straumann

RETENTIVE SYSTEMS FOR
IMPLANT-BORNE HYBRID DENTURES

Straumann® Soft Tissue Level Implant Line

COMMITTED TO
SIMPLY DOING MORE
FOR DENTAL PROFESSIONALS

The ITI (International Team for Implantology) is academic partner of Institut Straumann AG in the areas of research and education.

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Instructions for dentists and dental technicians

PLANNING

Planning principles

Implant-borne full dentures require thorough planning of the surgical and technical procedures. The number and positions of the implants as well as the design of the denture and occlusion should take account of the anatomical, functional and hygienic aspects. The static/dynamic conditions govern the selection of the retentive units (Besimo, 1993).

Magnet and bar retention systems for implant-borne lower hybrid dentures subject the implant abutments to the lowest stress (Jäger and Wirz, 1993).

Recall appointments

Hybrid dentures with resilient retention units must be examined at intervals of approximately 3 months to ensure harmful excursions of the denture are eliminated in their early stages (possible methods: relining, activating/replacing the matrix, checking the occlusion).

In cases of poor oral hygiene, the patient should undergo thorough scaling and polishing, as well as reinstruction and motivation to maintain the necessary high level of oral hygiene. If the patient is co-operative, the interval between check-ups can be increased.

BAR-BORNE RESTORATIONS

Introduction

The functions of a bar restoration:

- Stabilization and primary splinting of implants
- Countering the forces that would dislodge the denture
- Distribution of shear forces
- Resilience compensation through degrees of freedom

Description/Functioning

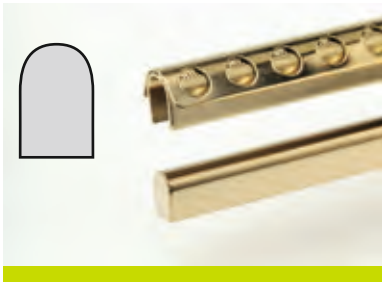
Most common types of bar:

Dolder® Bar (egg-shaped cross-section), normal and mini versions

The Dolder® Bar is a retention unit allowing three degrees of freedom (translateral and rotary movements).

Dolder® Bar attachment, "U"-shaped cross-section

The bar attachment is a rigid retentive unit with no rotational freedom.



Round Bar

The Round Bar is a retention unit permitting only one degree of freedom (translateral movements).

The following guidelines must absolutely be heeded when fabricating implant-borne hybrid dentures

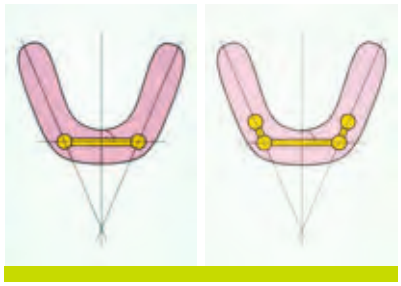
Freedom

"If riders are placed on more than one bar segments, the denture is retained, but has no degree of space freedom regardless of the cross-section of the bar" (Wirz, 1994).

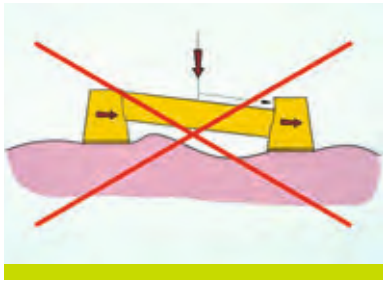
"If a rider is placed on the anterior-most bar segment only, a Round Bar creates 1 degree of space freedom, an egg-shaped cross-section 3 degrees of freedom and a bar attachment (or milled bar) no freedom" (Wirz, 1994).

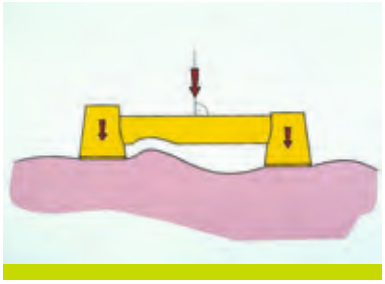
Bar positioning

The anterior bar is positioned perpendicular to the median line of the two halves of the alveolar ridge (Wirz, 1994).



The bar must be horizontal – even if the ridge varies in height. The bar must never be allowed to slope as this would impede the correct functioning of the bar attachment and create undesirable horizontal forces (Wirz, 1994).





Planning the bar restoration

Primary loading of the implant or fabrication of the restoration once the healing period has elapsed

"If full lower dentures are to be retained on Straumann dental implants, the following basic principle applies: Four implants are required if in the early period after implantation, for any reason whatsoever, the implant abutments are to be loaded with a denture before osseointegration has been completed. This is often useful when one-part implants are used, as the conditions of the temporary restoration are usually very unfavourable. In such cases, it is imperative that the four implants are splinted with a bar.

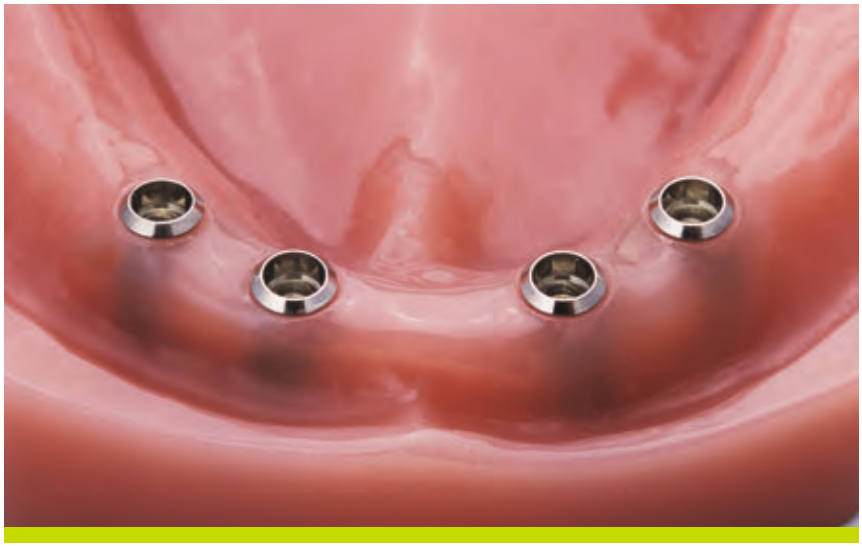
When used in the linear and front areas only, the Dolder® Bar joint, with its three different degrees of space freedom, loads the abutments least of all regardless of the number of abutments. If, however, the abutments are spaced regularly in the anterior region, and the denture is retained on all bar segments using several riders – regardless of the cross-section of the bar – the dynamics of the denture are lost completely. This is a purely rigid type of retention with no freedom whatsoever. If we are able to allow at least three months for osseointegration of two-part implants – which should usually be the case – we may limit ourselves to two relatively short implant abutments, assuming that the masticatory forces are absorbed by the denture bed and not by the implant site" (Wirz, 1994).

Fabrication of an implant-borne bar in the lower jaw using the synOcta® prosthetics system

"Patient" – initial situation

Edentulous lower jaw, with 4 two-part Straumann dental implants in positions 44–34.

⚠ **Important: The synOcta® Abutments can only be used in combination with implants with the internal octagon.**



Impression taking with synOcta® prosthetics

Two versions are available for the impression procedure: the "snap-on" version and the "screw-retained" version. The snap-on version can be regarded as the standard and can be used in the majority of cases. The screw-retained version is particularly indicated where the implant shoulder lies very deep.

In order to prevent any risk of confusion, the transfer system is color-coded. The Positioning Cylinder, Analog and screw-retained Impression Cap are color-coded red in the synOcta® prosthetic system.

A. “Snap-on” impression procedure

All parts of the transfer system are supplied non-sterile. They can be disinfected, as required, using standard commercial disinfectants for plastic products. (Please follow manufacturers’ directions).

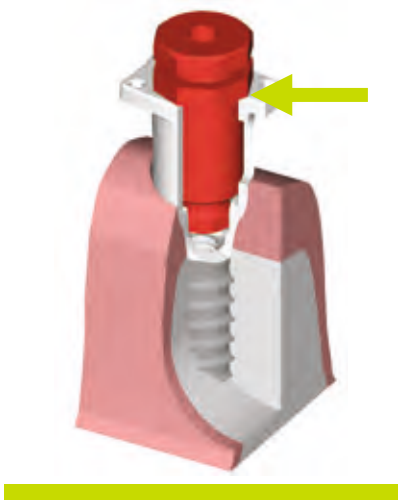
⚠ Caution: The plastic parts are designed for single use only.

They must not be sterilised in the autoclave.

To prevent damage to the plastic components (loss of elasticity, embrittlement), they must be protected from heat and light.

The implant shoulder and interior must be thoroughly cleaned prior to the impression procedure. The Impression Cap (048.017V4) is pushed onto the implant until the shoulder clicks into place. The Impression Cap is turned gently in order to check that it is in the correct position. When the cap is in the correct position, it can be rotated on the implant.

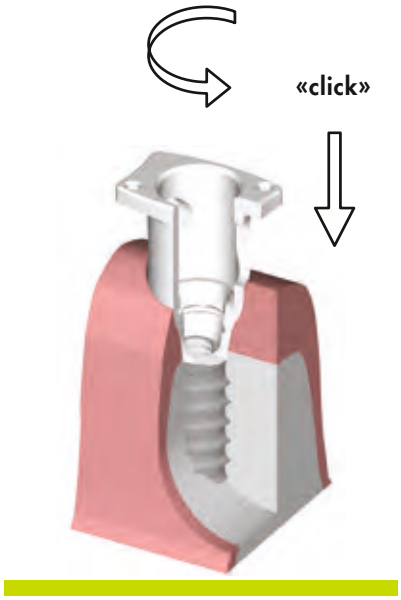
⚠ Important: To avoid errors during the impression procedure, it must be ensured that the shoulder and the margin of the Impression Cap are not damaged.



The octagon on the Positioning Cylinder must be aligned with the internal octagon on the implant and be inserted into the Impression Cap until it is flush with the top of the Impression Cap.

The impression should be taken using an elastomeric impression material (polyvinylsiloxane or polyether rubber).

⚠ Important: Due to its insufficient tensile strength and inadequate elastic recoil, hydrocolloid is not suitable for this application.



B. “Screw-retained” impression procedure

A special tray **with perforations** is required for this application.

The implant shoulder and interior must be thoroughly cleaned prior to the impression procedure.
The Impression Cap (048.010) is placed on the implant and is tightened with the integral Positioning Screw. Precise positioning of the octagon of the Impression Cap into the octagon of the implant is important. Should only a limited amount of space be available, the occlusal aspect of the cap can be reduced by one retention ring (once the Positioning Screw has been removed).

⚠ **Important: Only the integrated screw must be used! The margin and octagon must not be damaged in order to prevent any errors during the transfer process. For this reason, the Impression Caps are for single use only.**

The impression should be taken using an elastomeric impression material (polyvinylsiloxame or polyether rubber) in accordance with the manufacturer’s directions.

