BASIC INFORMATION ON THE

STRAUMANN® VARIOBASE™ ABUTMENT

Straumann® Variobase™ Abutment
The ITI (International Team for Implantology) is academic partner of Institut Straumann AG in the areas of research and education.
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1 PURPOSE OF THIS GUIDE

This guide was created for dental technicians and dentists working with the Straumann® Variobase™ Abutment for designing screw-retained or cement-retained customized abutments and cement-retained bridges (via mesostructure). It provides complementary step-by-step information on working with the Straumann® Variobase™ Abutment.

Failure to follow the procedures outlined in these instructions may harm the patient and/or lead to any or all of the following complications:

- Aspiration or swallowing of a component
- Breakage
- Infection

Note:
Implant-borne superstructures require optimal oral hygiene on the part of the patient. This must be considered by all involved parties when planning and designing the restoration.

Consult the brochure Basic Information on the Surgical Procedures – Straumann® Dental Implant System for information on indications and contraindications of Straumann implants, such as the required minimum number of implants, implant type, diameter and loading protocols.
2 GENERAL INFORMATION

2.1 INTRODUCTION TO THE STRAUMANN® VARIOBASE™ ABUTMENT

The Straumann® Variobase™ Abutment provides dental laboratories with the flexibility to create customized abutments with their chosen in-lab workflow of either pressing, casting or in-lab milling. In addition, the Straumann® Variobase™ Abutment comes with the benefit of the original Straumann connection and the unique Straumann engaging mechanism.

For intended use and indications for use, please refer to the instructions for use.

2.2 TECHNICAL REQUIREMENTS

**Straumann® Variobase™ Implant Kit**

To facilitate the precise design of the interface between the Straumann® Variobase™ Abutment and the coping, a specific digital Straumann® Variobase™ Implant Kit can be used. It consists of an open STL file containing the coping geometry.

**Note:**
The Straumann® Variobase™ Implant Kit only provides the geometry of the coping for the Straumann® Variobase™ Abutment. CAM specific parameters need to be defined by the dental laboratory according to the milling equipment manufacturer’s instructions.

**Software**

In order to design the Straumann® Variobase™ Abutment for digital workflows, CAD software containing the Straumann® Variobase™ Implant Kit can be used. Please contact Straumann for more information regarding availability. Please follow the instructions of the CAD software provider.

**Milling system**

Use any milling system that has the ability to mill the precise geometry of the Straumann® Variobase™ Abutment. A precise milling of the geometry requires drills of 1mm in diameter or smaller.
### 2.3 SYSTEM OVERVIEW

The Straumann® Variobase™ Abutment covers the following Straumann implant platforms.

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<thead>
<tr>
<th></th>
<th>NC</th>
<th>RC</th>
<th>NNC</th>
<th>RN</th>
<th>WN</th>
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<td><strong>Analogs</strong></td>
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<td><strong>Scanbodies</strong></td>
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<td><strong>Variobase™ Abutments</strong></td>
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<td><img src="image12.png" alt="Image" /></td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
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<td>025.4921</td>
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<td>048.711</td>
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<td><strong>Burn-out copings</strong></td>
<td><img src="image16.png" alt="Image" /></td>
<td><img src="image17.png" alt="Image" /></td>
<td><img src="image18.png" alt="Image" /></td>
<td><img src="image19.png" alt="Image" /></td>
<td><img src="image20.png" alt="Image" /></td>
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<tr>
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<td>023.2756/023.2756-04</td>
<td>023.4759/023.4759-04</td>
<td>048.267/048.267V4</td>
<td>048.268/048.268V4</td>
<td>048.269/048.269V4</td>
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<tr>
<td><strong>Auxiliary screws</strong></td>
<td><img src="image21.png" alt="Image" /></td>
<td><img src="image22.png" alt="Image" /></td>
<td><img src="image23.png" alt="Image" /></td>
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<td>025.4900</td>
<td>048.313</td>
<td>048.356</td>
<td>048.356</td>
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</tbody>
</table>

