

BASIC INFORMATION ON THE PROSTHETIC PROCEDURES



Straumann[®] Bone Level Implant Line

COMMITTED TO SIMPLY DOING MORE FOR DENTAL PROFESSIONALS



Straumann is the industrial partner of the ITI (International Team for Implantology) in the areas of research, development and education.

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PURPOSE OF THIS GUIDE

This guide describes the essential steps required for the fabrication and insertion of prosthetic restorations for Straumann[®] Bone Level implants.

For detailed information regarding implantation and soft tissue management see "Basic information on the surgical procedures with the Straumann® Dental Implant System" (Art. No. USLIT100).

Note

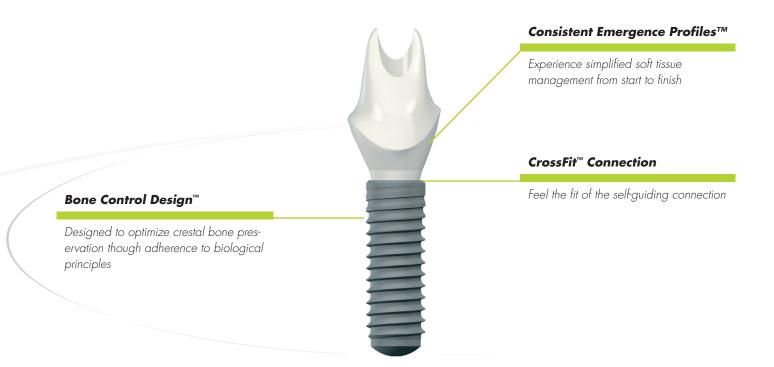
Different procedures apply for dental technicians and prosthodontists. Such procedures are marked with a color code in the respective chapters of this guide:

- Lab procedure
- Prosthetic procedure

1. STRAUMANN® BONE LEVEL IMPLANT -

CONFIDENCE AT BONE LEVEL

The Straumann[®] Bone Level Implant provides you with a solution for all bone level treatments, with Straumann expertise and quality built in. The implant design is based on the latest technology and scientific research in implant dentistry. Straumann's bone level implant respects five key biological principles, is designed to provide predictable esthetic results and offers simple handling in a variety of indications.



Bone Control Design[™]

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

- Fast osseointegration with the SLActive[™] surface technology
- Transmission of forces into the bone through the biomechanical implant design
- Consideration of the biological distance with a horizontal distance of microgap to bone
- Minimal micromovement through a conical connection

Consistent Emergence Profiles™

The prosthetic components of the Straumann[®] Bone Level implant line are designed to facilitate highly esthetic restorations that mimic natural teeth. These implant line components, designed to match the abutment profiles, allow you to easily attain esthetic results through soft tissue management.

CrossFit™ Connection

The prosthetic connection is intuitive, self-guiding and easy to grasp. The CrossFit[™] Connection:

- Provides a clear-cut insertion through the guidance by 4 grooves and the deep, conical connection
- Prevents rotation through orthogonal fit between implant and abutment
- Gives prosthetic flexibility with mechanical long-term stability through its conical connection

2. GENERAL INFORMATION

2.1 CrossFit[™] CONNECTION

The Straumann[®] Bone Level Implant features an intuitive implant-abutment connection that is self-guiding and designed to enable simple positioning. The new connection is designed to allow clear-cut insertion with all components to provide outstanding protection against rotation, as well as long-term stability.







Precision and simplicity: 4 grooves

The CrossFit[™] Connection features 4 grooves for the repositioning of prosthetic components. This configuration is designed for:

- simple implant alignment
- clear-cut and guided component insertion
- flexibility in the placement of angled prosthetic components
- designed to prevent rotation by orthogonal implant-abutment fit

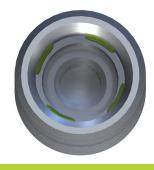


Figure 1: The internal connection viewed from above shows the 4 internal grooves.

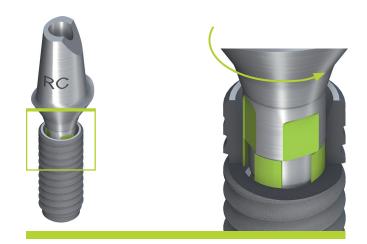


Figure 2: Abutment insertion, step 1. The abutment is placed on the 4 grooves in the implant.



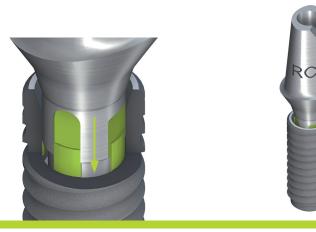


Figure 3a: Abutment insertion, step 2. The abutment is turned until it is aligned with the 4 implant grooves.

Figure 3b: Abutment insertion, step 3. The abutment then falls into its final position.



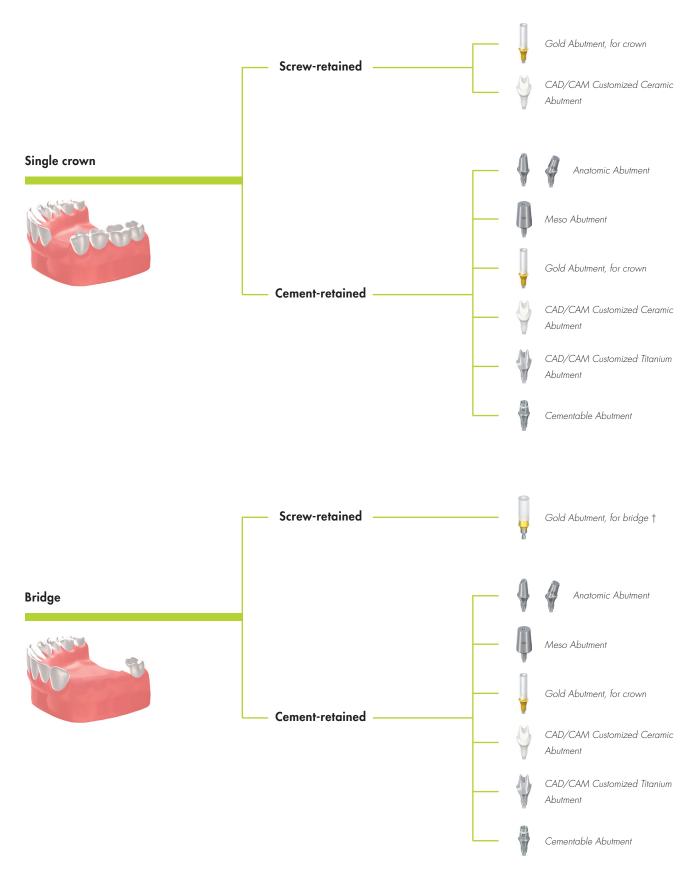
Figure 4: The CrossFit[™] connection provides an orthogonal fit between the implant and abutment.

Reliability and flexibility: Conical connection

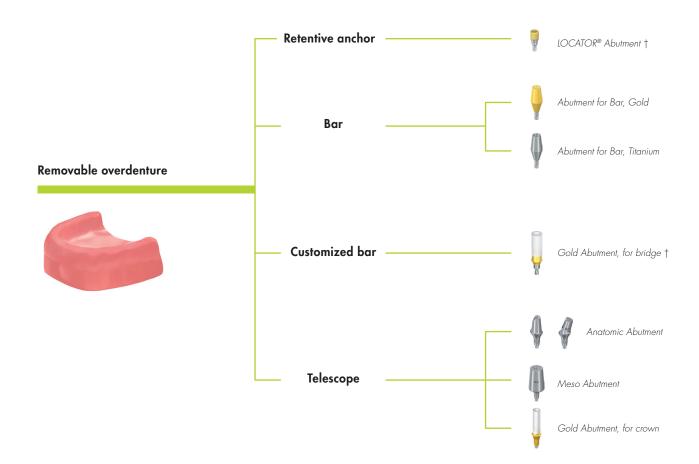
The CrossFit[™] Connection features a cone with improved mechanical properties, providing more flexibility for prosthetic treatments. The conical prosthetic connection provides:

- reduced micromovements and minimized microgap
- outstanding mechanical stability and optimized stress distribution
- exact implant-abutment fit
- simplified impression taking with divergently positioned implants

2.2 PROSTHETIC OPTIONS



† Pending FDA clearance



2.3 ABUTMENT OVERVIEW

	Anatomic Abutment	Meso Abutment	Gold Abutment, for crown	Gold Abutment, for bridge †	CAD/CAM Customized Ce- ramic Abutment
	Re Re	RC			
Single crown			<u>.</u>		
Screw-retained			v		v
Cement-retained	v	v	v		v
Bridge					
Screw-retained				v	
Cement-retained	v	v	v		v
Removable overdenture					
Telescope	v	v	v		
Bar				v	
Impression					
Implant level	v	v	v	v	v
Abutment level					
Material*	Titanium	Titanium	Ceramicor®	Ceramicor®	Zirconia
Page	42	42	49	61	71

*See information on sterilization conditions on page 130.

Ceramicor® is a registered trademark of Cendres & Métaux SA (Biel-Bienne, Switzerland)

CAD/CAM Custom- ized Titanium Abutment	Cementable Abutment	Abutment for Bar, Gold	Abutment for Bar, Titanium	LOCATOR [®] Abutment †
	C			
V	v			
V	V			
			1	
		V	V	
v	v	V	v	v
	v			v
Titanium	Titanium	Ceramicor®	Titanium	Ti alloy
71	84	99	99	109

2.4 CODING

The Straumann[®] Bone Level Implant line is color-coded and contains laser markings, enabling quick and precise identification of secondary parts, surgical instruments and auxiliaries. This concept simplifies the communication between all individuals involved in the treatment process.

Connection	Implant Ø	Instruments	Implant	Closure screw
Narrow CrossFit™ (NC)	3.3 mm			
Regular CrossFit™ (RC)	4.1 mm 4.8 mm			Ţ
Laser marked (NC/RC)		V		v
Color-coded				v

The following scheme illustrates the above mentioned approach:

Healing abutment	Impression post	Implant analog	Temporary abutment	Secondary part abutment
26.00				
v	v	v	v	v v
			Screw head	Screw head

*See information on sterilization conditions on page 130.

3. PREOPERATIVE PLANNING

Careful treatment planning is of utmost importance. A comprehensive pre-implantation diagnosis, evaluation and plan are an absolute prerequisite to ensure treatment success. The implant forms the apical extension of the restoration and serves as the planning basis for the surgical procedure, ultimately achieving a specific prosthetic result. Close communication between the patient, dentist and dental technician is imperative to achieve excellent implant-borne restorations.

3.1 WAX-UP/SET-UP

To determine the topographical situation, axial orientation and choice of implants, making a wax-up/set up using the previously prepared study cast is recommended. Subsequently, the type of superstructure can be defined. The waxup/set-up can later be used as the basis for a custom-made X-ray or drill template and for a temporary restoration.

Abutments should always be loaded axially. Ideally, the long axis of the implant is aligned with the cusps of the opposing tooth. Extreme cusp formation should be avoided as this can lead to unphysiological loading.

