Patent

Patent™ Dental Implant System

User Guide for Patent™ Standard Line

Patent

Contents

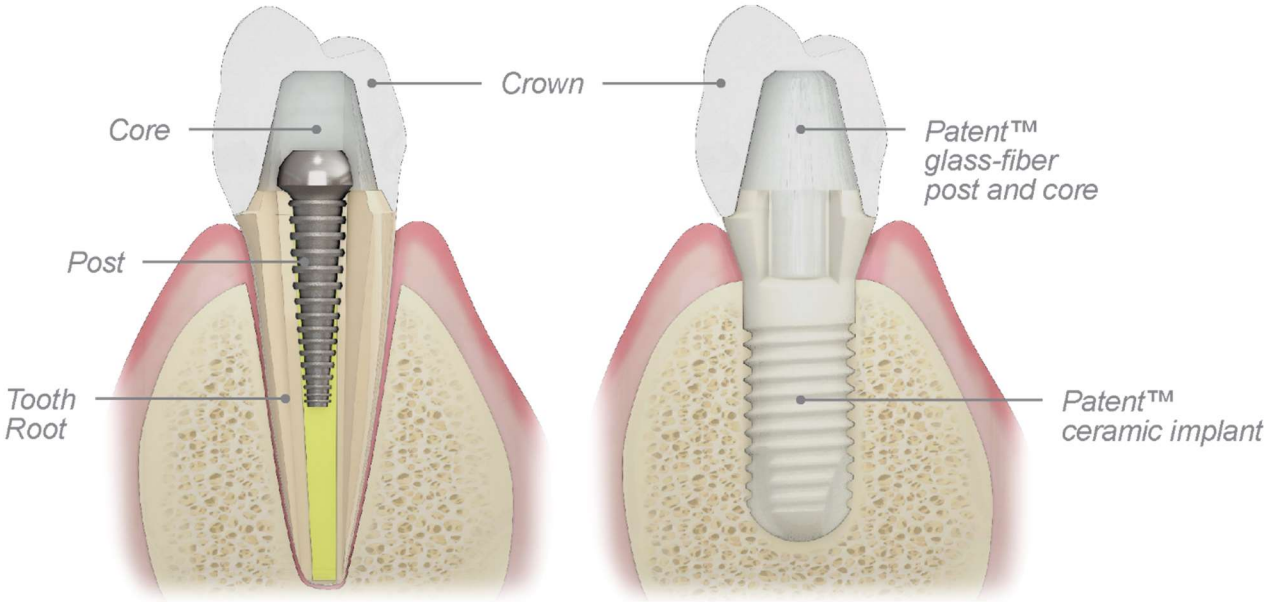
Introduction

The Patent™ Standard Line

The Patent™ standard line is composed of transgingival implants and can be used in partial or fully edentulous patients. Patent™ implants are made from Y-TZP zirconia, a biocompatible ceramic, and are available as one-piece implant, where the abutment is already included or as two-piece implant with a partial abutment, coupled to a post and core made from a glass fiber reinforced polymer. Both versions are suitable for fixed and removable denture.

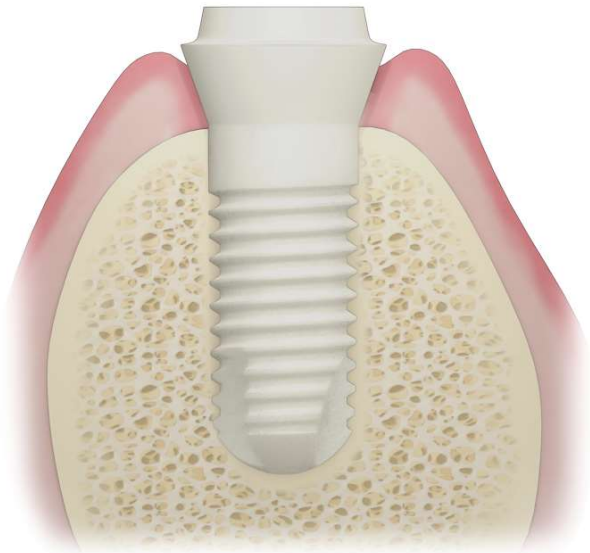
Patent™ standard line one-piece implant (left)
and two-piece implant with its glass fiber post (right)

Both versions are extremely easy to use. Especially the Patent™ two-piece implant, which works like a conventional restoration on a post and core. Once the implant is placed and stable, a glass fiber post and core is cemented to the partially abutment before a crown is cemented on it.



