Technical Information

Straumann® Dental Implant System

Basic Information

straumann

Contents

About this guide

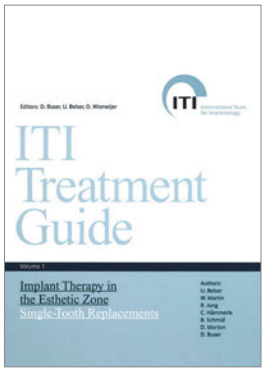
This Basic Information for the Straumann® Dental Implant System provides dental practitioners and related specialists with the essential steps regarding surgical treatment, planning, and procedure.

The manual is divided into the following main parts:
- The Straumann® Dental Implant System
- Preoperative Planning
- Surgical Procedures
- Additional Information on Instruments
- Appendix
- Index

For information on the Straumann® Bone Level Tapered Implant, please refer to the brochure *Straumann® Bone Level Tapered Implant, Basic Information* (490.038/en).

Information on the Straumann® Guided Implants and the Straumann® Guided Surgery System can be found in the brochure *Straumann® Guided Surgery, Basic Information* (152.753/en).

For further information regarding surgical treatment procedures, please refer to the following treatment guides or similar scientific publications:



ITI Treatment Guides
- Volume 1: Implant Therapy in the Esthetic Zone – Single-Tooth Replacements
- Volume 2: Loading Protocols in Implant Dentistry – Partially Dentate Patients
- Volume 3: Implant Placement in Post-Extraction Sites – Treatment Options
- Volume 4: Loading Protocols in Implant Dentistry – Edentulous Patients
- Volume 5: Sinus Floor Elevation Procedures
- Volume 6: Extended Edentulous Spaces in the Esthetic Zone
- Volume 7: Ridge Augmentation Procedures in Implant Patients – A Staged Approach

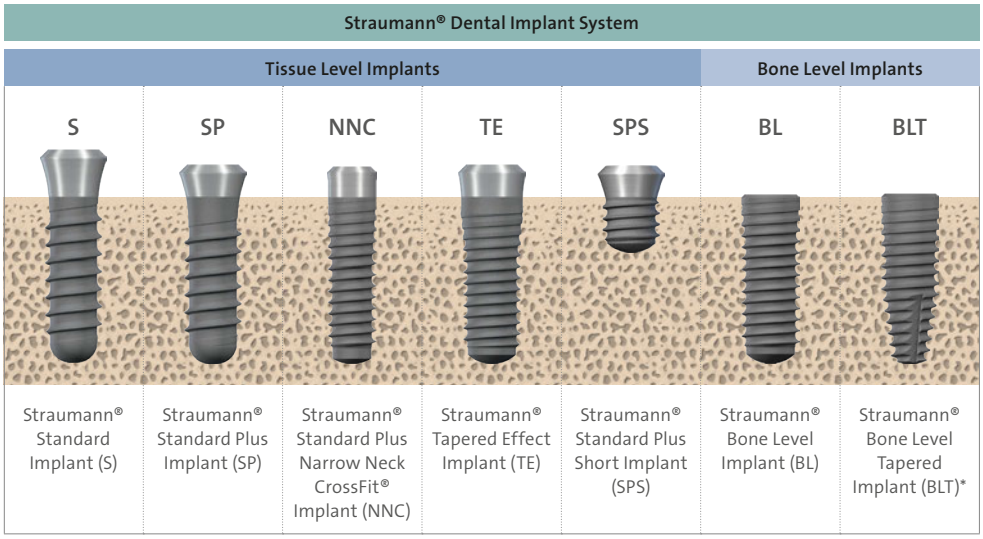
ITI Consensus Paper
Buser D./ Martin W./ Belser U.: Optimizing esthetics for implant restorations in the anterior maxilla :anatomic and surgical considerations. Int J Oral Maxillofac Implants, 2004; 19 Suppl: 43–61.

Additional information on the Straumann® Dental Implant System can be found at www.straumann.com.

1. The Straumann® Dental Implant System

1.1 Overview

The Straumann® Dental Implant System offers six implant lines with diverse body and neck designs, ranging from the classic Tissue Level Implant to the Bone Level Implant and some additional hybrid solutions. All implants can be placed with the instruments from the Straumann® Surgical Cassette while using very similar surgical procedures.



Straumann dental implants are available in four endosteal diameters: ∅2.9 mm, ∅3.3 mm, ∅4.1 mm, and ∅4.8 mm. A unified color code simplifies identification of instruments and implants.

Color coding		
●	blue	Endosteal implant diameter 2.9 mm
●	yellow	Endosteal implant diameter 3.3 mm
●	red	Endosteal implant diameter 4.1 mm
●	green	Endosteal implant diameter 4.8 mm

**For detailed information on the surgical procedure for BLT implants, please consult the brochure Straumann® Bone Level Tapered Implant, Basic Information (490.038/en).*

1.2 Implant lines

1.2.1 Straumann® Standard Implant – The classic Tissue Level Implant

Straumann® Standard Implants have a smooth neck section of 2.8 mm and are especially suitable for classic single-stage procedures, where the implant is placed at soft tissue level and not covered with soft tissue during the healing phase. The Standard Implant uses the Straumann® synOcta® connection together with its corresponding prosthetic components, the Straumann® synOcta® portfolio and the Straumann® Solid Abutment. The thread pitch on the Standard Implants measures 1 mm for the ∅ 3.3 mm implants, and 1.25 mm for all other diameters.

1.2.2 Straumann® Standard Plus Implant – The implant for flexible placement

Straumann® Standard Plus Implants have a shorter smooth neck section of 1.8 mm that allows flexible coronoapical implant placement in combination with trans- or subgingival healing. This offers the dental surgeon additional options that are particularly useful in the anterior tooth region of the maxilla, where esthetic demands are high. Similar to Straumann® Standard Implants, this implant type uses the Straumann® synOcta® connection together with its corresponding prosthetic components, the Straumann® synOcta® portfolio and the Straumann® Solid Abutment. The thread pitch on the Standard Plus Implants measures 1 mm for the ∅ 3.3 mm implants, and 1.25 mm for all other diameters.

1.2.2.1 Straumann® Standard Plus Narrow Neck CrossFit® Implant

The Narrow Neck CrossFit® (NNC) Implant is a 3.3 mm diameter implant with a narrow prosthetic platform. Its internal connection provides expanded prosthetic options and solutions for treatment in the upper and lower jaw, wherever space is limited. The NNC Implant is a Standard Plus (SP) Tissue Level Implant with a machined neck of 1.8 mm in height. With the introduction of Roxolid® material, it was possible to incorporate an internal CrossFit® connection and at the same time, to a strong small-diameter implant – and with this, confidence for the operator. The implant body and thread design is the same as the Straumann® 3.3 mm Bone Level NC Implant. The NNC is available in Roxolid® material with SLActive® surface only. Narrow Neck CrossFit® Implants use the Narrow Neck CrossFit® (NNC) prosthetic components.

1.2.2.2 Straumann® Standard Plus Short Implant

The Straumann® Standard Plus Short Implant is Straumann's shortest implant. The implant features a Standard Plus design for easy oral hygiene in the posterior regions, synOcta® internal connection compatibility with the existing Tissue Level prosthetic portfolio, Bone Level thread to increase the implant-to-bone contact. The most advanced Straumann technology combined with ease of use.

1.2.3 Straumann® Tapered Effect Implant – The implant for immediate placement

Straumann® Tapered Effect Implants have a special anatomical design, which combines a cylindrical shape in its apical region and a conical shape in the coronal region, making this implant particularly suitable for immediate or early implantation following extraction or loss of natural teeth. With the smooth neck section of 1.8 mm, healing can occur trans- or subgingivally. Tapered Effect Implants have a Straumann® synOcta® connection. Hence, the prosthetic components of the Straumann® synOcta® portfolio and the Straumann® Solid Abutment can be used. The thread pitch of 0.8 mm provides excellent primary stability.

1.2.4 Straumann® Bone Level Implant – Straumann expertise applied at bone level

Straumann® Bone Level Implants are suitable for bone level treatments in combination with trans- or subgingival healing. The implant's rough surface extends to the top of the implant and the connection is shifted inwards. The Bone Level Implant uses a conical-cylindrical connection, the CrossFit® connection, together with its corresponding prosthetic CrossFit® components from the Bone Level product portfolio. A cylindrical outer contour and a thread pitch of 0.8 mm, that tapers off in the coronal part of the implant, provide excellent primary stability.

1.2.5 Straumann® Bone Level Tapered Implant

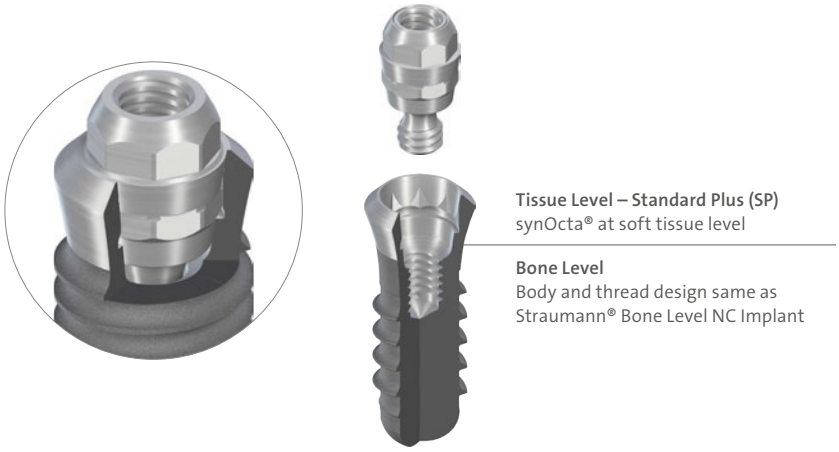
The Straumann® Bone Level Tapered Implant features the Straumann® Bone Control Design™ and the CrossFit® connection together with its corresponding prosthetic CrossFit® components from the Bone Level product portfolio. It has an apically tapered and self-cutting design, making this implant particularly suitable for anatomically and clinically challenging situations like those involving soft bone or fresh extraction sockets where higher initial stability is required.

1.3 Implant-abutment connections

1.3.1 Straumann® synOcta® Morse taper connection

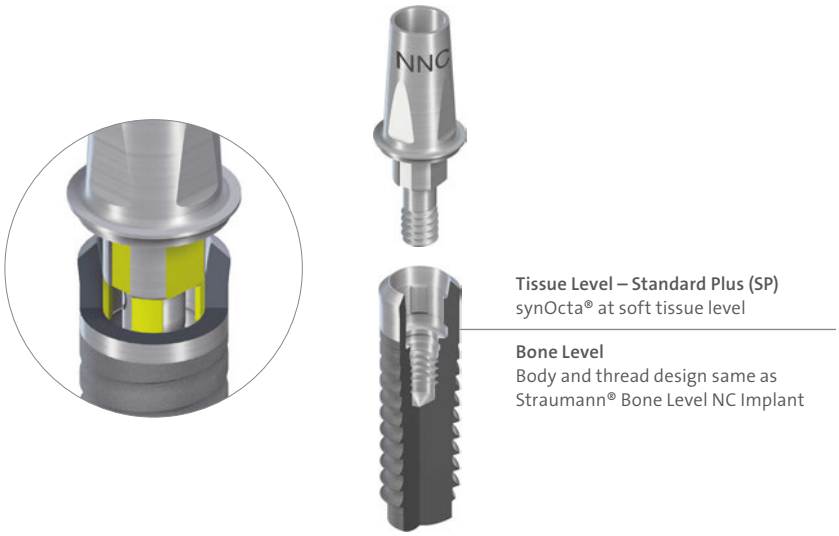
The Straumann® synOcta® concept was introduced worldwide in 1999, using the well-known Morse taper design principle developed in 1986. The mechanically locking friction fit of the Straumann® synOcta® internal connection, with an 8° cone and an octagon for the repositioning of prosthetic parts, shows improved performance over traditional external connections. Abutment loosening, even in screw-retained situations, has virtually been eliminated.

The Straumann® synOcta® connection is available for all Straumann® Standard, Standard Plus, and Tapered Effect Implants with the Regular Neck (RN) and Wide Neck (WN) platform.



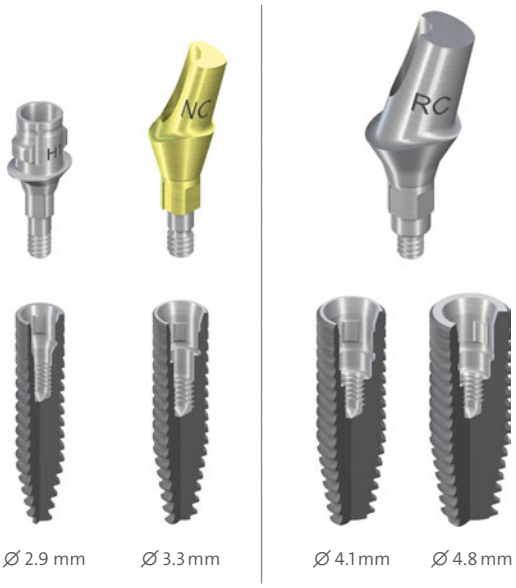
1.3.2 Straumann® Narrow Neck CrossFit® connection

The Narrow Neck CrossFit® (NNC) Implant is a 3.3 mm diameter implant with a narrow prosthetic platform. The NNC Implant is a Standard Plus (SP) Tissue Level Implant with a machined neck of 1.8 mm in height. The implant body and thread design is the same as the Straumann® 3.3 mm Bone Level NC Implant.



1.3.3 Straumann® Bone Level CrossFit® connection

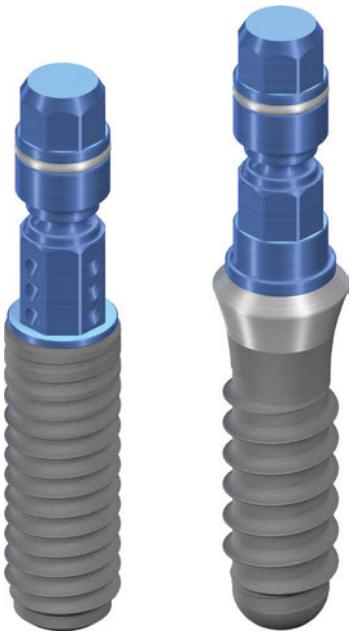
The CrossFit® connection of Straumann® Bone Level Implants applies the know-how and benefits from the Straumann® synOcta® Morse taper connection to the connection requirements at bone level. Similar to the Straumann® synOcta® connection, the mechanically locking friction fit of the 15° conical-cylindrical CrossFit® connection with four internal grooves has excellent long-term stability under all loading conditions and virtually eliminates screw loosening. The CrossFit® connection is available for Straumann® Bone Level Implants only.



Straumann® Bone Level Ø 4.1 mm and Ø 4.8 mm Implants have the same connection, the regular CrossFit® connection (RC), and share the same secondary components. Straumann® Bone Level Ø 3.3 mm Implants feature the narrow CrossFit® connection (NC). Bone Level Tapered Ø 2.9 mm Implants feature the Small CrossFit® connection (SC). The corresponding secondary components are color-coded:

- yellow = NC connection
- magenta = RC connection
- blue= SC connection

Connection types		
NNC: Narrow Neck CrossFit® Ø 3.5 mm	Ø 3.5 mm	
RN: Regular Neck Ø 4.8 mm	Ø 4.8 mm	
WN: Wide Neck Ø 6.5 mm	Ø 6.5 mm	
SC: Small CrossFit®	Ø 2.9 mm	
NC: Narrow CrossFit® Ø 3.3 mm	Ø 3.3 mm	
RC: Regular CrossFit® Ø 4.1 and Ø 4.8 mm	Ø 4.1 mm	Ø 4.8 mm



1.3.4 All our platforms, one handling: The Loxim® Transfer Piece

Pre-mounted Loxim® Transfer Piece for ease of use

- Secures transport into mouth.
- Operates with existing Adapters.

Self-retaining

- Detaches with Adapter after implant insertion.

Small diameter/short

- Easier access to narrow interdental spaces and the posterior region.
- Clockwise and counterclockwise turns.
- Integrated extraction function in case of implant removal (only during implant insertion).

Alignment Pin

- Can be re-inserted into the implant.
- Alignment in multiple implant situations.

Restoration-safe torque stop

- Pre-determined breaking point protects implant connection from a higher than recommended insertion torque.
- Designed for ease of implant restoration.

