

BASIC INFORMATION ON
THE SURGICAL PROCEDURE



Straumann® Narrow Neck CrossFit® Implant System

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ABOUT THIS BROCHURE

“Basic information on the surgical procedure – Straumann® Narrow Neck CrossFit® (NNC) Implant System” provides dental practitioners and related specialists with information about the implant and its surgical procedure.

For further information please refer to the main surgical brochure “Basic information on the surgical procedure – Straumann® Dental Implant System” (USLIT100) and “Basic information on Straumann® Guided Surgery” (USLIT261).

The brochure is divided into the following main parts: The Straumann® Narrow

- Neck CrossFit® Implant System
- Indications and contraindications
- Preoperative planning
- Surgical procedures
- Appendix

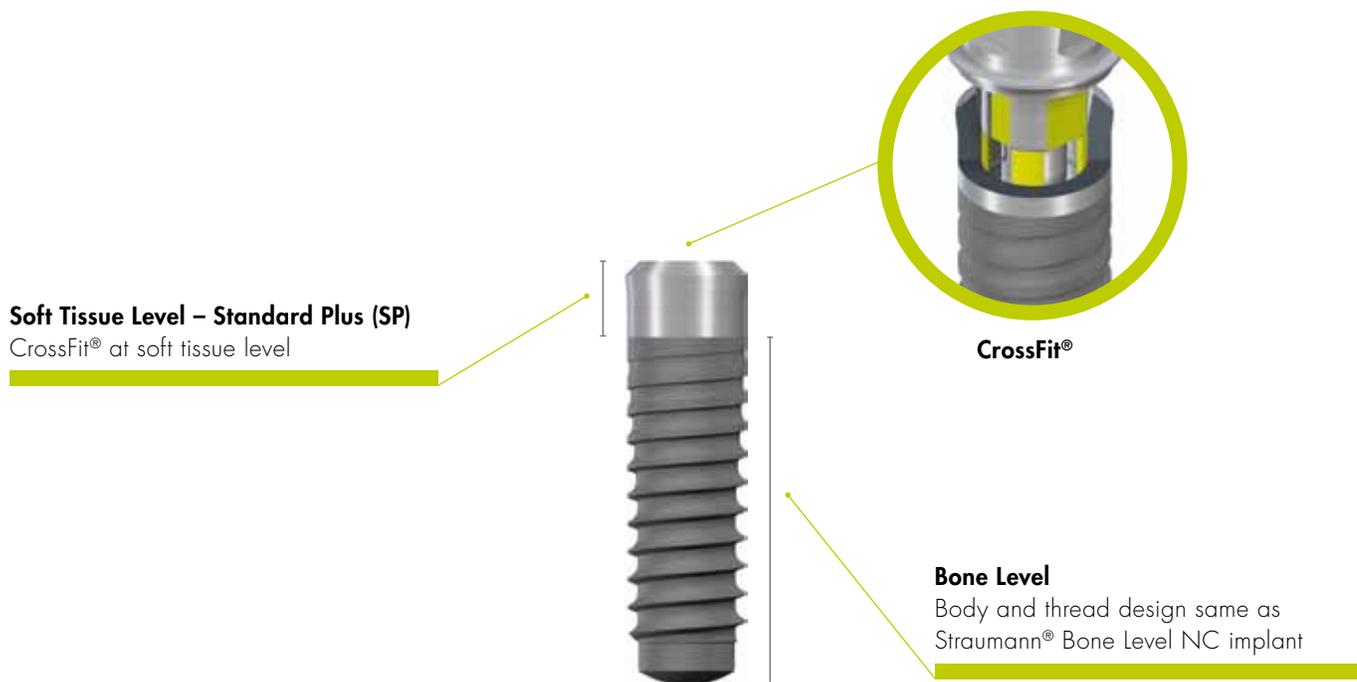
For further information about the NNC prosthetic procedure, please refer to the following brochure:

- “Prosthetic procedures for the Narrow Neck CrossFit® implant”, (USLIT408).

1. THE STRAUMANN® NARROW NECK CrossFit® IMPLANT SYSTEM

1.1 Overview

The NNC implant is a Ø 3.3 mm diameter implant with a narrow prosthetic platform measuring Ø 3.5 mm. Its internal connection provides expanded prosthetic options and solutions for treatments in the upper and lower jaw in narrow interdental spaces.¹ The NNC Implant is a Standard Plus (SP) Soft Tissue Level implant with a polished collar height of 1.8 mm. The introduction of the Roxolid® material makes it possible to incorporate an internal CrossFit® connection and at the same time offer a strong small diameter implant. Combining these features, the NNC is designed to provide confidence to the surgeon. The implant body and thread design of the NNC implant is the same as that of the Straumann Ø 3.3 mm Bone Level NC implant. The NNC implant is available in lengths of 8 mm to 14 mm and in the Roxolid material with the SLActive® surface only. Narrow Neck CrossFit implants use the Narrow Neck CrossFit (NNC) prosthetic components.