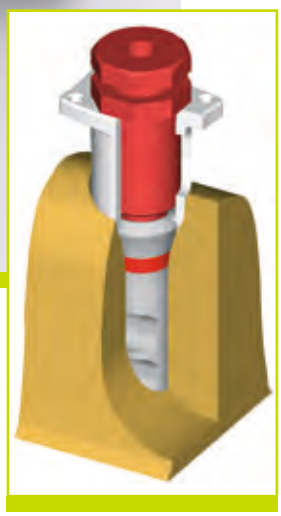
Once the material has set, the Positioning Screws are loosened, and the impression is removed.

⚠ **Important: Due to its insufficient tensile strength and inadequate elastic recoil, hydrocolloid is not suitable for this application.**

After impression taking, the Healing Caps are repositioned on the implants.

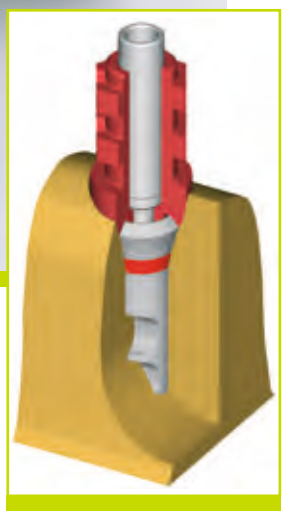
Fabricating the master cast

The "snap-on" version
The red Positioning Cylinder shows the dental technician that the Analog with the red marking that must be used. In the laboratory, the Analog (048.124) is repositioned in the impression, and the shoulder must click audibly into place.
The Analog must not be rotated in the impression.



The "screw-retained" version
The Analog is secured in the impression using the integral Positioning Screw. The red Impression Cap shows the dental technician that the Analog with the red marking that must be used.

⚠ Important: When tightening the screw, grasp the retentive section of the Analog in order to prevent the Impression Cap from rotating. This is especially important if the Impression Cap has been shortened.

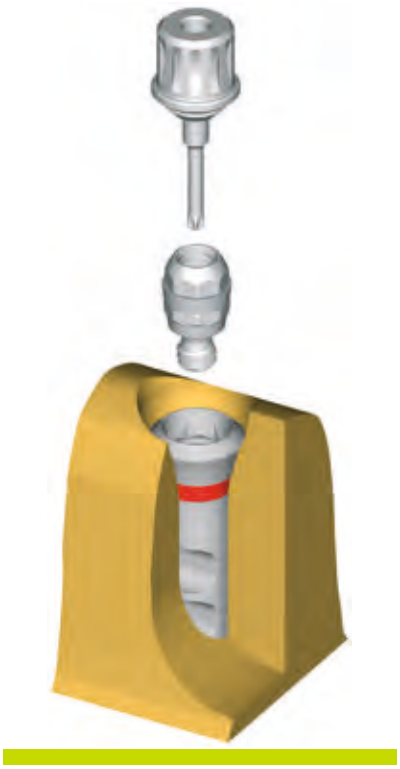


Fabricating the working master cast in the conventional way using Type 4 plaster.

The RN synOcta® 1.5 Screw-retained Abutment (048.601) is placed in the Analog and aligned in the octagon.
Note: The abutment must be positioned in the octagon before the screw is tightened.

The screw is hand-tightened using the SCS Screwdriver.

RN = Regular Neck (∅ 4.8 mm)



Fabrication of the joint Gold Bar

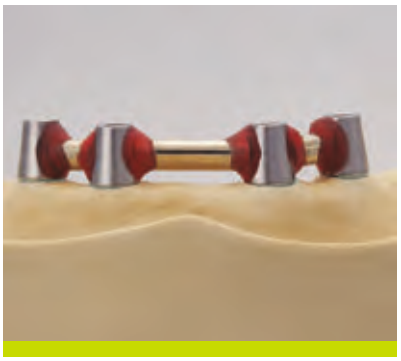
The prefabricated Gold Coping Bar for the synOcta® prosthetics system without an internal octagon (048.204) consists of a non-oxidizing, high-melting alloy (Ceramicor®; Au 60%, Pt 19%, Pd 20%, Ir 1%; melting range 1400–1490 °C, 2552°–2714 °F). It is screwed onto the Analog/synOcta® Abutment with the 4.4 mm SCS Occlusal Screw (048.350V4). The Gold Coping is 6.0 mm high and can be shortened 1.5 mm occlusal.

The individual bar segments are placed between the abutment units. Attention should be paid to the space between the bar and gingiva (min. 2.0 mm) to facilitate adequate cleaning and so prevent changes in the mucosa.

⚠ Important: To achieve a good joint, the gap should be as small as possible.

Type of joining

The prepared bar can now be soldered or laser-welded, as desired. A laser-assembled bar does not require soldering with non-precious ingredients and is therefore more biocompatible. Laser-welding takes place directly on the plaster model and therefore takes less work. Larger gaps are filled with wire made from the same type of material (see also page 22, Fabrication of laser-welded bars with titanium components).



Soldered Gold Bar

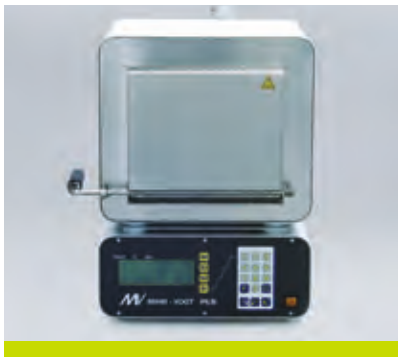
The Gold Copings and prefabricated bar segments are secured in place with a residue-free, burn-out plastic. The SCS Occlusal Screws must not be covered.

Tip: Overwaxing of the plastic compounds ensures good access of the flame later on in the soldering investment.

Once the SCS Positioning Screws have been loosened, the bar framework is carefully removed. Stabilization Pins (048.208V4) are available for retaining the RN synOcta® Bar Gold Copings in the soldering investment and are screwed into place with the SCS Positioning Screws.

They ensure that the Gold Copings are anchored accurately in the soldering investment during soldering.

To prevent possible distortion of the bar due to uneven preheating with the flame, the hardened soldering investment is preheated to 500–600 °C, 932–1112 °F in a preheating furnace.



After the invested bar has been preheated, it is ready for soldering. Once soldering has been completed, the investment should be cooled to room temperature.

The bar must be devested and cleaned in an ultrasonic bath. The oxides and soldering flux residues are then removed in an acid bath.

⚠ **Important: Due to the high precision of the prefabricated caps, increased caution is required during polishing. Therefore, under no circumstances, should a sandblaster be used.**

Tip: To protect the margins, a Polishing Protector (046.245) or an Analog can be screwed on during polishing. This reduces the risk of damage to the margins. It is advisable to work under a stereo-microscope.

It must be possible to reposition the cleaned bar without tension on the Analogs, without it being secured with the SCS Occlusal Screws when checking its fit.

⚠ **Important: The SCS Occlusal Screws that were used for soldering will be extremely oxidized and must not be used to secure the bar in the mouth. The bar must be secured in place with new SCS Occlusal Screws.**

The finished synOcta® Bar on the plaster model.

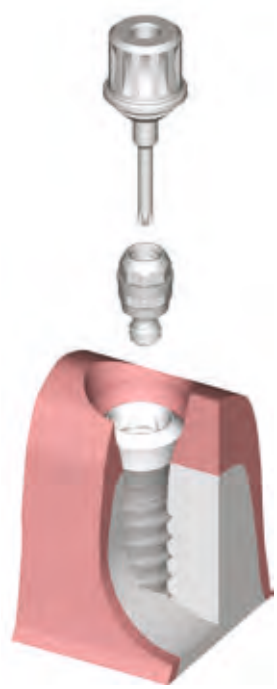
Insertion of the bar construction in the mouth

The restoration is delivered to the dentist with the original abutments.

The Healing Caps are removed and the interior of the implant is thoroughly cleaned and dried.

The superstructure is removed from the master cast and the abutment is unscrewed from the Analog.

Torque = 35 Ncm!



The **cleaned RN synOcta® 1.5 Screw-retained Abutment** is positioned **without cement** in the internal octagon. The abutment screw is tightened using the SCS Screwdriver, Ratchet (046.119) and Torque Control Device (046.049).

Note: The abutment must be positioned in the octagon before the screw is tightened.

After osseointegration of the implants, we recommend a **tightening torque of 35 Ncm** when inserting the abutment screws.
The **SCS Occlusal Screws** are tightened with **15 Ncm** on the RN synOcta® Abutment.

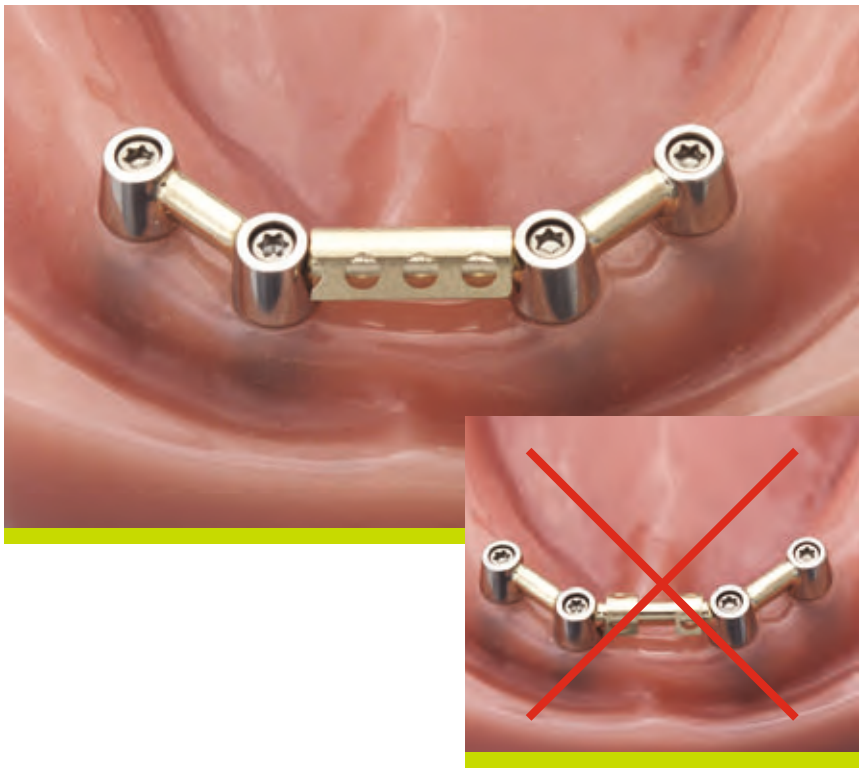
The bar *in situ* with the new SCS Occlusal Screws.

**See also CD-ROM StraumannR Dental Implant System-Prosthetics, 150.538,
"Hybrid dentures: Screw-retained bar construction on RN synOcta® 1.5 Screw-retained Abutment"**

Varying the retention force of the Bar Matrix

Only the appropriate Activator/ Deactivator may be used for activating/deactivating the Bar Matrix.

