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ivoclar

Dental Technical Documentation



SR Vivodent® S PE / S DCL

Exceptional prefabricated teeth in DCL quality



Making People Smile

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Introduction

Nature creates the most beautiful tooth shapes and shades.

This has guided us in the design of the new tooth lines SR Vivodent S PE and SR Vivodent S DCL. These teeth are a futher development of two tooth lines, which have been successfully established in the market for decades.

The demands of dentists, dental technicians and patients on modern denture teeth have risen steadily. It is so important to restore functional aspects because teeth are an expression of personality and give the patient a new zest for life. The tooth line meets these requirements with a wide variety of individually moulded anteriors which help underline the patients' individual appearance.

This documentation serves as a guideline for working with the tooth lines:

- ✓ SR Vivodent S PE / SR Orthotyp S PE
- ✓ SR Vivodent S DCL / SR Orthotyp S DCL



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Stepping Stones to Success

SR Vivodent S PE/S DCL

Each of the 16 upper and eight lower anterior sets were individually designed and moulded in a distinctive appearance and functionality.

SR Orthotyp S PE/S DCL

The SR Orthotyp S PE/S DCL posterior tooth, further developed in four different sizes, displays a modern appearance for the classic tooth-to-two-tooth set-up.

Shades

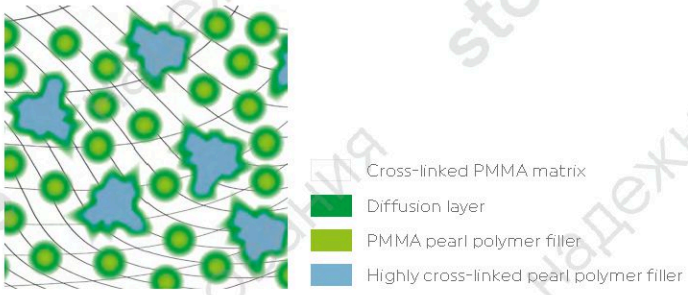
The SR Vivodent S PE/S DCL teeth impress with high levels of esthetics and vitality based on their shade intensity, brilliance and translucency. Responsible for these properties are the four-layered tooth structure and the customized layering scheme used in the manufacture of these teeth.

The 20 PE shades are a popular choice for the fabrication of complete dentures due to their vibrant esthetic properties.

The 16 A–D shades and the 4 Bleach shades are often used in combination dentures.

Material

The anterior and posterior moulds of the SR Vivodent S PE / S DCL tooth lines are produced in a four-layer process. They are constructed entirely of a highly cross-linked DCL polymer (Double Cross-Linked) material, a substantially modified variant of polymethyl methacrylate in which both the polymer and matrix are cross-linked. The DCL material displays a higher compressive strength but a similar flexibility to that of conventional PMMA. It is an ingenious combination from which extended denture longevity can be expected.



Shade guide

Our shade guides are designed to do more than one task. They feature a functional and compact design and come with an integrated facial meter and papillameter. So, tooth shade, tooth size and lip closure line can all be determined using just one nifty tool.



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Indication

Due to the DCL material and the optimal shape of the teeth for prosthetic restorations, both tooth lines are universally applicable:

- in the field of complete dentures
- for implant-supported, removable complete denture restorations
- for partial dentures

Model Orientation

Accessories

The Ivoclar Prosthetic Program allows both individually customized as well as standard removable dental restorations to be fabricated. The following list shows a short overview:





For dental restorations according to average values in the Stratos® 100 or 200	For dental restorations according to individual values in the Stratos® 300
For average model orientation in the Bonwill triangle of the articulator it is necessary to articulate the lower model with the help of the horizontal guide. The horizontal guide allows model orientation of both dentulous and edentulous cases in the Stratos articulator.	Skull-related, individual model orientation in the Stratos 300 is carried out with the UTS 3D transferbow.
In this case the 2D or 2½D setting up template is recommended.	A 3D template should be used for the set-up in conjunction with skull-related model orientation.







The definitive determination of the correct jaw relation is carried out using the intraoral registration device Gnathometer M.