3.2 X-RAY TEMPLATE WITH REFERENCE SPHERES

To accurately determine bone availability, the use of an Xray template with X-ray reference spheres is recommended. First, mark the proposed implant positions on the study cast. Then, fix the X-ray reference spheres at the marked points and make the vacuum-formed template with the spheres. The subsequently taken X-ray or computer tomography (CT) scan provides information on bone availability, quality and mucosal thickness. Based on these properties, the exact implant positions, number of implants, diameters and lengths can be determined.



The X-ray reference sphere has a diameter of 5 mm. The image of the sphere on the X-ray provides the reference value for the magnification scale.

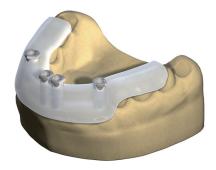
3.3 CUSTOM-MADE DRILL TEMPLATE

A custom-made drill template can facilitate planning and the preparation of the implant bed and enables precise use of the cutting instruments. The desired prosthetic result should serve as the focus throughout all treatment planning stages.

With these components, a surgical drill template can be produced in the usual manner:

Art. No.	Article		Dimensions
049.810V4		Drill sleeve with collar	height 10 mm outside Ø 3.5 mm inside Ø 2.3 mm
049.818V4		Stepped pin for 049.810	height 16 mm Ø 2.2/3.5 mm
049.816V4		Pin for 049.810	height 16 mm, Ø 2.2 mm
049.817V4		Pin for 049.810	height 10 mm, Ø 2.2 mm
049.819V4		Pin for 049.810	height 16 mm, Ø 3.5 mm

The Straumann brochure "Basic information on the surgical procedure with the Straumann® Dental Implant System" (USLIT 100) contains two fabrication methods with step by step instructions.



Vacuum-formed template with integral pins as X-ray reference



Vacuum-formed template with integrated drill sleeve as drilling template

3.4 THERMOPLASTIC DRILL TEMPLATE

Art. No.	Article		Dimensions	Material		
040.526	Thermoplastic Drill templates set, single tooth, contents:					
	H	Thermoplastic drill template for single-tooth sites (V5)	sleeve height 10 mm, inner Ø 2.3 mm	titanium/ polymer		
		Guide pin (V5)	length 20 mm, Ø 2.3 mm	stainless steel		
		Drill for dental laboratory	Ø 2.3 mm	steel		
040.527	Thermoplastic drill templates set, free-end situation, contents:					
	T	Thermoplastic drill template for free-end situations (V5)	sleeve height 10 mm, inner Ø 2.3 mm	titanium/ polymer		
		Guide pin (V5)	length 20 mm, Ø 2.3 mm	stainless steel		
		Drill for dental laboratory	Ø 2.3 mm	steel		

V5 = 5 components per pack

For more detailed information, refer to the package insert "Thermoplastic Drill Template Flyer" (USLIT 191).

Drill a hole in the previously determined implant position and axis in the plaster anatomic cast. Then insert the pin into the prepared site in order to check the implant position. Subsequently, heat the template in water until it is soft and transparent. Place the template on the guide pin and press it onto the plaster teeth. After it has cooled and been disinfected, the thermoplastic drill template determines exactly how the pilot drill (\emptyset 2.2 mm) is to be guided.



Drill hole template for single tooth situation

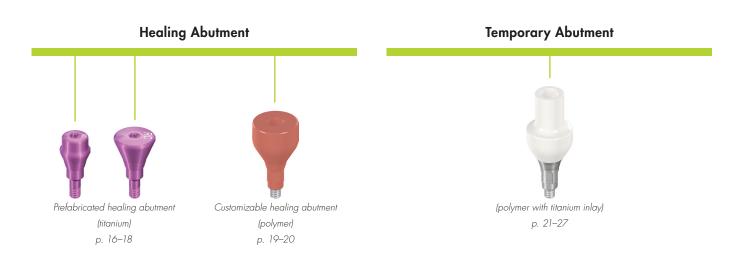


Drill hole template for free end situation

4. SOFT TISSUE MANAGEMENT

The Straumann[®] Bone Level Implant line emphasizes esthetic considerations, offering tailor-made solutions that allow for natural soft tissue shaping and maintenance in a variety of indications. A versatile portfolio of healing and temporary abutments is available, including customizable products made of polymer for easy and quick processing.

4.1 SOFT TISSUE MANAGEMENT SOLUTIONS



4.2 PREFABRICATED HEALING ABUTMENT

Intended use

- Soft tissue management
- Closure of implant connection for submerged and non-submerged healing

Characteristics

Simple

- One-piece design
- Color-coded and laser-marked
- Anatomically shaped emergence profiles, matching impression post and final abutments

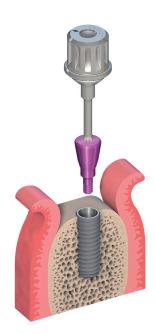
Reliable

■ CrossFit[™] connection



Prosthetic procedure: p. 17–18

4.2.1 Prefabricated Healing Abutment - Prosthetic procedure

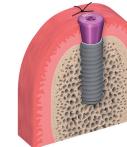


1

2

Step 1 – Insertion

- Insert the healing abutment with the SCS screwdriver. The friction fit secures the healing abutment to the instrument during insertion and ensures safe handling.
- Hand-tighten the healing abutment. The cone-in-cone design provides a tight connection between the two components.

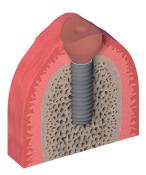


Step 2 - Wound closure

Adapt the soft tissue and suture it back tightly around the abutment.

Optional: Bottle-shaped and customizable healing abutment





The bottle-shaped healing abutment pre-shapes the soft tissue by allowing for a slight excess of mucosa to accumulate during healing. The insertion of the final restoration pushes the formed tissue outward, supporting the creation of naturally shaped peri-implant soft tissue.

The customizable healing abutment allows for individual soft tissue management.



Do not use the customizable healing abutment for longer than 6 months.

Healing abutments are delivered non-sterile and must be sterilized prior to use (see instructions, p. 130).

4.3 CUSTOMIZABLE HEALING ABUTMENT

Intended use

- Individual soft tissue management for esthetic cases
- Closure of implant connection during healing phase

Characteristics

Simple

- Polymer material allows for easy and quick chair-side modification
- Easy to achieve esthetics due to gingiva-colored and modifiable polymer material

Reliable

■ CrossFit[™] Connection

Note

Do not use in the mouth for longer than 6 months



Prosthetic procedure: p. 20

Prosthetic procedure

4.3.1 Customizable Healing Abutment - Prosthetic procedure



Step 1 - Customizing

 Individualize the healing abutment on an analog, in accordance with the mouth situation. Heatless wheels and new cross-toothed millers are recommended for grinding.



 To avoid smearing of the polymer, adjust the bur speed properly (low rpm number, minimal pressure).

Step 2 – Insertion

 Hand-tighten the healing abutment in the implant with the SCS screwdriver and temporarily seal the screw channel (e.g., with composite).

4.4 TEMPORARY ABUTMENT

Intended use

- Individual soft tissue management for esthetic cases
- Screw- or cement-retained temporary crowns
- Cement-retained temporary bridges

Characteristics

Simple

- Polymer material allows for easy and quick chair-side modification
- Easy to achieve esthetics due to tooth-colored and modifiable polymer material

Reliable

- Precise fit and high stability due to reinforcement with titanium inlay
- CrossFit[™] Connection

Note

- Do not use in the mouth for longer than 6 months
- Place temporary restoration out of occlusion
- The NC temporary abutment may be modified by a maximum of 6.0 mm vertically and 0.5 mm laterally. The RC temporary abutment may be modified by a maximum of 6.0 mm vertically and 1.0 mm laterally.

Lab procedure: p. 22–27

Prosthetic procedure: p. 22–27



Lab procedureProsthetic procedure

4.4.1 Temporary Abutment – Procedure Option A: Screw-retained temporary crown



Step 1 – Customizing

- Individualize the temporary abutment on an analog, in accordance with the mouth situation. Heatless wheels and new cross-toothed millers are recommended for grinding.
- To avoid smearing of the polymer, adjust the bur speed properly (low rpm number, minimal pressure).



D Note

For optimal adhesion of the temporary veneering material, roughen or sandblast the upper section of the abutment or integrate a means of retention.

Lab procedure Prosthetic procedure



Step 2 – First insertion

 Hand-tighten the temporary abutment in the implant/ implant analog with the SCS screwdriver and temporarily seal the screw channel (e.g., with cotton).









 Use a standard technique to fabricate the temporary restoration (e.g., prefabricated crown form or vacuumformed sheet technique, as shown here).





Step 3 – Finishing

 Remove excess acrylic, reopen the screw channel and finish the temporary restoration.



Step 4 – Final insertion

- Clean the polished temporary restoration, place it on the implant and tighten the screw with a torque between 15 Ncm and 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).
- Cover the screw head with absorbent cotton or gutta percha and seal the screw channel with temporary veneering material (e.g., composite).

Option B: Cement-retained temporary crown



Step 1 – Customizing

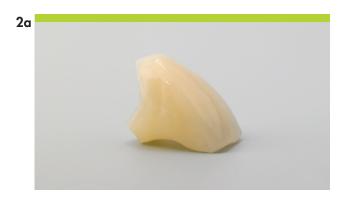
- Individualize the temporary abutment on an analog, in accordance with the mouth situation. Heatless wheels and new cross-toothed millers are recommended for grinding.
- To avoid smearing of the polymer, adjust the bur speed properly (low rpm number, minimal pressure).



Note

For optimal adhesion of the cement-retained temporary crown, roughen or sandblast the upper section of the abutment.





Step 2 – Fabricating the cement-retained temporary single crown

• Use a standard procedure to fabricate the cementretained single crown (e.g., grind out a prefabricated plastic tooth).





Step 3 – Placing the customized abutment

Place the abutment on the implant and tighten the screw with a torque between 15 Ncm and 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).



 Cover the screw head with absorbent cotton or gutta percha and seal the screw channel temporarily (e.g., with absorbent cotton).



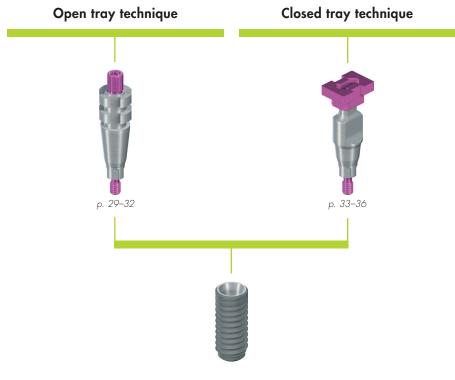
Step 4 – Cementing the temporary single crown

• Coat the internal configuration of the crown with temporary cement and cement it on the temporary abutment.

5. IMPRESSION TAKING

5.1 OPTIONS FOR IMPRESSION TAKING

Impressions for the Straumann® Bone Level Implant can be taken by either of the following two procedures:



Straumann[®] Bone Level Implant

The technique used depends upon the user's preference and the clinical situation. Both techniques are described in the following chapters.

5.2 OPEN TRAY IMPRESSION

Intended use

Open tray impression technique

Characteristics

Simple

- Color-coded components correspond to prosthetic connection
- Slender emergence profile accommodates space limitations
- Guide screw can be tightened by hand or with the SCS screwdriver

Reliable

- High precision impression components replicate the intraoral situation
- Clear-cut tactile response from the prosthetic connection verifies proper seating of components

Note

- Open tray impression procedure requires a custom-made tray with perforations.
- Impression posts are intended for single use only, to ensure optimal fit and precise impression taking for each patient.