Natural tooth with post and core (left) vs Patent™ two-piece implant (right)

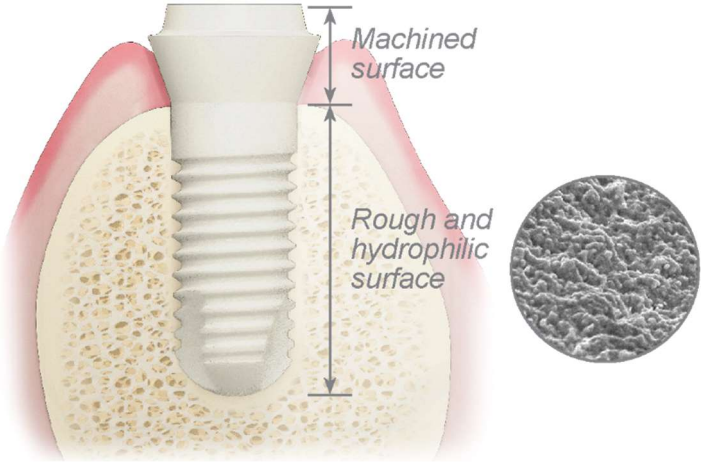
Once the Patent™ implant is placed in its bed, the finish line of its transgingival part should be equigingival.



Patent™ two-piece implant placed correctly

Patent™ surface

Patent™ implants have a bi-textured surface in order to accommodate the corresponding tissues. The endosseous part is rough (Ra = 4.9 µm) and has a behavior to promote osseointegration, while the transgingival part is machined in order to provide a favorable environment for soft-tissues.



Patent™ implant surface properties

Patent 3C™ connection

Patent 3C™ connection has been especially developed for optimal torque transmission. In addition to - its favorable wall thickness, the 3C™ connection allows to have a driving angle co-linear to the driving force, avoiding unwanted high stress concentrations.

Patent 3C™ connection

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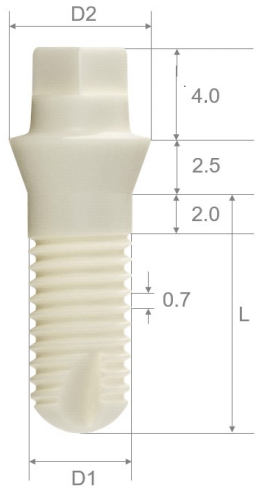
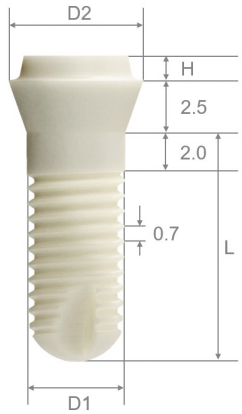
Product range and dimensions

Patent™ Standard Line - One-Piece Implant



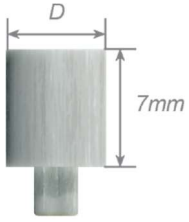
Endosseous diameter (D1)		Ø 4.1 mm	Ø 4.5 mm	Ø 5.0 mm
Platform diameter (D2)		Ø 5.2 mm	Ø 6.2 mm	Ø 6.2 mm
Length (L)	7 mm	1S4107	1S4507	1S5007
	9 mm	1S4109	1S4509	1S5009
	11 mm	1S4111	1S4511	1S5011
	13 mm	1S4113	1S4513	1S5013

Patent™ Standard Line - Two-Piece Implant



Endosseous diameter (D1)		Ø 4.1 mm	Ø 4.5 mm	Ø 5.0 mm
Platform diameter (D2)		Ø 5.2 mm	Ø 6.2 mm	Ø 6.2 mm
Ferule height (H)		1.6 mm	1.2 mm	1.2 mm
Length (L)	7 mm	2S4107	2S4507	2S5007
	9 mm	2S4109	2S4509	2S5009
	11 mm	2S4111	2S4511	2S5011
	13 mm	2S4113	2S4513	2S5013

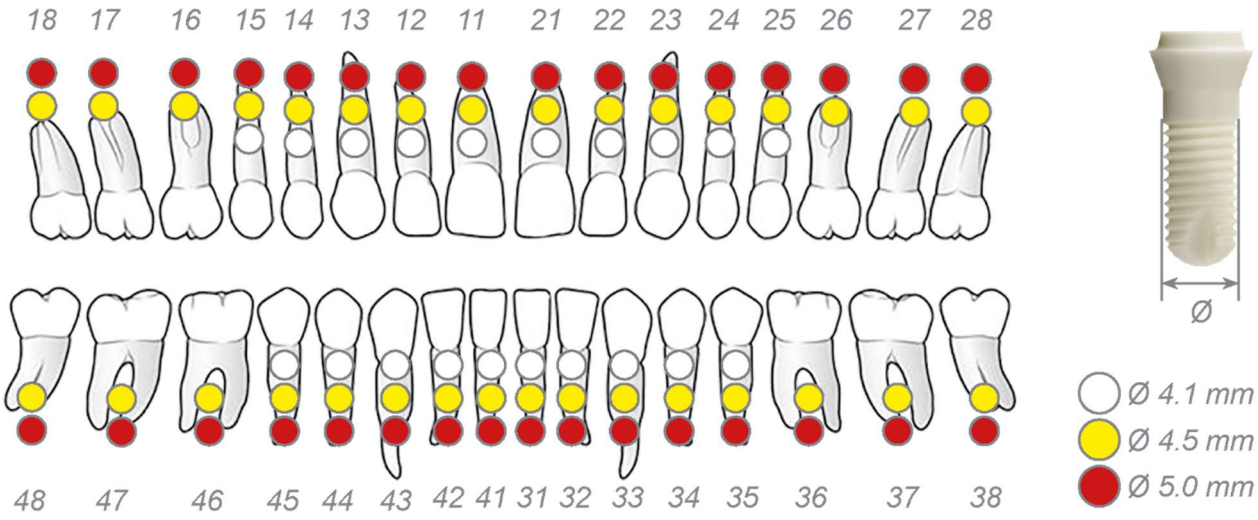
Patent™ Standard Line – Glass fiber post and core