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Application / Processing

Important

The following requirements should be met to ensure that the dentures function correctly in the oral cavity in the long term:

- ✓ Only professional users may process the products.
- ✓ Fabrication in the dental laboratory must be carried out according to the best standard of practice in the dental field.
- ✓ PMMA/composite resin teeth must be steam cleaned, roughened and wetted with monomer to ensure a reliable bond between the tooth and denture base material. It is recommended to apply additional mechanical retention if a self-curing material is utilized to complete the denture.
- ✓ The teeth should not come into contact with direct heat or a flame (e.g. through an alcohol torch).
- ✓ During the grinding process, heat generation due to high grinding pressure must be prevented.
- ✓ Contact with solvents should be avoided.

The dentist should check the following points before beginning the treatment:

1. **Does the patient belong to a risk group, which may generally jeopardize the success of the treatment?**

   a. Are there signs of bruxism (patient>s statements, tooth wear, masseter hypertrophy)?
   b. Are there signs of significantly increased masticatory forces?

   Patients restored with implant-supported restorations have been shown to exert higher masticatory forces than patients with tissue-supported dentures. The increase in these forces is related to the fact that implant-supported restorations are anchored in the bone and therefore lack the sensory receptive feed-back necessary to control these forces. The heightened forces may lead to an increase in chipping in composite teeth. It may therefore be indicated to use PMMA-based denture teeth for these patients.

2. **What type of removable or partially removable restoration should be implemented?**

   All PMMA/composite-based denture teeth are suitable for tissue-supported dentures and partial dentures in patients that do not belong to any of the above risk groups.



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General information

- After the functional impression and registration, the shade is determined with the help of the corresponding shade guide.
- Ideally, tooth shade and shape are selected together with the patient. Anatomical specifications and individual patient wishes can be discussed and taken into consideration.
- The shade, shape, size and position of the teeth can be reconstructed best when previous patient photos are used.

Shade selection

- Shade selection should be performed on the patient under defined light conditions (5500K colour temperature) or in daylight.
- The tooth samples of the SR Vivodent S PE and SR Vivodent S DCL shade guide feature the same layering structure and material as the original teeth. Shade deviations during the shade selection are therefore minimized.

Anterior mould selection

- The multifunctional shade guide enables the operator to determine the tooth size and lip closure line. This is possible with the **facial meter** and the **papilla meter**.
- The three tooth shape characteristics available – triangular, oval and rectangular – represent the most popular natural tooth shapes found in human teeth.
- The classification of sizes S, M and L allow the correct tooth size to be found quickly and easily.
- Even when no information is available regarding size, shape or position of the teeth, the shape can be assumed according to specific reference points on the maxillary model.

Posterior mould selection

The size of the posterior teeth is selected in line with the anterior tooth moulds determined during the preceding stage and the structural anatomy within the mouth. The combination table aids in finding the correct posterior teeth quickly and easily.



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Combination table

		SR Vivodent S PE / S DCL		SR Orthotyp S PE / S DCL (22°)
		Anteriors		Posteriors
		Upper	Lower	Upper/Lower
Small	▲	A22 A42	A3, A4, A5 A3, A4, A5	N3U/N3L, N4U/N4L N3U/N3L, N4U/N4L
	●	A44	A3, A4, A5	N3U/N3L, N4U/N4L
	■	A11 A13	A3, A4, A5 A3, A4, A5, A6	N3U/N3L, N4U/N4L N3U/N3L, N4U/N4L
Medium	▲	A25 A26	A6, A7, A8 A7, A8	N4U/N4L, N5U/N5L N4U/N4L, N5U/N5L
	●	A54	A7, A8	N4U/N4L, N5U/N5L
	■	A12 A24B A66	A6, A7, A8 A6, A7, A8 A6, A7, A8	N4U/N4L, N5U/N5L N4U/N4L, N5U/N5L N4U/N4L, N5U/N5L
Large	▲	A27 A68	A9, A10 A9, A10	N5U/N5L, N6U/N6L N5U/N5L, N6U/N6L
	●	A14	A8, A9	N5U/N5L, N6U/N6L N5U/N5L, N6U/N6L
	■	A15 A17	A10 A9, A10	N5U/N5L, N6U/N6L N5U/N5L, N6U/N6L

This combination table is recommended as a guideline. In case of particular anatomical conditions, deviations are possible.
The offer may vary from country to country.