Note: Article numbers ending in V4 or -04 contain 4 burn-out copings in one pack.
2.4 PRODUCT CHARACTERISTICS

Reliability
- With the original Straumann® implant-abutment connection
- Strong retention of coping with a patented\(^2\) engaging mechanism
  - Extra gluing surface with 4 cams

Efficiency
- Easy to use thanks to the Variobase™ STL data available for open CAD software
- Easy and precise wax-up process thanks to accurate burn-out copings
- Compact base dimensions for high design flexibility
- Simplified gluing process
  - Save time by skipping the sandblasting process
  - 4 Cams facilitate precise positioning of the coping

Cost-effectiveness
- Allows using the in-lab workflow of choice, i.e. conventional wax-up for pressing or casting and in-lab milling

\(^2\) patent pending
3 RESTORATION, DESIGNING AND FINISHING

3.1 PREPARATION

Prerequisites
- The tooth shade has been identified and noted (via color chart or digital measuring device).
- The impression has been taken.

Both, shade information and impression have been sent to the dental lab.

3.1.1 FABRICATION OF THE MASTER CAST
Fabricate the master cast using standard methods and type-4 dental stone (ISO 6873). To ensure high-quality restorations, consider the following requirements:
- Only use new, undamaged and original Straumann implant analogs.
- Embed the implant analogs in the stone; the implant analogs must not move in the model.
- Always use a gingival mask to ensure the emergence profile is optimally contoured.
- Preferably use scannable material for the gingival mask.

3.2 DESIGN AND FABRICATION OF COPING/CROWN

3.2.1 CONVENTIONAL CASTING AND PRESSING WORKFLOW
Step 1 – Placing of the Straumann® Variobase™ Abutment
Place the Straumann® Variobase™ Abutment and hand-tighten the screw (maximum 15 Ncm). Only use the Straumann® SCS Screwdriver to fix the abutment in the analog. Check again for proper fit and for any rotational or vertical movement.
Step 2 – Assembling and shortening of the burn-out coping

Attach the burn-out coping to the Straumann® Variobase™ Abutment and check for proper fit.

**Note:**

Working with the burn-out coping supports a clean and sharp-edged finish of the screw channel and a good fit to the Straumann® Variobase™ Abutment.

**Note:**

With its tight fit, the burn-out coping should be free of any rotational or vertical movement.

Shorten the burn-out coping to the height of the occlusal plane according to the individual circumstances.

**Note:**

Ensure that the shortened burn-out coping still covers the complete metal part of the Straumann® Variobase™ Abutment.

Contour a wax-up shape according to the individual anatomical situation.

**Note:**

- You can make a reduced anatomic design or a full-contour design depending on the indications of the dental material used.
- Make sure that the wax layer on the abutment is sufficiently thick (at least 0.15 mm) to provide space for the burn-out coping to expand during heating.
- Respect the minimal wall thickness of the respective dental material used according to the manufacturer’s instructions.
Step 3 – Fabrication of the coping or crown
Use standard procedure to either press or cast the coping (reduced anatomic design) or the full-contour crown (full anatomic design).

Note:
For optimal results, it is recommended to avoid speed investment material and processes for pressing procedures. The plastic of the burn-out coping requires sufficient time to completely burn out.

If necessary, make also an individual crown using standard procedure.

Finalize the coping or crown before bonding.

Note:
If you veneer the crown, ensure that the thermal expansion coefficient matches the coping material’s thermal expansion coefficient.
3.2.2 DIGITAL WORKFLOW (CADCAM)
3.2.2.1 Scanning and designing

Option A: Scanning and designing – with a scanbody
Import the Straumann® Variobase™ Implant Kit into the design software according to the software manufacturer’s instructions.

