



Straumann® Variobase®
Basic Information

Contents

1. General information	4
1.1 Purpose of this guide	4
1.2 Introduction to Straumann® Variobase®	5
1.3 Digital workflow options	6
1.4 Soft Tissue Management and gingiva height selection	9
2. Lab procedure for Straumann® Variobase®	10
2.1 Preparation	10
2.2 Design and fabrication of the prosthetic restoration – Digital Workflow	10
2.3 Design and fabrication of the prosthetic restoration – Conventional Workflow	13
2.4 Bonding	23
3 Dental procedure	29
3.1 Chair-side implant-borne crown on Straumann® Variobase® C	29
3.2 Final insertion of Variobase® Restorations	31
4 Product reference list	32
4.1 System overview	32
4.2 Auxiliaries and instruments	38

1. General information

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 brochure:

<i>Basic Information on the Surgical Procedures – Straumann® Dental Implant System</i> , for information on indications and contraindications of Straumann® implants such as the required minimum number of implants, implant type, diameter and loading protocols.	152.754/en
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Consult the Instructions for use:

<i>Straumann® Variobase® for Crown</i> (valid only outside US)	701593
<i>Straumann® Variobase® for Crown</i> (valid only in US)	701753
<i>Straumann® SC Variobase® for Crown</i>	701745
<i>Straumann® Variobase® for Bridge/Bar and Straumann® Variobase® for Bridge/Bar Cylindrical</i>	701627
<i>Straumann® Variobase® C</i> (only valid outside US)	701719
<i>Straumann® Variobase® for CEREC®</i> (only valid in US)	701722

1.2 Introduction to Straumann® Variobase®

Straumann® Variobase® offers a variety of treatment options for customized single, multi-tooth and full-arch prosthetic restorations. It brings efficiency by giving dental professionals a choice between the preferred in-lab or chair-side workflow to fabricate the implant restoration. Additionally, Variobase® provides the benefit of the original Straumann® implant connection.

For intended use and instructions for use, please refer to the Instructions for use listed under chapter 1.1 “Purpose of this guide”.

Table shows exemplary RC Variobase® portfolio. Entire portfolio is listed under the section “4.1 System overview”.

Straumann® Variobase®	Single-unit restorations		<p>Variobase® for Crown</p> <ul style="list-style-type: none"> • Available for Tissue Level and Bone Level platforms • Two abutment heights 3.5 mm and 5.5 mm available • Possibility to tailor the abutment height 5.5 mm down to 3.5 mm • Gingiva heights 1 mm, 2 mm, 3 mm available • SC Variobase® for Crown specifically developed for the 2.9 mm implant system
			<p>Variobase® for Crown AS</p> <ul style="list-style-type: none"> • Screw-channel angulation of up to 25° • Available for Tissue Level and Bone Level platforms • Two abutment heights 3.5 mm and 5.5 mm available • Possibility to tailor the abutment height 5.5 mm down to 3.5 mm
			<p>Variobase® C</p> <ul style="list-style-type: none"> • Available for Tissue Level and Bone Level platforms • Integrated in Sirona®'s software libraries • Chimney design matches the shape of Sirona®'s Scanbodies and pre-fabricated screw-channel in material blocks
	Multi-unit and full-arch restorations		<p>Variobase® for Bridge/Bar</p> <ul style="list-style-type: none"> • Available for Tissue Level and Bone Level platforms • Cementation Aid for Variobase® for Bridge/Bar Cylindrical supporting an easy cementation procedure • Non-engaging conical shape to the implant

1.3 Digital workflow options

1.3.1 Digitally produced restorations

Straumann® CARES® for dental labs and dentists provides validated, digital workflows, from scan to manufacture, delivering the flexible solutions you require.

Digitally produced restorations on Straumann® Variobase® prosthetic components are accessible through a variety of offerings.

For more detailed information, please see the following brochures:

- *Straumann® CARES® Scan & Shape Basic Information*, Art. No. 490.190/en
- *Straumann® CARES® Implant-borne prosthetics Basic Information*, Art. No. 152.822/en
- *Basic information on Straumann® CARES® tooth prosthetic procedures*, Art. No. 702086
- *CARES® X-Stream™ Restorative Options*, Art. No. 490.369/en
- *Straumann® CARES® Digital for dental labs Playing together seamlessly*, Art. No. 490.127/en



1.3.1.1 CARES® System and CARES® X-Stream

With Straumann® CARES® you can simply access the desired Variobase® prosthetic components to accurately design the prosthetic restoration. In the CARES® Visual Software, the Variobase® Implant Kit is already implemented to facilitate the precise design of the interface between the Variobase® prosthetic component and the relevant prosthetic restoration (coping, crown, bridge, over-denture).

Straumann's precisely milled, high-quality prosthetics cover a leading range of materials and applications for centralized, in-lab or chair-side milling.



CARES® X-Stream™

The one-step prosthetic solution: 1 scan, 1 design, 1 delivery

CARES® X-Stream™ is an innovative example of an efficient digital workflow. With only one scan and one simultaneous and adaptive prosthetic element design, all required prosthetic components (e.g. Variobase® and its relevant crown or bridge) are manufactured in the Straumann validated environment and arrive together in one delivery with an excellent fit of the components. This optimization of the necessary processing steps reduces turnaround time and related costs considerably.

CARES® X-Stream restorative options

For Variobase® prosthetic components a variety of restorative materials are available within CARES® X-Stream™ workflow.

For more detailed information on the availability of CARES® X-Stream™ on Variobase® prosthetic components please refer to the Straumann website.

1.3.1.2 Connectivity to third-party systems

Connect your existing CAD software and mill the restoration on a Variobase® prosthetic component either via Straumann® centralized milling facilities or with your in-house milling equipment.

