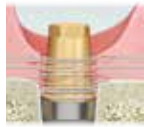


XA Technique



The biological rationale

4



XA cemented prosthesis

XA Abutments for cemented restorations

PBox XA for cemented restorations

Prosthetic protocol for XA cemented restorations

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XA screw retained prosthesis

XA Abutments for screw retained restorations

PBox XA for screw retained restorations

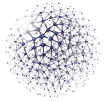
Prosthetic protocol for XA screw retained restorations

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General indications

Composition of the materials

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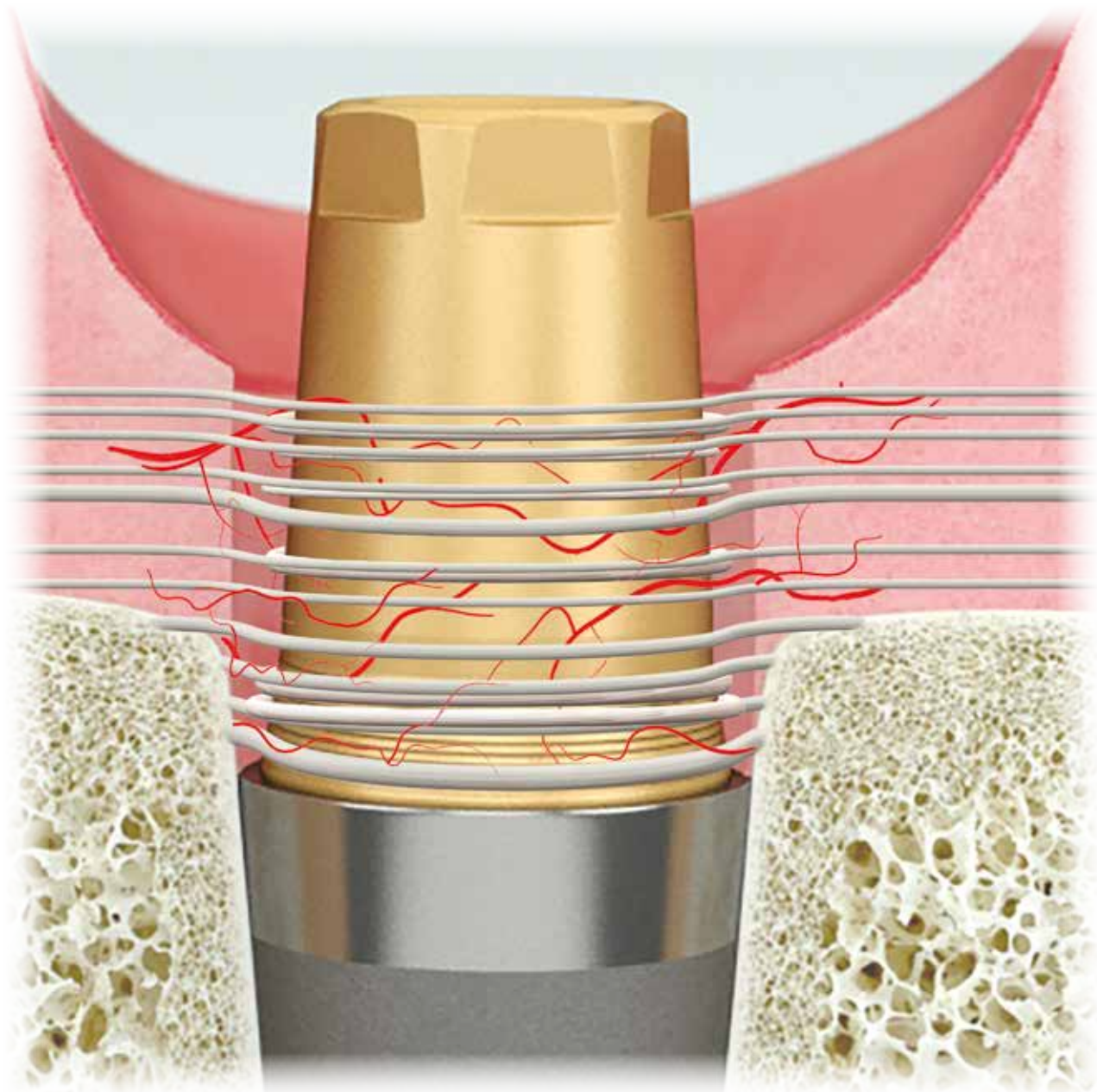
Bibliography

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29

The biological rationale

The tooth crosses an epithelium and the stabilization of the soft tissues defines its survival. The **soft tissues** around the tooth are **essential to maintain its function and the bone tissue** around it. In order to obtain good functionality and preserve the tissues around the rehabilitation on implants, proper stabilization of soft tissues must be reached. The connective tissue guides the other tissues: the epithelium and the bone tissue.



