



Basic information on
Straumann® Variobase®



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 INTRODUCTION

1.1 PURPOSE OF THIS GUIDE

This guide was created for dental technicians and dentists working with the Straumann® Variobase® for designing screw-retained or cement-retained customized prosthetic reconstructions, such as copings, crowns, bridges or over-dentures. It provides complementary step-by-step information on working with the Straumann® Variobase®.

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 brochures:

- *Basic Information on the Surgical Procedures – Straumann® Dental Implant System*, 152.754, for information on indications and contraindications of Straumann implants such as the required minimum number of implants, implant type, diameter and loading protocols.
- Instructions for use: *Straumann® CARES® Variobase® portfolio*, 701158, and *Straumann® Variobase® prosthetic components for bridge/bar*, 701627.
- Instructions for use: *Straumann® Variobase® Abutment*, 701593.

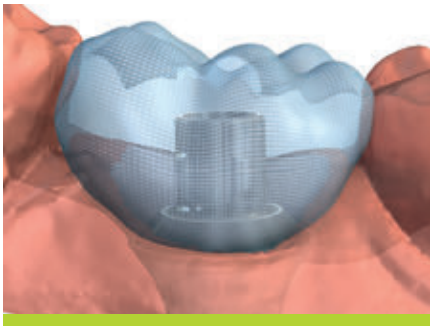
2 GENERAL INFORMATION

2.1 INTRODUCTION TO THE STRAUMANN® VARIOBASE®

The Straumann® Variobase® prosthetic components provide dental laboratories with the flexibility to create customized prosthetic restorations with their chosen in-lab workflow of either pressing, casting or in-lab milling. In addition, Variobase® Abutments come with the benefit of the original Straumann connection and the unique Straumann engaging mechanism.

For intended use and instructions for use, please refer to the Instructions for use: *Straumann® Variobase® Abutments, 701593* and *Straumann® Variobase® prosthetic components for bridge/bar, 701627*.

2.2 TECHNICAL REQUIREMENTS



Straumann® Variobase® Implant Kit

To facilitate the precise design of the interface between the Variobase® prosthetic component and the relevant prosthetic restoration (coping, crown, bridge, over-denture), a specific digital Variobase® Implant Kit can be used. It consists of an open STL file containing the required milling template for the inner geometry of the prosthetic restoration.

Note:

The Variobase® Implant Kit only provides the inner geometry of the prosthetic restoration for the Variobase® prosthetic components. CAM specific parameters need to be defined by the dental laboratory according to the milling equipment manufacturer's instructions.

Software

In order to use the Variobase® in digital workflows, CAD software containing the 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 Variobase® prosthetic components. A precise milling of the geometry requires drills of 1mm in diameter or smaller.

2.3 SYSTEM OVERVIEW

The Variobase® prosthetic components cover the following Straumann implant platforms:

	IMPLANT-LEVEL PROSTHETICS					ABUTMENT-LEVEL PROSTHETICS	
	NC	RC	NNC	RN	WN	NC	RC
Analogs							
	025.2101	025.4101	048.127	048.124	048.171	023.2754 (0°, D 3.5 mm) 023.4756 (0°, D 4.6 mm) 023.4757 (angled, D 4.6 mm)	023.4756 (0°, D 4.6 mm) 023.4757 (angled, D 4.6 mm)
Reposition-able Implant Analogs			-				
	025.2102	025.4102	-	048.129	048.172	025.0007 (D 3.5 mm) 025.0008 (D 4.6 mm)	025.0008 (D 4.6 mm)
Scanbodies							
	025.2915	025.4915	048.173	048.168	048.169	025.0001 (D 4.6 mm) 025.0000 (D 3.5 mm)	025.0001 (D 4.6 mm)
Variobase® for crown, abutment height 3.5 mm						-	-
	025.2921	025.4921	048.709	048.710	048.711	-	-
Variobase® for crown, abutment height 5.5 mm						-	-
	022.0027	022.0026	022.0021	022.0022	022.0023	-	-
Burn-out Copings for Variobase® for crown, abutment height 3.5 mm						-	-
	023.2756/ 023.2756-04 ¹	023.4759/ 023.4759-04 ¹	048.267/ 048.267V4 ¹	048.268/ 048.268V4 ¹	048.269/ 048.269V4 ¹	-	-

