BASIC INFORMATION ON THE
SURGICAL PROCEDURE

Straumann® Dental Implant System

COMMITTED TO
SIMPLY DOING MORE
FOR DENTAL PROFESSIONALS™
Straumann is the industrial partner of the ITI (International Team for Implantology) in the areas of research, development and education.
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Basic information on the Surgical Procedure 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
- Indications and Contraindications
- Preoperative Planning
- Surgical Procedures
- Healing Phase
- Additional Information on Instruments
- Appendix

For further information regarding the Straumann Dental Implant System, visit our comprehensive website at www.straumann.com.
1. THE STRAUMANN® DENTAL IMPLANT SYSTEM

1.1 Overview

The Straumann Dental Implant System offers four implant lines with diverse body and neck designs, ranging from the classic soft tissue level to the bone level implant. All implants can be placed with one surgical kit while using very similar surgical procedures.

Straumann implants have been extensively researched. Their optimized design, called Bone Control Design®, is based on the five key biological principles in implant dentistry: osseoconductivity, control of the microgap, biomechanical implant design, biological distance, and the location of the surface margin. With Bone Control Design, Straumann implants are designed to achieve optimal preservation of crestal bone and soft tissue stability.

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

### Color coding

<table>
<thead>
<tr>
<th>Color</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>yellow</td>
<td>Endosteal implant diameter 3.3 mm</td>
</tr>
<tr>
<td>red</td>
<td>Endosteal implant diameter 4.1 mm</td>
</tr>
<tr>
<td>green</td>
<td>Endosteal implant diameter 4.8 mm</td>
</tr>
<tr>
<td>Neck diameter</td>
<td>Ø 4.8 mm</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>Ø 3.3 mm</td>
<td>Ø 4.1 mm</td>
</tr>
<tr>
<td>Ø 4.1 mm</td>
<td>Ø 4.8 mm</td>
</tr>
<tr>
<td>Ø 4.8 mm</td>
<td>Ø 4.8 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connection</th>
<th>RN synOcta®</th>
<th>RN Solid Abutment</th>
<th>Retentive Anchor</th>
<th>steCo®</th>
<th>Titanmagnetics®</th>
<th>LOCATOR®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosthetic restoration components</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The Straumann® Dental Implant System

1.1 Overview
**1. The Straumann® Dental Implant System**

### Overview

**Straumann® Standard Implant**
- Standard Implant
- Standard Plus Implant
- Tapered Effect Implant
- Bone Level Implant

**Neck Diameter**
- Endosteal Diameter

**Connection**

**Prosthetic Restoration Components**
- RN synOcta®
- RN Solid Abutment Retentive Anchor
- stecco®
- Titanmagnetics® LOCATOR®
- WN synOcta®
- WN Solid Abutment Retentive Anchor
- stecco®
- Titanmagnetics® LOCATOR®

---

**Implants**

<table>
<thead>
<tr>
<th>Implant Type</th>
<th>Neck Diameter</th>
<th>Connection</th>
<th>Prosthetic Restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP Ø 4.8 RN</td>
<td>Ø 4.8 mm</td>
<td>RN synOcta®</td>
<td>RN synOcta® LOCATOR®</td>
</tr>
<tr>
<td>SP Ø 4.8 WN</td>
<td>Ø 6.5 mm</td>
<td>WN synOcta®</td>
<td>WN synOcta® LOCATOR®</td>
</tr>
</tbody>
</table>

---

**Implant Overview**

- Ø 3.3 mm
- Ø 4.1 mm
- Ø 4.8 mm
- Ø 6.5 mm

---

**Implant Specifications**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Stecco®</th>
<th>Titanmagnetics® LOCATOR®</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3 mm</td>
<td>033.751S</td>
<td>RN synOcta®</td>
</tr>
<tr>
<td>4.1 mm</td>
<td>033.751S</td>
<td>RN synOcta®</td>
</tr>
<tr>
<td>4.8 mm</td>
<td>033.751S</td>
<td>RN synOcta®</td>
</tr>
</tbody>
</table>

---

stecco® and Titanmagnetics® LOCATOR® are trademarks of stecco-system-technik GmbH & Co. KG, Germany. LOCATOR® is a registered trademark of Zest Anchors, Inc., USA.
1.2 Implant lines

1.2.1 Straumann® Standard Implant – The classic soft tissue level implant

Straumann Standard implants have a smooth neck section of 2.8 mm and are especially suitable for single-stage procedures, where the implant is placed at the 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: synOcta portfolio and the Straumann Solid Abutment. The thread pitch on standard implants measures 1.0 mm for the Ø 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 consist of a smooth neck section of 1.8 mm that allows flexible coronoapical implant placement in combination with trans- or subgingival healing. Standard plus implants offer the dental surgeon additional treatment options that are particularly useful in the anterior 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: synOcta portfolio and the Straumann Solid Abutment. The thread pitch on the standard plus implant measures 1.0 mm for the Ø 3.3 mm implants, and 1.25 mm for all other diameters.

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 synOcta connection; the prosthetic components of the 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 corresponding prosthetic CrossFit components from the Bone Level product portfolio to provide consistent emergence profiles and esthetic results. A cylindrical outer contour and a thread pitch of 0.8 mm that tapers off in the coronal part of the implant, provides excellent primary stability.

Straumann Standard Plus Narrow Neck implants can be used as an alternative solution for narrow anterior interdental spaces. They are very flexible for indications where esthetic demands are high. This one-piece design implant has an external connection with a shoulder diameter of 3.5 mm, an endosteal diameter of 3.3 mm, and a smooth neck section of 1.8 mm. Narrow neck implants use their proprietary narrow neck (NN) prosthetic components. The implant has a thread pitch of 1.0 mm.
1.3 Implant-abutment connections

1.3.1 Straumann® synOcta® Morse taper connection
The mechanically locking friction fit of the Straumann synOcta internal connection, with its 8° Morse taper connection, is designed to provide a more secure implant to abutment connection.

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 connection
The one-part Straumann Standard Plus Narrow Neck implant has a built-in octa abutment (1.5 mm in height) that provides a solid base for narrow prosthetic abutment copings.

The Narrow Neck connection is available for Straumann Standard Plus Narrow Neck implants only.
1.3.3 Straumann® Bone Level CrossFit® Connection

The CrossFit Connection of Straumann Bone Level implants features a mechanically locking friction fit that is designed to drastically reduce screw loosening. The Crossfit Connection is available for Straumann Bone Level implants only.

Strawmann 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 healing, temporization, and final prosthetic components. Strawmann Bone Level Ø 3.3 mm implants feature the narrow CrossFit Connection (NC). The corresponding secondary components are color-coded:

- yellow = NC connection
- magenta = RC connection
1.4 Surfaces

Straumann® implants are manufactured from biocompatible pure Grade 4 titanium. Standard, Standard Plus, Tapered Effect and Bone Level implants are available with the SLActive® or the SL® surfaces.

1.4.1 Straumann SLActive surface

The SLActive surface features the scientifically proven SLA surface topography. Additionally, it exhibits the surface properties of hydrophilicity and chemical activity, which can significantly accelerate the entire osseointegration process, under the appropriate clinical circumstances.

Hydrophilicity

The hydrophilic properties of SLActive enable a larger accessible surface area for increased blood contact and bone cell attachment.

Chemical activity

The chemical activity of SLActive provides ideal conditions for direct protein adsorption, promoting faster osseointegration in comparison to SLA. *

1.4.2 Straumann SLA

The SLA surface is produced using a large-grit sandblasting technique that generates a macro-roughness on the titanium surface. Following, an acid-etching technique superimposes a micro-roughness on the titanium surface. The resulting topography offers the ideal structure for cell attachment and is the basis for the further developed SLActive surface.

*As shown in animal model.
1.5 Materials

Straumann provides implants made of pure titanium grade 4 and a titanium zirconium alloy (Roxolid®).

1.5.1 Titanium
The complete Straumann® implant portfolio is available made of titanium grade 4. Straumann titanium grade 4 is cold worked in order to enhance the mechanical strength. Titanium has shown excellent long-term biocompatibility. Its metallic structure allows for producing the implants with the SLA®/SLActive® surface, thus enabling a good osseointegration.

1.5.2 Roxolid®
In addition to titanium implants, Straumann® offers Ø 3.3 mm implants made of a new alloy composed of titanium and zirconium, called Roxolid. Roxolid was designed to meet the needs of dental surgeons. Roxolid and SLActive® combine higher tensile\(^1\) and fatigue\(^2\) strength with excellent osseointegration.

1. In accordance with ASTM F67, data on file.
2. Straumann data on file.
2. INDICATIONS AND CONTRAINDICATIONS

2.1 Intended Use

Straumann® dental implants are suitable for the treatment or oral endosteal implantation in the upper and lower jaw and for the functional and esthetic oral rehabilitation of edentulous and partially dentate patients (unless specific indications and limitations are present, as stated below). Straumann dental implants can also be used for immediate or early implantation following extraction of loss of natural teeth. Straumann implants are cleared within the scope of indications, for immediate restoration in single tooth gaps and in an edentulous or partially dentate jaw; good primary stability and an appropriate occlusal load are essential. Two or more adjacent implants should be prosthetically connected together if restored immediately. In the case of immediately restored edentulous situations, at least 4 implants must be connected together. Healing phase duration for delayed restorations is given on page 65. The prosthetic restorations used are single crowns, bridges and partial or full dentures, which are connected to the implants by the corresponding elements (abutments). On pages 12–16 you will find implant specific details about indications, the necessary bone volume and the spacing between implants and the distance from adjacent teeth.