- To **activate** the matrix, press its walls together with the Activator.
- To **deactivate** the matrix, press its walls apart with the Deactivator.



Positioning the Bar Matrix

The matrix must make use of the entire length of the bar. This helps absorb horizontal forces better (Wirz, 1994).

⚠ **Important: Placing the matrix should always be carried out with the Spacer before fabrication of the prosthesis. This is the only way to ensure vertical translation of the prosthesis to the bar.**

Activator set for all Bar Matrices (046.150)

Deactivator for Dolder® Bar, mini (046.151)

Deactivator for Dolder® Bar, standard (046.152)

INITIAL SITUATION EDENTULOUS: BAR ON synOcta®

Type of bar: soldered/laser-welded Gold Bar

Abutments and laboratory components Gold Copings	Instruments
Insertion of abutment RN synOcta® 1.5 Screw-retained Abutment, 048.601 	SCS Screwdriver: Length 15 mm: 046.400  Length 21 mm: 046.401  Length 27 mm: 046.402  and/or SCS Screwdriver for Handpiece Adapter: Length 20 mm: 046.410  Length 26 mm: 046.411  Length 32 mm: 046.412 
Impression procedure Optional: RN synOcta® Impression Cap with integral Positioning Screw 048.010  or RN Impression Cap 048.017V4 with  RN synOcta® Positioning Cylinder 048.070V4 	Laboratory Handpiece 046.085 for 046.410/411/412 
Production of master cast RN synOcta® Analog 048.124  RN synOcta® Analog 048.108 (for bars with 048.601) 	
Production of superstructure RN synOcta® Gold Coping, bar, 048.204  Dolder® Bar, egg-shaped cross-section, mini, 048.411  Dolder® Bar Matrix, mini, 048.413 incl. Spacer  Dolder® Bar, egg-shaped cross-section, standard, 048.412  Dolder® Bar Matrix, standard, 048.414 incl. Spacer  Stabilization Pin, 048.208V4  SCS Occlusal Screw, 048.350V4 	

Abutments and laboratory components Gold Copings	Instruments
Insertion of final restoration SCS Occlusal Screw, 048.350V4 	Activator set, 046.150  Deactivator, mini, 046.151  Deactivator, standard, 046.152 
Bar Set Gold 040.195 Contents: 2x RN synOcta® 1.5 Screw-retained Abutment, 048.601  2x RN synOcta® Analog, 048.124  2x RN synOcta® Gold Coping, bar, 048.204  4x SCS Occlusal Screw, 048.350 	

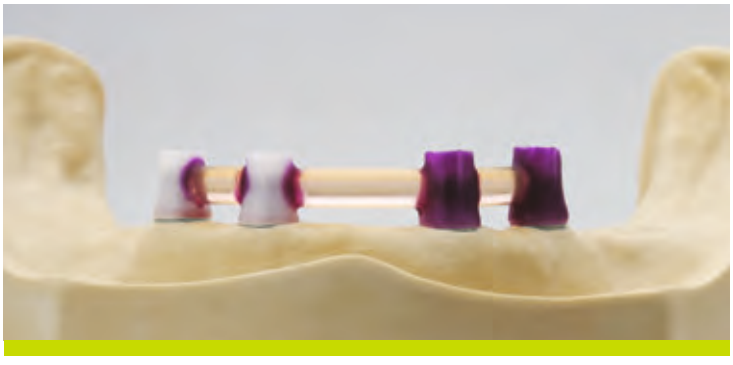
RN = Regular Neck (Ø 4.8 mm)

Fabrication of bars using the one-piece casting method

As an alternative to the laser-welded or soldered Gold Bars, the dental technician now has a choice of RN synOcta® Plastic Coping, bar (048.227), and the bar variants standard (048.460) and mini (048.461) in burn-out plastic for the fabrication of a cast Titanium Bar (Wirz, 1997 and Wirz et al., 1999).

The standard and mini Titanium Bar Matrices which fit the Titanium Bar (from left to right).

The bar, composed of plastic parts and prepared for embedding.



The bar cast from pure titanium.

Note: The production of a Gold Bar in the one-piece casting method is also possible.

Art.-No.		Article	Dimension	Material
048.227		RN synOcta® Plastic Coping bridge/bar, for 048.601	height 10.0 mm shortenable	burn-out plastic
048.460		Plastic Bar, egg-shaped cross-section, standard	height 3.0 mm length 80.0 mm	burn-out plastic
048.461		Plastic Bar, egg-shaped cross-section, mini	height 2.3 mm length 80.0 mm	burn-out plastic
048.470		Titanium Bar Matrix, standard, incl. Spacer	height 4.5 mm length 50.0 mm	titanium
048.471		Titanium Bar Matrix, mini, inkl. Spacer	height 3.5 mm length 50.0 mm	titanium
Bar Set Plastic 040.197 Contents:		2x RN synOcta® 1.5 Screw-retained Abutment, 048.601 2x RN synOcta® Analog, 048.124 2x RN synOcta® Plastic Coping, bar, 048.227 2x SCS occlusal screw, 048.350		

RN = Regular Neck (Ø 4.8 mm)

Fabrication of laser-welded bars with titanium components

In addition to the gold variant, the bar can also be composed of prefabricated titanium parts using a laser-welding technique.

A RN synOcta® Titanium Coping, bar (048.214) and the Titanium Bar variants standard (048.465) and mini (048.466) are available.

The standard and mini titanium matrices which fit the Titanium Bar (from left to right).

The bar segments **are fitted to the master cast, allowing a minimum gap.** Larger gaps are offset by the addition of more titanium.

The segments are welded together with adequate argon gas rinsing.

⚠ **Important: The soldering points must not show any blue discoloration. This type of discoloration indicates inadequate argon gas ventilation and therefore oxygen uptake by the metal. This makes the weld brittle and therefore weakens the bar construction. The laser device operating instructions must be followed. See also "Positioning the Bar Matrix" on page 16.**

Art. No.	Article	Dimension	Material
048.214 	RN synOcta®-Titanium Coping, bar, für 048.601	height 6.0 mm	titanium
048.465 	Titanium Bar, egg-shaped cross-section, standard	height 3.0 mm length 50.0 mm	titanium
048.466 	Titanium Bar, egg-shaped cross-section, mini	height 2.3 mm length 50.0 mm	titanium
048.470 	Titanium Bar Matrix standard, incl. Spacer	height 4.5 mm length 50.0 mm	titanium/brass
048.471 	Titanium Bar Matrix mini, incl. Spacer	height 3.5 mm length 50.0 mm	titanium/brass
Bar Set Titanium 040.196 Contents: 	2x RN synOcta® 1.5 Screw-retained Abutment, 048.601 2x RN synOcta® Analog, 048.124 2x RN synOcta® Titanium Coping, bar, 048.214 2x SCS Occlusal Screw, 048.350		

RN = Regular Neck (Ø 4.8 mm)

FABRICATION OF THE DEFINITIVE BAR PROSTHESIS WITH METAL REINFORCEMENT

Once the bar has been tried in, the denture with metal reinforcement can be fabricated. The teeth are set up according to modern full denture principles (e.g., Gerber et al.).

Once the wax-up denture has been tried in, the teeth are secured in a plaster or silicone index. To enable the index to be repositioned accurately on the duplicate model, grooves are made in the ground labial surface of the master model.

The bar is then blocked out for duplicating. In order to do so, the bar is fitted onto the master model.

⚠ Important: Before the bar sleeve is positioned, the Spacer must be fixed to the bar. This ensures vertical translation of the denture.

The bar is then coated with a 0.4 mm thick wax sheet, which acts as a Spacer. Labially and lingually, the wax is only extended to the mucosa. Stops of approximately 4 × 3 mm must be cut out to coincide with the height of the premolars and the second molar.

When the duplicating mould has been removed, the index can be fitted to the duplicate model. The plastic teeth are integrated into the index and matched to the duplicate model.

The dimensions and thickness of the lingual surfaces of the teeth to be built up are governed by the prevailing anatomical conditions. The retainers for the sleeve or rider should also be positioned to provide good mechanical retention.

The areas of the bar rider and strengthener which contact the denture acrylic must be silanized (e.g., Rocatec, Silicoater) or be pretreated with a primer.

⚠ **Important: The bar sleeve and rider must not be soldered to the metal framework as this would prevent them being replaced at a later date. Also, any heat treatment would adversely affect the elastic properties of the lamellae.**

The finished metal-reinforced jointed bar.

MODIFICATION OF AN EXISTING FULL LOWER DENTURE IN AN IMPLANT/BAR-BORNE HYBRID DENTURE

If the implant-borne anchorage of an existing full denture is necessary, this can be fitted with a bar construction after implantation and the relevant healing time.

In this case, impression taking is carried out with the existing denture in combination with one-part plastic Impression Caps (048.093V4).

Art. No. 048.093V4

⚠ **Important: The caps are suitable only for impression taking of implants with a shoulder diameter of 4.8 mm.**

First, the Healing Caps are removed from the implants and the Impression Caps fitted with a snap-on mechanism. The relevant part of the existing denture is hollowed out.

⚠ **Important: It must be possible to fit the denture over the Impression Caps without making contact.**

After adjusting the denture, the impression is taken with the integrated caps, using an elastomeric impression material (polyvinylsiloxane or polyether rubber).

To protect the implant shoulder,
the Healing Caps are screwed back onto the implants after the impression taking.

The master cast is fabricated using special hard plaster. One-part, RN synOcta® Analogs (048.108) are available.

These are placed in the plastic Impression Caps situated in the denture, and the master cast is then fabricated in the conventional way using special hard plaster, type 4. It is important to fix the bite height, as is usual with, for example, a denture relining.

After removing the denture and the impression material from the plaster master cast, the bar construction procedure is decided, and the denture is hollowed out accordingly.

The bar is fabricated as described on pages 11–14 and/or 20–23.

The Bar Matrices with the Spacer (denture resilience) are positioned on the finished bar construction, and the undercut points and outside of the matrices are blocked out with wax (to ensure that they can be activated/ deactivated). The denture is then adapted to the bar construction by polymerisation of the matrices. The denture is then checked for **surplus plastic** in the region of the matrices and **for function.**

⚠ **Important: This step is essential, because only in this way can the optimum function of the integrated Bar Matrices (incl. ability to activate/ deactivate them) be ensured. Unremoved plastic residue may damage the bar construction/implants.**

Before the bar is fitted, the RN synOcta® 1.5 Screw-retained Abutments (048.601) are screwed into the implants with a **force of 35 Ncm.**

Art. No. 048.108

RELINING AN IMPLANT-BORNE BAR DENTURE

Hybrid dentures with resilient retention units should be examined at intervals of approximately 3 months to enable harmful excursions of the denture to be eliminated in their early stages.
If the alveolar ridge resorbs after a prolonged wearing time, the bar-borne denture sinks. This leads to a loss of resilience of the matrices and so to greater stress on the retentive elements/implants. Relining then becomes necessary.

Relining is carried out with the bar in position.

