

Handling guidelines for NobelProcera™ zirconia copings and frameworks

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May 2009

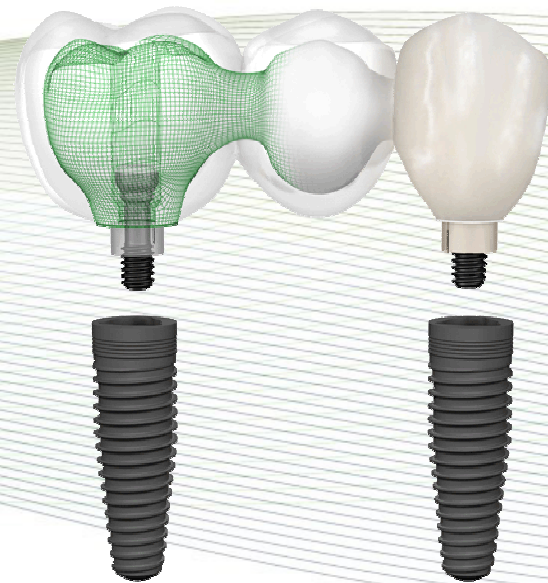


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Current status and rationale

The NobelProcera™ system is one of the most established CAD/CAM systems on the market with in vitro and in vivo scientific documentation.

Rational for handling guidelines are:

- Customers' clinical and laboratory handling of frameworks and restorations has a significant effect on the long-term clinical function and success of NobelProcera restorations.
- Dentists and technicians alike must understand and follow handling guidelines of NobelProcera Zirconia copings and frameworks.

- By providing information and guidelines the complications can be minimized.
- As success is not determined solely by the veneering of a framework, the handling instructions must not be limited to the application of veneering materials, but should also include the appropriate handling of the framework.

These guidelines are based on current scientific findings. Due to ongoing research in the field of Zirconia, certain adaptations of the guidelines may apply in the future.

Impression taking

Final precision of a restoration - both on teeth and implants - is determined by the accuracy of the impression!

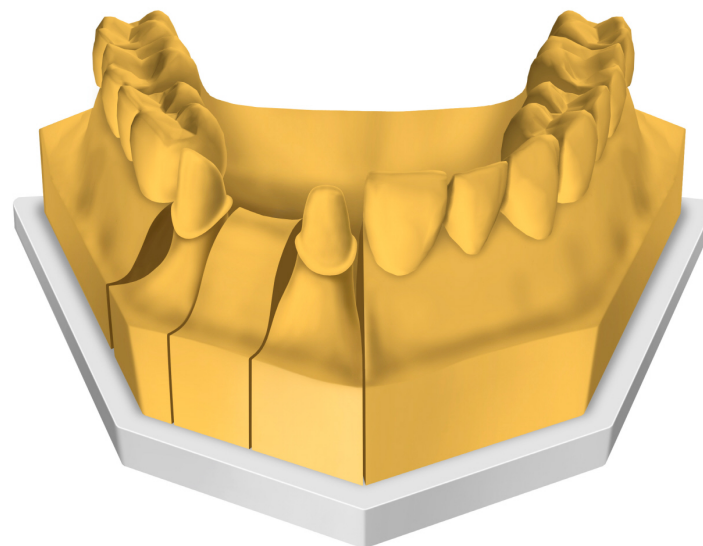
When selecting impression materials addition silicones (A-silicone) or polyether material is highly recommended.



Fabrication of definitive cast

When fabricating a definitive cast the following aspects should be considered:

- Recommended materials (type-4 dental stone)
- Die preparation for scanning according to NobelProcera procedure
- **DO NOT USE** die spacer, due to pre calculated manufacturing cement space
 - Procera tactile scanners - use die hardener for stone model
 - NobelProcera Scanner (Conoscopic Holography laser) – **DO NOT USE** die hardener for stone model, due to it's reflective properties
- Using NobelProcera Scanner – if making a wax-up design an optical scan wax must be used



Tip!
Always handle the manufactured frameworks with care on the cast.

CAD – framework design

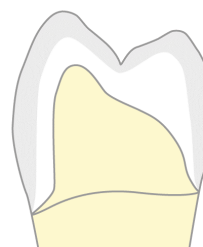
Key framework design benefits of the NobelProcera software

- Virtual design of copings, frameworks and superstructures according to clinical needs and material requirements
- Ideal support of the veneering material through an automated cut-back function for design of the framework
- Extensive loss of sound tooth substance (atypical tooth preparations) can easily be compensated by the framework and must never be substituted using veneering porcelain

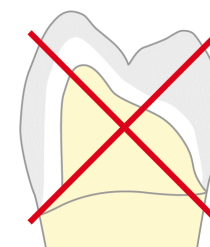
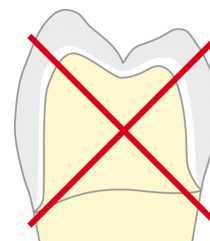
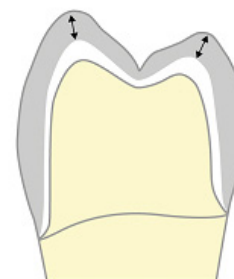
Tip!