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Comprehensive model analysis

Marking:
Centre of the incisive papilla

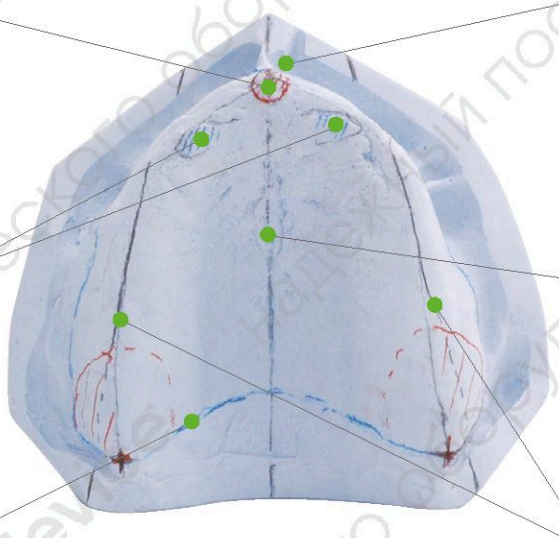
Relevance:
- Anatomical midline of the upper jaw
- Labial positioning of the central incisors

Marking:
First large pair of rugae

Relevance:
Labial positioning of the canine teeth at the tip of the rugae

Marking:
Post dam

Relevance:
Posterior palatal limit of the denture base



Marking:
Deepest point of the vestibule

Relevance:
Starting point for measuring the vertical dimension and the incisal height of the central incisors

Marking:
Palatal suture (raphe palatina), anatomical midline

Relevance:
Reference point for the transversal symmetry of the anterior set-up

Marking:
Crest of the alveolar ridge

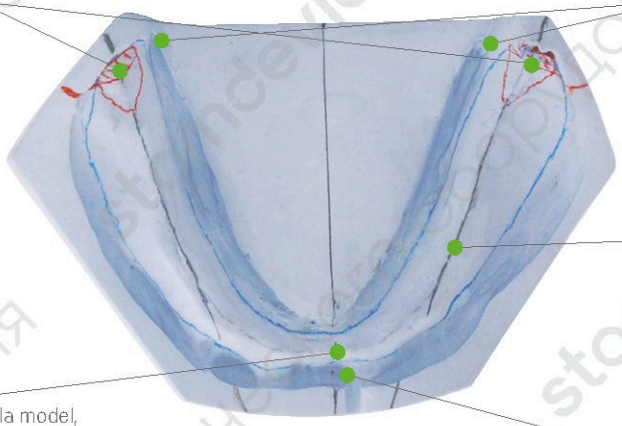
Relevance:
Provides orientation for a static set-up

Marking:
Distal half of the retromolar pad (trigonum retromolare)

Relevance:
- Positioning of the setting up template on the dorsal aspect (corresponds to the height of the occlusal plane)
- Dorsal positioning of the lateral wings of the horizontal guide

Marking:
Model midline transferred from maxilla model, anatomical

Relevance:
- Bilateral orientation for the anterior set-up
- Position of the symphysis fork of the horizontal guide



Marking:
Lingual limit of the retromolar pads

Relevance:
Pound's Line, consideration for tongue space

Marking:
Crest of the alveolar ridge

Relevance:
Course of the central fissure of the posterior teeth (static positioning)

Marking:
Deepest point of the vestibule

Bedeutung:
Starting point for measuring the total vertical dimension

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Anterior set-up

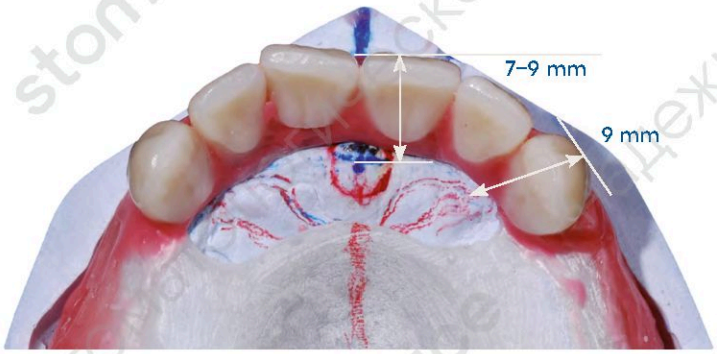
As the dental technician often only has the articulated models as a reference it is essential that the dentist provides as much additional information as possible. In particular the midline, canine line or the width of the nasal base and the smile line.

The incisive papilla provides a reliable reference point for the anterior set-up.

The **central incisors** are aligned with the incisive papilla, if no other information is provided by the dentist (esthetic midline/lip support). In a normal bite situation, the labial surface is positioned approx. 7–9 mm towards the front from the centre of the incisive papilla. The raphe median plane determines the symmetry axis of the anterior set-up in the upper jaw. The course of the incisal edges of the central incisors is determined by half the height of the overall vertical dimension plus a 2 mm overlap.