Art. No. 048.108

First, the occlusal screws (048.350V4) are replaced by Fixation Pins (048.073V4). These Fixation Pins are made from plastic and have a snap-on mechanism. They are used only to secure the bar on the implants when taking a relining impression with the denture. The Fixation Pins are intended for single use only.

⚠ Important: To preserve the resilience of the denture, the corresponding Spacer must be inserted between the bar and matrix before impression taking. After impression taking, the bar stays in the denture, and the dental technician inserts the one-part RN synOcta® Analog (048.108) into the bar caps.

The master cast is fabricated and prepared for relining in the conventional way.

Before relining, the bar is secured to the master cast with the SCS Occlusal Screws, the undercut points are blocked out with wax, and the corresponding Spacer is fixed in the Bar Matrix. Relining is then carried out in the conventional way.

After relining, the Spacer is removed and the matrices are checked for surplus plastic and for function.

⚠ Important: This step is essential, because only in this way can the optimum function of the relined, implant-borne bar denture be ensured. Interference with the functioning of the joint mechanism may damage the implant or bar construction.

Art. No. 048.073V4

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RETENTIVE ANCHORS

Introduction

Purposes of anchors

– Securing the prosthesis against excursive forces and those which would dislodge the saddles
– Distribution of shear forces
– To transfer the masticatory forces as axially as possible from the denture to the implant

Description/Function

The Retentive Anchor is assigned to the movable attachments. Retentive units that permit rotary movement of the denture in one or more directions and/or vertical translational movements are termed mobile units.

The mobile connector shortens the lever arm of the tilting forces exerted on the implant. The implants must always be placed at an angle of 90° to the occlusal plane to ensure that they are loaded axially. Precisely designed occlusal surfaces – balanced occlusion with freedom-in-centric (Geering et al., 1993) – and optimum design of the denture fitting surface also influence the stability of the denture and the distribution of the masticatory forces (Worthington et al., 1992). We recommend that a new denture always be fabricated as part of the treatment plan or after the provision of implants (Mericske-Stern, 1988).

Indications for Retentive Anchors

– Use with Standard Implants Ø 4.1 mm or Ø 4.8 mm with Ø 4.8 mm shoulder
– Resilient anchorage in the edentulous maxilla and mandible in conjunction with two implants to ensure the degrees of freedom
– Insufficient space available (in such cases, bars often cause the anterior section to be extended too far lingually thus restricting the space available for the tongue and impeding its functioning)
– In cases of severely tapering anterior arches and/or jaws (Geering et al., 1993)
– Single Retentive Anchors allow for designs which are gentle on the periodontium (hygienic)

Contraindications for Retentive Anchors

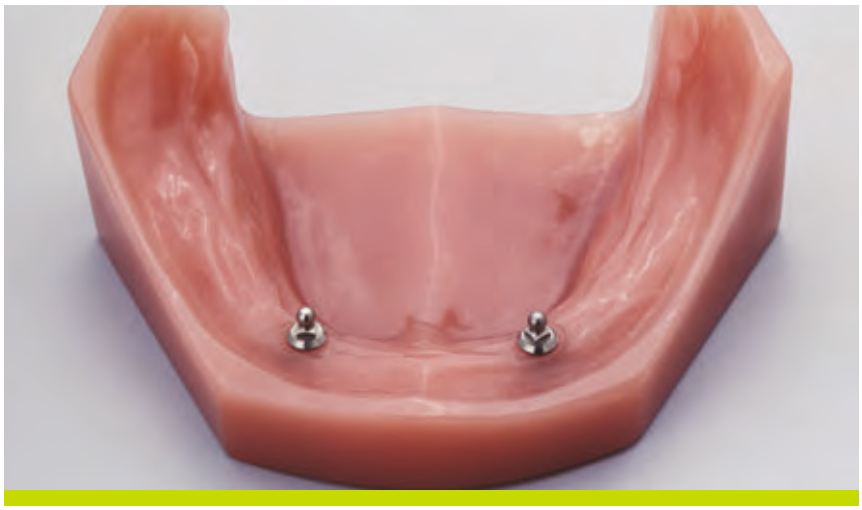
– Combined tooth-/implant-borne restorations
– Use of more than two implants per jaw
– In conjunction with attachments exhibiting a different degree of resilience
– If the implants are not vertical to the occlusal plane
– In cases where the implants have been positioned in the arch in such a way as to prevent a tangential axis of rotation
– In unfavourable ridge situations

FABRICATION OF A NEW FULL LOWER DENTURE WITH A METAL REINFORCEMENT AND TWO ELLIPTICAL MATRICES

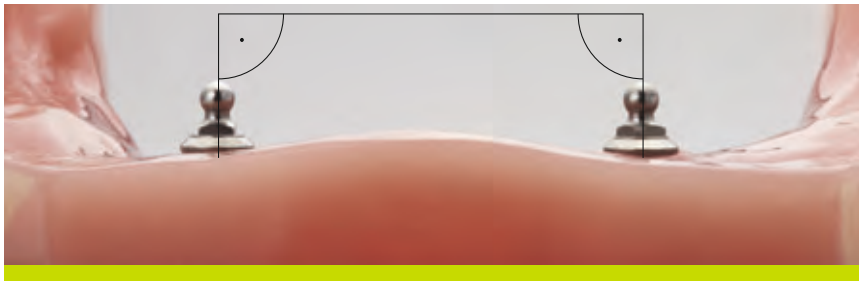
«Patient» initial situation

Edentulous lower jaw with two implants replacing the canines with Retentive Anchors (048.439).

⚠ **Important: To ensure that the Retentive Anchors function perfectly over a long period of time, the implants must be placed as parallel as possible to one another and vertical to the occlusal plane to create a tangential axis of rotation.**



The Retentive Anchor has a square neck to accommodate the Driver, and can be changed if necessary. It is inserted into the implant with a **force of 35 Ncm.** Measured from the upper edge of the implant shoulder, it is 3.4 mm high.



Taking an impression of the Retentive Anchor

The impression is taken with an elastomeric impression material (polyvinylsiloxane or polyether rubber) directly over the anchor, without any aids.

⚠ **Important: In view of its low resistance to tearing, a hydrocolloid is not suitable for this application.**

Driver (046.069) with "R.A". marking ("Retentive Anchor"), Retentive Anchor (048.439), and Transfer Pin (048.109) (from left to right).

Producing the model

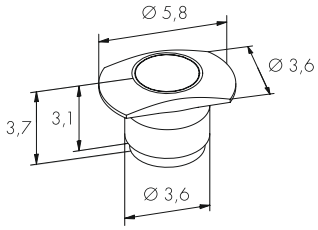
Transfer Pins are positioned in the impression and the model is produced in special, type-4 hard plaster. The impression of the Retentive Anchor, provides the square/spherical stud of the Transfer Pin with sufficient retention in the impression.

To ensure stability, the production and integration of a metal reinforcement in the full lower denture is recommended. Sufficient space must be left for securing the matrices.

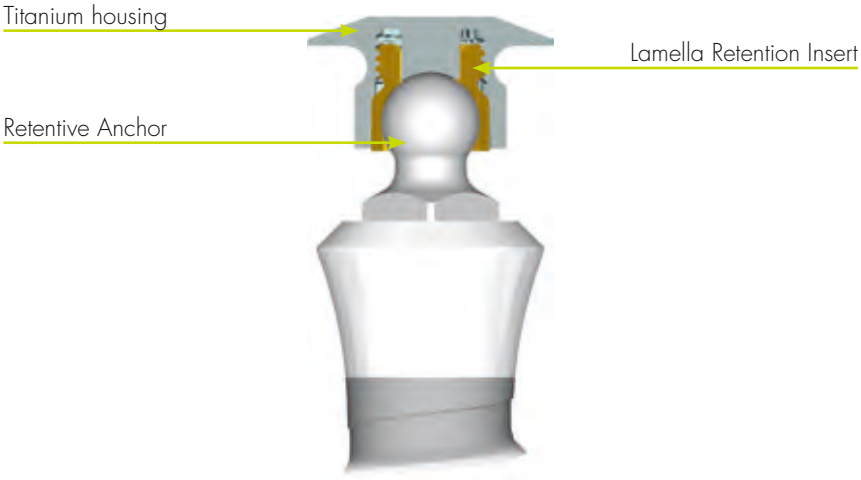
The teeth should be set up using the occlusal concept for full dentures.

The principle of function of the Elliptical Matrix

The Elliptical Matrix is used for the fixation of removable resilient full dentures on Straumann implants in conjunction with the Retentive Anchor. It consists of a titanium housing (pure titanium Grade 4) into which a gold Lamella Retention Insert is screwed (Elitor®; Au 68.6%, Ag 11.8%, Cu 10.6%, Pd 4.0%, Pt 2.5%, Zn 2.5%, Ir < 1%).



Elliptical Matrix



When there is insufficient space, the wings of the titanium housing can be modified individually. However, a minimum diameter of 3.6 mm must be maintained in order to ensure the retention of the housing in the resin.

Adjusting the retentive force

The Screwdriver (Art. No. 046.154) is required for activating, deactivating, and removing the Lamella Retention Insert. The instrument is pushed with the correct alignment into the Lamella Retention Insert as far as it will go. The retentive force is adjusted by rotation (increased by turning clockwise and reduced in the opposite direction). **The initial retention force is approximately 200 g,** which is also the minimum that can be set.

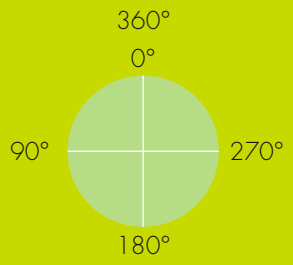
The maximum retention force is approximately 1400 g. The Lamella Retention Insert must not project out of the housing.

⚠ **Important: The retentive force should only be adjusted when trying in the finished denture.**

Screwdriver, Art. No. (046.154)

Unscrewed Lamella Retention Insert

The connection between tightening angle and retention force:



Tightening angle	0°	90°	180°	270°	360°
	Tightened as far as it will go				Condition on delivery
Retention force	**1400 g	**700 g	**500 g	**300 g	**200 g

** Slight deviations from these average values are possible due to the unavoidable manufacturing tolerances of the retention lamellas and of the retention sphere. If signs of wear are apparent on the Retentive Anchor, these values no longer apply and the Retentive Anchor must be exchanged.

⚠ **Important:**
When trying the denture in the patient, always start with the lowest retention force. The retention force is adjusted by rotating the Lamella Retention Insert and must be done in small increments until the desired retention force is obtained. Otherwise, excessive retention forces may cause difficulties when removing the denture from the mouth.

