax or resin and unscrew it taking advantage of the specific design of the screwdriver tip.



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.

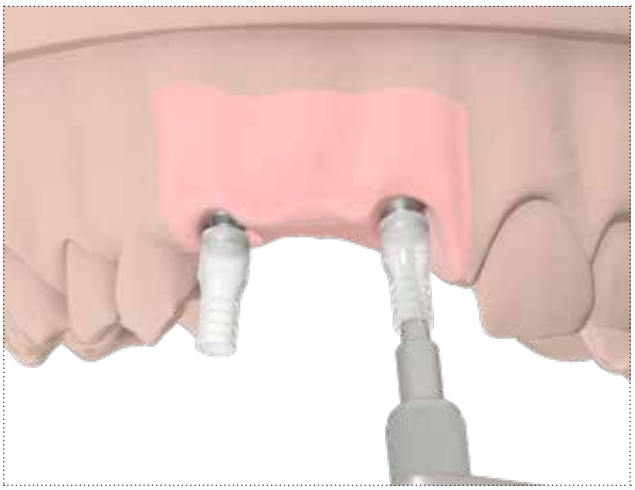


Tighten the structure in the patient's mouth applying a torque 20-25 Ncm and cover the screw hole with resin or composite.

Definitive multiple screw retained rehabilitation with Dynamic Abutment

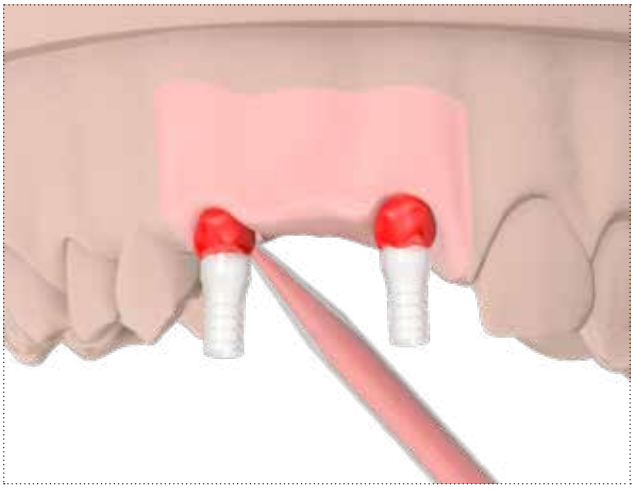
Screw the Dynamic Abutments onto the analogs on the precision model using the specific fixation screw with the screwdriver of the most suitable length between the ones available, of 24 or 32 mm.

Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw 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.

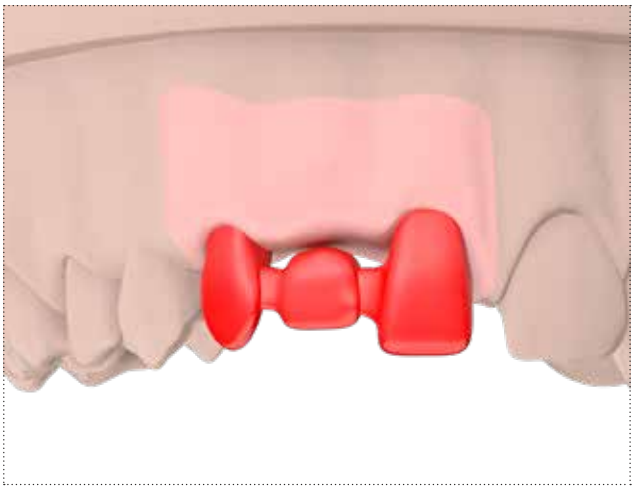
Fix the rotating portion in the desidered position with castable resin.



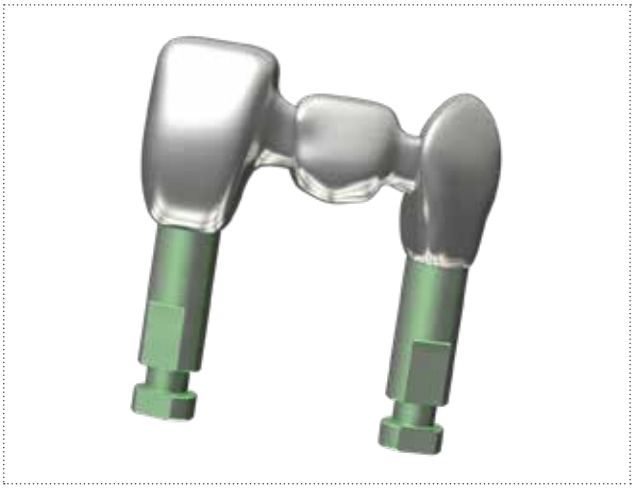
Reduce the castable sleeves to a size compatible with the patient's vertical dimension with an abrasive disk.

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.

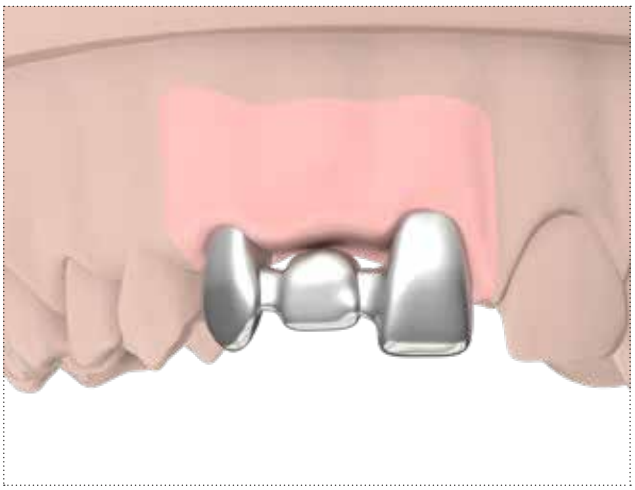
Important warning
Before casting, make a precise re-seat of the structure possible on the model in the laboratory as well as during the various intraoral tests.



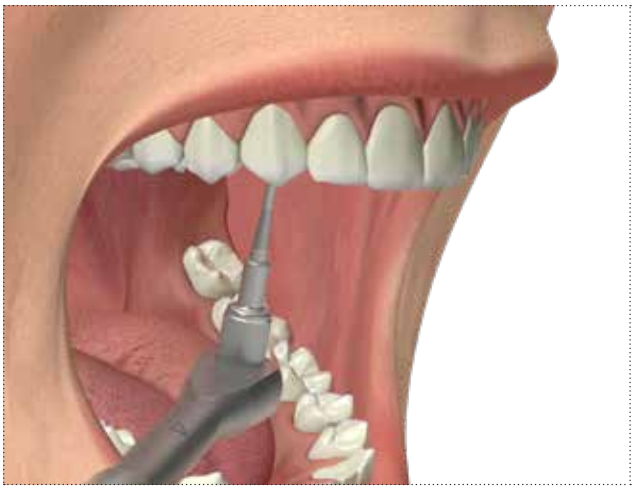
Overcast the structure as usual and finish the base, so as to avoid obstacles for soft tissues adaptation.



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



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

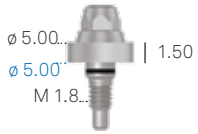
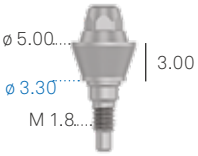
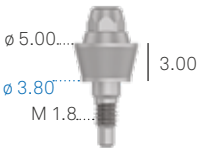
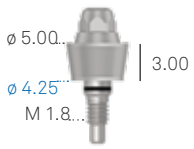
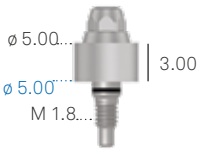
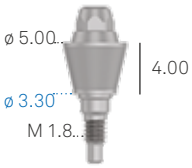
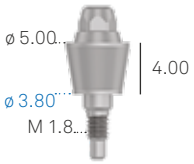
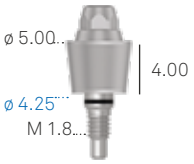
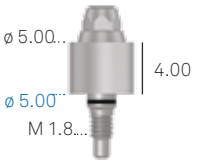


Temporary and definitive rehabilitation with P.A.D. abutments

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, all the components must be sterilized in an autoclave.

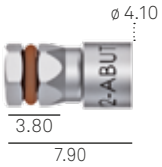
The upper cone allows the prosthetic structure to be up to 15° on each side, which in the case of angled P.A.D. abutments is added to the inclination of 17° or 30°. This characteristic allows disparallelisms of up to 45° to be easily managed

Straight P.A.D. abutments

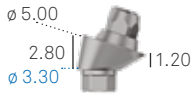
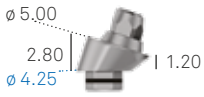
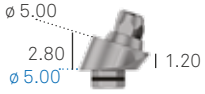
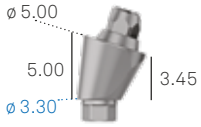
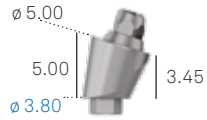
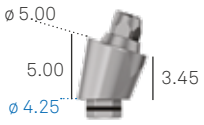
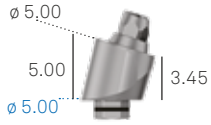
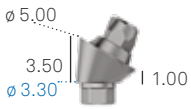
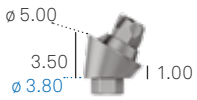
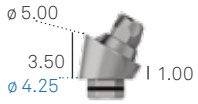
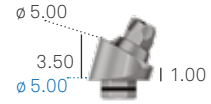
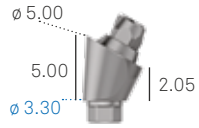
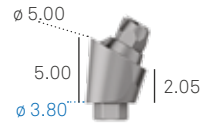
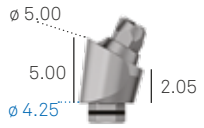
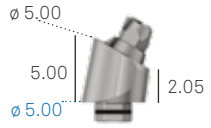
prosthetic component ø	3.30	3.80	4.25	5.00
Straight P.A.D. abutments Direct screw retained Transgingival h 1.50 mm	**A-PAD-AD330-15** 	**A-PAD-AD380-15** 	**AS-PAD-AD425-15** 	**AS-PAD-AD500-15** 
Straight P.A.D. abutments Direct screw retained Transgingival h 3.00 mm	**A-PAD-AD330-30** 	**A-PAD-AD380-30** 	**AS-PAD-AD425-30** 	**AS-PAD-AD500-30** 
Straight P.A.D. abutments Direct screw retained Transgingival h 4.00 mm	**A-PAD-AD330-40** 	**A-PAD-AD380-40** 	**AS-PAD-AD425-40** 	**AS-PAD-AD500-40** 

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

Note: to carry the abutments in the patient's mouth, each single package contains a practical carrier made in plastic (cod. AVV-ABUT-DG, not sold individually).

description	code
Screwdriver for straight P.A.D. abutments, with hexagonal connector for dynamometric key Not inlcuded in the surgical kit, can also be ordered separately	**AVV2-ABUT** 

Angled P.A.D. abutments

prosthetic component ø	3.30	3.80	4.25	5.00
P.A.D. abutment Angled at 17° Transgingival h 3.00 mm Fixation screw included	**A-PAD-AA330-173** 	**A-PAD-AA380-173** 	**AS-PAD-AA425-173** 	**AS-PAD-AA500-173** 
P.A.D. abutment Angled at 17° Transgingival h 5.00 mm Fixation screw included	**A-PAD-AA330-175** 	**A-PAD-AA380-175** 	**AS-PAD-AA425-175** 	**AS-PAD-AA500-175** 
P.A.D. abutment Angled at 30° Transgingival h 3.00 mm Fixation screw included	**A-PAD-AA330-303** 	**A-PAD-AA380-303** 	**AS-PAD-AA425-303** 	**AS-PAD-AA500-303** 
P.A.D. abutment Angled at 30° Transgingival h 5.00 mm Fixation screw included	**A-PAD-AA330-305** 	**A-PAD-AA380-305** 	**AS-PAD-AA425-305** 	**AS-PAD-AA500-305** 
Single pack Pack of 10 pieces Fixation screw Supplied with angled P.A.D. abutments, it can also be ordered separately as a spare	**PAD-VM-180** **PAD-VM-180-10** 	Use PAD-VM-180	Use PAD-VM-180	Use PAD-VM-180

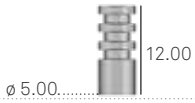
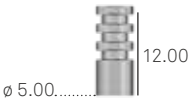
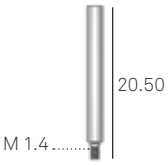
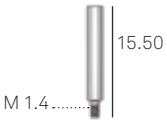
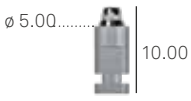
Recommended torque for angled P.A.D. abutments: 20-25 Ncm.

description	code
P.A.D. transfer screw for manual screwing, to be used as a carrier to transport angled P.A.D. in the oral cavity, sterilizable and reusable	**PAD-VTRAL-140-MAN** 
Carrier for transport of angled P.A.D. abutments into the oral cavity, sterilizable and reusable. Not inlcuded in the surgical kit, can also be ordered separately	**PAD-CAR** 

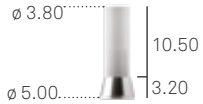
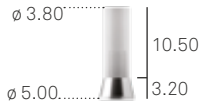
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.

See technical characteristics of Gr. 5 titanium on page. 264.

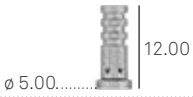
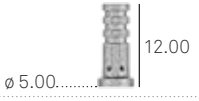
P.A.D. components for over-structures

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 on P.A.D. abutments Non engaging	**PAD-CAP** 
Non rotating caps in POM for direct impression on P.A.D. abutments Engaging	**PAD-CAP-EX** 
Pick-up transfer in Gr. 5 titanium for P.A.D. abutments Non engaging Long transfer screw included (code PAD-VTRAL-140)	**PAD-TRA** 
Pick-up transfer in Gr. 5 titanium for P.A.D. abutments Engaging Long transfer screw included (code PAD-VTRAL-140)	**PAD-TRA-EX** 
Spare screw for transfer for P.A.D. abutments Supplied with transfers and also available separately as a spare	**PAD-VTRAL-140** 
Spare screw for transfer for P.A.D. abutments, long. Supplied with transfers and also available separately as a spare	**PAD-VTRA-140** 
Manually fastening transfer P.A.D. screw, to use as carrier to carry the angled P.A.D. in the oral cavity, sterilizable and reusable	**PAD-VTRAL-140-MAN** 
Analog for P.A.D. abutments in Gr. 5 titanium	**PAD-ANA** 
Castable sleeves in PMMA for P.A.D. abutments Non engaging Fixation screw included	**PAD-CC** 

Recommended torque for the final fastening of the healing caps: 8-10 Ncm.
Recommended torque for Pick-up transfer: 20-25 Ncm.

description	code
Castable sleeves in PMMA for P.A.D. abutments Engaging Fixation screw included (cod. PAD-VP-140)	**PAD-CC-EX** 
Castable posts in PMMA with a pre-formed base in gold alloy 1 for overcasting on P.A.D. abutments Non engaging Fixation screw included (cod. PAD-VP-140)	**PAD-UC** 
Castable posts in PMMA with pre-formed base in cobalt-chrome for overcasting on P.A.D. abutments Engaging Fixation screw included (cod. PAD-VP-140)	**PAD-UCRCO** 
Spare screw for prosthetic components for P.A.D. abutments Supplied together with all components for the over-structure production, and also available as a spare part Also available in packs of 10 pieces (code PAD-VP-140-10)	**PAD-VP-140** 

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

description	code
Sleeves in PEEK for P.A.D abutments for relining Non engaging Fixation screw included (cod. PAD-VP-140)	**PAD-CP** 
Sleeves in PEEK for P.A.D abutments for relining Engaging Fixation screw included (cod. PAD-VP-140)	**PAD-CP-EX** 
Sleeves in Gr. 5 titanium for P.A.D abutments for relining Non engaging Fixation screw included (cod. PAD-VP-140)	**PAD-CT** 
Sleeves in Gr. 5 titanium for P.A.D abutments for relining Engaging Fixation screw included (cod. PAD-VP-140)	**PAD-CT-EX** 
Castable cylinders in PMMA for the production of structures to be cemented to titanium sleeves Gr. 5	**PAD-CCEM** 
Spare screw for prosthetic components for P.A.D. abutments Supplied together with all components for the over-structure production, and also available as a spare part. Also available in packs of 10 pieces (code PAD-VP-140-10)	**PAD-VP-140** 

Recommended torque for prosthetic screws: 20-25 Ncm.
Recommended torque for PEEK sleeves: 15-20 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.

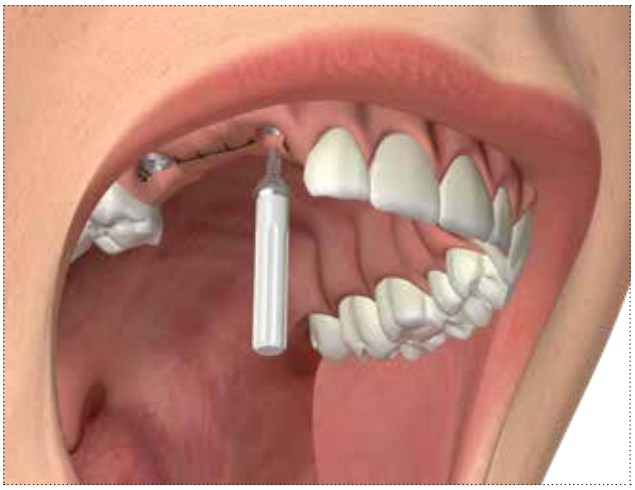
See technical characteristics of Gr. 5 titanium, PMMA and "gold alloy 1", on pages 264-269.

Insertion of straight P.A.D. abutments

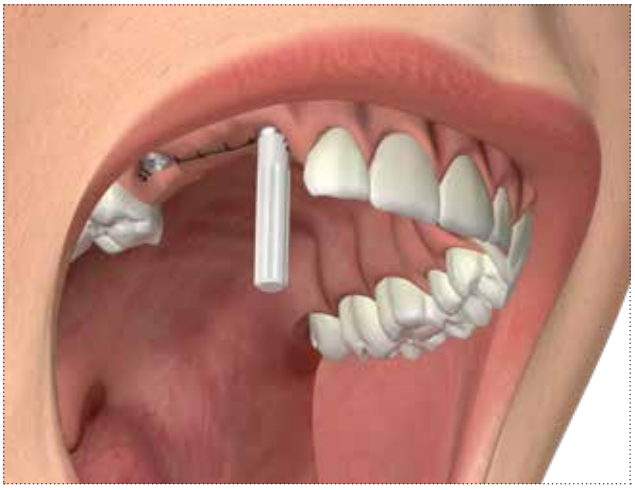
The following pages illustrate the insertion of straight and angled P.A.D. abutments. For purely explanatory purposes, the images show an upper arch, so as to illustrate the use of both straight and angled abutments. The same insertion procedures are applicable even if rehabilitation envisages the use of a greater number of implants.

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 adequate 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-KIT).

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.

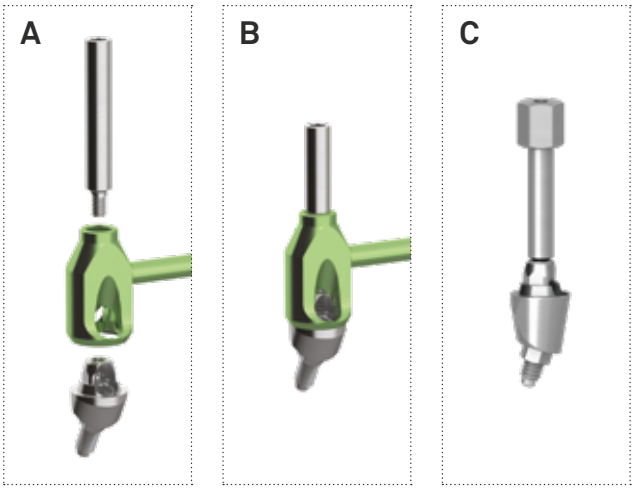
Insertion of angled P.A.D. abutments

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.

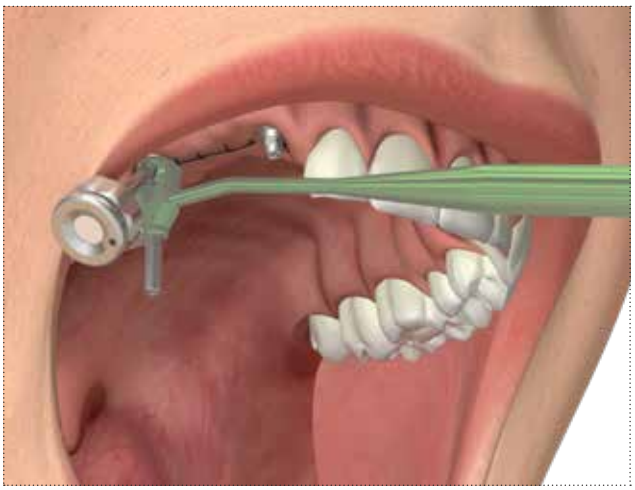
Position the angled P.A.D. abutment in the lower part of its specific carrier (code PAD-CAR), so that the screw hole of the abutment coincides with one of the two side holes in the carrier, depending on the orientation made necessary by the side of the mouth being operated on (**Img. A**). Insert the transfer screw in the upper hole of the carrier (cod. 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 insertion 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 connecting 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 (cod. CRI5-KIT).

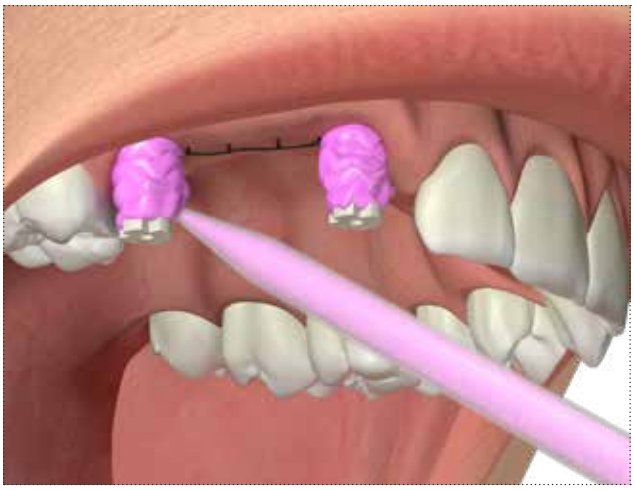
Important warning
The maximum tightening torque for angled P.A.D. abutments, fixed with through screw, is 20–25 Ncm.
As it is difficult to control the insertion torque of prosthetic components manually, the procedure should always be completed using the torque-control ratchet. It is advisable to keep 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.

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

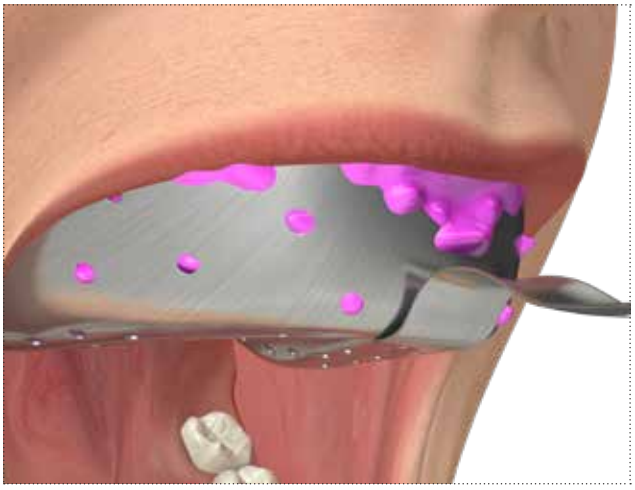
After inserting the P.A.D. abutments in the implant connections, insert the POM caps with a slight pressure for the closed tray technique. No screws are used, because these caps directly grip the cone of the abutment. They are particularly indicated for cases of slight disparallelism of emergence platforms.

If necessary, reduce the caps to fit the patient's vertical dimension removing one of the two ritentive tabs.

Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the POM caps and fill the impression tray with a more consistant material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.



Position the closed impression tray *in situ*, attempting to avoid lateral movements that may cause them to move accidentally. Wait for the hardening times as indicated by the instructions and lift the tray vertically.

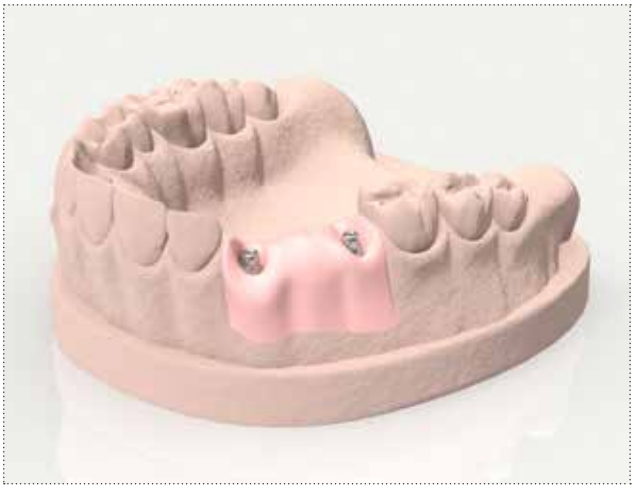


If the abutments are not to be immediately loaded and must be protected while they remain in the oral cavity, they can be covered with the specific PAD-CG titanium protection cap (**Img. B**), or with the PAD-CGP caps in PEEK (**Img. A**), which are smaller and can therefore be more easily hidden by 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 276.

Position the PAD-ANA analogs in the impression tray, engaging them in the POM rotating caps.

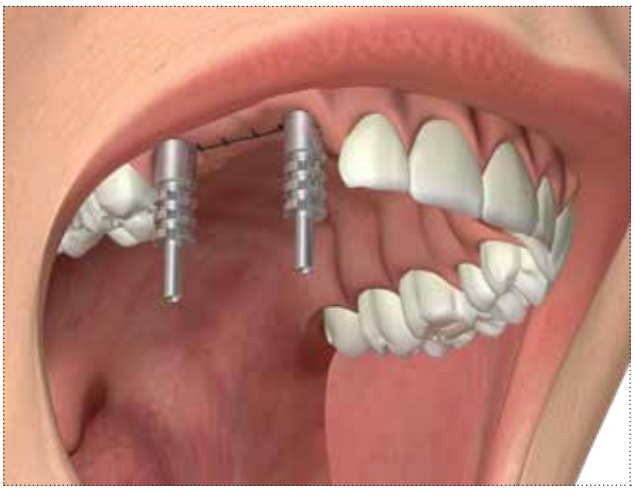
Develop the model as usual.



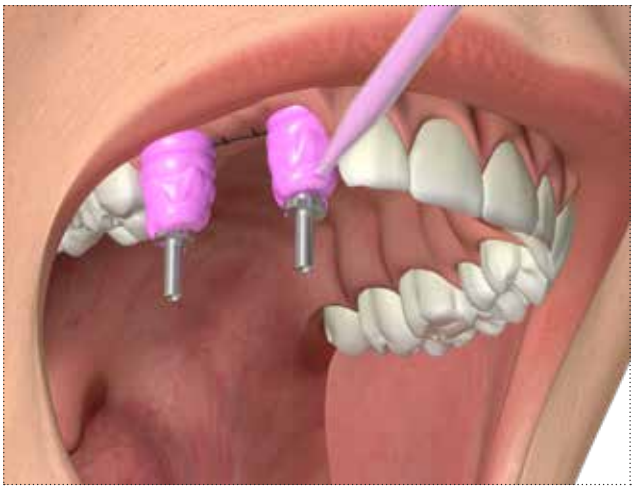
Impression on P.A.D. abutments with Pick-up transfers

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.

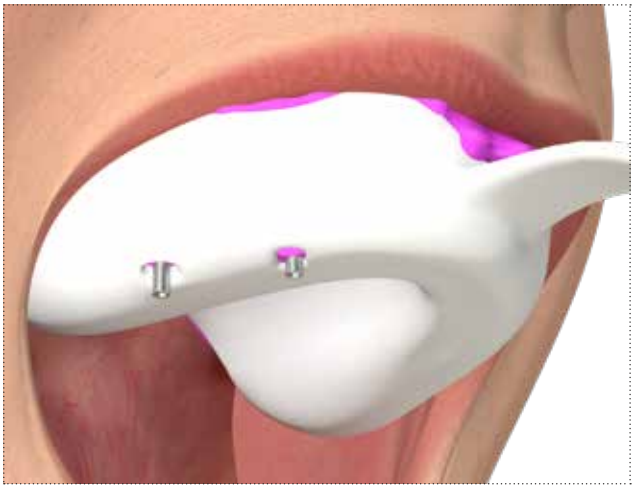
If desired, fix the transfers together with wire and resin or composite, and wait for polymerization to be completed, as indicated by the manufacturer.



Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) only around the Pick-up transfers and fill the impression tray with a more consistant material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.



Position the tray *in situ*. The screw will emerge from the respective hole in the tray. Wait for the hardening times as indicated by the instructions, then unscrew the transfer screws and lift the tray vertically.

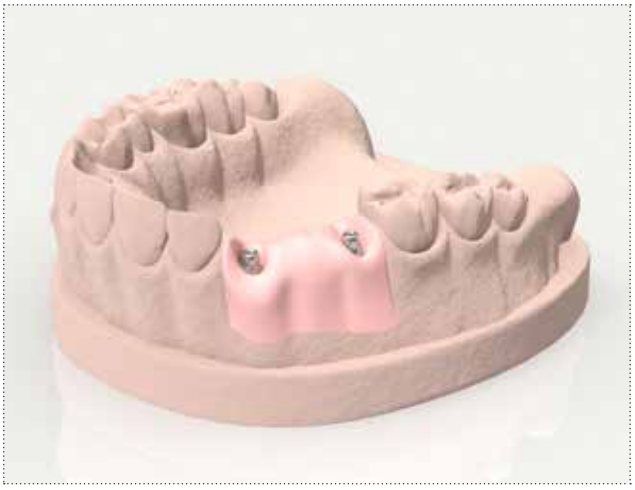


If the abutments are not to be immediately loaded and must be protected while they remain in the oral cavity, they can be covered with the specific PAD-CG titanium protection cap (**Img. B**), or with the PAD-CGP caps in PEEK (**Img. A**), which are smaller and can therefore be more easily hidden by 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 276.

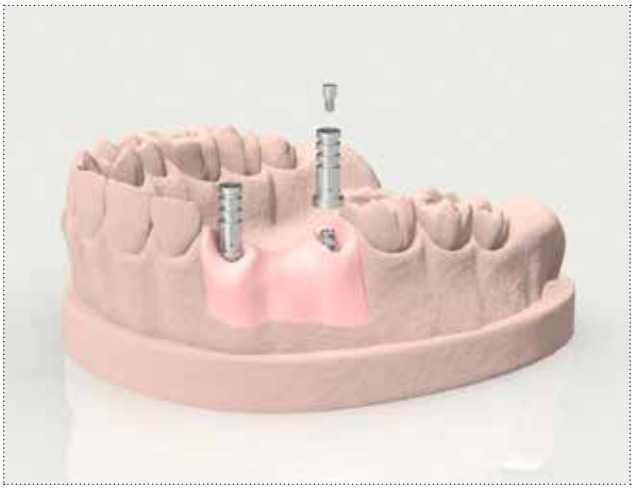
Screw the PAD-ANA laboratory analogs to the transfers with the screw PAD-VTRAL-140, replaced in the holes left by it in the impression material.

Develop the model as usual.



Immediate loading: luting technique

Screw on each P.A.D. analog a titanium sleeve with the specific supplied screw (cod. PAD-VP-140) on the precision model.



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

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

Model a resin truss that incorporates the castable sleeves.

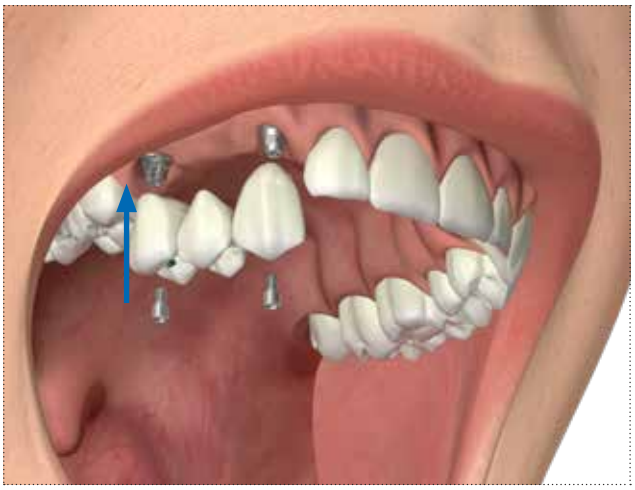
Remove the structure from the model and proceed with casting, while the titanium sleeves remain tightened onto the P.A.D. abutments.

Ceramize the bridge as usual. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.

Note: take great care to correctly position the titanium sleeves in the patient's mouth, following the order of the model, so as to avoid creating discomfort and functional difficulties.

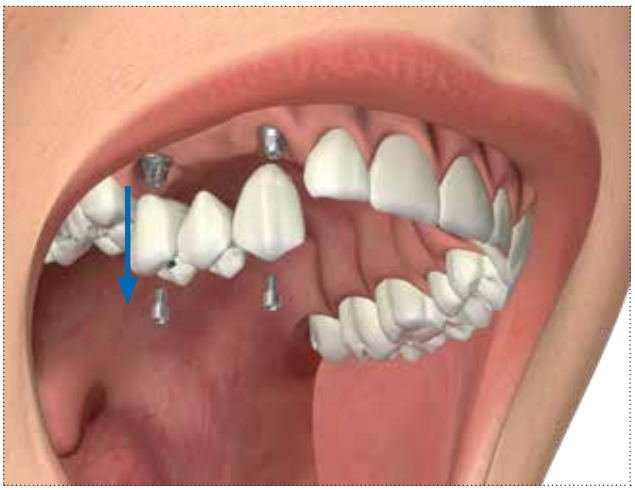
In the laboratory insert the resin cement between the truss and the titanium sleeves.

Screw the ceramic bridge that incorporates the sleeves in titanium to the P.A.D. abutments in the patient's mouth with the supplied screws (cod. PAD-VM-*) with a torque of 20-25 Ncm. Check the occlusal relationships and verify the absence of tensions. Preserve the screw heads and close the screw holes with a removable material, such as a composite or a resin.



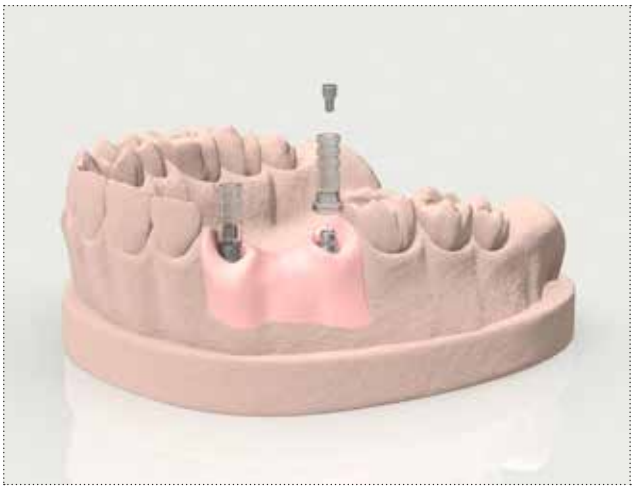
Deferred loading: casting technique

Remove the temporary prosthesis and take the definitive impression on the P.A.D. abutments with Pick-up transfers and individual tray following the same procedures of the previous pages and develop the model as usual.
Reposition the temporary prosthesis in the patient's mouth.



Screw the castable sleeves in PMMA to the abutments. Care must be taken during laboratory phases, before casting, to avoid tightening totally castable sleeves onto models with a torque greater than 8–10 Ncm, because polymers are weaker than metal.

Important warning
For the laboratory phases, always use spare prosthetic screws, available in single packs with code PAD-VP-140. Use new screws for final tightening in the patient's mouth.



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

Model a resin bridges that incorporates the castable sleeves.

Cast the structure as usual or using CAD-CAM technologies.
Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.

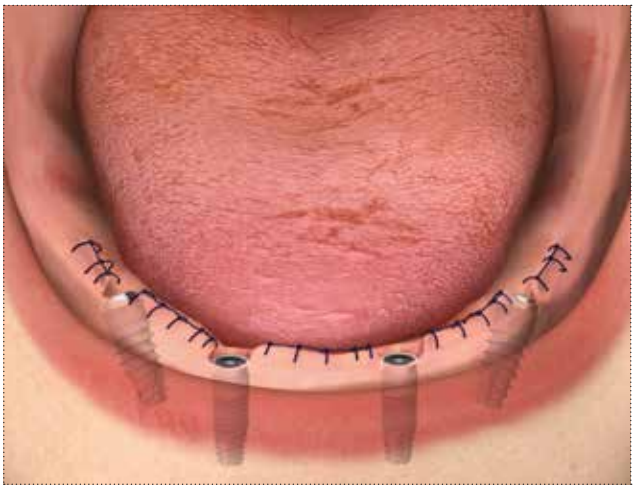
Important warning
If the structure is not completely passive, even though the routine checking procedure has been followed before casting, correct it using the normal techniques.

Ceramize the final prosthesis as usual and screw it on 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 a composite or a resin.
The recommended torque is 20-25 Ncm.

All-on-4 technique*

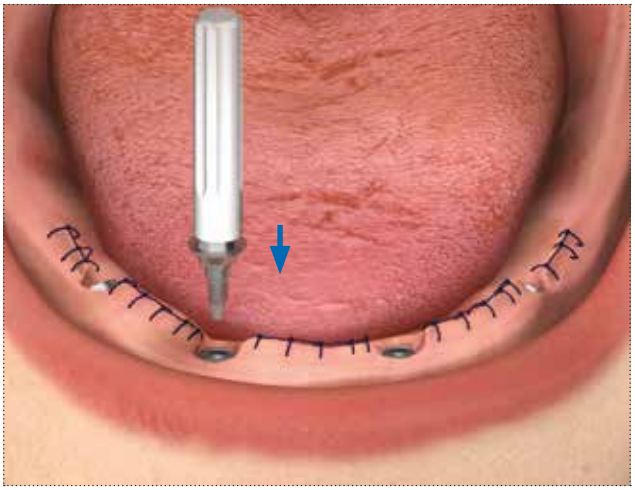
Insertion of straight P.A.D. abutments

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-4 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.

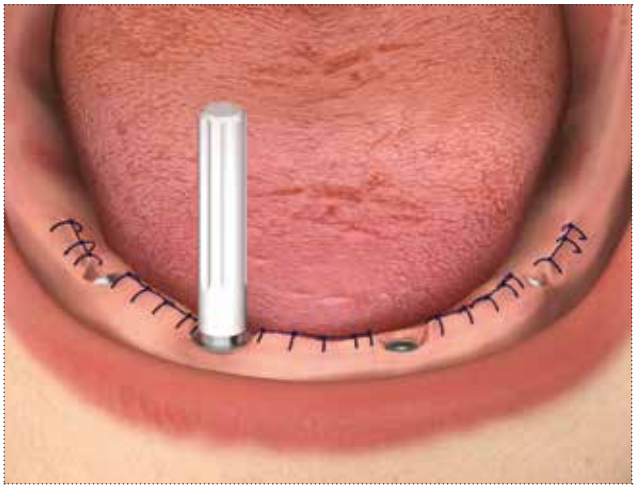


Use the AVV-ABUT-DG abutment carrier supplied in the abutment pack to transport straight P.A.D. abutments into the patient's mouth. The carrier engages the upper hexagon of the P.A.D. abutment, and it is therefore not adequate to fully insert it to obtain the correct retention.

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 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 name of the "All-on-4" technique, developed by dr. Paulo Maló, is a registered trademark owned by Nobel Biocare.*

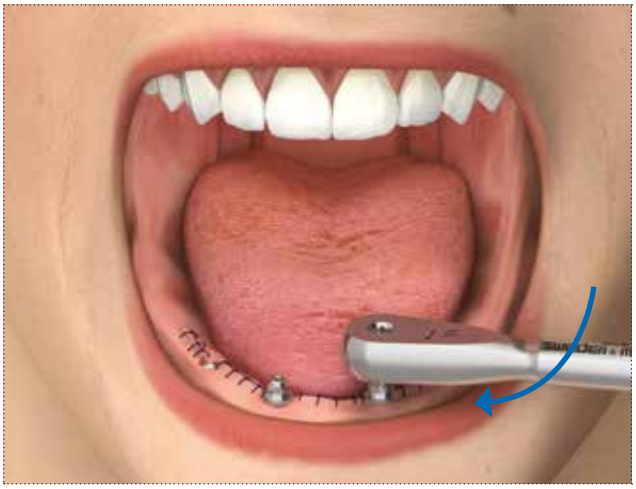
The screwing operation can be completed with the specific hexagonal key (code AVV2-ABUT), which must be purchased separately. This hexagonal key must be connected to the torque-control ratchet (CRI5-KIT).

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.
The maximum tightening torque for angled P.A.D. abutments, fixed with fixation screw, is 20-25 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.



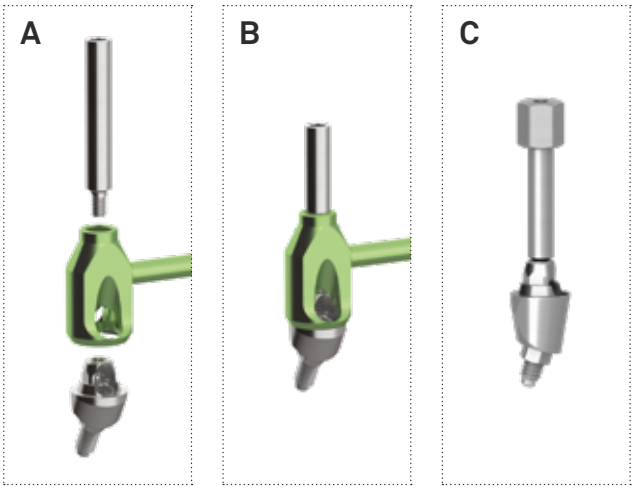
Insertion of angled P.A.D. abutments

Use the HSM-20-DG driver (see pages 27) to engage the connection screw (code PAD-VM-180 or PAD-VM-200, 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.

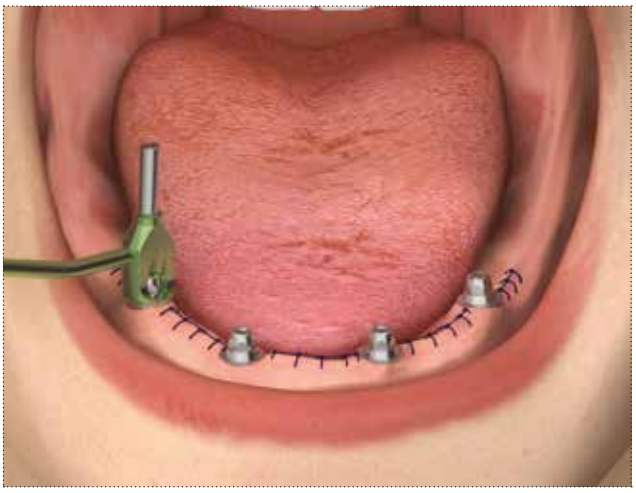
Important warning
Angled P.A.D. abutments must be transported into the patient's mouth using the specific PAD-CAR transporter (see page 29) and a transfer screw, also made in titanium, to fix the abutment to the instrument. Before being used clinically, the components must be sterilized in an autoclave.

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 (cod. PAD-VTRA-140) and tighten it onto the angled P.A.D. abutment (**Img. B**).

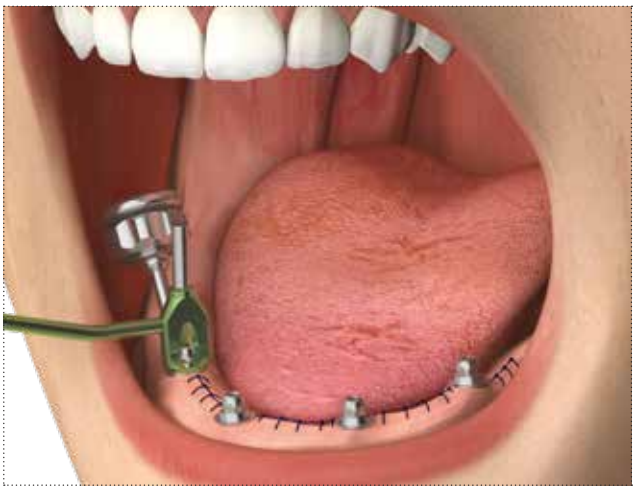
Note: the transfer screw is not supplied together with the carrier. It can be ordered separately in a single pack.
If there is not sufficient vertical space, the transfer screw for manual insertion PAD-VTRAL-140-MAN can be used as a carrier, without PAD-CAR, screwing it directly into the prosthetic hole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



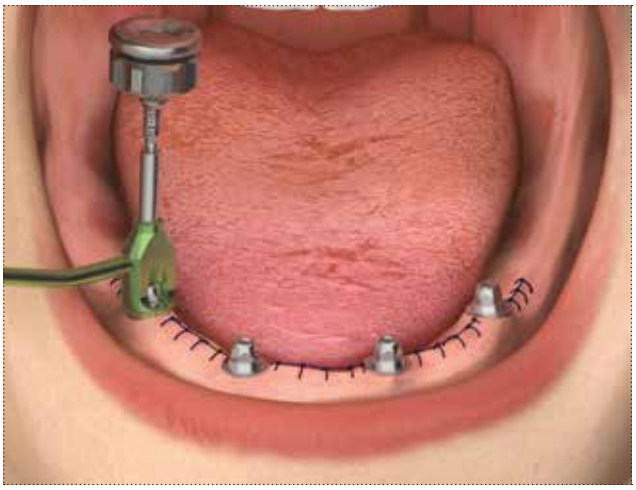
Position the transfer screw/carrier/angled P.A.D. assembly on the implant connection.



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

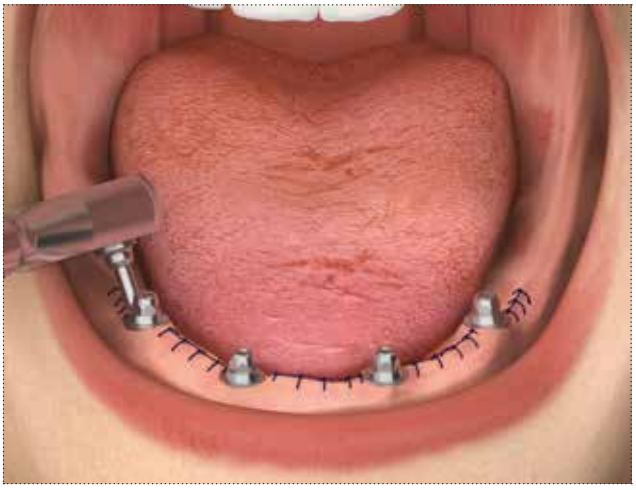


Use the same driver (cod. HSM-20-DG or HSMXS-20-DG) to unscrew the transfer screw, and then extract the carrier.



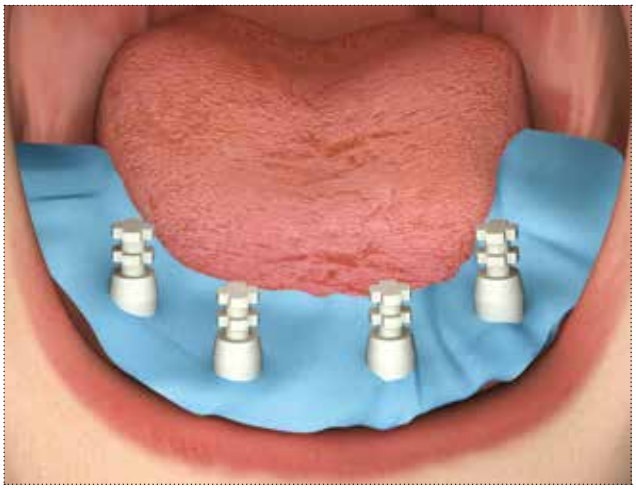
Check for correct manual tightening torque again fitting the screwdriver AVV2-ABUT into the CRI5-KIT ratchet.

Important warning
The maximum tightening torque for straight P.A.D. abutments, when directly screw retained is 25–30 Ncm.
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 must 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.

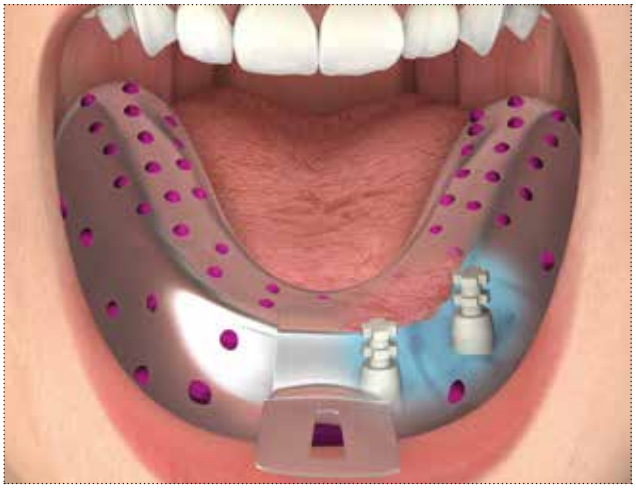


Impression on P.A.D. abutments with POM caps

After inserting the P.A.D. abutments in the implant connections, insert the rotating caps 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.



Position the closed impression tray on the cap, attempting to avoid lateral movements that may cause them to move accidentally. Wait for the hardening times as indicated by the 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 276.

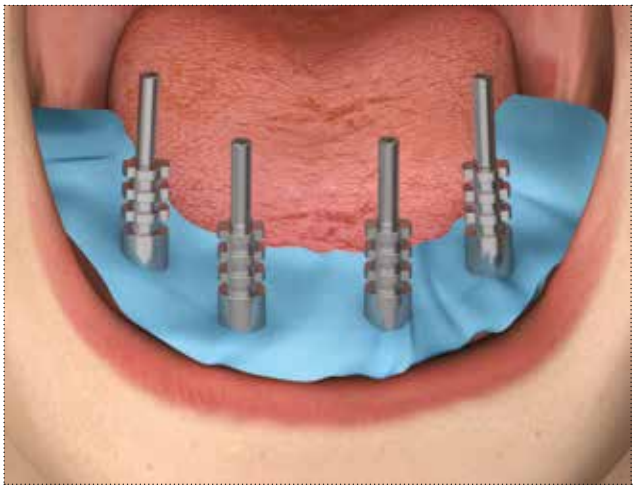
Position the PAD-ANA analogs in the impression tray, engaging them in the POM rotating caps.

Develop the model as usual.

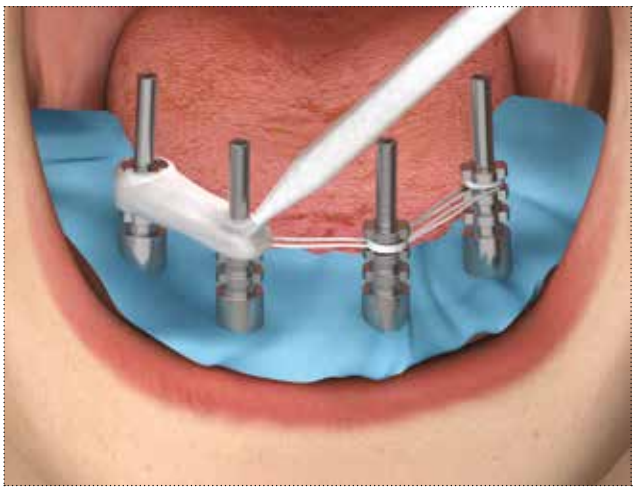
Important warning
For the laboratory phases, always use spare prosthetic screws. Use new screws for final tightening in the patient's mouth.

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

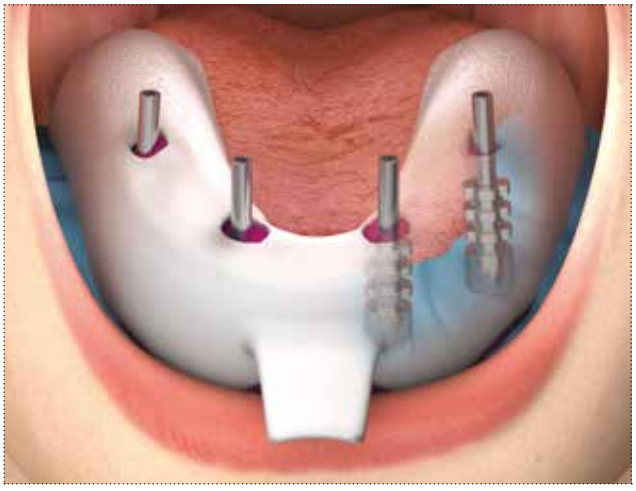
After inserting the P.A.D. abutments into the implant connections, screw on the PAD-TRA rotating Pick-up transfers.
Transfers are sold complete with their respective long transfer screw PAD-VTRAL-140, suitable for taking an impression with an individual open tray. Screws can also be purchased separately as spare parts.



If desired, fix the transfers together with wire and resin, and wait for polymerization to be completed, as indicated by the manufacturer. The connection morphology of rotating P.A.D. prosthesis components facilitates the insertion of structures in case of disparallelisms.



Position the individual open tray on the transfers.
The screw will protrude from the holes created specifically in the individual tray. When the impression material has 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 276.

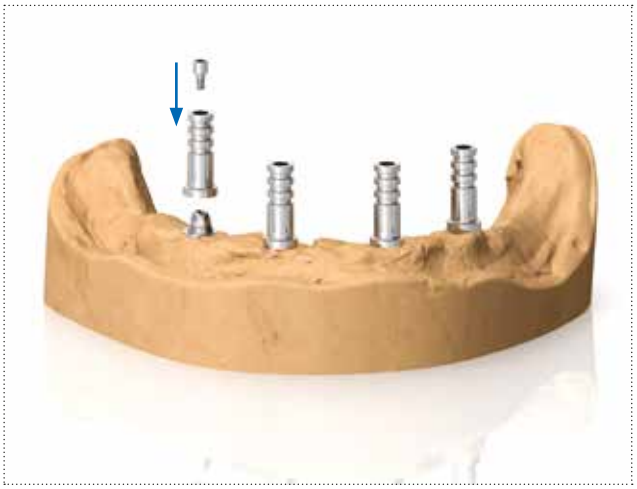
Position the PAD-ANA analogs in the impression tray, engaging them in the transfers, and screw in the screw, repositioning it in the hole by the screw in the impression material.

Develop the model as usual.

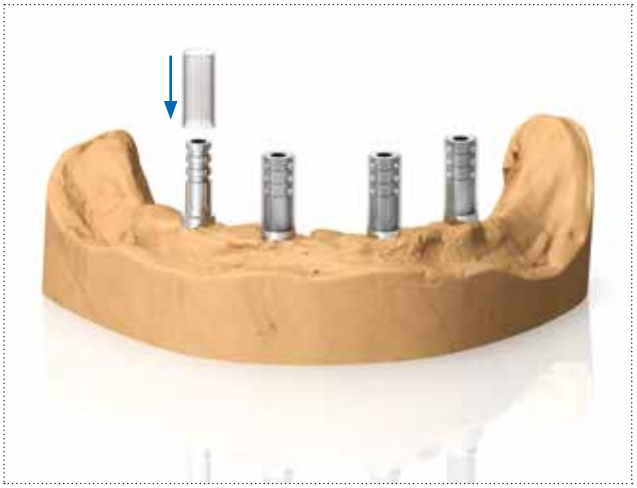
Important warning
For the laboratory phases, always use spare screws: use new screws for final tightening in the patient's mouth.

Production of a prosthesis with a reinforced structure: luting techinque

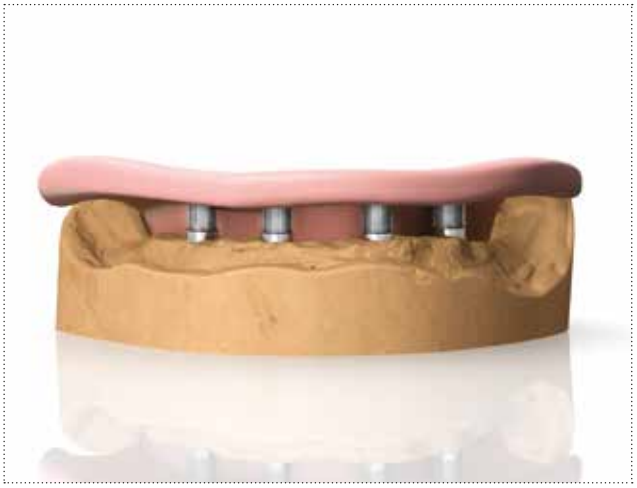
Using the specific screws supplied (code PAD-VP-140), screw a titanium rotating sleeve (code PAD-CT) onto every P.A.D. analog.