2.1.1 Indications for small diameter (Ø 3.3 mm) implants

As a general rule, always use the largest possible implant diameter. Because of their reduced mechanical stability, small diameter implants are only used in cases with a low mechanical load. Placement in the molar region is not recommended. For further restrictions see pages 12, 14, 15 and 16.

2.1.2 Titanium grade 4 Standard/Standard Plus Implants (Ø 3.3 RN) are to be used only in cases for the following indications

- Edentulous jaw: 4 implants with a bar for primary connection
- Partially dentate jaw in the case of implant-borne fixed restorations that are combined with Ø 4.1 mm implants and whose superstructure has primary splinting.

2.1.3 Specific indications for Straumann implants with a length of 6.0 mm

Because of the reduced surface area for anchorage in the bone, these implants are to be used solely for the following indications:

- As an additional implant together with longer implants to support implant-borne reconstructions
- As an auxiliary implant for implant-borne bar constructions supporting full dentures in a seriously atrophied mandible

2.2 Contraindications

Serious internal medical problems, bone metabolism disturbances, uncontrolled bleeding disorders, inadequate wound healing capacity, poor oral hygiene, maxillary and mandibular growth not completed, poor general state of health, uncooperative or unmotivated patient, drug or alcohol abuse, psychoses, prolonged therapy-resistant functional disorders, xerostomia, weakened immune system, illnesses requiring periodic use of steroids, titanium allergy, uncontrollable endocrine disorders.

2.2.1 Relative contraindications

Previously irradiated bone, diabetes mellitus, anticoagulation drugs/hemorrhagic diatheses, bruxism, parafunctional habits, unfavorable anatomic bone conditions, tobacco abuse, uncontrolled periodontitis, temporomandibular joint disorders, treatable pathologic diseases of the jaw and changes in the oral mucosa, pregnancy, inadequate oral hygiene.

2.2.2 Local contraindications

Inadequate bone volume and/or quality, local root remnants. Attention should be paid to the specific indications of the small diameter implants and the implants with a length of 6.0 mm as specified above.
### 2.3 Implant specific indications

#### 2.3.1 Titanium implants

<table>
<thead>
<tr>
<th>Implant type</th>
<th>Indications and distinctive features</th>
<th>Minimal ridge width*</th>
<th>Minimal site width**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SP Ø 3.3 mm NN</strong></td>
<td>■ Small diameter implant for narrow interdental spaces and ridges</td>
<td>5.5 mm</td>
<td>5.5 mm</td>
</tr>
<tr>
<td><strong>S Ø 3.3 mm RN</strong></td>
<td>■ Alternative in the case of a restricted ridge width</td>
<td>5.5 mm</td>
<td>7.0 mm</td>
</tr>
</tbody>
</table>
| **SP Ø 3.3 mm RN**    | ■ In view of their lower mechanical strength compared to the Ø 4.1 mm implants, these implants should be used exclusively for the following indications:  
  ■ Edentulous jaw:  
    4 implants S/SP Ø 3.3 RN in conjunction with a bar construction  
  ■ Partially edentulous jaw:  
    In the case of fixed reconstruction, combined with Ø 4.1 mm implants and splinted with a superstructure  
  **Caution**  
  Placement in the molar region is not recommended | 5.5 mm               | 7.0 mm               |
| **S Ø 4.1 mm RN**     | ■ For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients | 6.0 mm               | 7.0 mm               |
| **SP Ø 4.1 mm RN**    |                                                                                                       |                      |                      |

*S = Standard Implant, SP = Standard Plus Implant  
NN = Narrow Neck Ø 3.5 mm, RN = Regular Neck Ø 4.8 mm

* Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm  
** Minimal site width: Minimal mesial-distal site width for a single tooth restoration, between adjacent teeth, rounded off to 0.5 mm
### Specific indications for Straumann® Standard and Standard Plus implants, cont.

<table>
<thead>
<tr>
<th>Implant type</th>
<th>Indications and distinctive features</th>
<th>Minimal ridge width*</th>
<th>Minimal site width**</th>
</tr>
</thead>
</table>
| S Ø 4.8 mm RN | ■ 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                                                                                                           | 7.0 mm                | 7.0 mm               |
| SP Ø 4.8 mm RN |                                                                                                                                                                                                                                         |                       |                      |
| S Ø 4.8 mm WN | ■ 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 designed for their reconstruction of teeth with a wider neck diameter                                                                 | 7.0 mm                | 8.5 mm               |
| SP Ø 4.8 mm WN |                                                                                                                                                                                                                                         |                       |                      |

*S = Standard Implant, ** = Standard Plus Implant  
RN = Regular Neck Ø 4.8 mm, WN = Wide Neck Ø 6.5 mm

* Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm  
** Minimal site width: Minimal mesial-distal site width for a single tooth restoration, between adjacent teeth, rounded off to 0.5 mm
<table>
<thead>
<tr>
<th>Implant type</th>
<th>Indications and distinctive features</th>
<th>Minimal ridge width</th>
<th>Minimal site width</th>
</tr>
</thead>
</table>
| TE Ø 3.3 mm RN       | ■ 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  
   ⚠️ Caution  
   Placement in the molar region is not recommended                                                                                                                                     | 7.0 mm               | 7.0 mm            |
| TE Ø 4.1 mm RN       | ■ For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients                                                                                              | 7.0 mm               | 7.0 mm            |
| TE Ø 4.8 mm WN       | ■ For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients  
   ■ The TE Ø 4.8 mm implants are especially suited for wider interdental spaces and ridges                                                                                       | 8.5 mm               | 8.5 mm            |

**TE** = Tapered Effect Implant  
**RN** = Regular Neck Ø 4.8 mm, **WN** = Wide Neck Ø 6.5 mm

* Minimal ridge width: Minimal orofacial ridge width between adjacent teeth, rounded off to 0.5 mm  
** Minimal site width: Minimal mesial-distal site width for a single tooth restoration, between adjacent teeth, rounded off to 0.5 mm
## Specific indications for Straumann® Bone Level implants

<table>
<thead>
<tr>
<th>Implant type</th>
<th>Indications and distinctive features</th>
<th>Minimal ridge width*</th>
<th>Minimal site width**</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL Ø 3.3 mm NC</td>
<td>Small diameter implant for narrow interdental spaces and ridges</td>
<td>5.5 mm</td>
<td>5.5 mm</td>
</tr>
<tr>
<td></td>
<td>Caution: Placement in the molar region is not recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL Ø 4.1 mm RC</td>
<td>For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients</td>
<td>6.0 mm</td>
<td>6.0 mm</td>
</tr>
<tr>
<td>BL Ø 4.8 mm RC</td>
<td>For oral endosteal implant indications in the maxilla and mandible, for functional and esthetic rehabilitation of edentulous and partially edentulous patients, The BL Ø 4.8 mm implants are especially suited for wider interdental spaces and ridges</td>
<td>7.0 mm</td>
<td>7.0 mm</td>
</tr>
</tbody>
</table>

* BL = Bone Level, NC = Narrow CrossFit®, RC = Regular CrossFit®

---

* Minimal ridge width: Minimal orofacial ridge width, rounded off to 0.5 mm

** Minimal site width: Minimal mesial-distal site width for a single tooth restoration, between adjacent teeth, rounded off to 0.5 mm
### Specific indications for Straumann® Roxolid® implants

<table>
<thead>
<tr>
<th>Implant type</th>
<th>Indications and distinctive features</th>
<th>Minimal ridge width*</th>
<th>Minimal gap width**</th>
</tr>
</thead>
<tbody>
<tr>
<td>S Ø 3.3 mm RN SLActive® Roxolid</td>
<td>▪ Ideal in the case of a restricted ridge width</td>
<td>5.5 mm</td>
<td>7.0 mm</td>
</tr>
<tr>
<td>SP Ø 3.3 mm RN SLActive Roxolid</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| TE Ø 3.3 mm RN SLActive Roxolid | ▪ 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  
▪ Caution  
Placement in the molar region is not recommended for Ø 3.3 mm implants | 7.0 mm | 7.0 mm |
| BL Ø 3.3 mm NC SLActive Roxolid | ▪ Small diameter implant for narrow interdental spaces and ridges  
▪ Caution  
Placement in the molar region is not recommended for Ø 3.3 mm implants | 5.5 mm | 5.5 mm |

*S = Standard  SP = Standard Plus  TE = Tapered Effect  BL = Bone Level  
RN = Regular Neck Ø 4.8 mm NC = Narrow CrossFit®

* Minimal ridge width: Minimal orofacial ridge width between adjacent teeth, 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
3. PREOPERATIVE PLANNING

3.1 Implant position
The implant is the focal point of the restoration, and 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. As 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
- Orophalcal
- 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, as it is the widest part of the implant. Note that all distances given in this chapter are rounded off to 0.5 mm. The following basic rules must be applied:

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 required.