The position of the **canines** plays a decisive role in achieving a harmonious facial expression. In the dental arch, the canines are positioned in the area of the first large pair of palatine rugae, with the labial surface of the maxillary canines being placed at a distance of approx. 9 mm to the end of the first large pair of palatine rugae. The vertical alignment of the canines significantly influences the curvature of the smile line.

Once the canines are in position, the **lateral incisors** are placed in the space between the central incisors and canines. By slightly rotating or interlacing the lateral incisors, highly individualized effects can be achieved.



The lower canines are set up in relation to tooth 13 and 23. The direct axis of the lower canine points between the upper lateral incisor and the canine.

It is important that the canines are set up without contact to the antagonist teeth, thus providing assured group guiding contact of the posterior teeth.

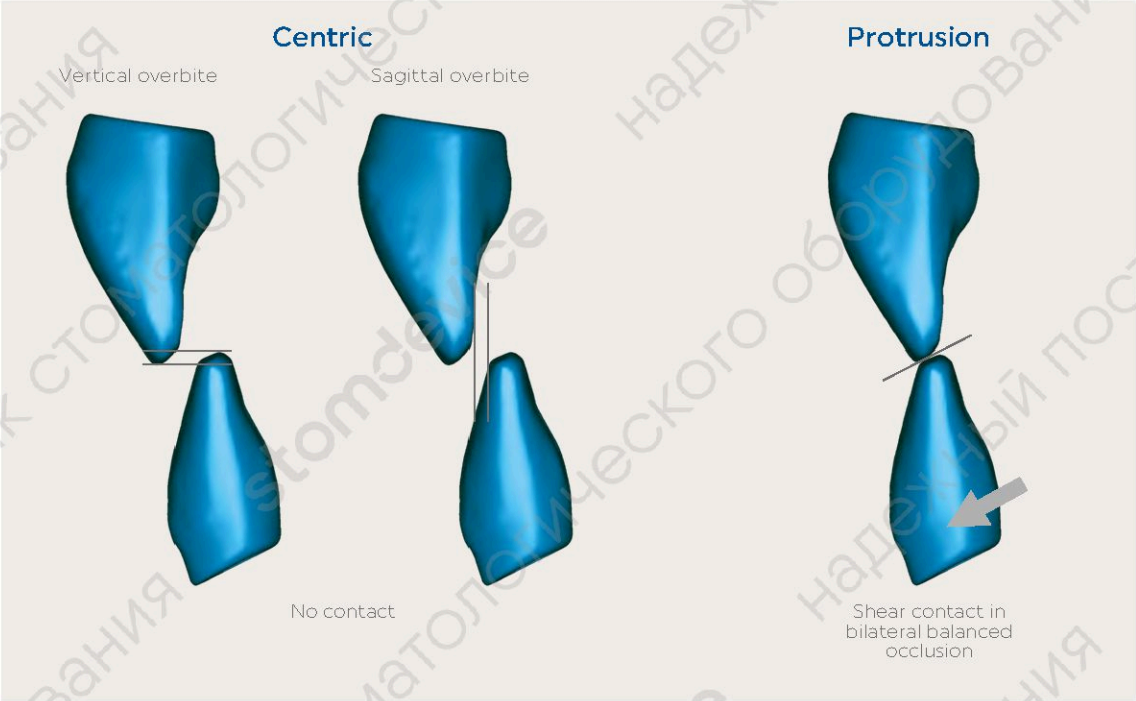
If necessary, the canines can be repositioned. The incisors are set up in the lower anterior arch once the posterior teeth are in position.

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Vertical overbite / horizontal overbite

Guiding contacts during laterotrusion and protrusion are not desirable in the anterior region.

- As an average value, the vertical and horizontal overlap in an anterior set-up should be approx. 0.5 – 1.0 mm.
- The overlap should be designed in such a way that the anterior teeth are prevented from contacting in functioning.
- Too strong anterior contacts during mastication may lead to parafunctions.



The esthetically and prosthetically optimized anterior teeth enable a variety of set-up possibilities due to their characteristics.