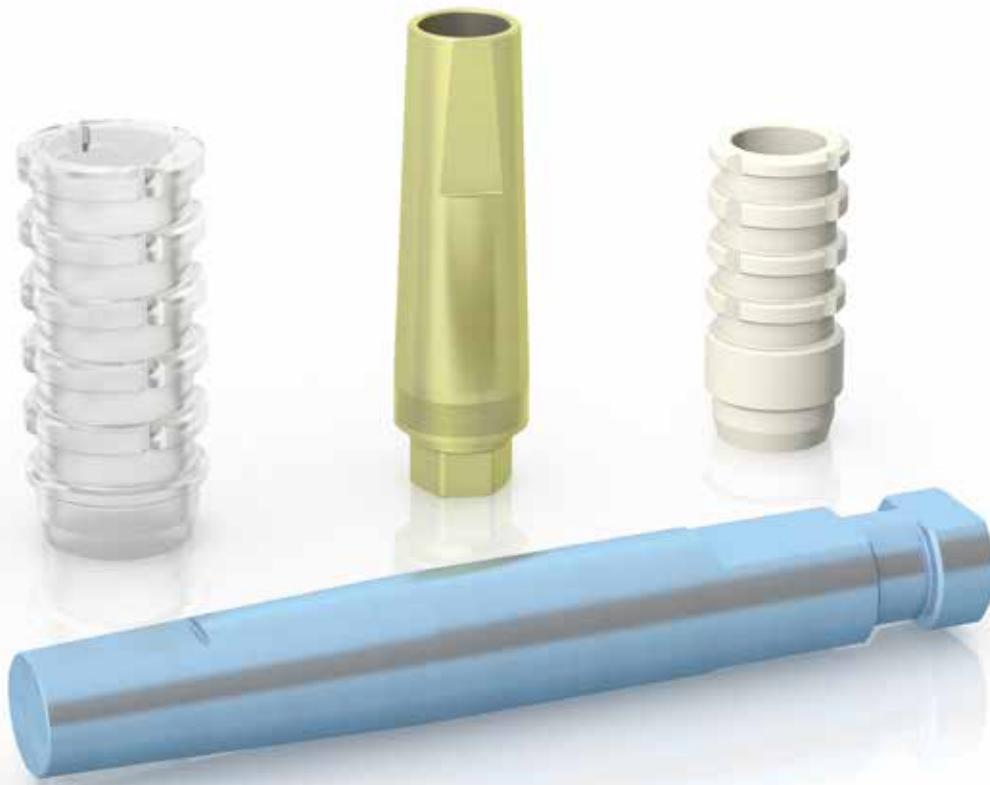
XA abutments can be used for an immediate loading or for delayed procedures, according to the **One-Abutment-One-Time** technique, thus avoiding unnecessary connections and disconnections during the prosthetic phase.



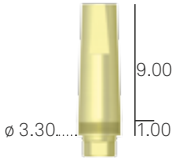
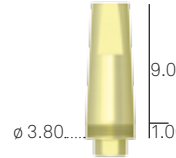
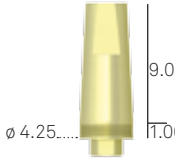
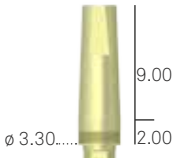
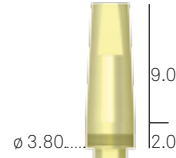
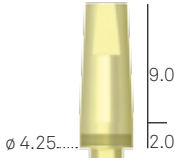

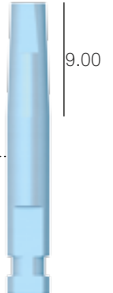
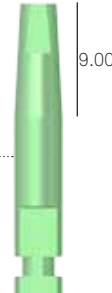
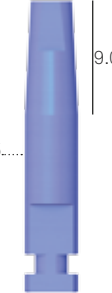

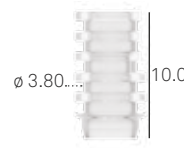




XA abutments for cemented restorations

These abutments, 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 is 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 the three platforms of the Shelta implants.



XA abutments for cemented restorations

description	abutment ϕ 3.30	abutment ϕ 3.80 mm	abutment ϕ 4.25
for implants	Premium 3.30 - 3.80 Shelta 3.80	Premium 3.80 Shelta 3.80 - 4.25 - 5.00	Shelta 4.25 - 5.00
Premade XA abutment Engaging Transgingival H. 1.00 mm Fixation screw with conical support 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 with conical support 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.

See technical characteristics of Gr. 5 titanium, PMMA and PEEK at page 27.