Rule 2
Distance to adjacent implants at bone level:
A minimal distance of 3.0 mm between two adjacent implant shoulders (mesiodistal) is required.
3.1.1.1 Examples of single tooth gaps
For single tooth restorations, the implant is centered within the single tooth site. The following examples show how rule 1 is implemented.

Straumann® Standard, Standard Plus, and Tapered Effect implants
For soft tissue level implants, the width of the site has to be considered for the selection of the shoulder diameter (NN, RN, WN). In order to make use of the site width in conjunction with rule 1, the following approximation can be used.

The distance between adjacent teeth at bone level is approximately 1.0 mm (2 x 0.5 mm) more than the site width. Hence, applying rule 1, the site width must be 2.0 mm wider than the implant shoulder.
3. Preoperative Planning

3.1 Implant position

**S/SP/TE implants**

<table>
<thead>
<tr>
<th>Shoulder diameter (D) (mm)</th>
<th>Site width (a&lt;sub&gt;min&lt;/sub&gt; (mm))</th>
<th>Distance between adjacent teeth at bone level (b&lt;sub&gt;min&lt;/sub&gt; (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 3.5 (NN)</td>
<td>5.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Ø 4.8 (RN)</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Ø 6.5 (WN)</td>
<td>8.5</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Rule: D + 2.0 mm, D + 3.0 mm*  

*Rule 1 applied on both implant sides.

The Diagnostic T (see page 25), applied in the patient’s mouth or on the cast, can be used to obtain an initial measurement of the site width for the choice of the implant shoulder diameter and prosthetic reconstruction.

**Single tooth gaps**

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

<table>
<thead>
<tr>
<th>Implant diameter (D) (mm)</th>
<th>Site width (a&lt;sub&gt;min&lt;/sub&gt; (mm))</th>
<th>Distance between adjacent teeth at bone level (b&lt;sub&gt;min&lt;/sub&gt; (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL Ø 3.3</td>
<td>5.5</td>
<td>6.5</td>
</tr>
<tr>
<td>BL Ø 4.1</td>
<td>6.0</td>
<td>7.0</td>
</tr>
<tr>
<td>BL Ø 4.8</td>
<td>7.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Rule: D + 2.0 mm, D + 3.0 mm*  

*All distances are rounded off to 0.5 mm.
3.1.1.2 Examples of multiple tooth gaps
The following examples show how rules 1 and 2 are implemented in multiple tooth sites. 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 3.0 mm between two adjacent implant shoulders (rule 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

<table>
<thead>
<tr>
<th>S/SP/TE implants</th>
<th>Shoulder diameter D₁ [mm]</th>
<th>Shoulder diameter D₂ [mm]</th>
<th>aₘᵋᵣₐₓ [mm]</th>
<th>bₘᵋᵣᵢₐₓ [mm]</th>
<th>cₘᵋᵣᵢₐₓ [mm]</th>
<th>Lₘᵋᵣᵢₐₓ [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 3.5 [NN]</td>
<td>Ø 3.5 [NN]</td>
<td>3.0</td>
<td>6.5</td>
<td>3.0</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Ø 3.5 [NN]</td>
<td>Ø 4.8 [RN]</td>
<td>3.0</td>
<td>7.0</td>
<td>4.0</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td>Ø 3.5 [NN]</td>
<td>Ø 6.5 [WN]</td>
<td>3.0</td>
<td>8.0</td>
<td>5.0</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Ø 4.8 [RN]</td>
<td>Ø 4.8 [RN]</td>
<td>4.0</td>
<td>8.0</td>
<td>4.0</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Ø 4.8 [RN]</td>
<td>Ø 6.5 [WN]</td>
<td>4.0</td>
<td>8.5</td>
<td>5.0</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>Ø 6.5 [WN]</td>
<td>Ø 6.5 [WN]</td>
<td>5.0</td>
<td>9.5</td>
<td>5.0</td>
<td>19.5</td>
<td></td>
</tr>
</tbody>
</table>

Straumann® Bone Level implants

<table>
<thead>
<tr>
<th>BL implants</th>
<th>Implant diameter D₁ [mm]</th>
<th>Implant diameter D₂ [mm]</th>
<th>aₘᵋᵣᵢₐₓ [mm]</th>
<th>bₘᵋᵢᵢᵣᵢₐₓ [mm]</th>
<th>cₘᵋᵣᵢₐₓ [mm]</th>
<th>Lₘᵋᵢᵢᵣᵢₐₓ [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL Ø 3.3</td>
<td>BL Ø 3.3</td>
<td>3.0</td>
<td>6.5</td>
<td>3.0</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>BL Ø 3.3</td>
<td>BL Ø 4.1</td>
<td>3.0</td>
<td>7.0</td>
<td>3.5</td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>BL Ø 3.3</td>
<td>BL Ø 4.8</td>
<td>3.0</td>
<td>7.0</td>
<td>4.0</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td>BL Ø 4.1</td>
<td>BL Ø 4.1</td>
<td>3.5</td>
<td>7.0</td>
<td>3.5</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td>BL Ø 4.1</td>
<td>BL Ø 4.8</td>
<td>3.5</td>
<td>7.5</td>
<td>4.0</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>BL Ø 4.8</td>
<td>BL Ø 4.8</td>
<td>4.0</td>
<td>7.5</td>
<td>4.0</td>
<td>15.5</td>
<td></td>
</tr>
</tbody>
</table>
3.1.2 Orofacial implant position
The facial and palatal bone layer must be at least 1.0 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 12-16. Within this limitation, a restoration-driven orofacial implant position and axis should be chosen so that screw-retained restorations are possible.

⚠️ Caution
An augmentation procedure is indicated where the orofacial bone wall is less than 1.0 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.
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.

**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 page 66).

---

**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. They can be placed slightly deeper, if necessary. Ideally, in the esthetic region, the implant shoulder should be positioned about 1.0 mm apical to the cemento-enamel junction (CEJ) of the contralateral tooth or 2.0 mm subgingival of the prospective gingival margin (see references on page 24).
**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 3.0–4.0 mm subgingival of the prospective gingival margin (see also use of Bone Level transfer part on page 49).

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

For further information regarding surgical procedures in cases pertaining to esthetics, please refer to the following scientific publications:

**ITI Consensus Paper**

**ITI Treatment Guide**
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 30), is recommended.

**Note**
Currently, a Diagnostic T for Straumann Bone Level implants is not available.

\[X = \text{Minimum occlusal space requirement (for the smallest prosthetic restoration option)}\]

\[Y = \text{Interproximal distance (site width)}\]

\[Z = \text{Implant center to adjacent tooth (1/2 the gap width)}\]

**Implant shoulders:**
NN = Narrow Neck (Ø 3.5 mm)
RN = Regular Neck (Ø 4.8 mm)
WN = Wide Neck (Ø 6.5 mm)

Determining the implant shoulder diameter in a single tooth gap

Determining the minimal distance between implant axis and adjacent teeth

Minimum vertical space requirement for access with surgical instruments
3.2.1.2 Straumann® Implant Distance Indicator

Two types of 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 four 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 during surgery to mark the desired implant site.

After reflecting the flap and determining the 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 Ø 1.4 mm (Art. No. 044.022) in order to mark the center of the implant bed.

### Distance indicator for Straumann Standard, Standard Plus, and Tapered Effect implants

<table>
<thead>
<tr>
<th>Leg label</th>
<th>Disk diameter</th>
<th>Corresponding implants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg 1</td>
<td>RN Ø 4.8</td>
<td>all Regular Neck (RN) implants</td>
</tr>
<tr>
<td>Leg 2</td>
<td>RN Ø 4.8</td>
<td>all Regular Neck (RN) implants</td>
</tr>
<tr>
<td>Leg 3</td>
<td>NN Ø 3.5</td>
<td>all Narrow Neck (NN) implants</td>
</tr>
<tr>
<td>Leg 4</td>
<td>WN Ø 6.5</td>
<td>all Wide Neck (WN) implants</td>
</tr>
</tbody>
</table>
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 easily determine 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 5.0 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.
3.2.2.2 X-ray templates

X-ray templates are used for measurement and comparison. They 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 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.
To calculate the effective bone availability, the following formula should be used:

\[
\frac{\text{X-ray reference sphere } 5.0 \text{ mm} \times \text{ bone availability (X-ray*)}}{\text{Reference sphere diameter on the X-ray}} = \text{effective bone availability}
\]

* 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 13.0 mm and 6.0 mm (+20% distortion), respectively.

\[
\frac{5.0 \text{ mm} \times 13.0 \text{ mm}}{6.0 \text{ mm}} = 10.8 \text{ mm}
\]

Additional length of the drill tip:

Note

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 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.

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

The 10.0 mm long metal pin functions as the X-ray reference pin. After the 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 verification, an X-ray with the drill template may also be taken. A Ø 2.2 mm pilot drill is then used for the subsequent drilling.
3.2.3.2 Thermoplastic drill template

1. Drill a hole into the previously determined implant position and in the plaster anatomic cast on its axis.
2. Check the implant position by inserting the pin into the drilled hole.
3. Heat the template in water until it is soft and transparent.
4. Place the template on the guide pin and press onto the plaster teeth.