2. Indications and Contraindications

To obtain more information about indications and contraindications related to each implant, please refer to the corresponding instructions for use. Instructions for use can also be found on www.ifu.straumann.com

2.1 List of abbreviations

List of abbreviations		
SCS	=	Screw Carrying System
HDD	=	Horizontal Defect Dimension
NNC	=	Narrow Neck CrossFit® connection (3.5 mm)
RN	=	Regular Neck (4.8 mm)
WN	=	Wide Neck (6.5 mm)
SC	=	Small CrossFit® connection (for Bone Level Tapered Implants)
NC	=	Narrow CrossFit® connection (for Bone Level Implants)
RC	=	Regular CrossFit® connection (for Bone Level Implants)
S	=	Standard
SP	=	Standard Plus
TE	=	Tapered Effect
BL	=	Bone Level
SPS	=	Standard Plus Short

2.2 Implant specific indications

2.2.1 Straumann Implants

Straumann offers its complete implant portfolio in the material Roxolid®, an alloy composed of titanium and zirconium which offers higher strengths. Both implant lines, Roxolid® and titanium, are available with SLA® and SLActive® surface.

Specific indications for Straumann® Roxolid® Implants

Implant type		Distinctive features	Minimal ridge width*	Minimal gap width**	Available lengths
BLT ∅ 2.9 mm SC Roxolid® SLActive®/SLA®***		• Small-diameter implant for narrow interdental spaces and ridges in the anterior region specifically for upper lateral incisors and all lower incisors.	5 mm	5 mm	10–14 mm
SP ∅ 3.3 mm NNC SLActive®/SLA®***		• Small-diameter implant for narrow interdental spaces and bone ridges	5.5 mm	5.5 mm	8–14 mm
S ∅ 3.3 mm RN SLActive®/SLA®		• Ideal in cases with restricted ridge width	5.5 mm	7 mm	8–16 mm
SP ∅ 3.3 mm RN SLActive®/SLA®					8–14 mm
TE ∅ 3.3 mm RN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • Alternative in dental gaps where the roots of adjacent teeth are close together, where implants with a greater endosteal diameter are contraindicated	7 mm	7 mm	8–14 mm
BL ∅ 3.3 mm NC SLActive®/SLA®		• Small-diameter implant for narrow interdental spaces and ridges	5.5 mm	5.5 mm	8–14 mm
BLT ∅ 3.3 mm NC Roxolid®/Titanium SLActive®/SLA®		• Small-diameter implant for narrow interdental spaces and bone ridges	5.5 mm	5.5 mm	8–16 mm

**Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm*
***Minimal gap width: Minimal mesial-distal gap width for a single-tooth restoration, between adjacent teeth, rounded off to 0.5 mm*
**** Only available in Roxolid®*

Specific indications for Straumann® Roxolid® Implants

Implant type		Distinctive features	Minimal ridge width*	Minimal gap width**	Available lengths
S ∅ 4.1 mm RN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients	6 mm	7 mm	6 – 16 mm
SP ∅ 4.1 mm RN SLActive®/SLA®					6 – 14 mm
SP ∅ 4.1 mm RN SLActive®***		• Open-end situations in the mandible with severely atrophic bone resorption (always splinted, one implant per unit)	6 mm	7 mm	4 mm
TE ∅ 4.1 mm RN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients	7 mm	7 mm	8 – 14 mm
BL ∅ 4.1 mm RC SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients	6 mm	6 mm	8 – 14 mm
BLT ∅ 4.1 mm NC Roxolid®/Titanium SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients	6 mm	6 mm	8 – 16 mm

** Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm*
*** Minimal gap width: Minimal mesial-distal gap width for a single-tooth restoration, between adjacent teeth, rounded off to 0.5 mm*
**** Only available in Roxolid®*

Specific indications for Straumann® Roxolid® Implants

Implant type		Distinctive features	Minimal ridge width*	Minimal gap width**	Available lengths
S Ø 4.8 mm RN SLActive®/SLA® SP Ø 4.8 mm RN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • The S/SP Ø 4.8 mm Implants are especially suited for wider interdental spaces and ridges	7 mm	7 mm	6–14 mm
SP Ø 4.8 mm RN SLActive® ***		• Open-end situations in the mandible with severely atrophic bone resorption (always splinted, one implant per unit)	7 mm	7 mm	4 mm
S Ø 4.8 mm WN SLActive®/SLA® SP Ø 4.8 mm WN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • The S/SP Ø 4.8 mm Implants are especially suited for wider interdental spaces and ridges • S/SP Implants with a WN platform are dsigned for the reconstruction of teeth with a greater neck diameter	7 mm	8.5 mm	6–12 mm
SP Ø 4.8 mm WN SLActive®/SLA® ***		• Open-end situations in the mandible with severely atrophic bone resorption (always splinted, one implant per unit)	7 mm	8.5 mm	4 mm
TE Ø 4.8 mm WN SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • TE Ø 4.8 mm Implants are especially suited for wider interdental spaces and ridges	8.5 mm	8.5 mm	10–14 mm
BL Ø 4.8 mm RC SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • BL Ø 4.8 mm Implants are especially suited for wider interdental spaces and ridges	7 mm	7 mm	8–14 mm
BLT Ø 4.8 mm NC Roxolid®/Titanium SLActive®/SLA®		• For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients • BLT Ø 4.8 mm Implants are especially suited for wider interdental spaces and ridges	7 mm	7 mm	8–16 mm

**Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm*
***Minimal gap width: Minimal mesial-distal gap width for a single-tooth restoration, between adjacent teeth, rounded off to 0.5 mm*
**** Only available in Roxolid®*

3. Preoperative Planning

3.1 Implant position

The implant is the focal point of the dental restoration. It provides the basis for planning the surgical procedure. Close communication between the patient, dentist, surgeon and dental technician is imperative for achieving the desired prosthetic result.

To establish the topographical situation, the axial orientation, and the choice of implants, we recommend the following:

- Make a wax-up/set-up on the previously prepared study cast.
- Define the type of superstructure.

The wax-up/set-up can later be used as the basis for a custom-made X-ray or drill template and for a temporary restoration.

Note: The implant abutments should always be loaded axially. Ideally, the long axis of the implant is aligned with the cusps of the opposing tooth. Extreme cusp formation should be avoided. It can lead to unphysiological loading.

The implant diameter, implant type, position and number of implants should be selected individually, taking the anatomy and spatial circumstances (e.g. malpositioned or inclined teeth) into account. The measurements given here should be regarded as minimum guidelines. Only when the minimum distances are observed is it possible to design the restoration so that the necessary oral hygiene measures can be carried out.

The final hard and soft tissue response is influenced by the position between the implant and the proposed restoration. Therefore, it should be based on the position of the implant-abutment connection. The implant position can be viewed in three dimensions:

- Mesiodistal
- Orofacial
- Coronoapical

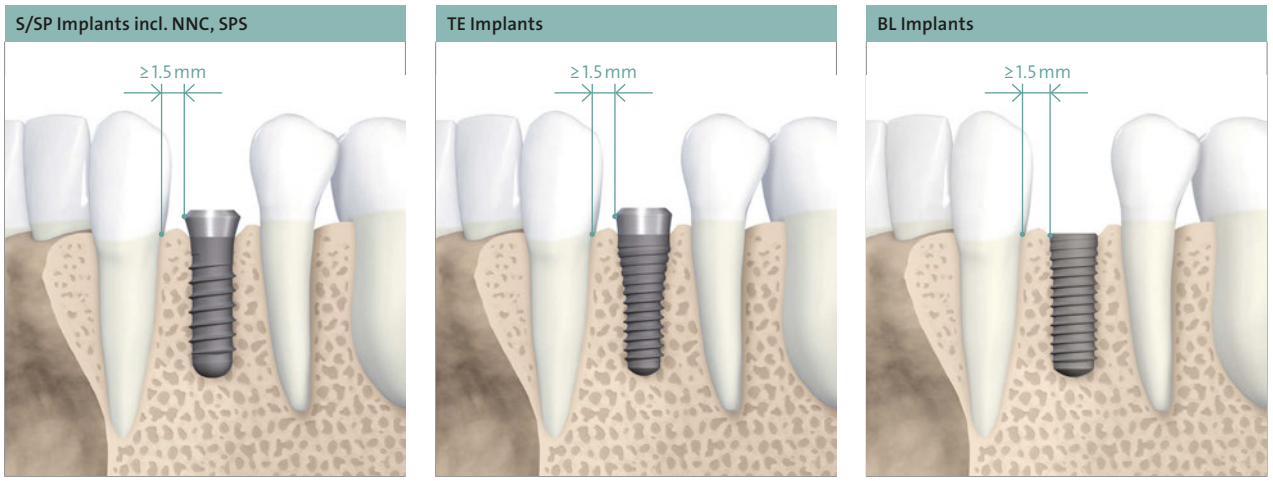
3.1.1 Mesiodistal implant position

The mesiodistal bone availability is an important factor for choosing the implant type and diameter as well as the interimplant distances in the case of multiple implants. The point of reference on the implant for measuring mesiodistal distances is always the shoulder, being the most voluminous part of the implant. Note that all distances given in this chapter are rounded off to 0.5 mm. The following basic rules are recommended:

Rule 1

Distance to adjacent tooth at bone level:

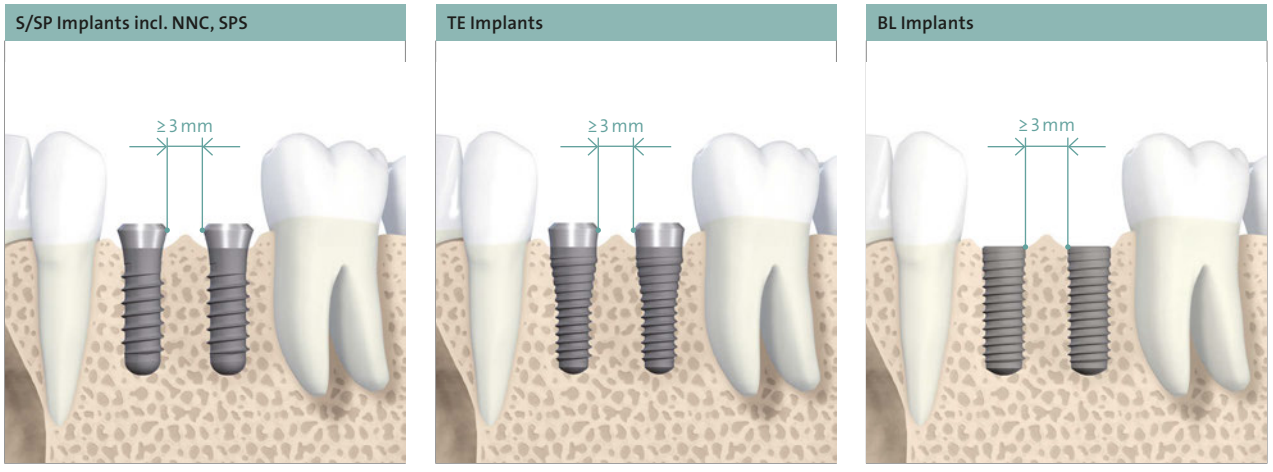
A minimal distance of **1.5 mm from the implant shoulder to the adjacent tooth** at bone level (mesial and distal) is recommended.



Rule 2

Distance to adjacent implants at bone level:

A minimal distance of **3 mm between two adjacent implant shoulders** (mesiodistal) is recommended.

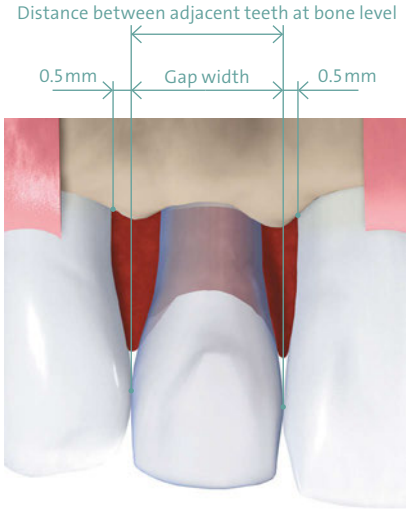


3.1.1.1 Examples for single tooth gaps

For single tooth restoration, the implant is placed centered within the single tooth gap. The following examples show how Rule 1 is implemented.

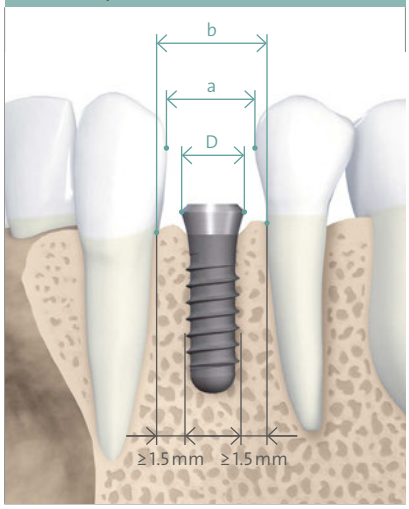
Straumann® Standard, Standard Plus, and Tapered Effect Implants

For Straumann® Tissue Level Implants, the gap size has to be considered for the selection of the shoulder diameter (NNC, RN, WN). In order to make use of the gap width in conjunction with Rule 1, the following approximation can be used.



The distance between adjacent teeth at bone level is approximately 1 mm (2 × 0.5 mm) more than the gap width. Hence, applying Rule 1, the gap width must be 2 mm wider than the implant shoulder.

S/SP/TE Implants



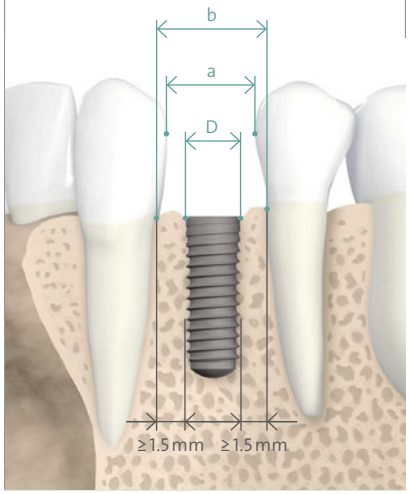
Shoulder diameter D (mm)	Gap width a_{min} (mm)	Distance between adjacent teeth at bone level b_{min} (mm)
Ø 3.5 (NNC)	5.5	6.5
Ø 4.8 (RN)	7	8
Ø 6.5 (WN)	8.5	9.5
Rule	**D + 2 mm**	**D + 3 mm***

** Rule 1 applied on both implant sides*
The Diagnostic T (see page 21), applied in the patient's mouth or on the cast, can be used to obtain an initial measurement of the gap width for the choice of the implant shoulder diameter and prosthetic reconstruction.

Straumann® Bone Level Implants

For Straumann® Bone Level Implants, the distance between adjacent teeth at bone level determines the implant diameter.

BL Implants



Shoulder diameter D (mm)	Gap width a_{min} (mm)	Distance between adjacent teeth at bone level b_{min} (mm)
BL Ø 3.3	5.5	6.5
BL Ø 4.1	6	7
BL Ø 4.8	7	8
Rule	**D + 2 mm**	**D + 3 mm***

** Rule 1 applied on both implant sides*

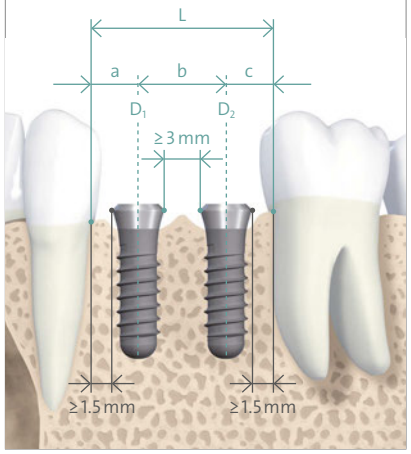
For Straumann® Bone Level Tapered implants, please consult the brochure *Straumann® Bone Level Tapered Implant, Basic Information* (490.038/en).

3.1.1.2 Examples of multiple tooth gaps

The following examples show how Rules 1 and 2 are implemented in multiple tooth gaps. The measurement is made at bone level from the adjacent tooth to the center of the implant and between implant centers. The minimal distance of 3 mm between two adjacent implant shoulders (Rules 2) is important to facilitate flap adaptation, avoid proximity of secondary components and provide adequate space for maintenance and home-care.