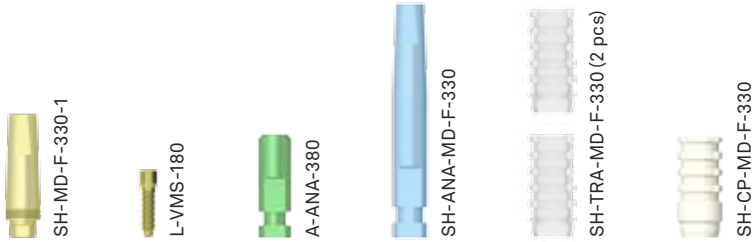

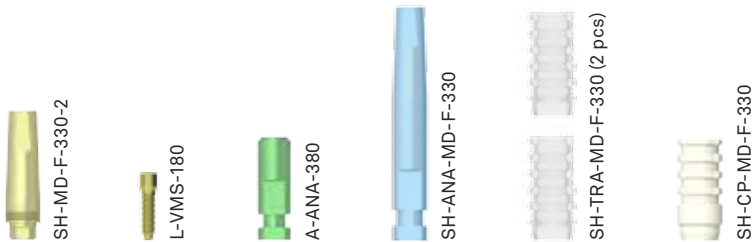

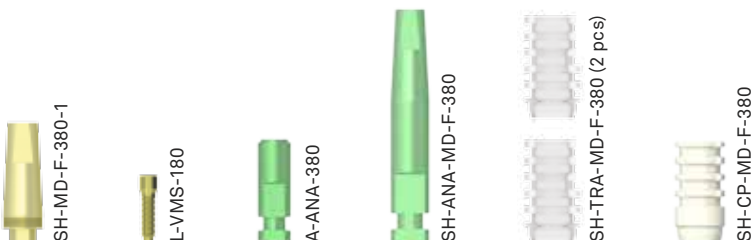

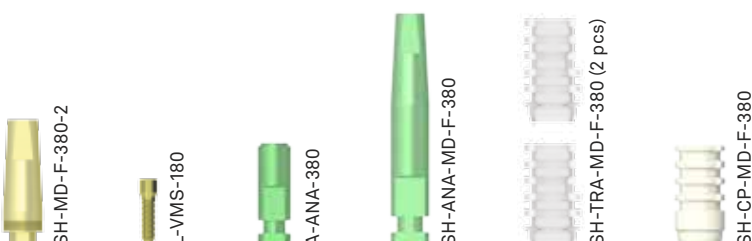

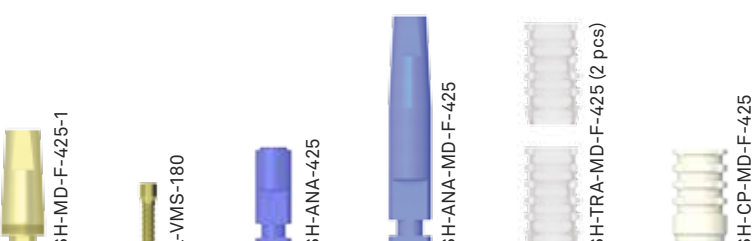

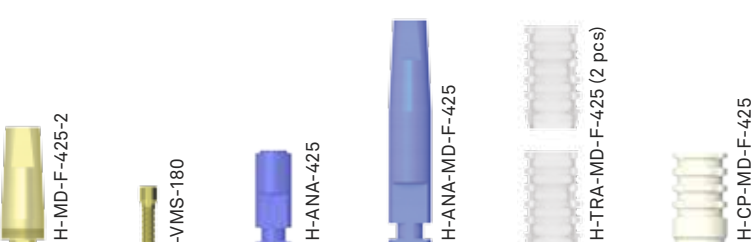
IMPORTANT WARNING: The ϕ 3.30 mm prosthetic components allow prosthetic Platform Switching with ϕ 3.80 mm implants. It is recommended to use these posts exclusively for single crowns in front sectors (excluding premolars), and only as a support for multiple restorations in distal sectors. The ϕ 3.80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

PBox XA for cemented restorations

The PBox for cemented restorations is a complete and practical set for the **One-Abutment-One-Time** technique. It includes one XA abutment and all the components to take the impression, to cast the model and for the subsequent laboratory phases.

A PBox is suitable for a single crown procedure. In case of multiple bridges, for any single implant one separate PBox should be used. The most suitable diameter and transgingival height for the specific clinical case should be chosen. XA premade abutments contained in the PBox must be sterilized in an autoclave before clinical use.



code	components
<p>PBOX-SHXA-330-1</p> 	<p>PBox for cemented restoration \varnothing 3.30 – transgingival height 1 mm including:</p>  <p>SH-MD-F-330-1 L-VMS-180 A-ANA-380 SH-ANA-MD-F-330 SH-TRA-MD-F-330 (2 pcs) SH-CP-MD-F-330</p>
<p>PBOX-SHXA-330-2</p> 	<p>PBox for cemented restoration \varnothing 3.30 – transgingival height 2 mm including:</p>  <p>SH-MD-F-330-2 L-VMS-180 A-ANA-380 SH-ANA-MD-F-330 SH-TRA-MD-F-330 (2 pcs) SH-CP-MD-F-330</p>
<p>PBOX-SHXA-380-1</p> 	<p>PBox for cemented restoration \varnothing 3.80 – transgingival height 1 mm including:</p>  <p>SH-MD-F-380-1 L-VMS-180 A-ANA-380 SH-ANA-MD-F-380 SH-TRA-MD-F-380 (2 pcs) SH-CP-MD-F-380</p>
<p>PBOX-SHXA-380-2</p> 	<p>PBox for cemented restoration \varnothing 3.80 – transgingival height 2 mm including:</p>  <p>SH-MD-F-380-2 L-VMS-180 A-ANA-380 SH-ANA-MD-F-380 SH-TRA-MD-F-380 (2 pcs) SH-CP-MD-F-380</p>
<p>PBOX-SHXA-425-1</p> 	<p>PBox for cemented restoration \varnothing 4.25 – transgingival height 1 mm including:</p>  <p>SH-MD-F-425-1 L-VMS-180 SH-ANA-425 SH-ANA-MD-F-425 SH-TRA-MD-F-425 (2 pcs) SH-CP-MD-F-425</p>
<p>PBOX-SHXA-425-2</p> 	<p>PBox for cemented restoration \varnothing 4.25 – transgingival height 2 mm including:</p>  <p>SH-MD-F-425-2 L-VMS-180 SH-ANA-425 SH-ANA-MD-F-425 SH-TRA-MD-F-425 (2 pcs) SH-CP-MD-F-425</p>

Prosthetic protocol for XA cemented restorations

Immediately after the surgical placement, a suitable XA abutment for cemented restoration is tightened to the implant.