¹ Due to their low mechanical load, small diameter implants are not recommended for use in the molar region.

SP 3.3, NNC

Neck diameter

Ø 3.5 mm



Endosteal diameter

Ø 3.3 mm

Art. No.	Length	Material	Surface	Connection	Prosthetic restoration components
033.416S	8 mm	Roxolid®	SLActive®	NNC	Narrow Neck CrossFit® (NNC) LOCATOR®
033.417S	10 mm	Roxolid®	SLActive®	NNC	
033.418S	12 mm	Roxolid®	SLActive®	NNC	
033.419S	14 mm	Roxolid®	SLActive®	NNC	



1.2 Specific design features

The Straumann® Narrow Neck CrossFit® implant has an internal CrossFit® connection with an 8° cone and a 45° implant shoulder. It is specifically adapted for small diameter Soft Tissue Level implants with a narrow prosthetic platform. It is designed to provide optimal force transmission and easy handling for component positioning.

The Narrow Neck CrossFit® (NNC) connection is available for Narrow Neck CrossFit® implants only.



*Straumann® Narrow Neck CrossFit® implant
with a NNC connection*



Straumann® Soft Tissue Level implant design

The design of the Soft Tissue Level implant collar offers “built-in” soft tissue management. In addition, it allows plastic components to be snapped on for abutment level impression workflow.



Straumann® Bone Level thread design

The Straumann® Bone Level thread design has a pitch of 0.8 mm and a conical core diameter, which blends into the machined collar of the implant. It is designed to facilitate good primary stability.



1.3 New transfer piece (NTP)

The Straumann® Narrow Neck CrossFit® implant is delivered with a new, pre-mounted transfer piece, which is not screw-retained, but connected to the implant with a snap-in mounting. After insertion of the implant, the NTP can be released by hand or with the help of tweezers. Counter-manuevering with the Straumann® Holding key is no longer needed (see surgical procedure, page 13).

The NTP can be used as an orientation pin to indicate implant position and angulation for parallel placement of neighbor implants. The NTP can easily be reinserted for further advancement of the implant placement.



The Narrow Neck CrossFit® is delivered sterile in the standard Straumann® SLActive packaging.

2. INDICATIONS AND CONTRAINDICATIONS

2.1 Indications

Straumann® dental implants are suitable for the treatment of oral endosteal implantation in the upper and lower jaw and for the functional and esthetic oral rehabilitation of edentulous and partially dentate patients. Straumann® dental implants can also be used for immediate or early implantation following extraction or loss of natural teeth. As a rule of thumb, always use the largest possible implant diameter.

The prosthetic restorations used are single crowns, bridges and partial or full dentures, which are connected to the implants through the corresponding components (abutments).

For details about the necessary bone volume, spacing between implants and distance from adjacent teeth, see the "Basic Information" brochures as mentioned in the section "Further information".

Specific indications: Small diameter implants

Because of their reduced mechanical stability, small diameter implants (Ø 3.3 mm) are only used in cases with a low mechanical load. Ø 3.3 mm implants are not recommended for molar region.

2.2 Contraindications

Serious internal medical problems; bone metabolism disturbances; uncontrolled bleeding disorders; inadequate wound healing capacity; not completed maxillary and mandibular growth; poor general state of health; uncooperative, unmotivated patient; drug or alcohol abuse; psychoses; prolonged therapy-resistant functional disorders; xerostomia; weakened immune system; illnesses requiring periodic use of steroids; uncontrollable endocrine disorders. Allergies or hypersensitivity to chemical ingredients of materials used: titanium zirconium alloy.

2.2.1 Relative contraindications

Previously irradiated bone in head or neck area, diabetes mellitus, anticoagulation drugs/hemorrhagic diatheses, bruxism, parafunctional habits, unfavorable anatomic bone conditions, tobacco abuse, untreated periodontal diseases, acute infection of implant site, 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.

2.3 Healing phase

Straumann® dental implants are suitable, within the scope of indications, for immediate and early restoration in single tooth gaps and in an edentulous or partially edentulous jaw. Good primary stability and an appropriate occlusal load are essential. In case of immediate restoration: In partially edentulous jaws, two or more adjacent implants should be prosthetically connected together. In edentulous jaws, at least 4 implants must be connected together. For minimal healing time for relevant Straumann® dental implants refer to the "Basic Information" brochures.