Straumann® Standard, Standard Plus, and Tapered Effect Implants

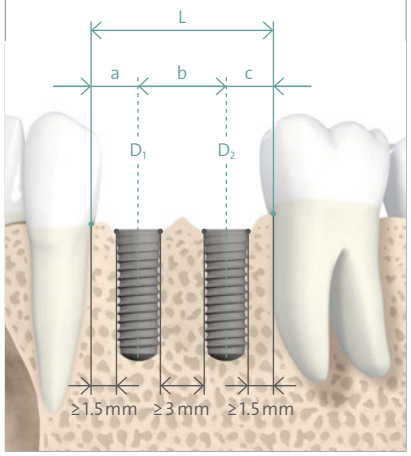
S/SP/TE Implants



Shoulder diameter D1 (mm)	Shoulder diameter D2 (mm)	a_{min} (mm)	b_{min} (mm)	c_{min} (mm)	L_{min} (mm)
Ø 3.5 (NNC)	Ø 3.5 (NNC)	3	6.5	3	12.5
Ø 3.5 (NNC)	Ø 4.8 (RN)	3	7	4	14
Ø 3.5 (NNC)	Ø 6.5 (WN)	3	8	5	16
Ø 4.8 (RN)	Ø 4.8 (RN)	4	8	4	16
Ø 4.8 (RN)	Ø 6.5 (WN)	4	8.5	5	17.5
Ø 6.5 (WN)	Ø 6.5 (WN)	5	9.5	5	19.5

Straumann® Bone Level Implants

BL Implants



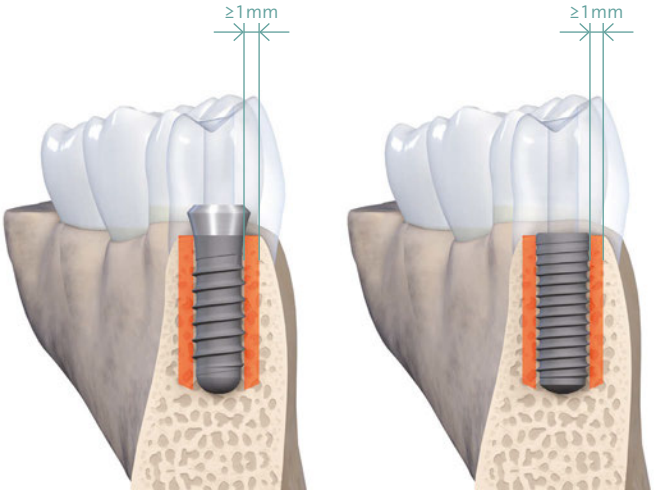
Shoulder diameter D1 (mm)	Shoulder diameter D2 (mm)	a_{min} (mm)	b_{min} (mm)	c_{min} (mm)	L_{min} (mm)
BL Ø 3.3	BL Ø 3.3	3	6.5	3	12.5
BL Ø 3.3	BL Ø 4.1	3	7	3.5	13.5
BL Ø 3.3	BL Ø 4.8	3	7	4	14
BL Ø 4.1	BL Ø 4.1	3.5	7	3.5	14
BL Ø 4.1	BL Ø 4.8	3.5	7.5	4	15
BL Ø 4.8	BL Ø 4.8	4	7.5	4	15.5

For Straumann® Bone Level Tapered implants, please consult the brochure *Straumann® Bone Level Tapered Implant, Basic Information* (490.038/en).

3.1.2 Orofacial implant position

The facial and palatal bone layer must be at least 1 mm thick in order to ensure stable hard and soft tissue conditions. The minimal orofacial ridge widths for individual implant types are given in the indication tables on pages 10. Within this limitation, a restoration-driven orofacial implant position and axis should be chosen such that screw-retained restorations are possible.

Caution: An augmentation procedure is indicated where the orofacial bone wall is less than 1 mm or a layer of bone is missing on one or more sides. This technique should be employed only by dentists who have adequate experience in the use of augmentation procedures.

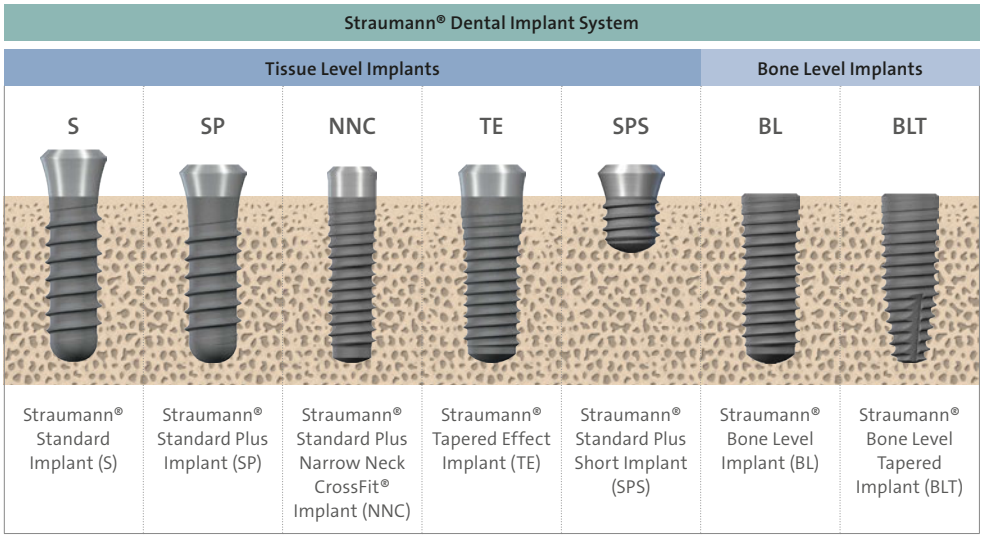


Bone layer at least 1 mm in thickness

Choose the orofacial implant position and axis so that the screw channel of the screw-retained restoration is located behind the incisial edge.

3.1.3 Coronoapical implant position

Straumann dental implants allow for flexible coronoapical implant positioning, depending on individual anatomy, implant site, the type of restoration planned, and preference. In the anterior area, a deeper coronoapical implant position is better for esthetic reasons. In this situation, the use of Straumann® Standard Plus, Tapered Effect or Bone Level Implants is recommended. The following illustration shows the coronoapical implant position for these implants.



Straumann® Standard Implants

Straumann® Standard Implants with a smooth neck section of 2.8 mm are submerged in the bone as far as the margin of the SLA®/SLActive® surface.

Straumann® Standard Plus and Tapered Effect Implants

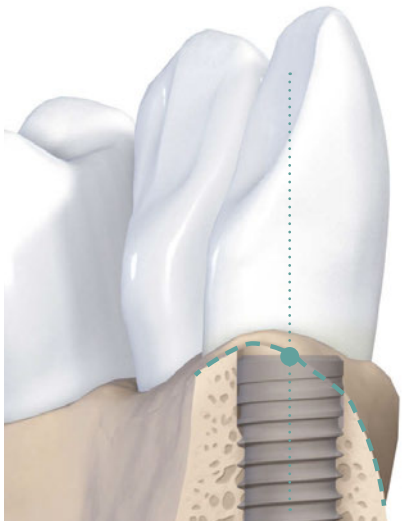
Straumann® Standard Plus and Tapered Effect Implants with a smooth neck section of 1.8 mm are submerged in the bone as far as the margin of the Straumann® SLA®/SLActive® surface. Optionally they can be placed slightly deeper if necessary.

Ideally, in the esthetic region, the implant shoulder should be positioned about 1 mm apical to the cemento-enamel junction (CEJ) of the contralateral tooth or 2 mm subgingival of the prospective gingival margin (see also references on page 20).

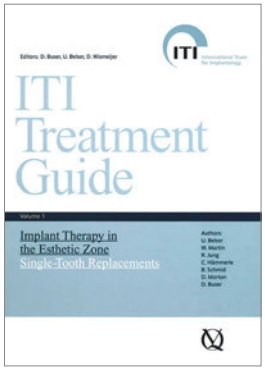
Caution: If a Straumann® Standard Plus or a Tapered Effect Implant is inserted deeper than the margin of the Straumann® SLA®/SLActive® surface, the preparation depth must be increased accordingly (see also page 33).

Straumann® Bone Level Implants
Straumann® Bone Level Implants are best set with the outer rim of the small 45° sloping edge (chamfer) at bone level.

Ideally, in the esthetic region, the implant shoulder should be positioned about 3 – 4 mm subgingival of the prospective gingival margin (see also use of Bone Level transfer part on pages 42 ff.).



In a scalloped situation, place the mesial/distal point of the outer rim of the implant to bone level. The lingual/palatinal wall will then extend slightly over the top line of the implant. The buccal wall is located somewhat below the implant edge.



ITI Treatment Guides
- Volume 1: Implant Therapy in the Esthetic Zone – Single-Tooth Replacements
- Volume 2: Loading Protocols in Implant Dentistry – Partially Dentate Patients
- Volume 3: Implant Placement in Post-Extraction Sites – Treatment Options
- Volume 4: Loading Protocols in Implant Dentistry – Edentulous Patients
- Volume 5: Sinus Floor Elevation Procedures
- Volume 6: Extended Edentulous Spaces in the Esthetic Zone
- Volume 7: Ridge Augmentation Procedures in Implant Patients – A Staged Approach

ITI Consensus Paper
Buser D./ Martin W./ Belser U. :Optimizing esthetics for implant restorations in the anterior maxilla :anatomic and surgical considerations. Int J Oral Maxillofac Implants, 2004; 19 Suppl: 43–61.

Additional information on the Straumann® Dental Implant System can be found at www.straumann.com.

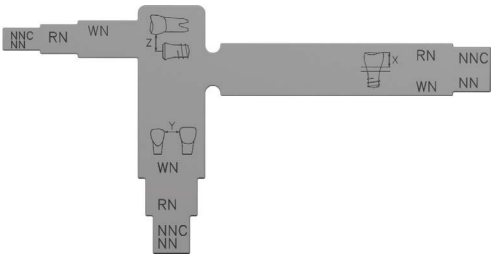
3.2 Planning aids

3.2.1 Mesiodistal and orofacial space requirements

3.2.1.1 Diagnostic T for Straumann® Standard, Standard Plus, and Tapered Effect Implants

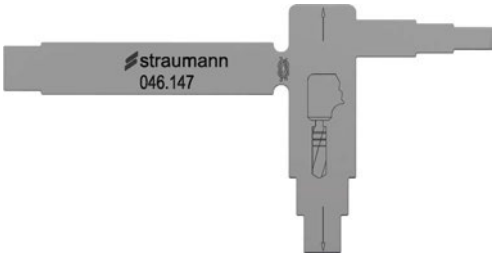
By using the Diagnostic T in the patient's mouth or on the cast, an initial impression of the spatial relations for the choice of the implant shoulder diameter and prosthetic reconstruction can be obtained. The pictograms on the instruments show which arm is used for which measurement. The use of additional planning methods, such as the use of a drill template (see page 27), is recommended.

Note: Currently, a Diagnostic T for Straumann® Bone Level Implants is not available.

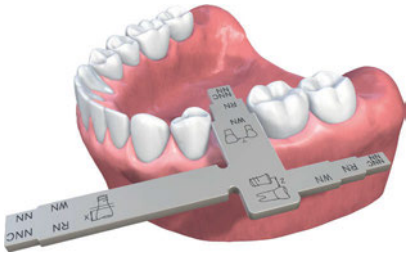


X = Minimum occlusal space requirement
(for the lowest prosthetic restoration option)
Y = Interproximal distance (gap width)
Z = Implant center to adjacent tooth (½ the gap width)

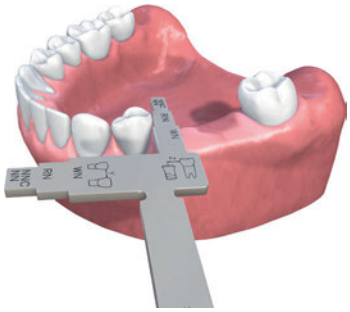
Implant shoulders:
NNC = Narrow Neck CrossFit® (Ø 3.5 mm)
RN = Regular Neck (Ø 4.8 mm)
WN = Wide Neck (Ø 6.5 mm)



Minimum vertical space requirement for access with surgical instruments



Determining the implant shoulder diameter in a single tooth gap



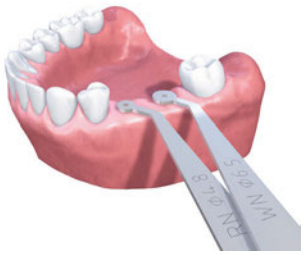
Determining the minimal distance between implant axis and adjacent teeth

3.2.1.2 Straumann® Implant Distance Indicator

Two types of Implant Distance Indicators are available:

- For Straumann® Standard, Standard Plus and Tapered Effect Implants (Art. No. 046.148)
- For Straumann® Bone Level Implants (Art. No. 026.0901)

The discs of the Implant Distance Indicators display the shoulder diameters of Straumann implants. The Implant Distance Indicators can be used to check the available space before the start of treatment or intraoperatively to mark the desired implant site.



Intraoperative use of the Implant Distance Indicator before flap opening

Round Bur, ∅ 1.4 mm

Needle Drill, ∅ 1.6 mm

After flap opening and precise positioning of the disc(s) at the planned implantation site, it is possible to drill through the perforation in the disc(s) with the Round Bur ∅ 1.4 mm (Art. No. 044.022) or the ∅ 1.6 mm Needle Drill (Art. No. 026.0054) in order to mark the center of the implant bed.

Implant Distance Indicator for Straumann® Standard, Standard Plus, and Tapered Effect Implants

Straumann® Implant Distance Indicator for Straumann® Standard, Standard Plus and Tapered Effect Implants (Art. No. 046.148)

	Leg label	Disk diameter	Corresponding implants
Leg 1	RN ∅ 4.8	∅ 4.8 mm	all Regular Neck (RN) Implants
Leg 2	RN ∅ 4.8	∅ 4.8 mm	all Regular Neck (RN) Implants
Leg 3	NNC ∅ 3.5	∅ 3.5 mm	all Narrow Neck CrossFit® (NNC) Implants
Leg 4	WN ∅ 6.5	∅ 6.5 mm	all Wide Neck (WN) Implants

Implant Distance Indicator for Straumann® Bone Level Implants and Bone Level Tapered Implants

Art. No. 026.0901

Alternative Leg:
Art. No. 025.0044

	Leg label	Disk diameter	Corresponding implants
Leg 1	BL ∅ 4.1	∅ 4.1 mm	Bone Level Implants, Bone Level Tapered Implants ∅ 4.1 mm
Leg 2	BL ∅ 4.1	∅ 4.1 mm	Bone Level Implants, Bone Level Tapered Implants ∅ 4.1 mm
Leg 3	BL ∅ 3.3	∅ 3.3 mm	Bone Level Implants, Bone Level Tapered Implants ∅ 3.3 mm
Leg 4	BL ∅ 4.8	∅ 4.8 mm	Bone Level Implants, Bone Level Tapered Implants ∅ 4.8 mm
Alternative Leg*	BL ∅ 2.9	∅ 2.9 mm	Bone Level Tapered Implants ∅ 2.9 mm

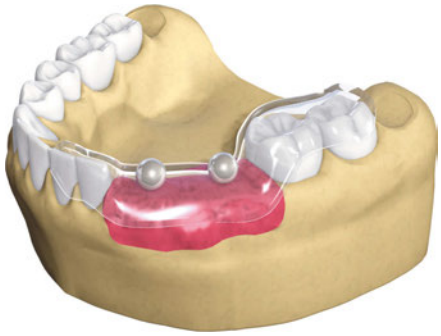
**One of the disks delivered with the article 026.0901 can be replaced by the BL ∅ 2.9 disk, article 025.0044.*

3.2.2 Determining the vertical bone availability

The vertical bone availability determines the maximal allowable length of the implant that can be placed. To make it easier in determining the vertical bone availability, the use of an X-ray Template with X-ray Reference Spheres is recommended.

3.2.2.1 X-ray Reference Sphere

The X-ray Reference Sphere (Art. No. 049.076V4) has a diameter of 5 mm. The image of the sphere on the X-ray provides the reference value for the magnification scale. To prepare a reference sphere carrying template, the selected implant positions are marked on the study cast. The X-ray Reference Spheres are fixed at the marked points. The vacuum-formed template is then made with the spheres. The subsequent X-ray shows the vertical bone availability and mucosal thickness, from which the corresponding implant length and type can be derived, in consideration of the enlargement factor.



Warning: Adhere to production requirements of the holding template and ensure that the X-ray Reference Sphere is securely fixed within the holding template.

3.2.2.2 X-ray Templates

The X-ray Templates are used for measurement and comparison. They also assist the user in selecting the suitable implant type, diameter and length. The following X-ray Templates are available:

- For Straumann® Standard and Standard Plus Implants (Art. No. 150.215)
- For Straumann® Tapered Effect Implants (Art. No. 150.230)
- For Straumann® Bone Level Implants (Art No. 150.216)

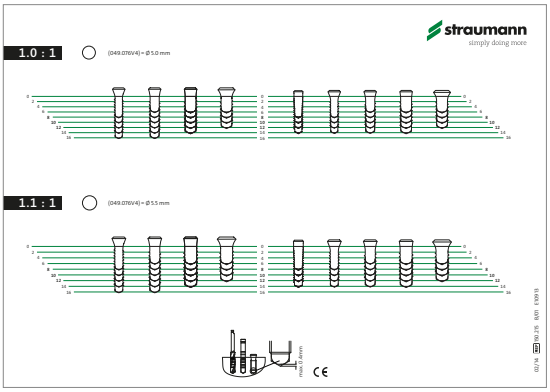
Similar to the distortions that occur in X-rays, the implant dimensions are shown on the individual templates with the corresponding distortion factors (1:1 to 1.7:1).

