

BEGO CAD/CAM Hybrid Double Crowns & Hybrid Secondary Bar Constructions

Date of issue August 2019



Partners in Progress

Contents

1

BEGO CAD/CAM Hybrid Double Crowns & Hybrid Secondary Bar Constructions

- 03 Production processes
- 03 BEGO CAD/CAM hybrid production
- 03 Hardware and software requirements
- 03 Design of the primary components
- 03 Follow-up work recommendations for primary components

2

Job creation

- 04 Job creation in exocad* software for hybrid double crowns
- 05 Job creation in 3Shape* software for hybrid double crowns
- 06 Job creation in 3Shape software for hybrid secondary bar constructions

3

Preset parameters

07 Preset parameters in the CAD software

4

Scanning

08 Scanning

5

Attachments and retentions

- 09 Attachments and retentions 3Shape
- 10 Attachments and retentions exocad

6

Follow-up work recommendations & Veneering recommendations

- 11 Follow-up work recommendations
- 11 Veneering recommendations

BEGO CAD/CAM Hybrid Double Crowns & Hybrid Secondary Bar Constructions

Introduction

The combination possibilities of precise production processes and tried-and-tested materials open up the possibility of having BEGO CAD/CAM hybrid double crowns (in the CAD softwares **exocad*** and **3Shape***) and hybrid secondary bar constructions (initially only in **3Shape**) produced by BEGO Medical.

Production processes

• Selective laser melting (SLM)

In the SLM process, your CAD files guide a laser which additively builds up the workpiece layer by layer using a metal powder. This makes it possible to produce complex designs very quickly and in a high quality.

• High-speed cutting (HSC)

High-speed cutting (HSC) is a process used for the precise production of double crowns, customized bar restorations, and implant prosthetics. A precise production process avoids the typical issues encountered in conventional production such as variations in the fit or an inhomogeneous structure as a result of the casting.

BEGO CAD/CAM hybrid production

The procedure follows the standard workflow in the dental laboratory. The first step concerns the modeling of the primary crown(s)/bar, referred to as primary components in the following, which will subsequently be sent to the production department. Once BEGO has produced the primary components and the dentist has taken the transfer impression, you process your primary crown(s) on the transfer model as usual. This is followed by scanning of the primary crown(s) and modeling of the secondary construction.

Hardware and software requirements

- The ambient temperature has a major impact on the accuracy of fit of the hybrid secondary crown, as temperature fluctuations affect the precision of the scanner. Prior to the (start of the) processing of a new job, the scanner temperature should be checked and recalibration performed if necessary so as to ensure the precision.
- The PC configuration should correspond to the CAD software developer's software recommendation.
- The material file must be saved in exocad or 3Shape (if this is not the case, it needs to be uploaded by BEGO User Support.)
- On 3Shape systems from a third-party BEGO reseller, the reseller's authorization is required for the uploading of the BEGO DLL file. The "BEGO DLL DECLARATION OF CONSENT" form with the number MED-AWB-F-497/01_EN can be found in the Download area of our website.

Design of the primary components

Design the primary telescopes/bars in the CAD software as usual. We recommend smoothing the upper edge/positioning the lever centrally.

The recommended parameters for the primary components assume a cone angle of 1° or 0° .

Please note:

Generally speaking, primary crowns can be produced with or without a step. The step should be slightly tapered.



The primary components should not have any sharp edges. If they do, rounding off should be performed during fitting or the milling radius correction activated (however, this can result in possible friction loss). If the milling radius correction is not activated, increased manual follow-up work of the restoration may prove necessary.

If the primary component is free from sharp edges, the milling radius correction will have no effects on the accuracy of fit. As such, it can also be deactivated in such cases!

Follow-up work recommendations for primary components

- Fit on the model as usual
- Final-mill the primary components in order to perform final adjustment of the path of insertion
- Then rubber-polish and polish

Job creation

Hybrid double crowns and hybrid secondary bar constructions

Job creation in exocad* software for hybrid double crowns

- Create the patient and customer
- Mark the tooth status
- Select "Wirobond® C+ TKS (Hybrid)" as the material for the double crown
- Adjust the parameters for the hybrid technology under "Options & parameters"



Material	
000	· ·
IPS e.max CAD LT (MU)	IPS e.max CAD LT (SU)
IPS e.max CAD MO	KATANA™ Zirconia STML
220	Ponioloyd G
KATANA [™] Zirconia UTML	PontoLloyd® G
Pontolloyd	Pontonocm
PontoLloyd® P	Pontonorm
	Manuel
VarseoWax CAD/Cast⊗	Wirobond® C+
	AT .
Wirobond® C+ TKS	Wirobond® C+ TKS (Hybrid
COMPACT.	