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



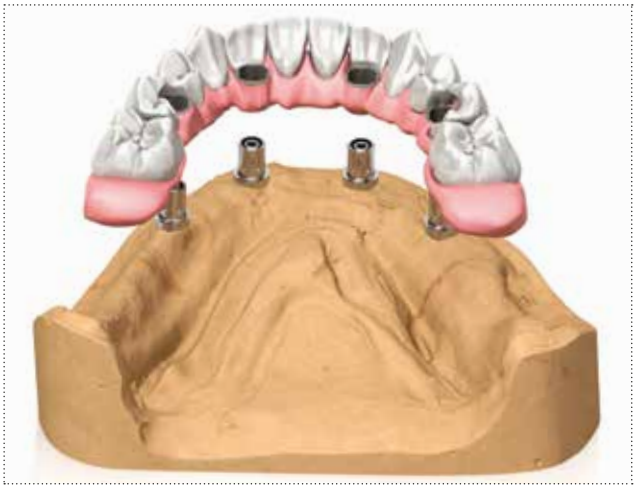
Reduce the titanium sleeves and their respective castable cylinders to a size compatible with the patient's vertical dimension, using the silicone mask obtained from a preassembly or by placing the structure in an articulator in relationship to the space left by the antagonist.



Model a resin truss that incorporates the castable cylinders.

Remove the structure from the model and proceed with casting or a replica using CAD-CAM following normal methods. The titanium sleeves remain screwed onto the P.A.D. abutments.

Proceed with the production of the aesthetic part of the prosthesis, using normal methods.
Check the passivity of the structure first on the model and then in the patient's mouth.



continues...

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

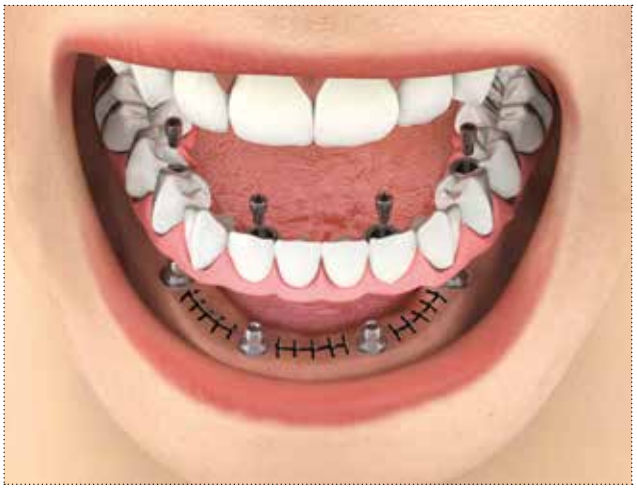
Fit the temporary prosthesis onto the titanium sleeves, previously replaced in the patient's mouth, and screw in with the respective screws.

Note: Take great care to correctly position the titanium sleeves in 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. The P.A.D. abutments will remain screwed 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.

Important warning
New screws must be used for definitive fixing of the structure in the patient's mouth.



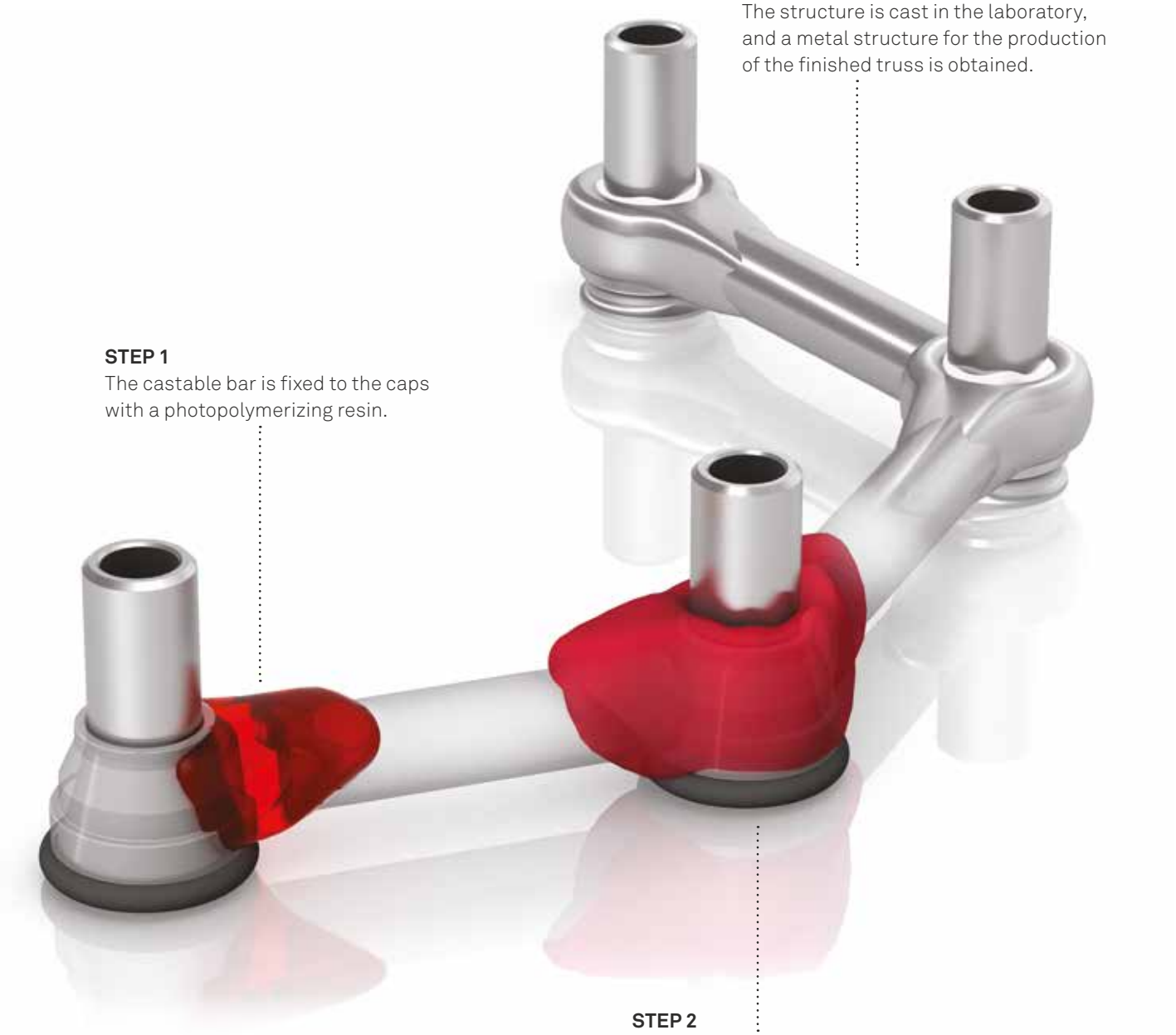
Important warning
For patients already fitted with an overdenture, a temporary prosthesis anchored on implants can be created, using the same PAD-CT titanium sleeves or the version in PEEK (code PAD-CP).
In this case, the existing prosthesis must be perforated at the positions of the implants, and then luted 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. The flange of the existing overdenture should be cut away to allow for proper cleansibility.

P.A.D. for Direct Prosthetic Framework (D.P.F.) technique

P.A.D. abutments proved to be a valid support for the carrying out of different simplified prosthetic protocols, such as the realization of Full Arch immediate loading rehabilitation with a simplified and easy procedure. 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. The temporary prosthesis may also be used as template for the realization of the final prosthesis.

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.

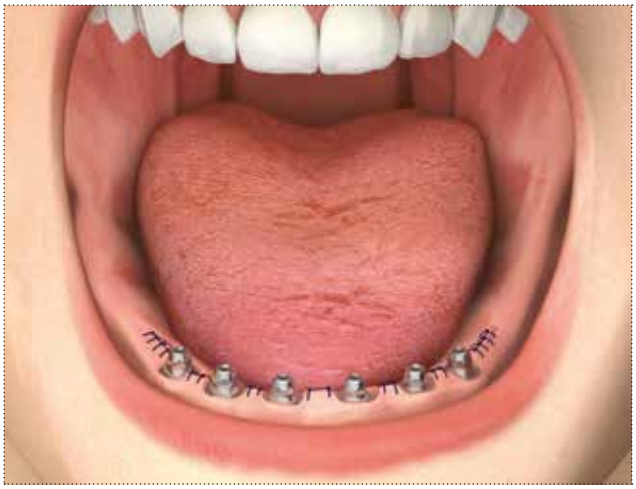
description	code
Pack complete with all prosthetic components for the D.P.F. technique on single P.A.D. abutments. The pack includes a sleeve in titanium (PAD-CT-LV), a castable centring device (PAD-CC-LV), an anti-escape plug (PAD-TR-LV), a protection O-ring (PAD-ORING-LV) and a fixing screw (PAD-VP-140)	**PAD-LV** 
Spare sleeve in Grade 5 titanium for the D.P.F. technique. The pack does not include the connection 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 Packs of 10 pieces Spare screw for prosthetic components for P.A.D. abutments	**PAD-VP-140** **PAD-VP-140-10** 
Castable bar, L. 5 cm, ø 2.2 mm	**BARC**

See technical characteristics of Gr. 5 titanium and PMMA on pages 264-266.

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

Production of a prosthesis with a reinforced structure

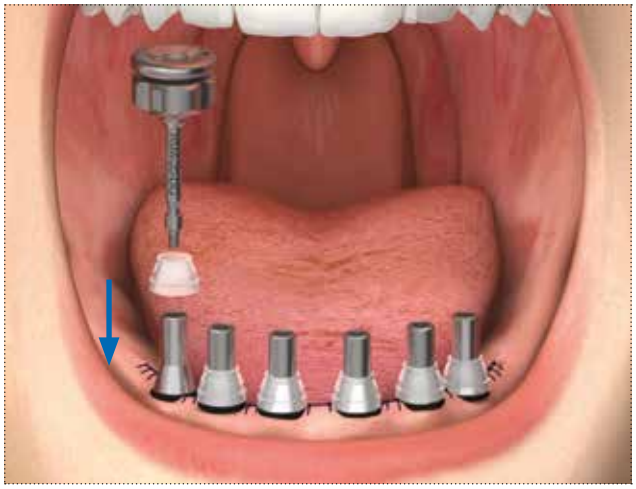
Before suturing the surgical wound, screw a P.A.D. abutment onto every implant, with a suitable transgingival height for the thickness of the patient's soft tissues. Then apply sutures as required by clinical indications.



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.

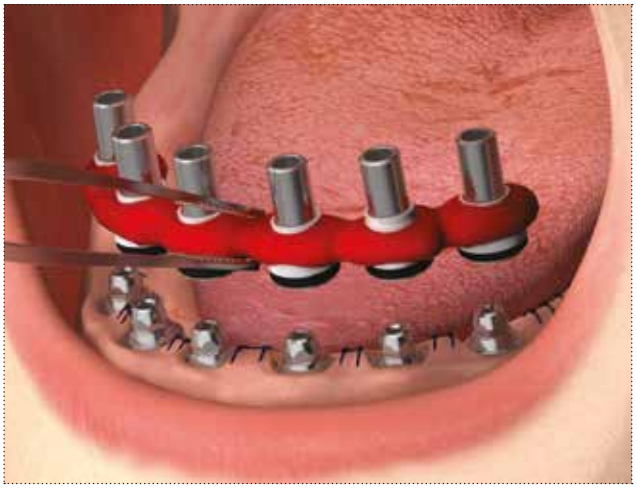
Using the specific screw provided, screw a titanium sleeve for the D.P.F. technique (code PAD-CT-LV) fitted with its black O-ring (code PAD-ORING-LV) onto every P.A.D. abutment. Then fit a castable centring device (code PAD-CC-LV) onto every sleeve.



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 276. 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 pre-formed 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 PAD-VP-140 screws and remove the entire resin structure with the PAD-CT-LV sleeves still inserted.



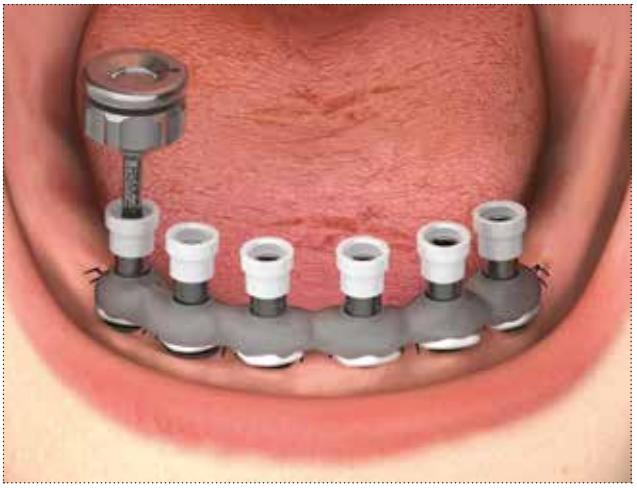
IN THE LABORATORY: If necessary thicken the structure even further. Remove the titanium sleeves and their respective screws before casting the truss.

continues...

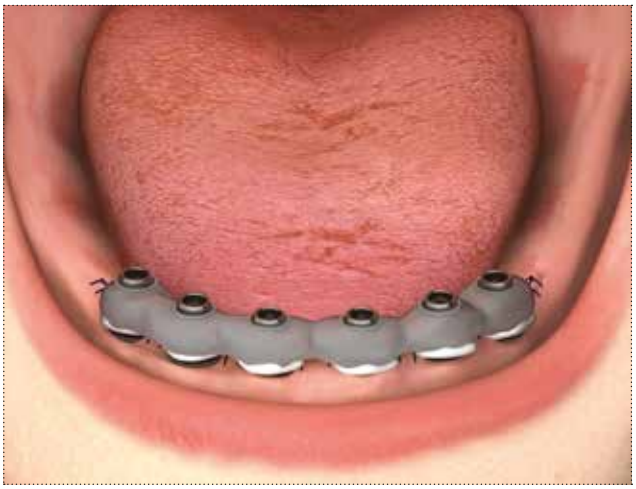
Cast the structure using the standard protocol. Test the structure in the patient's mouth, checking for its complete passivity. The recommended torque for tightening all over-structures obtained by casting onto P.A.D. abutments is 20-25 Ncm.
Replace the titanium sleeves in the truss, which is kept in the correct position by the specific anti-escape plugs. Insert the PAD-VP-130 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 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 following the manufacturer's instructions.



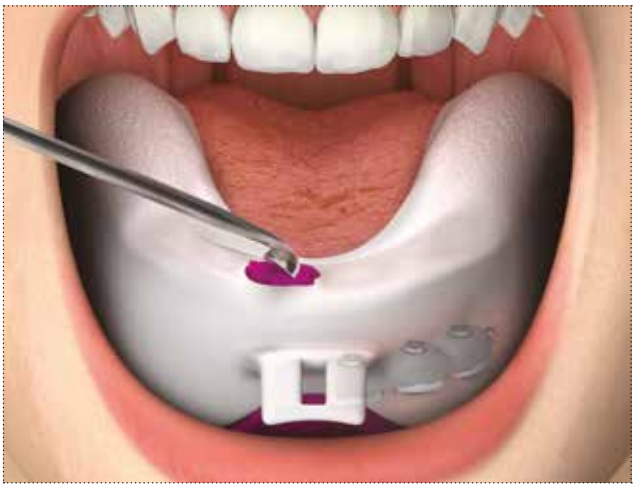
If necessary, the technician can shorten the sleeves to conform to the patient's vertical dimension.



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

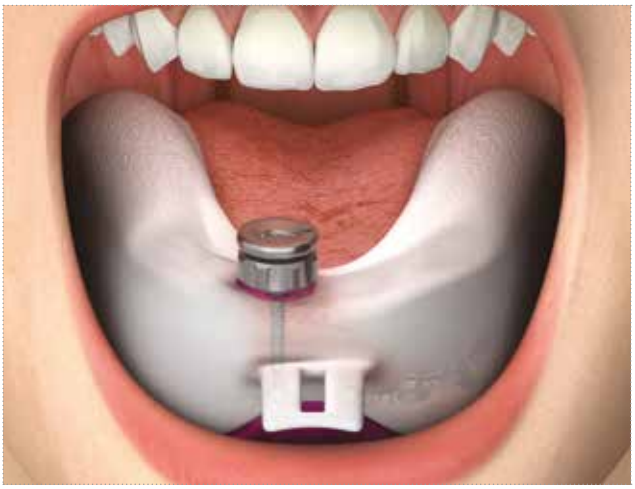
Using an individual tray, perforated at the position of the screw left in place, take an impression that incorporates the cast truss, fixed previously to the titanium sleeves. Then excavate the impression at the position of the screw.

Note: the PAD-VP-140 screw can be substituted with a PAD-VTRAL-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.

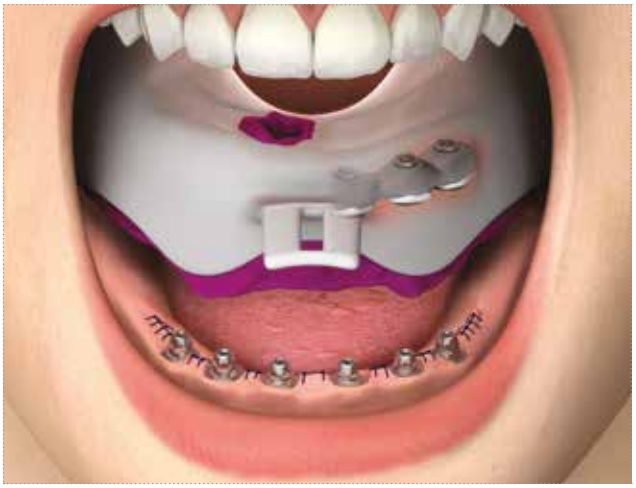


continues...

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



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



Position the PAD-ANA analogs 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 analogs 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.

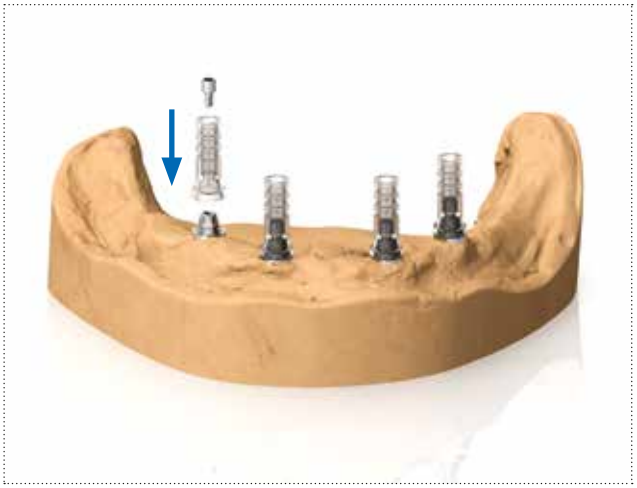
Deferred loading on 4 or 6 implants

Production of a definitive prosthesis by casting or with CAD-CAM technique

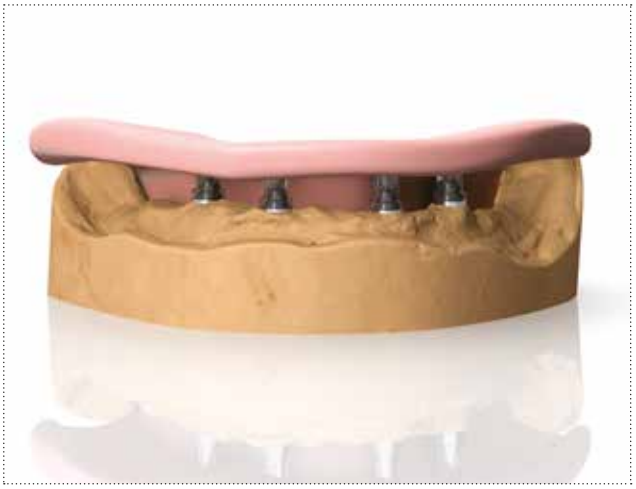
Remove the temporary prosthesis and take a definitive impression on the P.A.D. abutments with Pick-up transfers and an individual tray, following the same procedures indicated on page 154, and then casting the model using normal methods. Reposition the temporary prosthesis in the patient's mouth.

Screw the PAD-CC castable sleeves 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.

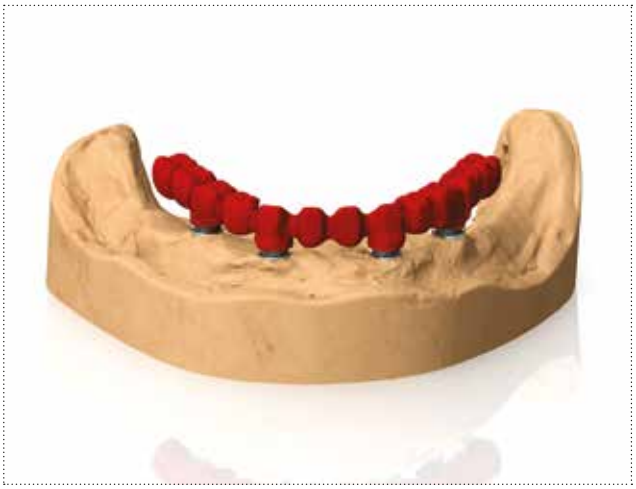
Important warning
For the laboratory phases, always use spare screws, use the definitive screws only for final tightening in the patient's mouth.



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.

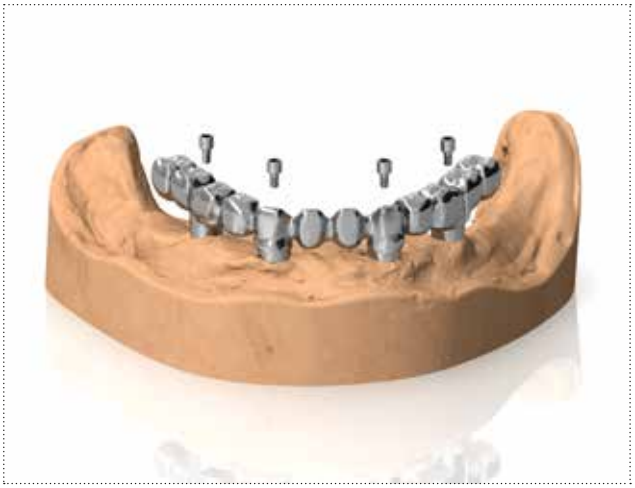


Make a castable structure, which will allow the metal framework of the final prosthesis to be obtained by casting or with CAD-CAM methods.



Cast 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.

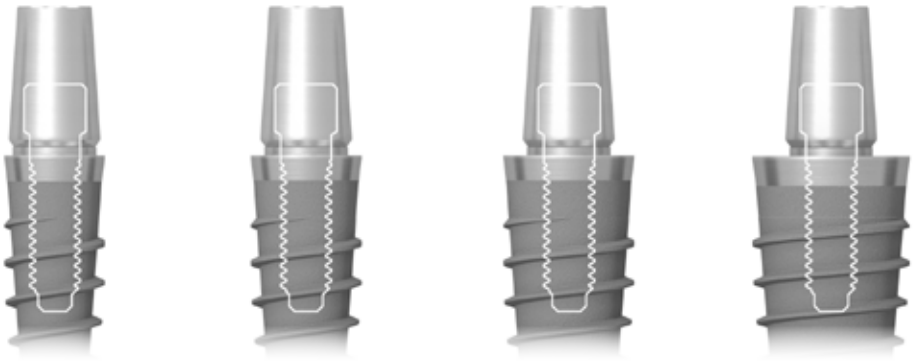
Important warning
If the structure is not completely passive, even though the normal checking protocol has been followed before casting, correct it using the normal techniques.



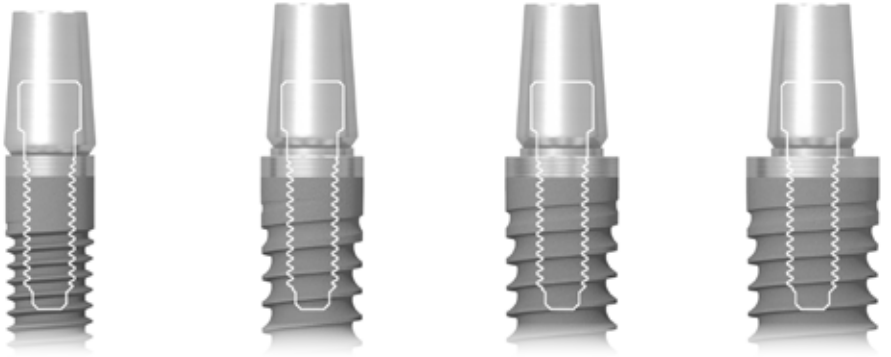
Apply the ceramic finish to the definitive prosthesis using normal methods, and screw it onto the P.A.D. abutments in the patient's mouth. Preserve the screw heads and close the screw holes with a removable material, such as a composite or a resin.
The recommended torque for tightening all over-structures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

Conoweld conometric technique for the temporary and final rehabilitation

The Grade 5 titanium posts that form part of the Conoweld prosthetic range have been specifically designed to rest securely on the Collex collar.
This make it possible to have only one post for Premium One, Kohno One and Shelta platforms.



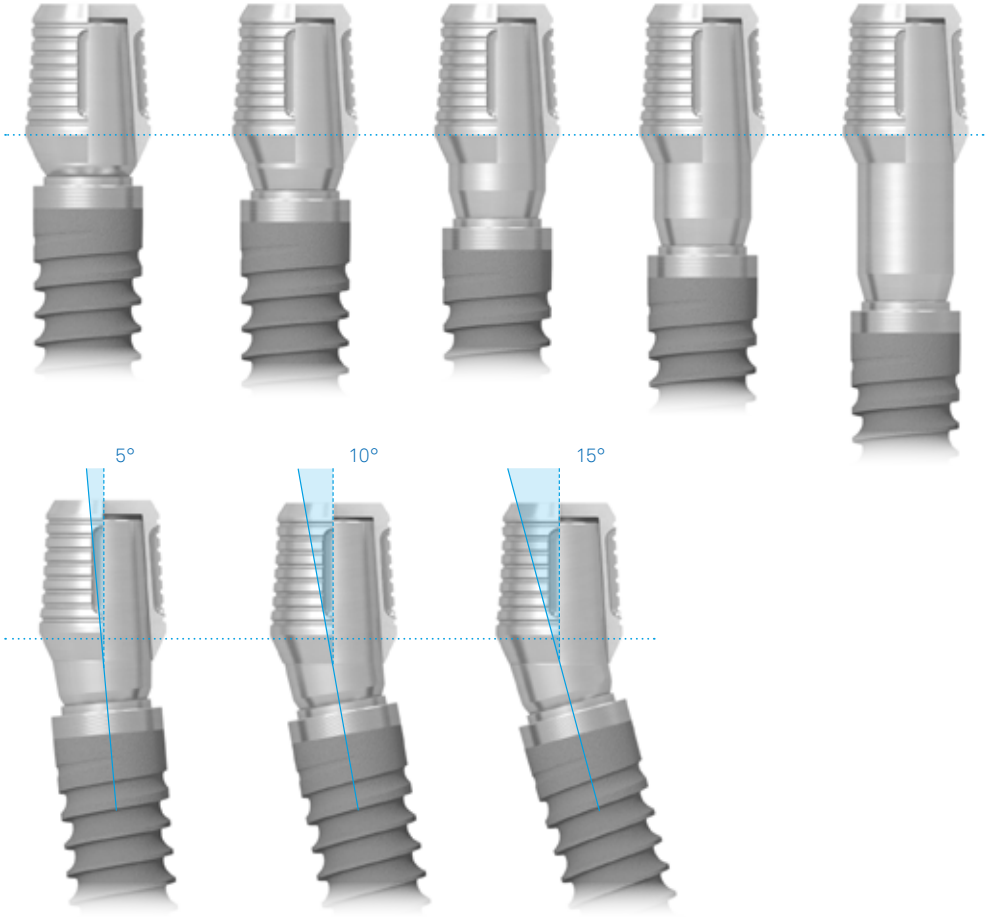
Shelta ø 3.80 | Shelta ø 4.25 | Shelta ø 5.00 | Shelta ø 6.00



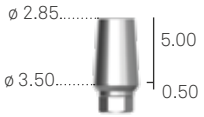
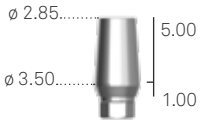
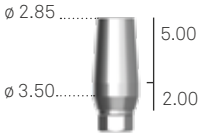
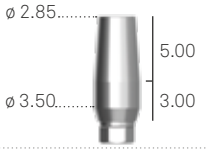
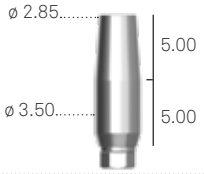
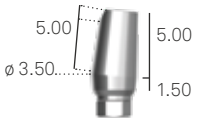
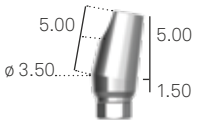
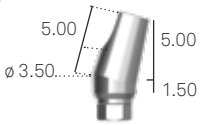
Premium One ø 3.30 | Premium One ø 3.80 Kohno One ø 3.80 | Premium One ø 4.25 Kohno One ø 4.25 | Premium One ø 5.00 Kohno One ø 5.00

The Conoweld technique embraces the advantages of two protocols already widely established in oral implantoprosthesis: intraoral welding and conometric retention.