Determining each magnification factor or scale is facilitated by showing the X-ray Reference Sphere on the template (next to the scale reference).

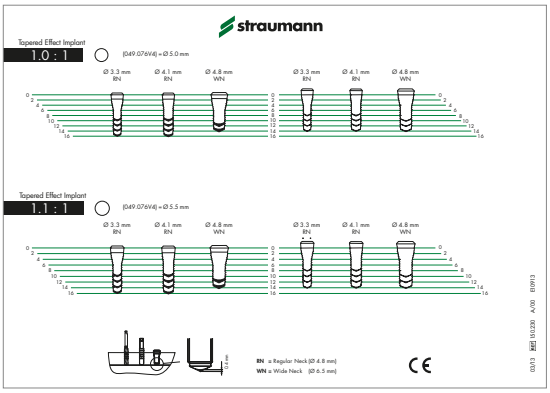
The first stage consists of comparing the size of the X-ray Reference Sphere on the patient's X-ray with the size of the reference sphere on the template. By superimposing the two pictures, the correct scale can be found. Then, the spatial relations around the implant position are determined and the implant length and insertion depth are established.

Warning: Use only the X-ray Template specific to the implant type.

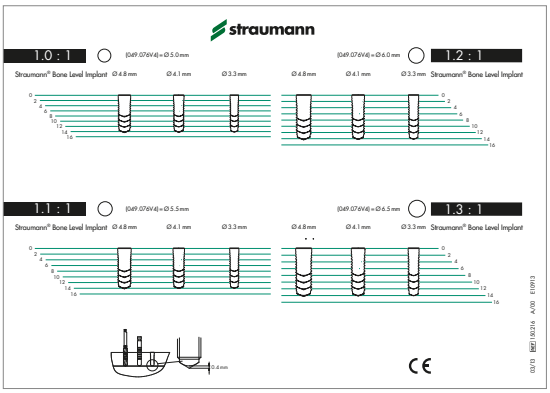
Example: scale 1.1:1 = reference sphere ∅ 5.5 mm



X-ray Template for Straumann® Standard and Standard Plus Implants (Art. No. 150.215)



X-ray Template for Straumann® Tapered Effect Implants (Art. No. 150.230)



X-ray Template for Straumann® Bone Level Implants (Art. No. 150.216)

To calculate the effective bone availability the following formula should be used:

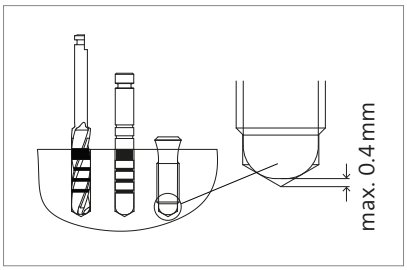
$$\frac{\text{X-ray Reference Sphere 5 mm} \times \text{bone availability (X-ray*)}}{\text{Reference sphere diameter on the X-ray}} = \text{effective bone availability}$$

* Taking into consideration all implant-related anatomic structures (e.g. mandibular canal, sinus maxillaris, etc.)

Example for a measured bone availability and reference sphere diameter on the X-ray of 13 mm and 6 mm (+ 20 % distortion), respectively.

$$\frac{5\,\text{mm} \times 13\,\text{mm}}{6\,\text{mm}} = 10{,}8\,\text{mm}$$

Additional length of the drill tip:



Warning: Due to the construction and function of the drills, the drill tip is a maximum of 0.4 mm longer than the implant insertion depth. This additional length must be taken into consideration during the planning phase.

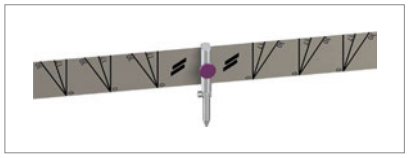
3.2.3 Planning the implant angulation using the Straumann® Pro Arch Guide

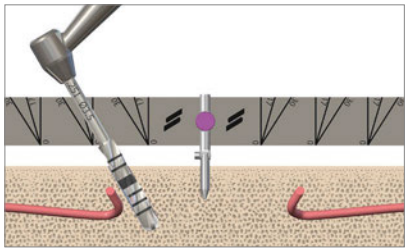
The Straumann® Pro Arch Guide is used for visual and three-dimensional orientation of the implant angulation (mesial/distal) and oral parallelization. The Straumann® Pro Arch Guide is used in edentulous jaws for surgical implant placement.

The template of the Straumann® Pro Arch Guide can be easily bent to adapt to the dental arch. It is secured by drilling into the symphysis with a ∅ 2.2 mm Pilot Drill and a pin in the jaw. The drilling depth for the bone cavity of the pin is 10 mm. The drilling depth can be checked optically using the depth markings on the drills or using the optional depth stop system.

NC		
Material	TAN	TAN
Angle	17°	30°
∅ (mm)	4.6 mm	4.6 mm
GH (mm)	2.5 mm 4.0 mm	2.5 mm 4.0 mm

RC		
Material	TAN	TAN
Angle	17°	30°
∅ (mm)	4.6 mm	4.6 mm
GH (mm)	2.5 mm 4.0 mm	2.5 mm 4.0 mm





Product description

The Straumann® Pro Arch Guide is used in edentulous jaws for surgical implant placement. The template of the Straumann® Pro Arch Guide can be easily bent to adapt to the dental arch. It is secured by drilling into the symphysis with a ∅ 2.2 mm Pilot Drill and a pin in the jaw. The drilling depth for the bone cavity of the pin is 10 mm. The drilling depth can be checked optically using the depth markings on the drills or using the optional depth stop system.

The slider is used to position the template for drilling. Drill the implant sites according to the surgical protocol. Each drill is aligned parallel to the template surface and at the implantation angle. Make sure the Guide is properly assembled, clean and sterile. Never use potentially contaminated components.

Warnings and precautions:

The following precautions are to be met prior to or during treatment:

- Position the patient in such a way that the danger of aspirating components is minimized. All components that are used intraorally must be secured against aspiration or swallowing.
- Do not use damaged or blunt instruments. Always inspect instruments before use.
- If the laser markings are illegible, the device must be replaced.
- Do not use more than 20 times.

For guidelines for the sterilization of the Straumann® Pro Arch Guide, please refer to the brochure *Surgical and Prosthetic Instruments, Care and Maintenance* (152.008/en).

3.2.4 Surgical drill template

A custom-made drill template facilitates planning and preparation of the implant bed and enables precise use of the cutting instruments. The planning basis for fabricating this template should be the desired prosthetic result.

A conventional surgical drill template can be produced with the vacuum-formed template components.

The 10mm-long metal pin functions as the X-ray Reference Pin.
After the X-ray Reference Pin is integrated into the template,the planned implant axis and position become visible on the X-ray.

The Drill Sleeve is then secured in a drill template.

Note: For further information, see *Fabrication and Use of an Individual Drill Template* (152.290/en), where two fabrication methods are shown gradually in step-by-step instructions.

4. Surgical Procedures

4.1 Implant bed preparation

The implant diameter, implant type, position and number of implants should be selected individually taking the anatomy and spatial circumstances into account. The specific measurements should be regarded as minimum guidelines.
Note that for Straumann® Bone Level Tapered Implants the basic implant bed preparation depends on bone class. Please consult the brochure *Straumann® Bone Level Tapered Implant, Basic Information* (490.038/en).

Steps	Instrumentation	
1. Basic implant bed preparation		
Ridge preparation	Needle Drill Round Bur	
Twist drilling	Pilot Drill 1 (2.2 mm) Alignment Pin Pilot Drill 2 (2.8 mm) Depth Gauge Twist Drill PRO (Ø 3.5 mm) Depth Gauge Twist Drill PRO (Ø 4.2 mm) Depth Gauge	
2. Fine implant bed preparation		
Profile drilling	SP Profile Drill	BL/NNC Profile Drill TE Profile Drill
Tapping	S/SP Tap	BL/TE/NNC Tap

Basic implant bed preparation involves ridge preparation and twist drilling. For Twist Drilling, the endosteal diameter of the implant (3.3/4.1/4.8 mm) – not the implant type or the bone class – determines which instruments have to be used.

Fine implant bed preparation involves profile drilling and tapping. For tapping, the implant type (S/SP/TE/BL) and the bone class determine which instruments have to be used, with exception of the NNC and SPS Implants that require a BL Tap.

Please note: Narrow Neck CrossFit® and SP Short Implants have a Standard Plus design, but both implant types require a Bone Level tapping.

4.1.1 Basic implant bed preparation

After opening the gingiva, the basic implant bed preparation begins with preparing the alveolar ridge (Step 1) and marking the implantation site with a Round Bur or a Needle Drill (Step 2). After that, the implant bed preparation with Pilot Drills and Twist Drills follows (Step 3–7), according to the endosteal implant diameter chosen in the preoperative planning (see Chapter 3).

1

Step 1 – Prepare the alveolar ridge

Carefully reduce and smooth a narrow tapering ridge with a large Round Bur. This will provide a flat bone surface and a sufficiently wide area of bone.

Note: When choosing the implant length, the vertical reduction of the bone has to be considered.

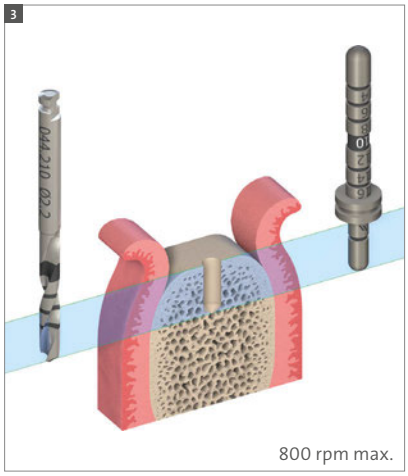
2

Step 2 – Mark the implantation site

Mark the implantation site determined during the implant position planning with the ∅ 1.4 mm Round Bur or the ∅ 1.6 Needle Drill. The Implant Distance Indicator can be used for that purpose (see pages 22 ff.). If the Distance Indicator is used together with the Needle Drill to mark the implant position, make sure not to drill more than 3 mm in order to avoid any collision between the Needle Drill and the Distance Indicator.

Widen and correct the position of the mark with the ∅ 2.3 mm or the ∅ 3.1 mm Round Bur, if necessary.

3



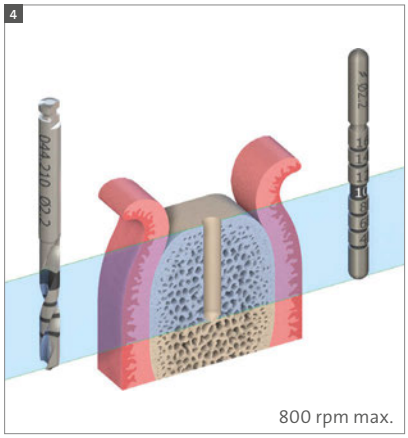
Step 3 – Mark the implant axis
With the ∅ 2.2 mm Pilot Drill, mark the implant axis by drilling to a depth of about 6 mm – except for 4 mm SPS Implants, where the drilling depth must not exceed 4 mm.

Insert the short side of the Depth Gauge with the Implant Distance Indicator to check for correct implant axis orientation.

If necessary, correct unsatisfactory implant axis orientation in the following step.

Note: The Implant Distance Indicator visualizes the shoulder diameter of 4.8 mm (RN) and enables checking of the probable position of the implant shoulder.

4

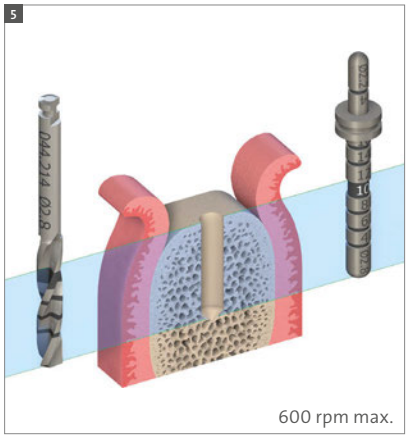


Step 4 – Prepare the implant bed to ∅ 2.2 mm
Pre-drill the implant bed to the final preparation depth with the ∅ 2.2 mm Pilot Drill.

Use the ∅ 2.2 mm Alignment Pin to check the implant axis and preparation depth.

Caution: At this point take an X-ray, particularly with vertically reduced bone availability. The Alignment Pin is inserted into the drilled area, which allows a comparative visualization of the drill hole in relation to the anatomical structures.

5

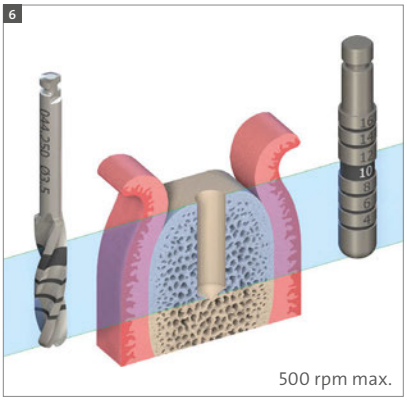


Step 5 – Widen the implant bed to ∅ 2.8 mm
Continue with the implant bed preparation.

If necessary, correct the implant position with the ∅ 2.8 mm Pilot Drill. Use the ∅ 2.8 mm Depth Gauge to check the preparation depth.

For an implant with an endosteal diameter of 3.3 mm, basic preparation ends here. Continue with the fine implant bed preparation on page 33.

6

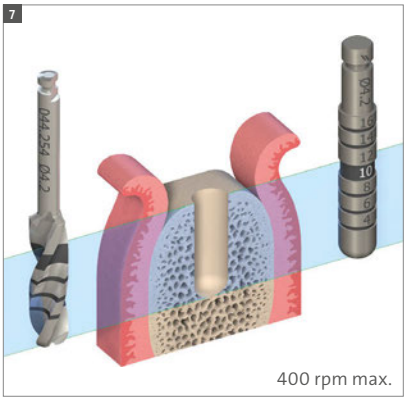


For ∅ 4.1 mm and ∅ 4.8 mm implants

Step 6 – Widen the implant bed to ∅ 3.5 mm
Continue with the ∅ 3.5 mm Straumann® Twist Drill PRO and check the final preparation depth with the ∅ 3.5 mm Depth Gauge.

For an implant with an endosteal diameter of 4.1 mm, basic preparation ends here. Continue with the fine implant bed preparation on page 33.

7



For ∅ 4.8 mm implants

Step 7 – Widen the implant bed to ∅ 4.2 mm
Continue with the ∅ 4.2 mm Straumann® Twist Drill PRO and check the final preparation depth with the ∅ 4.2 mm Depth Gauge.

Continue with the fine implant bed preparation on page 33.

Note: To facilitate introducing the instruments into the bone cavity, the bony margin of the drill hole can be beveled slightly using a large Round Bur or with an SP Profile Drill corresponding to the diameter of the Twist Drill/Spiral Drill employed. The Profile Drills are inserted only a fraction into the drill hole.

The following table summarizes the use of instruments for the basic implant bed preparation according to the endosteal implant diameter. All drills are available in a short and a long version and as multi-use as well as single-patient drills (see also Chapter 6.1). The table lists the short multi-use drills only.

Instrumentation for basic implant bed preparation					Endosteal ⌀ (mm)		
Step	**Art. No.**	**Product**	**max. rpm**		**⌀ 3.3**	**⌀ 4.1**	**⌀ 4.8**
1 Ridge preparation	044.004	Round Bur, ⌀ 3.1 mm	800				
2 Mark implant position	026.0054	Needle Drill, ⌀ 1.6 mm	800				
	044.022	Round Bur, ⌀ 1.4 mm					
	044.003	Round Bur, ⌀ 2.3 mm					
	044.004	Round Bur, ⌀ 3.1 mm					
3 Mark implant axis	044.210	Pilot Drill 1, short, ⌀ 2.2 mm	800				
	046.455	Depth Gauge, with Implant Distance Indicator, ⌀ 2.2/2.8 mm					
4 Prepare implant bed to ⌀ 2.2 mm	044.210	Pilot Drill 1, short, ⌀ 2.2 mm	800				
	046.458	Alignment Pin, ⌀ 2.2 mm, straight					
5 Prepare implant bed to ⌀ 2.8 mm	044.214	Pilot Drill 2, short, ⌀ 2.8 mm	600				
	046.455	Depth Gauge, with Implant Distance Indicator, ⌀ 2.2/2.8 mm					
6 Prepare implant bed to ⌀ 3.5 mm	044.250	Twist Drill PRO, short, ⌀ 3.5 mm	500				
	046.450	Depth Gauge ⌀ 3.5 mm					
7 Prepare implant bed to ⌀ 4.2 mm	044.254	Twist Drill PRO, short, ⌀ 4.2 mm	400				
	046.451	Depth Gauge ⌀ 4.2 mm					

4.1.2 Fine implant bed preparation

The fine implant bed preparation encompasses profile drilling and subsequent tapping. Instrumentation depends on the implant type, the endosteal implant diameter, and the bone class.