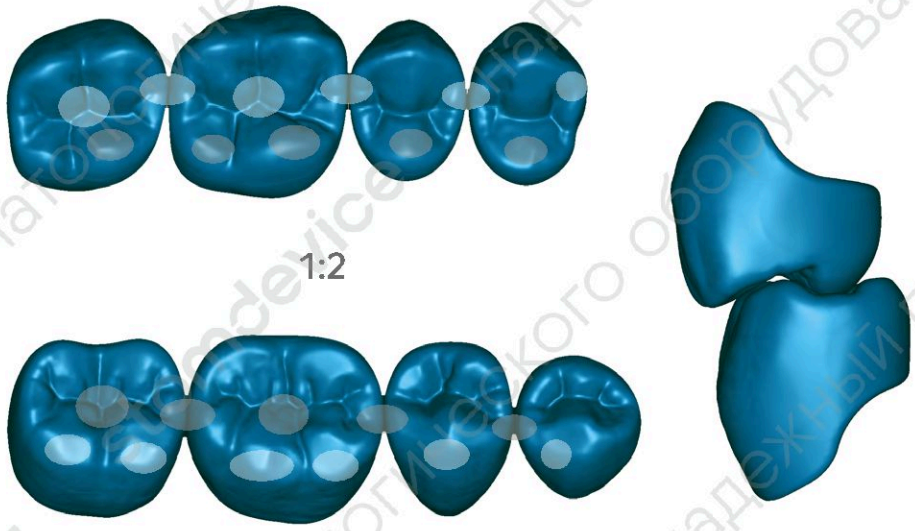


Posterior set-up

The classical occlusion

The Ivoclar Vivadent «Typ» tooth lines are based on the principle of group function of the working and balancing side (latero- and mediotrusion) according to Dr Strack.

They are set up in a one-to-two-tooth relation as in a normal bite situation. Consequently, the primary contacts in the centric position are located in the central fossae of the mandible and on the marginal ridges. The "Typ" moulds are supported by a secondary contact area on the buccal cusps in the mandible.



Posterior mandibular set-up using a template

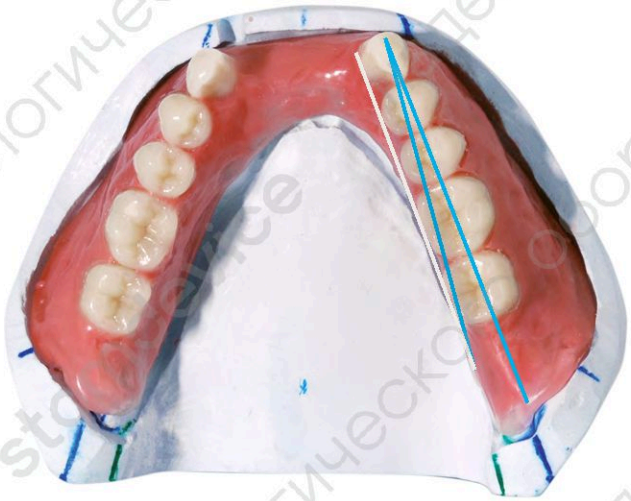
The template ensures that the sagittal curve of Spee and the transversal curve of Wilson are taken into account. Both curves of the natural dentition are essential for bilateral balanced group guidance.



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Align the template with the height of the distal third of the retromolar pad in the posterior region and the height of the distal edges of the mandibular canines in the anterior region.

When viewed from an occlusal perspective, the central fossae of the mandibular posterior teeth are positioned over the crest of the alveolar ridge. The lingual border of the posterior set-up is defined by Pound>s line. Pound's line extends from the mesial corner of the mandibular canine to the lingual border of the trigonum on the same side.



The markings on the template assist in achieving a symmetrical tooth set-up. Begin the set-up of the mandibular teeth by positioning the first premolars, followed by the second premolars, first molars and then second molars.

Ensure that both the buccal cusp tips and mesio-lingual cusps make contact with the template.



Viewed from the buccal side, the axes of the first and second premolars should be aligned perpendicular to the template. The vertical axes of the first and second molars are automatically aligned in the process.



Contacts in the centric position

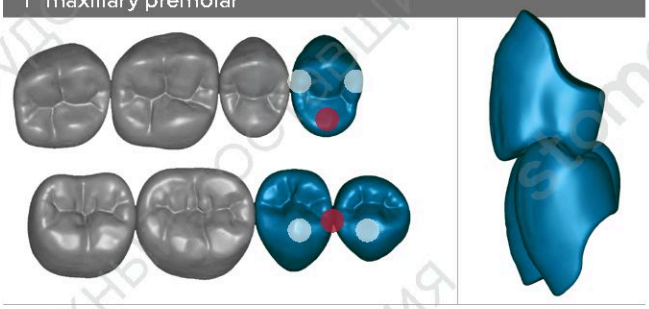
The maxillary teeth can now be aligned with the mandibular teeth in a one-tooth-to-two-tooth relationship to achieve optimum intercuspation.