The Conoweld range includes three different universal 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 both in the straight and in the angled posts.

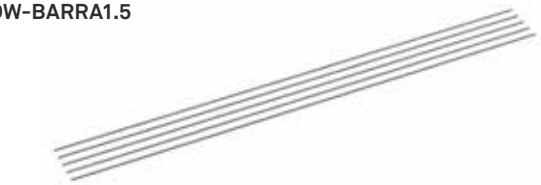


The two titanium caps differ in thickness: the cap designed for the construction of a welded structure intraorally for the temporary stage (**A**) is thicker in order to withstand the welding with the titanium bars, without bonding with the underlying post, while the cap designed to anchor the final prosthesis luted (**B**) 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 (**C**) 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.

prosthetic component hexagon	2.30
Conoweld post in Gr. 5 titanium Straight Transgingival height 0.50 mm Connecting screw included	**A-MD-TS-EX230-05** 
Conoweld post in Gr. 5 titanium Straight Transgingival height 1.00 mm Connecting screw included	**A-MD-TS-EX230-1** 
Conoweld post in Gr. 5 titanium Straight Transgingival height 2.00 mm Connecting screw included	**A-MD-TS-EX230-2** 
Conoweld post in Gr. 5 titanium Straight Transgingival height 3.00 mm Connecting screw included	**A-MD-TS-EX230-3** 
Conoweld post in Gr. 5 titanium Straight Transgingival height 5.00 mm Connecting screw included	**A-MD-TS-EX230-5** 
Conoweld post in Gr. 5 titanium Angled at 5° Connecting screw included	**A-MA05-TS-EX230** 
Conoweld post in Gr. 5 titanium Angled at 10° Connecting screw included	**A-MA10-TS-EX230** 
Conoweld post in Gr. 5 titanium, Angled at 15° Connecting screw included	**A-MA15-TS-EX230** 
Single pack Packs of 10 pieces Spare screws Supplied with abutments and also available separately as a spare	**VM2-180** **VM2-180-10** 

Recommended torque for Conoweld post: 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.

description	code
Temporary cap for intraoral welding	**CAP-TS-PRO** 
Final cap for gluing	**CAP-TS-DEF** 
Cap for impression	**CAP-TS-IMP** 
Analog of the Conoweld post	**ANA-TS** 
Packs of 5 pieces Bar in Gr. 2 titanium with circular profile L. 150 mm, ø 1.20 mm	**DW-BARRA1.2** 
Packs of 5 pieces Bar in Gr. 2 titanium with circular profile L. 150 mm, ø 1.50 mm	**DW-BARRA1.5** 
Packs of 5 pieces Bar in Gr. 2 titanium with circular profile L. 150 mm, ø 1.80 mm	**DW-BARRA1.8** 
Packs of 5 pieces Bar in Gr. 2 titanium with rectangular profile L. 100 mm, 3x1 mm	DW-BARRA3x1 
Packs of 5 pieces Bar in Gr. 2 titanium with rectangular profile L. 100 mm, 4x2 mm	DW-BARRA4x2 

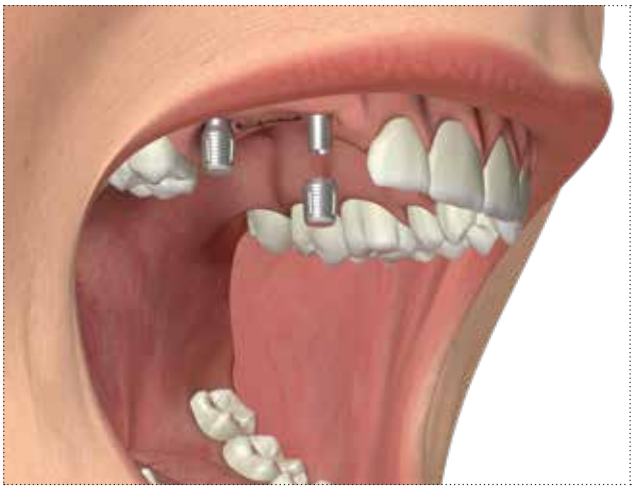
See technical characteristics of Gr. 2 titanium and PMMA on pages 264-266.

Temporary multiple rehabilitation with endoral welding on Conoweld caps

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 20-25 Ncm.

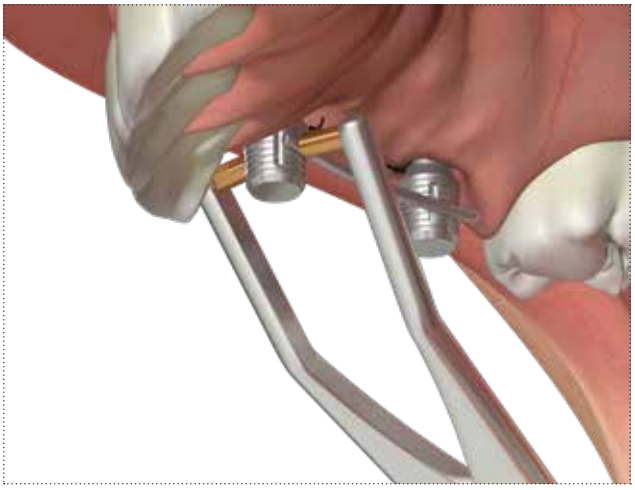
Position the temporary Conoweld caps (cod. CAP-TS-PRO) on the abutments, gently applying manual pressure. Take a Gr. 2 titanium bar for intraoral welding of the most suitable thickness and curve it manually in line with the arch to be rehabilitated.

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.

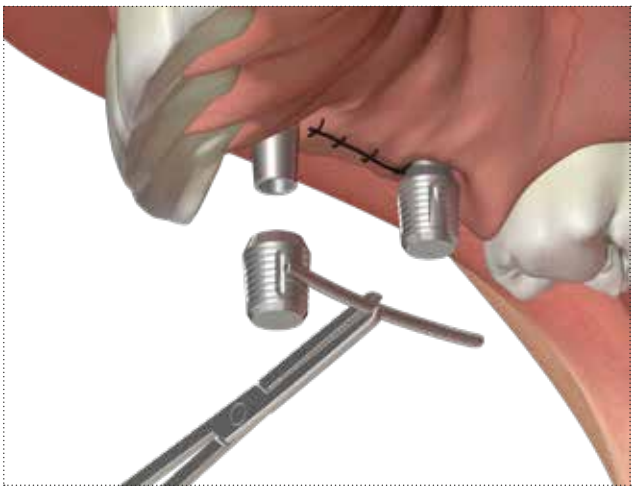


Line up the first segment of the bar with one of the two distal caps and carry out welding with the special intraoral welding machine, following the manufacturer's instructions.

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.

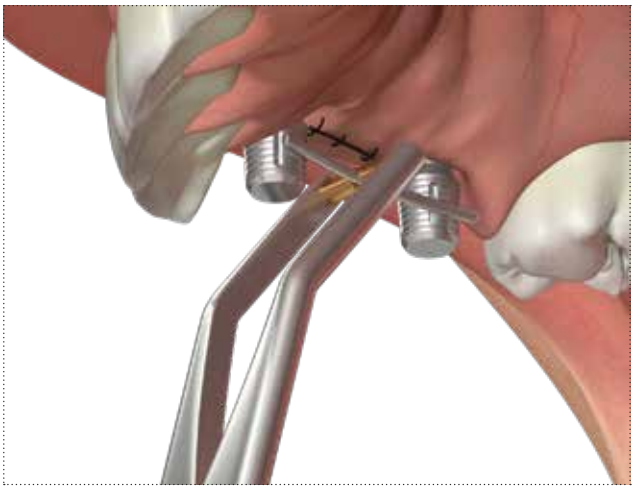


In order to establish that the procedure has been carried out correctly, it is advisable to remove the bar and caps that have been fixed up until that point after each welding and before the next. This helps to establish that the wall of the cap and the underlying post have not bonded and to be sure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

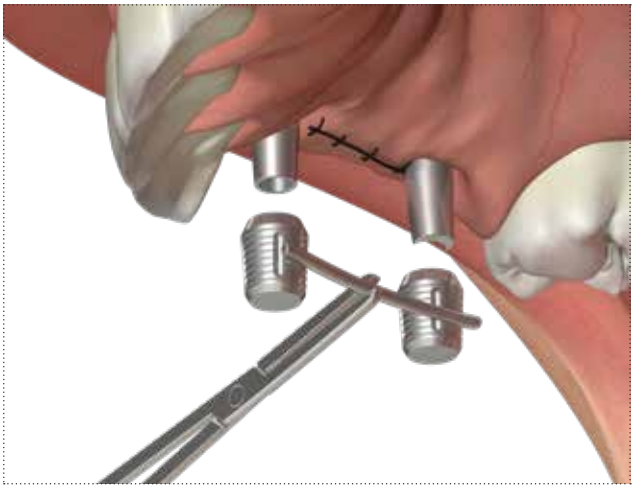


Having positioned the first cap back on its post, guide the bar and, if necessary, remodel it, in order to weld it to the next cap along.

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 two caps welded to it.



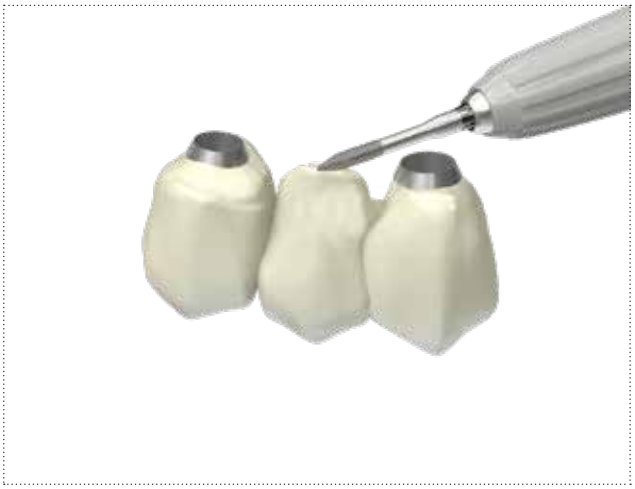
Direct protocol: creation of the immediate temporary prosthesis

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.

Remove the structure made up of the bar and the two caps welded to it: to verify the structure dimension try it in the pre-made bridge prepared in the laboratory.

Position the structure made up of the bar and the two caps welded to it in the patient's mouth and direct relining with the pre-made posts fill with resin, taking care to remove all the excess cement from the margin.

Remove the relined temporary prothesis, trim and smooth it. Then position it 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 themselves.

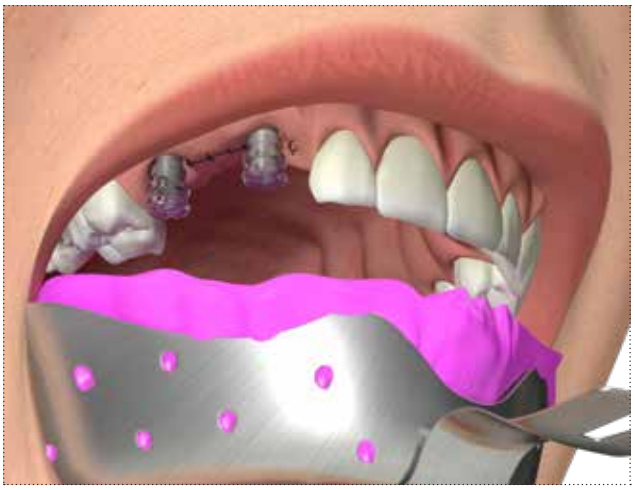


This particular feature of conometric rehabilitation ensures solid splinting throughout the entire osseointegration period, limiting the micromovements of the implants, even where the bone is only slightly mineralised.

Indirect protocol: impression with Conoweld transfer caps in PMMA

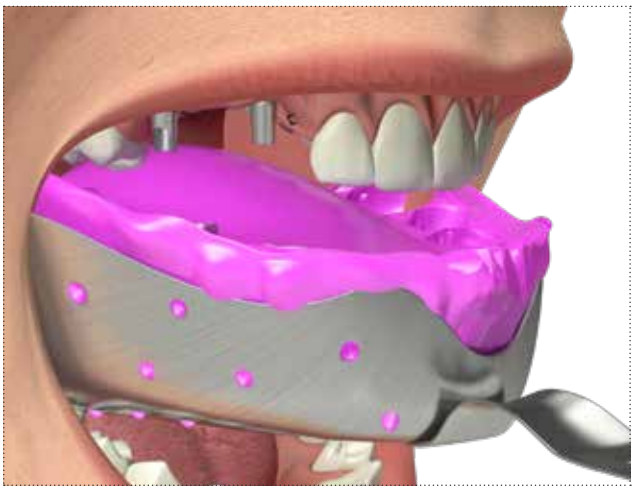
In case of indirect protocol, the impression can be taken directly on the welded structure or using the special Conoweld caps in PMMA (cod. CAP-TS-IMP), as illustrated below. Insert the PMMA caps on the Conoweld posts and gently applying manual pressure.
Fix the caps between each other using resin and wire, if desired.

Choose a closed tray of suitable dimensions, ensuring that, vertically, the caps and posts are included in the impression material in their entirety.
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) around the caps. Fill the impression tray with a more consistant material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.



Position the closed impression tray in situ and wait for the hardening times as indicated by the instructions.

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 to fabricate 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 surgery in order to position it in the mouth.

Definitive multiple rehabilitation with conometric technique

Technique for luting cast structure onto titanium caps

Position the final titanium caps (cod. CAP-TS-DEF) on the posts, gently applying manual pressure on the precision model.

Wax the structures, interposing a lab spacer in order to passivate the final prosthesis and facilitate the luting 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 or duplicate with CAD-CAM methods only the structure made in wax or resin, 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. It can help here to spread small layer of primer, such as ZPrime, before cementing with Bis-Cem.

Position the cast bridge on the Conoweld posts: the interaction via conometry between the posts and the Conoweld caps will confer to the structure the correct retentivity so that the patient will not be able to remove it himselves.

Important warning
To obtain the best results in terms of precision and passivity, it is advised 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.

Technique for complete casting with castable caps

Position the Conoweld caps in PMMA (cod. CAPS-TM-IMP) on the Conoweld plaster analogs, gently applying manual pressure.

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

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

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

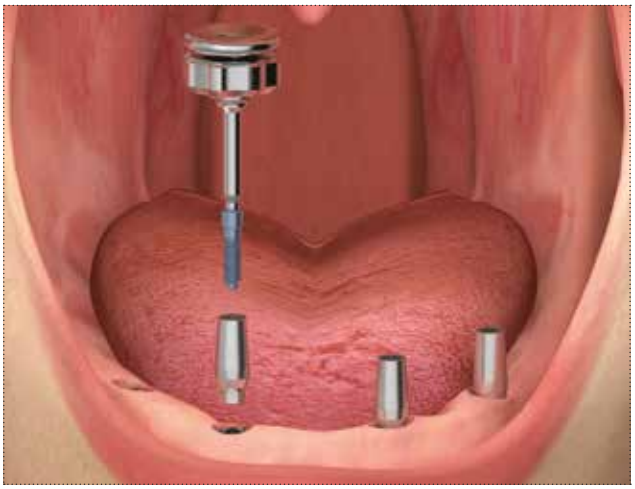
Finish the base of the structure and complete the coating in ceramic.

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.

Position the cast bridge on the Conoweld posts: the interaction via conometry between the posts and the Conoweld caps will confer to the structure the correct retentivity so that the patient will not be able to remove it himselves.

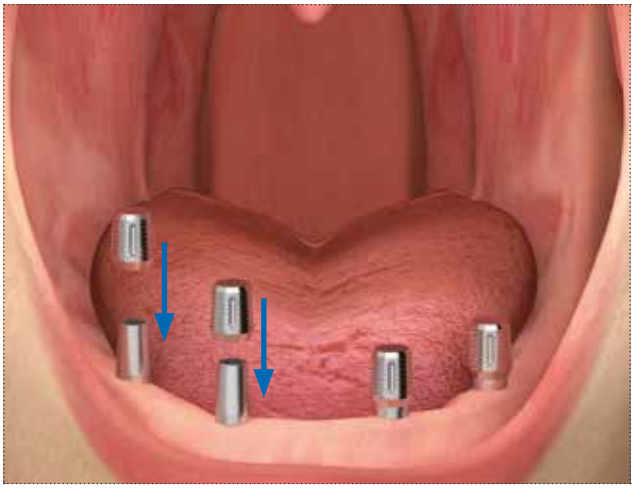
Fixing stage - endoral welding on Conoweld caps for immediate loading

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.
(See page 15 for available lengths and types).



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.

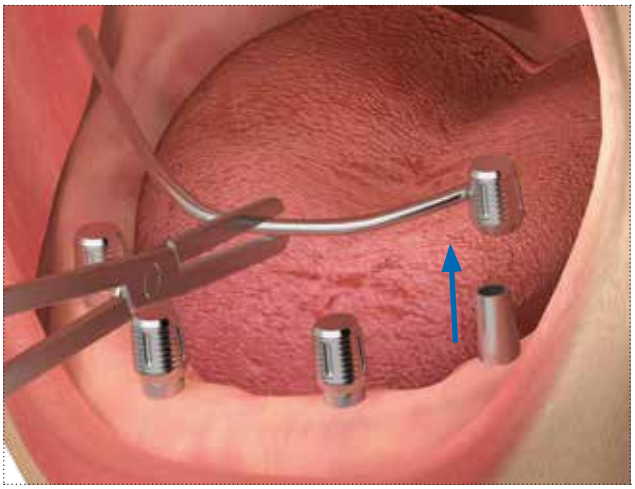
Note: avoid cutting the bar to measure at the outset, as the excess segment makes removal and repositioning easier to handle until the welding of the caps is complete.



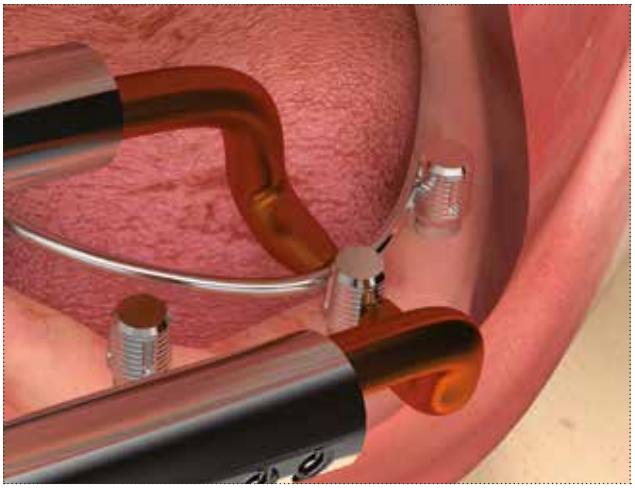
Line up the first segment of the bar with one of the two distal caps and carry out welding with the special intraoral welding machine, following the manufacturer's instructions.

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.

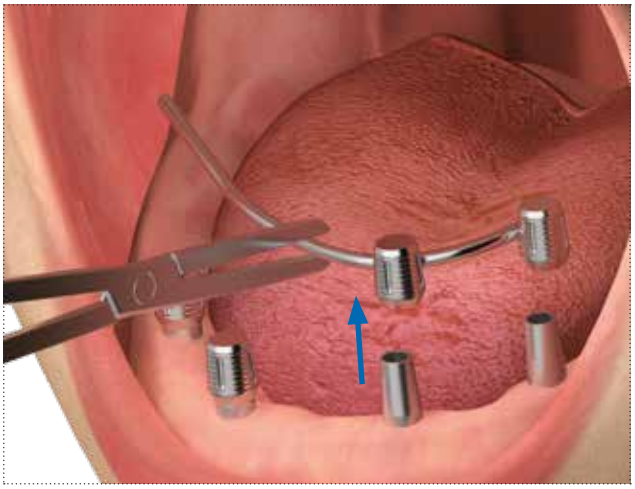
In order to establish that the procedure has been carried out correctly, it is advisable to remove the bar and caps that have been fixed up until that point after each welding and before the next. This helps to establish that the wall of the cap and the underlying post have not bonded and to be sure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



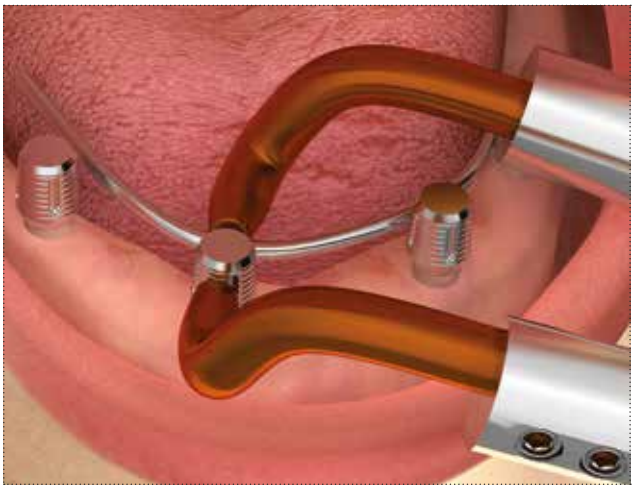
Having positioned the first cap back on its post, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.



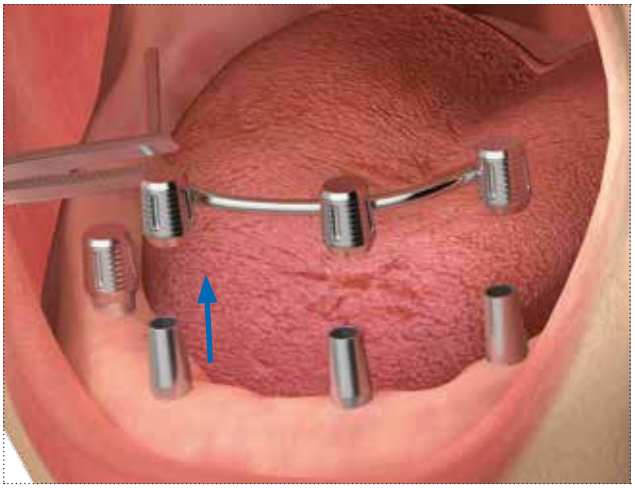
Remove the structure made up of the bar and the first two caps welded to it in order to establish that the wall of this second cap and the underlying post have not bonded and to establish that the structure is passive.



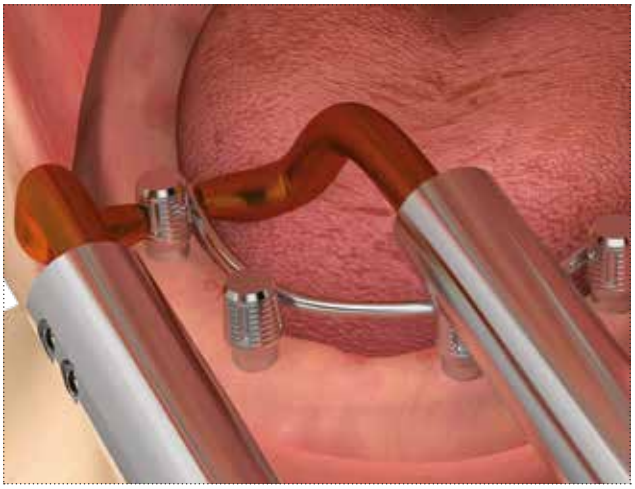
Having positioned the first and second caps back on their posts, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap along.



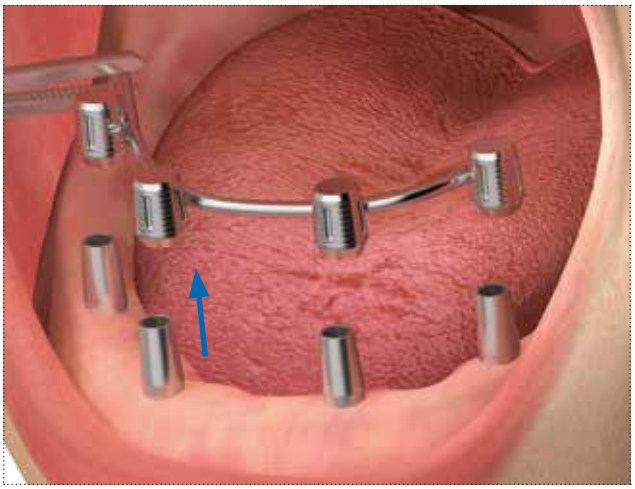
Remove the structure made up of the bar and the three caps welded to it in order to establish that there is no casting between the wall of this third cap and the underlying post and to establish that the structure is passive.



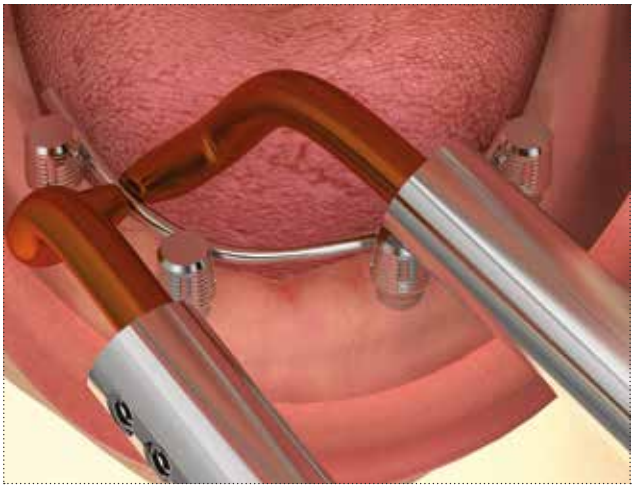
Having positioned the three caps back on their posts, guide the bar round and, if necessary, remodel it, in order to weld it to the next cap.



Remove the entire structure made up of the bar and the four caps welded to it in order to establish 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 placements 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.
While the additional bar should not be capable of generating traction, 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: while 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.

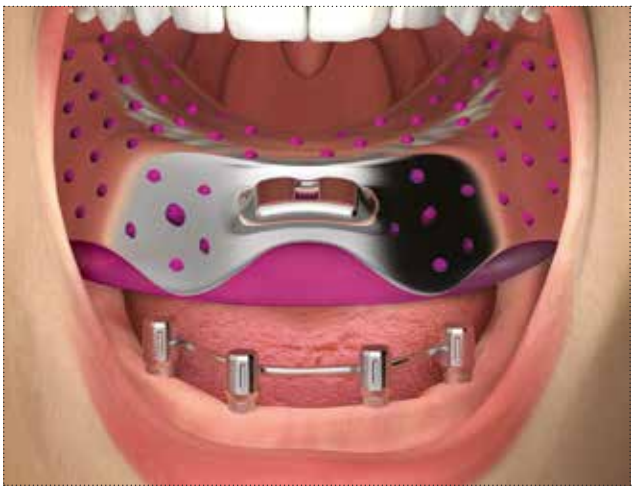
Creation of the temporary prosthesis: direct protocol

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.