Our connectivity offering to third-party systems comprises two options:

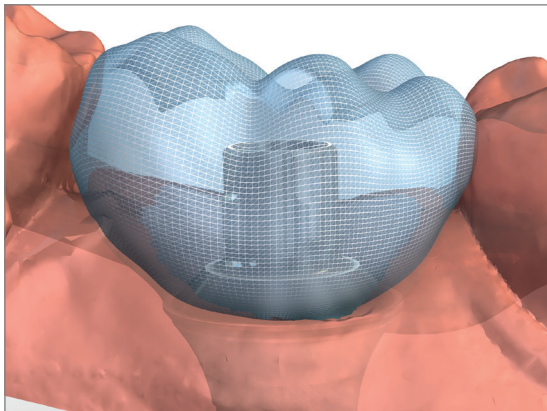
1. Connectivity to our Straumann® Centralized Milling facilities

If you work with Dental Wings or 3shape CAD software, the Variobase® Implant Kit is available to send the files for the prosthetic restoration to Straumann® Centralized Milling. To facilitate the precise design of the interface between the Variobase® prosthetic component and the relevant prosthetic restoration (coping, crown, bridge, over-denture) the Implant Kit is either already available in the software, or the respective files can be downloaded from the Straumann website.

Dental Wings	CARES Plug-in
3Shape	DME files

2. Connectivity for in-house milling

For in-house milling of the prosthetic restoration on Variobase®, we offer STL files for Variobase® prosthetic components on the Straumann website for download.



The implant kits are available for several Variobase® prosthetic components, facilitating the precise design of the interface between the Variobase® prosthetic component and the relevant prosthetic restoration (coping, crown, bridge, over-denture). It consists of an open STL file containing the required milling template for the inner geometry of the prosthetic restoration.

For more detailed information on the availability of the Straumann® Variobase® prosthetic components in third-party systems please refer to the Straumann website and contact your software provider or software dealer for availability and eligible software versions.

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.
- Availability may differ from country to country.

Milling system

Use any milling system that has the ability to mill the precise geometry of the Variobase® prosthetic components. Precise milling of the geometry requires drills of 1 mm in diameter or smaller.

1.3.1.3 Straumann® Scan & Shape



Straumann® CARES® Scan & Shape is an online ordering platform that delivers peace of mind. It offers a new comprehensive level of on-demand CAD/CAM design services, including Variobase® options, with no investment in equipment, technology or training. Whether you are new to digital workflows or already at the expert level: we can meet your needs and provide you with the high quality and precision Straumann® is renowned for.

Note: CARES® Scan & Shape may not be available in your country. Please contact your country sales representative for details.

1.3.1.4 Chair-side implant-borne restoration with third-party CAD/CAM Systems

Variobase® C is specifically designed to meet the needs of third-party CAD/CAM requirements. Variobase® C is compatible with the components used in the Sirona® CEREC® or in-Lab CAD/CAM workflow.



Note:

- Variobase® C may not be available in your country. Please contact your Straumann® country sales representative for details.
- Variobase® C may not be available in the Sirona® CEREC® or in-Lab software. Please contact your dealer for availability and eligible software.
- Follow the instructions for use of the CAD/CAM system manufacturer.

1.3.2 Conventionally produced restorations

For pressing or casting techniques, Burn-out Copings are available for certain Variobase® prosthetic components for easy and accurate wax-up of the prosthetic restoration.



The Burn-out Copings match the dimensions of the Variobase® prosthetic components, producing an inner geometry of the prosthetic restoration with the best possible fit.

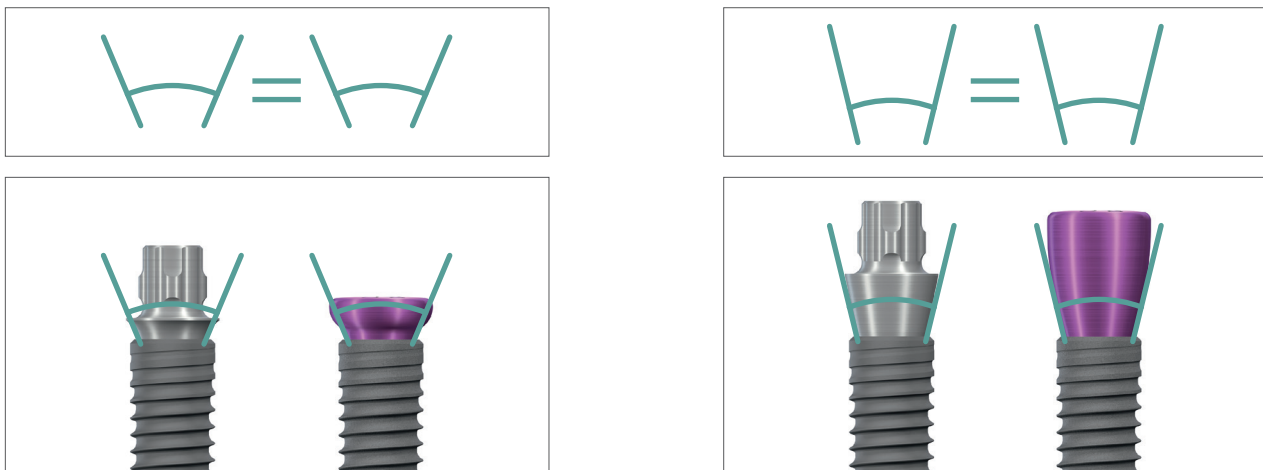
1.4 Soft Tissue Management and gingiva height selection

The Straumann® Bone Level and Bone Level Tapered implants put a strong emphasis on esthetic considerations. They offer tailor-made solutions that allow for natural soft tissue shaping and maintenance for their indications. A wide-ranging portfolio of healing and temporary abutments is available.

The Bone Level Variobase® for Crown is available in 3 gingiva heights and exactly matches with the shape of the conical Straumann® healing abutments.

Select the appropriate Bone Level Variobase® for Crown and the corresponding healing abutment based on your case planning. The additional gingiva heights are available for 3.5 mm and 5.5 mm abutment heights.

Please see the product reference list for detailed information on the available portfolio. For further information on soft tissue conditioning with Straumann® Bone Level please refer to brochure 152.533/en.