Finished denture

FABRICATION OF A NEW FULL LOWER DENTURE WITH METAL REINFORCEMENT AND TWO TITANIUM MATRICES

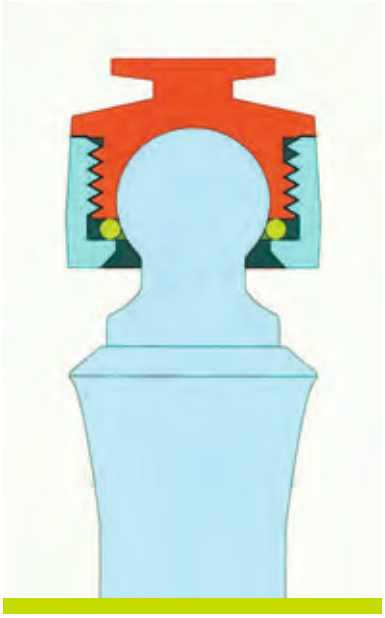
«Patient» initial situation

Edentulous lower jaw with two implants replacing the canines with Retentive Anchors (048.439).

Model starting situation (procedure identical as described in chapter "Fabrication of a full lower denture with metal reinforcement and two Elliptical Matrices").

The Titanium Matrix (048.450) consists of a titanium alloy (Ti-6Al-4V), hardness HV5 Vickers 350–385. Individual components: threaded ring-spring-housing with retainer (from left to right).

Unlike the Elliptical Matrix, the Titanium Matrix makes use of a Spring with a **defined extraction force of 700–1100 g.** If retention is lost, the Spring can be replaced.



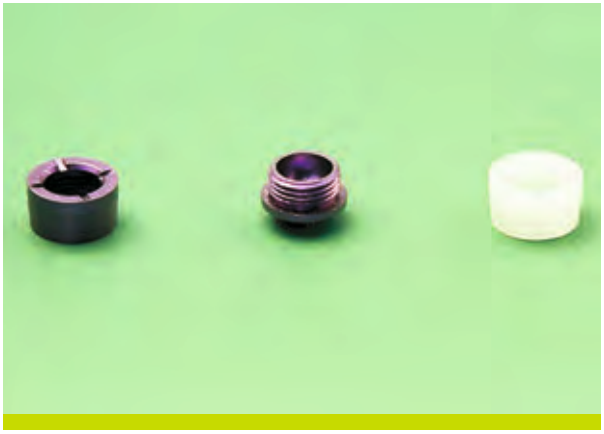
To replace the Spring, the thread on the Titanium Matrix is unscrewed anti-clockwise using a special Screwdriver (048.452) and the Spring is changed.

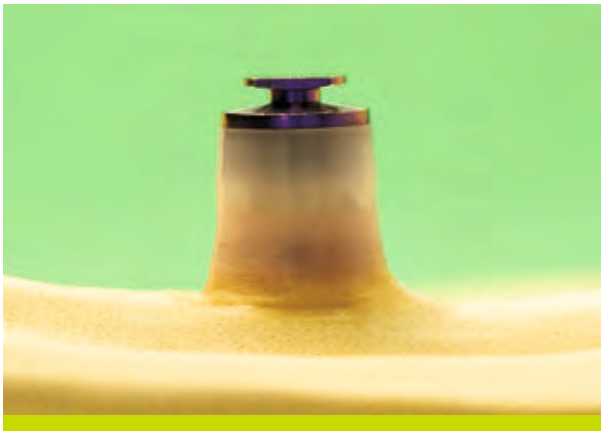
The threaded ring is then screwed back in place hand-tight.

The titanium matrices can be polymerised into place as follows:

Method A

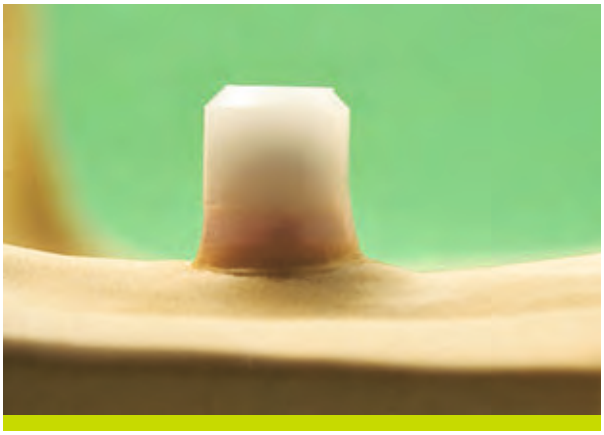
Before positioning the matrices on the Transfer Pins on the model, the original threaded ring is unscrewed and replaced with a plastic threaded ring (048.454V4). The undercuts are blocked out with plaster. The plastic ring is 3/100 mm wider in diameter than the Titanium Matrix and acts as a Spacer for it. This prevents too tight a fit of the titanium threaded ring on the polymerised acrylic. After polymerisation, the threaded ring is replaced by the titanium ring once more.





Method B

The denture is polymerised with special acrylic Spacers only (048.451V4). First, the undercuts are blocked out with plaster. Once the denture is ready, the Spacers are removed and the dentist can polymerise the titanium matrices into place directly in the patient's mouth. The Spacers are also used to produce the model for the metal reinforcement.



Method C

Before being positioned on the edge of the threaded ring, the Titanium Matrix is coated with a thin film of die Spacer. This ensures that the threaded ring can be released later on without excessive force having to be exerted.

⚠ **Important: With all three methods, the titanium matrices (or Spacers) must also always be positioned on the Transfer Pins with their axes aligned (parallel to the path of insertion) and the undercuts blocked out.**

The finished denture with titanium matrices integrated in the metal framework.

⚠ **Important: Once the denture is complete, it must be checked to ensure no acrylic has penetrated the matrix. To do this, the threaded ring should be removed and the inner configuration with the Spring should be cleaned.**

Removal of Titanium Matrix from an existing denture

To replace an entire Titanium Matrix, the threaded ring and spring must first be removed. The tip of a special Extractor (048.453) is then heated over a Bunsen burner and screwed into the matrix housing. The housing can then be withdrawn from the acrylic denture.

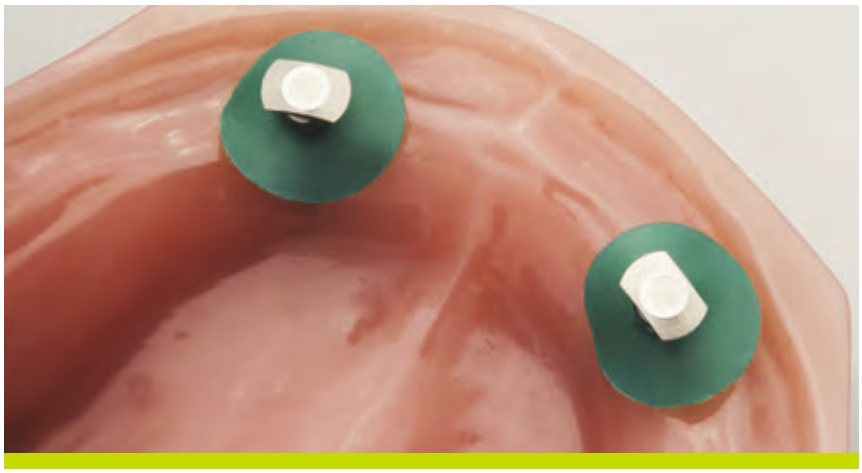
MODIFICATION OF AN EXISTING FULL LOWER DENTURE IN AN IMPLANT-BORNE RETENTIVE ANCHOR DENTURE

Polymerisation of the Elliptical matrix in the patient's mouth after implantation and osseointegration

The existing full lower denture prior to modification.

The Retentive Anchors are inserted into the implants with a force of **35 Ncm.** The existing denture is then hollowed out in the region of the anchor. The opening created allows the acrylic to flow in. The Elliptical Matrices positioned on the anchor must not touch the denture after hollowing.

After positioning on the Retentive Anchors, a small piece of rubber dam is placed over the matrices. This prevents the acrylic from flowing into the internal matrix configuration.



⚠ **Important: The matrices must be aligned (parallel to the path of insertion).**

The prepared denture is then fixed in the mouth and the acrylic is flowed through the perforation.

The modified denture with the polymerised Elliptical Matrices.

RELINING OF AN IMPLANT-BORNE RETENTIVE ANCHOR DENTURE

Hybrid dentures with Retentive Anchors should be checked at approximately three-month intervals, to eliminate damaging denture movements by appropriate measures at an early stage. If the alveolar ridge resorbs after a prolonged wearing time, the denture may sink. This leads to a loss of resilience of the matrices and so to greater stress on the Retentive Anchor/ implants. Relining then becomes necessary.

Relining is carried out directly over the Retentive Anchors. Care should be taken to ensure that the denture is sitting correctly (Retentive Anchor/matrix connection). The dental technician then positions the Transfer Pins (048.109) in the matrices (titanium or Elliptical Matrix) in the denture and produces the relining model (see also page 31, Producing the model).

After relining, the matrices should be checked for acrylic that may have flowed into them and for their functionality. It must also be possible to activate/deactivate the matrices. After polymerisation, the Elliptical Matrix and Titanium Matrix are opened with the relevant Screwdriver and the internal configuration is cleaned.

⚠ Important: These measures are vital, because only in this way is the optimum function of the relined, implant-borne anchor denture ensured. If the function of the matrix is impeded, this can damage the implant/anchor.

EDENTULOUS: RETENTIVE ANCHOR

Retentive Anchor with Elliptical matrix		**Retentive Anchor with Titanium Matrix**	
Choice of implant	**Solid screw implant Ø 4.1 mm, 4.8 mm; shoulder Ø 4.8 mm**		
Abutments and laboratory parts	Instruments	Abutments and laboratory parts	Instruments
Insertion of abutments Retentive Anchor 048.439 	Driver for Retentive Anchor 046.069 	Retentive Anchor 048.439 	Driver for Retentive Anchor 046.069 
Impression Transfer Pin 048.109 		Transfer Pin 048.109 	
Production of denture Elliptical matrix 048.456	Screwdriver 046.154 	Titanium Matrix 048.450  Spacer 048.451V4  Threaded mounting ring 048.454V4 	Screwdriver 048.452 
Insertion of final restoration	Screwdriver 046.154 	Spring 048.455V4 	Screwdriver 048.452  Extractor 048.453

RETENTIVE ANCHORS

Art. No		Article	Dimension		Material
048.439		Retentive Anchor	height	3.4 mm	Ti
046.069		Retentive Anchor Driver	length	19.0 mm	stainless steel
048.109		Transfer Pin for Retentive Anchor	length	18.0 mm	stainless steel
Elliptical matrix, activable					
048.456		Elliptical matrix	height ∅	3.2 mm 3.6 mm	Elitor®/Ti
048.457		Spare Lamella Retention Insert	height	2.6 mm	Elitor®
046.154		Screwdriver	length	37.0 mm	stainless steel
Titanium Matrix with defined extraction force					
048.450		Titanium Matrix for Retentive Anchor	height	3.1 mm	Ti
048.451V4		Spacer for Titanium Matrix	height	3.5 mm	POM
048.452		Screwdriver Titanium Matrix	length	60.0 mm	stainless steel/ Al, anodised
048.453		Extractor for Titanium Matrix	length	100.0 mm	stainless steel
048.454V4		Threaded Mounting Ring for Titanium Matrix	height	2.2 mm	POM
048.455V4		Spacer for Titanium Matrix			stainless steel

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LOCATOR®

Introduction

Optimal connection is provided by dual retention.
Excellent long-term performance thanks to the high wear resistance of the components.