Important warning

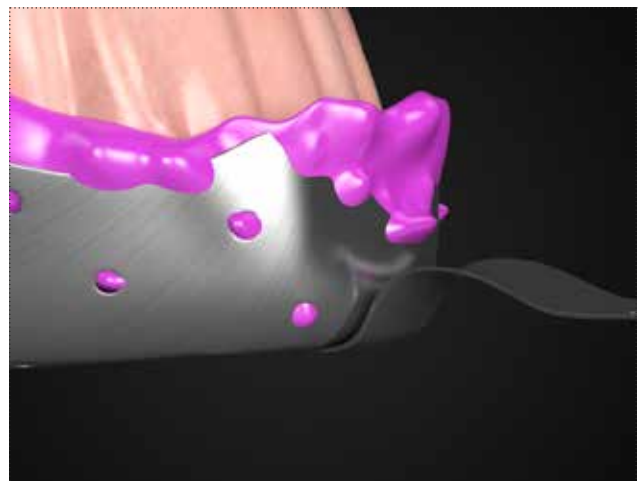
XA premade abutments are supplied in non-sterile packs. Before clinical use, titanium abutments must be sterilized in an autoclave.



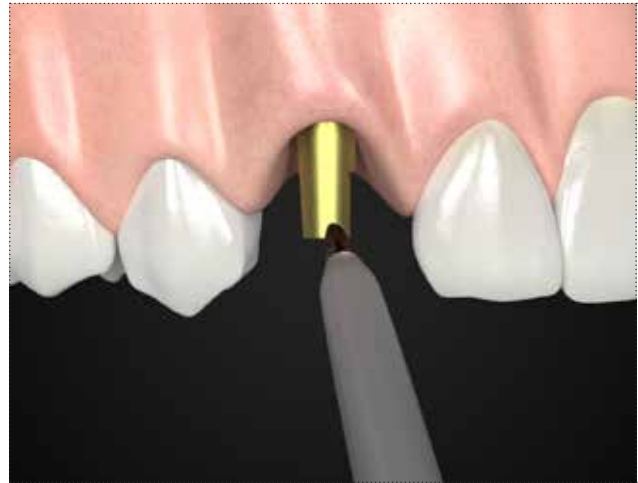
Insertion of the PMMA sleeve guiding it on the flat face of the abutment.



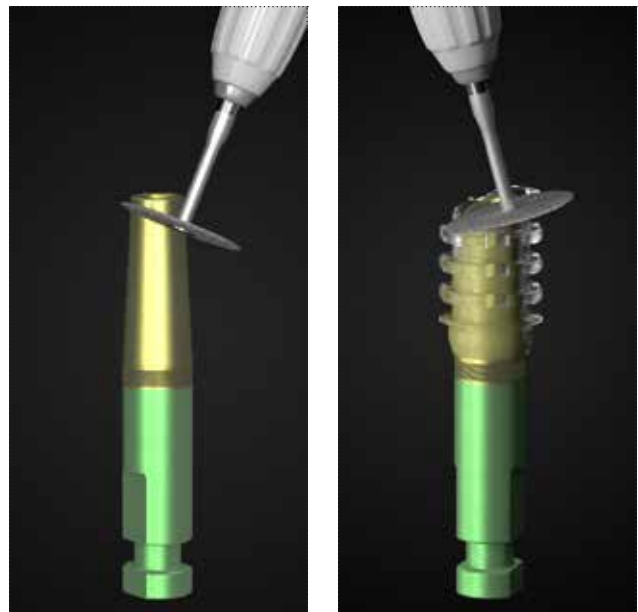
Impression is taken including the PMMA sleeve. Alternatively, the impression can be taken directly onto the abutment, as it was a natural tooth. In this case the use of silicon is highly recommended, as polyether could be too hard at the moment of the tray removal.



If necessary, the abutment can be reduced to the right dimension. The abutment can be cut either into the patient's mouth or unscrewing it from the implant and fastening it to an 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 lab.



During the healing phase a direct provisional crown made by the lab can be temporarily cemented to the abutment. Otherwise a PEEK sleeve is available to be luted to a hollowed crown.