Platform	SC				NC			RC						
Gingiva height	1 mm	2 mm	3 mm		1 mm	2 mm	3 mm	1 mm	2 mm	3 mm				
Healing abutments	 024.00075	 024.00085	 024.00095	 024.00105	 024.22425	 024.22225	 024.22245	 024.42225	 024.42245	 024.42265				
Variobase® for Crown	Abutment Height 3.5 mm				 022.0038	 022.0039	 022.0040		 025.2921	 022.0102	 022.0104	 025.4921	 022.0103	 022.0105
	Abutment Height 5.5 mm								 022.0027	 022.0106	 022.0108	 022.0026	 022.0107	 022.0109

2. Lab procedure for Straumann® Variobase®

2.1 Preparation

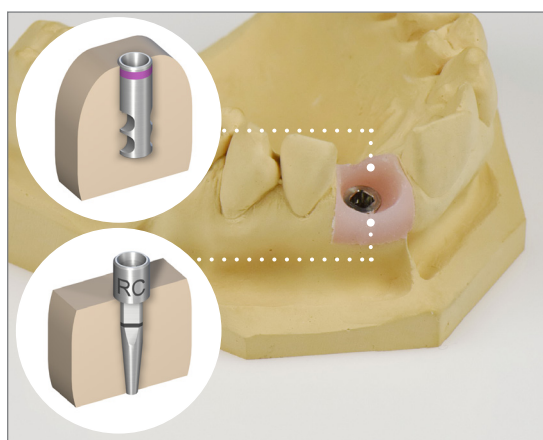
Prerequisites

The tooth shade has been identified and noted (using color chart or digital measuring device). Both the shade information and the impression have been sent to the dental lab.

Dentist has sent either the conventional impressions as a basis for the master cast or the digital intra-oral scan to proceed with a digital model if required.

For more detailed information on digital impression options and digital produced models, please refer to the brochure 490.149/en.

Fabrication of the master cast



A Repositionable Implant Analog can be used for both the digital model and 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.

2.2 Design and fabrication of the prosthetic restoration – Digital Workflow

The procedures explained under this section apply to the following Variobase® prosthetic components:

- Variobase® for Crown
- Variobase® for Crown AS
- Variobase® for Bridge/Bar
- Variobase® for Bridge/Bar Cylindrical

2.2.1 Scanning and designing with scanbody

The Straumann® Scanbodies represent the position and orientation of the respective dental implant or analog in CAD/CAM scanning procedures. This helps the CAD/CAM software to correctly align the subsequent CAD/CAM restoration.

Note: The Straumann® Scanbodies and all components are intended for single use only. Multiple use of a scanbody can lead to inaccurate results. Make sure the stability of the dental implant is sufficient to support the screwing / unscrewing operations of the scanbodies. Scan spray is not required at any time.

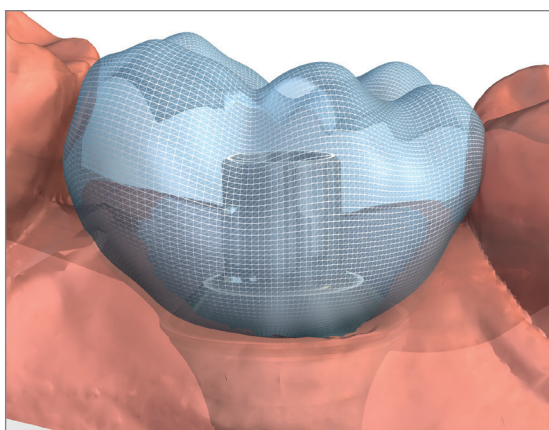
Import the Straumann® Variobase® Implant Kit into the design software according to the software manufacturer's instructions if not already available in the respective design software.

For more detailed information on Straumann® Scanbodies please refer to the brochure 490.820/en.



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 laxity.
- If a single-tooth restoration is planned, orient the angled surface of the scanbody buccally (not adjacent to the approximal tooth).
- Avoid any contact between the scanbody and the proximal teeth.



Step 2 – Scanning and modelling

- If you use third-party CAD software, follow the software provider's instructions on how to scan and recognize the scanbody.
- In CARES® Visual the scanbody matching process has already occurred.
- Model the coping or crown following the software provider's instructions.

2.2.2 Scanning and designing without scanbody

If the implant kit is not embedded in your software, you cannot use a scanbody.

Note:

- Scanning without scanbody is not possible for Variobase® for Crown AS. The implant kit for Variobase® for Crown AS is needed for designing and milling the crown with an angled screw-channel.
- Scanning without scanbody is not as accurate as the scanning procedure with scanbody. Therefore, we recommend following this workflow only if the implant kit is not available in the respective CAD software.



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.

Note: 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 screw channel diameters are as follows:

	Variobase® for Crown	Variobase® for Bridge/Bar	Variobase® for Bridge/Bar Cylindrical
NNC	2.2 mm	2.3 mm	2.3 mm
RN	2.7 mm	2.7 mm	2.7 mm
WN	2.7 mm	2.7 mm	2.7 mm
SC	2.2 mm	n/a	n/a
NC	2.2 mm	2.3 mm	2.3 mm
RC	2.3 mm	2.3 mm	2.3 mm

2.2.3 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 for the material following the instructions of your CAM software and milling equipment provider.
- Use a drill with a maximum diameter of 1 mm 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.

2.3 Design and fabrication of the prosthetic restoration – Conventional Workflow

Working with the Burn-out Coping supports a clean and sharp-edged finish of the screw channel and a good fit of the prosthetic restoration with the Variobase® prosthetic components.

2.3.1 Single-unit restorations with Variobase® for Crown



Step 1 – Placing the Variobase® for Crown on the master cast

Place the Variobase® for Crown on the model analog hand-tight (maximum 15 Ncm).

Note:

- 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 when using the Variobase® for Crown.



- If a Variobase® for Crown with adjustable chimney is used, you can customize the chimney according to the anatomical situation, but not lower than the mark to assure the abutment stability.



Step 2 – Assembling and shortening the Burn-out Coping

- Attach the Burn-out Coping to the Variobase® for Crown and check for proper fit.
- With its tight fit, the Burn-out Coping for Variobase® for Crown should be free of any rotational or vertical movement.

Tip: If the Burn-out Coping fits too tight remove and insert the Burn-out Coping to the Variobase® for Crown several times. This loosens the fit so that the wax-up design can be removed easily.



- Shorten the Burn-out Coping according to the individual circumstances.
- Ensure that the shortened Burn-out Coping still covers the complete metal part of the Variobase® for Crown.



Step 3 – Wax-up design

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

Note:

- You can make a reduced anatomical 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 minimum wall thickness of the respective dental material used according to the manufacturer's instructions.



Step 4 – Fabrication of the prosthetic restoration

- Use standard procedure to either press or cast the prosthetic restoration.
- This can be a coping, crown, bridge or over-denture as a framework (reduced anatomical design) or the full-contour (full anatomical design).