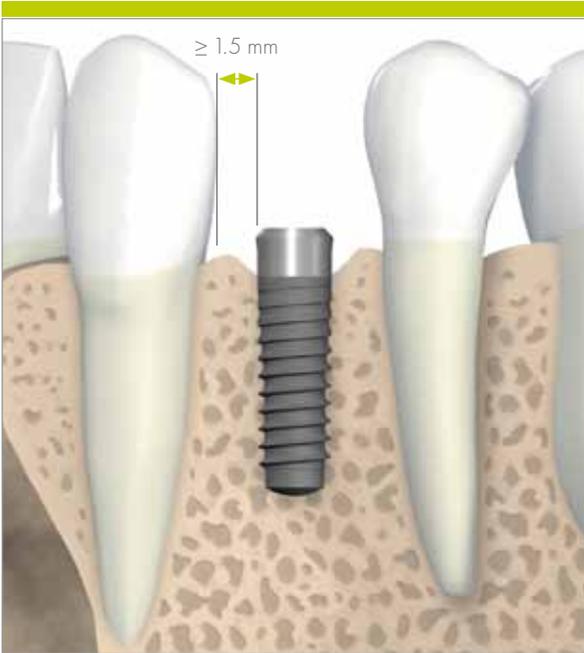
Specific indications for Straumann® Roxolid implants

Implant type		Distinctive features	Minimal ridge width*	Minimal gap width**
SP Ø 3.3 mm NNC SLActive® Roxolid®		Small diameter implant for narrow interdental spaces and bone ridges Placement in the molar region is not recommended	5.5 mm	5.5 mm

* 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



Implant-to-tooth distance



3.1 Implant position

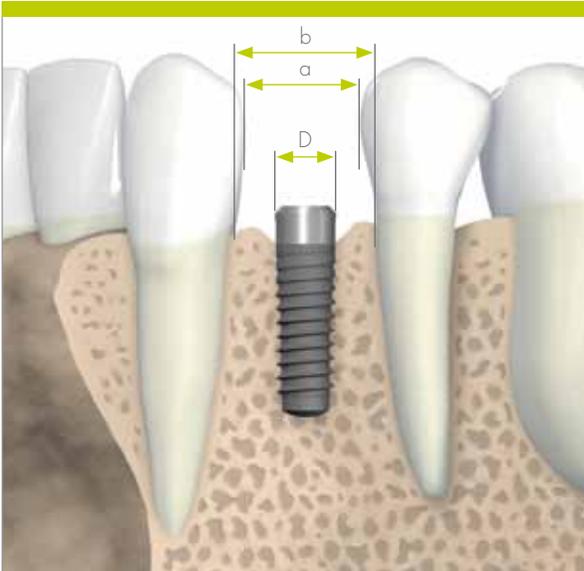
3.1.1 Mesiodistal implant positioning

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.



Distances in single tooth gaps

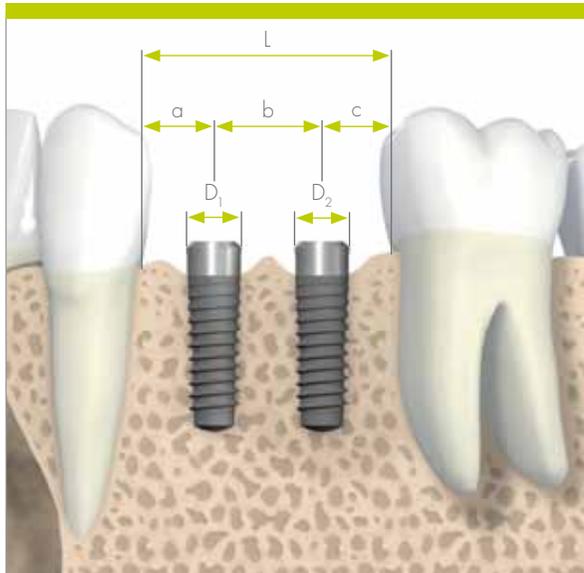
Single tooth gaps

Shoulder diameter D	Gap width a_{min}	Distance between adjacent teeth at bone level b_{min}
Ø 3.5 mm NNC	5.5 mm	6.5 mm