After it has cooled off and has been disinfected, the thermoplastic drill template determines exactly how the Ø 2.2 mm pilot drill is to be guided.
4. SURGICAL PROCEDURE

4.1 Implant bed preparation
Preparation of the implant bed is completed using one surgical kit for all Straumann® dental implants. The surgical procedure can be categorized into two steps:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Influencing factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic implant bed preparation</td>
<td>Endosteal implant diameter</td>
</tr>
<tr>
<td>Ridge preparation</td>
<td></td>
</tr>
<tr>
<td>Twist drills</td>
<td></td>
</tr>
<tr>
<td>2. Final implant bed preparation</td>
<td>Implant type and bone class</td>
</tr>
<tr>
<td>Profile drills</td>
<td></td>
</tr>
<tr>
<td>Tapping</td>
<td></td>
</tr>
</tbody>
</table>

Prior to and during the surgical procedure, the following points must be considered:

- Check all instruments for completeness and function. An adequate stock of implants and sterile spare instruments should always be available.
- Do not use cutting instruments more than 10 times. The table “Surgery Tracking Sheet for Straumann Cutting Instruments” (Art. No. USLT 230) facilitates tracking.
- Ensure ample cooling of drills with pre-cooled (5 °C, 41 °F) physiological sterile saline solution (NaCl).
- Do not exceed the indicated speed for drills (see graphics and tables on page 36).
- Use drills in ascending order of their diameter.
- Use only light pressure and an intermittent drilling technique.

Basic implant bed preparation involves ridge preparation and use of the twist drills.

For twist drills, the endosteal diameter of the implant (3.3/4.1/4.8 mm), not the implant type or the bone class, determines the drills that are used.

Final implant bed preparation involves use of the profile drills and tapping.

For tapping, the implant type (S/SP/TE/BL) and bone class determine the tap that is used.
4.1.1. Basic implant bed preparation

After opening the gingiva, the basic implant bed preparation begins by preparing the alveolar ridge (Step 1) and marking the implantation site with a round bur (Step 2). After that, the implant bed preparation with pilot and twist drills follows (steps 3–7), according to the endosteal implant diameter chosen during preoperative planning (see Chapter 3, page 17).

1  Step 1 – Prepare the alveolar ridge
Carefully reduce and smooth a narrow tapering ridge with a large round bur to provide a flat bone surface and a sufficiently wide area of bone.

Note
When choosing the implant length, (SLActive®/SLA® surface) the vertical reduction of the bone has to be considered.

2  Step 2 – Mark the implantation site
Mark the implantation site determined during implant position planning with the Ø 1.4 mm round bur. The implant distance indicator can be used for that purpose (see pages 26 and 27).

Widen and correct the position of the mark with the Ø 2.3 mm or the Ø 3.1 mm round bur, if necessary.
3

**Step 3 – Mark the implant axis**

With the Ø 2.2 mm pilot drill, mark the implant axis by drilling to a depth of about 6.0 mm.

Insert the short side of the Ø 2.8 mm depth gauge with the distance indicator to check for correct implant axis orientation.

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

**Note**
The 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 Ø 2.2 mm**

Pre-drill the implant bed to the final preparation depth with the Ø 2.2 mm pilot drill.

Use the Ø 2.2 mm alignment pin to check the implant axis and preparation depth.

**Caution**
At this point take an X-ray, particularly in sites with vertically reduced bone availability. The alignment pin is inserted into the drilled site, which allows a comparative visualization of the prepared site in relation to the anatomical structures.

5

**Step 5 – Widen the implant bed to Ø 2.8 mm**

Continue with the implant bed preparation.

If necessary, correct the implant position with the Ø 2.8 mm pilot drill. Use the Ø 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 final implant bed preparation on page 37.
For Ø 4.1 mm and Ø 4.8 mm implants

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

For an implant with an endosteal diameter of 4.1 mm, basic preparation ends here. Continue with the final implant bed preparation on page 37.

For Ø 4.8 mm implants

Step 7 – Widen the implant bed to Ø 4.2 mm
Continue with the Ø 4.2 mm Straumann Twist Drill PRO and check the final preparation depth with the Ø 4.2 mm depth gauge.

Continue with the final implant bed preparation on page 37.

Note
To facilitate introducing the instruments into the bone cavity, the bony margin of the implant site can be beveled slightly using a large round bur or with a SP profile drill corresponding to the diameter of the last twist/spiral drill employed. The profile drills are inserted only a fraction into the implant site.
The following table summarizes the use of instruments for initial implant bed preparation according to the endosteal implant diameter. All drills are available in a short and a long version, and multi-use as well as single-patient drills (see also Surgical Instruments on page 67). The table lists the short multi-use drills only.

<table>
<thead>
<tr>
<th>Step</th>
<th>Art. No.</th>
<th>Product</th>
<th>max. rpm</th>
<th>Endosteal Ø (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 3.3</td>
</tr>
<tr>
<td>1</td>
<td>Prepare ridge</td>
<td>044.004</td>
<td>Round bur, Ø 3.1 mm</td>
<td>800</td>
</tr>
<tr>
<td>2</td>
<td>Mark implant position</td>
<td>044.022</td>
<td>Round bur, Ø 1.4 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>044.003</td>
<td>Round bur, Ø 2.3 mm</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>044.004</td>
<td>Round bur, Ø 3.1 mm</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mark implant axis</td>
<td>044.210</td>
<td>Pilot drill 1, short, Ø 2.2 mm</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>046.455</td>
<td>Depth gauge, with distance indicator, Ø 2.2/2.8 mm</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Prepare implant bed to Ø 2.2 mm</td>
<td>044.210</td>
<td>Pilot drill 1, short, Ø 2.2 mm</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>046.458</td>
<td>Alignment pin, Ø 2.2 mm, straight</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Prepare implant bed to Ø 2.8 mm</td>
<td>044.214</td>
<td>Pilot drill 2, short, Ø 2.8 mm</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>046.455</td>
<td>Depth gauge, with distance indicator, Ø 2.2/2.8 mm</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Prepare implant bed to Ø 3.5 mm</td>
<td>044.250</td>
<td>Twist drill PRO, short, Ø 3.5 mm</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>046.450</td>
<td>Depth gauge Ø 3.5 mm</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Prepare implant bed to Ø 4.2 mm</td>
<td>044.254</td>
<td>Twist drill PRO, short, Ø 4.2 mm</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>046.451</td>
<td>Depth gauge Ø 4.2 mm</td>
<td></td>
</tr>
</tbody>
</table>
4.1.2. Final implant bed preparation
The final 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. 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.

<table>
<thead>
<tr>
<th>Straumann Standard Plus Profile Drill</th>
<th>Straumann Tapered Effect Profile Drill</th>
<th>Straumann Bone Level Profile Drill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert the Straumann Standard Plus Profile Drill according to the planned insertion depth of the implant.</td>
<td>Insert the Straumann Tapered Effect Profile Drill into the bone according to the planned insertion depth of the implant.</td>
<td>Insert the Straumann Bone Level Profile Drill into the bone up to the planned implant shoulder level.</td>
</tr>
<tr>
<td>Insertion depth on SLActive®/SLA® surface margin level</td>
<td>Insertion depth on implant shoulder</td>
<td>A dent on the front of the guide cylinder makes the BL Profile drills distinguishable from Tapered Effect Profile drills.</td>
</tr>
</tbody>
</table>

400 rpm max. 300 rpm max. 300 rpm max.

Note
Due to the unflared neck portion, the Straumann Standard Plus Ø 3.3 mm NN and Standard Plus Ø 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. Tapping 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 tap can be used according to the recommendation for BL implants as suggested in the table below.

### Tapping according to bone class

<table>
<thead>
<tr>
<th>Bone Classes*</th>
<th>S, SP implants</th>
<th>BL, TE implants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø 3.3 mm</td>
<td>Ø 4.1 mm</td>
</tr>
<tr>
<td>Class 1</td>
<td>full</td>
<td>full</td>
</tr>
<tr>
<td>Class 2</td>
<td>coronal</td>
<td>coronal</td>
</tr>
<tr>
<td>Class 3</td>
<td>full</td>
<td>full</td>
</tr>
<tr>
<td>Class 4</td>
<td>full</td>
<td>full</td>
</tr>
</tbody>
</table>

* 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 ratchet
- Tap for adapter
- Coupling for ratchet
- Coupling for adapter
- Depth mark
- Cutting head

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).

The S/SP taps are available for adapter and for ratchet. Two lengths are offered for the ratchet version.

15 rpm max.

### Straumann Bone Level and Tapered Effect taps

- Tap for adapter
- Coupling for adapter
- Label for implant type
- Depth mark
- Cutting head

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

BL/TE taps are available for adapter only.

15 rpm max.

Caution
Straumann taps are to be used only for the corresponding implant type.
Two types of Straumann® taps are available: taps for ratchet and taps for handpiece. The taps for ratchet are directly coupled to the ratchet, and are for tapping with ratchet only. The taps for handpiece can be coupled either to a handpiece or to an adapter for ratchet and allow both tapping with the handpiece or with the ratchet.

**Tapping with handpiece**

Connect the tap for adapter to the handpiece via the handpiece adapter. Do not exceed 15 rpm.

**Tapping with ratchet**

For tapping with the ratchet use the tap for ratchet or 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 final 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 37).

Note
For Standard implants, profile drilling is not required.

Step 2 – Tapping the thread in dense bone
Pre-tap the implant bed with the S/SP tap according to the bone class and the endosteal diameter (see table on page 38).