Prosthetic procedure: p. 30–31

Lab procedure: p. 32



Prosthetic procedure

5.2.1 Open tray impression - Prosthetic procedure



Step 1 - Positioning the impression post

- Ensure sufficient access to the implant site in order to avoid pinching of the gingival tissue. Be aware that the sulcus may collapse rapidly once the healing components have been removed.
- Clean the internal configuration of the implant thoroughly prior to the impression procedure.
- Place the impression post accurately into the implant and hand-tighten the guide screw.
- In situations where occlusal space is limited, the length of the impression post can be reduced by one retention ring after the guide screw has been removed.



Step 2 – Impression taking

 Make perforations in the custom-made impression tray (light cured resin) according to the individual situation so that the positioning screw of the impression post sticks out.



2c



2d



 Take the impression using an elastomeric impression material (polyvinyl siloxane or polyether rubber).

Note

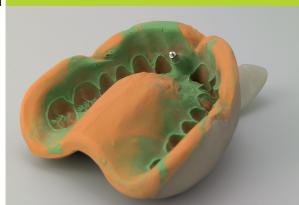
Due to its low tensile strength, hydrocolloid is not suitable for this application.

- Uncover the screws before the material is cured.
- Once the material is cured, loosen the guide screws and remove the tray.

Lab procedure

5.2.2 Open tray impression - Lab procedure

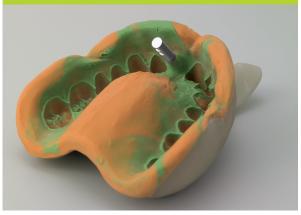




Step 1 – Analog repositioning and fixing

 Reposition and fix the analog in the impression using the guide screw. To avoid inaccuracies when connecting, the analog must be positioned exactly in line with the grooves of the impression post before screwing in.

1b



lc



Note

When tightening the screw, grasp the retentive section of the analog securely to prevent the impression post from rotating. This step is especially important when dealing with a shortened post.

2



Step 2 – Fabricating the master cast

 Fabricate the master cast using standard methods and type 4 dental stone (DIN 6873). A gingival mask should always be used to ensure that the emergence profile of the crown is optimally contoured.

5.3 CLOSED TRAY IMPRESSION

Intended use

Closed tray impression technique

Characteristics

Simple

- Color-coded components correspond to prosthetic connection
- Slender emergence profile to accommodate space limitations
- No additional preparation (i.e., perforation) of impression tray required

Reliable

- High precision impression components replicate the intraoral situation
- Clear-cut tactile response from the prosthetic connection verifies proper seating of components

Note

Impression posts are intended for single use only, to ensure optimal fit and precise impression taking for each patient.

Prosthetic procedure: p. 34–35

Lab procedure: p. 36



5.3.1 Closed tray impression - Prosthetic procedure



Step 1 - Positioning the impression post

- Ensure sufficient access to the implant site in order to avoid pinching of the gingival tissue. Be aware that the sulcus may collapse rapidly once the healing components have been removed.
- Clean the internal configuration of the implant thoroughly prior to the impression procedure.
- Place the impression post accurately into the implant and hand-tighten the guide screw with the SCS screwdriver

Note

Ensure that the lateral planar areas of the post are facing mesial and distal.



- Place the polymer impression cap on top of the fixed impression post. Ensure that the color of the cap corresponds to the color of the positioning screw in the post and that the arrows are aligned in a buccal-lingual direction
- Push the impression cap in an apical direction until it clicks. The impression cap is now firmly seated on the impression post.



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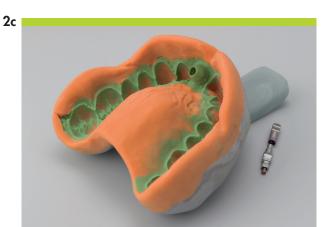
Step 2 – Impression taking

 Take the impression using an elastomeric impression material (polyvinyl siloxane or polyether rubber).

Note

Due to its low tensile strength, hydrocolloid is not suitable for this application.

 Once the material is cured, carefully remove the tray. The impression cap remains in the impression material and therefore is automatically pulled off from the impression post with the removal of the tray.



• Unscrew and remove the impression post and send it with the impression tray to the dental technician.

Lab procedure

5.3.2 Closed tray impression - Lab procedure





Step 1 – Analog fixing and impression post repositioning

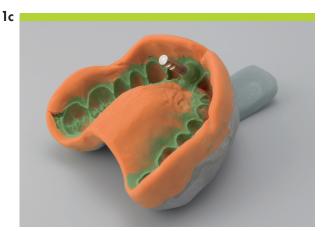
 Mount the impression post onto the analog using the guide screw. To avoid inaccuracies when connecting, the analog must be positioned exactly in line with the grooves of the impression post before screwing it in.



Note

Ensure that the color code of the guide screw corresponds to the color code of the analog, and that the color code of the analog corresponds to the color code of the polymer cap in the impression material.

- Reposition the impression post in the tray.
- Gently push the impression post until you feel the tactile response of engagement. It is now firmly seated on the impression cap in the impression tray.



Step 2 – Fabricating the master cast

 Fabricate the master cast using standard methods and a type 4 dental stone (DIN 6873). A gingiva mask should always be used to ensure that the emergence profile of the crown is optimally contoured.

2



5.4 BITE REGISTRATION

To simplify bite registration after impression taking, plastic bite registration aids are available in various heights. For repositioning on the master cast, the bite registration aids have a flat side laterally.



Step 1 – Insertion

Insert the bite registration aids into the implants.
 Each component is fitted with a snap mechanism that holds it in the internal configuration.

Note

Protect the components against aspiration (e.g., use a throat pack or a thread).



2b



3



Step 2 – Shortening

Shorten the bite registration aids (if needed) and apply the bite registration material. To ensure the repositioning from the mouth to the master cast, the occlusal area and the lateral flat side of the bite registration aids must be adequately surrounded with the registration material.

Note

Bite registration aids must be shaped out of the mouth. If they need to be shortened occlusally due to lack of space, ensure that the lateral flat side is not ground off.

Step 3 – Positioning

• To transfer the bite, put the bite registration in the analogs on the master cast. Fix the bite wax model and mount the maxilla and mandible casts on the articulator.

6. RESTORATION

6.1 CrossFit[™] PLAN SET/PLAN ABUTMENT

Intended use

Intra- and extra-oral planning of prosthetic restoration

Characteristics

Simple

- Color-coded, well-marked and easily identifiable PLAN abutments
- Comprehensive PLAN set contains all PLAN abutments arranged clearly
- Easy handling with the SCS screwdriver

Reliable

- Proper seating of PLAN abutments verified through the clear-cut response from the prosthetic connection
- PLAN abutments fabricated of sterilizable polymer material

Note

- Clean and moist-heat sterilize PLAN abutments after intra-oral use
- Do not g-sterilize PLAN abutments
- Do not sterilize the cassette

- Lab procedure: p. 40
- Prosthetic procedure: p. 40–41





6.1.2 CrossFit[™] PLAN Set/PLAN abutment selection

The Straumann[®] CrossFit[™] PLAN Set allows for specified planning of the restoration in the mouth and on the model, providing the dentist and the dental technician great flexibility in cooperative planning and minimizes the quantity of stock abutments. The PLAN set contains all PLAN abutments available for the Straumann[®] Bone Level Implant (anatomic, cementable, gold, and LOCATOR[®] †).



Step 1 - Selecting the right abutment

 Open the PLAN set, pick up a PLAN abutment and secure it with the SCS screwdriver (empty mold for instruments built in).



 Place the PLAN abutment on the implant (intra-oral use) or implant analog (extra-oral use). Check dimensions (rings on PLAN abutments indicate gingiva height), axial alignment and screw axis of the potential restoration.



Step 2 - Ordering the stock abutment

 Once the most accurate fit of the PLAN abutment is determined, order the corresponding stock abutment (titanium, gold) using the allocation chart on the PLAN set inlay card.

[†] Pending FDA clearance

6.1.3 Cleaning and sterilizing PLAN abutments

- Clean the PLAN abutments thoroughly with water or ethanol after intra oral-use.
- After cleaning, moist-heat sterilize (autoclave) PLAN abutments for 18 minutes at 134 °C (273 °F).
- Refer to the manufacturer's specifications for the heat-sterilization device.

Note

- Do not sterilize PLAN abutments more than 20 times
- Do not g-sterilize PLAN abutments
- Do not sterilize the cassette

6.2 ANATOMIC (AND MESO) ABUTMENT

Intended use

Cement-retained restorations

Characteristics

Simple

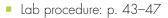
- Less grinding necessary due to prepared mucosa margins
- Adaptation to natural soft tissue contour due to prepared mucosa margins in different heights
- Oval shape resembles emergence profile of a natural tooth

Reliable

■ CrossFit[™] Connection

Note

- Not suitable for direct ceramic veneering
- A minimum height of 3.0 mm above the mucosa margin of the abutment must be maintained in order to maintain proper stability of the abutment
- The cement margin must not be more than 2.0 mm below the mucosa
- Use a new basal screw for the final insertion of the abutment



Prosthetic procedure: p. 48



6.2.1 Anatomic (and Meso) Abutment - Lab procedure

The following case describes the fabrication of a cement-retained single crown by using the anatomic abutment.

Ια

Step 1 – Fabricating the master cast and wax-up

 Fabricate the master cast, including a gingiva mask with the corresponding implant analog (see instructions in chapter 5, p. 28).

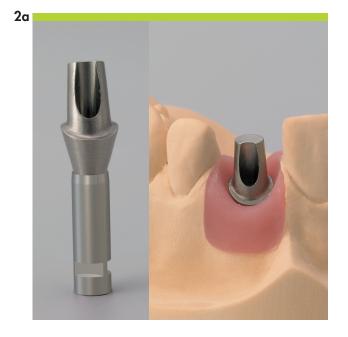


 For optimal esthetic planning, model a full anatomical wax-up.



 Make a silicone key over the full wax-up in order to define the optimal shape of the customized abutment.





Step 2 - Preparing the Anatomic or Meso Abutment

• The anatomic abutment and the meso abutment (p. 45) consist of titanium and can be modified as required.

Note

To maintain proper stability of the abutment, a minimum height of 3 mm above the mucosa margin of the abutment must be maintained.

- Modify the anatomic abutment on a polishing aid
- The modified anatomic abutment is placed in the master cast.



If the anatomic abutment does not fit your individual demands or if you prefer grinding the mucosa margins yourself, you can use the **meso abutment.** The processing of the meso abutment corresponds to the steps of the anatomic abutment.









3

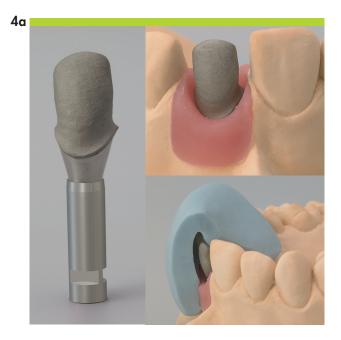


Step 3 – Fabricating the superstructure

Fabricate the superstructure on the modified abutment using standard modeling, casting and veneering methods.