Implant-based?	No implant 👻
Scan a pre-op model?	No
Scan gingiva separately?	No 💌
Design virtual gingiva?	Optional (Wizard mode)
Shrink	Q 0,9 mm ≥
Gap width of cement	0.025 mm
Minimal thickness	€ 0,45 mm
✓ ADVANCED PARAMETERS	
Beginning of cement gap	₹ 2,5 mm
End of cement gap	0 mm 🕨
Add. spacing axial	■ 0,01 mm
Add. spacing radial	< 0,01 mm >
Horizontal crown margin	【 0,2 mm 🕨
Angled crown margin	0 mm 🕨
Angle	90 .
Vertical crown margin	0 mm 🕨
Cross section of connector	9 mm 🕨
Don't block out	🚺 0 mm 🕨
Distance to antagonist	
Milling Diameter	1,2 mm

🗸 ок

Options 8	a parameters	?
Implant-based?	No implant	•

Implant-based?	No implant 🔹
Scan a pre-op model?	No
Scan gingiva separately?	No 🔻
Design virtual gingiva?	Optional (Wizard mode) 🔹
Shrink	0,9 mm 🔰
Gap width of cement	(0,025 mm
Minimal thickness	0,45 mm >
✓ ADVANCED PARAMETERS	
Beginning of cement gap	₹ 2,5 mm >
End of cement gap	0 mm 🔰
Add. spacing axial	(0,01 mm)
Add. spacing radial	【 0,01 mm 】
Horizontal crown margin	0,2 mm 🕽
Angled crown margin	0 mm 🔰
Angle	S 90 · D
Vertical crown margin	0 mm 🔰
Cross section of connector	9 mm 🔰
Don't block out	0 mm 🔰
Distance to antagonist	
Milling Diameter	1.2 mm)

* This symbol is a commercial designation/registered trademark of a company which is not part of the BEGO company group.

Job creation in 3Shape* software for hybrid double crowns

- Create the patient
- Mark the tooth stumps
- Select the desired secondary restoration, e.g., anatomic crown/pontic, anatomically reduced crown/pontic, or standard coping/pontic
- Select "TelescopeSecondaryCoping Wirobond[®] C+ (Hybrid)" as the type for the secondary construction
- Pay attention to the correct material



* This symbol is a commercial designation/registered trademark of a company which is not part of the BEGO company group.

Job creation

Hybrid secondary bar constructions

Job creation in 3Shape* software for hybrid secondary bar constructions

- Create the patient
- Mark the tooth stumps
- Select the required restoration

- Select "Secondary Bar Structure (Hybrid)" as the type for the secondary bar construction
- Pay attention to the correct material



* This symbol is a commercial designation/registered trademark of a company which is not part of the BEGO company group.

Preset parameters

in the CAD software

The preset values are standard values determined by BEGO and can be used as a starting point for calculated customized parameters.

Your CAD software offers you the possibility of making changes to your accuracy of fit settings in order to edit the properties between the primary and secondary component. These settings can be found in exocad* when selecting the material under "Options and Parameters" and in 3Shape* under "Settings/Advanced Settings".

The following parameters have a significant effect on the accuracy of fit between the primary and secondary components.

- Cement line/cement line thickness This is the compensation value beneath the accuracy of fit parameter Distance axial/radial.
- Start of cement line (exocad) This setting is used to preset the frictional surface height.

The activation of the milling radius correction depends on the primary component design. Deactivation can result in increased manual adjustment requirements. In case of transitional edges between the occlusal surface and the crown wall area, activation is recommended.

The parameters must be determined for each of your scanners and the scan spray, as the manual steps can have a significant effect on the accuracy of fit here.

Scanning

The foundations for reliable accuracy of fit

The settings must be selected in the "DETAILS" degree of detail for a 3Shape* scanner.

- Calibrate the scanner
- Open the scanning software and perform the scan
- The high-luster polished primary components need to be sprayed evenly and thinly with a scan spray, for example Diasol Occlusionsspray* or fine-particle sprays from other manufacturers
- Shake the scan spray sufficiently and then spray the crowns evenly and thinly from a distance of approx. 20 cm. The thickness of the layer of scan spray applied has a significant influence on the accuracy of fit parameters. This means that the thicker the layer of scan spray film applied, the broader the secondary construction will be.
- For the individual stump scan, please remove all the scan spray (if it has been smeared when positioning the individual stump) and reapply. This procedure prevents uneven layer thicknesses on the surface, which can result in an imprecise accuracy of fit.