Note:

- For optimal results, it is recommended to avoid speed investment material and processes. The plastic of the Burn-out Coping requires sufficient time to completely burn out.



Optional: for cement-retained restorations

- If necessary, make an individual crown or bridge restoration as well according to the 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.

2.3.2 Single-unit restorations with Variobase® for Crown AS

For processing a cast-on or press ceramic restoration with Variobase® for Crown AS use only the following components, which are designed for angled screw-channel solutions.

Burn-out Coping Top	Burn-out Coping Base	Screw driver AS	Screw AS
			
<p>Two piece Burn-out Coping for a fixed screw-channel angulation of 25°.</p>		<p>Dedicated screws and screwdrivers are available for Straumann® Angled Solutions. All color coded in green.</p>	

Note:

- Follow the instructions for use carefully to obtain the prosthetic restoration.
- Screws AS & Screwdrivers AS are not compatible with the standard SCS and Createch screws and screwdrivers.
- The Screw AS should be tightened at 35 Ncm. Applying a torque >35 Ncm could damage the Screw AS which may prevent the possibly to unscrew it.



Step 1 – Assembling the Burn-out Coping Base

- Attach the Burn-out Coping Base to the Variobase® for Crown AS.
- The snap-on retention indicates proper seating.

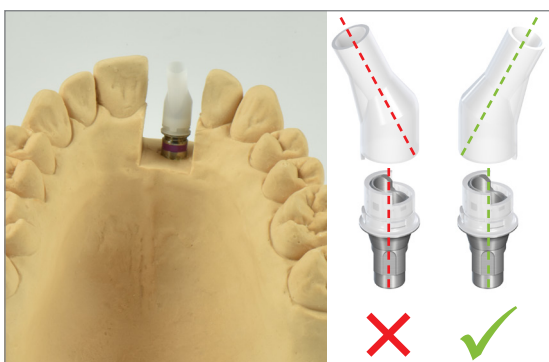
Note

- Check the alignment of the cut-out-window of both the Variobase® for Crown AS and the Burn-out Coping Base.
- Check for the proper fit and the absence of any rotational or vertical movement between the Variobase® for Crown AS and the Burn-out Coping Base.



Step 2 – Inserting the Variobase® for Crown AS on the master cast

- Screw the assembly of the Variobase® for Crown AS and the Burn-out Coping Base onto the implant analog hand-tight (max. 15 Ncm).
- Use only the Screw AS and the Screwdriver AS, which are both color coded in green.



Step 3 – Assembling the Burn-out Coping

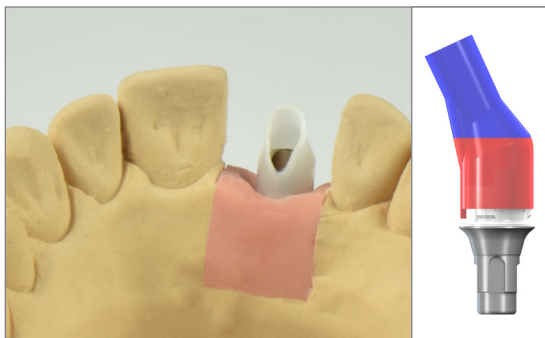
- Assemble the Burn-out Coping Top onto the Burn-out Coping Base (friction retention).
- Check that the screw channel is centered with the cut-out window of the Variobase® for Crown AS.
- Check for proper fit between the Burn-out Copings components and the Variobase® for Crown AS.



- Rotate the Burn-out Coping Top in the optimal position for the final restoration (within the $\pm 45^\circ$ rotational range).
- Wax-up together the Burn-out Coping Base and Top to avoid any rotation.

Note:

- Both the Burn-out Coping Base and Top have rotation-indexing elements to limit the rotation of the Burn-out Coping Top to a maximum of 90° around the abutment axis ($\pm 45^\circ$).
- An incorrect alignment of the Burn-out Coping Top may prevent removal of the screw after the crown is finalized.



Step 4 – Modify the Burn-out Coping

- Shorten the upper part (blue area) of the Burn-out Coping Top according to the individual circumstances.
- Ensure that the shortened Burn-out Coping still covers the complete metal part of the Variobase® for Crown AS.

Note:

- Shortening the lower part (red area) of the Burn-out Coping Top may prevent the possibly to remove the screw.



Step 5 – Wax-up design

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

Note:

- You can make a reduced anatomical 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 minimum wall thickness of the respective dental material used according to the manufacturer's instructions.



Step 6 – Fabrication of the prosthetic restoration

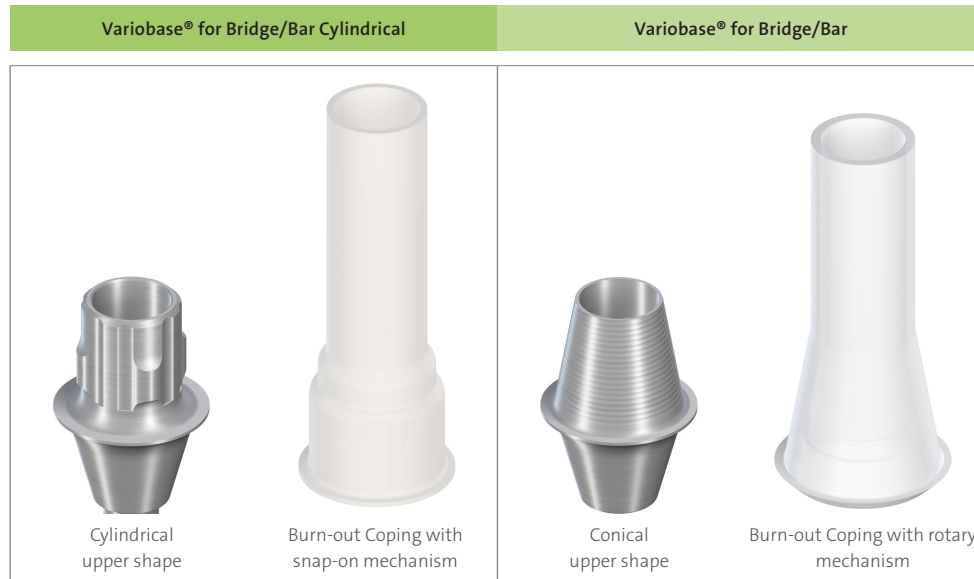
- Use standard procedure to either press or cast the prosthetic restoration.
- This can be an anatomic reduced or full-contour crown.
- Finalize the prosthetic restoration before bonding.