The self-locating design of the LOCATOR® components allows patients to easily seat their dentures.
The LOCATOR® Retention Inserts can be easily placed and removed with the LOCATOR® Core Tool.

The LOCATOR® components can accommodate up to 40° divergence between two implants.
Even where occlusal space is limited, re-storations are possible thanks to the small vertical dimension of the components.

Indications

The LOCATOR® components are intended for use with dentures that are retained sole-ly by endosteal implants in the mandible or maxilla.

Contraindications

The LOCATOR® components are not suitable for combined tooth- and implant-support-ed respective-anchored dentures.
The LOCATOR® components cannot be used with implant divergences greater than 40°.
LOCATOR® components are not suitable on implants with an endosteal diameter of 3.3 mm (except for Narrow Neck CrossFit® Implants).

USING PLAN LOCATOR® ABUTMENTS

1. Selecting the right LOCATOR® Abutment

Open the Plan Set, pick up a Plan LOCATOR® Abutment and secure it with the SCS Screwdriver (empty mold for instruments built in).

Place the Plan LOCATOR® Abutment on the implant (intraoral use) or Implant Analog (extraoral use). This will help in checking dimensions (rings on Plan LOCATOR® Abutments indicate gingiva height), axial alignment and screw axis of the potential restoration.

1a

1b

2. Ordering the stock abutment

Once the best fitting Plan LOCATOR® Abutment is determined, the corresponding stock abutment can be ordered using the allocation chart on the Plan Set inlay card.

Cleaning and sterilizing Plan Abutments

– Clean the Plan Abutments thoroughly with water or ethanol after intraoral use.
– After cleaning, sterilize Plan Abutments with moist heat (autoclave) for 18 minutes at 134 °C (273 °F).
– Refer to the manufacturer's specifications for the heat-sterilization device.
– Do not sterilize the Plan Cassette or its inserts.
– Replace non-functional Plan Abutments.

📖 **Note:** Do not sterilize Plan Abutments more than 20 times.
Do not gamma-sterilize Plan Abutments.
Do not sterilize the Plan Cassette or its components.

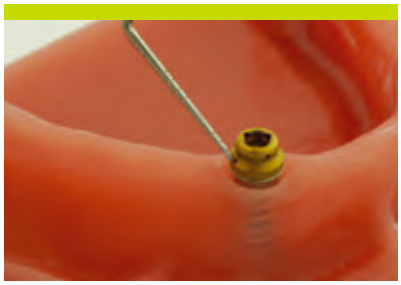
FABRICATION OF A NEW FULL DENTURE

1. The implant shoulder should not be covered by the gingiva. Select the height of the LOCATOR® Abutment by determining the height of the gingiva.

1

2. The top margin of the abutment should be 1.0 mm above the mucosa. Inserting the prosthesis is easier for the patient if the LOCATOR® Abutments are on the same horizontal level.

2



3. First, screw the abutment into the implant hand-tight, using the LOCATOR® Driver.

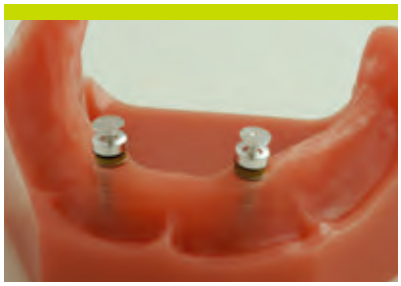
3

4. Then torque the abutment to **35 Ncm** using the Straumann Ratchet, with the Torque Control Device attached, and the LOCATOR® Driver.

4

5. A white Spacer ring (not pictured) is placed on the abutments. The Spacer ring prevents plastic from penetrating the region below the matrix housing. To take the impression, place the LOCATOR® Impression Copings on the LOCATOR® Abutments.

5



6. Take the impression utilizing the mucodynamic technique (vinyl polysiloxane or polyether rubber).

6

7. It is sent to the dental laboratory. Then, to make the master cast, insert the LOCATOR® Female Analogs into the LOCATOR® Impression Copings.

7

8. Fabricate the master cast in the usual way, using special hard plaster, Type 4. The Denture Caps with the black Processing Analogs are then put on the LOCATOR® Analogs. The proces-sing male serves to fix the Denture Cap on the Analog, giving optimal stability.

8

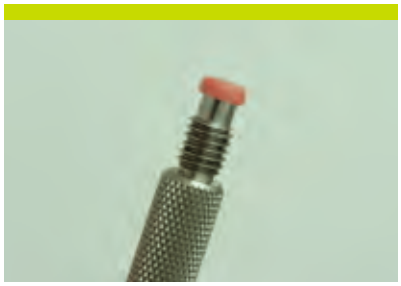
9. The denture is fabricated using the conventional technique. The polymerised prosthesis with the Denture Caps and black Processing Analogs.

9

10. After finishing and polishing the denture, remove the black Processing Analogs from the Denture Caps using the LOCATOR® Core Tool, and insert appropriate LOCATOR® Replacement Males in their place. Refer also to "Using the LOCATOR® Core Tool" on page 55 and "Selecting the Replacement Males" on page 56.

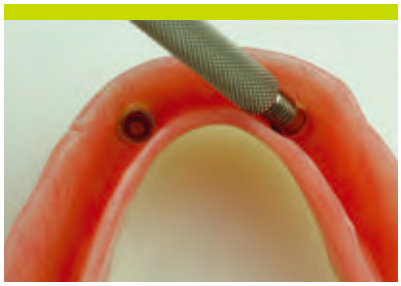
11. To insert LOCATOR® Replacement Males, the tip of the LOCATOR® Core Tool must be unscrewed.

11



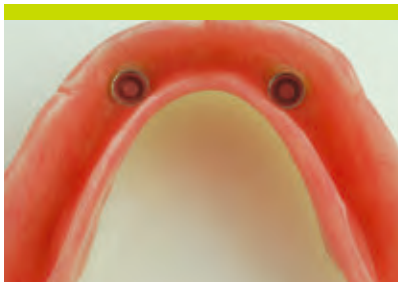
12. The exposed end of the Replacement Male is pressed into the Denture Cap. The Replacement Male clicks audibly into place.

12



13. Then insert the finished denture and check the occlusion.

13



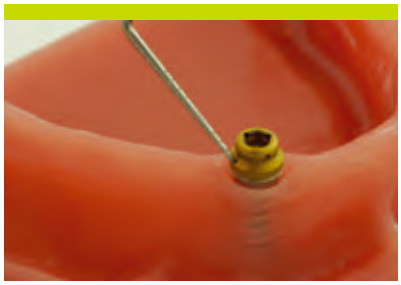
MODIFICATION OF AN EXISTING LOWER FULL DENTURE INTO A DENTURE FIXED ON LOCATOR® ABUTMENTS WITH SIMULTANEOUS RELINING

1. The implant shoulder should not be covered by the gingiva. Select the height of the LOCATOR® Abutment by determining the height of the gingiva.

2. The upper border of the abutment should be 1.0 mm above the mucosa.

1

2



3. First, screw the abutment into the implant hand-tight, using the LOCATOR® Driver.

4. Then torque the abutment to **35 Ncm** using the Straumann Ratchet, with the Torque Control Device attached, and the LOCATOR® Driver. A white Block-out Spacer ring is put on the abutments (not illustrated). The Block-out Spacer ring prevents resin from flowing into the region below the Denture Cap.

3

4

5. Place the Denture Caps, with the black Processing Analogs, onto the LOCATOR® Abutments.

5

6. Then hollow out the existing denture base in the areas of the LOCATOR® Denture Caps.

7. Insert the denture into the patient's mouth and check the fit. The Denture Caps fixed on the abutments must not touch the denture.

6

7

8+9. The impression for the relining is taken using the conventional technique.

8

9

10. Subsequently, to fabricate the master cast, insert the LOCATOR® Female Analogs into the Denture Caps, which are located in the impression material.

10

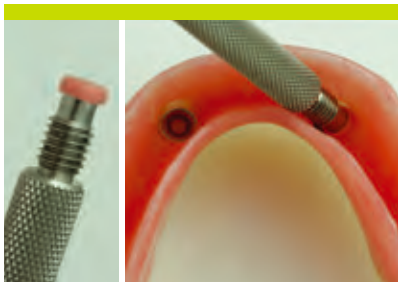
11. Fabricate the master cast in the usual way using special hard plaster, Type 4. Then place the Denture Caps onto the LOCATOR® Female Analogs. The Processing Analog serves to fix the Denture Cap on the Analog, giving optimal stability.
Note: The Denture Caps with the black Processing Analogs must be securely seated on the Analogs. Then the denture is relined using the conventional technique.

11

12. After finishing and polishing the denture, remove the black Processing Analogs from the Denture Caps using the LOCATOR® Core Tool, and insert appropriate Replacement Males in their place. Refer also to "Using the LOCATOR® Core Tool" on page 55 and "Selecting the Replacement Males" on page 56.

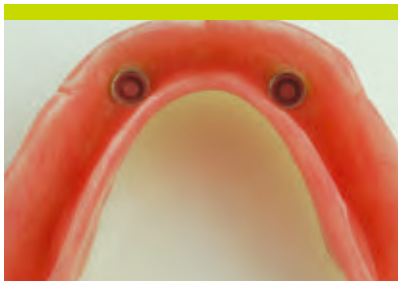
13. To insert LOCATOR® Replacement Males, the tip of the LOCATOR® Core Tool must be unscrewed. The exposed end of the Replacement Male is pressed into the Denture Cap. The Retention Insert clicks audibly into place.

13



14. Then insert the finished denture and check the occlusion.

14



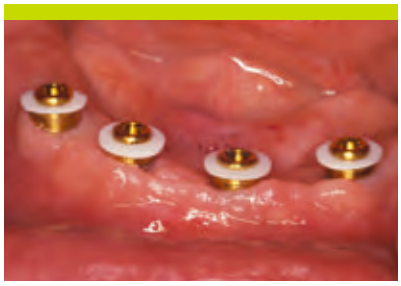
MODIFICATION OF AN EXISTING LOWER FULL DENTURE INTO A DENTURE FIXED ON LOCATOR® ABUTMENTS IN THE PATIENT'S MOUTH

1. Four implants with screwed (35 Ncm) LOCATOR® Abutments in the mandible.

1

2. LOCATOR® Abutments with white Block-out Spacer rings attached.

2



3. Denture Caps with attached black Processing Analogs on LOCATOR® Abutments.

3

4. Hollow-ground prosthesis with connecting holes for filling with prosthesis resin.

⚠ **Important: When checking fit in the mouth, the Denture Caps fixed on the abutments must not touch the prosthesis.**

4

Polymerizing the Denture Caps into the denture

5. The connecting holes are now filled with prosthetic resin from lingual, and the caps are thus anchored in the denture. For this purpose, use a lightcure or self-curing resin. After curing, remove any excess resin and polish the denture.