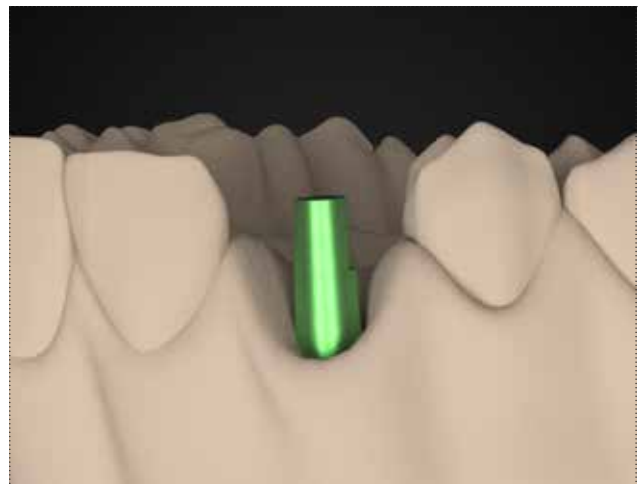


XA CEMENTED PROSTHESIS

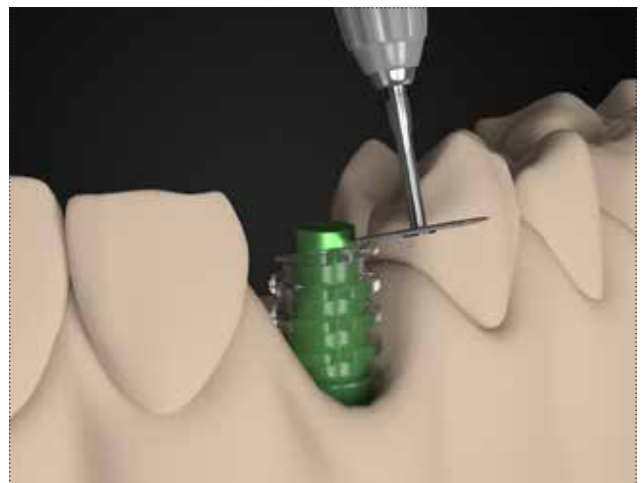
The lab receives the impression, which includes the first PMMA sleeve well retained into the impression material, the analog of the abutment and the cutting template, that is the second PMMA sleeve previously cut.



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

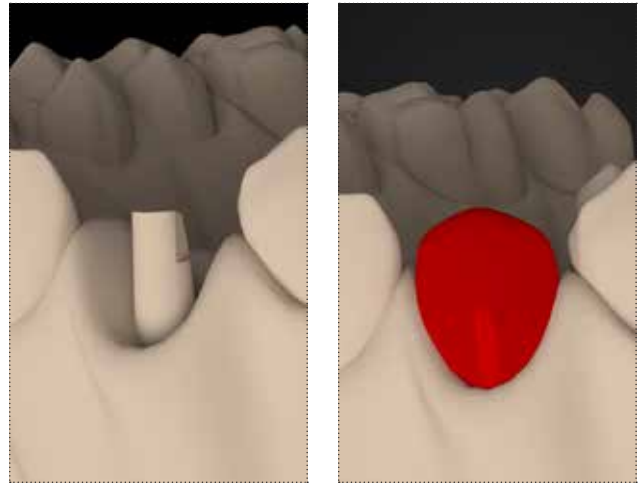


The analog of the abutment is accurately reduced with the aid of the PMMA template.

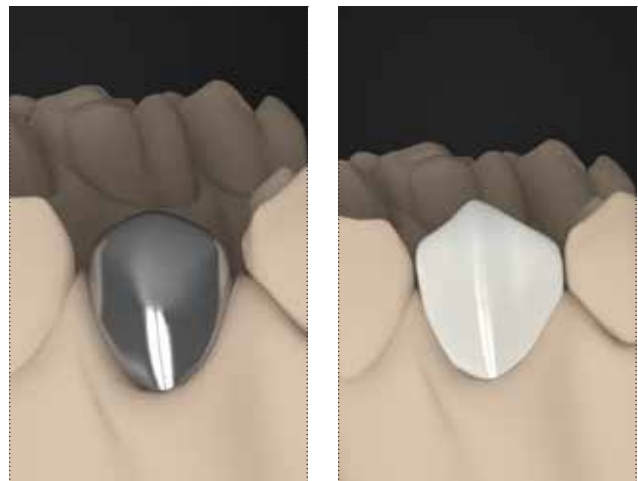


If the impression was taken without the aid of the PMMA sleeve, epoxy resin is highly recommended to cast the model.

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 ditching 1 or more mm of resin around the abutment.



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



The crown can be cemented onto the XA abutment into the patient's mouth.



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. Their form and position is reproduced in the laboratory model with great precision, thanks to a transfer and a dedicated analog.

One single 3.80 mm diameter enables a significant prosthetic simplification.



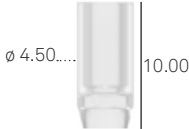
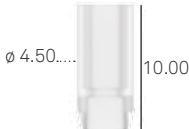



XA abutments for screw retained restorations

∅ prosthetic component	∅ 3.80
for implants	Premium 3.80 Shelta 3.80 - 4.25 - 5.00
XA abutment H. 4.50 mm	SH-ABU-F-TS-380-4 
XA abutment H. 5.50 mm	SH-ABU-F-TS-380-5 
XA abutment H. 6.50 mm	SH-ABU-F-TS-380-6 
Analog for XA abutments	SH-ANABU-F-380 
Transfer for XA abutments	SH-TRABU-F-380 
Transfer screw	SH-VTRABU-F-200 
Healing cap in PEEK for XA abutments	SH-CG-ABU-F-380 

Recommended torque for definitive fastening of directly tightened abutments: 25–30 Ncm.