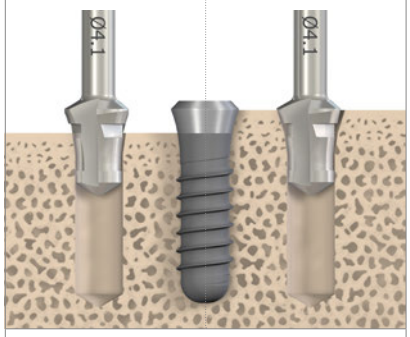
Profile drilling

The Profile Drill prepares the implant bed for a specific Straumann implant.

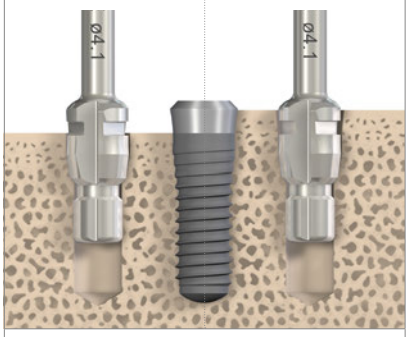
- Straumann® Standard Plus, Tapered Effect, and Bone Level Implants require profile drilling with specific instruments. This is independent of the bone class.
- Straumann® Standard Implants are inserted without profile drilling.

The Profile Drills are clearly marked SP, TE, or BL/NNC. The (first) diameter indicated on the label corresponds to the diameter of the guide cylinder and, accordingly, to the diameter of the implant bed before profile drilling. All Straumann® Profile Drills are available in a short and a long version.

Straumann® Standard Plus Profile Drill

Insertion depth on SLActive®/SLA® surface margin level	Insertion depth on implant shoulder
	
Insert the Straumann® Standard Plus Profile Drill according to the planned insertion depth of the implant.	
400 rpm max.	

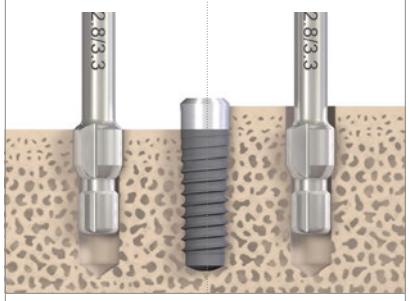
Straumann® Tapered Effect Profile Drill

Insertion depth on SLActive®/SLA® surface margin level	Insertion depth on implant shoulder
	
Insert the Straumann® Tapered Effect Profile Drill according to the planned insertion depth of the implant.	
300 rpm max.	

Straumann® Bone Level Profile Drill

	
Insert the Straumann® Tapered Effect Profile Drill according to the planned insertion depth of the implant.	A dent on the front of the guide cylinder makes the drills better distinguishable from Tapered Effect Profile Drills.
300 rpm max.	

Straumann® Narrow Neck CrossFit® Profile Drill

Insertion depth on SLActive® surface margin level	Insertion depth on implant shoulder
	
Insert the Straumann® Bone Level profile drill according to the planned insertion depth of the implant	
300rpm max	

Note: Due to the unflared neck portion, Standard Plus ∅ 4.8 mm RN Implants are inserted without profile drilling.

Caution: The Profile Drills are suitable only for the corresponding implant type!

Tapping

Tapping prepares the implant bed for a specific thread type. It is an optional step that gives the surgeon the flexibility to adjust the surgical protocol to the bone class to help achieve optimal primary stability. It is recommended in dense bone and with large diameter implants in order to keep the insertion torque in a desirable range. The table below summarizes suggested tap usage.

Note: TE Implants generally do not need tapping.
In specific situations of TE Implants (e.g. dense bone conditions), the BL/TE/NNC Tap can be used according to the recommendation for BL Implants as suggested in the table below.

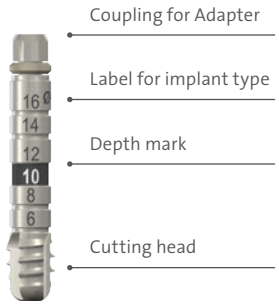
Tapping according to bone class

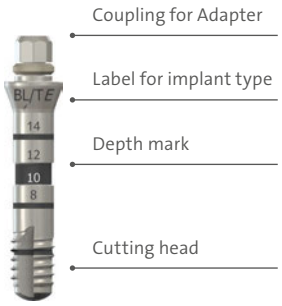
Bone Classes	S, SP Implants – Endosteal diameter			BL/NNC/SPS Implants – Endosteal diameter		
	Ø 3.3 mm	Ø 4.1 mm	Ø 4.8 mm	Ø 3.3 mm	Ø 4.1 mm	Ø 4.8 mm
Class 1	full	full	full	full	full	full
Class 2	coronal	coronal	full	full	full	full
Class 3			full			full
Class 4			full			full

*Class 1: hardest bone/Class 4: soft bone

coronal = thread tapping in the coronal area of the implant bed

full = thread tapping over full depth of the implant bed

Straumann® Standard and Standard Plus Taps
Tap for Adapter

S/SP Taps are used in the coronal area only or over the full depth of the implant bed, depending on implant diameter and bone class (see table above).
15 rpm max.

Straumann® Bone Level and Tapered Effect Taps
Tap for Adapter

If a BL/TE Tap is used, it should always be inserted over the full depth of the implant bed preparation (see table above).
15 rpm max.

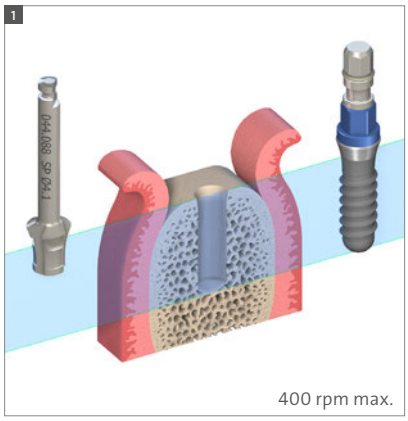
Caution: Straumann® Taps are to be used only for the corresponding implant type!

Please note: For NNC and SPS Implants, the corresponding BL/TE/NNC and BL/TE Taps must be used.

The Straumann® Taps can be used with a dental handpiece or with a Straumann® Ratchet as shown below.

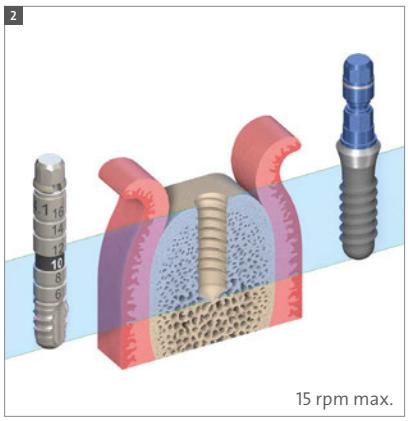
Tapping with Handpiece	Tapping with Ratchet
Connect the Tap for Adapter to the Handpiece via the Handpiece Adapter. Do not exceed 15 rpm.	For tapping with the Ratchet connect a Ratchet Adapter to the Tap for Adapter. After inserting the Tap into the cavity, the Ratchet is placed on its coupling and the thread is tapped with a slow rotating movement. The Holding Key is used as a stabilizer to maintain the direction of tapping during the procedure.

4.1.3 Examples for fine implant bed preparation Straumann® Standard and Standard Plus Implants



Step 1 – Standard Plus Profile Drill
Shape the coronal part of the implant bed with the Standard Plus Profile Drill.

Insert the Standard Plus Profile Drill up to the planned implant shoulder level (see page 33).

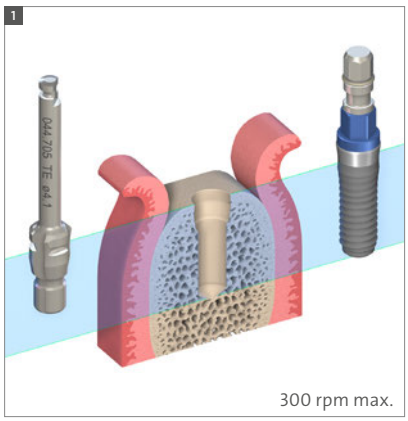


Step 2 – Tapping the thread in dense bone
Tap the implant bed with the S/SP Tap according to the bone class and the endosteal diameter (see table on page 34).

Note: For Standard Implants, profile drilling is not required.

Please note that 4 mm SPS Implants and NNC Implants require the BL/TE and BL/TE/NNC Taps respectively.

Straumann® Tapered Effect implants



Step 1 – TE Profile Drill
Shape the coronal part of the implant bed with the TE Profile Drill.

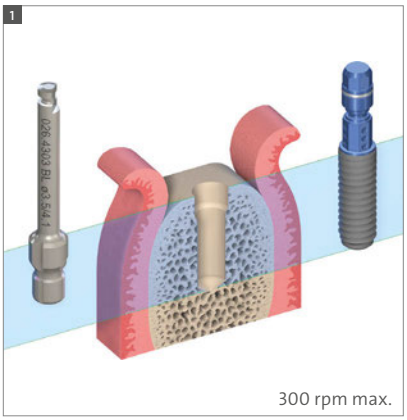
Insert the TE Profile Drill up to the planned implant shoulder level (see page 33).

Note: TE Implants generally do not need tapping. In specific situations of TE Implants (e.g. dense bone conditions), the BL/TE Tap can be used according to the recommendation for BL Implants.

Straumann® Bone Level Implants

The following example shows fine implant bed preparation for a ∅ 4.1 mm Bone Level Implant of 12 mm of length placed in bone class 1 or 2, making tapping necessary (see table on page 34). These steps follow the basic implant bed preparation (see Chapter 4.1.1).

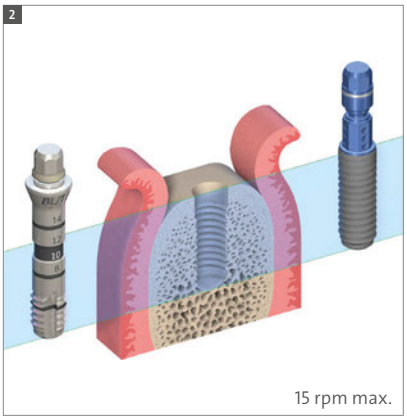
1



Step 1 – Bone Level Profile Drill

Prepare the implant bed with the Straumann® Bone Level Profile Drill. Insert the Profile Drill up to the planned implant shoulder level (see page 33).

2



Step 2 – Tapping the thread in dense bone

Tap the entire length of the implant bed with the BL/TE Tap.

The following table summarizes the use of Profile Drills and Taps for the fine implant bed preparation for all Straumann implants. All Profile Drills are available in a short and a long version. The table lists the short Profile Drills, and the Taps for Adapter only.

Instrumentation for fine implant bed preparation					Straumann® Standard Implant			
								
Art. No.	Product	Max. rpm		Thread pitch	S Ø 3.3 RN	S Ø 4.1 RN	S Ø 4.8 RN	S Ø 4.8 WN
044.086	SP Profile Drill, short, Ø 3.3 mm, RN	400						
044.088	SP Profile Drill, short, Ø 4.1 mm, RN							
044.084	SP Profile Drill, short, Ø 4.8 mm, WN							
044.575	S/SP Tap, Ø 3.3 mm, for Adapter	15		1				
044.577	S/SP Tap, Ø 4.1 mm, for Adapter			1.25				
044.579	S/SP Tap, Ø 4.8 mm, for Adapter			1.25				
044.701	TE Profile Drill, short, Ø 3.3 mm RN	300						
044.705	TE Profile Drill, short, Ø 4.1 mm RN							
044.703	TE Profile Drill, short, Ø 4.8 mm WN							
026.2303	BL Profile Drill, Ø 3.3 mm, short	300						
026.4303	BL Profile Drill, Ø 4.1 mm, short							
026.6303	BL Profile Drill, Ø 4.8 mm, short							
026.2310	BL/TE/NNC Tap, Ø 3.3 mm, for Adapter	15		0.8				
026.4310	BL/TE/NNC Tap, Ø 4.1 mm, for Adapter			0.8				
026.6310	BL/TE/NNC Tap, Ø 4.8 mm, for Adapter			0.8				

● Required step ▼ More than 1 step required ◍ Required in dense bone only

Straumann® Standard Plus Implant								Straumann® Tapered Effect Implant			Straumann® Bone Level Implant		
													
SP Ø 3.3 NNC	SP Ø 3.3 RN	SP Ø 4.1 RN		SP Ø 4.8 RN		SP Ø 4.8 WN		TE Ø 3.3 RN	TE Ø 4.1 RN	TE Ø 4.8 WN	BL Ø 3.3 NC	BL Ø 4.1 RC	BL Ø 4.8 RC
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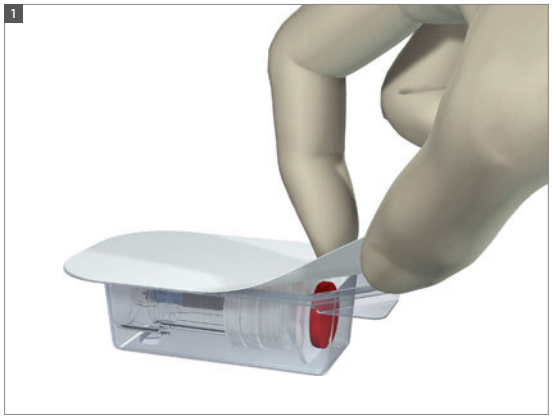
** Due to the unflared neck portion, the Straumann® Standard Plus Ø 4.8 mm RN Implants are inserted without profile drilling.*

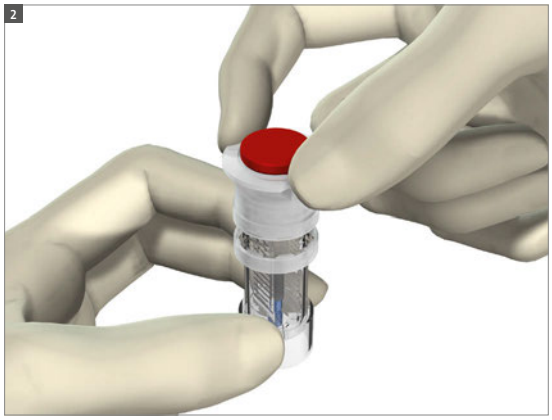
4.2 Opening the implant package

Sterile barrier system: Blister



Step 1 – Open the blister and remove the vial

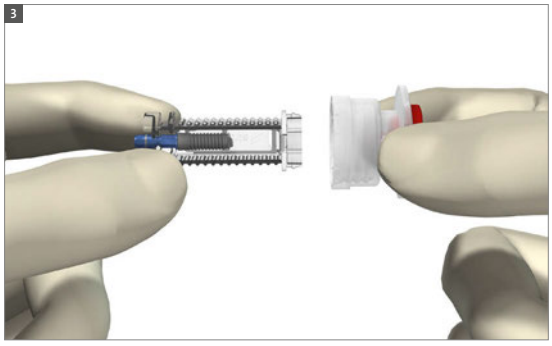
Note: The blister ensures the sterility of the implant. Do not open the blister until immediately prior to implant placement.



Step 2 – Open the vial
Turn the lid in counterclockwise direction.

SLActive® only: Keep the vial upright to prevent the liquid from flowing out.

Note: If the implant carrier is not firmly attached to the lid, screw in the lid once again.



Step 3 – Detach the implant carrier
Detach the implant carrier from the lid by pulling it off manually.

Note (for SLActive® only): After removing the implant from the solution, the chemical activity of SLActive® is ensured for 15 minutes.

Sterile barrier system: Vial

1

Step 1 – Open the safety cap
Open the safety cap of the sterile vial.

Note: The vial ensures the sterility of the implant.

2

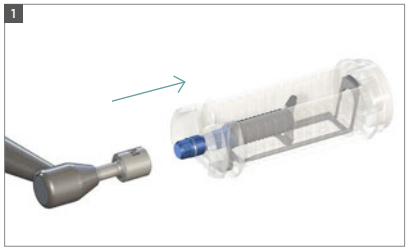
Step 2 – Remove the implant from the carrier
Simultaneously, pull down the implant carrier and lift the implant out of the implant carrier (while supporting your arms).