Note:

- For optimal results, it is recommended to avoid speed investment material and processes. The plastic of the Burn-out Coping requires sufficient time to completely burn out.
- If you veneer the framework, ensure that the veneering material's thermal expansion coefficient matches the coping material's thermal expansion coefficient.

2.3.3 Multi-unit restorations with Variobase® for Bridge/Bar prosthetic components

Two Variobase® for Bridge/Bar options are available for processing a multi-unit restoration or edentulous cases. Dedicated Burn-out Copings are available for the two Variobase® for Bridge/Bar prosthetic components. Please use the respective Burn-out Coping according to the following instruction.



Both Variobase® for Bridge/Bar prosthetic components come with a non-engaging conical connection to the implant, which allows for compensation of up to 15 degrees of divergence per implant axis.

Variobase® for Bridge/Bar and Variobase® for Bridge/Bar Cylindrical can be used together in one restoration.



Step 1 – Placing the Variobase® for Bridge/Bar prosthetic components on the master cast

- Place the Variobase® for Bridge/Bar prosthetic components on the model analog hand-tight (max. 15 Ncm).

Note:

- 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 when using the Variobase® for Bridge/Bar prosthetic components.



Step 2 – Assembling the Burn-out Copings

2a – Variobase® for Bridge/Bar Cylindrical

- Attach the Burn-out Coping to the Variobase® for Bridge/Bar Cylindrical and check for proper fit.

Note: The Burn-out Coping has a loose fit. As soon as the wax-up design is obtained, the Burn-out Coping retains on the Variobase® for Bridge/Bar Cylindrical.



2b – Variobase® for Bridge/Bar

- Place the Burn-out Copings on the Variobase® for Bridge/Bar.
- Rotate clockwise to eliminate rotational and vertical movement.



Step 3 – Shortening the Burn-out Copings

- Shorten the Burn-out Coping according to the individual circumstances.
- Ensure that the shortened Burn-out Coping still covers the complete metal part of the Variobase® for Bridge/Bar prosthetic component.



Step 4 – Wax-up design

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

Note:

- You can make a reduced anatomical 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 minimum wall thickness of the respective dental material used according to the manufacturer's instructions.



Step 5 – Removing the wax-up design

5a – Variobase® for Bridge/Bar Cylindrical

- Unscrew the Variobase® for Bridge/Bar Cylindrical from the implant analogs.
- Pull-off the wax-up restoration from the Variobase® for Bridge/Bar Cylindrical.

Note:

- The wax-up design should not be removed when the abutments are placed on the master cast.
- Due to the cylindrical upper shape the wax-up might damage.



5b – Variobase® for Bridge/Bar

- Pull-off the wax-up design from the Variobase® for Bridge/Bar with conical upper shape directly from the master cast.

Note:

- Thanks to the conical upper shape, the wax-up restoration are removed directly from the master cast as higher angulations can be compensated.



Step 6 – Fabricating the restoration

- Follow the standard procedure to either press or cast the prosthetic restoration.
- This can be a bridge or over-denture as a framework (reduced anatomical design) or the full-contour (full anatomical design).

Note:

- For optimal results, it is recommended to avoid speed investment material and processes. The plastic of the Burn-out Coping requires sufficient time to completely burn out.



Note:

- If you stain and glaze the framework, ensure that the stain and glaze material's thermal expansion coefficient matches the framework material's thermal expansion coefficient.

2.4 Bonding

2.4.1 General recommendations

Pre-treatment

- Always wear gloves.
- All components must be free of grease and dry.
- Clean with steam, ultrasound or alcohol.
- Ensure a good passive fit of the restoration to obtain the best possible bonding result.

Sandblasting Variobase® prosthetic components

- It is not necessary to sandblast the Variobase® for Crown, Variobase® for Crown AS or Variobase® for Bridge/Bar Cylindrical to obtain a strong bond due to its specific abutment design with the retention elements.
If sandblasting is an integral part in your lab procedure, you can perform sandblasting with 50 µm AL2O3 and max. 2 bar.
- We do not recommend sandblasting Variobase® for Bridge/Bar with conical upper shape.
Note: Helical thread depth may be reduced after sandblasting, potentially leading to weaker retention.
- The Variobase® C must be sandblasted with 50 µm AL2O3 and max. 2 bar due to its design.

Cement

- Use a cement that is approved for bonding the chosen restorative material to a Ti-Base.
- Always use the components within a cement system. Do not mix components with different trademarks.
- Always follow the cement manufacturer's instructions throughout the cementation procedure.
- Always use the appropriate primer if one is stated in the restorative material or cement manufacturer's instructions for use.

2.4.2 Single-unit restorations on Variobase® for Crown and Variobase® for Crown AS



Step 1 – Fixing the Variobase® prosthetic component on the master cast

- Fix the Variobase® for Crown with the SCS or Variobase® for Crown AS with the Screwdriver AS (green color coded) to the implant analogs by tightening the basal screw or the Screw AS (green color coded) hand-tight.
- Seal the screw channel to prevent excess cement from flowing into the screw channel.

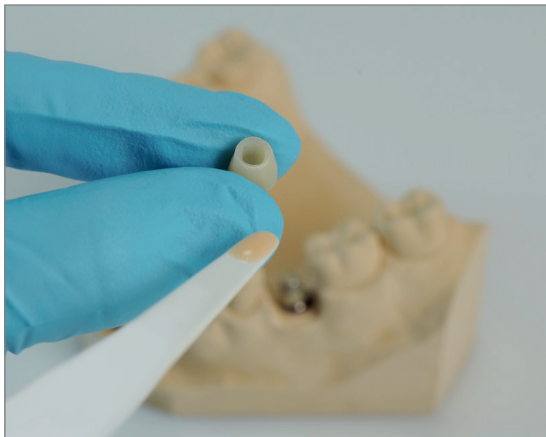
Note:

- To ensure precise seating of the prosthetic restoration on the Variobase® for Crown or Variobase® for Crown AS, 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 on the Variobase® for Crown or Variobase® for Crown AS.
- Follow the cement manufacturer's instructions for use.
- Bond the prosthetic restoration to the Variobase® prosthetic component.