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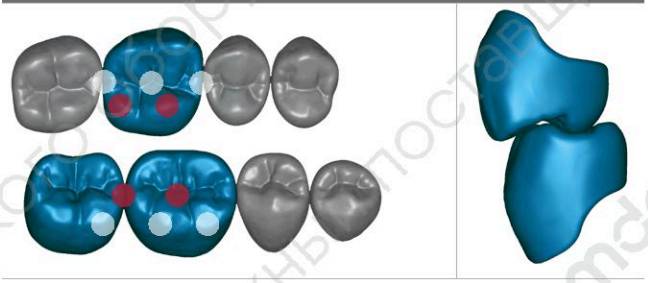
- The palatal working cusp of the maxillary premolars engages the marginal ridges of its antagonist.
- The alignment of the 1st premolar establishes the buccal corridor.

1st maxillary premolar



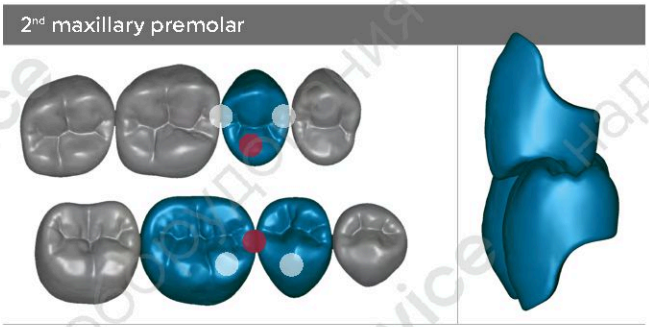
- The mesio-palatal working cusp engages the central fossa of the mandibular 1st molar.
- The distal-palatal working cusp engages the marginal ridge of its antagonist.
- Viewed from the buccal, the mesio-buccal cusp of the maxillary 1st molar points towards the mesio-buccal fissure of its antagonist. This is a typical characteristic of a classic bite with normal intercuspation.

1st maxillary molar



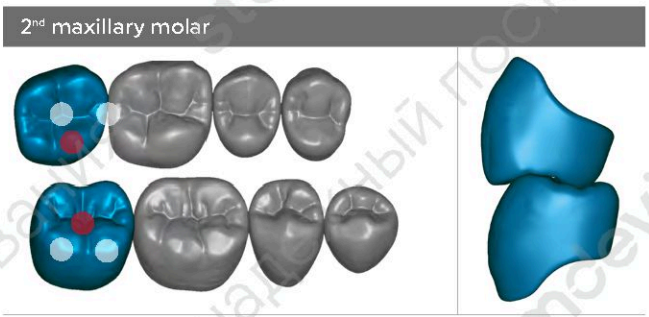
- The palatal working cusp of the maxillary premolars engages the marginal ridges of its antagonist.

2nd maxillary premolar



- The mesio-palatal working cusp engages the central fossa of the mandibular 2nd molar.

2nd maxillary molar



Completion

Gingiva design

Waxing-up the denture is made easier when the teeth are fixed with a hard wax. The rest of the denture body can be modelled with a slightly softer wax which is easier to handle.
The following points must be observed:

Cervical gingival contour

Generally, the gingiva must be designed in such a way that it is easy to keep clean and has a natural appearance. Dominantly modelled curvature of the gingiva (balconies) should be avoided. In particular, there is often an unattractive step in the area between the canine and the first premolar. This occurs when the posterior teeth are too short.

In the maxillary anterior region the gingival margin tends to be higher in the distal area. In the mandible it is at its lowest in the centre.

Minimum layer thickness

The structural integrity and shade effect of the tooth must be preserved. Ensure that the minimum layer thickness is maintained.

- Anterior teeth: min. 2.5 mm
- Posterior teeth: Central fossa min. 2 mm, cusp tips min. 2.5 mm, in the cervical area min. 2.5 mm



Anterior layering



Posterior layering

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Rules of grinding

- **Checking the centric:**
  In complete denture prosthetics, it is generally not recommended to perform major occlusal adjustments prior to processing the denture base.