Rule

$$a_{min} = D + 2 \text{ mm}$$

$$b_{min} = D + 3 \text{ mm}^*$$



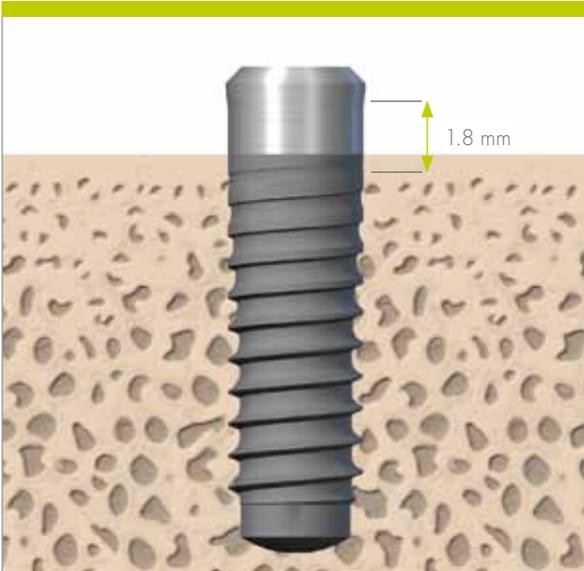
Distances in multiple tooth gaps

Multiple tooth gaps

Shoulder diameter D_1	Shoulder diameter D_2	a_{min}	b_{min}	c_{min}	L_{min}
Ø 3.5 mm NNC	Ø 3.5 mm NNC	3 mm	6.5 mm	3 mm	12.5 mm
Ø 3.5 mm NNC	Ø 4.8 mm RN	3 mm	7 mm	4 mm	14 mm
Ø 3.5 mm NNC	Ø 6.5 mm WN	3 mm	8 mm	5 mm	16 mm

*Rule 1 applied on both implant sides

The Diagnostic T, applied in the patient's mouth or on the cast, can be used to obtain an initial measurement of the gap width for the choice of the implant shoulder diameter and prosthetic reconstruction.



Coronoapical implant position

Straumann® NNC Standard Plus implants with a smooth neck section of 1.8 mm are submerged in the bone as far as the margin of the Straumann® SLActive® surface. Optionally 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.

⚠ Caution

If a Straumann® NNC Standard Plus implant is inserted deeper than the margin of the Straumann® SLActive surface, **the prepared depth must be increased accordingly** (see also page 14).