- Place the modified abutment on the polishing aid/analog and hand-tighten the screw using the SCS screwdriver.
- Wax an individual resin cap onto the abutment.
- Contour a wax model according to the anatomical circumstances of the individual cast.
- Check the wax-up with the silicone key.





Step 4 – Casting and veneering

• Cast the framework using the standard casting methods

Check the framework with the silicone key before veneering

Veneer the superstructure





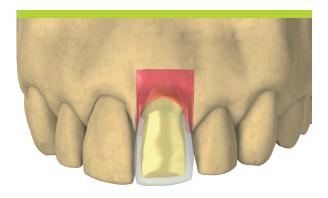
6.2.2 Anatomic Abutment – Prosthetic procedure



The final restoration is delivered to the doctor's office on the master cast.

Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the superstructure from the master cast and unscrew the abutment from the analog.
- Clean and dry the interior of the implant and the abutment thoroughly.



Step 2 – Final insertion

- Position the cleaned abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the anatomic abutment in case a crown replacement is required.
- Cement the superstructure to the abutment.
- Remove superfluous cement.

6.3 GOLD ABUTMENT FOR CROWN

Intended use

- Screw-retained or cement-retained crowns
- Cement-retained bridges via mesostructure (custom abutment technique)

Characteristics

Simple

- Easy wax-up and protection of the screw channel due to modeling aid (burn-out polymer)
- Easy-to-achieve esthetics due to individual contouring of the emergence profile and adaptation to the margin of the gingival contour

Reliable

- Superfluous cement easily removable by raising the cement margin by an individually designed mesostructure
- CrossFit[™] Connection

Note

- Not suitable for direct splinting with other gold abutments. For screw-retained bridges, the gold abutment for bridge must be used (see instructions in chapter 6.4, p. 61).
- Use a new basal screw for the final insertion of the abutment.

- Lab procedure: p. 50–59
- Prosthetic procedure: p. 60





6.3.1 Gold Abutment for crown – Lab procedure

The following case describes the fabrication of a cement-retained single crown by utilizing the custom abutment technique.



Step 1 – Fabricating the master cast and wax-up

• Fabricate the master cast, including a gingiva mask with the corresponding implant analog (see instructions in chapter 5, p. 28).



 For optimal esthetic planning, model a full anatomical wax-up



 Make a silicone key over the full wax-up in order to define the optimal shape of the customized abutment.



Step 2 – Preparing the Gold Abutment

 Place the gold abutment on the analog and hand-tighten the screw using the SCS screwdriver.



 Shorten the modeling aid to the height of the occlusal plane according to the individual circumstances. Working with the modeling aid ensures a clean and sharp-edged finish of the screw channel.





• Attach the gold abutment to the polishing aid for easier handling during manipulation outside of the model.





Step 3 – Wax modeling

 Contour a wax-up shape according to the individual anatomical situation. The silicone key shows the exact space for the cement-retained crown, which will be made over the customized abutment.

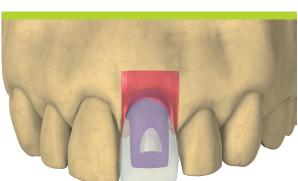


 Make sure that the wax layer on the abutment is sufficiently thick (at least 0.7 mm). Do not cover the delicate margin of the abutment with wax.



• Check the wax-up with the silicone key.





Note

The picture displays the optimal configuration of a customized abutment, showing an ideal emergence profile. This configuration ideally adapts the crown contours to the margin of the gingival contour. For hygiene purposes, the cement margin must not be more than 2.0 mm below the gingival level.



Step 4 – Investment

 Invest the customized abutment according to standard methods without using wetting agents.

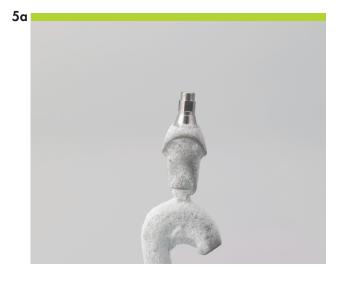
D Note

In order to avoid overflow of the cast-on alloy, thoroughly clean the abutment prior to investment (removal of wax particles, insulating agents with a cotton pellet or brush moistened with alcohol).

Always do the cast with the modeling aid. Otherwise, the dental casting alloy will not or only minimally flow out at the upper coping rim.

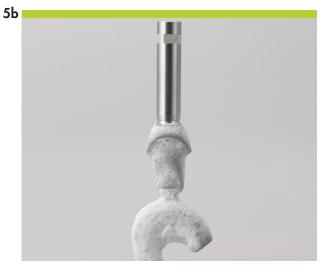
Ensure that there is no wax on the delicate margin. The use of investment materials for rapid heating methods (speed investment materials) is not recommended.

When processing the investment material, follow the manufacturer's instructions. Observe the recommended mixing ratio and preheating time exactly.



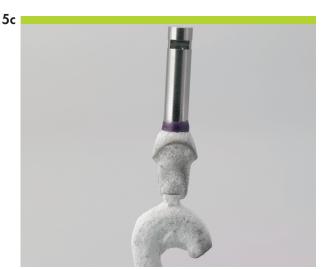
Step 5 – Casting and devestment

- Cast the customized abutment.
- Gently devest the customized abutment with ultrasound, water jet, pickling acid or a glass fiber brush.



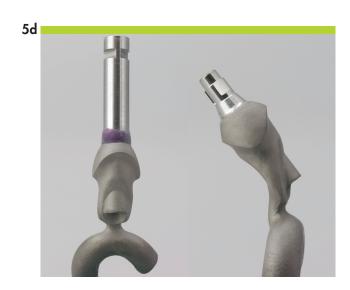
Note

For the devestment of the gold abutment with sandblasting (maximum pressure: 2 bars; maximum alumina particle size: 50μ m), the inner configuration must be protected from infiltration with sand with the polishing aid.



• The wax-fixed polishing aid allows better fixation and protects the pre-polished part of the gold abutment.

Lab procedure



• The gold abutment following sandblasting



D Note

Do not sandblast the inner configuration of the gold abutment.





Step 6 – Polishing

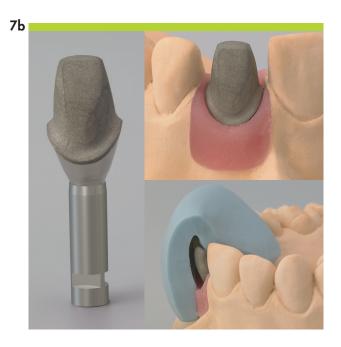
• After trimming, polish the finished customized abutment.

• The customized abutment is now ready for the fabrication of the cement-retained single crown.

^{7α}

- Step 7 Fabricating the cement-retained single crown
- Block out the screw channel and wax the framework directly over the customized abutment.
- The silicone key shows the spatial relations for the restoration.

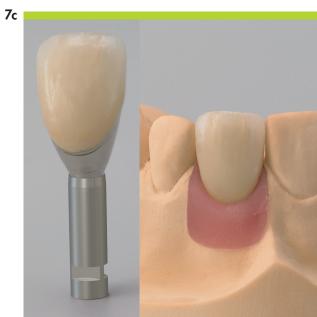
6b



• Cast the framework in the conventional manner. After trimming the cast, the metal crown fits precisely on the customized abutment.

• The silicone key shows the spatial relations for veneering.

• Veneer the superstructure





Casting errors and incorrect handling





Note

The long-term success of the prosthetic work depends upon the accurate fit of the restoration.

The entire procedure must repeated if...

...trimming through the cast-on alloy prohibits the Ceramicor® surface from being covered with ceramic veneering material (Ceramicor® is a non-oxidizing alloy and does not allow ceramic bonding).

Failed casting



...the cast-on gold did not flow out entirely.

Casting beads and overflow of alloy



...intruded casting metals and casting pearls cannot be removed from the connection part of the gold abutment.

Using alloys with castable Ceramicor® components

Ceramicor[®] is only suitable for cast-on procedures

Ceramics cannot be bonded directly to cast-on Cermicor[®] components as this alloy does not form bonding oxides.

When selecting the casting alloy, ensure that it is compatible with the high-fusing alloy of the Ceramicor[®] components. The melting range of the casting alloy must not exceed a liquidus temperature of 1350 °C/2462 °F.

Ceramicor[®] must not be cast on with base metal casting alloys because gold, in combination with nickel or cobalt, destroys the components.

Suitable dental casting alloys:

- High noble alloys
- Precious metal alloys with a minimum content of gold and platinum group metals of 25%
- Palladium-based alloys with a minimum content of palladium of 50%

ISO standard alloy types

Alloy types according to the following ISO standards are suitable for cast-on procedures to the prefabricated Cermicor® component:

- ISO standard 9693
- ISO standard 1562
- ISO standard 8891

D Note

The alloy manufacturer's recommendation must be followed. Due to diffusion at the alloy and the cast-on coping interface, components made from an unsuitable alloy may form phases with low-strength, reduced corrosion resistance or a lower melting range.

Ceramicor® is a registered trademark of Cendres & Métaux SA (Biel-Bienne, Switzerland).

Prosthetic procedure

6.3.2 Gold Abutment for crown - Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.



Step 1 – Preparation

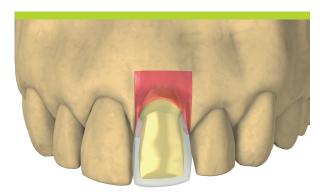
- Remove the healing cap or temporary restoration.
- Remove the superstructure from the master cast and unscrew the abutment from the analog.
- Clean and dry the interior of the implant and the abutment thoroughly.

Step 2 – Final insertion Option A: Screw-retained crown

- Position the cleaned abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha or composite).
- This allows later removal of the customized abutment in case a crown replacement is required.

Option B: Cement-retained crown

- Position the cleaned abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha or composite).
- This allows later removal of the customized abutment in case a crown replacement is required.
- Cement the crown to the mesostructure and remove superfluous cement.



Note

The picture displays the optimal configuration of a customized abutment, showing an ideal emergence profile. This configuration ideally adapts the crown contours to the margin of the gingival contour. For hygiene purposes, the cement margin must not be more than 2.0 mm below the gingival level.

6.4 GOLD ABUTMENT FOR BRIDGE †

Intended use

- Screw-retained bridges
- Screw-retained customized bar

Characteristics

Simple

- Easy wax-up and protection of the screw channel due to modeling aid (burn-out polymer)
- Easy to achieve esthetics due to individual contouring of the emergence profile and adaptation to the margin of the gingival contour

Reliable

- No cement gap
- One-screw solution

Note

- Not suitable for single crowns. For single crowns, the gold abutment for crown must be used (see instructions in chapter 6.3, p. 49).
- Use a new basal screw for the final insertion of the abutment.

† Pending FDA clearance

- Lab procedure: p. 62–69
- Prosthetic procedure: p. 70



6.4.1 Gold abutment for bridge - Lab procedure

The following case describes the planning of a screw-retained bridge.



Step 1 – Fabricating the master cast and wax-up

 Fabricate a master cast, including a gingiva mask with the corresponding analogs (see instructions in chapter 5, p. 28).

- 1b
- For optimal esthetic planning, model a full anatomical wax-up.



 Make a silicone key over the full anatomical wax-up in order to define the optimal shape of the customized bridge.