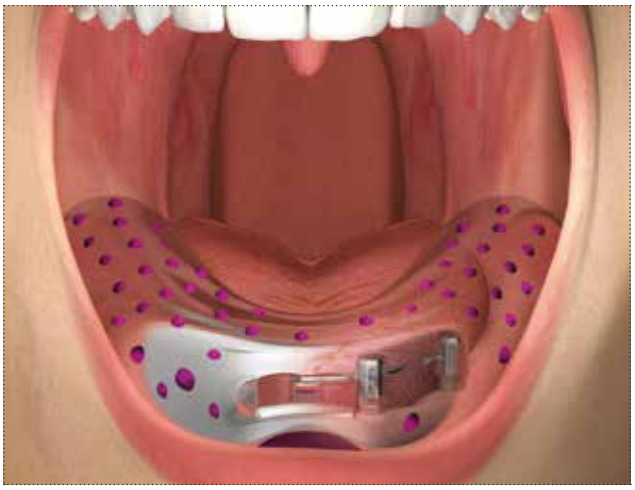
Once the base of the temporary prosthesis has been smoothed, it can be positioned onto the Conoweld posts immediately: the interaction via conometry between the posts and the Conoweld caps will mean that, in terms of retention, the dentist will be able to remove the temporary prosthesis at any time, 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

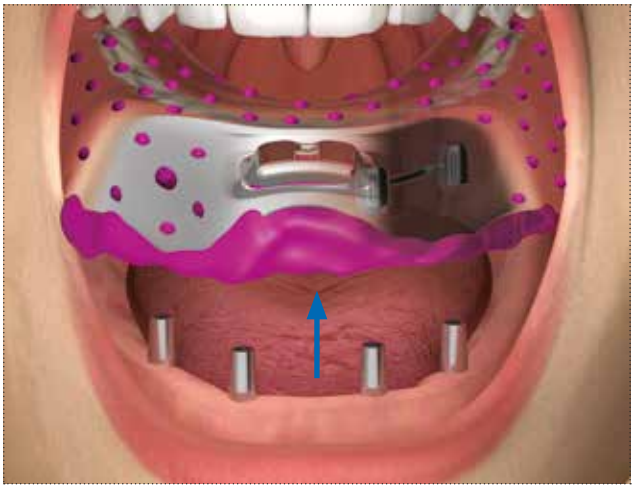
The structure including the temporary Conoweld caps welded onto the titanium bars forms an accurate and reliable impression key. The impression can therefore be taken incorporating the entire structure within the material inside the tray. As the caps rub against the posts as a result of conometry, it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



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. It might be advisable to use a light body impression material around the structure before impressing with a hard material.



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



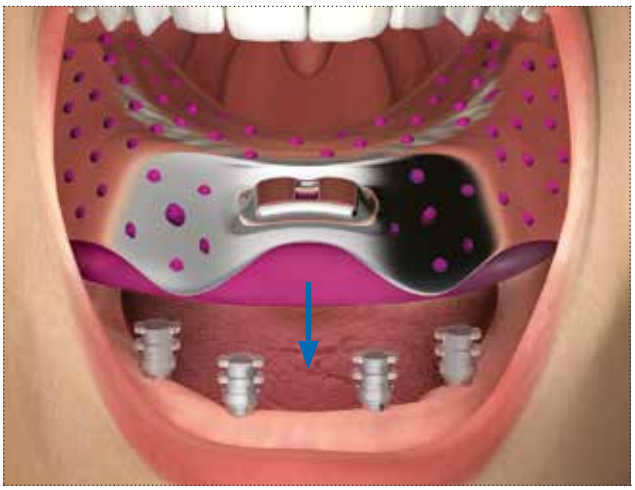
One by one, reposition the analogs in the metallic caps. Send the impression to the laboratory. Cast the model in the usual way.

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.

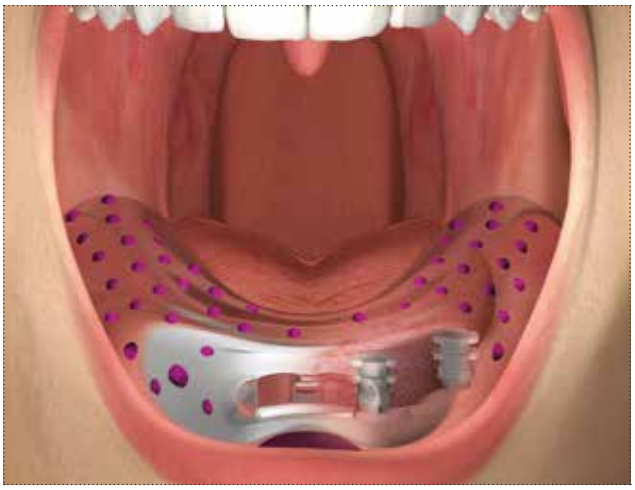
On the structure, build a temporary prosthesis in resin, and then return to the surgery in order to position this in the mouth.

Indirect protocol: impression with Conoweld transfer caps in PMMA

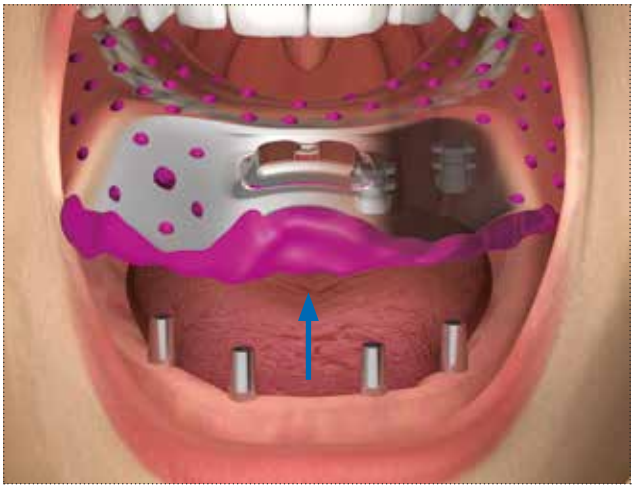
In case of indirect protocol, the impression can be taken directly on the welded structure or using the special Conoweld caps in PMMA (cod. CAP-TS-IMP), as illustrated below. Insert the PMMA caps on the Conoweld posts and gently applying manual pressure.
Fix the caps between each other using resin and wire, if desired.



Choose a closed tray of suitable dimensions, ensuring that, vertically, the caps and posts are included in the impression material in their entirety.
Inject a precision impression material (i.e. SKY IMPLANT LIGHT, code SKY14) around the cups. Fill the impression tray with a more consistant material (i.e. SKY IMPLANT ONEMIX-ED, code SKY08) over the entire arch.
Position the closed impression tray in situ and wait for the hardening times as indicated by the instructions.



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



Reposition the Conoweld plaster analogs in the caps, now incorporated into the impression material, and send the impression to the laboratory,if necessary 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 conometric 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 surgery in order to position this in the mouth.

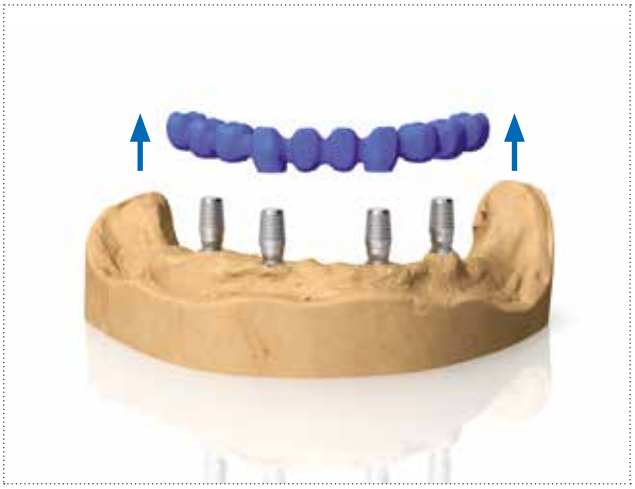
Creation of final conometric prosthesis

Technique for luting cast structure onto titanium caps

Take a precise impression in accordance with the protocol set out on page 38.
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 luting 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.

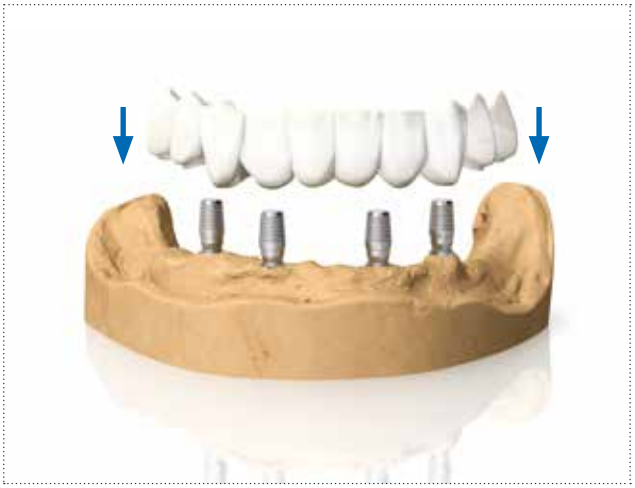
Cast the structure made in wax, leaving the Conoweld caps on the model.



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 lute 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.

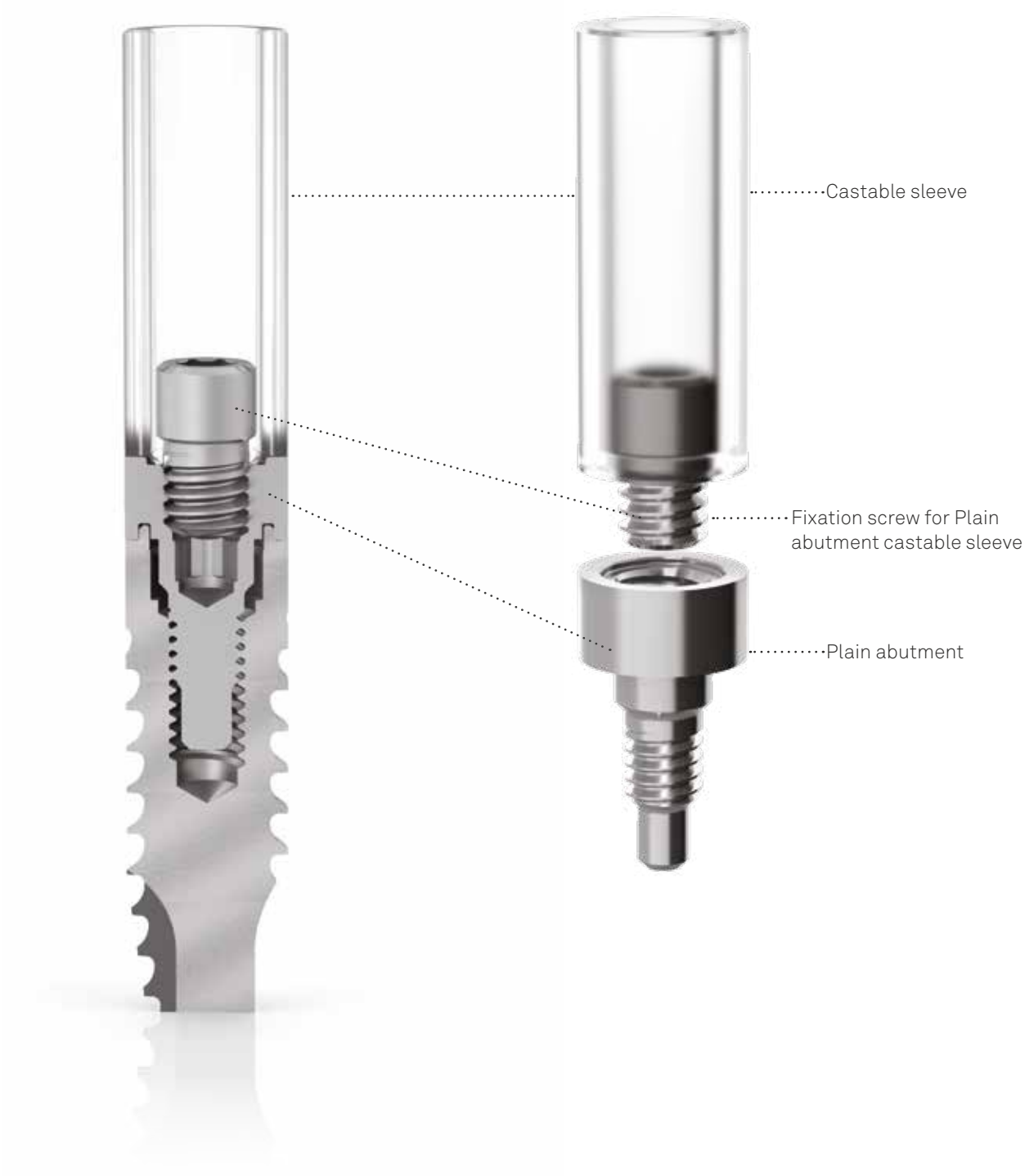
Cast the structure made in wax that has the Conoweld castable caps inside it.

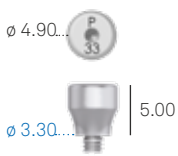
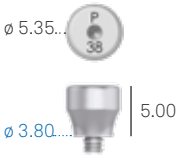
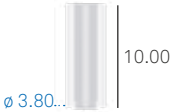
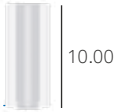
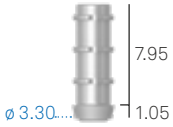
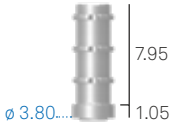
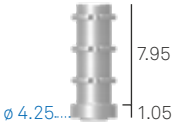
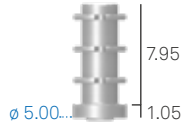
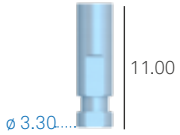
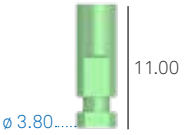
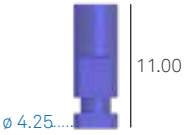
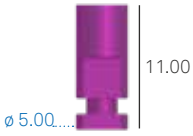
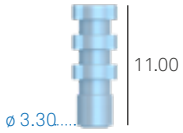
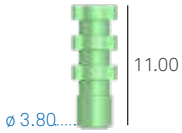
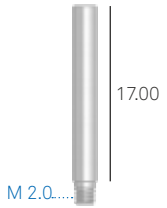
Finish the base of the structure and complete the coating in ceramic.

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.

Temporary and definitive rehabilitation with Plain abutments

The Plain abutments, whose unique design allows for 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 insertion and the final fastening of Plain abutments, the standard screwdrivers from the HSM series contained in the 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. Normally, when these abutments are used, the impression is taken directly on the abutments with the specific transfers. Titanium sleeves are also available, for the production of temporary prosthesis.



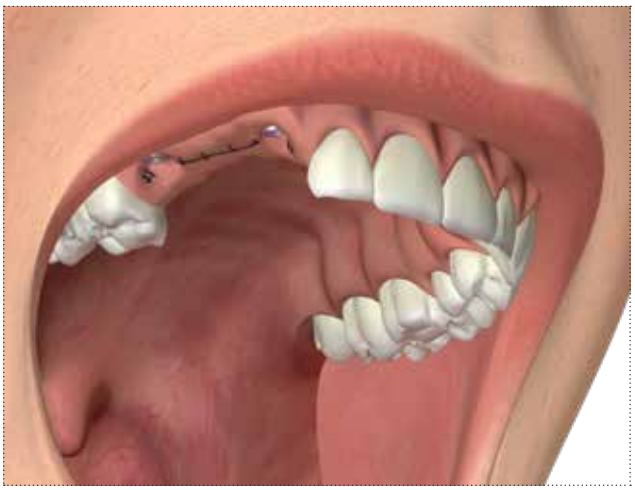
prosthetic component ø	3.30	3.80	4.25	5.00
Direct screw retained Plain abutment Transgingival h 2.00 mm	**A-PLAIN-ABU330-2** 	**A-PLAIN-ABU380-2** 	**AS-PLAIN-ABU425-2** 	**AS-PLAIN-ABU500-2** 
Direct screw retained Plain abutment Transgingival h 3.00 mm	**A-PLAIN-ABU330-3** 	**A-PLAIN-ABU380-3** 	**AS-PLAIN-ABU425-3** 	**AS-PLAIN-ABU500-3** 
Direct screw retained Plain abutment Transgingival h 4.00 mm	**A-PLAIN-ABU330-4** 	**A-PLAIN-ABU380-4** 	**AS-PLAIN-ABU425-4** 	**AS-PLAIN-ABU500-4** 
Healing cap for Plain abutment	**A-PLAIN-CG330** 	**A-PLAIN-CG380** 	**A-PLAIN-CG425** 	**A-PLAIN-CG500** 
Castable sleeve for Plain abutments Fixation screw included	**A-PLAIN-CC330** 	**A-PLAIN-CC380** 	**A-PLAIN-CC425** 	**A-PLAIN-CC500** 
Single pack Pack of 10 pieces Fixation screw for Plain abument castable sleeve	**A-PLAIN-VP200** **A-PLAIN-VP200-10** 	Use A-PLAIN-VP200	Use A-PLAIN-VP200	Use A-PLAIN-VP200
Titanium sleeve for Plain abutments Fixation screw included	**A-PLAIN-CT330** 	**A-PLAIN-CT380** 	**A-PLAIN-CT425** 	**A-PLAIN-CT500** 
Analog for Plain abutment	**A-PLAIN-ANA-330** 	**A-PLAIN-ANA-380** 	**A-PLAIN-ANA-425** 	**A-PLAIN-ANA-500** 
Transfer for Plain abutment Fixation screw included	**A-PLAIN-TRA-330** 	**A-PLAIN-TRA-380** 	**A-PLAIN-TRA-425** 	**A-PLAIN-TRA-500** 
Spare screw for Plain transfer Supplied with the transfers for Plain abutments, it can also be ordered separately as a spare	**A-PLAIN-VTRA200** 	Use A-PLAIN-VTRA200	Use A-PLAIN-VTRA200	Use A-PLAIN-VTRA200

Recommended torque for Pick-up transfer and for healing caps PLAIN: 8-10 Ncm, for titanium sleeves on P.A.D. abutment 20-25 Ncm, for PLAIN abutments 25-30 Ncm.

See technical characteristics of Gr. 5 titanium and PMMA on pages 264 and 266.

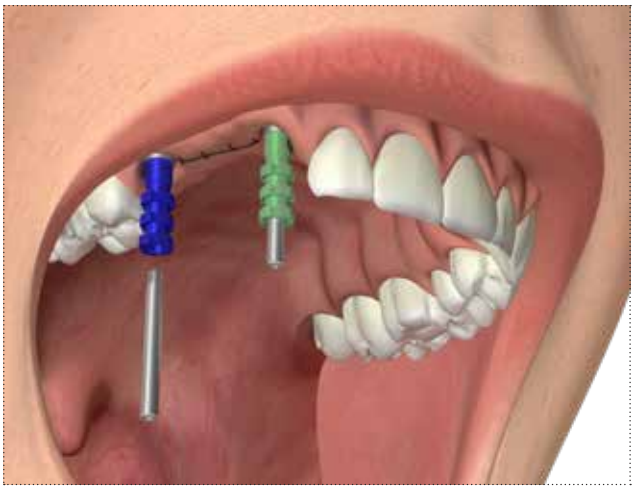
Impression and model phase

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 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 and the Plain abutments remain screwed to the implant.

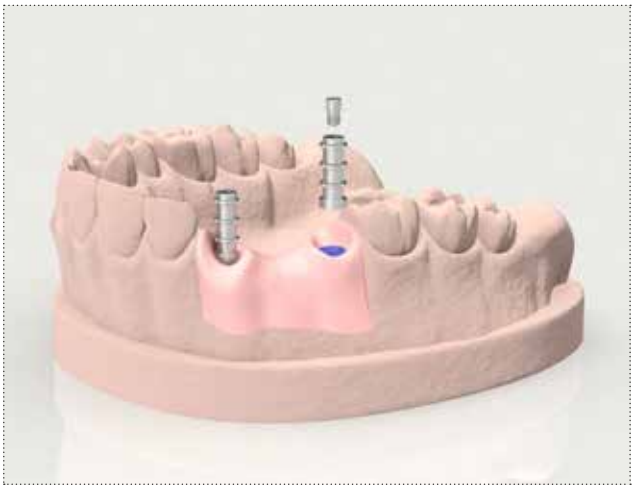
Screw the titanium healing caps onto the Plain abutments using a screwdriver of the HSM series.
The tightening torque for Plain healing caps on their respective abutments is 8-10 Ncm.

Screw the Plain analogs onto the transfers using the transfer screws, repositioned in the holes left by each screw in the impression material.
The recommended torque is 8-10 Ncm.
Develop the model as usual.

Multiple temporary screw retained rehabilitation with Plain abutments: luting technique with titanium sleeves

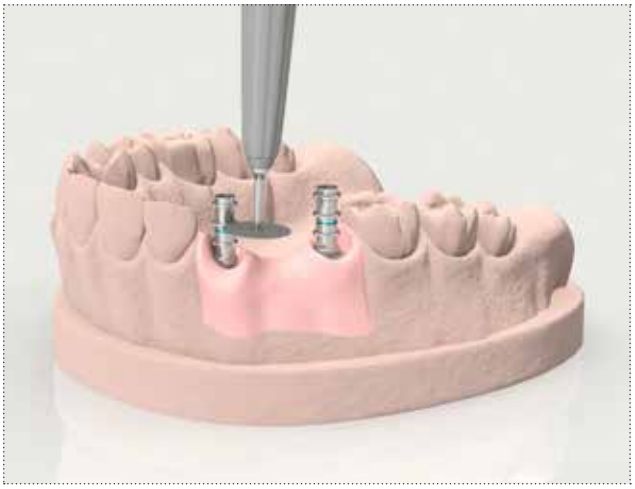
Screw the titanium sleeves onto the Plain analogs on the precision model using the fixation screw A-PLAIN-VP200, leaving it initially at the original length. The recommended torque is 8-10 Ncm.

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.

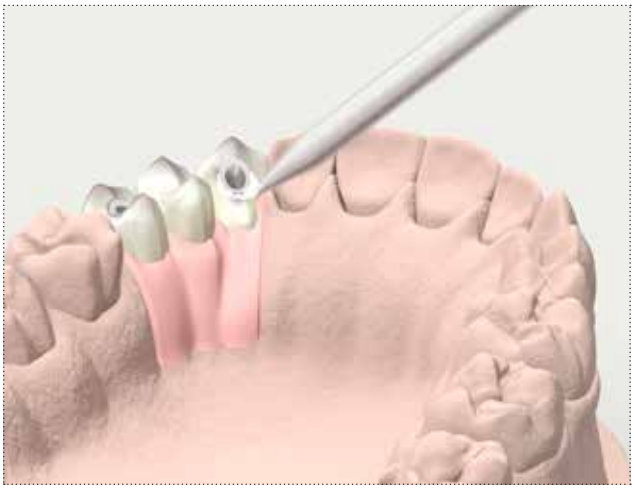


On the Plain titanium sleeves insert a pre-made pierced bridge made in the laboratory so as to allow it to slide easily on the body of the sleeves. Mark the palatal and vestibular margin of the temporary bridge on both sleeves, then reduce them appropriately.

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

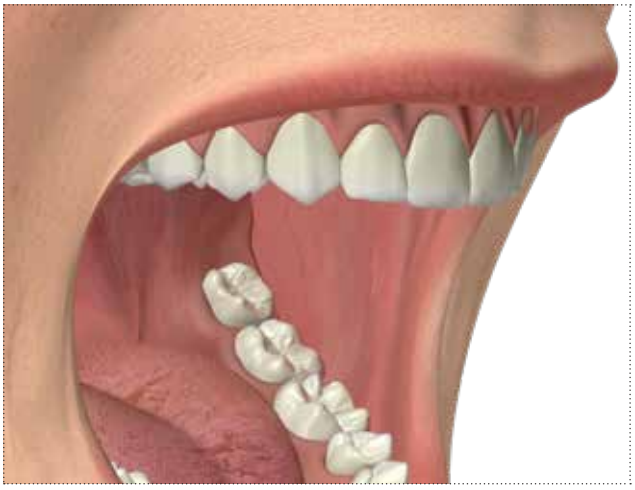


Lute the temporary bridge onto the Plain titanium sleeves, waiting for polymerization as indicated by the instructions.



When polymerization is complete, unscrew the temporary bridge from the model, trim it and tighten it onto the implants, using the specific screws and a screwdriver from the HSM series. A tightening torque of 20-25 Ncm must not be exceeded.

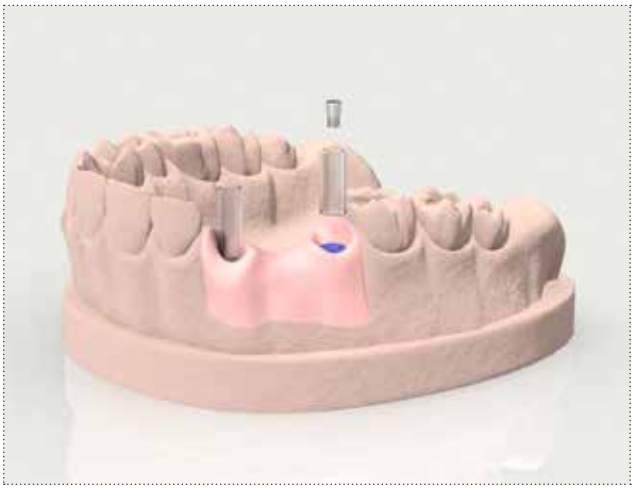
Insert teflon, gutta-percha or soft cement into the screw hole of the Plain sleeves and close the top with resin or a composite material.
The temporary bridge will help not only to ensure an adequate quality of life for the patient while waiting for the definitive prosthesis, but also the correct conformation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



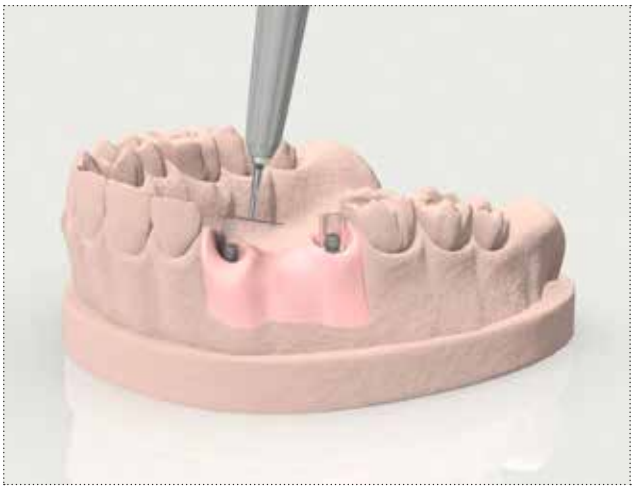
Multiple temporary screw retained rehabilitation with Plain abutments: total casting technique with castable sleeves

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

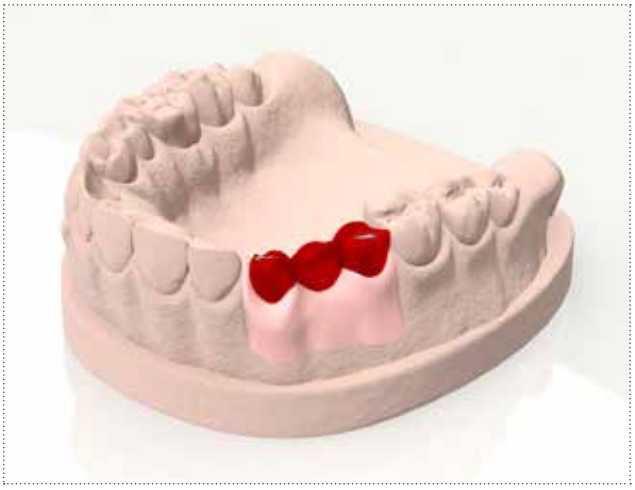
Important warning
It is recommended always to use test screws for the laboratory phases, which are available in single pack or pack of 10 pieces. Keep the new screw supplied for the final fastening in the oral cavity.



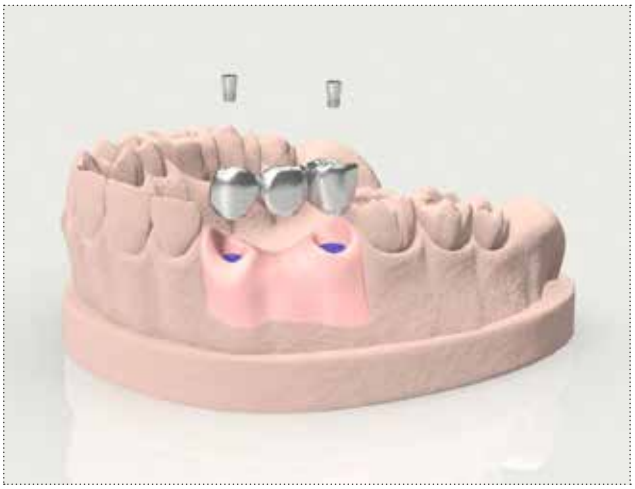
Reduce the castable sleeves to a size compatible with the patient's vertical dimension with an abrasive disk.