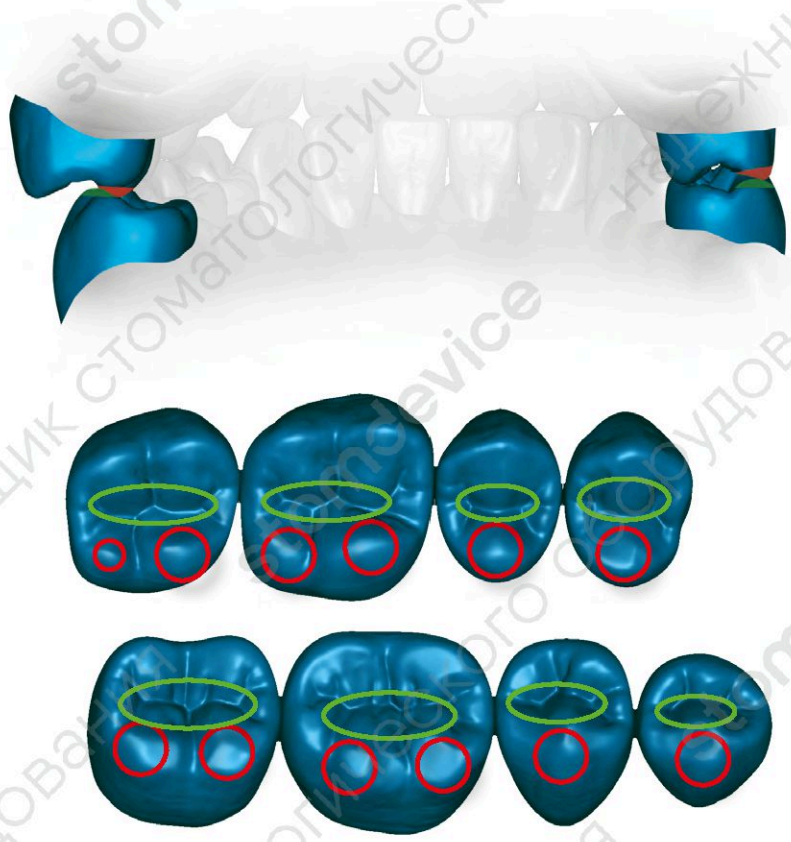
  If there is an increase in vertical dimension this must be corrected prior to removing the polymerized dentures from the model. Make sure the centric lock in the articulator is engaged. Grinding should be performed using the following guidelines:

  - **Do not** adjust the working cusps.
  - Reduce premature contacts in the antagonist fossa.

  If the occlusal height is adjusted, all the centric contacts – as determined by the set-up - must be established.

- **Adjusting functional movement:**
  Relatively large guiding contacts are desirable to ensure a balanced occlusion within the functional range. The following adjustment guidelines are recommended:

  - **Centric contacts:** do not adjust
  - **Working side** (laterotrusion): grind mesio-buccal cusps in the maxilla, lingual cusps in the mandible
  - **Balancing side** (mediotrusion): grind mesio-buccal cusps in the mandible
  - Protrusion: grind disto-buccal cusps in the maxilla, mesio-buccal cusps in the mandible
  - Retrusion: grind mesio-buccal cusps in the maxilla, disto-buccal cusps in the mandible



Areas of adjustment to establish centric contacts: Grind contacts Do not grind

To replicate the abrasion in natural dentition adjust the incisal edges of the anterior teeth in the maxilla from the palatal side and in the mandible from the labial side.

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General Information

Care instructions for the patient

- Thoroughly clean the dentures with a denture brush, soap / toothpaste / non-abrasive denture cleaning paste and warm water every morning and every evening.
- Soaking the dentures in cleaning solution is not sufficient to remove bacteria.
- It is advisable to use an ultrasonic denture cleaner to clean your dentures.
- After each meal, rinse your dentures and your mouth, with the dentures removed, with water.
- Do not soak or clean the dentures in pure alcohol or solvent. Alcohol or solvent may attack the denture base or tooth material and cause white staining.
- Do not use washing-up or dish washing liquid to clean the dentures.
- Never clean your dentures in hot water or in a dishwasher and never boil your dentures.
- Have your dentures professionally cleaned by your dentist if hard deposits have built up on them.

Literature references

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Descriptions and data constitute no warranty of attributes.

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