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 37).
**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 final implant bed preparation for a Ø 4.1 mm Bone Level Implant with a 12.0 mm length placed in bone class 1 or 2, making pre-tapping necessary (see table on page 38). These steps follow basic implant bed preparation (see pages 33-35).

**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 37).

**Step 2 – Tapping the thread in dense bone**
Pre-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 final implant bed preparation for all Straumann® implants. All profile drills are available in a short and a long version. S/SP taps are available for ratchet and for handpiece. The table lists the short profile drills, and the taps for handpiece only.

### Instrumentation for final implant bed preparation

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Product</th>
<th>Max. rpm</th>
<th>Thread pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>044.086</td>
<td>SP Profile drill, short, Ø 2.8 mm, RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>044.088</td>
<td>SP Profile drill, short, Ø 3.5 mm, RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>044.084</td>
<td>SP Profile drill, short, Ø 4.2 mm, WN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>044.575</td>
<td>S/SP Tap, Ø 3.3 mm, for handpiece</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>044.577</td>
<td>S/SP Tap, Ø 4.1 mm, for handpiece</td>
<td>15</td>
<td>1.25</td>
</tr>
<tr>
<td>044.579</td>
<td>S/SP Tap, Ø 4.8 mm, for handpiece</td>
<td></td>
<td>1.25</td>
</tr>
<tr>
<td>044.701</td>
<td>TE Profile drill, short, Ø 2.8 mm RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>044.705</td>
<td>TE Profile drill, short, Ø 3.5 mm RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>044.703</td>
<td>TE Profile drill, short, Ø 4.2 mm WN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026.2303</td>
<td>BL Profile drill, Ø 3.3 mm, short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026.4303</td>
<td>BL Profile drill, Ø 4.1 mm, short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026.6303</td>
<td>BL Profile drill, Ø 4.8 mm, short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026.2310</td>
<td>BL/TE Tap, Ø 3.3 mm, for handpiece</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>026.4310</td>
<td>BL/TE Tap, Ø 4.1 mm, for handpiece</td>
<td>15</td>
<td>0.8</td>
</tr>
<tr>
<td>026.6310</td>
<td>BL/TE Tap, Ø 4.8 mm, for handpiece</td>
<td></td>
<td>0.8</td>
</tr>
</tbody>
</table>
Due to the unflared neck portion, the Straumann® Standard Plus Ø 3.3 mm NN and Standard Plus Ø 4.8 mm RN implants are inserted without profile drilling.

| Required step | Required in dense bone only |

### Required step

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Product Max.</th>
<th>rpm</th>
<th>Thread</th>
<th>pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP Ø 3.3 NN</td>
<td>SP Ø 3.3 RN</td>
<td>SP Ø 4.1 RN</td>
<td>SP Ø 4.8 RN</td>
<td>SP Ø 4.8 WN</td>
</tr>
<tr>
<td>sP Profile drill, short, Ø 2.8 mm, rn</td>
<td>sP Profile drill, short, Ø 3.5 mm, rn</td>
<td>sP Profile drill, short, Ø 4.2 mm, Wn</td>
<td>s/sP tap, Ø 3.3 mm, for handpiece</td>
<td>s/sP tap, Ø 4.1 mm, for handpiece</td>
</tr>
<tr>
<td>TE Ø 3.3 RN</td>
<td>TE Ø 4.1 RN</td>
<td>TE Ø 4.8 WN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>te Profile drill, short, Ø 2.8 mm rn</td>
<td>te Profile drill, short, Ø 3.5 mm rn</td>
<td>te Profile drill, short, Ø 4.2 mm Wn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL Profile drill, Ø 3.3 mm, short</td>
<td>BL Profile drill, Ø 4.1 mm, short</td>
<td>BL Profile drill, Ø 4.8 mm, short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL/te tap, Ø 3.3 mm, for handpiece</td>
<td>BL/te tap, Ø 4.1 mm, for handpiece</td>
<td>BL/te tap, Ø 4.8 mm, for handpiece</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4. Surgical procedure

#### 4.1 Implant bed preparation

<table>
<thead>
<tr>
<th><strong>4.1 Implant bed preparation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Required step</em></td>
</tr>
</tbody>
</table>

* Due to the unflared neck portion, the Straumann® Standard Plus Ø 3.3 mm NN and Standard Plus Ø 4.8 mm RN implants are inserted without profile drilling.
4.2 Opening the implant package
Straumann SLActive® implants

1 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.

2 Step 2 – Open the vial

Turn the lid in a counterclockwise direction, keeping the vial upright to prevent the sodium chloride solution from flowing out.

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

3 Step 3 – Detach the implant carrier

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

Note
After removing the implant from the sodium chloride solution, the hydrophilicity and chemical activity of SLActive surface are ensured for 15 minutes.
Straumann SLA® implants

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

Note
For SLA implants, the vial ensures the sterility of the implant, unlike SLActive®, which utilizes a blister package for sterility.

2  
Step 2 – Remove the implant carrier from the ampoule
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 for placement of the implant. The following step-by-step shows how a Straumann® Standard Plus implant is placed with the handpiece (left column on the following pages) and how a Straumann® Bone Level implant is placed with the ratchet (right column on the following pages).

Note

Straumann Bone Level implants must be rotationally oriented for both handpiece and ratchet insertion (see Step 5 on page 49). Apart from this exception, all Straumann implants are placed in the same way.

Placement with the handpiece
Example: Straumann Standard Plus Implant

1

Step 1 – Attach the handpiece adapter
Grasp the closed part of the implant carrier. Attach the handpiece adapter onto the transfer part on the implant. A click is heard when the handpiece adapter is attached to the transfer part correctly.

Placement with the ratchet
Example: Straumann Bone Level Implant

1

“click”

Step 1 – Attach the ratchet adapter
Grasp the closed part of the implant carrier. Attach the ratchet adapter onto the transfer part on the implant. A click is heard when the ratchet adapter is attached to the transfer part correctly.
Step 2 – Remove the implant from the implant carrier
Simultaneously pull down the implant carrier and lift the implant out of the implant carrier (while supporting your arms).

Step 3 – Place the implant
Place the implant with the handpiece into the implant bed.

Remove the implant from the implant carrier
Pull the implant carrier slightly downward to remove the implant from the implant carrier. At the same time, lift the implant from the carrier with a slight twisting movement (while supporting your arms).

Step 3 – Place the implant
Place the implant manually into the implant bed with the aid of the adapter.
Step 4 – Insert the implant with the handpiece
Move the implant into final position with a maximum of 15 rpm, turning it clockwise.

Note
When the floor of the bone cavity is reached, there is a palpable increase in resistance.

Caution
To prevent bone compression, check for correct implant bed preparation before placing the implant. When placing the implant, insertion torque must not exceed 35 Ncm.
Step 5 – 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 hand-piece, choose the correct position as shown in step 5 in the right-hand column.

Step 5 – Correct implant orientation
While approaching the final implant position, make sure that one of the four white marks on the blue transfer part is exactly oriented orofacially. This positions the four protrusions of the internal connection for ideal prosthetic abutment orientation. A quarter turn to the next white mark corresponds to a vertical displacement of 0.2 mm.

⚠️ Warning
Correction of vertical positioning, using reverse rotations (counterclockwise), is contraindicated as it can considerably interfere with the primary stability of the implant and should not be performed.
Step 6 – Loosen the transfer part
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 page 72).
Step 7 – Remove the instruments
Remove the holding key and then completely remove the transfer part with the adapter from the implant.

Step 7 – 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.
4.4 Soft tissue management
After implantation, the implant is closed – hand-tightened – with a SCS closure screw, healing cap or healing abutment to protect the internal aspect of the implant (for SCS screwdrivers see page 72). The surgeon can choose between submucosal and transmucosal healing and has options available for soft tissue management made possible through a set of secondary healing components.

The non-epithelialized side of the flap should be approximated to the implant neck [soft tissue approximation]. If necessary, this step must be combined with a gingivectomy. The wound margins are closed with atraumatic suture material, and the sutures must not be tied too tightly. One relieving suture is placed on either side of the closure screw or healing cap so that the wound margins are approximated without tension. Use of non-absorbable suture material is recommended (e.g., Polyamide or Teflon). The sutures are removed after 7–10 days. A postoperative X-ray is recommended.

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 regeneration (GBR) or membrane technique procedures. A second surgical procedure is required for uncovering the implant and insertion of the desired secondary component.

Esthetic results depend on successful soft tissue management. To optimize the soft tissue management process, various components with Consistent Emergence Profiles® are available in the prosthetic portfolio of the Straumann® Bone Level Implant. This applies for all healing abutments, temporary abutments and abutments for the final restoration. Thus, the emergence profiles are uniform throughout the treatment process (for optimal healing abutment selection see pages 59-64).
Step 1 – Inserting the closure screw after 1st 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**

Bone Level closure screws are delivered sterile and ready to use. All other Straumann closure screws are delivered non-sterile and must be sterilized prior to use. Refer to package insert for sterilization instructions.

Subsequent loosening is made easier by applying sterile gel or sterile petroleum jelly 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: 2nd 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 59-64.)

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

**Note**

All Straumann secondary components, excluding Bone Level closure screws, are delivered non-sterile and should be sterilized before use. See package insert for sterilization instructions.
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. Healing components 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 59-64.)