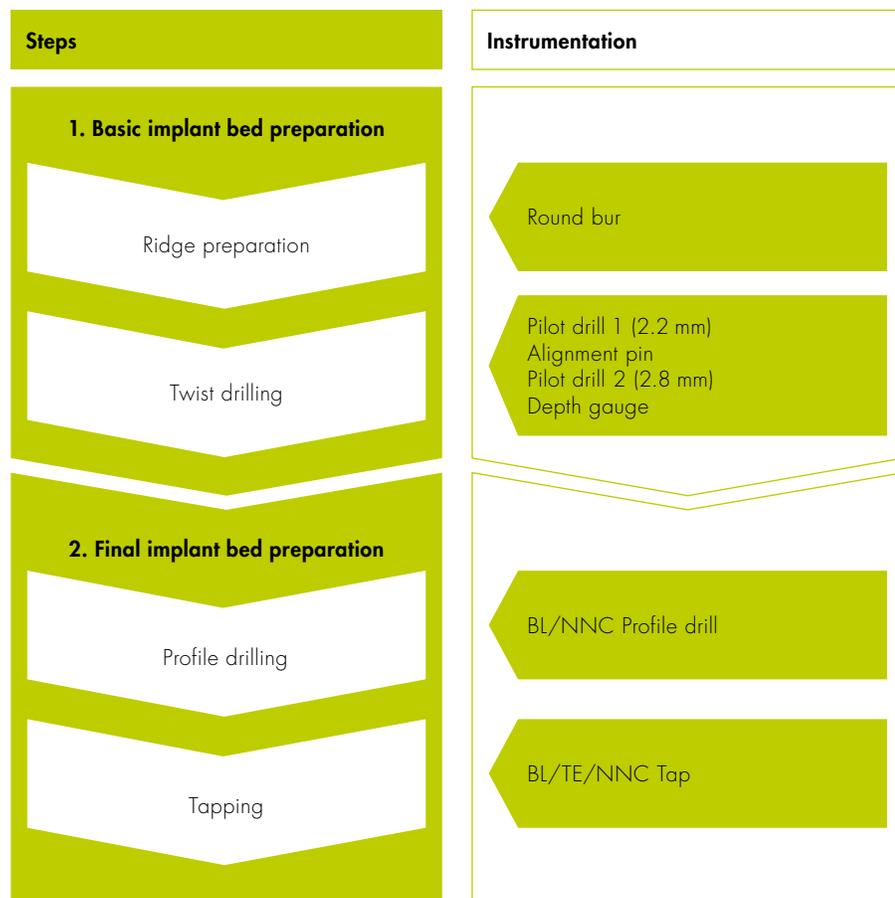
3.2 Planning aids

The Diagnostic T and the distance indicator for Straumann® Narrow Neck (NN) implants can be used to obtain an initial impression of the spatial relations for NNC. The X-ray templates for Straumann® Narrow Neck (NN) implants can be used for the planning of NNC implants which share the same dimension of prosthetic platform and endosteal diameter as well as the length.

4. SURGICAL PROCEDURE

4.1 Implant bed preparation

As shown in the section "System overview" on page 3, the Straumann® Narrow Neck CrossFit® implant is a Standard Plus (SP) Soft Tissue Level (STL) implant with a Bone Level (BL) implant body and thread design. Therefore, the **basic and final implant bed preparation follows the 3.3 mm Bone Level implant procedure, using the specific instrumentation, including profile drilling.**



See appendix 1 (page 20) for instruments for basic and final implant bed preparation for Straumann® Narrow Neck CrossFit® implants.



Profile drilling

If the Straumann® Narrow Neck CrossFit® implant is implanted deeper than the SLActive® margin level, the preparation depth with the profile drill has to be increased accordingly.

Insert the Straumann® Bone Level profile drill according to the planned insertion depth of the implant (300 rpm max.).



Straumann® NNC Profile drill



4.2 Implant placement

4.2.1 Placement with the handpiece

Step 1 – Attach the handpiece adapter

Grasp the closed part of the implant carrier. Attach the handpiece adapter to the New Transfer Piece. A click is heard when the handpiece adapter is attached correctly.



Step 2 – Remove the implant from the carrier

Simultaneously, pull down the implant carrier and lift the implant out of the implant carrier (while supporting your arms).



Step 3 – Place the implant

Place the implant with the handpiece into the implant bed.

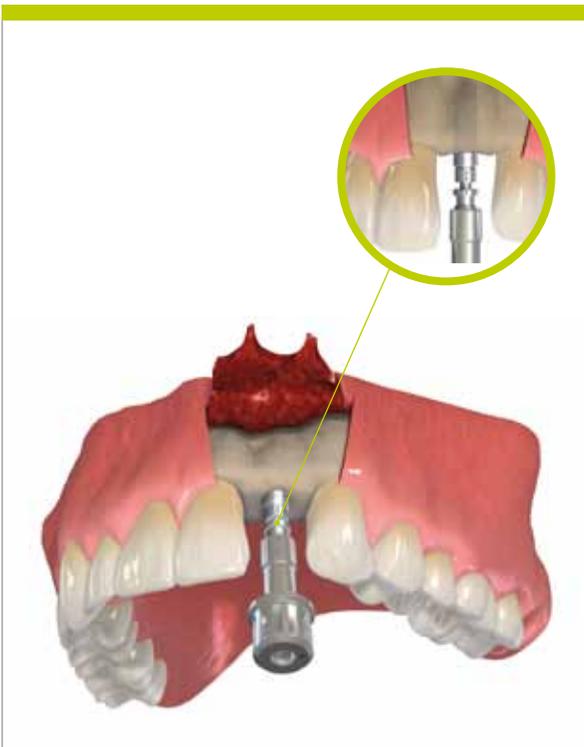
Step 4 – Insert the implant with the handpiece



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.

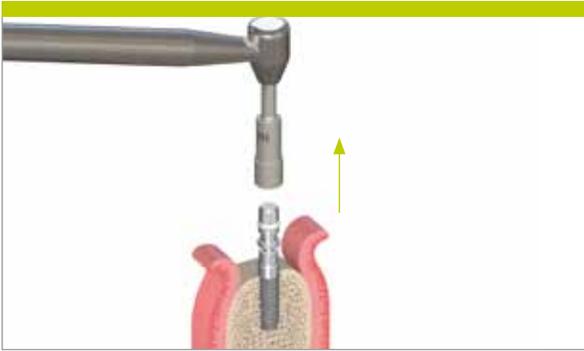


Step 5 – Correct implant orientation

While approaching the final implant position, make sure that the dimples on the transfer piece are oriented exactly orofacially. This positions the four protrusions of the internal connection for ideal prosthetic abutment orientation. A quarter turn to the next drilled holes corresponds to a vertical displacement of 0.2 mm.