Step 2 – Preparing the gold abutments

 Place the gold abutments for bridge on the analogs and hand-tighten the screws using the SCS screwdriver.



 Shorten the modeling aids to the height of the occlusal plane according to individual circumstances. Working with the modeling aid ensures a clean and sharp-edged finish of the screw channel.



 To avoid a deformation of the conical design of the connection, it is highly recommended to always attach the gold abutment to the polishing aid while working outside of the model.



3a



Step 3 – Wax modeling

- Contour a wax-up shape according to the individual anatomical situation.
- Make sure that the wax layer on the abutment is sufficiently thick (at least 0.7 mm). Do not cover the delicate margin of the abutments with wax.



• Check the spatial conditions before casting the bridge framework with the silicone key of the wax-up.



Step 4 – Investment

- Check that the wax framework of the bridge is absolutely tension-free before investing the framework.
- Invest the bridge framework according to standard methods without using wetting agents.

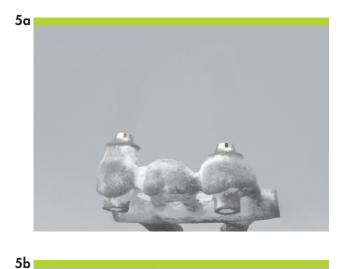
Note

In order to avoid overflow of the cast-on alloy, thoroughly clean the abutments prior to investment (removal of wax particles, insulating agents with a cotton pellet or brush moistened with alcohol).

Ensure that there is no wax on the delicate margin. The use of investment materials for rapid heating methods (speed investment materials) is not recommended.

When processing the investment material, follow the manufacturer's instructions. Observe the recommended mixing ratio and preheating time exactly.





Step 5 – Casting and devestment

• Cast the bridge framework.

Note

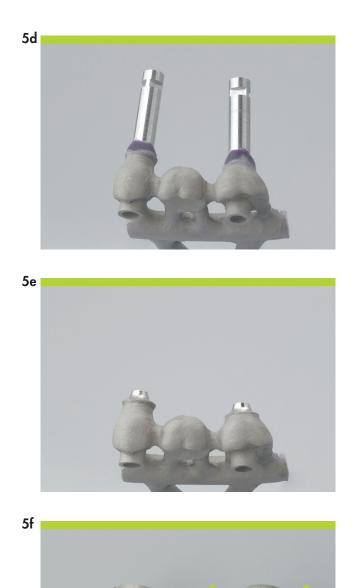
The long term success of the prosthetic work depends upon the accurate fit of the restoration. The entire procedure will have to be repeated if casting errors occur (see examples on p. 58).

- Allow for enough cooling time of the casted bridge before the devestment.
- Gently devest the bridge framework with ultrasound, water jet, pickling acid or a glass fiber brush.





- For the devestment of the gold abutments with sandblasting (maximum pressure: 2 bars; maximum alumina particle size: 50 µm), the inner configuration must be protected from infiltration from sand with the polishing aid.
- The wax-fixed polishing aid allows better fixation and protects the pre-polished part of the gold abutments.





To help ensure success of the restoration, a perfect prosthetic fit in the internal connection of the implant is mandatory. Take particular care not to let the bridge reconstruction fall down onto any surface. The weight of the bridge construction might have a negative impact on the high precision connection of the gold abutment. If the construction falls down at anytime, repeat the entire procedure.

Do not sandblast the internal configuration of the gold abutment.





Step 6 – Preparation before veneering

- Remove the sprues and smooth the removal areas.
- Check the spatial conditions with the silicone key.

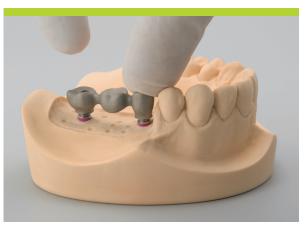


 Control tension-free fitting on the master cast (Sheffield test). If the bridge is not tension-free and wiggles, cut the bridge and resplint it in a tension-free manner.

Note

In order to take the bridge off the master cast, all basal screws need to be removed first.







 Do an additional try-on of the tension-free fit of the framework in the mouth of the patient



Step 7 - VeneeringVeneer the superstructure

6.4.2 Gold abutment for bridge – Prosthetic procedure



The final restoration is delivered to the doctor's office on the master cast.

Step 1 – Preparation

- Remove the healing abutment or temporary restoration.
- Remove the superstructure from the master cast and unscrew the bridge from the analogs.
- Clean and dry the interior of the implants and the bridgework thoroughly.
- Check the tension free fit of the bridgework before tightening it in the mouth of the patient.

D Note

In case of movements due to tensions in the bridgework, do not insert the bridge.

Step 2 – Final insertion

- Position the cleaned bridgework in the implants.
- Tighten the screws with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).
- Close the SCS configuration of the screws with cotton and sealing compound (e.g., gutta percha or composite). This allows later removal of the bridge work if needed.

6.5 Customized CAD/CAM Abutment

Intended use

- Cement-retained crowns
- Cement-retained bridges via mesostructure
- Screw-retained crowns (ceramic abutments only)

Characteristics

Simple

- Anatomic emergence profile
- Fast scan and design process
- Cost and time savings in the dental lab

Reliable

- High precision connection
- High performance materials



- Lab procedure: p. 73–78
- Prosthetic procedure: p. 76; 79-80

6.5.1 Technical Requirements

In order to use Straumann® customized abutments, the dental lab needs the following components:



6.5.2 Straumann Customized Abutment – Lab procedure



Step 1 – Fabricating the master cast

 Fabricate the master cast using standard methods and type 4 dental stone (DIN 6873). A gingival mask should always be used to ensure that the emergence profile of the crown is optimally contoured.



• For ideal esthetic planning, model a full anatomical wax-up in addition to the wax-up of the abutment.



 Prepare a silicone key over the full wax-up in order to define the optimal shape of the customized abutment.





Step 1 – Preparing the scan – duplicate model

Insert a Wax-up Sleeve in the master cast.



• Use the Wax-up Sleeve to model the desired shape of the abutment.



For an accurate scan, scannable wax must be used (Copy-CadWax from etkon).

3a



Step 1a - Scanning the abutment

- Fix the modified Wax-up Sleeve on the corresponding analog holder.
- Insert the analog holder into the scan pot.
- Ensure the bolt on the analog holder is in line with the white marking of the scan pot. This allows for proper positioning for the analog holder at the bottom of the scan pot. Integrated magnets help to find the correct position.
- Position the complete scan pot into the scan cylinder of the es1 scanner.

Note

For an accurate scan, the Wax-up Sleeve must be positioned correctly on the analog holder.

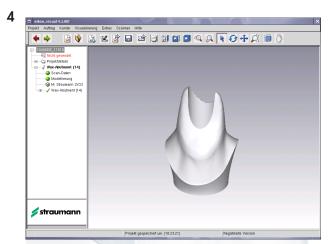
With a correctly postitioned Wax-up Sleeve, there is no gap and no rotation between the Wax-up Sleeve and the analog holder. To ensure optimal fit and precision, Wax-up Sleeves are intended for singe use only.

Step 2 – Scanning

• Close the cover of the scanner and follow the normal scan instructions of the esl scanner.









Step 4 – Ordering the abutment

- After you have scanned the abutment, you can order your abutment directly via the etkon_visual4 software.
- After the data transmission is completed, an e-mail confirmation is sent.
- Once the abutment design has been verified, you will receive an order confirmation.

D Note

Before the abutment is fabricated, the data is subjected to an incoming inspection. If the data record is found to contain errors or is incomplete, a message will be sent to you, requesting corrections or additional information. A definitive order confirmation will be sent after completing this step.

6.5.2.3 Manufacturing and Delivery



Fabricating the abutment

 Based on the design data, the customized abutment is manufactured in our production center.

Delivery to the dental laboratory

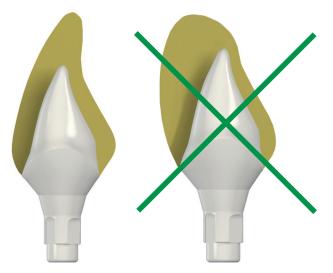
- The customized abutment is immediately delivered after production.
- In just a few working days, the dental laboratory receives the order.

Delivery of the customized abutment is available through the following service providers:

- International: DHL (www.dhl.com)
- Switzerland: Swiss Post (www.post.ch)

After the order has left the production center, you will receive an order tracking number with a delivery notification. With this number you can check the status of your order on the "track and trace" website of the corresponding service provider.

6.5.2.4 Product Completion at the Dental Laboratory



Option A: Screw - retained crown

Ceramic abutment

- Fabricate a screw-retained crown with a ceramic synchronized to the thermal expansion coefficient of zirconia.
- Straumann® customized abutments made of zirconia have a thermal expansion coefficient of 10.5 x 10-6/K (25°C - 500°C, 77°f - 932°f).

Note

Particular attention must be given to an even layer of thickness at the porcelain veneered on the abutment.

Option B: Cement - retained crown



- Mount the ceramic abutment on the implant analog.
- Use a standard procedure to fabricate the cementretained single crown.
- Veneer the crown.

Titanium abutment

 The procedure for the titanium abutment is the same as the procedure for the cement-retained ceramic abutment, option B.

Note

Customized abutments are provided non-sterile. Please use the following procedure for sterilization before use:

Titanium Ceramic Autoclave Dry heat 134°C (273°F), 18 min 160°C (320°F), 4h

6.5.2.5 Customized Abutments - Prosthetic Procedure

The final restoration is delivered to the doctor's office on the master cast.



Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the superstructure from the master cast and unscrew the abutment from the analog.



Step 2 – Final insertion

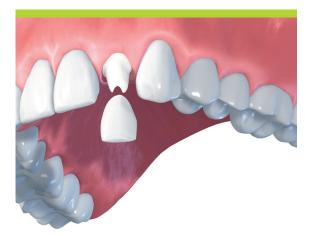
- Clean and dry the inner joint of the implant and the abutment thoroughly.
- Insert the cleaned customized abutment.

Note

- If the model contains more than one abutment, use transfer aids.
- Only tighten the screw using the SCS Screwdriver, together with the Ratchet and Torque Control Device.
- Never use cement when inserting the abutment into the implant.
- Straumann® customized ceramic abutments made of zirconium oxide are not autoclavable and must not be cleaned with a steam jet.
- Follow recommended sterilization procedures.

6.5.2.6 Customized Ceramic Abutment







Option A: Screw-retained crown

- Position the ceramic abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device.
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the customized abutment should a crown replacement be required.

Option B: Cement-retained crown

- Position the ceramic abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device.
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the customized abutment should a crown replacement be required.
- Cement the superstructure to the abutment.
- Remove superfluous cement.

Note

Use only the special basal screws provided for the ceramic abutment.

Customized titanium abutment

Cement-retained crown

- Position the titanium abutment in the implant. Tighten the screw with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control.
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the customized abutment should a crown replacement be required.
- Cement the superstructure to the abutment.
- Remove superfluous cement.