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.

Note
Healing caps and abutments are delivered non-sterile in blisters and must be sterilized prior to use. See package insert for sterilization instructions.

Subsequent loosening is made easier by applying sterile gel or sterile petroleum jelly to the healing cap or healing abutment before it is screwed into the implant.

Step 2 – Wound closure
Adapt the soft tissue and suture it back tightly around the abutment.
Overview of closure screws and healing caps for Straumann® Standard, Standard Plus, and Tapered Effect implants

<table>
<thead>
<tr>
<th>Indication</th>
<th>Connection</th>
<th>Article Description</th>
<th>Art. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submucosal healing</strong></td>
<td>NN</td>
<td>Closure screw with hex socket, height 1.8 mm, Ti</td>
<td>048.374*</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Closure screw, small, Ti</td>
<td>048.371V4</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Closure screw, large, height 1.5 mm, Ti</td>
<td>048.373V4</td>
</tr>
<tr>
<td></td>
<td>WN</td>
<td>Closure screw, Ti</td>
<td>048.375</td>
</tr>
<tr>
<td><strong>Transmucosal healing</strong></td>
<td>NN</td>
<td>Protective cap with integral occlusal screw, Ø 4.0 mm, height 3.4 mm, PEEK</td>
<td>048.050†</td>
</tr>
<tr>
<td></td>
<td>NN</td>
<td>Healing cap with integral occlusal screw, Ø 4.0 mm, height 3.4 mm, Ti</td>
<td>048.043</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Closure screw, large, height 1.5 mm, Ti</td>
<td>048.373V4</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Healing cap, height 2.0 mm, Ti</td>
<td>048.033</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Healing cap, height 3.0 mm, Ti</td>
<td>048.034</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Healing cap, height 4.5 mm, Ti</td>
<td>048.037</td>
</tr>
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<td></td>
<td>WN</td>
<td>Healing cap, height 2.0 mm, Ti</td>
<td>048.038</td>
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<td></td>
<td>WN</td>
<td>Healing cap, height 3.0 mm, Ti</td>
<td>048.039</td>
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<tr>
<td></td>
<td>WN</td>
<td>Healing cap, height 4.5 mm, Ti</td>
<td>048.053</td>
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<tr>
<td><strong>Esthetic region</strong></td>
<td>NN</td>
<td>Healing cap with integral occlusal screw, Ø 4.0 mm, height 3.4 mm, Ti</td>
<td>048.043</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Healing cap with labial bevel, small, height 2.0 mm, Ti</td>
<td>048.028</td>
</tr>
<tr>
<td></td>
<td>RN</td>
<td>Healing cap with labial bevel, large, height 3.5 mm, Ti</td>
<td>048.029</td>
</tr>
<tr>
<td></td>
<td>WN</td>
<td>Healing cap with labial bevel, height 2.0 mm, Ti</td>
<td>048.030</td>
</tr>
</tbody>
</table>

*Requires hexagonal screwdriver, Art. No. 046.421
† Limited duration of no longer than 28 days intraorally.
## Overview of closure screws and healing abutments for Straumann® Bone Level implants

<table>
<thead>
<tr>
<th>Indication</th>
<th>Connection</th>
<th>Article</th>
<th>Art. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submucosal healing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ For submucosal healing a closure screw or a short healing abutment should be used. Use of the H 0.5 mm closure screw is recommended for deeply placed implants if bone overgrowth may occur.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td></td>
<td>NC Closure Screw, H 0.0 mm Ti</td>
<td>024.2100-04*</td>
</tr>
<tr>
<td>NC</td>
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<td>NC Closure Screw, H 0.5 mm Ti</td>
<td>024.2105-04*</td>
</tr>
<tr>
<td>NC</td>
<td></td>
<td>NC Healing Abutment, conical, D 3.6 mm H 2.0 Ti</td>
<td>024.2222</td>
</tr>
<tr>
<td>RC</td>
<td></td>
<td>RC Closure Screw, H 0.0 mm Ti</td>
<td>024.4100-04*</td>
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<tr>
<td>RC</td>
<td></td>
<td>RC Closure Screw, H 0.5 mm Ti</td>
<td>024.4105-04*</td>
</tr>
<tr>
<td>RC</td>
<td></td>
<td>RC Healing Abutment, conical, D 4.5 mm H 2.0 Ti</td>
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<tr>
<td><strong>Transmucosal healing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ The set of healing abutments, which have profiles matched to secondary components, allows for simple and reliable soft tissue management.</td>
<td></td>
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<tr>
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<tr>
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<tr>
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<td>NC Healing Abutment, conical, D 3.6 mm H 5.0 Ti</td>
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<tr>
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<td>NC Healing Abutment, conical, D 4.8 mm H 2.0 Ti</td>
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<td>NC Healing Abutment, conical, D 4.8 mm H 3.5 Ti</td>
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<td>NC Healing Abutment, conical, D 4.8 mm H 5.0 Ti</td>
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<td>RC Healing Abutment, conical, D 4.5 mm H 2.0 Ti</td>
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<td>RC Healing Abutment, conical, D 4.5 mm H 4.0 Ti</td>
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<td>RC Healing Abutment, conical, D 6.0 mm H 6.0 Ti</td>
<td>024.4246</td>
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* Sterile pack of 4
### Overview of closure screws and healing abutments for Straumann® Bone Level implants, cont.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Connection</th>
<th>Article</th>
<th>Art. No.</th>
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</thead>
<tbody>
<tr>
<td><strong>Esthetic region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Bottle-shaped healing abutments preshape the soft tissue by allowing for a slight excess of mucosa during healing. The insertion of the final restoration pushes the formed tissue outward, supporting the creation of a naturally shaped peri-implant soft tissue. Make sure that there is no tension on the wound margin. Otherwise mucosal necrosis can occur. (For optimal healing abutment selection see pages 59-64.)</td>
<td>NC</td>
<td>NC Healing Abutment, bottle shape, D 3.3 mm H 3.5 mm Ti</td>
<td>024.2234</td>
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<tr>
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</tr>
<tr>
<td>▪ The customizable healing abutment allows for individual soft tissue management.</td>
<td>NC</td>
<td>NC Healing Abutment, customizable, D 5.0 mm polymer</td>
<td>024.2270</td>
</tr>
<tr>
<td>▪ Note</td>
<td>RC</td>
<td>RC Healing Abutment, customizable, D 7.0 mm polymer</td>
<td>024.4270</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview of Bone Level abutments and corresponding healing abutments
Which healing abutments suit which abutments?

**Straumann® Bone Level Implant Line – NC Platform**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>GH</th>
<th>Anatomic Ø 4.0 mm</th>
<th>LOCATOR® Ø 3.8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>022.2102</td>
<td>2.0 mm</td>
<td>⭐️</td>
<td>022.2502</td>
</tr>
<tr>
<td>022.2104</td>
<td>3.5 mm</td>
<td>⭐️</td>
<td>022.2503</td>
</tr>
<tr>
<td>022.2152</td>
<td>2.0 mm</td>
<td>⭐️</td>
<td>022.2504</td>
</tr>
<tr>
<td>022.2154</td>
<td>3.0/4.0 mm</td>
<td>⭐️</td>
<td>022.2506</td>
</tr>
<tr>
<td>022.2155</td>
<td>5.0/6.0 mm</td>
<td>⭐️</td>
<td></td>
</tr>
</tbody>
</table>

**Conical Ø 3.6 mm**
- 024.2222 2.0 mm
- 024.2224 3.5 mm
- 024.2226 5.0 mm

**Conical Ø 4.8 mm**
- 024.2242 2.0 mm
- 024.2244 3.5 mm
- 024.2246 5.0 mm

**Bottle shape Ø 3.3 mm**
- 024.2234 3.5 mm
- 024.2236 5.0 mm

**Customizable Ø 5.0 mm**
- 024.2270 –

**Temporary Ø 5.0 mm**
- 024.2370 –

**Temporary Ø 3.5 mm (crown)**
- 024.2371 –

**Temporary Ø 3.5 mm (bridge)**
- 024.2375 –

---

**GH** = Gingiva Height

= ideal combination

= best fit

**Note**
The corresponding healing abutments for the Meso, gold, and CADCAM abutments depend on the emergence profile of the final restoration. The above illustration is a recommendation for the optimal use of the "Consistent Emergence Profiles" concept.
### Straumann® Bone Level Implant Line – NC Platform

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>GH</th>
<th>1.0 mm</th>
<th>2.0 mm</th>
<th>3.0 mm</th>
<th>1.0 mm</th>
<th>2.0 mm</th>
<th>3.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conical Ø 3.6 mm</td>
<td>024.2222</td>
<td>2.0 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conical Ø 4.8 mm</td>
<td>024.2242</td>
<td>2.0 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle shape Ø 3.3 mm</td>
<td>024.2234</td>
<td>3.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customizable Ø 5.0 mm</td>
<td>024.2270</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 5.0 mm</td>
<td>024.2236</td>
<td>5.0 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 3.5 mm (crown)</td>
<td>024.2237</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 3.5 mm (bridge)</td>
<td>024.2237</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note**

The corresponding healing abutments for the Meso, gold, and CAD/CAM abutments depend on the emergence profile of the final restoration.