IMPORTANT WARNING: The ∅ 3.80 mm prosthetic components are compatible with ∅ 3.80 mm, ∅ 4.25 mm and ∅ 5.00 mm Shelta implants. They do not allow prosthetic Platform Switching on ∅ 3.80 mm implants; they allow prosthetic Platform Switching on ∅ 4.25 mm and ∅ 5.00 mmw Shelta implants.





Accessories for screw retained restorations on XA abutments

<p>∅ prosthetic component</p>	<p>∅ 3.90 - 4.50</p>
<p>for implants</p>	<p>Premium 3.80 Shelta 3.80 - 4.25 - 5.00</p>
<p>Castable sleeve for XA abutments Engaging Fixation screw included</p>	<p>SH-CCABU-F-380</p>  <p>∅ 4.50... 10.00</p>
<p>Castable sleeve for XA abutments Non engaging Fixation screw included</p>	<p>SH-CCABU-F-380-ROT</p>  <p>∅ 4.50... 10.00</p>
<p>Titanium sleeve for XA abutments Engaging Fixation screw included</p>	<p>SH-CTABU-F-380</p>  <p>∅ 3.90... 10.00</p>
<p>Titanium sleeve for XA abutments Non engaging Fixation screw included</p>	<p>SH-CTABU-F-380-ROT</p>  <p>∅ 3.90... 10.00</p>
<p>Single pack Pack of 10 pieces</p> <p>Fixation screw for XA superstructures</p>	<p>A-PLAIN-VP200 A-PLAIN-VP200-10</p>  <p>M2.0...</p>

Recommended torque for definitive fastening of structures on abutments: 20–25 Ncm.

See technical characteristics of Gr. 5 titanium, PMMA and PEEK at page 27.

Prosthetic screwdrivers

description	code
Screwdriver for fixation screws, with hexagonal connector for ratchet or hand knob, short	HSM-20-EX 
Screwdriver for fixation screws, with hexagonal connector for ratchet or hand knob, long	HSML-20-EX 
Screwdriver for fixation screws, with hexagonal connector for ratchet or hand knob, extra-long	HSMXL-20-EX 
Driver for fixation screws, with right angle shank	HSM-20-CA 





It is recommended the use of the prosthetic screwdrivers with the CRI5-KIT ratchet contained in all the surgical and prosthetic instruments set of the implant systems.

PBox XA for screw retained restorations

A practical PBox set is available, which complements XA abutments for screw retained procedures. The abutments are not included in the set, they must be purchased separately. In the choosing of the abutments always evaluate the suitable height for the single clinical cases: 4.50 mm, 5.50 mm and 6.50 mm.

The PBox for screw retained procedures is available in two versions: one version for single crowns with engaging components and one for bridges and multiple structures with non engaging parts. Every PBox includes a transfer and an analog for taking the impression on the abutment, a PEEK cap to protect the abutment while waiting for the delivery of the final restoration, a titanium sleeve for a luted temporary prosthesis and a castable sleeve for the laboratory phases. The single fixation screw contained in the last vial must be used only for the final fastening in the patient's mouth.



code	components
<p>PBOX-XA-ABU-ROT</p> 	<p>PBox for screw retained restoration \varnothing 3.80 – non engaging including:</p>  <p>SH-ANABU-F-380 SH-TRABU-F-380 SH-VTRABU-F-200 A-PLAIN-VP200 SH-CTABU-F-380-ROT SH-CG-ABU-F-380 A-PLAIN-VP200 SH-CCABU-F-380-ROT A-PLAIN-VP200</p>
<p>PBOX-XA-ABU</p> 	<p>PBox for screw retained restoration \varnothing 3.80 – engaging including:</p>  <p>SH-ANABU-F-380 SH-TRABU-F-380 SH-VTRABU-F-200 A-PLAIN-VP200 SH-CTABU-F-380 SH-CG-ABU-F-380 A-PLAIN-VP200 SH-CCABU-F-380 A-PLAIN-VP200</p>

The abutment is not included in the kit, it must be purchased separately.

Prosthetic protocol for XA screw retained restorations

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.

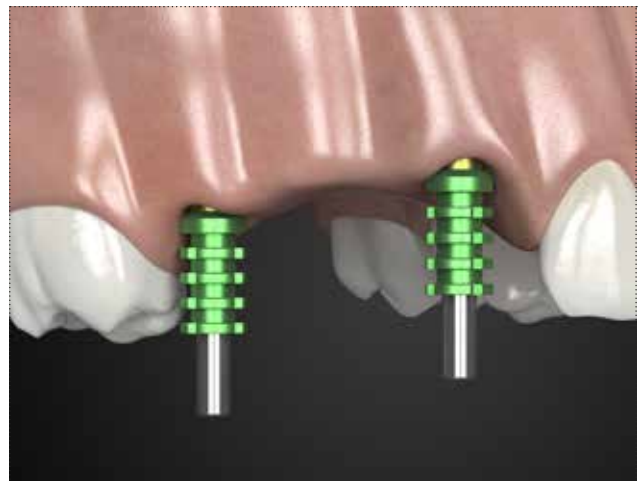
Please, pay attention and choose the proper height (4.50 – 5.50 – 6.50 mm) as these abutments must not be cut or modified.