Model a structure in wax or castable resin on the sleeves.

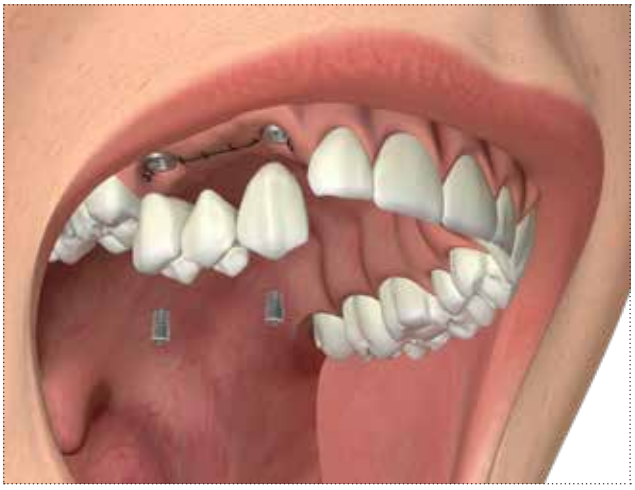


Cast the structure according to the standard protocol. Test the structure first on the model and then in the patient's mouth, checking for its complete passivity.



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

Unscrew the healing caps and tighten the over-structure on the Plain abutments, applying a torque of 20-25 Ncm. Check for passivation and occlusal relationships.

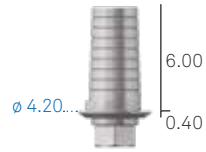
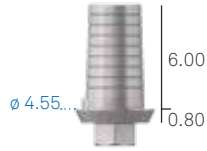
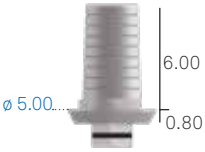
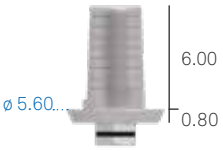
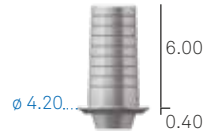
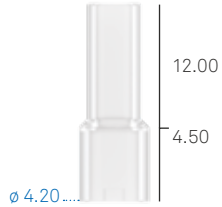
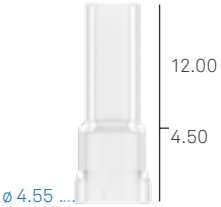
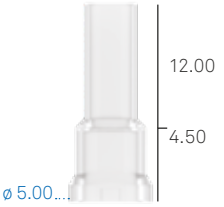
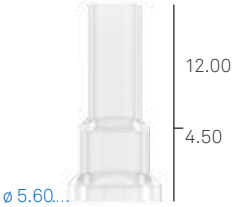
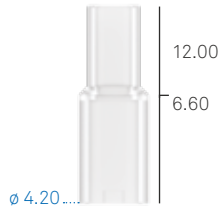
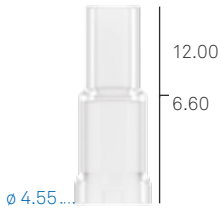
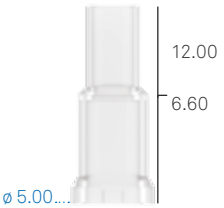
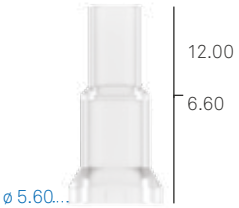


Definitive rehabilitation with T-Connect

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.

Castable sleeve for wax-up modelling

T-Connect in Gr. 5 titanium

prosthetic component ø	3.30	3.80	4.25	5.00
T-Connect for single rehabilitation Cementing cone h 4.00 mm Fixation screw included	**A-BASTZR-S-330-4** 	**A-BASTZR-S-380-4** 	**AS-BASTZR-S-425-4** 	**AS-BASTZR-S-500-4** 
T-Connect for single rehabilitation Cementing cone h 6.00 mm Fixation screw included	**A-BASTZR-S-330-6** 	**A-BASTZR-S-380-6** 	**AS-BASTZR-S-425-6** 	**AS-BASTZR-S-500-6** 
T-Connect for multiple rehabilitation Cementing cone h 4.00 mm Fixation screw included	**A-BASTZR-M-330-4** 	**A-BASTZR-M-380-4** 	**AS-BASTZR-M-425-4** 	**AS-BASTZR-M-500-4** 
T-connect for multiple rehabilitation Cementing cone h 6.00 mm Fixation screw included	**A-BASTZR-M-330-6** 	**A-BASTZR-M-380-6** 	**AS-BASTZR-M-425-6** 	**AS-BASTZR-M-500-6** 
Sleeve for wax-up modelling on T-Connect supports with cone h 4.00 mm	**A-CCBAS-330-4** 	**A-CCBAS-380-4** 	**A-CCBAS-425-4** 	**A-CCBAS-500-4** 
Sleeve for wax-up modelling on T-Connect supports with cone h 6.00 mm	**A-CCBAS-330-6** 	**A-CCBAS-380-6** 	**A-CCBAS-425-6** 	**A-CCBAS-500-6** 
Single pack Pack of 10 pieces Fixation screw. Supplied with the T-Connect, it can also be ordered separately as a spare	**VM2-180** **VM2-180-10** 	Use VM2-180	Use VM2-180	Use VM2-180

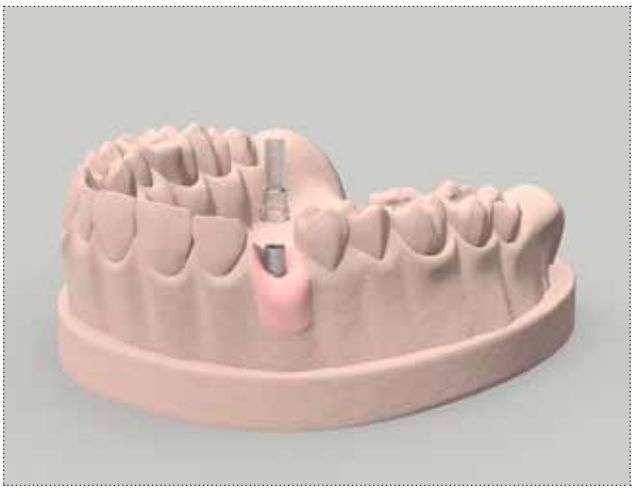
Recommended torque for T-Connect: 20-25 Ncm.

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.

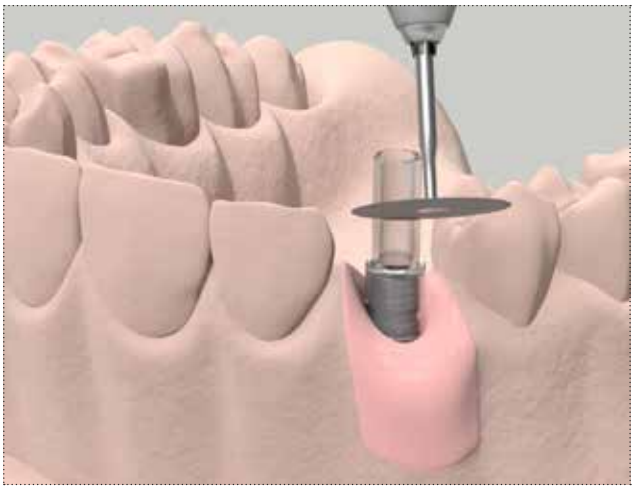
See technical characteristics of Gr. 5 titanium and PMMA on pages 264 and 266.

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

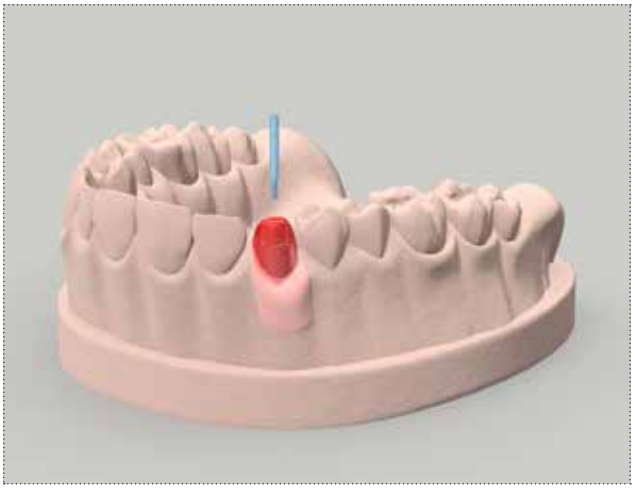
Screw the engaging T-Connect support on the precision model onto the analog using a screwdriver of the HSM series. Insert a castable sleeve of the same height of the cementing cone of the T-Connect, of 4.00 or 6.00 mm.



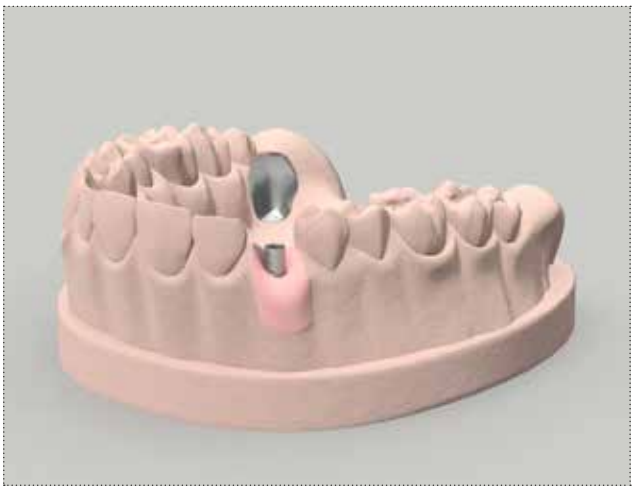
Reduce the castable sleeve to a size compatible with the patient's vertical dimension using an abrasive disk.



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



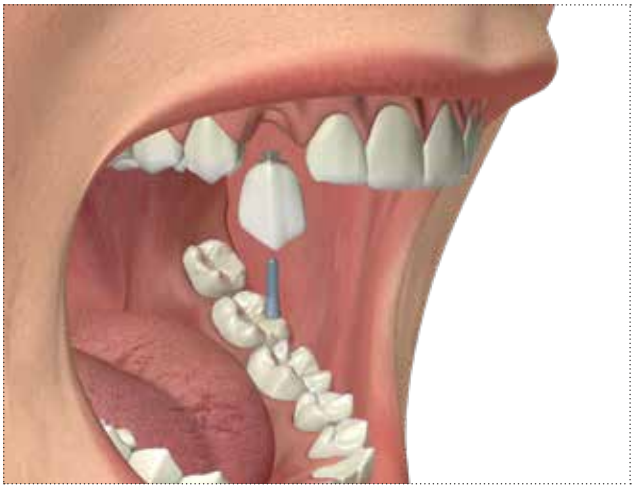
Cast or duplicate with CAD-CAM methods only the structure made in wax or resin, leaving the T-Connect on the model.



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.

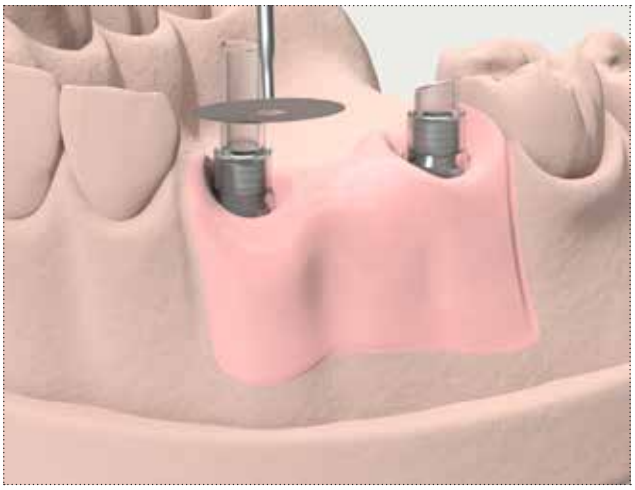
Important warning
It is recommended always to use test screws for the laboratory phases and to keep the new screw supplied for the final fastening in the oral cavity.



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

Screw the engaging T-Connect supports on the precision model onto the analogs using a screwdriver of the HSM series. Insert the castable sleeves of the same height of the cementing cones of the T-Connect, of 4.00 or 6.00 mm.

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



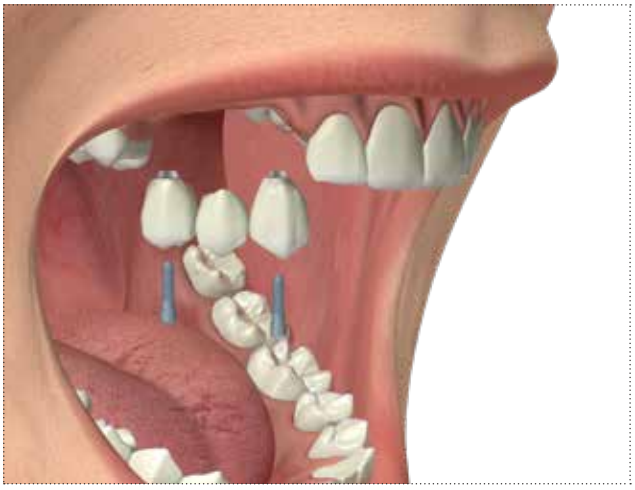
Model a bridge in wax or resin on the castable sleeves and use a screw to keep the screw holes free.

Cast or duplicate with CAD-CAM methods only the structure made in wax or resin, leaving the T-Connect on the model.

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

Tighten the bridge onto the implants 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.



Overdenture anchoring with Locator abutments

Locator Abutments are a patented and versatile prosthetic solution for attaching overdentures to dental implants easily and safely. 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 in 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).

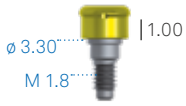
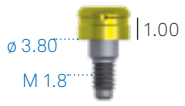
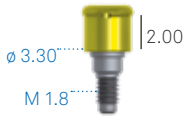
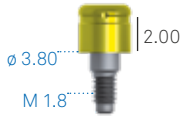
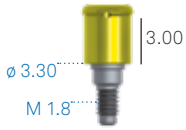
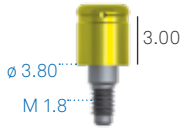
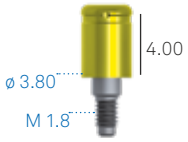
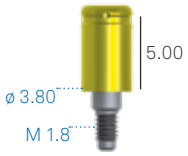
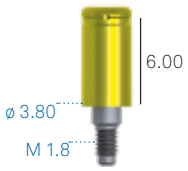
Titanium or steel cap

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.

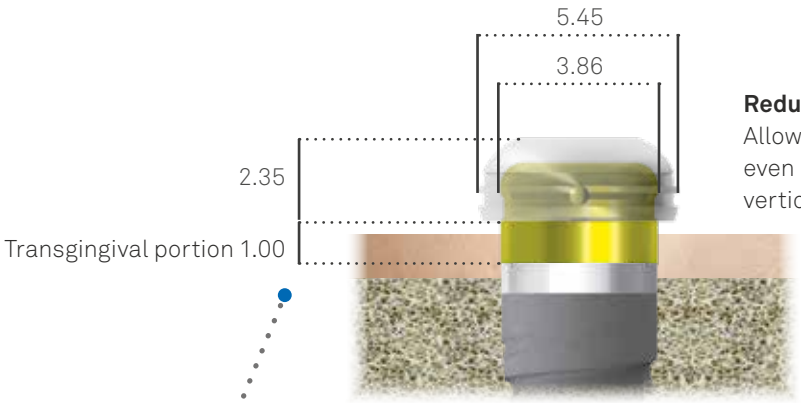
The Locator system has a practical steel or titanium cap where the retainer lodges inside the prosthesis. When it loses retentiveness, it can be easily replaced because there is no need to extract it from the resin by removing material from the prosthesis, but it can be simply extracted from the metal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

prosthetic component ø	3.30	3.80
Locator Abutment Straight emergence Transgingival h 1.00 mm	**1670** 	**1675** 
Locator Abutment Straight emergence Transgingival h 2.00 mm	**1671** 	**1676** 
Locator Abutment Straight emergence Transgingival h 3.00 mm	**1672** 	**1677** 
Locator Abutment Straight emergence Transgingival h 4.00 mm	-	**1678** 
Locator Abutment Straight emergence Transgingival h 5.00 mm	-	**1679** 
Locator Abutment Straight emergence Transgingival h 6.00 mm	-	**1680** 

Recommended torque for Locator abutment: 25-30 Ncm.

See technical characteristics of Gr. 5 titanium on page. 264.

Main characteristics

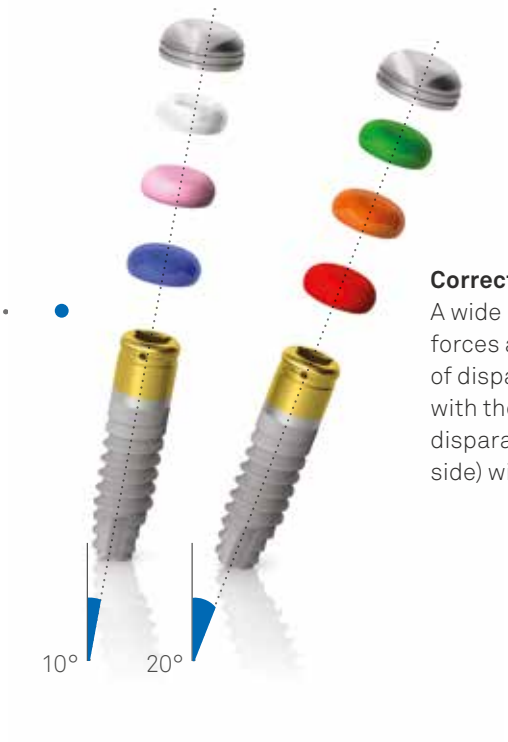


Reduced vertical height
Allows anchoring of the prosthesis even in clinical situations with a short vertical dimension.

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 to 6 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.

Locator products 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.

Locator core tool

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.

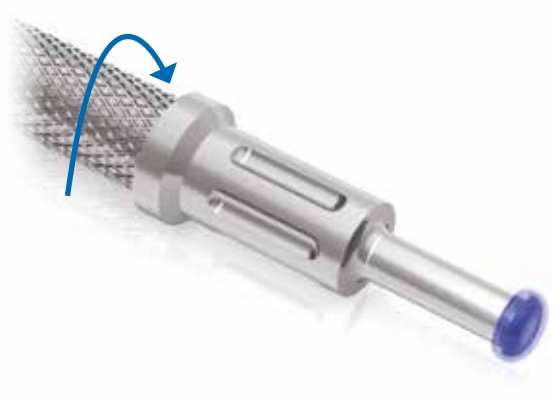
Insertion
The central part of the Locator core tool, once detached from the tip, has a cylindrical end specially designed for inserting the retainers in the metal caps.

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 220 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 screwing, it extrudes a small cylindrical piston which releases the retainer from the tip profile.



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 (code 8926-SW short driver, code 8927-SW long driver) with attachment compatible with the dynamometric ratchet CRI5-KIT 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.

Taking impressions on the 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 222 and 227.

Measuring the parallelism of implant axes

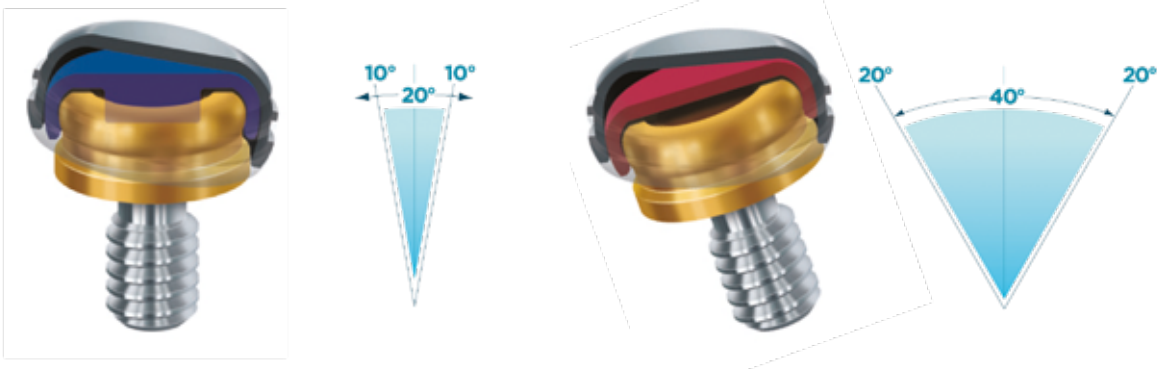
Since correct retention of the overdenture on the Locator abutment depends on the use of the appropriate retainers, it is fundamental to define the implant axes correctly, which determine whether to choose retainers with or without a central pivot. For this purpose a steel plate is available (code 9530), 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 220 and 222.

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

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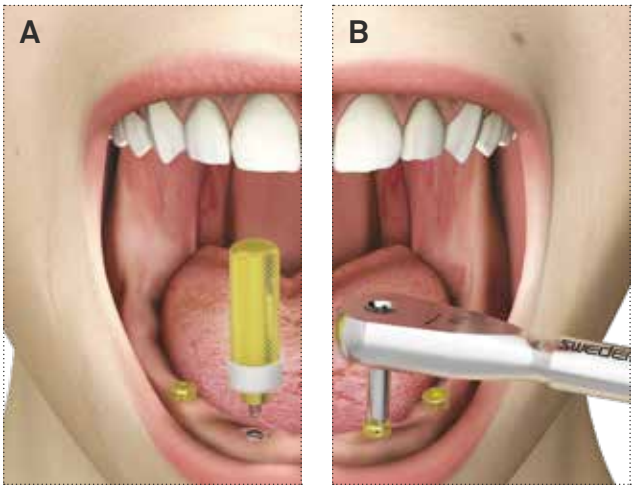
Accessories for overdenture on Locator Abutment

description	code
Kit containing 2 titanium caps in grade 5, 2 spacer rings in silicone 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 titanium caps in grade 5, 2 spacer rings in silicone 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 silicone 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 silicone 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 abutment

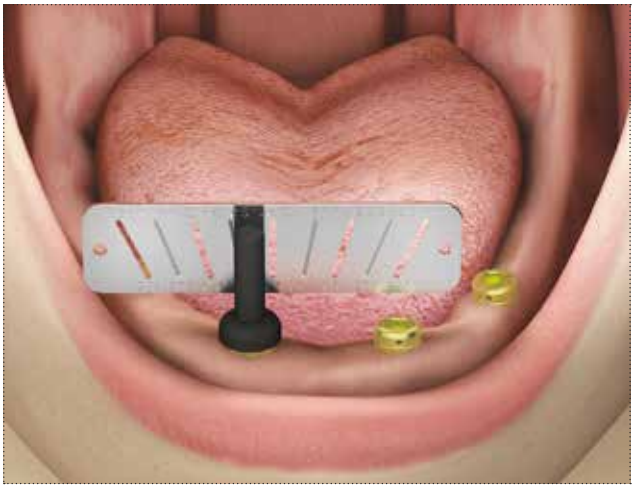
Direct method: chair-side phases

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-KIT 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.

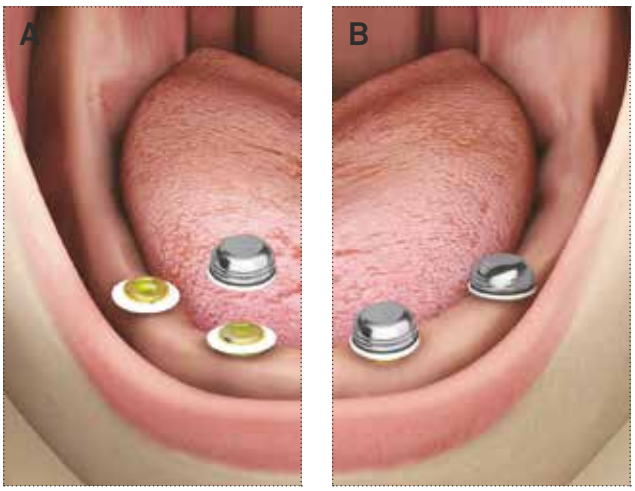


Fit the plastic pins (code 8517) onto the Locator abutments and use the plate 9530 to check the degree of divergence between the axes of the implants. Different nylon retainers will be used depending on the disparallelism:

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



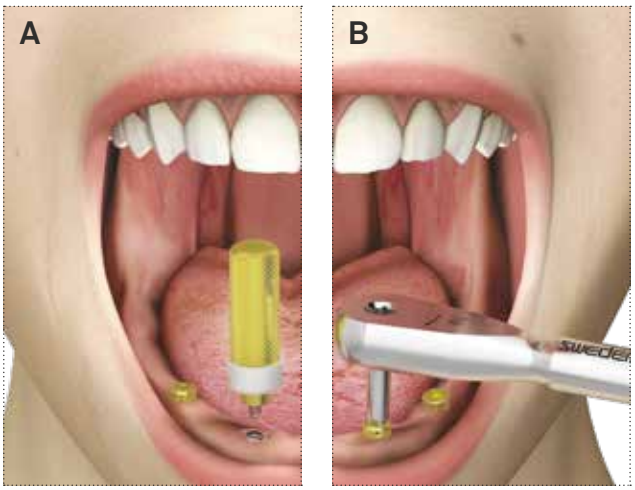
Pierce the prosthesis close to the attachments, create sufficiently large holes to allow the injection and exit of the acrylic resin.
Position the overdenture on the metal caps.

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.

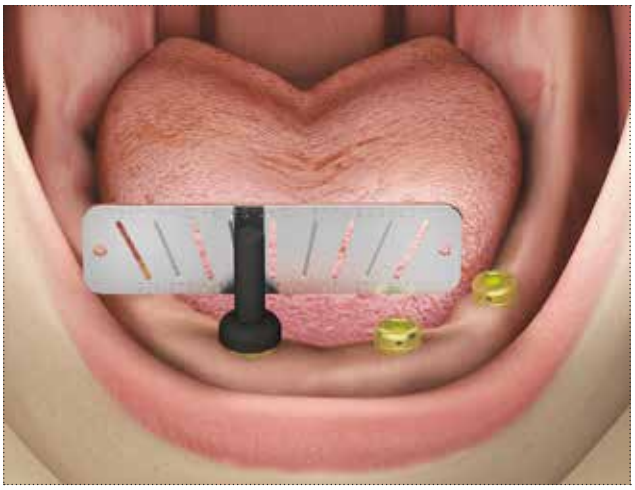
Indirect method: chair-side phases

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-KIT 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.



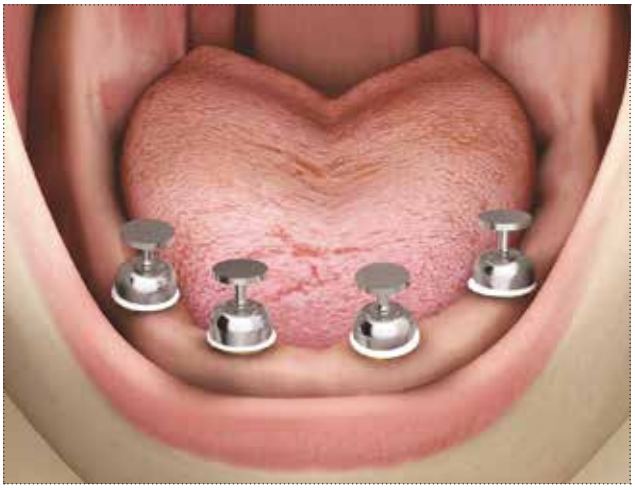
Fit the plastic pins (code 8517) onto the locator abutments and use the plate 9530 to check the degree of divergence between the axes of the implants. Different nylon retainers will be used depending on the disparallelism:

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



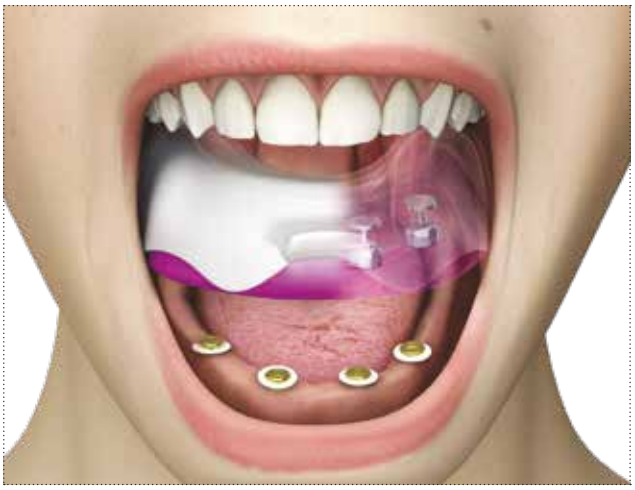
Note: in the indirect method this phase can also be performed on the model in the laboratory.