The above illustration is a recommendation for the optimal use of the “Consistent Emergence Profiles” concept.

**GH** = Gingiva Height

| = ideal combination |

| = best fit |
**Straumann® Bone Level Implant Line – NC Platform**

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>GH</th>
<th>1.0 mm</th>
<th>2.5 mm</th>
<th>4.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>022.2731</td>
<td></td>
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<td></td>
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<tr>
<td>022.2732</td>
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<td></td>
</tr>
<tr>
<td>022.2734</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conical Ø 3.6 mm**
- 024.2222: 2.0 mm
- 024.2224: 3.5 mm
- 024.2226: 5.0 mm

**Conical Ø 4.8 mm**
- 024.2242: 2.0 mm
- 024.2244: 3.5 mm
- 024.2246: 5.0 mm

**Bottle shape Ø 3.3 mm**
- 024.2234: 3.5 mm
- 024.2236: 5.0 mm

**Customizable Ø 5.0 mm**
- 024.2270: –

**Temporary Ø 5.0 mm**
- 024.2370: –

**Temporary Ø 3.5 mm (crown)**
- 024.2371: –

**Temporary Ø 3.5 mm (bridge)**
- 024.2375: –

**Note**
The corresponding healing abutments for the Meso, gold, and CAD/CAM abutments depend on the emergence profile of the final restoration.
The above illustration is a recommendation for the optimal use of the “Consistent Emergence Profiles” concept.
### Straumann® Bone Level Implant Line – RC Platform

<table>
<thead>
<tr>
<th>RC</th>
<th>Anatomic Ø 6.5 mm</th>
<th>Anatomic IPS e.max® Ø 6.5 mm</th>
<th>LOCTOR® Ø 3.8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art. No.</td>
<td>GH</td>
<td>2.0 mm</td>
<td>3.5 mm</td>
</tr>
<tr>
<td>Conical Ø 4.5 mm</td>
<td>024.4222</td>
<td>2.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4224</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4226</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Conical Ø 6.0 mm</td>
<td>024.4242</td>
<td>2.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4244</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4246</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Bottle shape Ø 4.4/4.7 mm</td>
<td>024.4234</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4236</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Customizable Ø 7.0 mm</td>
<td>024.4270</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 7.0 mm</td>
<td>024.4370</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 4.5 mm (crown)</td>
<td>024.4371</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 4.5 mm (bridge)</td>
<td>024.4375</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

GH = Gingiva Height

- = ideal combination

★ = best fit

**Note**

The corresponding healing abutments for the Meso, gold, and CAD/CAM abutments depend on the emergence profile of the final restoration.
The above illustration is a recommendation for the optimal use of the “Consistent Emergence Profiles” concept.

IPS e.max® is a registered trademark of Ivoclar Vivadent AG, Liechtenstein.
LOCTOR® is a registered trademark of Zest Anchors, Inc.
### Straumann® Bone Level Implant Line – RC Platform

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>GH</th>
<th>1.0 mm</th>
<th>2.0 mm</th>
<th>3.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>022.4321</td>
<td>022.4322</td>
<td>022.4323</td>
<td></td>
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</tr>
<tr>
<td>022.4325</td>
<td>022.4326</td>
<td>022.4327</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Conical Ø 4.5 mm
- Art. No.: 024.4222
- GH: 2.0 mm
- **GH = 1.0 mm**: Ideal combination

- Art. No.: 024.4224
- GH: 4.0 mm
- **GH = 2.0 mm**: Best fit

- Art. No.: 024.4226
- GH: 6.0 mm
- **GH = 3.0 mm**: With modifications

#### Conical Ø 6.0 mm
- Art. No.: 024.4242
- GH: 2.0 mm
- **GH = 1.0 mm**: Ideal combination

- Art. No.: 024.4244
- GH: 4.0 mm
- **GH = 2.0 mm**: Best fit

- Art. No.: 024.4246
- GH: 6.0 mm
- **GH = 3.0 mm**: With modifications

#### Bottle shape Ø 4.4/4.7 mm
- Art. No.: 024.4234
- GH: 4.0 mm
- **GH = 1.0 mm**: Ideal combination

- Art. No.: 024.4236
- GH: 6.0 mm
- **GH = 2.0 mm**: Best fit

#### Customizable Ø 7.0 mm
- Art. No.: 024.4270
- GH: –
- **GH = 3.0 mm**: With modifications

#### Temporary Ø 7.0 mm
- Art. No.: 024.4370
- GH: –
- **GH = 3.0 mm**: With modifications

#### Temporary Ø 4.5 mm (crown)
- Art. No.: 024.4371
- GH: –
- **GH = 3.0 mm**: With modifications

#### Temporary Ø 4.5 mm (bridge)
- Art. No.: 024.4375
- GH: –
- **GH = 3.0 mm**: With modifications

<table>
<thead>
<tr>
<th>GH = Gingiva Height</th>
<th>= ideal combination</th>
<th>= best fit</th>
<th>= with modifications</th>
</tr>
</thead>
</table>

**Note**

The corresponding healing abutments for the Meso, gold, and CAD/CAM abutments depend on the emergence profile of the final restoration. The above illustration is a recommendation for the optimal use of the “Consistent Emergence Profiles” concept.
### Straumann® Bone Level Implant Line – RC Platform

<table>
<thead>
<tr>
<th>RC</th>
<th>Multi-Base Ø 4.5 mm</th>
<th>Multi-Base Ø 6.5 mm</th>
<th>Multi-Base Ø 4.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Art. No.</td>
<td>GH 1.0 mm</td>
<td>2.5 mm</td>
</tr>
<tr>
<td>Conical Ø 4.5 mm</td>
<td>024.4222</td>
<td>2.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4224</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4226</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Conical Ø 6.0 mm</td>
<td>024.4242</td>
<td>2.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4244</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4246</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Bottle shape Ø 4.4/4.7 mm</td>
<td>024.4234</td>
<td>4.0 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>024.4236</td>
<td>6.0 mm</td>
<td></td>
</tr>
<tr>
<td>Customizable Ø 7.0 mm</td>
<td>024.4270</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 7.0 mm</td>
<td>024.4370</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 4.5 mm (crown)</td>
<td>024.4371</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Temporary Ø 4.5 mm (bridge)</td>
<td>024.4375</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

GH = Gingiva Height

- = ideal combination

- = best fit

---

**Note**

The corresponding healing abutments for the Meso, gold, and CADCAM abutments depend on the emergence profile of the final restoration. The above illustration is a recommendation for the optimal use of the “Consistent Emergence Profiles” concept.
5. HEALING PHASE

5.1 Healing phase duration

<table>
<thead>
<tr>
<th>Situation</th>
<th>SLActive®</th>
<th>SLA®</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 ≥ 8.0 mm</td>
<td>At least 3–4 weeks</td>
<td>At least 6 weeks</td>
</tr>
<tr>
<td>Cancellous bone quality Implants with a diameter of 3.3 mm Implants with a Straumann SLActive/SLA surface length of 6.0 mm</td>
<td>At least 8 weeks</td>
<td>At least 12 weeks</td>
</tr>
<tr>
<td>Straumann SLActive/SLA surface is not completely in contact with the bone Bone augmentation* is necessary</td>
<td>Healing phase corresponding to the situation</td>
<td></td>
</tr>
</tbody>
</table>

SLA® = Sand-blasted, Large grit, Acid-etched SLActive® = Sand-blasted, Large grit, Acid-etched, chemically active and hydrophilic

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

5.2 Straumann SLActive and SLA in comparison

The bone formation process is initiated at an earlier stage with Straumann SLActive, resulting in significantly earlier secondary stability and thus more predictability during the early healing period.
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 and 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 sterile forceps and put into the handle or ratchet. The forceps (Art. No. 046.110) was developed and shaped specially to allow round instruments to be gripped securely.

For information about the care and maintenance of Straumann instruments, please contact Straumann Customer Service at 800/210 1139 and request the PDF “Care and maintenance of surgical and prosthetic instruments.” (USLIT 119)

6.1.1 Depth marks on Straumann instruments

Straumann instruments have depth marks in 2.0 mm intervals that correspond to the available implant lengths. The marks on the twist drills are continuous between the 10.0 mm and 12.0 mm markings. The lower edge of the mark corresponds to 10.0 mm and the upper edge to 12.0 mm.

When inserting a Straumann Standard Plus or Tapered Effect Implant such that the bone is flush with the implant shoulder level (see Preoperative Planning on page 23), the preparation depth must be 2.0 mm more than the indicated implant length.

Example: The preparation depth for a 10.0 mm SP implant inserted up to shoulder level must be 12.0 mm.

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 28 on X-ray templates).
6.1.2 Single-patient pilot and twist 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 surgery only and for one patient only. Single-patient drills can minimize the risk of infection for the patient. Drills 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.

New generation single-patient drills are drill stop compatible.

6.1.3 Straumann Drill Stop – Precise depth control
Straumann Drill Stops provide precise control of the drilling depth during implant bed preparation for the placement of Straumann dental implants. Delivered in sterile sets, the drill stops are ready for use. The Straumann Drill Stop is designed for single-patient use only, and must be used in conjunction with the single-patient drills that are compatible with drill stops.