Hybrid secondary crown design

For 3Shape & exocad* software

- Select CAD Button and design the crown as usual
- Upload the construction to the BEGO production center

* This symbol is a commercial designation/registered trademark of a company which is not part of the BEGO company group.

8

Attachments and retentions

3Shape* software

- TK Soft as a hybrid attachment
- Attachments can be found in the specially created "BEGO_Hybrid" group

Sculpt toolkit 2
Attachment settings
Group
BEGO_Hybrid
Attachment
TK-SOFT 🔻
Default orientation
Global direction 👻
✓ One by one
Cut by gingiva
Sculpt on protected surfaces

• New round hole retentions as an attachment in 3Shape. No need to create as a pontic any more!

	Basiselemente + Attachments		
Sculpt toolkit 2	Attachments	Attachments	
	Handle maxillary large A Ratertion_1_Hole Retertion_2_Holes Retertion_3_Holes	ID Name	Configuration_22_Networken2Holes (10 anders) Restantion_2_Holes
Attachment settings	Retention, 4, increas Retention, 5, increas Retention, 6, increas Retention, 7, increas	Vaueller Hodelpfad für Attachment	Visueller Hodelydad für Attachment VIBMVS120V10/35Nope Dental System Configuration/Dental System Control Panel/Bri
Group	Raterbon, 8, Holes	Addtver Hudelpfad für Attachment	Additives Hodelipfad für Attachment UBM/03/20/010/30/aas Dental Svitem Carliaustan/Dental Svitem Carlial Parahites
BEGO_Retention Attachment	 MacAgen Kapleren Sachen Mach stern Mach stern 	Subtraktiver Hodelpfad für Attachment	Subtraktiver Hodelplad für Attachment
Retention_8_Holes	Pageskerk	Standardauenchtung	Enschubichtung -
Default orientation	terre (benerie terre internet)	Zusätzliche Parameter	
Insertion direction 👻	🖉 Papanhark Isanar	Bohrungsdurchmesser	0.00 B
♥ One by one	Details Geant H2 Beneric	Optionale Freiheitsgrade Regen 2 Von Riche verscheben 2 Rutsten um Achee 2	Max, Neegung 00.00 2 Max, Abstand 5.00 2
Cut by gingiva		Skalerung in X-Richtung E Skalerung in Y-Richtung E Skalerung in Z-Richtung E	
Sculpt on protected surfaces		Materialien und Indikation	nen
		I Matarialen	Indiatorien
		El Windend C+ A	C 30 Bite Plate *

Attachments and retentions

exocad* software

- TK Soft as a hybrid attachment is only selectable in the exocad software if the customer has the implant module.
- Round hole retentions are stored as BEGO retentions in the Attachment library under "TKS" > "BEGO Retentions".

BEGO Retention 01.sdfa BEGO Retention 02.sdfa BEGO Retention 03 Gebogen.sdfa BEGO Retention 03.sdfa BEGO Retention 04 Gebogen.sdfa BEGO Retention 04.sdfa BEGO Retention 05 Gebogen.sdfa BEGO Retention 05.sdfa BEGO Retention 06 Gebogen.sdfa BEGO Retention 06.sdfa BEGO Retention 07 Gebogen.sdfa BEGO Retention 07.sdfa BEGO Retention 08 Gebogen.sdfa BEGO Retention 08.sdfa BEGO Retention 09 Gebogen.sdfa BEGO Retention 09.sdfa config.xml retention-kugel.sdfa

- retetion-kegel.sdfa
- retetion-kugelzapfen.sdfa

Note concerning 3Shape* & exocad software:





Follow-up work recommendations

3Shape* & exocad* software

- Accuracy of fit check
- If necessary: Rubber polishing of the inner geometry with rubber polisher rollers
- Prepolishing and final polishing with brushes
- Polishing of the primary component in the handpiece or on the polishing motor up to final accuracy of fit

Veneering recommendations

3Shape & exocad software

- Acrylic veneers only
- A metal primer (e.g., GC Europe*) should be used in case of missing retention pearls on the veneering surface in particular
- Please follow the instructions for use provided by the acrylic veneer supplier precisely



Not all products and services shown are available in all countries.

BEGO Medical GmbH Wilhelm-Herbst-Str. 1 · 28359 Bremen, Germany Phone +49 421 2028-0 · Fax +49 421 2028-174 E-mail info@bego-medical.com · www.bego.com

Always want to have a look at all BEGO news? Sign up for our newsletter here: www.bego.com/newsletter