D Note

Direct ceramic veneering is not possible. Use only the basal screws provided for the titanium abutment

6.6 CEMENTABLE ABUTMENT

Intended use

p Cement-retained crowns and bridges

Characteristics

Simple

- **p** Flexible impression taking on implant or abutment level
- **p** Easy handling of prefabricated copings
- **p** Reduce adjustment work (e.g., height adjustment)
- **p** Easy choice of components thanks to color-coding

Reliable

- p CrossFit[™] connection
- p Perfect fit due to prefabricated components
- p Proper fit of abutment level impression cap verified by clear-cut response

Note

- **p** Cement margin must be no more than 2.0 mm below the gingiva.
- **p** A minimum height of 3.0 mm above the mucosa margin of the abutment must be maintained to ensure proper stability and retention of the restoration.

"NC cementable components will be launched in 2008."

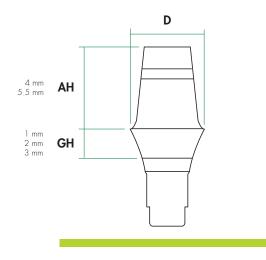
Lab procedure: p. 89–92; 94 Prosthetic procedure: p. 82-88; 93; 95



6.6.1 Cementable abutment coding

	Narrow CrossFit™		Regular CrossFit™	
Diameter (D)	3.5 mm (blue coding)	5 mm (yellow coding)	5 mm (grey coding)	6.5 mm (brown coding)
AH 4 mm (black marking)			RC RC	
AH 5.5 mm (white marking)				RG I I I I I I I I I I I I I I I I I I I

AH: Abutment height GH: Gingiva height





Option A: Impression taking on abutment level - Prosthetic procedure





Step 1 – Abutment insertion

 Select the appropriate size cementable abutment using the PLAN set (see instructions in chapter 6.1, p. 39)

- Thoroughly clean and dry the interior of the implant.
- Position the abutment in the implant. Tighten the screw to 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 131).



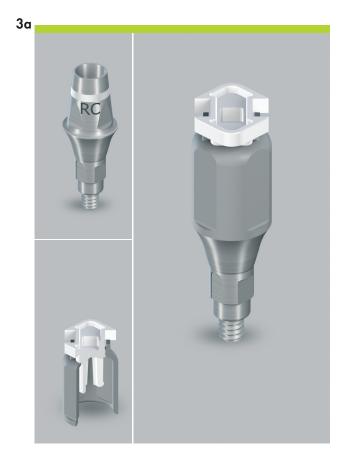
Step 2 - Customizing the abutment

 Make height adjustments according to the individual situation. This can be done down to the bottom of the black/white ring.

Note

The abutment level impression does not carry any information of potential customizations. In this case, the abutment level impression has to be taken without any auxiliaries. We recommend taking the impression on implant level, and then ask the technician to customize the abutment according to the individual situation.

We recommend customizing the abutment right before the final crown is integrated, if the spatial surroundings allow it (no chewing forces against the abutment). Ask your dental lab to supply you with a reduction coping.



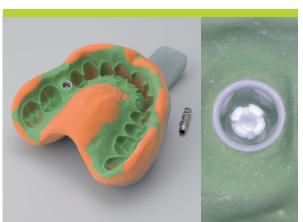
Step 3 – Impression taking on abutment level

- Click the impression cap onto the abutment.
- The white ring on the abutment indicates the abutment height (AH). It corresponds to the white arrow on top of the impression cap and the white clicking mechanism inside of the impression cap.

Note

Due to its low tensile strength, hydrocolloid materials are not suitable for this application.

3b



 Take the impression using an elastomeric impression material (polyvinyl siloxane or polyether rubber).

Chairside temporization of the abutment





Temporary coping

Protective cap



Using the temporary coping

Step 4 – Preparation

 Snap the temporary coping onto the abutment in the mouth of the patient.

- Mark the appropriate height according to the individual situation and shorten the coping as necessary.
- If you intend to provisionalize a bridge, remove the rotational feature of the temporary coping.



Note

Do not use Vaseline (aliphatic isolation agent) for insulation of the abutment.

4b



Step 5 - Creating the provisional

 Use a standard procedure to fabricate the provisional (e.g., prefabricated crown form or vacuum-formed sheet technique). The retention rings ensure proper mechanical bonding of the veneering material to the coping. The plateau of the coping helps to prevent the veneering material from flowing under the abutment.

 After the polymerization is completed, take the provisional out of the mouth and place it on the analog.



- 5c
- Grind down and polish the emergence profile of the coping and the restoration to achieve an even profile. To avoid tissue irritation, the interface needs to be smooth and flush with the restoration.



Step 6 – Inserting the provisional

- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the provisional.
- Apply temporary cement to the inner part of the coping and cement it onto the abutment.

D Note

The restoration must always be out of occlusion. Use temporary cement in order to remove the temporary restoration in due time.

Temporary copings must not be kept in the mouth longer than 28 days.



Using the protective cap

Step 4 – Cementing the protective cap

- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This allows a later removal of the provisional.
- Apply temporary cement to the inner part of the protective cap and cement it onto the abutment.

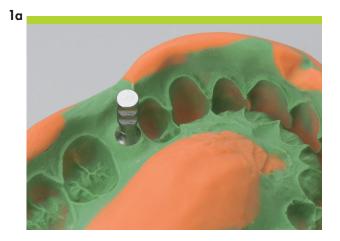
D Note

Use temporary cement in order to remove the temporary restoration in due time.

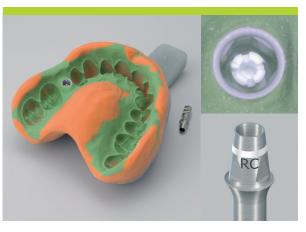
Protective caps must not be kept in the mouth longer than 28 days.



Lab procedure



1b



2



Step 1 – Fabricating the master cast

Click the corresponding analog into the impression.

Note

Ensure that the color code of the analog corresponds to the color code of the impression cap.

The white ring on the abutment indicates the abutment height (AH). It corresponds to the white arrow on top of the impression cap and the white clicking mechanism inside of the impression cap.

Step 2 – Preparation

- Fabricate the master cast in a conventional manner (see instructions in chapter 5, p. 28).
- Model a full anatomical wax-up for optimal esthetic planning. Use the corresponding burn-out coping as a basis for this wax-up.
- Make a silicone key over the full wax-up in order to define the optimal shape of the restoration.



Step 3 – Customizing

- Depending on the individual situation, height adaptations can be made without damaging the anti-rotational grooves.
- Customize the abutment portion of the analog according to the individual situation.
- Fabricate a reduction coping for the practitioner. This will enable the precise transfer of the individualization into the mouth of the patient.



To ensure proper stability and retention of the restoration, a minimum height of 3.0 mm above the mucosa margin of the abutment must be maintained.





Step 4 – Fabricating the crown

• Select the burn-out coping and place it on the analog.



• Shorten if necessary.

4c



• Fabricate the superstructure on the (modified) abutment using standard modeling methods.



• Check the wax-up with the silicone key.

Lab procedure 📕



Step 5 – Casting and veneering

- Cast the framework using standard casting methods.
- Adjust the framework so that it can be attached to the analog. Remove the clamping ring using a circular motion. Do not harm the rotational faces nor the exact margin fit.

• Check the spatial conditions with the silicone key.



• Veneer the superstructure.



Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.



Step 1 – Final insertion

- Remove the temporary restoration in a conventional manner.
- If necessary, do the required customization of the abutment by using the reduction coping from the dental technician.
- Clean the abutment thoroughly and remove all remaining temporary cement.
- Cement the crown to the abutment and remove superfluous cement.

Option B: Impression taking on implant level

Take the impression according to the instructions in chapter 5, p. 28.

Lab procedure





2b



Step 1 - Inserting the abutment

- Select the correct size cementable abutment by using the PLAN set (see instructions in chapter 6.1, p. 39).
- Hand-tighten the abutment on the analog in the master cast

Step 2 - Customizing

 Make height adaptations according to the individual situation without damaging the anti-rotational grooves.

Note

To ensure proper stability and retention of the restoration, a minimum height of 3.0 mm above the mucosa margin of the abutment must be maintained.

Follow the corresponding steps as described for the impression on abutment level (p. 92).

- Apply the transfer aid and attach it to the adjacent teeth.
- Deliver the customized abutment with the attached transfer aid* and the final restoration to the doctor's office for insertion.
- * not available in all countries

Prosthetic procedure



Step 1 – Final insertion

- Position the cleaned abutment in the implant. Tighten the screw to 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 131).
- Insert the abutment together with the transfer aid for a better orientation.
- Close the SCS configuration of the screw with cotton and sealing compound (e.g., gutta percha). This later allows removal of the abutment.
- Cement the crown to the abutment and remove superfluous cement.

6.7 ABUTMENT FOR BARS

Intended use

- Bar-retained implant-borne dentures in the mandible and maxilla
- Stabilization and primary splinting of the implants

Characteristics

Simple

- Effective one piece solution provides simplified bar restorations for standard situations
- A 15° cone allows implant divergence flexibility up to 30°
- Abutment can be easily shortened due to 7.0 mm distance from soft tissue level

Reliable

 Flexible design for soldered and laser-welded bar constructions with prefabricated components

Note

Use a new basal screw for the final insertion of the abutment.

- Lab procedure: p. 97–104
- Prosthetic procedure: p. 105



6.7.1 Abutment for bars – Lab procedure



Step 1 – Fabricating the master cast

 Fabricate the master cast using standard methods and type 4 dental stone (DIN 6873).





Step 2 – Preparation

 Place the abutment for bars on the analogs and hand-tighten the screw using the SCS screwdriver.



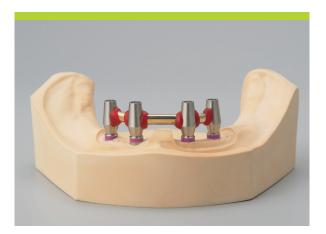


Soldered gold bar

(For the lab procedure of a laser-welded titanium bar, continue at step 3 on p. 102.)







Step 3 – Placing the bar segments

 Place the individual bar segments between the abutment units.

Note

The space between the bar and the gingiva must be at least 2.0 mm. To achieve a good joint, the gap between the abutment and the bar should be as small as possible.

Step 4 – Fixation of the bar segments

• Use a residue-free burn-out plastic to fix the bar segments to the abutments.

D Note

Do not cover the basal screws.



5

Step 5 – Removing the bar framework

- After loosening the screws, carefully remove the bar framework.
- Place the framework on the polishing aids and hand-tighten the screws. The polishing aids ensure that the abutments are anchored accurately in the soldering investment during soldering.



6b



Step 6 – Soldering the bar

To prevent possible distortion of the bar through uneven preheating with the flame, preheat the soldering investment to 500-600 °C (932-1112 °F) in a preheating furnace.

- After preheating, solder the invested bar according to standard procedure.
- Once soldering is complete, cool down the investment to room temperature.
- Devest and clean the bar in an ultrasonic bath.
- Remove the oxides and soldering flux residues in an acid bath.

Note

Do not sandblast the framework.



Check the fit

D Note

Stress-free repositioning of the bar on the implant analogs should be possible without securing it with the screws.





6e



• Shorten the bar in height if necessary, and polish.

• Send the finished bar with 4 new basal screws to the doctor's office.

Note

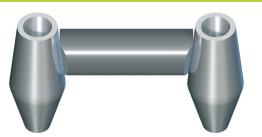
At this point, the screws used for soldering are extremely oxidized. Therefore, do not use them to secure the bar in the mouth.