	IMPLANT-LEVEL PROSTHETICS					ABUTMENT-LEVEL PROSTHETICS	
	NC	RC	NNC	RN	WN	NC	RC
Burn-out Copings for Variobase® for crown, abutment height 5.5 mm							
	023.0018/ 023.0018V4 ¹	023.0017/ 023.0017V4 ¹	023.0014/ 023.0014V4 ¹	023.0015/ 023.0015V4 ¹	023.0016/ 023.0016V4 ¹	-	-
Auxiliary Screws for Variobase® for crown							
	025.2900	025.4900	048.313	048.356	048.356	-	-
Variobase® for bridge/bar						 	
	022.0000	022.0001	022.0002	022.0003	022.0004	023.0000 (D 3.5 mm) 023.0001 (D 4.6 mm)	023.0001 (D 4.6 mm)
Burn-out Copings for Variobase® for bridge/bar						 	
	023.0006/ 023.0006V4 ¹	023.0007/ 023.0007V4 ¹	023.0008/ 023.0008V4 ¹	023.0009/ 023.0009V4 ¹	023.0010/ 023.0010V4 ¹	023.0004/ 023.0004V4 ¹ (D 3.5 mm) 023.0005/ 023.0005V4 ¹ (D 4.6 mm)	023.0005/ 023.0005V4 ¹ (D 4.6 mm)
Auxiliary screws for Variobase® for bridge/bar, Basal Screws for implant level and Occlusal Screw on abutment level for Straumann® Screw-retained Abutments							
		025.2926		048.356		023.4763	

¹ Article numbers ending in V4 or in -04 contain 4 burn-out copings in one pack.

2.4 PRODUCT CHARACTERISTICS



Maximum Design Freedom

- Variobase® for crown for single-unit restorations available in 3.5 mm and 5.5 mm* abutment height.
- Variobase® for bridge/bar for multi-unit restorations of straight and tilted** Straumann implants.
- Minimal abutment height providing maximum design flexibility.
- Strong retention of the coping on the abutment.
- Save time by skipping the sandblasting process.

Choose the procedure you prefer

- Pressing and casting techniques – Easily and accurately wax up the prosthetic restoration with the Burn-out Copings.
- Digital produced restorations – accessible through three options:
 - Access the desired Variobase® prosthetic components with the CARES® System.
 - Access the Variobase® STL data through a leading CAD/CAM software with the constantly developing CARES® App or CARES® Plug-in.
 - Access the digital offering with the CARES® Scan & Shape Service.

Justified trust

- Rely on perfect design harmony with the original Straumann® implant-abutment connection.

* For the digital workflow the abutment height cannot be reduced.

** Variobase® can be used to compensate up to 30° divergence between two implants; Variobase® copings can be used in combination with Straumann® screw-retained Abutment to compensate larger divergence.

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 THE PROSTHETIC RESTORATION



3.2.1 CONVENTIONAL CASTING AND PRESSING WORKFLOW

Step 1 – Placing the Variobase® prosthetic component

Place the Variobase® prosthetic component and hand-tighten the screw (maximum 15 Ncm). Only use the Straumann® SCS Screwdriver to fix the abutment in the analog or to fix the copings on the Straumann® Screw-retained Abutments. Check again for proper fit and for any rotational or vertical movement when using the Variobase® for crown.

If a Variobase® with a longer chimney is used, you can customize the chimney according to the anatomical situation.

Note:

The Variobase® Abutments with adjustable chimney height must not be cut lower than the mark to assure the abutment stability.



Step 2 – Assembling and shortening of the Burn-out Coping

Attach the Burn-out Coping to the Variobase® prosthetic component 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 Variobase® prosthetic components.
- With its tight fit, the Burn-out Coping for Variobase® for crown should be free of any rotational or vertical movement.
- The Burn-out Copings for Variobase® for bridge/bar shall be placed on the Variobase® prosthetic components and then turned clockwise to 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 Variobase®.



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 prosthetic restoration (e.g. coping, crown, bridge, over-denture)

Use standard procedure to either press or cast the framework (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 prosthetic restoration before bonding.

Note:

If you veneer the framework, ensure that the veneering material's thermal expansion coefficient matches the coping material's thermal expansion coefficient.