4.3 Placing the implant

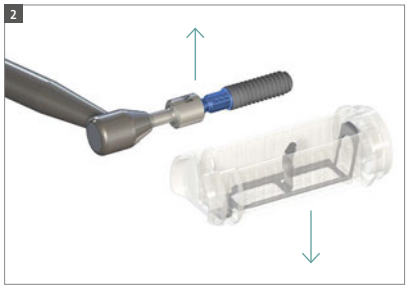
A Straumann implant can be placed either manually with the Ratchet or with the aid of the Handpiece. A maximum speed of 15 rpm is recommended. The following step-by-step instructions show how a Straumann® Bone Level Implant is placed with the Handpiece (left column on the following pages) and how a Straumann® Standard Plus Implant is placed with the Ratchet (right column).

Note: Straumann® Bone Level Implants must be rotationally oriented for both, Handpiece and Ratchet insertion (see Step 4 on page 44). Apart from this exception, all Straumann implants are placed in the same way.

Implant placement with Handpiece

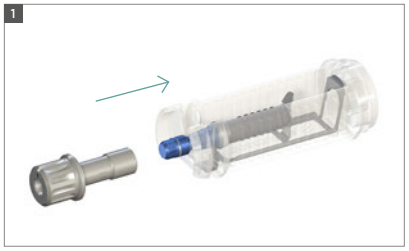


Step 1 – Attach the Handpiece Adapter
Hold the enclosed part of the implant carrier. Attach the Handpiece Adapter to the Loxim®. A click will be heard when the Adapter is attached correctly.

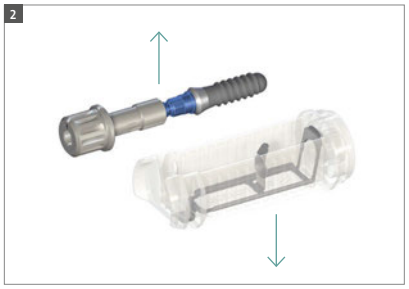


Step 2 – Remove the implant from the carrier
Simultaneously, pull down the implant carrier and lift the implant out of the implant carrier (keep your arms steady).

Implant placement with Ratchet

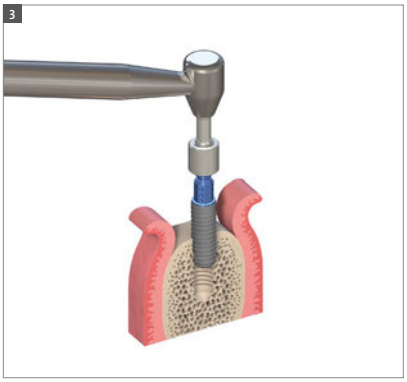


Step 1 – Attach the Ratchet Adapter
Hold the enclosed part of the implant carrier. Attach the Ratchet Adapter to the Loxim®. A click will be heard when the Adapter is attached correctly.



Step 2 – Remove the implant from the carrier
Simultaneously, pull down the implant carrier and lift the implant out of the implant carrier (keep your arms steady).

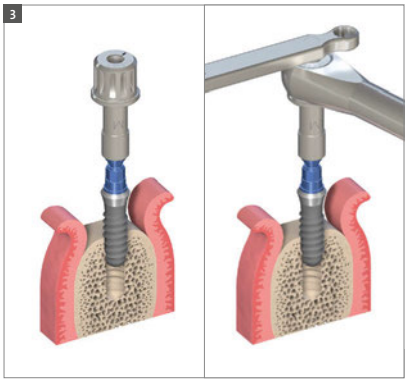
3



Step 3 – Place the implant
Place the implant with the Handpiece into the implant bed. Move the implant into its final position with a maximum of 15 rpm turning it clockwise.

Caution: Vertical position corrections using reverse rotations (counterclockwise) may lead to a decrease in primary stability.

3



Step 3 – Place the implant
Place the implant with the Ratchet into the implant bed. Move the implant into its final position with a maximum of 15 rpm turning it clockwise.

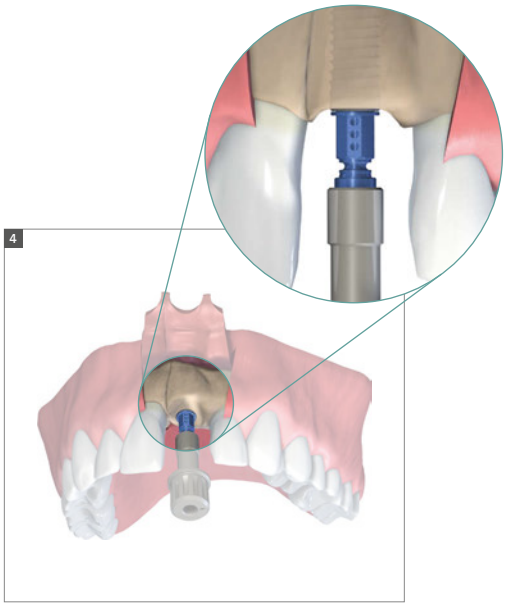
Caution: Vertical position corrections using reverse rotations (counterclockwise) may lead to a decrease in primary stability.

Caution: An insertion torque of 35 Ncm is recommended. If 35 Ncm is achieved before the implant has assumed its final position, to avoid bone overcompression, check that the implant bed preparation is correct.

The Loxim® is provided with a pre-determined breaking point to prevent damage to the inner configuration of the implant, thus ensuring the integrity of the interface for mounting the prosthesis.

Step 4 – Not needed for S/SP/TE

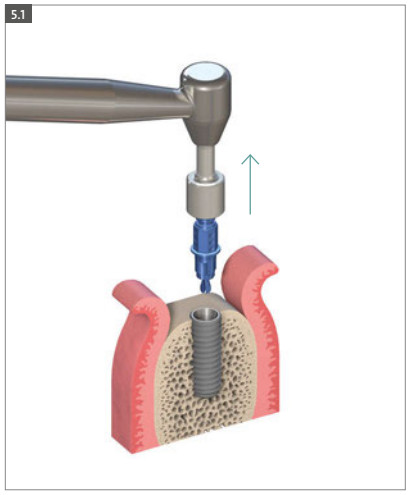
S, SP, and TE Implants do not need to be rotationally oriented. If you are placing a Bone Level Implant with the Handpiece, choose the correct position as shown in Step 4 in the right column.



Step 4 – Correct implant orientation

While approaching the final implant position, make sure that the drilled holes on the blue transfer part are oriented exactly orofacially. This positions the four protrusions of the internal connection for ideal prosthetic abutment orientation. A quarter turn to the next drilled holes corresponds to a vertical displacement of 0.2 mm. The drilled holes also show the depth of the implant shoulder in the bone.

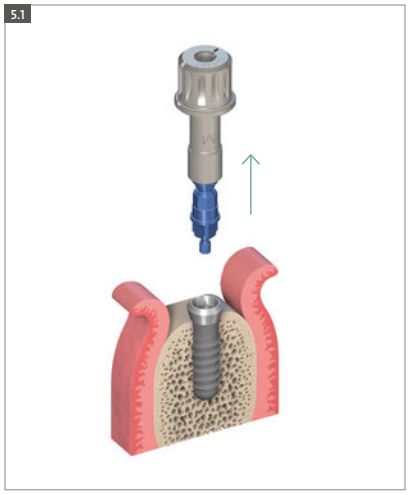
Caution: Avoid vertical position corrections using reverse rotations (counterclockwise). This can cause loosening of the transfer part and may lead to a decrease in primary stability.



Step 5.1 – Remove the instruments with Loxim®

Loxim® can easily be re-inserted to finish an uncompleted implant placement until the implant is fully inserted. If the implant needs to be removed during implantation surgery, Loxim® allows for counterclockwise turns.

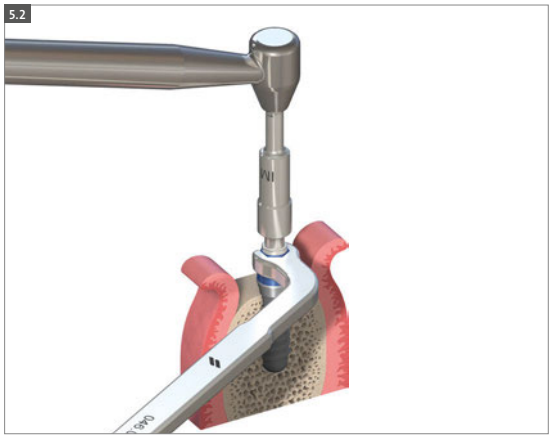
After insertion, the Loxim® is detached with the Adapter.



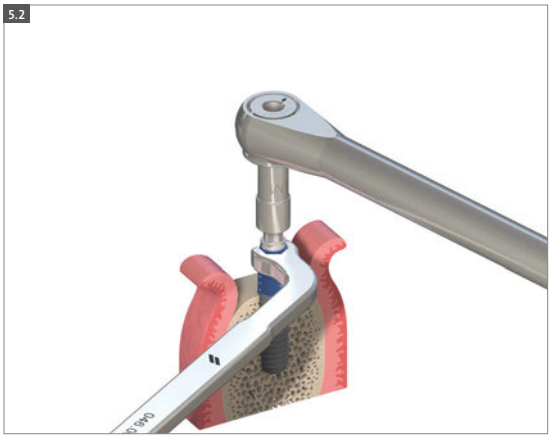
Step 5.1 – Remove the instruments with Loxim®

Loxim® can easily be re-inserted to finish an uncompleted implant placement until the implant is fully inserted. If the implant needs to be removed during implantation surgery, Loxim® allows for counterclockwise turns.

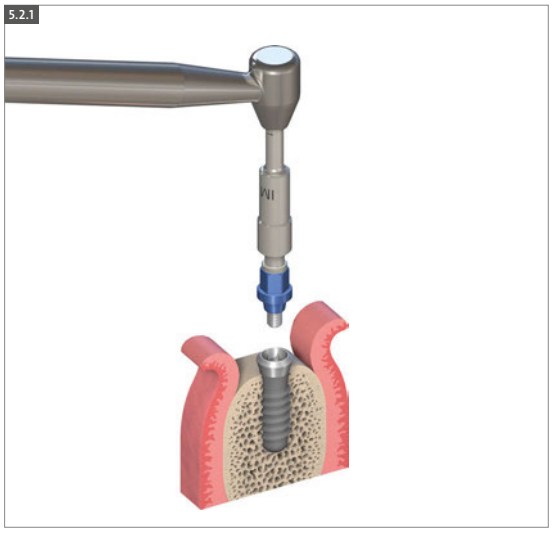
Remove the Ratchet while holding the Adapter at the bottom, and then detach the Adapter-Loxim® assembly.



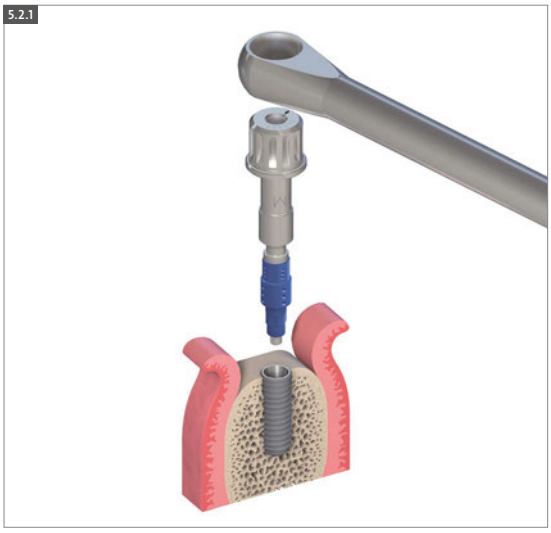
Step 5.2 – Loosen the transfer part without Loxim®
Before removing the transfer part, set the motor on the Handpiece to "reverse". During the first few turns, hold the implant with the Holding Key which is used for stabilizing (countering) the hexagon. Remove the transfer part (for details of the Holding Key see Chapter 6.1.6).



Step 5.2 – Loosen the transfer part without Loxim®
Change the direction of the Ratchet. The arrow on the rotary knob now points counterclockwise (see insert). Use the Holding Key to counter the octagon and loosen the transfer part counterclockwise using the Ratchet (for details of the Holding Key see Chapter 6.1.6).



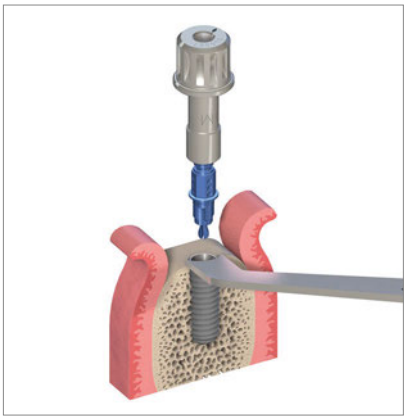
Step 5.2.1 – Remove the instruments
Remove the Holding Key and then completely remove the transfer part with the Adapter from the implant.



Step 5.2.1 – Remove the instruments
Remove the Holding Key, then the Ratchet, while holding the Adapter at the bottom. Finally, remove the transfer part from the implant with the Adapter still mounted completely.

Caution: After breakage of the Loxim®, the remaining part of the Loxim® in the implant must be removed and the implant, if not fitted correctly, has to be unscrewed with a 48h Explantation Device. After that the implant bed is to be re-prepared and a new implant has to be inserted. For further details, please consult the brochure *Guidance for Implant Removal*, (152.806/en).

4.3.1 Additional information for implants with the Loxim® Transfer Piece



Release aid for the Loxim® Transfer Piece

For situations in which any removal force is to be avoided, a release aid for the Loxim® can be used. Place the release aid onto the implant shoulder and hold it in place while detaching the Adapter with the Loxim®.

Release aid S for Loxim® (for SC), 026.0073

Release aid N for Loxim® (for NNC and NC), 026.2558

Release aid R/W for Loxim® (for RC, RN and WN), 026.4558

Important additional information

An insertion torque of 35 Ncm is recommended. If 35 Ncm are achieved before the implant has reached its final position, make sure the implant bed preparation is correct to avoid bone overcompression.

Warning: In case the implant has to be removed after implant placement, the retention of the Loxim® in the implant may be reduced. Always secure the implant against aspiration when removing the implant.

The Loxim® is provided with a pre-determined breaking point to prevent the implant's inner configuration from damage, thus ensuring the integrity of the interface to mount the prosthesis. If the Loxim® breaks during implant insertion, one part remains in the Adapter and the other part in the implant. Both parts can be removed with tweezers.

To extract the implant after the pre-determined breaking point broke, simply take out the broken part of the Loxim® from the Adapter and re-insert the Adapter on the Loxim® part remaining in the implant. Counterclockwise turns will remove the implant.

The part of the Loxim® below the pre-determined breaking point is not secured in the Adapter and, additionally, needs to be secured against aspiration when taking out the implant.

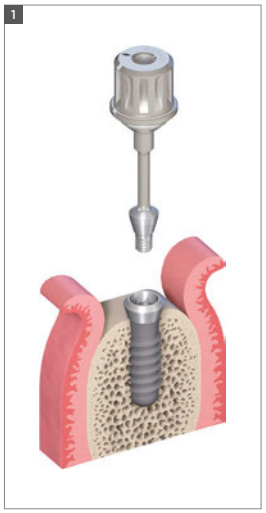
Caution: The broken part of the Loxim® no longer protects against high torque. Therefore, it is not to be used to advance the placement of the implant.

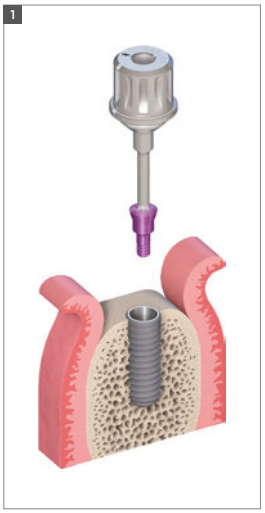
4.4 Soft tissue management

After implantation, the implant is closed – hand-tightened – with an SCS Closure Screw, Healing Cap or Healing Abutment to protect the implant (for SCS Screwdrivers see Chapter 6.1.7). The surgeon can choose between submucosal and transmucosal healing and has all options available for soft tissue management made possible through a set of secondary healing components.

4.4.1 Submucosal healing

For submucosal healing (healing under closed mucoperiosteal flap) the use of a Closure Screw, shorter Healing Cap or Healing Abutment is recommended. Submucosal healing is suggested in esthetic indications and for implantations with simultaneous guided bone restoration (GBR) or membrane technique. A second surgical procedure is required for uncovering the implant and insertion of the desired secondary component.