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.



2.4.3 Multi-unit restorations on Variobase® for Bridge/Bar prosthetic components

2.4.3.1 Cementation procedure for Variobase® for Bridge/Bar Cylindrical in combination with Cementation Aid

To process the bonding with the Cementation Aid, please consider the following recommendations:

- The design and fabrication of the framework must be done using a Scanbody and the Variobase® for Bridge/Bar Cylindrical implant library. This ensures that the screw-channel dimensions are aligned with the Cementation Aid dimensions.
- Use the Burn-out Coping for cast-on or press ceramic restorations to ensure that the screw-channel of the restoration fits the dimensions of the Cementation Aid.
- Do not use the Cementation Aid for angled screw-channel solutions.
- The Cementation Aid is single use only.



Step 1 – Assembling and inserting the Variobase® for Bridge/Bar Cylindrical on the master cast

- Assemble the finalized framework with the Variobase® for Bridge/Bar Cylindrical off the master cast.



- Transfer the restoration to the master cast.
- Fix the Variobase® for Bridge/Bar Cylindrical to the implant analogs by tightening the basal screws hand-tight (max. 15 Ncm).
- Check for proper seating of the restoration on the master cast.
- Perform final fit check prior to bonding.
 - Check mesial/distal contact points.
 - Check passive fit.
- **Note:** Framework must sit on the abutment platform with equal load distribution after cementing. An impassive fit of the restoration may lead to de-bonding.
 - Check occlusal fit.
- Finalize (e.g. polishing, etc.) prior to cementation.

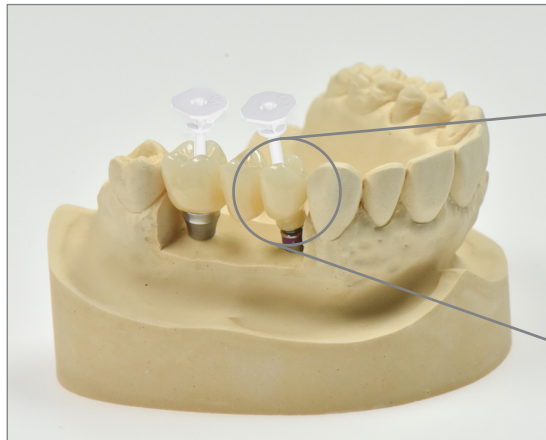
Step 2 – Selecting the appropriate Cementation Aid

Variobase® for Bridge/Bar Cylindrical	 022.0110	 022.0111	 048.377	 048.378	 048.379	 023.0027 (Ø 3.5 mm)	 023.0028 (Ø 4.6 mm)
Cementation Aid	 160.2 (CA 2)	 160.3 (CA 3)	 160.1 (CA 1)		 160.3 (CA 3)		

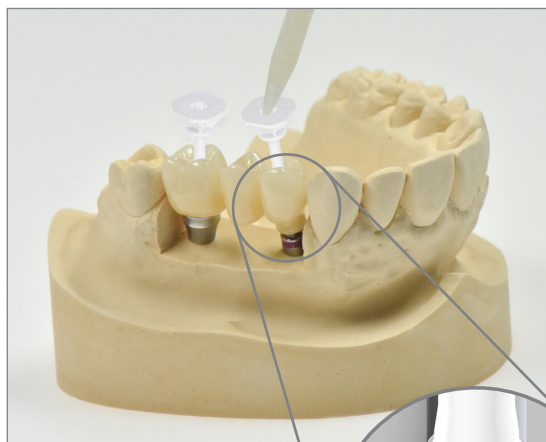
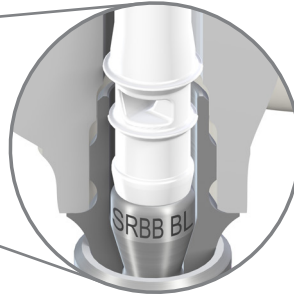
Note: Always select the appropriate Cementation Aid for the respective Variobase® for Bridge/Bar Cylindrical to ensure a proper function.

Step 3 – Inserting the Cementation Aid and applying cement

Note: before the Cementation Aid can be inserted, the Variobase® for Bridge/Bar Cylindrical must be screwed onto the implant analog hand-tight.



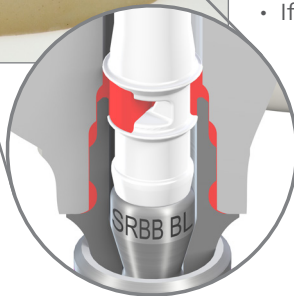
- Insert Cementation Aid into each screw channel.
- A tangible “click” indicates proper seating on the screw head.



- Check the proper seating of the framework on the Variobase® for Bridge/Bar Cylindrical prior to cement application.
- Apply self-adhesive dental cement through the access hole of the Cementation Aid.
- Stop when excess cement emerges from the abutment base.

Note:

- Immediately stop applying cement and pull-out the Cementation Aid if no excess cement appears on the abutment base. This indicates improper seating of the Cementation Aid.
- If any malfunction should occur use a new Cementation Aid.





- Remove the Cementation Aid after applying the cement directly.
- Immediately remove excess cement from the Variobase® prosthetic component.



- Push the restoration down and ensure proper seating of the framework on the Variobase® for Bridge/Bar Cylindrical platform.
- Harden the cement.



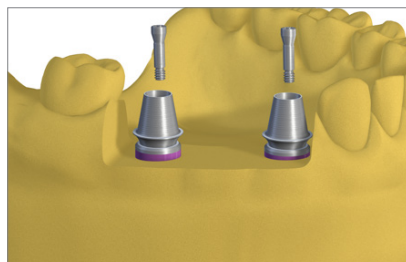
Step 4 – Finalization of the restoration

- Unscrew the restoration for finalization.
- 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.

Note:

- Do not fire the abutment after bonding.

2.4.3.2 Cementation procedure for Variobase® for Bridge/Bar (conical upper shape)

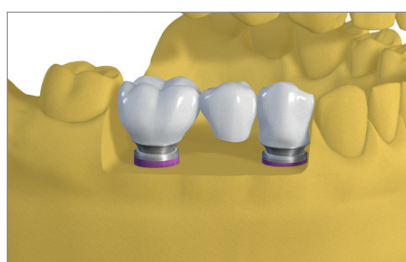


Step 1 – Fixation on master cast

- Fix the Variobase® for Bridge/Bar with conical upper shape to the implant analog hand-tight (max. 15 Ncm).