Always respect the anatomical form of the final restoration when designing the framework.

Veneering porcelain
Min 1.0mm
Max 2.0mm*



Veneering porcelain
Min 1.0mm
Max 2.0mm*

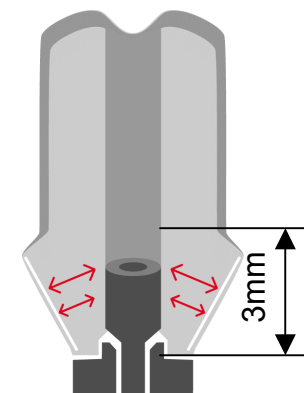


*Tinschert J, Schulze KA, Natt G, Latzke P, Heussen N, Spiekermann H. Clinical behavior of zirconia-based fixed partial dentures made of DC-Zirkon: 3-year results. Int J Prosthodont. 2008 May-Jun;21(3):217-22.

CAD – framework design

Minimum thickness of NobelProcera™ framework

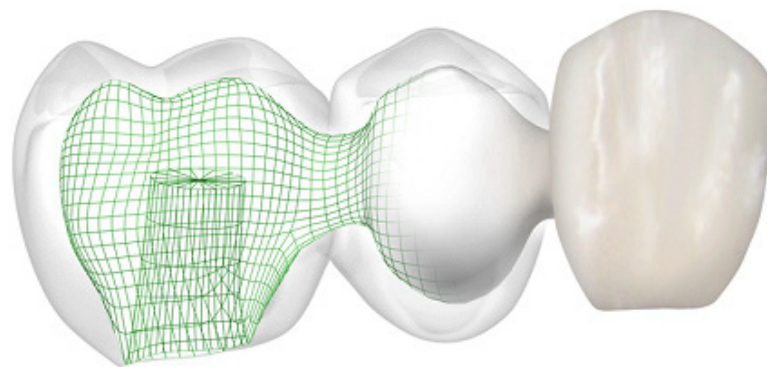
Type of restoration	Location	Min thickness
NobelProcera Crown Zirconia (CAD adjusted)	Anterior	0.4mm
NobelProcera Crown Zirconia (CAD adjusted)	All positions	0.7mm
NobelProcera Bridge Zirconia	All positions	0.6mm
*NobelProcera Abutment Zirconia Replace	All positions	0.8mm
*NobelProcera Abutment Zirconia Brånemark Syst	All positions	0.8mm
NobelProcera Abutment Zirconia NobelActive	Anterior	0.7mm
NobelProcera Implant Bridge Zirconia	All positions	1.0mm



*Minimum required thickness of 0.8mm required in marked areas for NobelProcera™ Abutment Zirconia NobelReplace® and Brånemark System®, up to a height of 3mm above implant level

CAD – framework design

A CAD/CAM oxide ceramic restoration should be virtually designed in a way to minimize adjustments of the fully sintered frameworks, since any type of manual manipulation might increase the risk for damaging the materials.

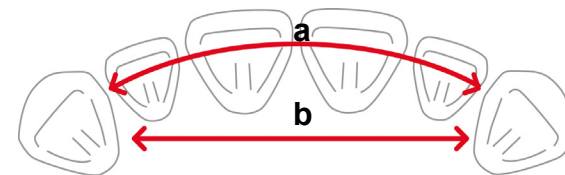


Connector design requirements NobelProcera™ Bridge Zirconia

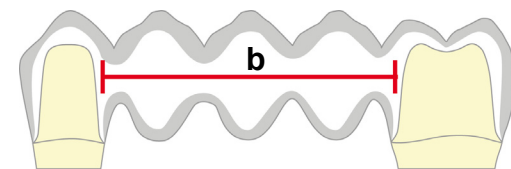


The connector dimension of a multiple unit framework depends on the distance between and the total number of missing teeth being restored.

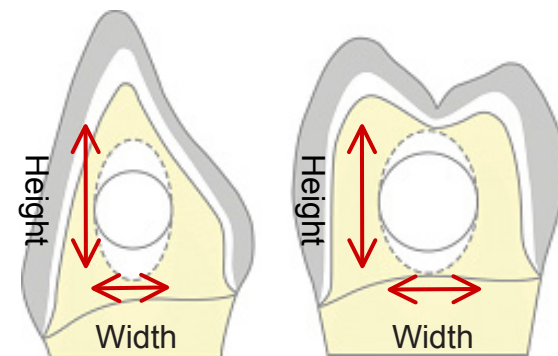
The total bridge design must fit into a disc of a \varnothing 60mm \times H 20mm.
Max one unit cantilever.