 **Caution**

Avoid vertical position corrections using reverse rotations (counterclockwise). This may lead to a decrease in primary stability.

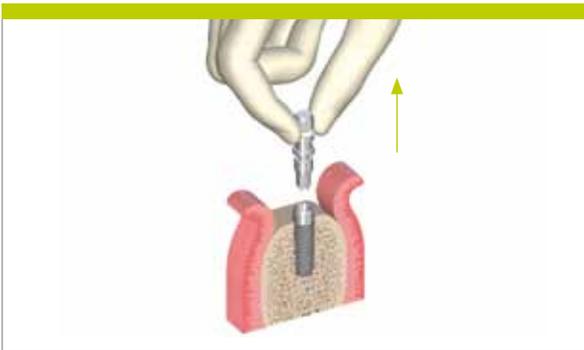


Step 6 – After implant placement

After insertion of the implant, the handpiece is pulled off.



The New Transfer Piece (NTP) stays in the implant and acts as an orientation pin to indicate implant position and angulation.



The NTP can be pulled out by hand or tweezers, no counter-maneuver with holding key is needed.



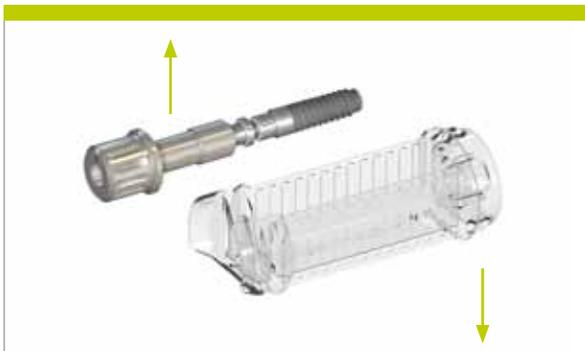
The NTP can easily be reinserted for further advancement of implant placement.



4.2.2 Placement with the ratchet

Step 1 – Attach the ratchet adapter

Hold the implant carrier at the closed end and push the ratchet adapter onto the New Transfer Piece until you hear a click.



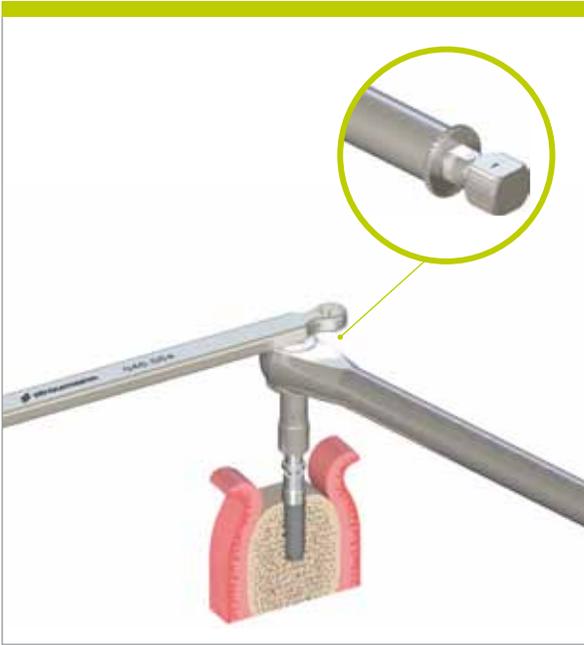
Step 2 – Remove the implant from the carrier

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 (prop your hands while doing this).



Step 3 – Place the implant

Place the implant manually into the implant bed with the aid of the adapter for ratchet.



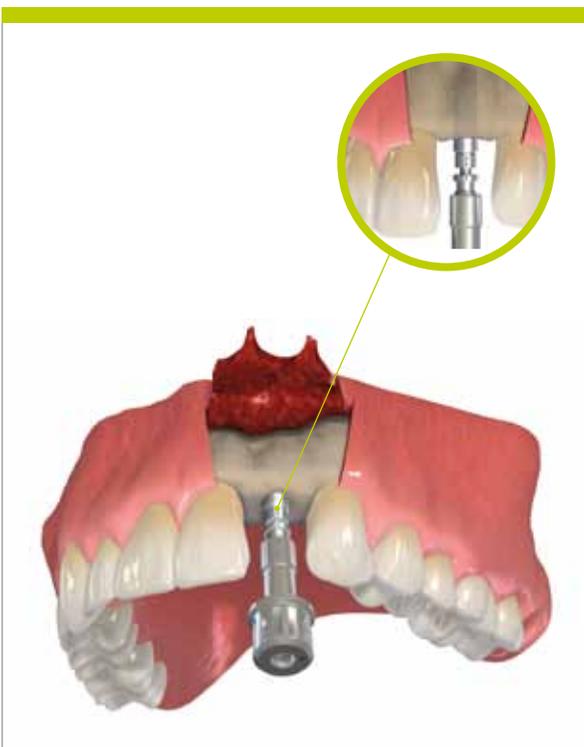
Step 4 – Insert the implant with the ratchet

Attach the ratchet and the pivot of the holding key which is used for stabilizing. The clockwise arrow on the rotary knob signals the direction of insertion (see insert). Bring the implant into its final position with slow movements of the ratchet.