Note:

- We do not recommend sandblasting Variobase® for Bridge/Bar with conical upper shape. Helical thread depth may be reduced after sandblasting, potentially leading to weaker retention.



Step 2 – Fit check and finalization of the prosthetic restoration

- Place framework on abutments.
- Check mesial/distal contact points.
- Check passive fit.

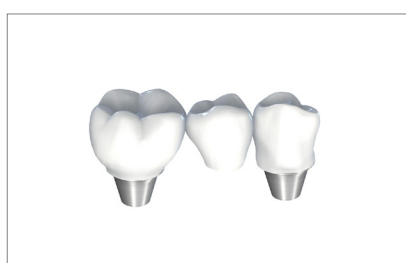
Note:

- Framework must sit on the abutment platform with equal load distribution after cementing. An impassive fit of the restoration may lead to de-bonding.
- Check occlusal fit.
- Finalize (e.g. polishing, etc.) prior to cementation.



Step 3 – Bonding

- Seal the screw channel to prevent excess cement from flowing into the screw channel.
- Apply self-adhesive dental cement on the Variobase® for Bridge/Bar.
- Follow the cement manufacturer's instructions for use.
- Bond the prosthetic restoration to the Variobase® for Bridge/Bar.



- 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.

Note:

- Do not fire the abutment after bonding.

2.4.4 Prepare restoration to send to the dentist

After finalization and cleaning, fix the restoration on the master cast before sending it to the dentist.

Make sure that the screw for final insertion was not used during lab procedure.

3 Dental procedure

3.1 Chair-side implant-borne crown on Straumann® Variobase® C

Variobase® C is compatible with the Sirona® Scanbody, the Sirona® ScanPost® and the material blocks with a pre-fabricated screw channel, and can be used within the Sirona® CAD/CAM offering for chair-side and lab-side restorations.

Note: For processing the prosthetic restoration, either a CEREC® system providing the option for chair-side implant borne workflow or a Sirona® in-Lab System can be used. Please follow Sirona®'s and the material manufacturer's instructions for use for scanning, designing, milling and finalizing the restoration.

3.1.1 Design and fabrication of the restoration



Step 1 – Ordering the components

Please select the respective parts as shown in the table below:

Variobase® C	Sirona® Scanbody size	Sirona® ScanPost®	Material block screw-hole size
 RC, GH 1 mm 022.0044	L	S BL 4.1 L	L
 NC, GH 1 mm 022.0043	S	S BL 3.3 L *	S
 NNC 022.0018	S	Not available	S
 RN 022.0019	L	SSO 4.8 L	L
 WN 022.0020	L	SSO 6.5 L	L

*Please use Scanbody size L when using Sirona®'s ScanPost® for Scanning

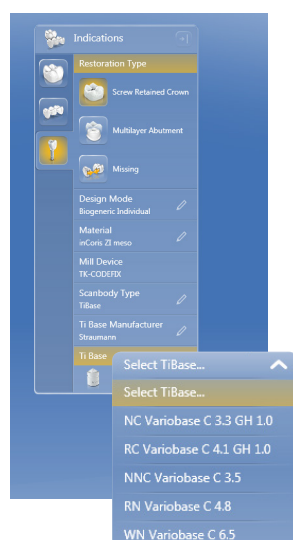
- Order the Variobase® C via the Straumann® sales channels.
- Order the Sirona® Scanbody and/or ScanPost® through Sirona®'s distribution channels.
- Order the material block with pre-fabricated screw-channel through the material manufacturer's distribution channels.

Note: The older versions of the Variobase® for CEREC® RC (022.0024) and NC (022.0025) are not compatible with their successors Variobase® C RC GH 1 mm (022.0044) and NC GH 1 mm (022.0043) due to different product design parameters.

Step 2 – Intra-oral scanning



Step 3 – Designing and milling the restoration

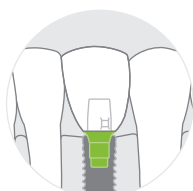


Sirona® CEREC® software selection mask

- Use your Sirona® software to select the original Straumann® Variobase® C.
- Select Variobase® C from the implant library of the CAD/CAM system to design the restoration.
- Mill the restoration.

Note: Country-specific availability. Please contact your Sirona® Sales Representative to check software availability or your Straumann Sales Representative to check for abutment availability.

3.1.2 Bonding



- Fit check the restoration intra-orally on the Variobase® C.
- Finish the restoration using standard procedures.
- Cement the restoration on the Variobase® C by following the instructions explained in chapter 2.4.2 Single-unit restorations on Variobase® for Crown and Variobase® for Crown AS.
- Final insertion into patient's mouth.

Note: Do not fire the abutment after bonding.

3.2 Final insertion of Variobase® Restorations

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.
- Thoroughly clean and dry the interior of the implant and the abutment.

Note:

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

3.2.1 Final insertion of single-unit restorations on Variobase® for Crown and Variobase® for Crown AS



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 either the SCS or AS Screwdriver together with the Ratchet and the Torque Control Device.
- Close the screw channel with cotton and sealing compound. 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 screw channel with cotton and sealing compound. 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.

3.2.2 Final insertion of multi-unit restorations on Variobase® for Bridge/Bar prosthetic components












































- Position the sterilized Variobase® prosthetic components with the prosthetic restoration in the implant.
- Screw all abutments into the implant with light hand-tight force and equal load distribution.
- Tighten the screws with 35 Ncm diagonally to avoid friction.








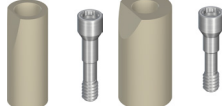
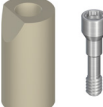











Tip: This tension-free screw-in technique is very important for larger restorations or full-arch restorations on Variobase® for Bridge/Bar prosthetic components to avoid loosening of the bond.

