Definition of a and b



Missing teeth	Region*	Maximum length a=arch length [mm] b=closest distance [mm]	Minimum connector and cross section height x width [mm] / area [mm ²]
0-2	Anterior	a=b=20	3.0 x 2.5 / 6.0
0-2	Posterior	a=b=20	4.0 x 3.0 / 9.4
3	Anterior	a=28	4.0 x 3.0 / 9.4
3	Posterior	b=28	5.0 x 4.0 / 15.7
4	Anterior	a=30 b=25	4.0 x 3.0 / 9.4
4	Posterior	contraindicated	-



*Anterior region does not include premolars

Values according to in-house testing

Connector design

NobelProcera™ Implant Bridge

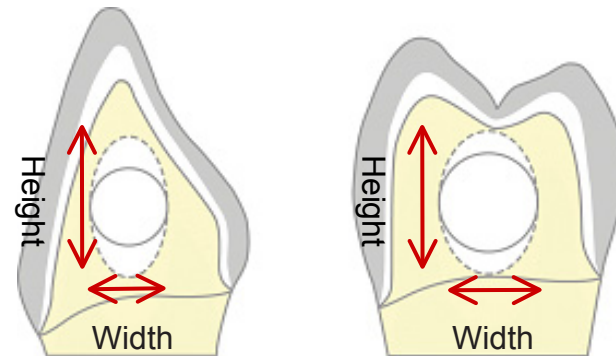


The connector dimension of multiple unit frameworks depends on the total number of pontics between supporting implants.

The total bridge design must fit into a disc of a $\text{Ø } 60 \text{ mm} \times \text{H } 20 \text{ mm}$. Max one unit cantilever.

Pontics Between supporting implants	Region	Minimum connector height x width [mm]
0-2	All	4.0 x 2.5

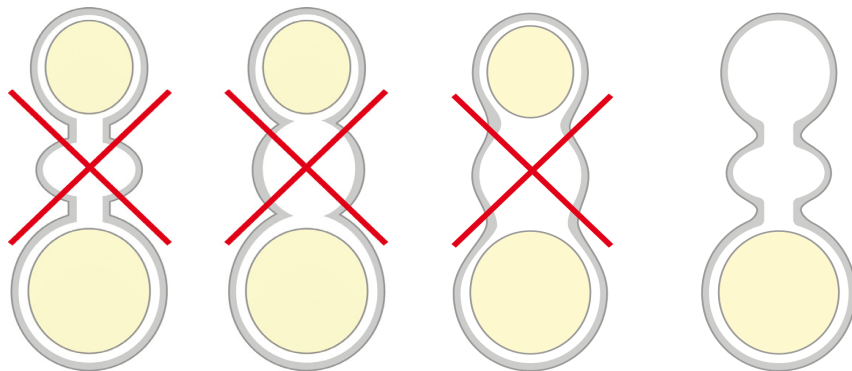
Values according to in-house testing



The minimum cross sectional area must be at least 8mm^2 .

Connector design

When designing the framework sharp line angles and square edges must be eliminated. Rounded edges are recommended.



Adjustments

Framework – marginal design

Do not manually reduce the margin of NobelProcera frameworks after sintering.

Surface treatment

In general any surface alteration after sintering should be avoided.

Adjustments (if necessary)

Apply only light pressure and copious water irrigation (applicable also for adjustments in the dental office)

After grinding, ensure that the framework does not fall below the recommended dimensions

Never use separating disks on sintered crown or bridge frameworks



Tip!

Copious water irrigation is recommended when working on oxide ceramic frameworks.

Adjustments

Proper surface finishing is mandatory if minor adjustments on the sintered frameworks were made.

Surface finishing should always be completed with ultra fine-grained diamond burs applying light pressure and copious irrigation.

Tip!

For additional protocols prior to veneering the frameworks, please follow the recommendations of your veneering porcelain manufacturer.

After adjustments, place the frameworks in an ultra-sonic solution of Iso-Propanol to clean the surfaces from contamination!

Cementation (if conventional cementation is not applicable)



Prior to adhesive cementation the intaglio (retention) surfaces might be cleaned by air-abrasion at 1 bar pressure using 50-110 μ m alumina particles. For adhesive bonding procedures air-abrasion cleans and activates the bonding surface for chemical adhesion when using special zirconia primers or adhesive luting resins.

For details please see NobelProcera™ Cementation Guide.