3.2.2 DIGITAL WORKFLOW (CAD/CAM)

3.2.2.1 Scanning and designing

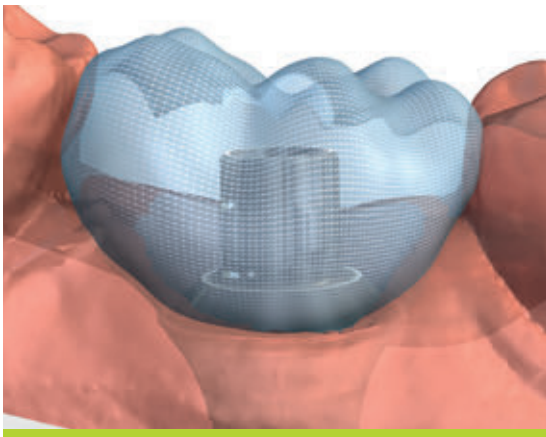
Option A: Scanning and designing – with a scanbody

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 Variobase® prosthetic component.

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 Variobase® prosthetic component model via a matching process. Otherwise, the Variobase® prosthetic component blocked out with wax can be kept for future scans.
- If a Variobase® with a customized longer chimney is used, the modified abutment has to be sprayed and scanned.

Step 2 – Modelling

Model the framework or the full-contour restoration 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 Variobase® for crown.

Step 2 – Milling

Mill the prosthetic restoration according to the instructions of your milling equipment provider.

3.2.3 FINALIZATION OF THE PROSTHETIC RESTORATION IN THE DENTAL LABORATORY



Step 1 – Finalization of the prosthetic restoration

Use standard procedure to finalize the prosthetic restoration (coping, crown, bridge or over-denture).

Note:

The prosthetic restoration bonded to the Variobase® must be completely finalized before the bonding step.

3.3 BONDING



Step 1 – Fixing on master model

Fix the abutments to the implant analogs by tightening the Basal Screws hand-tight or fix the copings on the abutment analogs by tightening the Occlusal Screws hand-tight. Seal the screw channel with wax to prevent excess cement from flowing into the screw channel.

Note:

- It is not necessary to sandblast the Variobase® for obtaining a strong bond.
- To ensure precise seating of the prosthetic restoration on the Variobase®, always bond on the master model.
- For Variobase® for crown, 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 cement² on the Variobase®. Follow the cement manufacturer's instructions. Bond the prosthetic restoration to the Variobase®.

Note:

- Immediately remove excess cement from the Variobase® prosthetic component. Polish the lower margin of the prosthetic restoration after the cement has dried.
- Always use a polishing aid to protect the abutment's prosthetic connection.
- Do not fire the abutment after bonding.



² Tested with Panavia™ F2.0 resin cement by Kuraray and a zircon® (zirconium dioxide) coping by Straumann.
Recommended cement: 3M™ RelyX™ self-adhesive cement.

3.4 INSERTION (DENTAL PRACTICE)

The final restoration is fixed on the master cast before it is delivered to the dentist.

Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the superstructure from the master cast and unscrew the Variobase® prosthetic components 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 Variobase® prosthetic components with the prosthetic restoration 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 Variobase® in case a crown, bridge or over-denture replacement should be required.






Option B: Variobase® for crown – cement-retained final restoration

- Position the sterilized Variobase® 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 Variobase® 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

Art. No.		Article	Dimensions	Material
046.400		SCS Screwdriver for ratchet, extra short	Length 15 mm	Cronidur® 30
046.401		SCS Screwdriver for ratchet, short	Length 21 mm	Cronidur® 30
046.402		SCS Screwdriver for ratchet, long	Length 27 mm	Cronidur® 30

4.2 RATCHET

Art. No.		Article	Dimensions	Material
046.119		Ratchet includes service instrument	Length 84 mm	Stainless steel

4.3 POLISHING AIDS AND ANALOG HOLDER

Art. No.		Article	Dimensions	Material
046.245		Polishing protector for RN synOcta® Copings, transocclusal screw-retained	Length 15 mm	Stainless steel
025.2920 025.2920-04		NC Polishing aid	Length 16 mm	Stainless steel
025.4920 025.4920-04		RC Polishing aid	Length 16 mm	Stainless steel
046.239		Analog holder	Length 105 mm	Al/Steel

5 IMPORTANT GUIDELINES

Please note

Practitioners must have appropriate knowledge and instruction in the handling of the Straumann CAD/CAM 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



Batch code



Catalogue number



Sterilized using irradiation



Lower limit of temperature



Upper limit of temperature



Temperature limitation

Rx only

Caution: U.S. federal law restricts this device to sale by or on the order of a dental professional.



Do not re-use



Non-sterile



Caution, consult accompanying documents



Use by



Keep away from sunlight



Straumann Products with the CE mark fulfill the requirements of the Medical Devices Directive 93/42 EEC



Consult instructions for use

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