Important warning

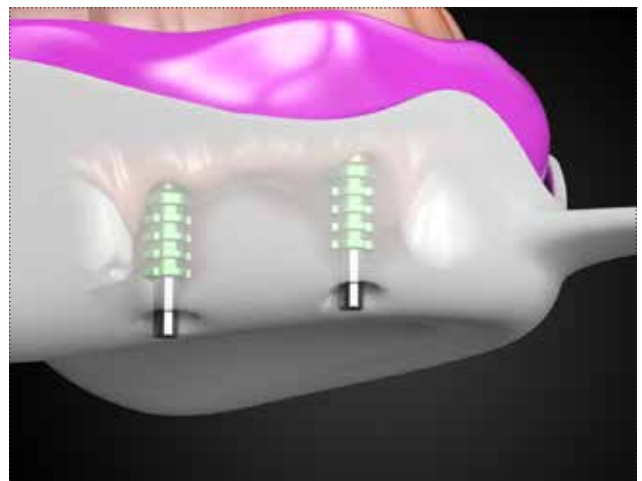
XA abutments are supplied in non-sterile packs.
Before clinical use they must be sterilized in an autoclave.



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



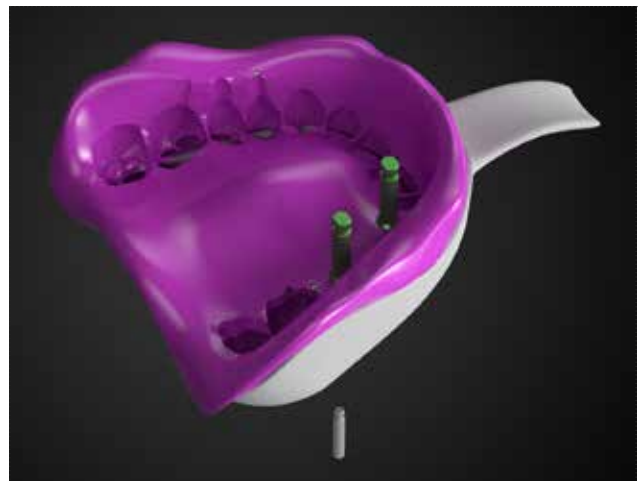
Impression is taken with an open tray, properly customized by the lab.



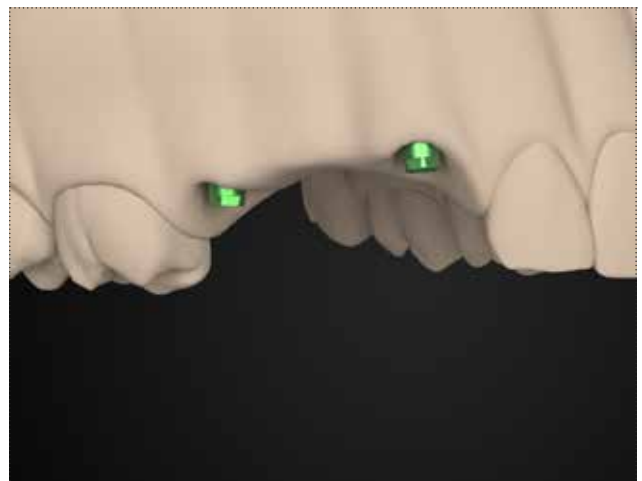
While waiting for the temporary or final bridge to be delivered, the abutments must be protected by PEEK caps (cod. SH-CG-ABU-F-380), that must be tightened at 9-10 Ncm.



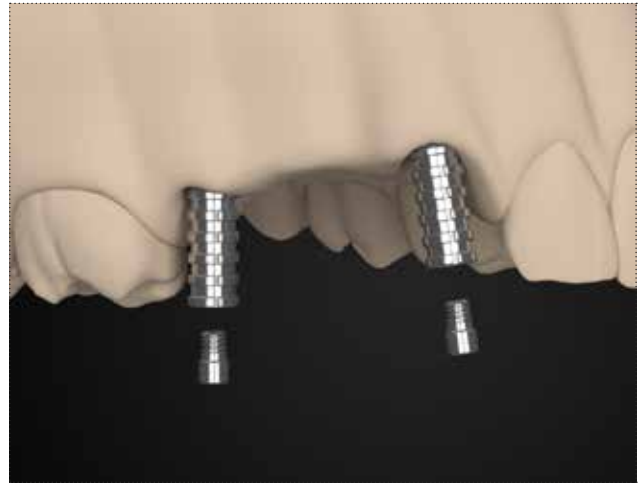
The lab receives the impression tray and the analogs of the abutments. These are positioned properly and fastened with the SH-VTRABU-F-200 screw to the transfers before pouring the model.



The model is poured with the analogs of the abutments accurately placed.



If a temporary bridge is made, 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.



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.