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 (8515) have already been inserted.



Inject a precision impression material only around the transfers and at the same time fill the impression tray with a more consistent material 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 abutment - Clinical Indications

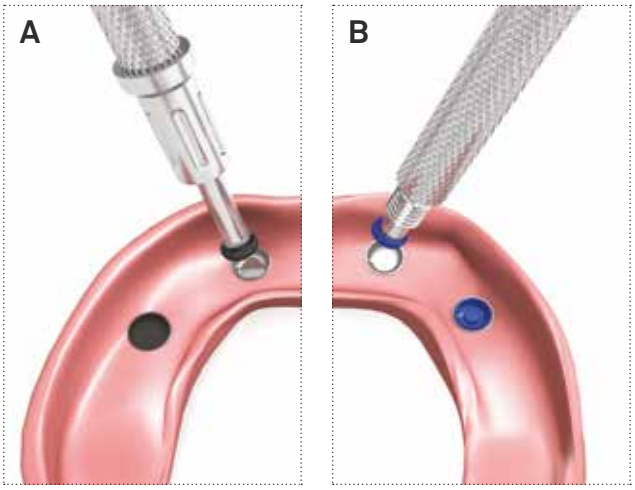
Indirect method: laboratory phases

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 customary 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 prosthesis, inviting them to practice these simple maneuvers, even though the self-centring design of the Locator abutments has been conceived especially to facilitate these operations.
Patient 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

The Locator metal component is made in 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 216 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 pages 224-225 and following.

Overdenture anchoring with ball attachments

The anchoring system with ball attachment consists of a post Gr. 5 titanium having a round end with diameter 2.20 mm and a choice of different anchoring systems incorporated in the removable prosthesis.
The ball abutments have a small hexagon at the base of the ball for attaching the driver, compatible with the system's dynamometric ratchet.

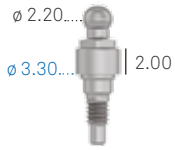
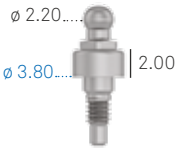
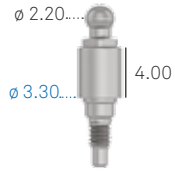
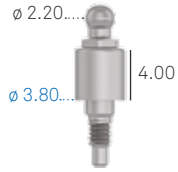
Conditions and indications for anchoring with ball attachments

The standard prosthetic protocol with ball attachments requires the support of two implants, positioned preferably 22 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.

ø prosthetic component	3.30	3.80
Ball attachments Straight emergence Transgingival h 1.00 mm	**A-AS-330-1** 	**A-AS-380-1** 
Ball attachments Straight emergence Transgingival h 2.00 mm	**A-AS-330-2** 	**A-AS-380-2** 
Ball attachments Straight emergence Transgingival h 4.00 mm	**A-AS-330-4** 	**A-AS-380-4** 
Analog of the ball attachment	**ANAS** 	Use ANAS

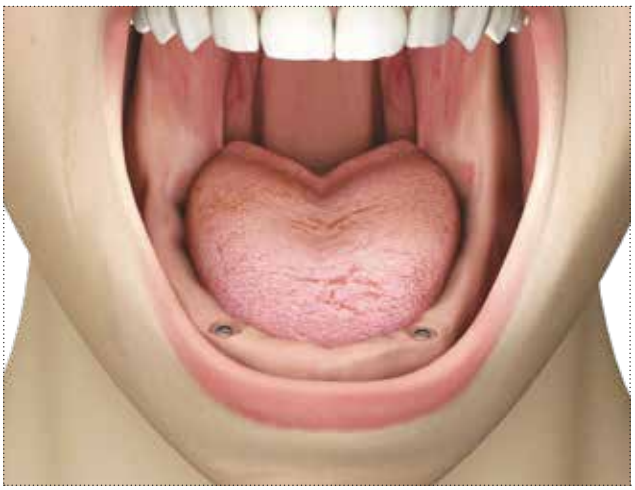
description	code
Steel driver for ball attachments with connector for dynamometric ratchet or digital connector	**BASCC-EX** 

Recommended tightening torque for ball attachments: 25-30 Ncm.

See technical characteristics of Gr. 5 titanium on page. 264.

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 229.

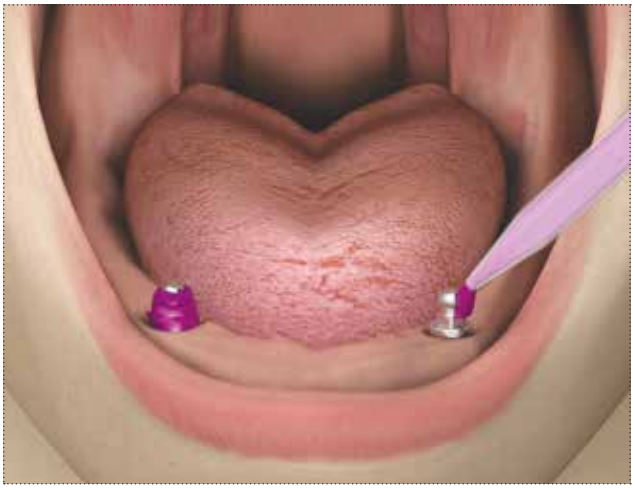


Engage the small hexagon at the base of the ball with the driver BASCC-EX and connect the other end to the dynamometric ratchet CRI5-KIT. Screw the posts into the connection of the implants with a torque of 25-30 Ncm.

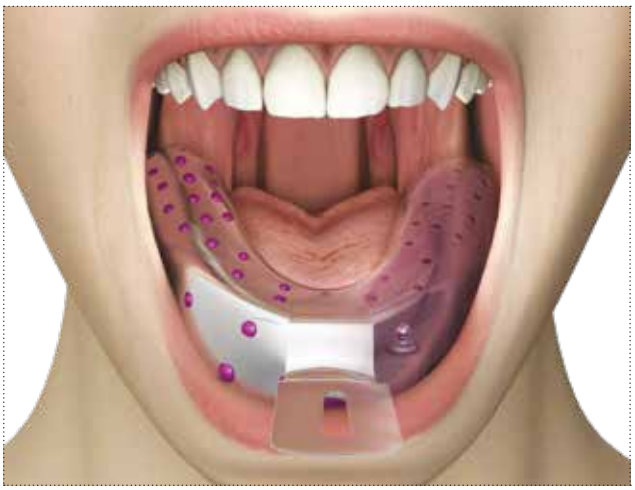
Note: the driver is not contained in the surgical kits and must be requested separately, with code BASCC-EX. Instead it is included in the Screw Kit. This driver is compatible with the system's dynamometric ratchet.

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 (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 (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 situ* and wait for the hardening times according to the manufacturer's instructions. Lift the impression tray vertically.



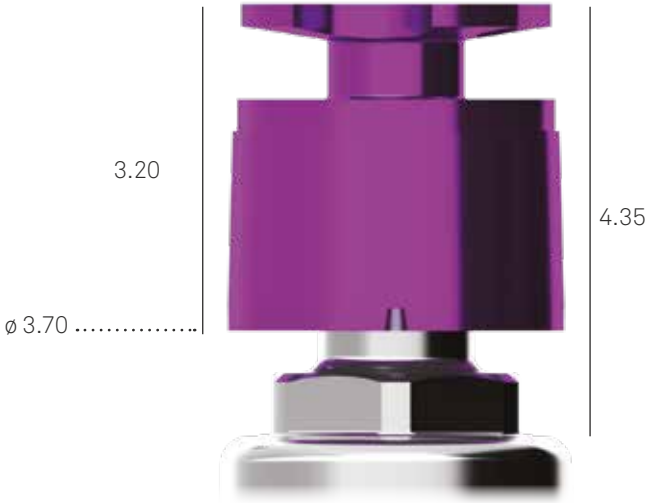
Insert the analogs of the ball attachments (code ANAS) in the empty spaces left by the retaining balls of the attachments.
Since the spherical head is always the same for all implant platforms, there is only one analog.

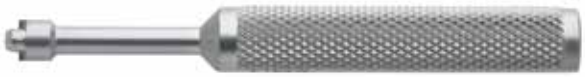
Develop the model according to usual techniques, incorporating the analogs of the ball attachments (code ANAS) in the chosen material.

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
Grade 5 titanium cap in two parts complete with 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 technical characteristics of Gr. 5 titanium on page. 264.

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.

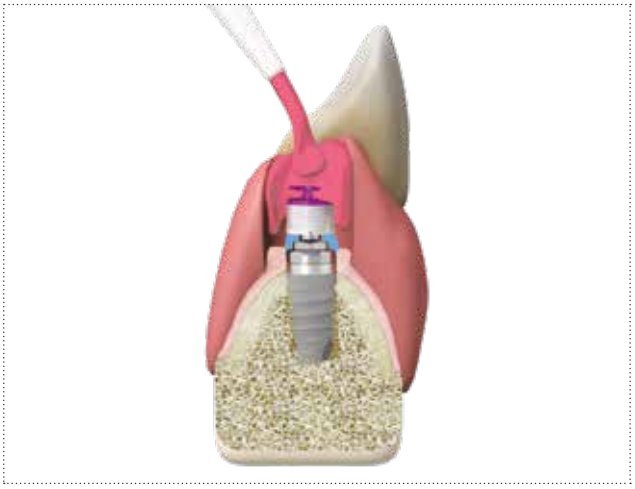
Titanium Cap CAP-TIT-1: direct method

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.

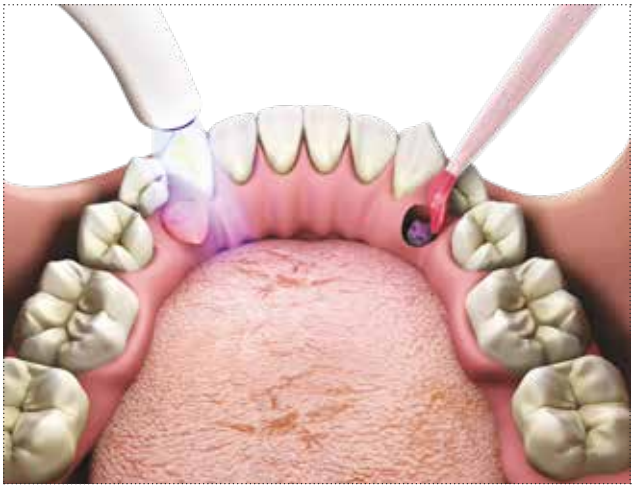
Note: depending on the type of resin it may be useful to apply a light layer of vaseline or wax around the transparent plastic ring to make its removal easier after its inclusion into the resin.

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.



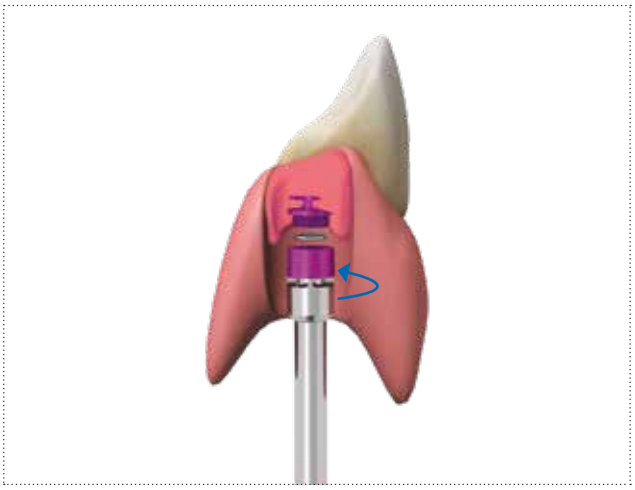
Intraoral views of caps inclusion in resin.



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-CAP-TIT-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 practice 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.

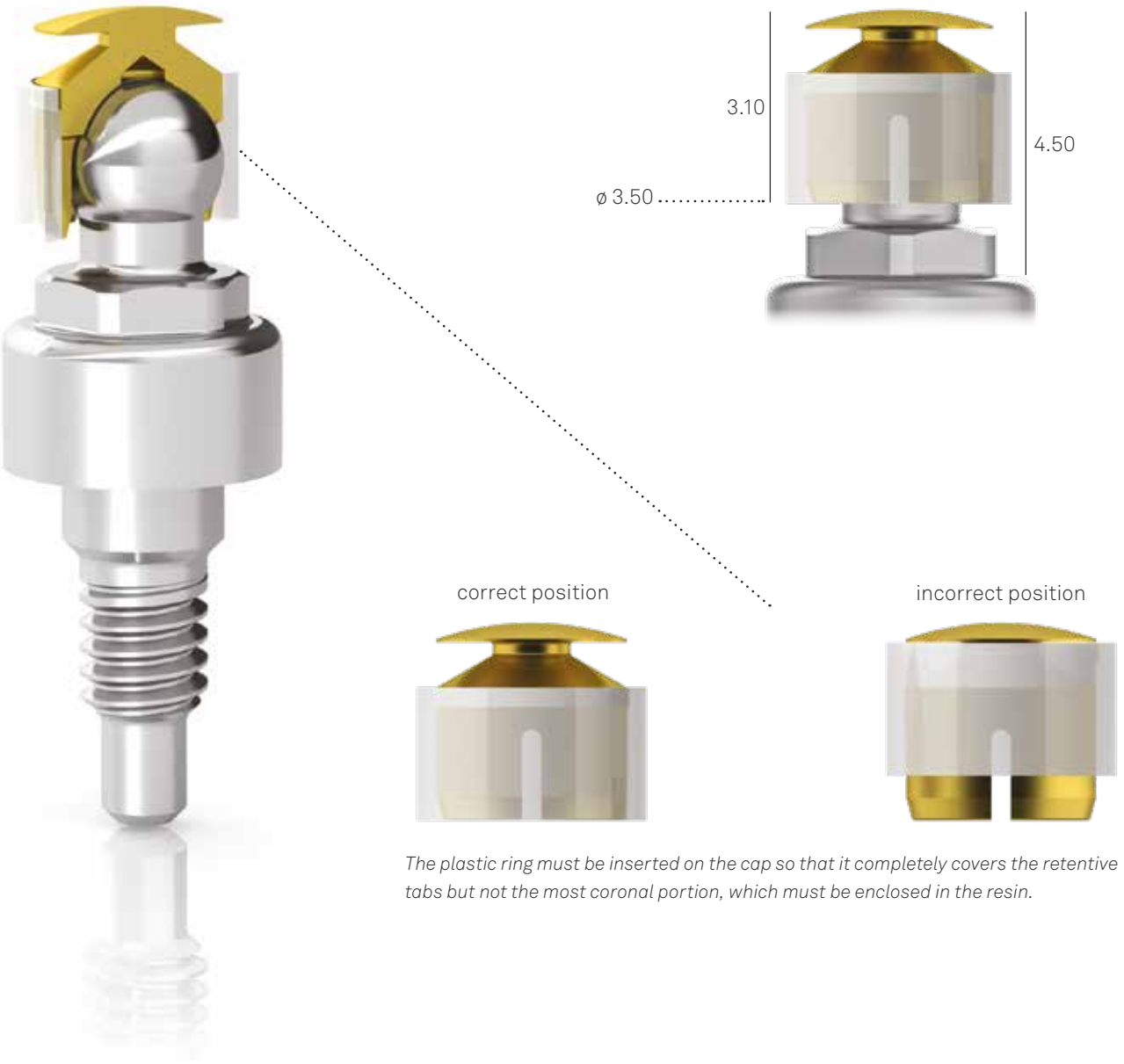
Polish the base of the overdenture and put the prosthesis in situ, exerting vertical pressure until you hear the characteristic click which indicates the correct engagement of the head of the ball attachment on the retention spring.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practice 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 consists 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.



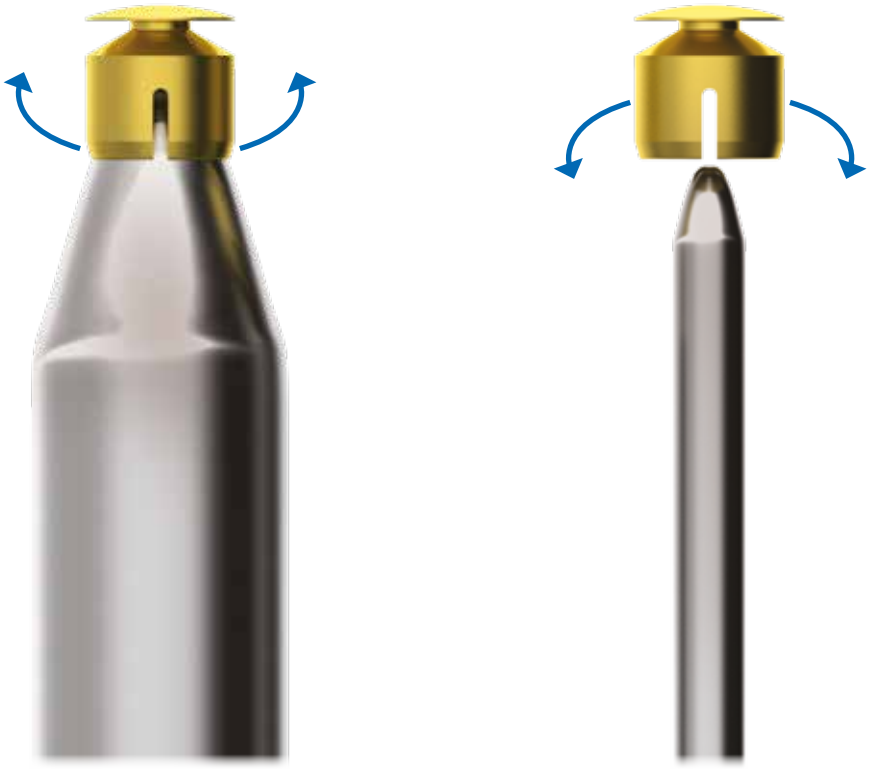
The plastic ring must be inserted on the cap so that it completely covers the retentive tabs but not the most coronal portion, which must be enclosed in the resin.

description	code
Cap in “gold alloy 2” for ball attachments ø 2.20 mm, complete with 3 plastic rings for positioning it and a laboratory tin spacer. The total height is 3.10 mm, and the outside diameter is 3.50 mm	**CAP-1** 

See the technical characteristics of Gold alloy 2 on page 268.

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.

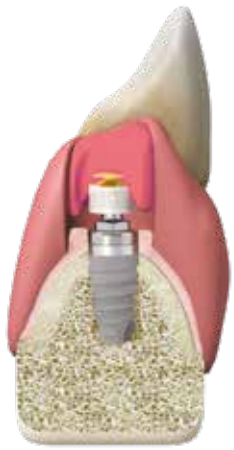
Insert a mass of resin in the hole so that it encloses the top of the cap, provided with a special peduncle that facilitates retention in the material, once it has been polymerised.

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 views of caps inclusion in resin.

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 239.

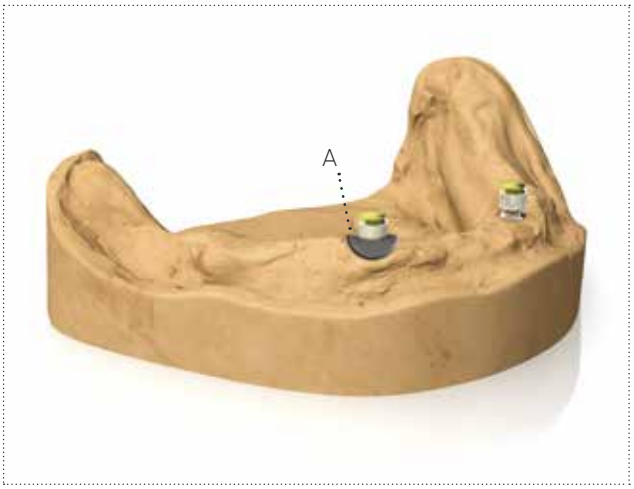


Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practice these simple manoeuvres, even though the ball attachments make these operations simple and fast. Patients must also be urged to report any discomfort 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.

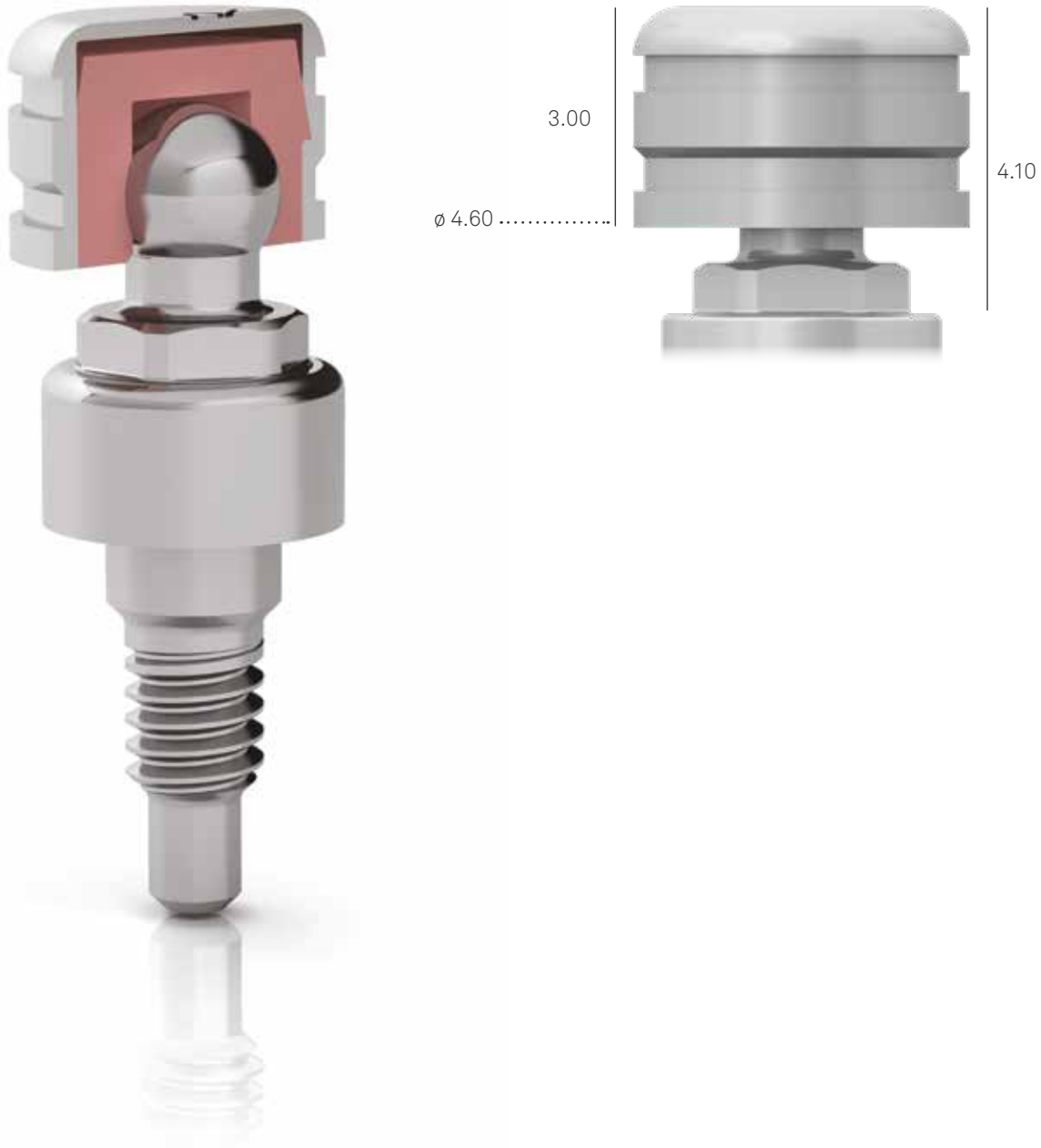
Test the retentive capacity of the gold alloy caps and put the overdenture into place. If necessary, adjust retentiveness with the operations described on page 239.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practice these simple maneuvers, 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

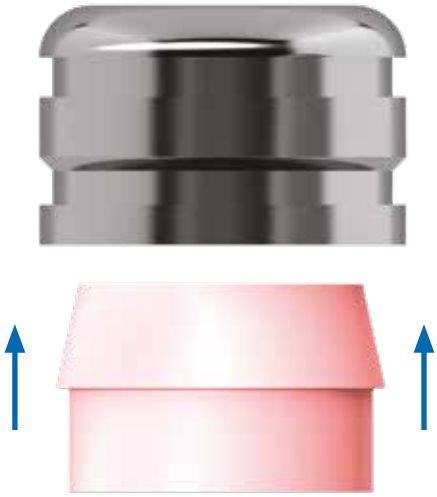
Polyamide cap CAP-TFL-1

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.



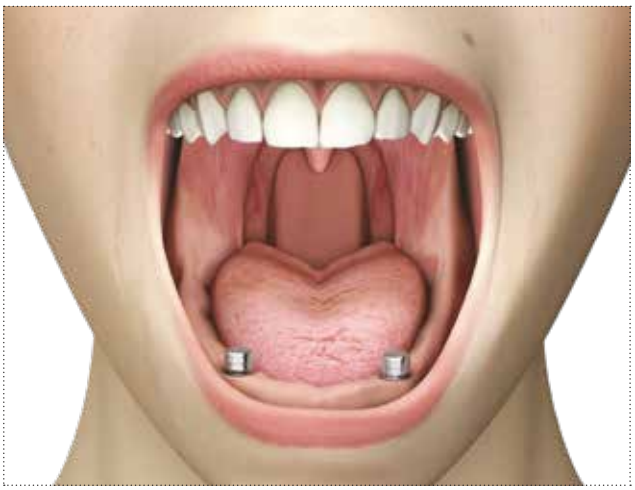
description	code
Polyamide cap for ball attachments ø 2.20 mm	**CAP-TFL-1** 
Steel container for polyamide cap with outer ø 4.60 mm. The total height is 3.00 mm	**CONT-CAP-TFL-1** 

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

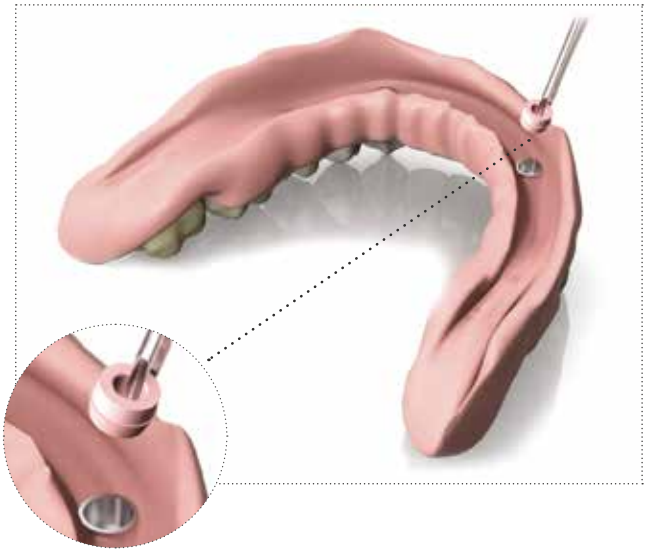
Manually insert the polyamide cap in the steel container exerting simple pressure. Position the assembled caps on the spherical head of the abutments.