Note: If the white LOCATOR® Block-out Spacers do not completely fill the space between the gingiva and the Denture Caps, any remaining undercuts must be blocked out to prevent resin flowing under the caps. This can be accomplished by, for example, stacking two or more LOCATOR® Block-out Spacer.

Once the resin has cured, remove the denture from the mouth and discard the white LOCATOR® Block-out Spacer. Remove any excess resin.

5

6.+7. After polishing the denture base, remove the black Processing Analogs and insert appropriate LOCATOR® Replacement Males in their place. Refer also to "Using the LOCATOR® Core Tool" on page 55 and "Selecting the Replacement Males" on page 56.

7

8. Then insert the finished denture and check the occlusion.

8

Photographs courtesy of
Dr. Robert C. Vogel

Determining the angulation of LOCATOR® Abutments in the mouth

Snap the LOCATOR® Parallel Posts onto the LOCATOR® Abutments. Use the LOCATOR® angle measurement guide to determine the respective angulation of the LOCATOR® Abutments in relation to each other. To do this, hold the angle measurement guide behind the placed Parallel Posts and read off the angle for each abutment.

⚠ **Important: Choose the appropriate LOCATOR® Replacement Males according to the angulation measured.**

⚠ **Caution: Tie dental floss to the lateral holes of the angle measurement guide to prevent aspiration.**

Two instruments are available for checking the angulation of the LOCATOR® Abutments that have been screwed into the implants:

LOCATOR® Parallel Post (048.199V4)

LOCATOR® Angled Measurement Guide (048.200)

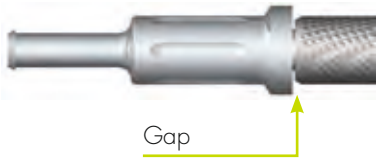
Impression procedure at implant shoulder level

It is also possible to take the impression at the level of the implant shoulder without LOCATOR® Abutments.
To do this, the impression is taken with Straumann impression components (snap-on or screwed impression, see page 6–9). The master cast is made with Straumann Analogs (Art. No. 048.124).
The LOCATOR® Abutments are selected in the dental laboratory. The upper border of the abutment should be 1.0 mm above the mucosa. Further procedure is the same as when LOCATOR® Analogs are used.

Using the LOCATOR® Core Tool

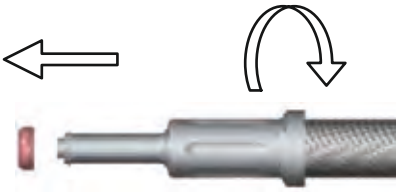
The LOCATOR® Core Tool is a three-piece multifunction instrument.

The tip is used for removing Replacement Males from the Denture Caps. To do this, the tip must be unscrewed by two full turns. A gap is visible between the tip and the middle section.



The tip is passed in a straight line into the Denture Cap with a Replacement Male. The sharp edges of the tip hold the Replacement Male while it is being removed. The instrument is drawn out of the Denture Cap in a straight line.

To remove the Replacement Male from the instrument, the tip must be screwed clockwise completely onto the middle section. This activates the loosening pin inside the tip, which releases the Replacement Male.



The middle section of the LOCATOR® Core Tool is used for inserting Replacement Males into the Denture Caps. To do this, the tip is unscrewed. The exposed end of the Replacement Male is pressed into the Denture Cap. The Replacement Male is fixed firmly in the cap when a click is heard.

The LOCATOR® Abutment Holder Sleeve makes it easier to deliver a LOCATOR® Abutment, and it retains the abutment while threading it into the implant. The LOCATOR® Abutment Holder Sleeve can be autoclaved.

The end (gold-colored) of the LOCATOR® Core Tool is used by the dental technician for screwing and unscrewing the LOCATOR® Abutments to the Analogs.

Using the black Processing Analog

Both the LOCATOR® Female Analog and the LOCATOR® Denture Cap are supplied with a preassembled black Processing Analog. The black Processing Analog is used as a Spacer for the various LOCATOR® Replacement Males.
In the case of underlining of a LOCATOR®-anchored prosthesis, the LOCATOR® Replacement Males must be removed from the Denture Caps and be exchanged for black Processing Analogs. The black Processing Analogs keep the prosthesis in a stable vertical position with the Denture Caps during the impression procedure and working. When underlining and working of the prosthesis is finished, the black Processing Analogs are exchanged for the corresponding new LOCATOR® Replacement Males.

Selecting the LOCATOR® Replacement Males

To enable patients to insert and remove their LOCATOR® retained dentures simply and reliably, the divergence of the path of insertion of the individual LOCATOR® Abutments must not exceed 10° per jaw (or 20° in the case of two abutments).
If several (3 or more) LOCATOR® Abutments are used in the same jaw, we recommend using pink LOCATOR® Replacement Males, Art. No. 048.191V4, with light retention (3.0 lbs/1.36 kg), or blue, Art. No. 048.192V4, with extra-light retention (1.5 lbs/0.68 kg).
In the case of implant divergences of more than 10° to 20° (or up to 40° in the case of two abutments), the LOCATOR® extended range Replacement Males in green with normal retention (4 lbs/1.82 kg), Art. No. 048.193V4, can be used or orange, with light retention (2.0 lbs/0.91 kg), Art. No. 048.188V4, or red, with extra-light retention (1 lbs/0.45 kg), Art. No. 048.194V4.

⚠ Caution: We recommend using the loosest retention elements first (blue, Art. No. 048.192V4) with the prosthetic restoration. If the patient feels that they are too loose, elements with a greater retention force may be used.

PRODUCT OVERVIEW

Art.-No		Article	Dimensions	Material
Plan LOCATOR® Abutments				
048.275V4		RN Plan LOCATOR® Abutment	height 1.0 mm	POM
048.276V4		RN Plan LOCATOR® Abutment	height 2.0 mm	POM
048.277V4		RN Plan LOCATOR® Abutment	height 3.0 mm	POM
048.278V4		RN Plan LOCATOR® Abutment	height 4.0 mm	POM
048.279V4		RN Plan LOCATOR® Abutment	height 5.0 mm	POM
048.280V4		RN Plan LOCATOR® Abutment	height 6.0 mm	POM
048.283V4		WN Plan LOCATOR® Abutment	height 1.0 mm	POM
048.284V4		WN Plan LOCATOR® Abutment	height 2.0 mm	POM
048.285V4		WN Plan LOCATOR® Abutment	height 3.0 mm	POM
048.286V4		WN Plan LOCATOR® Abutment	height 4.0 mm	POM
048.287V4		WN Plan LOCATOR® Abutment	height 5.0 mm	POM

For information about the NNC LOCATOR® Abutment, please refer to *Prosthetic Procedures for the Narrow Neck CrossFitR Implant – Straumann® Narrow Neck CrossFit® Implant Line, 152.808.*

Art.-No	Article	Dimensions	Material
LOCATOR® Abutments			
048.175/048.183	RN/WN LOCATOR® Abutment	height 1.0 mm	titanium alloy/Ti-N•
048.176/048.184 	RN/WN LOCATOR® Abutment	height 2.0 mm	titanium alloy/Ti-N•
048.177/048.185	RN/WN LOCATOR® Abutment	height 3.0 mm	titanium alloy/Ti-N•
048.178/048.186 	RN/WN LOCATOR® Abutment	height 4.0 mm	titanium alloy/Ti-N•
048.179/048.187	RN/WN LOCATOR® Abutment	height 5.0 mm	titanium alloy/Ti-N•
048.180	RN LOCATOR® Abutment	height 6.0 mm	titanium alloy/Ti-N•
LOCATOR® Components			
048.189V2 	LOCATOR® male processing package, contents: Denture Cap (Ø 5.5 mm, height 2.5 mm) with black Processing Analog (height 1.9 mm), Block-out Spacer (048.196), clear Replacement Male (048.190), pink Replacement Male (048.191) and blue Replacement Male (048.192)		titanium/nylon
048.190V4 	LOCATOR® Replacement Male, clear, 0°–10°*, 5 lbs, 2.27 kg**	height 1.7 mm	nylon
048.191V4 	LOCATOR® Replacement Male, pink, light retention, 0°–10°*, 3 lbs, 1.36 kg**	height 1.7 mm	nylon
048.192V4 	LOCATOR® Replacement Male, blue, extra-light retention, 0°–10°*, 1.5 lbs, 0.68 kg**	height 1.7 mm	nylon
048.182V2 	LOCATOR® male processing package, extended range, contents: Denture Cap (Ø 5.5 mm, height 2.5 mm) with black Processing Male (height 1.9 mm), Block-out Spacer (048.196), green Replacement Male (048.193), orange Replacement Male (048.188), red Replacement Male (048.194)		titanium/nylon
048.193V4 	LOCATOR® Replacement Male, green, extended range, 10°–20°*, 4 lbs, 1.82 kg**	height 1.7 mm	nylon
048.188V4 	LOCATOR® Replacement Male, orange, light retention, extended range, 10°–20°*, 2 lbs, 0.91 kg**	height 1.7 mm	nylon
048.194V4 	LOCATOR® Replacement Male, red, extra-light retention, extended range, 10°–20°*, 1 lbs, 0.45 kg**	height 1.7 mm	nylon

Art.-No		Article	Dimensions	Material
LOCATOR® Components				
048.181V4		LOCATOR® Replacement Male, gray, zero (0) retention	height 1.7 mm	nylon
048.198V4		LOCATOR® Female Analog	length 10.0 mm Ø 5.0 mm	aluminium
048.218V4		LOCATOR® processing Spacer		POM
046.413V4		LOCATOR® Abutment Holder Sleeve		PSU
048.197V4		LOCATOR® Impression Coping	height 4.0 mm	aluminum housing with LDPE insert
048.196V20		LOCATOR® Block-out Spacer	thickness 0.4 mm	silicone rubber
048.195V4		LOCATOR® black Processing Analog	height 1.9 mm	LDPE
Components				
046.415		LOCATOR® Core Tool	length 100.0 mm	stainless steel
046.416		LOCATOR® Driver short for Ratchet	length 15.0 mm	stainless steel
046.417		LOCATOR® Driver long for Ratchet	length 21.0 mm	stainless steel
048.199V4		LOCATOR® Parallel Post	length 8.0 mm	LDPE
048.200		LOCATOR® angle measurement guide	length 5.0 mm width 15.0 mm	stainless steel

- • = *Titanium Nitride-coated*
- *V2* = *Pack of 2*
- *V4* = *Pack of 4*
- *V20* = *Pack of 20*
- *LDPE* = *Low Density Polyethylene*
- * = *For the correction of angle divergences*
- ** = *Retentionforce*

CE 0473

Manufacturer
Zest Anchors, Inc.
Escondido, CA 92029
USA

Distributor
Institut Straumann AG
4002 Basel
Switzerland

Institut Straumann AG is the sole distributor of the LOCATOR® products listed in this brochure for the Straumann® Dental Implant System.