Important

Insertion torque should not exceed 35 Ncm. To prevent bone compression, check for correct implant bed preparation when reaching 35 Ncm before the implant is in its final position. Always use profile drilling with the Narrow Neck CrossFit® implants.

To avoid bone damage (bone necrosis or bone splitting) in the event of incorrect use (e.g. excessive tightening resistance with an inadequate drilling depth), the New Transfer Piece is provided with a predetermined breaking point. If the NTP breaks during the tightening process, one part remains in the adapter and the other part in the implant. The part in the implant can be easily pulled out with the aid of a forceps.



Step 5 – Correct implant orientation

While approaching the final implant position, make sure that the dimples on the transfer piece are oriented exactly orofacially. This positions the four protrusions of the internal connection for ideal prosthetic abutment orientation. A quarter turn to the next dimples corresponds to a vertical displacement of 0.2 mm.

⚠ Caution

Avoid vertical position corrections using reverse rotations (counterclockwise). This may lead to a decrease in primary stability.

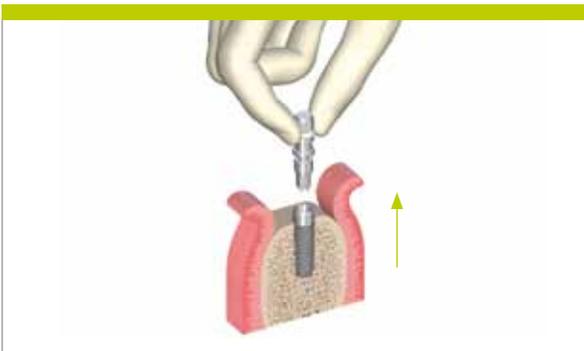


Step 6 – After implant placement

After insertion of the implant, the adapter is pulled off.



The New Transfer Piece (NTP) stays in the implant and acts as an orientation pin to indicate implant position and angulation.



The NTP can be pulled out by hand or tweezers, no counter-maneuver with holding key is needed.



The NTP can easily be reinserted for further advancement of implant placement.

APPENDIX 1: SURGICAL INSTRUMENTS

Art. No.		Article	Dimensions	Material
Basic implant bed preparation				
044.022		Round bur	Ø 1.4 mm	stainless steel
044.003		Round bur	Ø 2.3 mm	stainless steel
044.004		Round bur	Ø 3.1 mm	stainless steel
044.210		Pilot drill 1, short	Ø 2.2 mm, length 33 mm	stainless steel
044.211		Pilot drill 1, long	Ø 2.2 mm, length 41 mm	stainless steel
046.458		Alignment pin	Ø 2.2 mm, length 28 mm	titanium
044.214		Pilot drill 2, short	Ø 2.8 mm, length 33 mm	stainless steel
044.215		Pilot drill 2, long	Ø 2.8 mm, length 41 mm	stainless steel
046.455		Depth gauge, with distance indicator	Ø 2.2/2.8 mm, length 27 mm	titanium
Final implant bed preparation for BL and NNC implants Ø 3.3 mm				
026.2303		BL/NNC Profile drill, short	Ø 3.3 mm, length 26 mm	stainless steel
026.2306		BL/NNC Profile drill, long	Ø 3.3 mm, length 35 mm	stainless steel
Final implant bed preparation for BL, TE and NNC implants Ø 3.3 mm				
026.2310		BL/TE/NNC Tap for adapter	Ø 3.3 mm, length 23 mm	stainless steel/polymer

BL/NNC Profile drills are used for preparing the implant bed for Bone Level (BL) and Narrow Neck CrossFit® (NNC) implants.

Important: To be used in **all** bone classes.

BL/TE/NNC taps are for preparing the implant bed for Bone Level (BL), Tapered Effect (TE) and Narrow Neck CrossFit® (NNC) implants.

Important: For BL and NNC 3.3 mm implants, pre-tapping is recommended over the full length in bone class* 1 and 2.