Each Straumann Drill Stop Set includes drill stops with the following diameters:
Ø 2.2 mm (blue), Ø 2.8 mm (yellow), Ø 3.5 mm (red), Ø 4.2 mm (green). These diameters correspond to the diameters of the Straumann drills.
**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

<table>
<thead>
<tr>
<th>Implant bed depth</th>
<th>Short drill</th>
<th>Long drill</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.0 mm</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>14.0 mm</td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>12.0 mm</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>10.0 mm</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>8.0 mm</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>6.0 mm</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
6.1.4 Straumann® Surgical cassette

The surgical cassette is used for the secure storage and sterilization of the surgical and auxiliary instruments of the Straumann® Dental Implant System. The 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. Autoclaving at a temperature of up to 134 °C/273 °F is recommended. See page 70 for guidelines for the sterilization of the surgical cassette.

- The easy-to-read user guide ensures a reliable working sequence through color-coded arrows and silicone sleeves
- Clear illustrations and drill length stops allow the arranged instruments, screws and healing caps to be checked at a glance for correctness and completeness
- The instruments are positioned securely in the silicone sleeves for sterilization and storage
- The cassette can be packed according to the working procedure (using the handpiece or manually with the ratchet)
- The surgical cassette houses a separate screw container in which the required Straumann synOcta® and Narrow Neck closure screws and healing caps are arranged, thus providing ease of access to them. CrossFit® healing abutments for the Straumann Bone Level Implant are stored separately.
Guidelines for the sterilization of the surgical cassette

<table>
<thead>
<tr>
<th>Method</th>
<th>Temperature</th>
<th>Exposure Time</th>
<th>Dry Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam Sterilization Prevacuum Cycle</td>
<td>134 °C/273 °F</td>
<td>min. 18 minutes</td>
<td>20 – 60 minutes*</td>
</tr>
<tr>
<td>Steam Sterilization Gravity Cycle</td>
<td>134 °C/273 °F</td>
<td>min. 40 minutes</td>
<td>20 – 60 minutes*</td>
</tr>
</tbody>
</table>

No dry heat sterilization.

*Instruments that are not thoroughly dried may corrode.

Before sterilization, the cassette is packed (e.g., sealed in foil or wrapped in towels) to keep it sterile.

Important

- Chemical sterilization is not recommended
- Do not use dry heat sterilization
- Ensure that the individual sterilization parameters comply with the current regulations of the respective country

In order to avoid damaging the surgical cassette during autoclaving, it must be placed correctly in the autoclave (see illustration).
6.1.5 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

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

The ratchet is supplied with a service instrument, which is used to loosen the headed screw.
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.

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 (counter-clockwise).

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 screwdrivers

SCS screwdriver for manual use
Article: extra short, short, long
Lengths: 15.0 mm, 21.0 mm, 27.0 mm
Material: stainless steel

SCS screwdriver for mechanical use in the handpiece
Article: extra short, short, long
Lengths: 20.0 mm, 26.0 mm, 32.0 mm
Material: stainless steel
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

**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.

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.

**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 an angled model, which facilitates access in the posterior region, and also as a straight model.

6.2.3 Depth stops for osteotomes
All osteotomes have clear laser marks for depths of 6.0 mm, 8.0 mm, 10.0 mm, 12.0 mm and 14.0 mm. In addition, adjustable depth stops are available to facilitate depth checking.
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 bowl of water) 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). The “Surgery tracking sheet for Straumann cutting instruments” sheet (Art. No. USUT 230) helps to track how often the individual instruments have already been used.

*Exception: “Single-patient drills” (see page 67).
Instruments with high cutting performance capabilities are a basic requirement for successful implantation. The following guidelines should be remembered:

- **Never** allow instruments to land on their tips.
- Every instrument must be used only for its particular intended purpose.
- Dirty instruments should be placed in a bowl of saline solution after use during the surgical procedure to avoid allowing blood or tissue residue to dry on them.
- Residues of blood, saliva, tissue or bone must be removed from the instruments immediately after surgery. Every piece of residue that adheres to the instruments and dries on them leads to corrosion.
- Multi-part instruments (e.g., ratchet, internally cooled trephine drill) must be disassembled for sterilization and storage.
- Used instruments must always be placed in a suitable medium for disinfection prior to cleaning.
- Dirty instruments must be placed only on the intended surface (cassette lid or appropriate dish).
- **Never** disinfect, clean (including ultrasonically) or sterilize instruments made of different materials together.
- Damaged instruments must be sorted, disinfected, cleaned separately and discarded.
- **Never** store instruments damp or wet for prolonged periods.

For more information about the care and maintenance of Straumann instruments, please contact Strauman Customer Service at 800/210 1139 and request the PDF “Care and Maintenance of Surgical and Prosthetic Instruments” (USLT 119).

**Ultrasonic Cleaning Cassette**

The Ultrasonic Cleaning Cassette ensures optimal storage during instrument disinfection and cleaning in the ultrasonic bath.

The silicone mat features silicone protrusions that prevent the cutting edges of the instruments from coming into contact, which would have a negative effect on their cutting performance.
## 7.1 Labeling and color coding of the Straumann® Dental Implant System

### Naming and labeling explanations

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<th>Color coding</th>
<th>Endosteal implant diameter</th>
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<tr>
<td>red</td>
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</tr>
<tr>
<td>green</td>
<td>4.8 mm</td>
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### Implant types

- **S**: Standard Implant
- **SP**: Standard Plus Implant
- **TE**: Tapered Effect Implant
- **BL**: Bone Level Implant

### Connection types

- **NN**: Narrow Neck Ø 3.5 mm
- **RN**: Regular Neck synOcta® Ø 4.8 mm
- **WN**: Wide Neck synOcta Ø 6.5 mm
- **NC**: Narrow CrossFit® Ø 3.3 mm
- **RC**: Regular CrossFit Ø 4.1 and Ø 4.8 mm
Example of label on implant packaging

Label on the ampoule lid:
In addition to the color coding (endosteal diameter) of the Straumann® Dental Implant System, the ampoule lids contain all relevant implant information.
7.2 Related documentation

Note
Our detailed documentation will help you in carefully planning and performing your implant-based restorations:
- “Straumann® Narrow Neck”, Art. No. USLIT 112
- Cement-retained crowns and bridges with the solid abutment: Straumann Solid Abutment Prosthetic System”, Art. No. USLIT 045
- “Straumann Bone Level implant line: Basic information on the prosthetic procedures”, Art. No. USLIT 232

Instrument care and maintenance
For more information about the care and maintenance of Straumann instruments, please contact Strauman Customer Service at 800/210 1139 and request the PDF “Care and Maintenance of Surgical and Prosthetic Instruments” (USLIT 119).

The Straumann Guarantee
As a Swiss company, we attach the greatest importance to manufacturing our products to the highest quality. We are firmly convinced of the scientific and clinical basis of our Straumann® Dental Implant System and draw on our extensive knowledge and research 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 “The Straumann Guarantee” Art. No. 152.360.

Explantation
For explanation guidelines, please contact Straumann Customer Service at 800/210 1139 and request the PDF “Directions for use: Explantation procedure for Straumann dental implants” (Art No. 150.854).

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
**Custom-made products**
Under certain circumstances, custom-made products can be supplied for special indications or cases that cannot be treated with standard products.

If you require a custom-made product, please contact your local Straumann representative.

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7.3 Important notes

Disclaimer of liability
The Straumann® dental implant is part of an overall concept and may only be used in conjunction with the associated original components and instruments according to Institut Straumann AG’s instructions and recommendations.

Use of products made by third parties in conjunction with the Straumann Dental Implant System will void any warranty or other obligation, express or implied, of Institut Straumann AG. Instructions as to application of our products take place verbally, in writing, by electronic media or in hands-on trainings corresponding to state of the art at the time of introduction of the product.

The user of Straumann products has the duty to determine whether or not any product is suitable for the particular patient and circumstances. Straumann disclaims any liability, express or implied, and shall have no responsibility for any direct, indirect, punitive or other damages, arising out of or in connection with any errors in professional judgment or practice in the use or installation of Straumann products.

The user is also obliged to study the latest developments of the Straumann Dental Implant System and their applications regularly.

Please note
The descriptions contained in this document are not sufficient for immediate use of the Straumann Dental Implant System. Knowledge of dental implantology and instruction in the handling of the Straumann Dental Implant System provided by an operator with the relevant experience are always necessary.

Availability
Not all products listed in this brochure are available in all countries.

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

Caution
Our products must be secured against aspiration when used intracorally. Do not use damaged or blunt instruments.

Units per package
Unless stated otherwise, there is one unit in each package.

Documentation
You can obtain detailed instructions on the Straumann® Dental Implant System from your Straumann representative.

Copyright and trademarks
Straumann documents may not be reprinted or published, in whole or part, without the written authorization of Institut Straumann AG. Straumann and/or other products and logos from Straumann that are mentioned here are trademarks or registered trademarks of Straumann Holding AG and/or its affiliates.

Definition SLActive®
Sand-blasted, Large grit, Acid-etched, chemically active and hydrophilic

Definition SLA®
Sand-blasted, Large grit, Acid-etched

Explanation of the symbols on labels and instruction leaflets

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Straumann products carry the CE mark and fulfill the requirements of the Medical Devices Directive 93/42 EEC.

Consult instructions for use
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