STRAUMANN SFI-Anchor®

Intended use

- Dentures retained by implants in the mandible and maxilla
- SFI-Anchor® is currently available for Regular CrossFit® (RC) and Regular Neck (RN)

Characteristics

Simple

- Similar concept to existing systems on the market
- Minimum component height for limited occlusal space

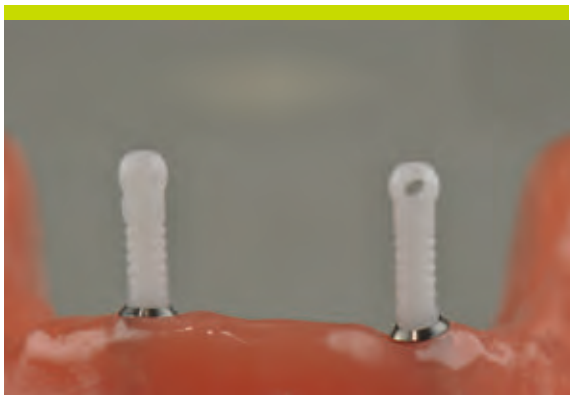
Flexible

- Divergence compensation up to 60° between two implants
- Different abutment heights to meet individual patient needs

Reliable

- Unique Star-Shape design for reliable retention
- Retention Inserts made of Pekkton® for reliable retention

Fabrication of a new prosthesis using the D60 Abutment



1. Step

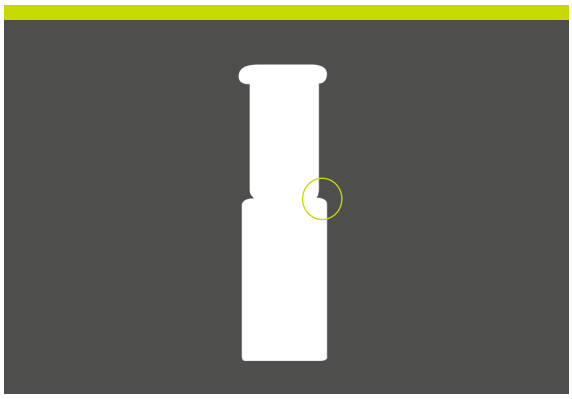
Choose the SFI-Anchor® Abutment Planner to decide on the correct abutment type (D20 or D60). With the help of the marks on the Abutment Planner the correct abutment height can be identified. Consider that the lower edge of the Straumann® SFI-Anchor® Abutment D60 is at least 1 mm above the gingiva and aligned parallel to the occlusal plane.

2. Step

Place the Straumann® SFI-Anchor® Abutment. First screw the Straumann® SFI-Anchor® Abutment into the implant with the SFI-Anchor® Screwdriver. Then, with a torque of 35 Ncm, tighten the abutment using the Ratchet and Torque Control Device and using the SFI-Anchor® Screwdriver.

3. Step

Use some Vaseline to facilitate the removal of composite bonding cement residues. Then mount the SFI-Anchor® Aligner.



Important

The abutment must be aligned in axis with the implant before injecting the cement.

Note

Make sure the Abutment Aligner is in line with the abutment to ensure correct insertion of the Aligner tip for cementation. If necessary, the SFI-Anchor® Aligner can be shortened as indicated.

4. Step

Inject the composite bonding cement into the SFI-Anchor® Abutment until the composite bonding cement visibly escapes from the two vent holes. Check that the abutment is completely filled. Please check for correct vertical and horizontal fit of the SFI-Anchor® Aligner on the abutment. For cementation, for example, use RelyX™ Unicem by 3M. For correct usage, please follow the manufacturer's instructions for use.

5. Step

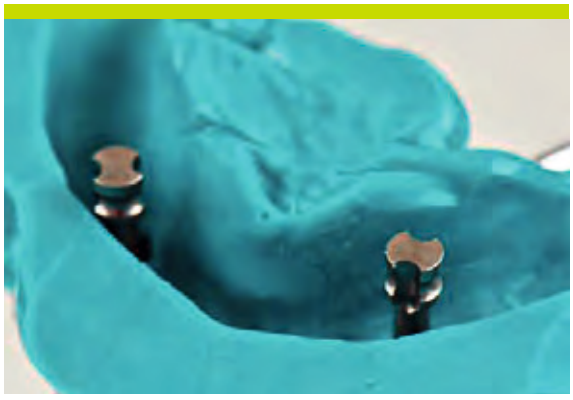
Align the SFI-Anchor® Abutment. Tip the placed SFI-Anchor® Aligner in alignment axis (do not rotate) until the second snap position is reached. Align the SFI-Anchor® Abutment parallel to the occlusal plane and allow the composite bonding cement to cure.

6. Step

For impression taking, place the SFI-Anchor® Impression Post on the SFI-Anchor® Abutment and take a mucodynamic impression.

Note

To ensure a proper alignment of Abutment and Retention Insert, the impression needs to be taken on abutment level.



7. Step

Pass to the dental laboratory for fabrication of the model. To fabricate the model, the SFI-Anchor® Analogs are inserted into the SFI-Anchor® Impression Posts.

8. Step

Fabrication of the master model according to state-of-the-art technology.

Insert the SFI-Anchor® Housings with the mounted SFI-Anchor® Retention Inserts (extra-low) or SFI-Anchor® Spacers on the SFI-Anchor® Analogs.

The prosthesis can now be fabricated using conventional technology.

Additional information: Insertion of the Retention Inserts into the Housing

- Use the provided tool
- Obtain correct position by slightly rotating Retention Inserts prior to placement in Housing (Retention Insert slightly drops into Housing)
- To disassemble the Retention Insert, use the appropriate end of the SFI-Anchor® Tool
- Slightly rotate the Retention Insert in the Housing (approx. 36°) and extract by slightly moving it back and forth

Additional information: Polymerization of the Housing directly in patient's mouth

- Create sufficient space prior to inclusion in the prosthetic body
- Align the SFI-Anchor® Housing with mounted SFI-Anchor® Block-out Spacer in the mouth parallel to the occlusal plane
- Make sure to also block out all undercuts

Product portfolio

Article number	Description	Divergence	Height	Material
045.025	SFI-Anchor® CD20	20°	2 mm	Titanium Grade 5
045.026	RN SFI-Anchor® Abutment D60, incl. Aligner	60°	1 mm	Titanium Grade 5
045.027	RN SFI-Anchor® Abutment D60, incl. Aligner	60°	2 mm	Titanium Grade 5
045.028	RN SFI-Anchor® Abutment D60, incl. Aligner	60°	3 mm	Titanium Grade 5
045.029	RN SFI-Anchor® Abutment D60, incl. Aligner	60°	4 mm	Titanium Grade 5
045.030	RN SFI-Anchor® Abutment D60, incl. Aligner	60°	5 mm	Titanium Grade 5
045.031	RN SFI-Anchor® Abutment D20	20°	1 mm	Titanium Grade 5
045.032	RN SFI-Anchor® Abutment D20	20°	2 mm	Titanium Grade 5
045.033	RN SFI-Anchor® Abutment D20	20°	3 mm	Titanium Grade 5
045.034	RN SFI-Anchor® Abutment D20	20°	4 mm	Titanium Grade 5
045.035	RN SFI-Anchor® Abutment D20	20°	5 mm	Titanium Grade 5
045.036	RC SFI-Anchor® Abutment D60, incl. Aligner	60°	1 mm	Titanium Grade 5
045.037	RC SFI-Anchor® Abutment D60, incl. Aligner	60°	2 mm	Titanium Grade 5
045.038	RC SFI-Anchor® Abutment D60, incl. Aligner	60°	3 mm	Titanium Grade 5
045.039	RC SFI-Anchor® Abutment D60, incl. Aligner	60°	4 mm	Titanium Grade 5
045.040	RC SFI-Anchor® Abutment D60, incl. Aligner	60°	5 mm	Titanium Grade 5
045.041	RC SFI-Anchor® Abutment D20	20°	1 mm	Titanium Grade 5
045.042	RC SFI-Anchor® Abutment D20	20°	2 mm	Titanium Grade 5
045.043	RC SFI-Anchor® Abutment D20	20°	3 mm	Titanium Grade 5
045.044	RC SFI-Anchor® Abutment D20	20°	4 mm	Titanium Grade 5
045.045	RC SFI-Anchor® Abutment D20	20°	5 mm	Titanium Grade 5

Retention Inserts			
Article number	**Description**	**Material**	**Retention**
045.046V2	SFI-Anchor® Basic Set ▪ 2 × SFI-Anchor® Housing ▪ 2 × SFI-Anchor® Retention Insert, extra-low ▪ 2 × SFI-Anchor® Retention Insert, low ▪ 2 × SFI-Anchor® Retention Insert, medium ▪ 2 × SFI-Anchor® Block-out Spacer		
045.047V4	SFI-Anchor® Retention Insert, extra-low	Pekkton®	Yellow approx. 300 g
045.048V4	SFI-Anchor® Retention Insert, low	Pekkton®	Red approx. 800 g
045.049V4	SFI-Anchor® Retention Insert, medium	Pekkton®	Green approx. 1300 g
045.050V4	SFI-Anchor® Retention Insert, strong	Pekkton®	Blue approx. 1800 g
045.051	SFI-Anchor® Retention Insert, Elitor®	Elitor®	approx. 1500 g

Auxiliaries		
Article number	**Description**	**Material**
045.060	SFI-Anchor® Instrument Set ▪ 4 × SFI-Anchor® Impression Part ▪ 4 × SFI-Anchor® Analog ▪ 1 × RN SFI-Anchor® Abutment Planner ▪ 1 × RC SFI-Anchor® Abutment Planner ▪ 1 × SFI-Anchor® Tool ▪ 1 × SFI-Anchor® Screwdriver	
045.052V4	SFI-Anchor® Spacer	POM
045.053V4	SFI-Anchor® Block-out Spacer	Silicone
045.054V4	SFI-Anchor® Impression Part	POM
045.055V4	SFI-Anchor® Analog	Titanium Grade 5
045.056	RN SFI-Anchor® Abutment Planner	POM
045.057	SFI-Anchor® Aligner	POM
045.058	SFI-Anchor® Tool	Titanium Grade 5
045.059	SFI-Anchor® Screwdriver	Sandvik
045.061V4	SFI-Anchor® Housing	Titanium Grade 5
045.062	RC SFI-Anchor® Abutment Planner	POM

IMPORTANT GUIDELINES

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

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

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

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

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

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

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

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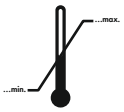
Straumann® and/or other trademarks and logos from Straumann® mentioned herein are the trademarks or registered trademarks of Straumann Holding AG and/or its affiliates.

Explanation of the symbols on labels and instruction leaflets

LOT	Batch code
REF	Catalogue number
STERILE R	Sterilized using irradiation
	Lower limit of temperature
	Upper limit of temperature
	Temperature limitation
Rx only	Caution: Federal law restricts this device to sale by or on the order of a dental professional.
	Do not re-use
	Non-sterile
	Caution, consult accompanying documents
	Use by
	Keep away from sunlight
CE	Straumann Products with the CE mark fulfill the requirements of the Medical Devices Directive 93/42 EEC
CE 0123	
	Consult instructions for use

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