Step 1 – Assembling
Check for proper fit of the scanbody in the analog and hand-tighten the self-retaining screw (maximum 15 Ncm). Only use the Straumann® SCS Screwdriver to fix the post in the analog. Check again for proper fit and for any rotational or vertical looseness. If a single-tooth restoration is planned, orient the angled surface of the scanbody buccally (not adjacent to the approximal tooth). Avoid any contact of the scanbody to the proximal teeth.

Step 2 – Scanning and modelling
Follow the software provider’s instructions on how to scan and recognize the scanbody. Model the coping or crown following the software provider’s instructions.
Option B: Scanning and designing – without a scanbody
If the implant kit is not embedded in your software, you cannot use a scanbody.

Step 1 – Scanning
Scan the Straumann® Variobase™ Abutment.

⚠️ Note:
- Scan spray may be applied.
- If the software does not allow virtual blocking out of undercuts, these and the screw channel must be blocked out with wax before scanning.
- If the software allows the scan to be saved as a template, future blocking out is no longer required. The template can be matched with the scan of the Straumann® Variobase™ Abutment model via a matching process. Otherwise, the Straumann® Variobase™ Abutment blocked out with wax can be kept for future scans.

Step 2 – Modelling
Model the coping or crown following the software provider’s instructions.

The diameter of the screw channel is: RC = 2.3 mm / NC = 2.2 mm / WN = 2.7 mm / RN = 2.7 mm / NNC = 2.2 mm

3.2.2.2 Milling

Step 1 – Preparation for milling
Transfer your design data to your milling machine following the instructions of your CAD software and milling equipment provider.

⚠️ Note:
- Use the proper settings per material following the instructions of your CAD software and milling equipment provider.
- Use a drill of maximal 1 mm diameter to precisely mill the four cams of the engaging mechanism of the Straumann® Variobase™ Abutment.

Step 2 – Milling
Mill the coping or crown according to the instructions of your milling equipment provider.
3.2.3 FINALIZATION OF THE COPING/CROWN IN DENTAL LABORATORY

Step 1 – Finalization of the coping/crown
Use standard procedure to finalize the coping or crown.

重要的：
- The coping or crown bonded to the Straumann® Variobase™ Abutment must be completely finalized before the bonding step.
- For cement-retained restorations, the crown can be made and finalized after the bonding step.

3.3 BONDING

Step 1 – Fixing on master model
Fix the Straumann® Variobase™ Abutment to the implant analog in the master model with a screw (hand-tight). Seal the screw channel with wax to prevent excess cement from flowing into the screw channel.

Note:
- Due to its patented engaging mechanism, it is not necessary to sandblast the Straumann® Variobase™ Abutment for obtaining a strong bond.

To ensure precise seating of the coping or crown on the Straumann® Variobase™ Abutment, always bond on the master model.

Due to the symmetrical nature of the four cams, confirm the position of the crown according to the actual patient anatomy prior to bonding.
Step 2 – Bonding

Apply self-adhesive dental cement\(^1\) on the Straumann® Variobase™ Abutment. Follow the cement manufacturer’s instructions. Bond the coping to the Straumann® Variobase™ Abutment.

**Note:**
- Immediately remove excess cement from the abutment.
  Polish the lower margin of the coping after the cement has dried.
- Always use a polishing aid to protect the abutment’s prosthetic connection.
- Do not fire the abutment after bonding.

\(^1\) Tested with Panavia™ F2.0 resin cement by Kuraray and a zerion® (zirconium dioxide) coping by Straumann
3.4 INSERTION (DENTIST’S OFFICE)

The final restoration is fixed on the master cast before it is delivered to the doctor’s office.

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.

Note:
Always ensure that surfaces of threads and screw heads are clean and that a new screw is used for the final restoration.

Step 2 – Final insertion

Option A: Screw-retained final restoration
- Position the sterilized Straumann® Variobase™ Abutment with the coping in the implant. Tighten the screw to 35 Ncm using the SCS Screwdriver together with the ratchet and the torque control device.
- Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha). This allows for later removal of the Straumann® Variobase™ Abutment in case a crown replacement should be required.