4 Product reference list





















4.1 System overview

	Tissue Level			Implant Level							
	NNC	RN	WN	SC			NC				
				GH 1 mm	GH 2 mm	GH 3 mm	GH 1 mm	GH 2 mm	GH 3 mm		
Analogs	 048.127	 048.124	 048.171				 025.0023	 025.2101			
Repositionable Implant Analogs		 048.129	 048.172				 025.0024	 025.2102			
Scanbodies	 048.173	 048.168	 048.169				 025.0025	 025.2915			
Variobase® for Crown	Abutments	 048.709	 048.710	 048.711	 022.0038	 022.0039	 022.0040	 025.2921	 022.0102	 022.0104	
	Burn-out Copings	 048.267 048.267V4*	 048.268 048.268V4*	 048.269 048.269V4*				 023.0011 023.0011V4	 023.2756 023.2756-04*		
	Abutments	 022.0021	 022.0022	 022.0023				 022.0027	 022.0106	 022.0108	
	Burn-out Copings	 023.0014 023.0014V4*	 023.0015 023.0015V4*	 023.0016 023.0016*				 023.0018 023.0018V4*			
	Auxiliary Screws	 048.313	 048.356	 048.356				 025.0031	 025.2900		

Bone Level & Bone Level Tapered				
RC			Abutment Level	
GH 1 mm	GH 2 mm	GH 3 mm	NC	RC
 025.4101			 023.2754 (0°, Ø 3.5 mm) 023.4756 (0°, Ø 4.6 mm) 023.4757 (angled, Ø 4.6 mm)	 023.4756 (0°, Ø 4.6 mm) 023.4757 (angled, Ø 4.6 mm)
 025.4102			 025.0007 (Ø 3.5 mm) 025.0008 (Ø 4.6 mm)	 025.0008 (Ø 4.6 mm)
 025.4915			 025.0000 (Ø 3.5 mm) 025.0001 (Ø 4.6 mm)	 025.0001 (Ø 4.6 mm)
 025.4921	 022.0103	 022.0105		
 023.4759 023.4759-04*				
 022.0026	 022.0107	 022.0109		
 023.0017 023.0017V4*				
 025.4900				

		Tissue Level			Implant Level						
		NNC	RN	WN	SC			NC			
					GH 1 mm	GH 2 mm	GH 3 mm	GH 1 mm	GH 2 mm	GH 3 mm	
Variobase® for Crown AS	Abutment height 3.5 mm	 048.876	 048.877	 048.878				 022.0084			
	Abutment height 5.5 mm	 048.879	 048.880	 048.881				 022.0093			
	Burn-out Copings	 048.896	 048.897	 048.898				 023.0025			
	Auxiliary Screws	 048.899	 048.906	 048.906				 025.0055			
Variobase® for Bridge/Bar Cylindrical	Abutments	 048.377	 048.378	 048.379				 022.0110			
	Cementation Aid	 160.3	 160.1					 160.2			
	Burn-out Copings	 048.380 048.380V4*	 048.381 048.381V4*	 048.382 048.382V4*				 023.0029 023.0029V4*			
	Auxiliary Screws	 025.2926	 048.356	 048.356				 025.2926			

Bone Level & Bone Level Tapered				Abutment Level	
RC			NC	RC	
GH 1 mm	GH 2 mm	GH 3 mm			
 022.0087					
 022.0096					
 023.0026					
 025.0055					
 022.0111			 023.0027 (∅ 3.5 mm)	 023.0028 (∅ 4.6 mm)	 023.0028 (∅ 4.6 mm)
 160.2				 160.3	
 023.0030 023.0030V4*			 023.0031; 023.0031V4* (∅ 3.5 mm)	 023.0032 (∅ 4.6 mm)	 023.0032V4* (∅ 4.6 mm)
 025.2926				 023.4763	

		Tissue Level			Implant Level						
		NNC	RN	WN	SC			NC			
					GH 1 mm	GH 2 mm	GH 3 mm	GH 1 mm	GH 2 mm	GH 3 mm	
Variobase® for Bridge/Bar (conical upper shape)	Abutments	 022.0002	 022.0003	 022.0004				 022.0000			
	Burn-out Copings	 023.0008 023.0008V4*	 023.0009 023.0009V4*	 023.0010 023.0010V4*				 023.0006 023.0006V4*			
	Auxiliary Screws	 025.2926	 048.356	 048.356				 025.2926			
Variobase® C	Abutment	 022.0018	 022.0019	 022.0020				 022.0043			
	Auxiliary Screws for Variobase® C	 048.313	 022.0045	 022.0045				 025.2900			

Bone Level & Bone Level Tapered				Abutment Level	
RC			NC	RC	
GH 1 mm	GH 2 mm	GH 3 mm			
 022.0001			 023.0000 (∅ 3.5 mm) 023.0001 (∅ 4.6 mm)	 023.0001 (∅ 4.6 mm)	
 023.0007 023.0007V4*			 023.0004; 023.0004V4* (∅ 3.5 mm) 023.0005; 023.0005V4* (∅ 4.6 mm)	 023.0005 (∅ 4.6 mm) 023.0005V4* (∅ 4.6 mm)	
 025.2926				 023.4763	
 022.0044					
 025.4900					

4.2 Auxiliaries and instruments

Art. No.	Pictures	Article	Dimensions	Material
SCS Screwdrivers				
046.400		SCS Screwdriver for ratchet extra-short	Length 15 mm	stainless steel
046.401		SCS Screwdriver for ratchet short	Length 21 mm	stainless steel
046.402		SCS Screwdriver for ratchet long	Length 27 mm	stainless steel
Angled Solutions Screwdrivers				
046.786		Screwdriver AS for ratchet extra-short	Length 15 mm	stainless steel
046.787		Screwdriver AS for ratchet short	Length 21 mm	stainless steel
046.788		Screwdriver AS for ratchet long	Length 27 mm	stainless steel
046.789		Screwdriver AS for handpiece extra-short	Length 20 mm	stainless steel
046.790		Screwdriver AS for handpiece short	Length 26 mm	stainless steel
046.791		Screwdriver AS for handpiece long	Length 32 mm	stainless steel
046.792		Screwdriver Handling Aid AS	n/a	stainless steel
Ratchet				
046.119		Ratchet, including service instrument	Length 84 mm	stainless steel
Polishing Aids and Analog Holder				
046.239		Analog Holder	Length 105 mm	AL/Steel
046.245		Polishing protector for RN synOcta® Copings, transocclusal screw-retained	Length 15 mm	stainless steel
025.0029		SC Polishing Aid	Length 16 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

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