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

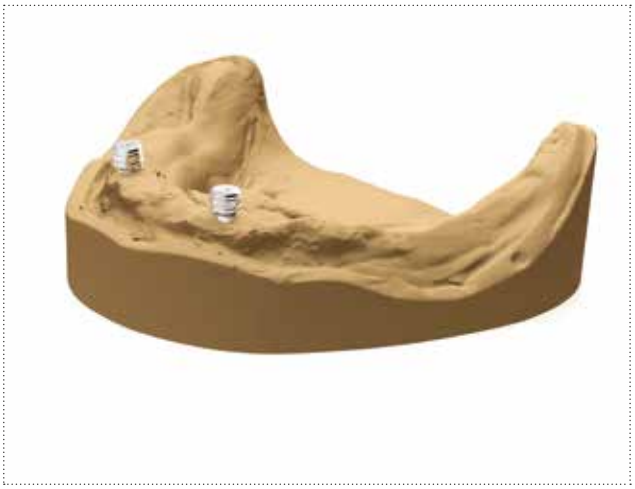
Pierce the prosthesis, existing or new, for about 5.50 mm in the area of the ball attachment, to create the seat for the matrix. Try the overdenture on the edentulous crest to check the vertical dimension of the matrices in the spaces specially created.
Fill the cavities with resin so as to enclose the 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 practice 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 practice 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

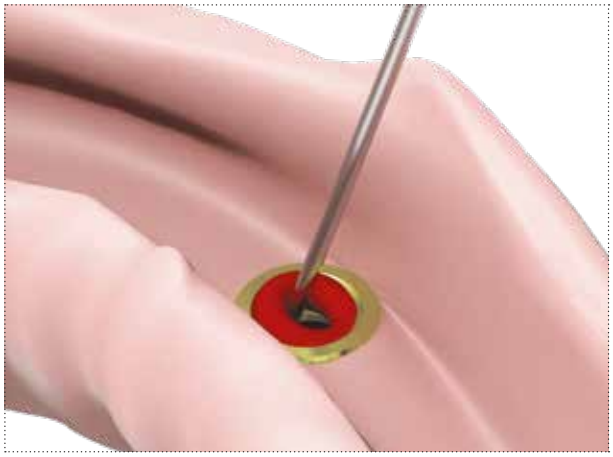
O-ring retention system

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 following 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.

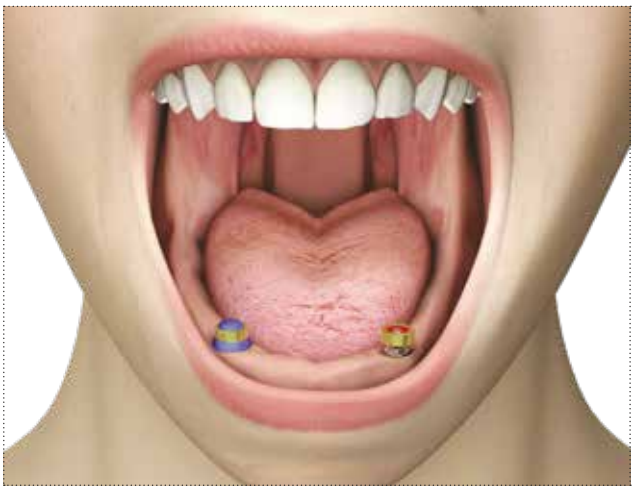
description	code	
Metal container in the shape of a ring for rubber O-rings. For ball attachments ø 2.20 mm. The total height is 2.00 mm, and the outside diameter is 5.05 mm. Pack of 6 pieces	**500502**	
Red ring in silicone for laboratory use, outside ø 4.50 mm, h 1.50 mm. Pack of 12 pieces	**1500505**	
White ring in natural rubber, soft, outside ø 4.50 mm, h 1.50 mm. Pack of 12 pieces	**1500504**	
Black ring in natural rubber, hard, outside ø 4.50 mm, h 1.50 mm. Pack of 12 pieces	**1500503**	

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prostheses, inviting them to practice 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.

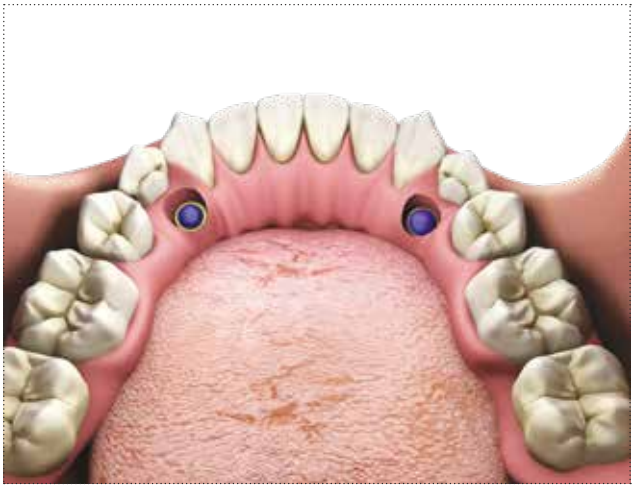


O-ring retention system: direct method

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.

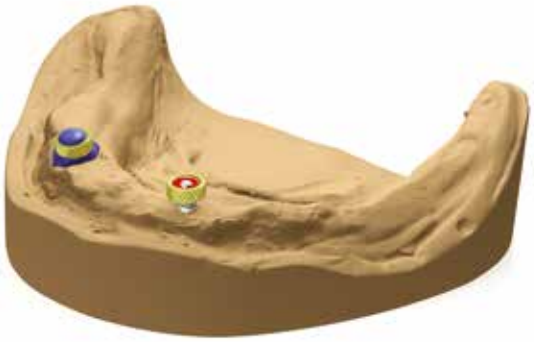


Fill the cavities with resin so as to enclose the matrices completely, which should remain at the same level as the equator of the attachment. Polymerise according to the manufacturer's instructions and finish off.

Important warning
It is advisable to instruct patients adequately on the correct procedures for inserting and removing the prosthesis, inviting them to practice 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

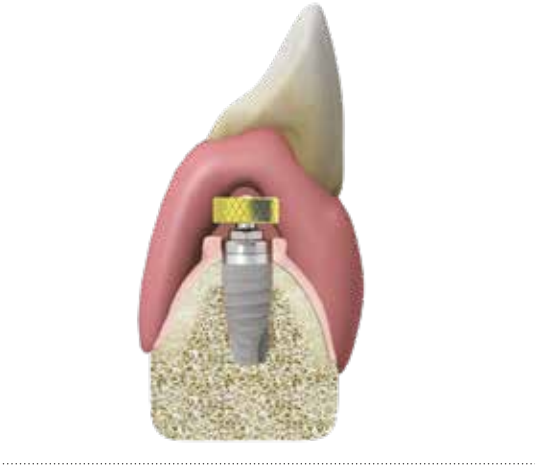
Insert the red laboratory silicone O-ring in the metal ring with the aid of a probe and fit the assembly on the spherical head of the analog, relieving any undercuts with a layer of wax. This precaution will avoid undesired movements of the O-ring matrix at the moment of fixing it in the prosthesis.
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 practice 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.



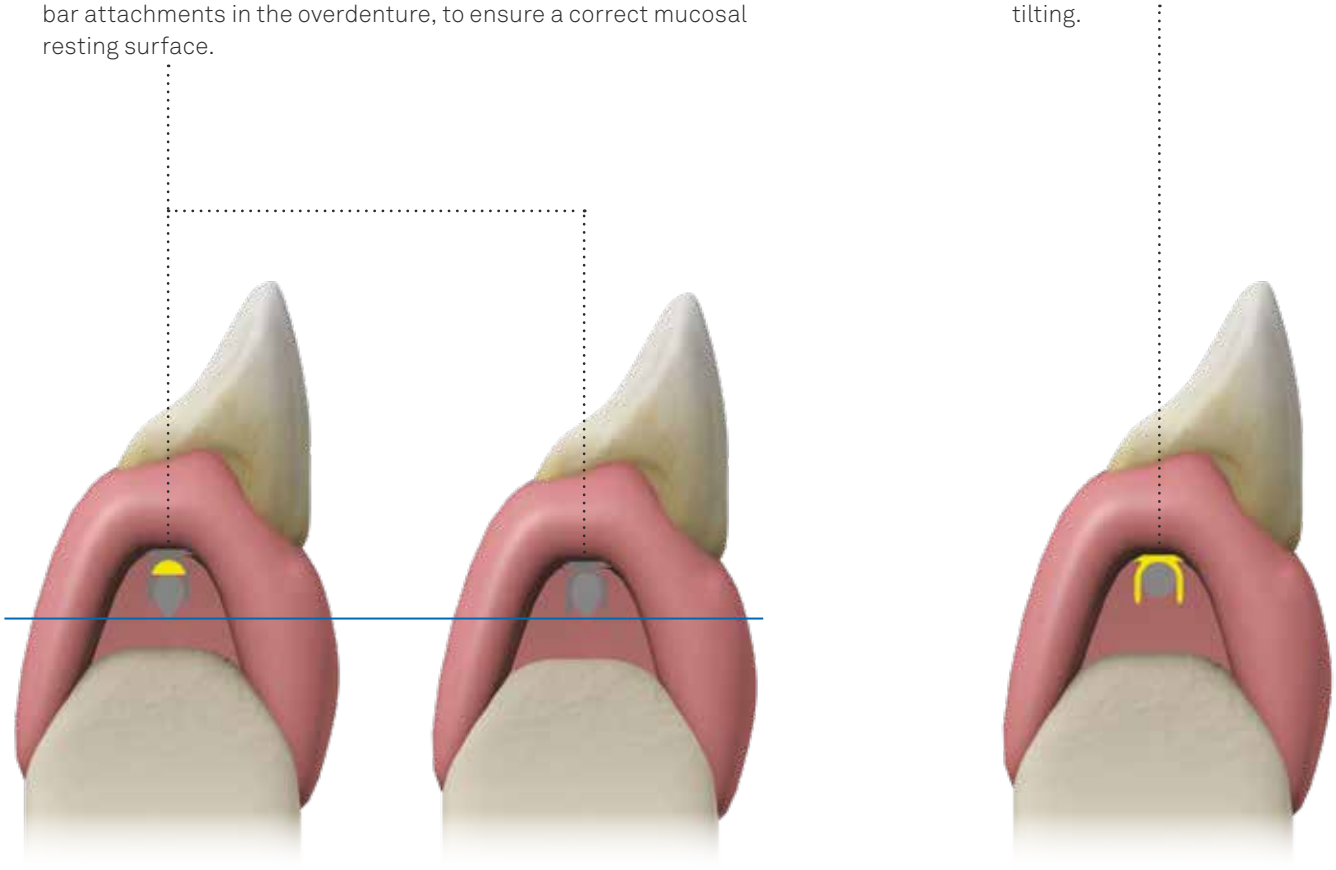
Cast or welded bars*

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 and passive.

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:

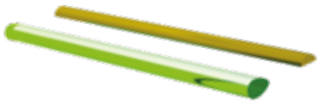
Dolder bar: bar with an asymmetrical ovoid section. Limits antero-posterior tilting movements. To allow correct resilience, it is supplied complete with a spacer to be used when fixing the bar attachments in the overdenture, to ensure a correct mucosal resting surface.

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

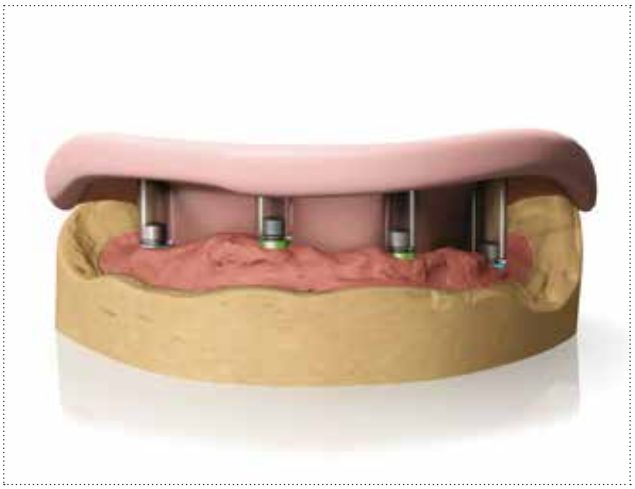
Important warning
For a correct design of the bar it is preferable to follow an indirect protocol since the laboratory model allows a precise measurement of the orthogonality of the structure. For the impression taking protocols see pages 36 and following.

Bar on Plain abutment: indirect method

Once the model has been made according to the standard procedures, screw the Plain abutments onto the analogs using the driver of the HSM series. The tightening torque of the Plain abutments is 20-25 Ncm. Set all the castable sleeves A-PLAIN-CC onto the Plain abutments using the fixation screw A-PLAIN-VP200, inlcuded in each sleeve pack. See PMMA technical characteristics on page 266.

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

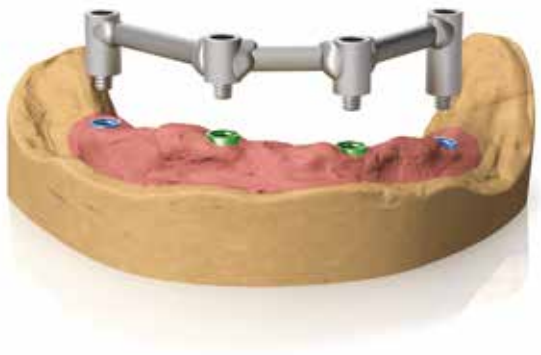
Reduce the castable sleeves to a dimension suited to the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.



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 or duplicate with CAD-CAM methods the structure according to the usual laboratory procedures.
Try out the bar first on the model and then in the patient's mouth to check its complete passivity. The recommended torque for tightening all over-structures obtained by casting onto abutments is 20-25 Ncm.

Important warning
If the structure is not completely passive, even though the normal checking protocol has been followed before casting, correct it using the normal techniques.



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.

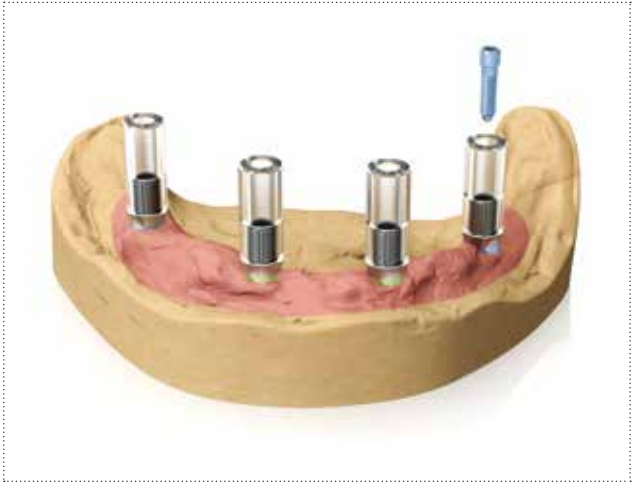
Make the structure in wax and then transform it in resin, incorporating the top of the bar attachments, or reposition the prefabricated teeth in the mask.

Important warning
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 practice 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 premade metal base: indirect method

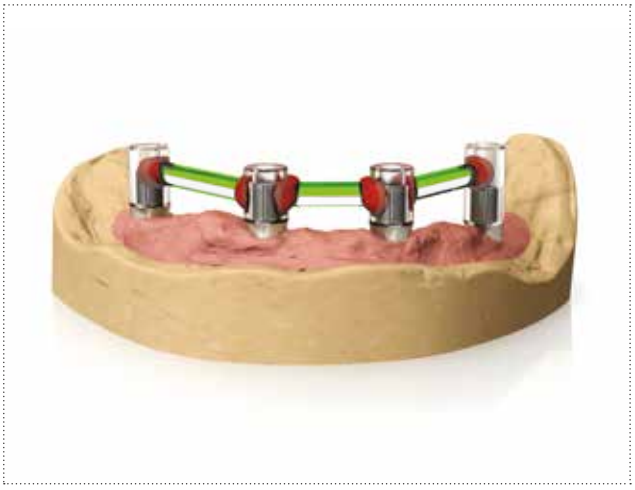
Once the model has been made according to the standard procedures, screw the castable posts with premade metal base onto the analogs using the driver of the HSM or L-HSM series according to the post used. The final tightening torque for prosthetic products on castable posts with premade alloy base is 20-25 Ncm.



Important warning
Always use spare screws for work in the laboratory, use the final screws only for the definitive fixing of the structure in the patient's mouth.

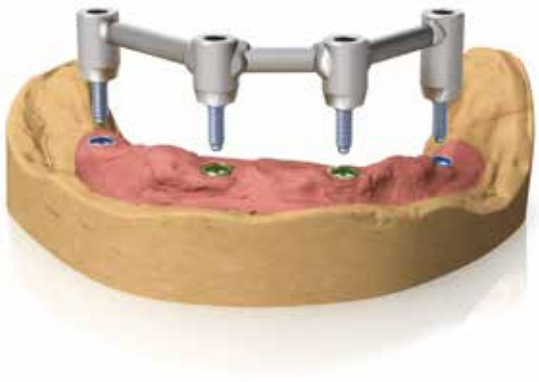
Reduce the castable sleeves to a dimension suited to the patient's vertical dimension, using the silicone mask obtained from preassembly or putting the structure in an articulator with relation to the space left by the opposing arch.

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.



Important warning
Given the impossibility of laser marking the gold alloy and the cobalt chrome, it was not possible to place a label at the base of the posts with ø 4.25 and 5.00 mm.
It is advisable to not unwrap the pieces until time of use, so as to distinguish the components with One connection from those with 2.50 hexagon connection.

Cast or duplicate with CAD-CAM methods the bar. 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.

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.

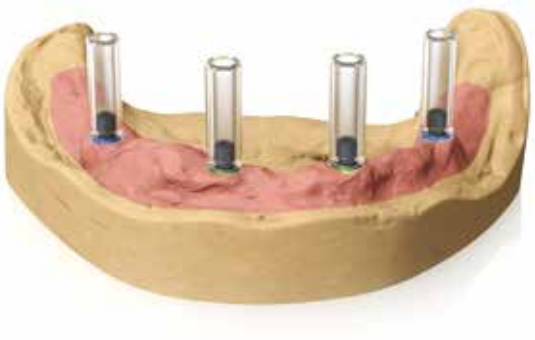
Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific bar attachment since the sections of the bars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

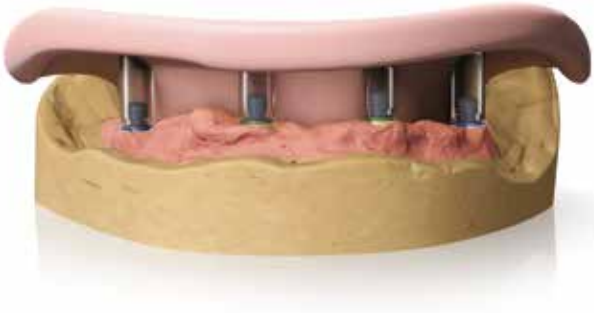
Bar obtained with entirely castable posts: indirect method

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

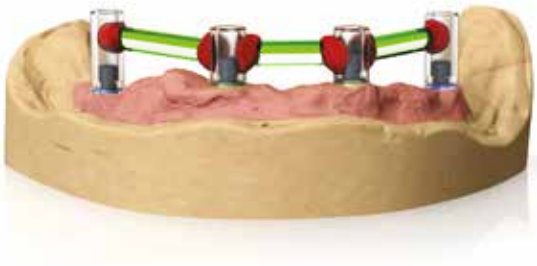
Important warning
Always use spare screws for work in the laboratory, these are available in a single pack with codes VM2-180. Use the final screws only for the final fastening in the patient's mouth.



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.

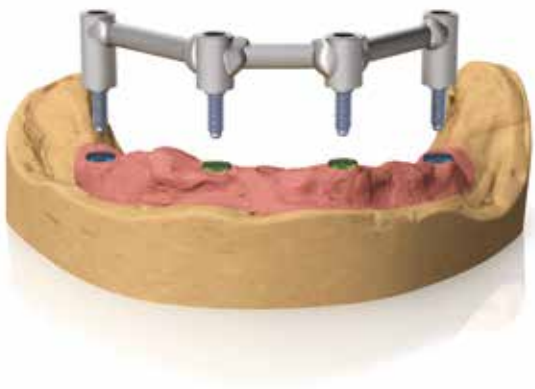


Fix a Dolder castable bar with ovoid profile (code BARC-CAV-TIT) or a Ackermann castable bar with a round profile (code BARC) to the castable posts with resin.



Important warning
Given the impossibility of laser marking the gold alloy and the cobalt chrome, it was not possible to place a label at the base of the posts with ø 4.25 and 5.00 mm. It is advisable to not unwrap the pieces until time of use, so as to distinguish the components with One connection from those with 2.50 hexagon connection.

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.

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.

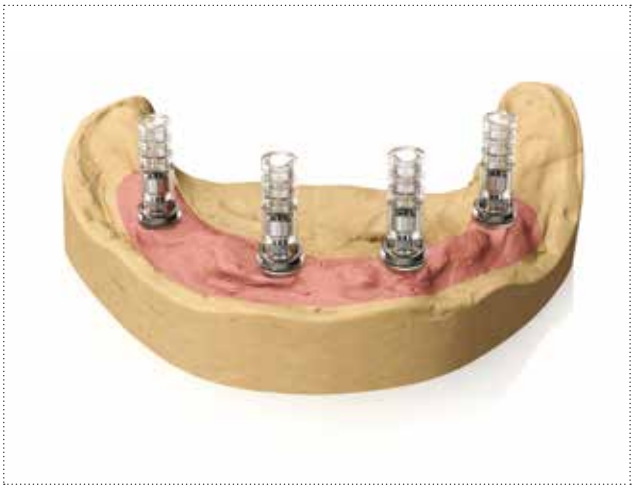
Important warning
Attention must be paid to ensure that the resin does not completely cover the side walls of the bar attachments, hampering their horizontal movement which allows the anchoring and release of the bar. Each bar requires the use of a specific bar attachment, since the sections of the bars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

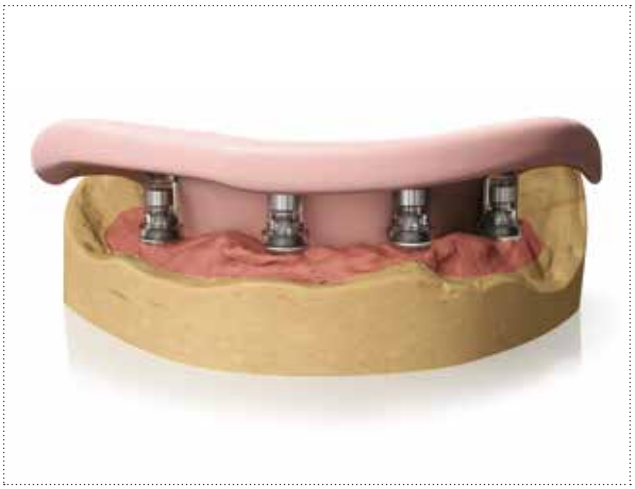
Bar on P.A.D. with castable sleeves: indirect method

Insert the P.A.D. abutment (as indicated in page 124 and followig) screw the castable posts PAD-CC onto the abutments. Before casting, care must be taken in the laboratory to ensure that the castable sleeves are not fastened to the models with a torque exceeding 8-10 Ncm, because polymers are not as resistant as metal.

Important warning
Always use spare screws for work in the laboratory, these are available pack of 10 pieces with code PAD-VP-140-10.
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 or duplicate with CAD-CAM methods 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.

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
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 practice 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 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: Implants 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
alluminium	5.5÷6.5	+/- 0.40
vanadium	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 Aluminium-4 Vanadium Eli (Extra low interstitial) Alloy for surgical applications;*
- *ISO 5832-3:2012: Implants for surgery – Metallic materials – Part 3: Wrought Titanium-6 Aluminium-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) at 0.46 MPa (DIN ISO 75)	113 °C
Heat Deflection Temperature (HDT-A) at 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)	Not broken

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	gold alloy 3
chemical designation	gold alloy 1	gold alloy 2	gold alloy 3
colour	white	yellow	yellow

composition	% of reference		
Au	60 %	> 68.60 %	70 %
Pt	24 %	2.45 %	8.5 %
Pd	15 %	3.95 %	-
Ir	1 %	0.05 %	0.10 %
Ag	-	11.85 %	13.40 %
Cu	-	10.60 %	7.50 %
Zn	-	2.50 %	0.50 %
Au+group metals	-	75.35 %	-
Ru	-	-	-

physical and mechanical properties			
density	18.1 g/cm^3	15.0 g/cm^3	15.7 g/cm^3
melting range	1400 ÷ 1460 °C	880 ÷ 940 °C	895 ÷ 1010 °C
modulus of elasticity in tension	115 GPa	97 GPa	100 GPa
Vickers hardness HV1 (gold alloy1) HV5 (gold alloy 2, gold alloy 3)	160 (annealed) 250 (tempered) 220 (after deformation) 240 (after casting)	> 240	170 (annealed) 295 (after deformation)
limit of elasticity	400 MPa (annealed) 700 (after deformation) 800 (after casting)	> 710 MPa	380 MPa (annealed) 730 (after deformatione)
elongation	20 % (annealed) 15 % (after deformation) 1 % (after firing)	> 4 %	37 % (annealed) 13 % (after deformation)

- *Gold alloy "1": all castable posts with a premade alloy base (e.g. VSR-UCR. etc).*
- *Gold alloy "2": CAP-1 cap for ball attachments in gold alloy.*
- *Gold alloy "3": CAV-375 bar attachment for round bars ø 2.20 mm.*

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
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 of prostheses for all disciplines of implant rehabilitiation.

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 International 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	risk class
Healing abutments	Invasive long-term surgical devices	Disposable, non-sterile	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 S.p.A. 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 S.p.A. 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. Cleaning: Containers and transports to be used for washing: no special requirements. In case of automated cleaning, use an ultrasound bath with a suitable detergent solution (e.g. DURR ID212, DC1 or equivalent). Follow the manufacturer's instructions for detergent concentrations and washing times. Use demineralized water to prevent the formation of stains and marks. When draining washing water, check that all residues have been removed from devices, holes, etc.
If necessary, repeat the operation or clean manually.
In case of manual cleaning, use a suitable neutral detergent (e.g. DURR ID212, DC1 or equivalent) and follow the manufacturer's instructions. Brush products with a soft-bristled brush under abundant running water. Using the brush, apply the detergent to all surfaces. Rinse with distilled water for at least four minutes. Ensure that the running water passes abundantly through any holes and other openings.
After rinsing, thoroughly dry the components and pack them in appropriate sterilization bags. Do not exceed 120°C when performing a drying cycle in a washing and disinfection appliance.

b. Sterilization: In a vacuum autoclave, sterilizing as follows:
- autoclave (gravity displacement cycle) at a temperature of 121°C with minimum exposure of 30 minutes and drying cycle of 15 minutes;
- autoclave (dynamic air removal cycle) at the temperature of 132°C with minimum exposure o 4 minutes and drying cycle of 20 minutes.

c. 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-KIT 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 (gravity displacement cycle) at a temperature of 121°C with minimum exposure of 30 minutes and drying cycle of 15 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 practice 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

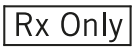
Warning - Limitations of guarantee

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.

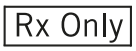
Disposal

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.

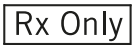
Key to symbols used on implant packs:

description	symbol
Caution! See instructions for use	
Batch number	
Code	
Manufacturer	
Consult instructions for use	
CE conformity mark for class IIa and IIb products	
American federal law restricts this device to sale by or by order of a professional practitioner	
Do not resterilize	
Disposable product, do not reuse	
Do not use if the packaging is damaged	
Sterilized with ionizing radiation	
Expiry date after which the product must not be used	

Key to symbols used on surgical instrument packs:

description	symbol
Caution! See instructions for use	
Batch number	
Code	
Manufacturer	
Consult instructions 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	
Non-sterile product	

Key to symbols used on prosthesis packs:

description	symbol
Caution! See instructions for use	
Batch number	
Code	
Manufacturer	
Consult instructions 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	

THIS MANUAL WAS LAST UPDATED IN MAY 2018.

The medical devices addressed by this 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.

NOTE

MP-IMP-PKS-ONE-E

rev. 03-22

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The implants, standard prosthetic components and surgical instruments contained in this catalogue are Medical devices and are manufactured by Sweden & Martina S.p.A. They conform to the ISO 9001 and ISO 13485 standards and are certified with the CE Mark (Class I) and CE 0476 mark (Class IIA and class IIB) in compliance with Regulation (EU) Medical Devices n.2017/745. They are conform to the QSR and 21 CFR part 820 and are approved by FDA.

The Sweden & Martina plant manufactures Medical Devices in compliance with the CGMPs in force in the USA and in other countries worldwide.