See p. 105 for the prosthetic procedure.

Laser-welded titanium bar



3b



Step 3 – Placing the bar segments

 Fit the bar segments to the master cast, allowing for a certain gap that will be offset by the addition of titanium (see graphic 3b).

D Note

The space between the bar and the gingiva must be at least 2.0 mm.

4a

4b





Step 4 - Welding of the segments

• Weld the segments together with adequate argon gas rinsing.

• Check the fit.

 If necessary, shorten the height of the bar and polish.

Note

Stress-free repositioning of the bar on the implant analogs should be possible without securing it with the screws.



• Send the finished bar with 4 new basal screws to the doctor's office.

Note

At this point, the screws used for soldering are extremely oxidized. Therefore, do not use them to secure the bar in the mouth. Prosthetic procedure

6.7.2 Abutment for bars - Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.



Step 1 – Final insertion

- Position the cleaned bar in the implants. Ensure the stressfree repositioning of the bar on the implants.
- Tighten the screw with 35 Ncm using the SCS screwdriver, along with the ratchet and the torque control device (see instructions in chapter 7.5, p. 128).

6.8 LOCATOR® ABUTMENT †

Intended use

Dentures retained by implants in the mandible and maxilla

Characteristics

Simple

- Divergence compensation up to 40° between two implants
- Minimum component height for limited occlusal space

Reliable

- Dual retention for optimal abutment-denture connection
- Excellent long-term performance due to high wear resistance of components

The LOCATOR® components are a registered trademark of Zest Anchors, Inc.



Manufacturer:

Zest Anchors, Inc. Escondido, CA 92029 USA

- Lab procedure: p. 107–110
- Prosthetic procedure: p. 111–118



[†] Pending FDA clearance



6.8.1 LOCATOR® Abutment – Lab procedure

Option A: Master cast from implant level impression

Take the impression according to the instructions in chapter 5, p. 28.



Step 1 – Selecting the abutment height

Select the height of the LOCATOR® abutment by determining the height of the replica gingiva at its highest point on the master cast. The top margin of the abutment should be 1.0 mm above the mucosa.

Note

Inserting the prosthesis is easier for the patient when the LOCATOR® abutments are on the same horizontal level.





Step 2 – Abutment insertion

 Hand-tighten the abutment into the implant analog using the LOCATOR[®] driver.

Option B: Master cast from abutment level impression

For abutment level impression-taking, special LOCATOR® analogs are used. The selection of the LOCATOR® abutments has already been made by the prosthodontist.



Step 1 – Female analog insertion

 Insert the LOCATOR[®] female analogs into the LOCATOR[®] impression copings.

2



Step 2 – Fabricating of the master cast

 Fabricate the master cast using standard methods and type 4 dental stone (DIN 6873).

Lab procedure

Construction of an overdenture with LOCATOR® denture housings

You can construct a new overdenture or upgrade an already existing and well-functioning overdenture with LOCATOR® components.

Option A: Construction of a new overdenture



2



Step 1 – Placing the white block out spacers and denture caps

- Place one white block out spacer over each abutment.
- Place the denture caps with the black processing males onto the LOCATOR[®] abutments, or the LOCATOR[®] analogs in the master cast.

Step 2 - Overdenture construction

- Construct the overdenture according to the standard procedure, adding the LOCATOR[®] denture housing.
- Return the completed overdenture to the doctor's office with the black processing males still in place.

Option B: Upgrading an existing overdenture



Step 1 – Placing the white block out spacers and denture caps

- Place one white block out spacer over each abutment.
- Place the denture caps with the black processing males onto the LOCATOR[®] abutments, or the LOCATOR[®] analogs in the master cast.

Step 2 – Hollowing out the denture base

 Hollow out the existing denture base in the areas of the LOCATOR[®] denture caps.



Step 3 – Overdenture rebase

- Rebase the overdenture according to the standard procedure, adding the LOCATOR[®] denture housing.
- Return to the dentist the completed overdenture with the black processing males still in place.

2

6.8.2 LOCATOR[®] Abutment – Prosthetic procedure (standard)

Impression taking

Option B: Abutment level impression taking

For abutment level impression taking, special LOCATOR® impression components are used. As a consequence, abutment heights are selected by the doctor on the patient.



Step 1 - Selecting the abutment height

 Make sure the top of the implant is not covered by hard or soft tissue.

Note

It is imperative that all hard and soft tissue is removed from the implant shoulder to ensure correct seating of the LOCATOR® abutment.

 Select the height of the LOCATOR® abutment by determining the height of the gingiva at its highest point surrounding the implant site. Choose the corresponding abutment tissue cuff height or the next closest higher size available.



Prosthesis insertion is easier for the patient if the LOCATOR® abutments are on the same horizontal level.



Step 2 – Abutment insertion

- Hand-tighten the abutment into the implant using the LOCATOR® driver.
- Tighten the abutment to 35 Ncm using the ratchet, along with the torque control device and the LOCATOR® driver.



Step 3 – Placing spacer and impression coping

- Place a white block out spacer ring on each abutment.
 The spacer ring is used to block out the area surrounding the abutment.
- Place the LOCATOR[®] impression copings on the LOCATOR[®] abutments.



Step 4 – Impression taking

- Take the impression utilizing the mucodynamic technique (vinyl polysiloxane or polyether rubber).
- Send the impression to the dental laboratory.

Final restoration

1

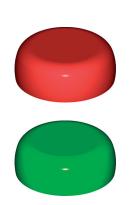


The dental technician has completed the LOCATOR® overdenture and returns it to the doctor's office for final placement. The finished denture is delivered with the black processing males still in place.

Step 1 - Selecting the replacement males

Implant divergence up to 10° for a single implant:

Color	Retention
v blue	0.68 kg
v pink	1.36 kg
v clear	2.27 kg
v clear	2.27 kg

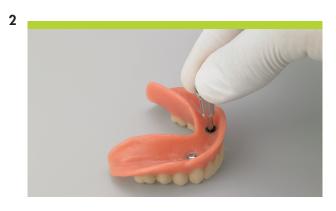


Implant divergence between 10° and 20° for a single implant:

Color	Retention
v red	0.23 kg
v green	1.36–1.82 kg

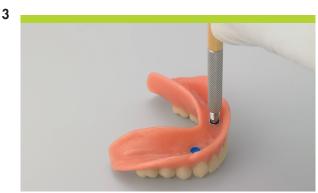
Note

Always start with the lowest retention replacement males.



Step 2 – Removing the processing males

 Remove the black processing males from the housing (p. 121).



Step 3 – Inserting the replacement male

• Insert the replacement male with the core tool (p. 119).



Step 4 - Inserting the finished denture

• Insert the finished denture and check the occlusion.

Prosthetic procedure

6.8.3 LOCATOR[®] Abutment – Prosthetic procedure (chairside)

For an already existing and well-functioning overdenture, the LOCATOR® system can be used in a chair-side procedure.



Step 1 – Selecting the abutment height

- Make sure the top of the implant is not covered by the gingiva.
- Select the height of the LOCATOR® abutment by determining the height of the gingiva at its highest point. The upper cylindric border should be 1.0 mm or more (next higher size available) above the mucosa.

Note

Prosthesis insertion is easier for the patient if the LOCATOR® abutments are on the same horizontal level.



Step 2 – Inserting the abutment

- Screw the abutment into the implant by hand using the LOCATOR[®] driver.
- Tighten the abutment to 35 Ncm using the ratchet, along with the torque control device and the LOCATOR[®] driver attached (p. 119).





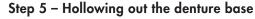
Step 3 – Placing the block-out spacer

 Place a white block-out spacer ring on the abutments. The spacer is used to block out the area surrounding the abutment.



Step 4 – Placing the denture caps

 Place the denture caps with the black processing males onto the LOCATOR[®] abutments.



 Hollow out the existing denture base in the areas of the LOCATOR[®] denture caps.



Note

Ensure that the denture caps fixed on the abutments do not touch the prosthesis.

Step 6 - Filling the connecting holes

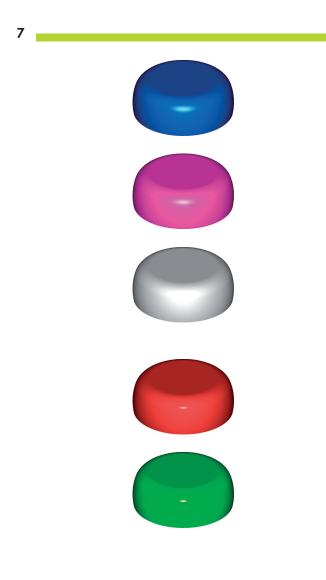
- Fill the connecting holes with prosthetic resin from lingual and anchor the caps in the denture (lightcure or selfcuring resin).
- Remove any excess resin after curing and polish the denture.

Note

If the white LOCATOR® block-out spacer does not completely fill the space between the gingiva and the denture caps, any remaining undercuts must be blocked out to prevent resin flowing under the caps. This can be accomplished by stacking two or more LOCATOR® block-out spacers.

Once the resin has cured, remove the denture from the mouth and discard the white LOCATOR® block-out spacers.

5



Step 7 – Selecting the replacement males

Implant divergence up to 10° for a single implant:

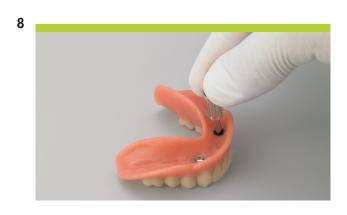
Color	Retention
v blue	0.68 kg
v pink	1.36 kg
v clear	2.27 kg

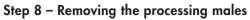
 Implant divergence between 10° and 20° for a single implant:

Color	Retention
v red	0.23 kg
v green	1.36–1.82 kg

Note

Always start with the lowest retention replacement males.





 To place the replacement males in the denture housing, remove the black processing males from the housing (p. 121).

Step 9 – Inserting the replacement male

• Insert the replacement male with the core tool (p. 119).



Step 10 - Inserting the finished denture

Insert the finished denture and check the occlusion.

9

6.8.4 LOCATOR® Abutment – Further references

1. Using the LOCATOR® core tool

The LOCATOR® core tool is a three-piece multifunction instrument.

The tip is used for removing replacement males from the denture caps. To do this, the tip must be unscrewed by two full turns. A gap is visible between the tip and the middle section.

The tip is passed in a straight line into the denture cap with a replacement male. The sharp edges of the tip hold the replacement male while it is being removed. The instrument is drawn out of the denture cap in a straight line.

To remove the replacement male from the instrument, the tip must be screwed clockwise completely onto the middle section. This activates the loosening pin inside the tip, which releases the replacement male.









The middle section of the LOCATOR® core tool is used for inserting replacement males into the denture caps. To do this, the tip is unscrewed. The exposed end of the replacement male is pressed into the denture cap. The replacement male is fixed firmly in the cap when a click is heard.

The end (gold-colored) of the LOCATOR® core tool is used by the dental technician for screwing and unscrewing the LOCATOR® abutments to and from the analogs.

2. Determining the implant divergences

Snap the LOCATOR® parallel posts onto the LOCATOR® abutments. Use the LOCATOR® angle measurement guide to determine the angulation of the LOCATOR® abutments in relation to each other. With the parallel posts in place, hold the angle measurement guide behind them to read the angle for each abutment.