Option B: Cement-retained final restoration
- Position the sterilized Straumann® Variobase™ Abutment in the implant. Tighten the screw to 35 Ncm using the SCS Screwdriver together with the ratchet and the torque control device.
- Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha). This allows for later removal of the Straumann® Variobase™ Abutment in case a crown replacement should be required.
- Cement the superstructure to the abutment.
- Remove excess cement.
4 AUXILIARIES AND INSTRUMENTS

4.1 SCS SCREWDRIVERS

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Article</th>
<th>Dimensions</th>
<th>Material</th>
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<tbody>
<tr>
<td>046.400</td>
<td>SCS Screwdriver for ratchet, extra short</td>
<td>Length 15 mm</td>
<td>Cronidur® 30</td>
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<tr>
<td>046.401</td>
<td>SCS Screwdriver for ratchet, short</td>
<td>Length 21 mm</td>
<td>Cronidur® 30</td>
</tr>
<tr>
<td>046.402</td>
<td>SCS Screwdriver for ratchet, long</td>
<td>Length 27 mm</td>
<td>Cronidur® 30</td>
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4.2 RATCHET

<table>
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<td>046.119</td>
<td>Ratchet includes service instrument</td>
<td>Length 84 mm</td>
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4.3 POLISHING AIDS AND ANALOG HOLDER

<table>
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<th>Art. No.</th>
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<tr>
<td>046.245</td>
<td>Polishing protector for RN synOcta® Capings, transocclusal screw-retained</td>
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<td>Stainless steel</td>
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<tr>
<td>025.2920</td>
<td>NC Polishing aid</td>
<td>Length 16 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>025.4920</td>
<td>RC Polishing aid</td>
<td>Length 16 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>046.239</td>
<td>Analog holder</td>
<td>Length 105 mm</td>
<td>Al/Steel</td>
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</tbody>
</table>
5 IMPORTANT GUIDELINES

Please note
Practitioners must have appropriate knowledge and instruction in the handling of the Straumann CADCAM products or other Straumann products (“Straumann Products”) for using the Straumann Products safely and properly in accordance with the instructions for use.

The Straumann Product must be used in accordance with the instructions for use provided by the manufacturer. It is the practitioner’s responsibility to use the device in accordance with these instructions for use and to determine, if the device fits to the individual patient situation.

The Straumann Products are part of an overall concept and must be used only in conjunction with the corresponding original components and instruments distributed by Institut Straumann AG, its ultimate parent company and all affiliates or subsidiaries of such parent company (“Straumann”), except if stated otherwise in this document or in the instructions for use for the respective Straumann Product. If use of products made by third parties is not recommended by Straumann in this document or in the respective instructions for use, any such use will void any warranty or other obligation, express or implied, of Straumann.

Availability
Some of the Straumann Products listed in this document may not be available in all countries.

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

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

Documentation
For detailed instructions on the Straumann Products contact your Straumann representative.

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Explanation of the symbols on labels and instruction leaflets

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<td>LOT</td>
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<td>STERILE R</td>
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<tr>
<td></td>
<td>Lower limit of temperature</td>
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<tr>
<td></td>
<td>Upper limit of temperature</td>
</tr>
<tr>
<td></td>
<td>Temperature limitation</td>
</tr>
<tr>
<td>Rx only</td>
<td>Caution: U.S. federal law restricts this device to sale by or on the order of a dental professional.</td>
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<tr>
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<td>Do not reuse</td>
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<tr>
<td></td>
<td>Non-sterile</td>
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<tr>
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<td>Caution, consult accompanying documents</td>
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<td></td>
<td>Use by</td>
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<td>Keep away from sunlight</td>
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<td>Straumann Products with the CE mark fulfill the requirements of the Medical Devices Directive 93/42 EEC</td>
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