Step 1 – Inserting the Closure Screw after first surgery

Ensure that the internal configuration of the implant is clean and bloodless.

Pick up the Closure Screw with the SCS Screwdriver. The friction fit will secure the Closure Screw to the instrument during insertion and will allow safe handling.

Hand-tighten the Closure Screw. The design will provide a tight connection between the two components.

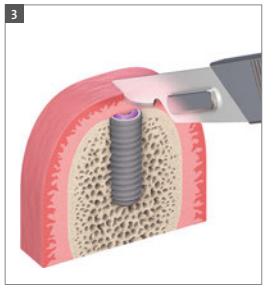
Note: All Closure Screws are delivered sterile and ready to use.

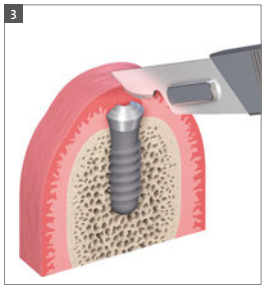
Subsequent loosening is made easier by applying chlorhexidine gel or sterile Vaseline to the Closure Screw before it is screwed into the implant.

Step 2 – Wound closure

Adapt the mucoperiosteal flaps carefully and suture together with interrupted sutures.

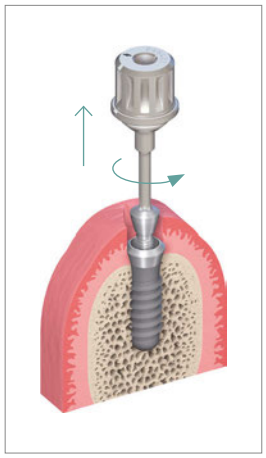
Make sure a tight seal is formed over the implant.

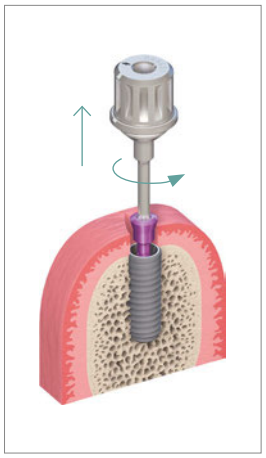




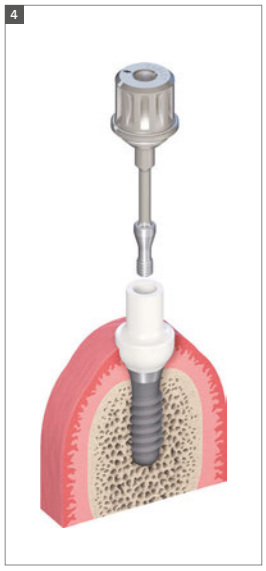
Step 3 – Reopening and removal: second surgery
Locate the implant.

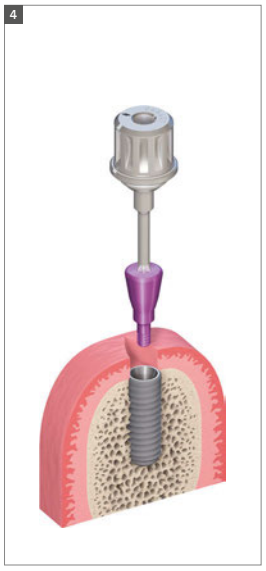
Make a small crestal incision down to the Closure Screw.





Spread the flap slightly and remove the Closure Screw with the SCS Screwdriver.





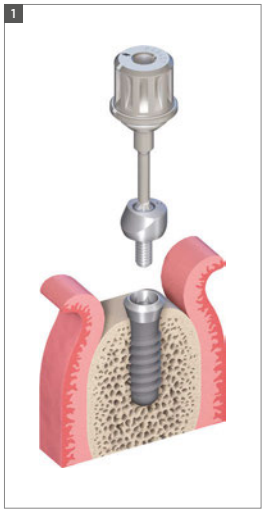
Step 4 – Insertion and wound closure
Rinse the exposed internal connection of the implant thoroughly with sterile saline solution.

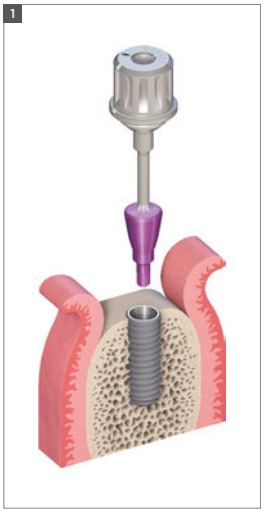
Insert a suitable secondary component. (For optimal Bone Level Healing Abutment selection see pages 51–53)

Adapt the soft tissue and suture it back tightly without tension around the secondary component.

4.4.2 Transmucosal healing

A versatile portfolio of Healing Caps and Healing Abutments is available for all Straumann implants enabling soft-tissue sculpturing during transmucosal healing. They are recommended for intermediate use. After the soft-tissue healing phase they are replaced with the appropriate temporary or final restoration. (For optimal Bone Level Healing Abutment selection see pages 51–53).





Step 1 – Insertion

Ensure that the internal configuration of the implant is clean and bloodless.

Insert the Healing Cap or Healing Abutment with the SCS Screwdriver. The friction fit secures the components to the instrument during insertion and ensures safe handling.

Hand-tighten the Healing Cap or Healing Abutment. The design will provide a tight connection between the two components.

Subsequent loosening is made easier by applying chlor-hexidine gel or sterile Vaseline to the Healing Cap or Healing Abutment before they are screwed into the implant.

Step 2 – Wound closure

Adapt the soft tissue and suture it back tightly around the abutment.

Overview of Bone Level Abutments and corresponding Healing Abutments

Which Healing Abutments suit which abutments?

Cement-retained solutions

Platform	SC			
Type	Screw- /cement-retained			
				
Material	TAN			
Angle	0°			
Ø (mm)	Oval shape 3.3 x 4.3			
GH (mm)	1	2	3	

GH (mm)	1	2	3	
Abutment height	2	3.5	5	6.5
Ø (mm)	Oval shape 3.3 x 4.3			
Material	Ti			
Type				
	Conical healing Abutment			

Platform	NC											
Type	Anatomic Abutment								Cementable Abutment			
												
Material	Ti		Ti		IPS e.max®		IPS e.max®		Ti		Ti	
Angle	0°		15°		0°		15°		0°		0°	
Ø (mm)	4.0		4.0		4.0		4.0		3.5		5.0	
GH (mm)	2.0	3.5	2.0	3.5	2.0	3.5	2.0	3.5	1.0	2.0	3.0	1.0	2.0	3.0

GH (mm)	3.5	5.0	3.5	5.0	3.5	5.0	3.5	5.0	3.5	3.5	5.0	2.0	3.5	5.0
Ø (mm)	4.8				4.8				4.8		3.6	4.8		
Type														
	Conical healing Abutment													

Platform	RC											
Type	Anatomic Abutment								Cementable Abutment			
												
Material	Ti		Ti		IPS e.max®		IPS e.max®		Ti		Ti	
Angle	0°		15°		0°		15°		0°		0°	
Ø (mm)	6.5		6.5		6.5		6.5		5.0		6.5	
GH (mm)	2.0	3.5	2.0	3.5	2.0	3.5	2.0	3.5	1.0	2.0	3.0	1.0	2.0	3.0

GH (mm)	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0	2.0	4.0	6.0	2.0	4.0	6.0
Ø (mm)	6.5				6.5				5.0			6.5		
Type														
	Conical healing Abutment													

Screw-retained solutions

Platform	NC											
Type	Anatomic Abutment				Screw-retained Abutment							
												
Material	IPS e.max®		IPS e.max®		TAN		TAN		TAN		TAN	
Angle	0°		15°		0°		0°		17°		30°	
Ø (mm)	4.0		4.0		3.5		4.6		4.6		4.6	
GH (mm)	2.0	3.5	2.0	3.5	1.0	2.5	4.0	1.0	2.5	4.0	2.5	4.0	2.5	4.0
GH (mm)	3.5	5.0	3.5	5.0	2.0	3.5	5.0	2.0	3.5	5.0	3.5			
Ø (mm)	4.8				3.6			4.8			4.8			
Type												
	Conical healing Abutment											

Platform	RC											
Type	Anatomic Abutment				Screw-retained Abutment							
												
Material	IPS e.max®		IPS e.max®		TAN		TAN		TAN			
Angle	0°		15°		0°		17°		30°			
Ø (mm)	6.5		6.5		4.6		4.6		4.6			
GH (mm)	2.0	3.5	2.0	3.5	1.0	2.5	4.0	2.5	4.0	2.5	4.0	
GH (mm)	4.0	6.0	4.0	6.0	2.0	4.0	6.0	4.0				
Ø (mm)	6.5				5.0			5.0				
Type												
	Conical healing Abutment											

Hybrid solutions

Platform	NC													
Type	Screw-retained Abutment										LOCATOR®			
														
Material	TAN			TAN			TAN		TAN		Ti alloy			
Angle	0°			0°			17°		30°		0°			
Ø (mm)	3.5			4.6			4.6		4.6		3.8			
GH (mm)	1.0	2.5	4.0	1.0	2.5	4.0	2.5	4.0	2.5	4.0	2.0	3.0	4.0	5.0	6.0
GH (mm)	2.0	3.5	5.0	2.0	3.5	5.0	3.5				2.0	3.5	5.0	
Ø (mm)	3.6			4.8			4.8				3.6			
Type														
	Conical healing Abutment													

Platform	RC											
Type	Screw-retained Abutment								LOCATOR®			
												
Material	TAN			TAN		TAN			Ti alloy			
Angle	0°			17°		30°			0°			
Ø (mm)	4.6			4.6		4.6			3.8			
GH (mm)	1.0	2.5	4.0	2.5	4.0	2.5	4.0		1.0	2.0	3.0	4.0	5.0	6.0
GH (mm)	2.0	4.0	4.0	3.5					2.0	4.0	6.0	
Ø (mm)	5.0			5.0					5.0			
Type												
	Conical healing Abutment											

5. Healing Phase

5.1 Healing phase duration

For the delayed loading surgical protocol, it is recommended to follow the healing time durations as indicated below:

Situation	Healing phase	
	SLActive®	**SLA®**
• Good bone quality and adequate bone quantity • Implants with a diameter of 4.1 mm or 4.8 mm and a Straumann® SLActive®/SLA® surface length of ≥ 8 mm	At least 3 – 4 weeks	At least 6 weeks
• Cancellous bone quality • Implants with a diameter of 2.9 mm • Implants with a diameter of 3.3 mm • Implants with a Straumann® SLActive®/SLA® surface length of 6 mm	At least 8 weeks	At least 12 weeks
• Straumann® Standard Plus Short Implant	10 – 12 weeks	n. a.
• Straumann® SLActive®/SLA® surface is not completely in contact with the bone • Bone augmentation measures* are necessary	Healing phase corresponding to the situation	

** This technique should be employed only by dentists who have adequate experience in the use of augmentation procedures.*

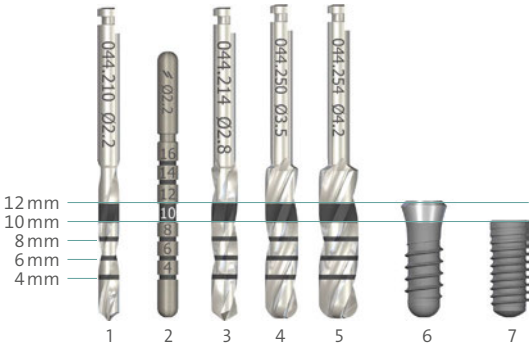
6. Additional Information on Instruments

6.1 Surgical instruments

Instruments must be checked for completeness and function. An adequate stock of implants and spare sterile instruments should always be available. The instruments must be disassembled for sterilization. Well maintained instruments prevent infections from developing that could endanger patients as well as the practice team.

To avoid contamination of the operation field, all of the instruments and material employed must be sterile. To prevent contamination of the sterile instruments, they should be removed from the Surgical Cassette with the sterile Instrument Tweezers and put into the handle or Ratchet. The Instrument Tweezers (Art. No. 046.110) were developed and shaped specially to allow round instruments to be gripped securely.

All steps related to the maintenance of Straumann surgical instruments are part of a dental practice hygiene plan (see also *Surgical and Prosthetic Instruments, Care and Maintenance* (152.008/en)).



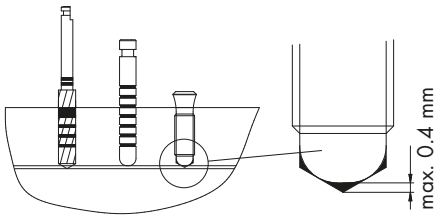
1. Pilot Drill 1, Ø 2.2 mm
2. Alignment Pin, Ø 2.2 mm
3. Pilot Drill 2. Ø 2.8 mm
4. Twist Drill PRO, Ø 3.5 mm
5. Twist Drill PRO, Ø 4.2 mm
6. Straumann® Standard Plus Implant, Ø 4.1 RN, length 10 mm
7. Straumann® Bone Level Implant, Ø 4.1 RC, length 10 mm

6.1.1 Depth marks on Straumann instruments

Straumann instruments have depth marks in 2 mm intervals that correspond to the available implant lengths. The marks on drills are continuous between 10 mm and 12 mm. The lower edge of the mark corresponds to 10 mm and the upper edge to 12 mm.

When inserting a Straumann® Standard Plus or Tapered Effect Implant up to the implant shoulder level (see Chapter 3), the preparation depth must be 2 mm deeper than the indicated implant length.

Example: The preparation depth for a 10 mm SP Implant inserted up to shoulder level must be 12 mm.



Warning: Due to the function and design of the drills, the drill tip is 0.4 mm longer than the insertion depth of the implant (see also page 25).

6.1.2 Single-patient Drills

Like multi-use drills, single-patient drills are indicated for the preparation of the implant bed for Straumann dental implants. They are supplied sterile and are to be used for one operation only and for one patient only. Single-patient drills can minimize the risk of infection for the patient. They are color-coded for easy identification of the diameter width.

Due to the function and design of the drills, the drill tip is 0.4 mm longer than the insertion depth of the implant.

For more information, please refer to *Straumann Single Patient Instruments, Surgical User Guide* (702173/en).

6.1.3 Straumann® Drill Stop – Precise depth control

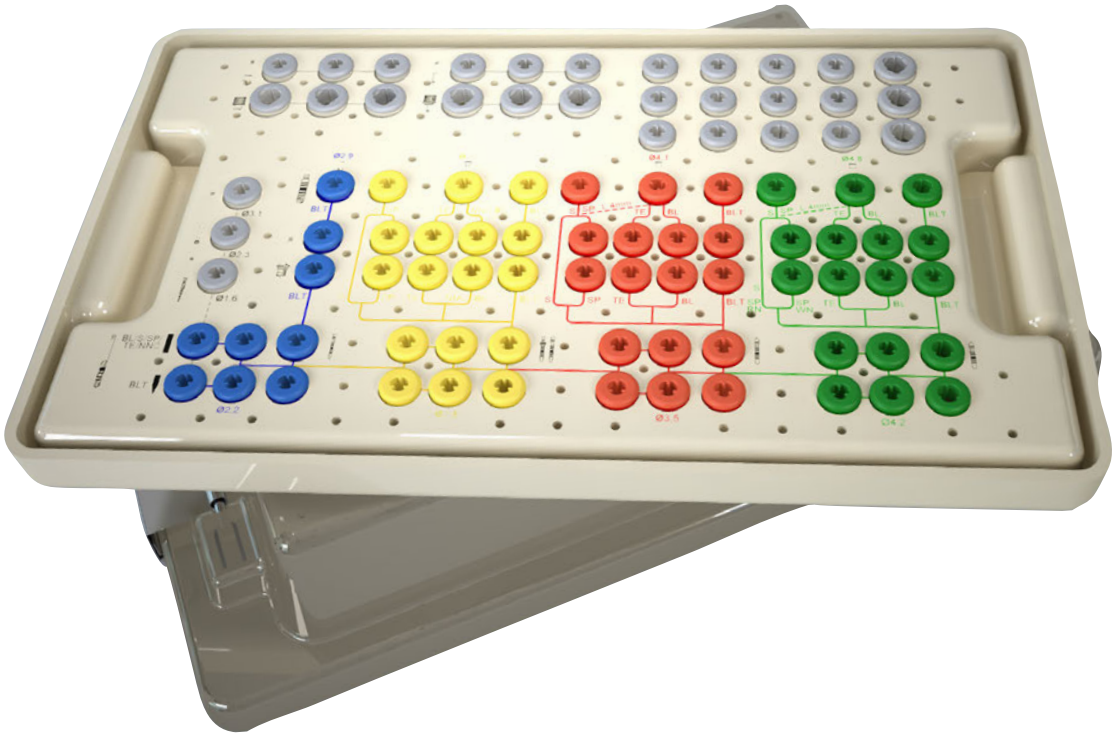
The Straumann® Drill Stop provides precise control over drilling depth during implant bed preparation for the placement of Straumann dental implants. Delivered in sterile sets the Drill Stops are ready to use. The Straumann® Drill Stop is designed for single-patient use only and must be used in conjunction with the single-patient drills specifically designed for them.