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

APPENDIX 2: SURGICAL PRODUCT OVERVIEW

Straumann® Narrow Neck CrossFit® implants

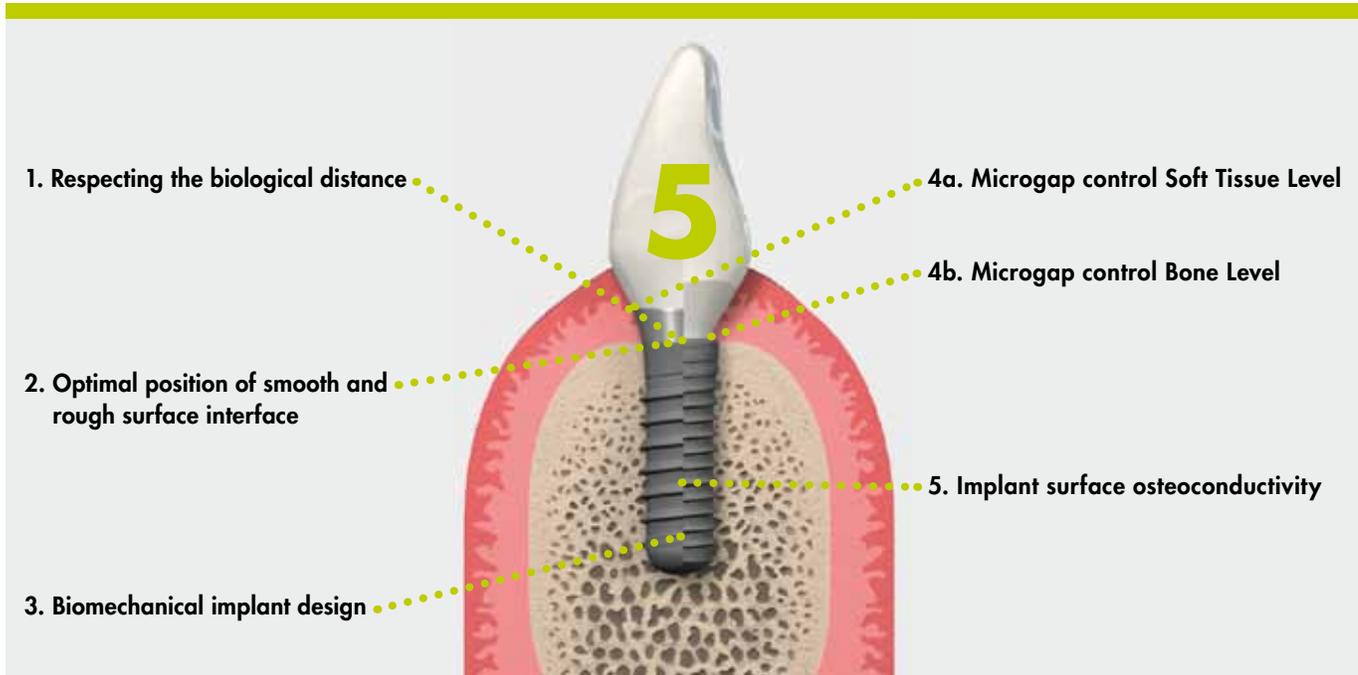
Art. No.		Article	Diameter	Length	Material
033.416S		NNC Implant, Roxolid®, SLActive®	Ø 3.3 mm	8 mm	TiZr*
033.417S		NNC Implant, Roxolid®, SLActive®	Ø 3.3 mm	10 mm	TiZr*
033.418S		NNC Implant, Roxolid®, SLActive®	Ø 3.3 mm	12 mm	TiZr*
033.419S		NNC Implant, Roxolid®, SLActive®	Ø 3.3 mm	14 mm	TiZr*

* Roxolid® (titanium-zirconium alloy)

Straumann® Narrow Neck CrossFit® closure screws and healing caps

Art. No.		Article	Height	Indication
048.324V4		NNC Closure screw, small, Ti	0 mm	Submucosal healing If submucosal healing is desired, use of a closure screw or shorter healing cap is recommended.
048.325V4		NNC Closure screw, large, Ti	1.5 mm	
048.071		NNC Healing cap, Ti	3.0 mm	
048.074		NNC Healing cap, Ti	4.5 mm	Transmucosal healing By using a taller healing cap, transmucosal healing can be obtained even when the implant shoulder is in a subgingival position.
048.082		NNC Healing cap, labial bevel, TAN	2.0 mm	

OPTIMIZE CRESTAL BONE PRESERVATION



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