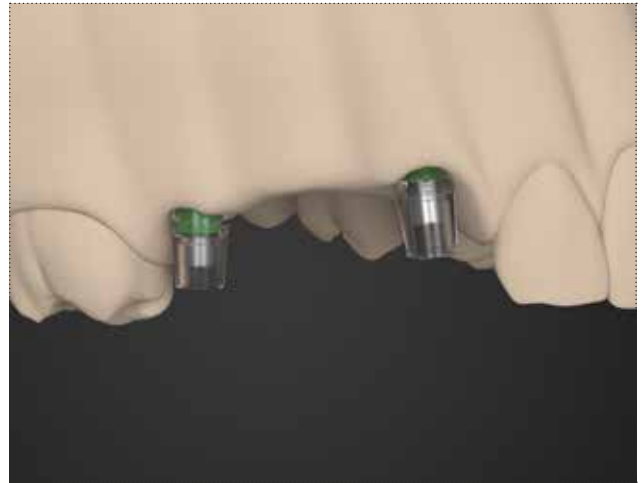
Now the temporary bridge can be assembled to the XA abutments into the patient's mouth, fastening the screws at 20-25 Ncm.



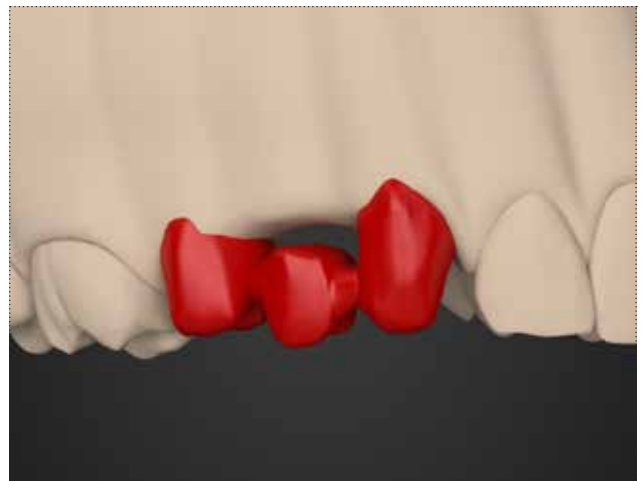
SH-CCABU-380-ROT non indexed PMMA sleeves are fixed at 8-10 Ncm on top of the abutments with A-PLAIN-VP200 screws.



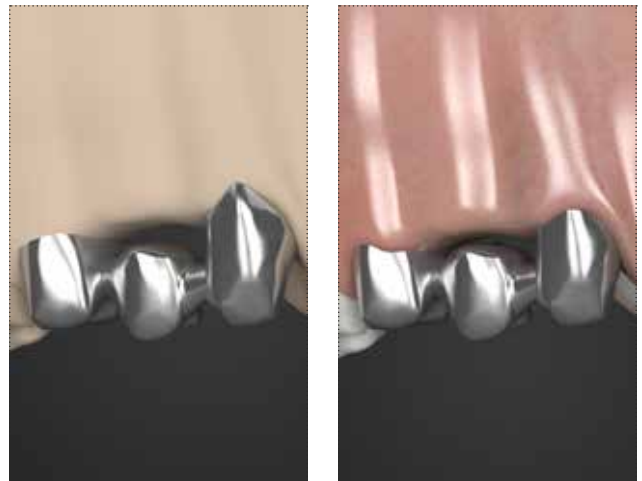
The PMMA SH-CCABU-380-ROT non indexed sleeves are remodelled as needed.



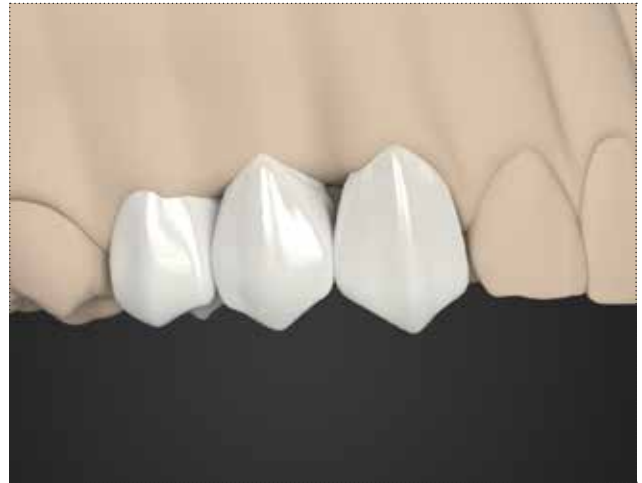
The wax up for the final bridge is built up on to the PMMA sleeves. To maximize the esthetic outcome the margin should be placed below the soft tissue margin (1 mm average). This can be easily achieved ditching 1 mm of resin around the abutment.



The wax up is cast as per abutment procedure and then the bridge is checked into the patient's mouth.



After verifying that the framework fits passively, the bridge can be finalized.



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

Important warning

Always use a new screw for the final intraoral fastening. Never use screws that have been previously used in the laboratory or to fix temporary bridges.



Composition of the materials

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
aluminium	5.50÷6.50	+/- 0.40
vanadium	3.50÷4.50	+/- 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.

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)	7×10^{-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

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