Note: Straumann® Drill Stops are not indicated for:

- Extraction sites, where bone cavity is often wider than the diameter necessary to hold the Drill Stop.
- Use with drill templates, due to the interference from or with the template.

6.1.4 Straumann® Surgical Cassette

The Surgical Cassette is used for the secure storage and sterilization of the surgical instruments and auxiliary instruments of the Straumann® Dental Implant System. The Surgical Cassette is made of a highly shock-proof thermoplastic, which has been proven for years in the medical area and is suitable for frequent sterilization in the autoclave.



- Endosteal implant diameter 2.9 mm
- Endosteal implant diameter 3.3 mm
- Endosteal implant diameter 4.1 mm
- Endosteal implant diameter 4.8 mm

For guidelines for the sterilization of the Straumann® Surgical Cassette, please refer to the brochure *Surgical and Prosthetic Instruments, Care and Maintenance* (152.008/en).

6.1.5 Ratchet

Ratchet

The Ratchet of the Straumann® Dental Implant System is a two-part lever arm instrument with a rotary knob for changing the direction of force.

The Ratchet is required for the following operations:

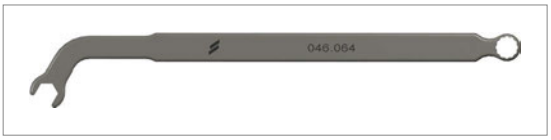
- manual thread tapping
- manual placement of implants into their final position in the implant bed

Service Instrument

The Ratchet is supplied with a Service Instrument, which is used to loosen the headed screw.

Ratchet disassembled

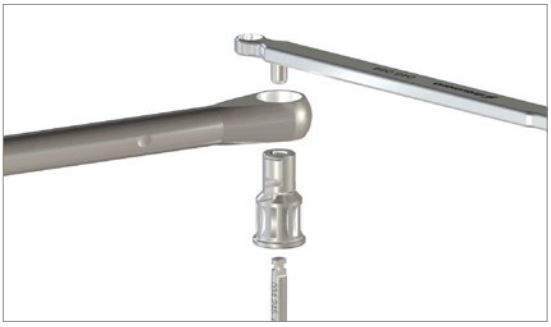
After loosening, the Ratchet bolt can be removed from the body of the Ratchet. It must be disassembled for cleaning and sterilization.



6.1.6 Holding Key

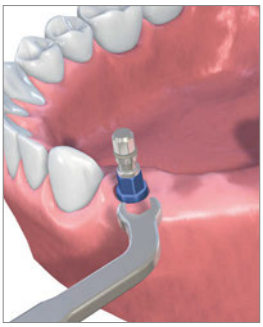
The Holding Key is used for

- stabilizing the Ratchet.
- countering the transfer part.

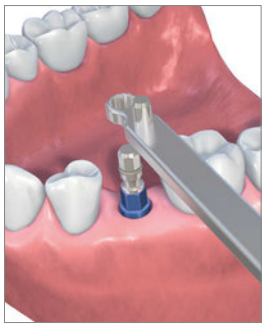


Stabilizing the Ratchet

Use the pivot of the Holding Key to stabilize the Ratchet during implant insertion or during tapping.



Forked end



Closed end

Countering the transfer part

Use the Holding Key for countering when loosening the transfer part from the implant. The transfer part should be loosened only with the Ratchet or Handpiece (counterclockwise).

The shape of the Holding Key is specially designed for different oral situations

- Forked end: when spaces are normal, the forked end is attached directly to the hexagon.
- Closed end: when the interdental space is limited, the closed end must be placed on the hexagon over the transfer part. To do this, the Ratchet and Adapter or Handpiece must be removed.

6.1.7 SCS Screwdriver and AS Screwdriver

SCS Screwdriver for ratchet
extra-short (15 mm),
short (21 mm), long (27 mm)

SCS Screwdriver for handpiece
extra-short (20 mm),
short (26 mm), long (32 mm)

AS Screwdriver for ratchet
extra-short (15 mm),
short (21 mm), long (27 mm)

AS Screwdriver for handpiece
extra-short (20 mm),
short (26 mm), long (32 mm)

Note: All the AS (Angled Solution) components are identified via a green color coding. Please note that the SCS and AS components are not intercompatible.

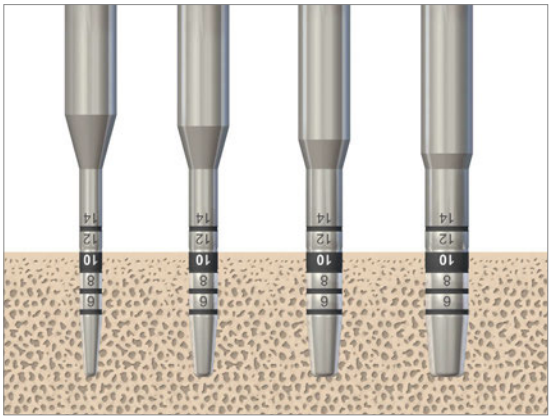
6.2 Osteotomes

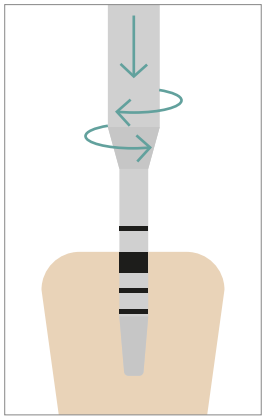
6.2.1 Instrument set for bone condensation

- Indicated in cases with cancellous bone (bone class 3 and 4).
- Reinforces bone radially to give improved primary stability to the implant.
- Before the instruments are used, it is advisable to mount the depth stops in order not to exceed the pre-determined working depth. These are mounted onto the instrument using a SCS screwdriver.
- Instruments of increasing diameter are introduced manually using slightly rotary movements or, if necessary, lightly tapping with a hammer in accordance with the desired implant length and implant diameter.
- Insert the implant carefully without applying extra force.

Note: The instruments with diameters of 2.2 mm, 2.8 mm, 3.5 mm and 4.2 mm match the implant diameters of the Straumann® Dental Implant System. They are available as a straight or angled model, which facilitates access in the posterior region.

Osteotomes for bone condensation





Insert Osteomes to the desired implant length using slightly rotary movements.

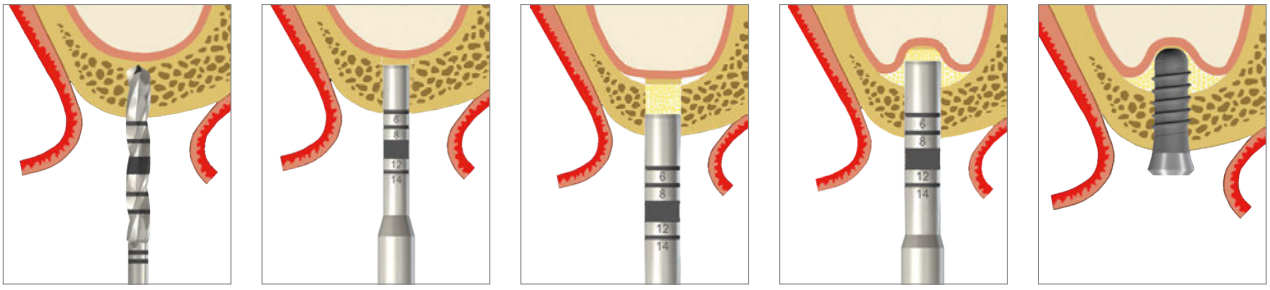
6.2.2 Instrument set for transalveolar sinus floor elevation

Indicated in cases with inadequate vertical bone. By tapping on the osteotomes with a mallet, the sinus floor can be fractured and elevated.

- The bone is prepared using the twist drills (⌀ 2.2 mm/2.8 mm/3.5 mm/4.2 mm) in accordance with the desired implant diameter. The surgeon feels his or her way very carefully up to the cortical bone of the sinus floor (minimum distance 1 mm). This process requires precise radiological planning.
- Before the instruments are used, it is advisable to mount the depth stops in order not to exceed the pre-determined working depth. These are mounted onto the instrument using a SCS screwdriver.
- First, the sinus floor is fractured, which requires precise radiological planning. The use of depth stops is also recommended in order not to exceed the pre-determined working depth. The instrument is introduced by lightly tapping with a hammer in accordance with the desired implant length.
- During elevation, autologous and/or alloplastic filling or bone material should also be applied to the implant bed. The material introduced acts like a cushion lifting the mucous membrane in accordance with principles of hydraulics.
- Insert the implant carefully without applying extra force.

Note: The instruments with diameters of 2.2 mm, 2.8 mm, 3.5 mm and 4.2 mm match the implant diameters of the Straumann® Dental Implant System. They are available as a straight or angled model, which facilitates access in the posterior region.

Osteotomes for sinus floor elevation



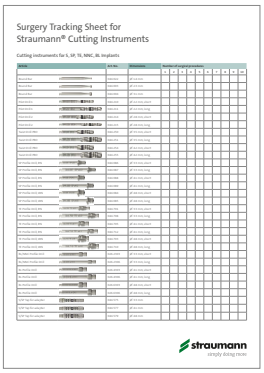
6.2.3 Depth stops for osteotomes

All osteotomes have clear laser marks for depths of 6 mm, 8 mm, 10 mm, 12 mm and 14 mm. In addition, adjustable depth stops facilitate depth checking.

Depth stops for osteotomes

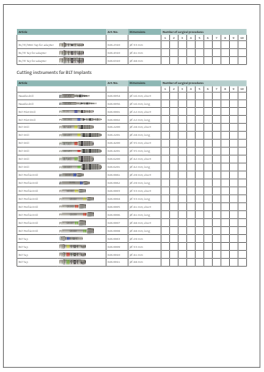
6.3 Cleaning and care of instruments

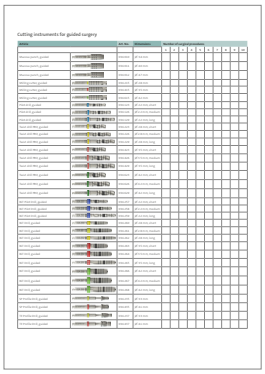
Careful treatment of all instruments is of the utmost importance. Even slight damage for instance to the drill tips (e.g., when the drills are “thrown” into a metal bowl) impairs cutting performance and thus the clinical result. With correct and careful care, the high quality of the material and excellent workmanship ensure that the rotating instruments (drills*, taps etc.) can be used repeatedly (up to a maximum of ten times is recommended). The *Surgery Tracking Sheet for Straumann Cutting Instruments* (152.755/en). helps to give an overview of how often the individual instruments have already been used.

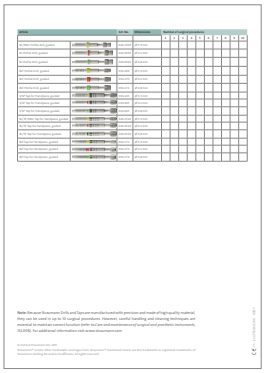

Surgery Tracking Sheet for
Straumann® Cutting Instruments

Cutting instruments for S, SP, TE, NNC, BL implants

straumann
simply dental care


Cutting instruments for BLT implants


Cutting instruments for guided surgery



Instruments with high cutting performance are a basic requirement for successful implantation. The following should therefore be remembered:

- Never allow instruments to land on their tips.
- Use each instrument only for its intended purpose.
- Never let surgical residues (blood, secretion, tissue residues) dry on an instrument; clean immediately after surgery.
- Thoroughly clean off incrustations with soft brushes only. Disassemble instruments, clean cavities especially well.
- Never disinfect, clean (also ultrasound) or sterilize instruments made of different materials together.
- Use only cleaning agents and disinfectants intended for the material and follow the instructions for use of the manufacturer.
- Rinse disinfectants and cleaning agents very thoroughly with water.
- Never leave or store instruments moist or wet.

You will find detailed information in the brochure *Surgical and Prosthetic Instruments, Care and Maintenance* (152.008/en).

7. Appendix

7.1 Related documentation

Note: Our detailed documentation will help you in carefully planning and performing your implant-based restorations:

- *Prosthetic Procedures for the Narrow Neck CrossFit® Implant – Straumann® Narrow Neck CrossFit® Implant Line* (152.808/en)
- *Straumann® synOcta® Prosthetic System, Basic Information* (152.255/en)
- *Cement-retained Crowns and Bridges with the Solid Abutment System: Straumann® Solid Abutment Prosthetic System* (152.254/en)
- *Straumann® Bone Level Prosthetic Procedures, Basic Information* (152.810/en)

Instrument care and maintenance

- Well maintained instruments are a basic requirement for successful treatment. You will find detailed information in the brochure *Surgical and Prosthetic Instruments, Care and Maintenance* (152.008/en).

The Straumann Guarantee

- As a Swiss company, we attach the greatest importance to manufacturing our products in to the highest quality. We are firmly convinced of the scientific and clinical basis of our Straumann® Dental Implant System and draw on the fund of know-how from nearly 30 years of quality production. The Straumann guarantee regulates replacement of all components of the Straumann® Dental Implant System. You will find detailed information in the brochure *Straumann® Guarantee* (152.360/en).

Explantation

- For explantation guidelines please refer to *Guidance for implant removal,* (152.806/en) and *Instructions for use: Non-sterile surgical instruments and prosthetic auxiliaries* (701124/en). The components required for explanation can be found in our current product catalog.

References

The Straumann® Dental Implant System has been comprehensively clinically documented for over 25 years. You can find references to the current research literature on our website www.straumann.com or by contacting your local Straumann representative.

Courses and training

Continuing education ensures long-term success! Please, ask your Straumann representative directly for information on the Straumann® Dental Implant System courses and training. Further information at www.straumann.com.

Quality assurance in accordance with MDD 93/42/EEC. All production stages carried out by Institut Straumann AG are subject to the Standards laid down in the EN ISO 9001 quality assurance system. This European standard establishes in detail the criteria which a company must fulfil regarding comprehensive quality assurance during its manufacturing processes in order to be recognized. Particularly high standards are rightly expected of medical products. They are defined in European standards ISO 13485, which we also meet. This ensures that the quality of our products and services meets our customers' expectations, and can be reproduced and traced at any time. Our products comply with the essential requirements defined in the Medical Devices Directive 93/42/EEC. All of our medical products therefore carry the CE mark. Institut Straumann AG meets the stringent requirements of European directive MDD 93/42/EEC for medical devices and standards EN ISO 9001 and ISO 13485.

7.2 Important guidelines

Please note
Practitioners must have appropriate knowledge and instruction in the handling of the Straumann CADCAM products or other Straumann products ("Straumann Products") for using the Straumann Products safely and properly in accordance with the instructions for use.

The Straumann Product must be used in accordance with the instructions for use provided by the manufacturer. It is the practitioner's responsibility to use the device in accordance with these instructions for use and to determine, if the device fits to the individual patient situation.

The Straumann Products are part of an overall concept and must be used only in conjunction with the corresponding original components and instruments distributed by Institut Straumann AG, its ultimate parent company and all affiliates or subsidiaries of such parent company ("Straumann"), except if stated otherwise in this document or in the instructions for use for the respective Straumann Product. If use of products made by third parties is not recommended by Straumann in this document or in the respective instructions for use, any such use will void any warranty or other obligation, express or implied, of Straumann.

Availability
Some of the Straumann Products listed in this document may not be available in all countries.

Caution
In addition to the caution notes in this document, our products must be secured against aspiration when used intraorally.

Validity
Upon publication of this document, all previous versions are superseded.

Documentation
For detailed instructions on the Straumann Products contact your Straumann representative.

Copyright and trademarks

Explanation of the symbols on labels and instruction leaflets

LOT Batch code

REF Catalogue number

STERILE R Sterilized using irradiation

 Lower limit of temperature

 Upper limit of temperature

 Temperature limitation

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

 Do not re-use

 Non-sterile

 Caution, consult accompanying documents

 Use-by date

 Keep away from sunlight

CE
CE 0123 Straumann Products with the CE mark fulfill the requirements of the Medical Devices Directive 93/42 EEC

 Consult instructions for use
Please follow the link to the e-IFU
www.ifu.straumann.com

Notes

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