D Note

Choose the appropriate LOCATOR® replacement males according to the angulation measured for each abutment. Tie dental floss through the lateral holes of the angle measurement guide to prevent aspiration.





3. Using the black processing male

Both the LOCATOR® female analog and the LOCATOR® denture cap are supplied with a preassembled black processing male. The black processing male functions as a space keeper for the various LOCATOR® replacement males. For the relining of a LOCATOR-anchored overdenture, the LOCATOR® replacement males must be removed from the denture caps and exchanged with black processing males. The black processing males keep the denture in a stable vertical position during the relining procedure. When the relining of the denture is finished, the black processing males are exchanged with the corresponding new LOCATOR® replacement males.



4. Important cleaning instructions

The proper cleaning of the LOCATOR®-borne denture and the LOCATOR® abutments is a prerequisite to ensure the long-term performance of both the abutments and the nylon processing inserts. An accumulation of plaque on the abutment that then imbeds into the nylon processing insert can abrade, over time, the titanium abutment to a smaller diameter and thus causing it to lose retention. According to the specific situation, the patient might be put on shorter recall appointments to monitor the proper cleaning of the denture and the abutments.

7. AIDS AND INSTRUMENTS

7.1 SCS SCREWDRIVER

The SCS* screwdriver is used for the fixation of the prosthetic parts and healing components. The star shape of the screwdriver tip connects to the top of the healing components and abutment screw heads for safe pick-up and handling.

*SCS = **S**crew **C**arrying **S**ystem SCS screwdriver for manual use Article: extra short, short, long Lengths: 15 mm, 21 mm, 27 mm Art. Nos.: 046.400, 046.401, 046.402 Material: Stainless steel



7.2 POLISHING AID

The polishing aid is used during polishing and other lab procedures to protect the abutment's prosthetic connection and to establish a convenient fixation extension.

Art. Nos.: 025.2920, 025.4920 Material: Stainless steel



7.3 RATCHET AND TORQUE CONTROL DEVICE

The ratchet (Art. No. 046.119) is a two-part lever arm instrument with a rotary knob for changing the direction of force. It is supplied with a service instrument (Art. No. 046.108), which is used to loosen the headed screw. After loosening, the ratchet bolt can be removed from the body of the ratchet. The ratchet gap must be disassembled prior to use for cleaning and sterilization.

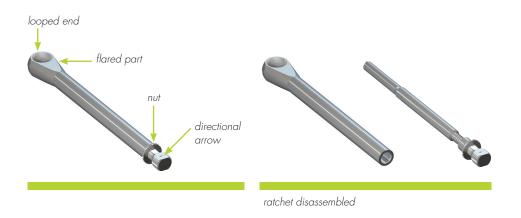
To apply a certain torque when tightening an abutment screw, use the ratchet together with the torque control device (Art. No. 046.049) and the holding key (Art. No. 046.064).

Ratchet

The ratchet is used in combination with the torque control device to torque in all Straumann[®] abutments and screws (it is the same ratchet used for placing Straumann[®] implants manually).

Note

The ratchet and service instrument are packaged together.



Torque control device

Connected to the ratchet, the torque control device is used to measure the value of Ncm (Newton centimeter) applied when inserting Straumann[®] abutments and screws.



Service Instrument

The service instrument is used to assemble and disassemble the ratchet.

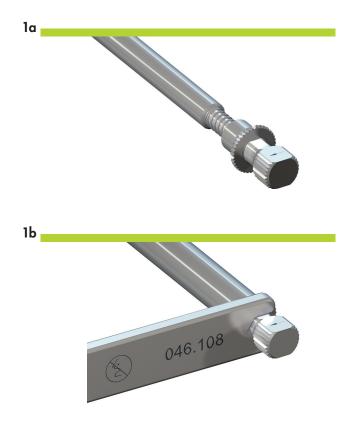


Holding key

The forked end of the holding key can be used to assemble and disassemble the ratchet. The pin can be used to stabilize drivers when abutments and screws are placed (also used for implant placement).

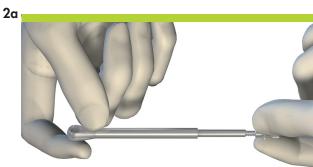


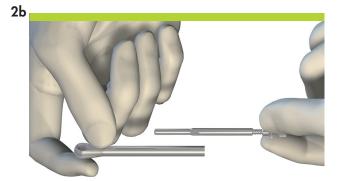
7.4 ASSEMBLING THE RATCHET AND THE TORQUE CONTROL DEVICE



Step 1 - Loosening

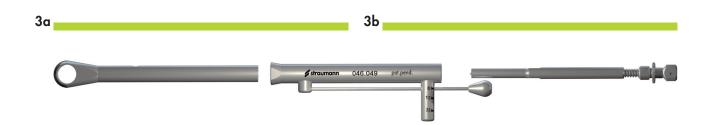
• Loosen the ratchet nut with the service instrument or the holding key.





Step 2 – Removing

• Unscrew and remove the internal bolt from the ratchet body.

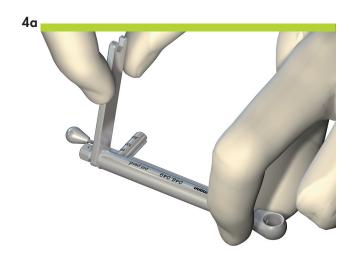


Step 3a – Insertion

 Insert the ratchet body into the torque control device (flared part of the ratchet must be flush with fluted end of torque control device).

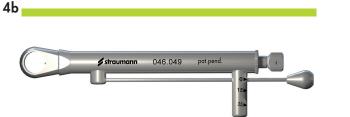
Step 3b - Insertion

 Insert the internal bolt into the opposite end of the torque control device. Tighten it firmly by hand.



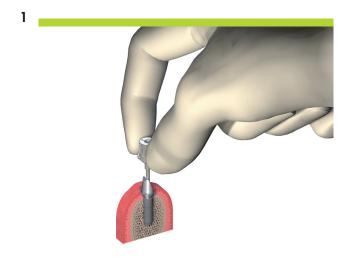
Step 4 – Tightening

 Tighten the nut of the ratchet with the service instrument or the holding key. Do not overtighten.



 The ratchet and torque control device are now assembled and ready for use.

7.5 TIGHTENING AN ABUTMENT WITH 35 Ncm

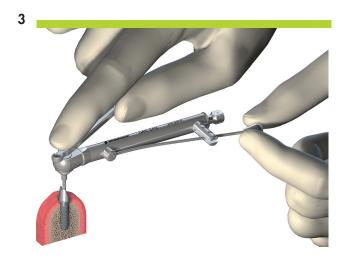


Step 1 – Insertion and tightening

- Insert the abutment into the implant.
- Tighten the abutment screw by hand using the SCS screwdriver.

Step 2 – Placing the ratchet

Place the looped end of the assembled ratchet with the torque control device over the driver handle. The directional arrow must be pointing clockwise (towards the torque bar with tear drop). If not, pull the arrow out, flip it over, and let it snap in.



Step 3 – Stabilizing the ratchet

• For stabilization, put the pin end of the holding key into the coronal hole on the driver handle.

2

046.049

pat.pend

4



Step 4 – Positioning of appropriate Ncm mark

 Use one hand to hold the holding key and the other hand to hold the torque bar. Grasp only the tear drop and move the torque bar to the 35 Ncm mark.

Step 5 – Removing the ratchet

- After reaching the 35 Ncm mark, return the torque bar to its starting position.
- Lift and remove the holding key, the ratchet with torque control device and the driver.

Note

Proper care and maintenance are important to ensure correct function of the ratchet and torque control device. Always disassemble instruments for proper cleaning and sterilization. For detailed instructions on how to care for these instruments, please refer to their package inserts.

Recommended torque for abutments and screws

Hand-tight	15-35 Ncm	35 Ncm
Closure screws Healing abutments	Temporary abutments	Final abutments

ABOUT STERILIZATION

Unless otherwise stated on the product packaging, **Straumann abutments and components are not sterile when delivered.** Please use the following procedure for sterilization prior to use.

Material	Method	Conditions
Ti, Ti alloy		
PEEK, PEEK with Ti inlay		
Metal alloy Ceramicor® Composition in weight %: Au 60%, Pd 20%, Pt 19%, Ir 1%	Autoclave, moist heat	134 °C (273 °F) for 18 min
ZrO ₂	Dry heat	160 °C (320 °F) for 4 h

Note

Parts that have been modified or altered from their original state may require different sterilization procedures.

To prevent tension cracks in PMMA products, do not use the following: alcohol; UV radiation; sterilization; immersion in liquid for more than one hour; temperatures over 60 °C (140 °F).

IMPORTANT NOTES

Disclaimer of liability

The Straumann dental implant is part of an overall concept and may only be used in conjunction with the associated original components and instruments according to Institut Straumann AG's instructions and recommendations.

Use of products made by third parties in conjunction with the Straumann® Dental Implant System will void any warranty or other obligation, express or implied, of Institut Straumann AG. Instructions as to application of our products take place verbally, in writing, by electronic media or in hands-on trainings corresponding to state of the art at the time of introduction of the product.

The user of Straumann products has the duty to determine whether or not any product is suitable for the particular patient and circumstances. Straumann disclaims any liability, express or implied, and shall have no responsibility for any direct, indirect, punitive or other damages, arising out of or in connection with any errors in professional judgment or practice in the use or installation of Straumann products.

The user is also obliged to study the latest developments of the Straumann® Dental Implant System and their applications regularly.

Please note

The descriptions contained in this document are not sufficient for immediate use of the Straumann® Dental Implant System. Knowledge of dental implantology and instruction in the handling of the Straumann® Dental Implant System provided by an operator with the relevant experience are always necessary.

Availability

Not all products listed in this brochure are available in all countries.

Validity

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

Caution

Our products must be secured against aspiration when used intraorally. Do not use damaged or blunt instruments.

Units per package

Unless stated otherwise, there is one unit in each package.

Documentation

You can obtain detailed instructions on the Straumann® Dental Implant System from your Straumann representative.

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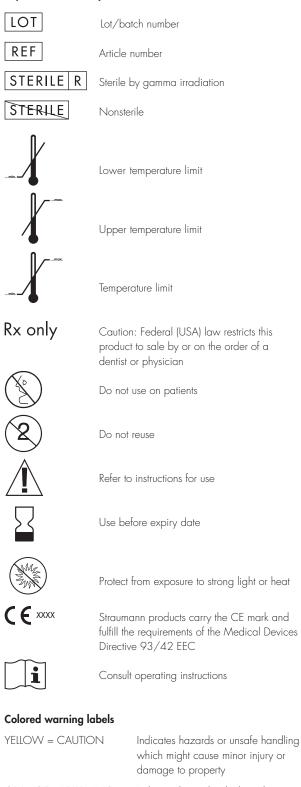
Definition SLActive

Sand-blasted, Large grit, Acid-etched, chemically active and hydrophilic

Definition SLA®

Sand-blasted, Large grit, Acid-etched

Explanation of the symbols on labels and instruction leaflets



ORANGE = WARNING Indicates hazards which might cause serious or fatal injury

RED = DANGER

Indicates hazards which might cause immediate serious or fatal injury

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