Post diameter (D)		Ø 6.0 mm	Ø 8.0 mm
Connection size	Small	GF00S6	-
	Large	GF00L6	GF00L8

Indications

Patent™ implants are available in 3 different endosseous diameters: 4.1 mm / 4.5 mm / 5.0 mm



Patent™ implants indications in the upper and lower jaw

Contraindications

General contra-indications: pregnancy, bone previously irradiated, diabetes, anticoagulant treatment, hemodynamic problems, bruxism/parafunctional habits, heavy smoking habit, uncontrolled periodontitis, malocclusion, temporomandibular joint (TMJ) issues, diseases in the oral cavity, insufficient oral care.

Local contra-indications: insufficient quality or quantity of bone, retained roots, chronic or acute bone inflammations which have not healed in the position where an implant(s) is to be inserted, localized disease of the gums, and any bone-pathologies on the neighboring teeth.

Fixed partial dentures with cantilever pontics are contra-indicated

Surgical protocol

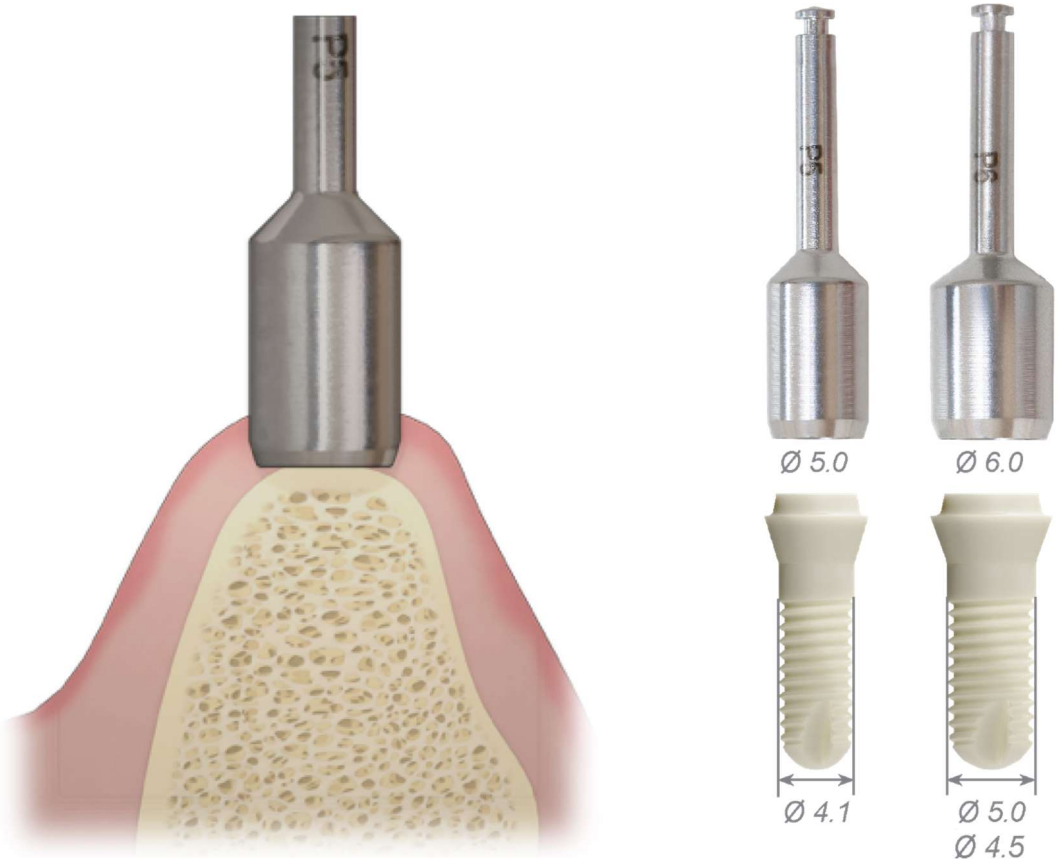
Flap/flapless

If the clinician determines that the anatomical situation is unclear or if the patient has a very narrow ridge, it is recommended to perform a flap technique as minimally invasive as possible.

If according to the clinician, the anatomical situation is favorable and there is sufficient attached gingiva around the implant site (≥ 1 mm), a flapless procedure using the soft-tissue punch can be utilized.

It is recommended to choose a soft tissue punch with a diameter slightly larger than that of the implant planned to be placed.

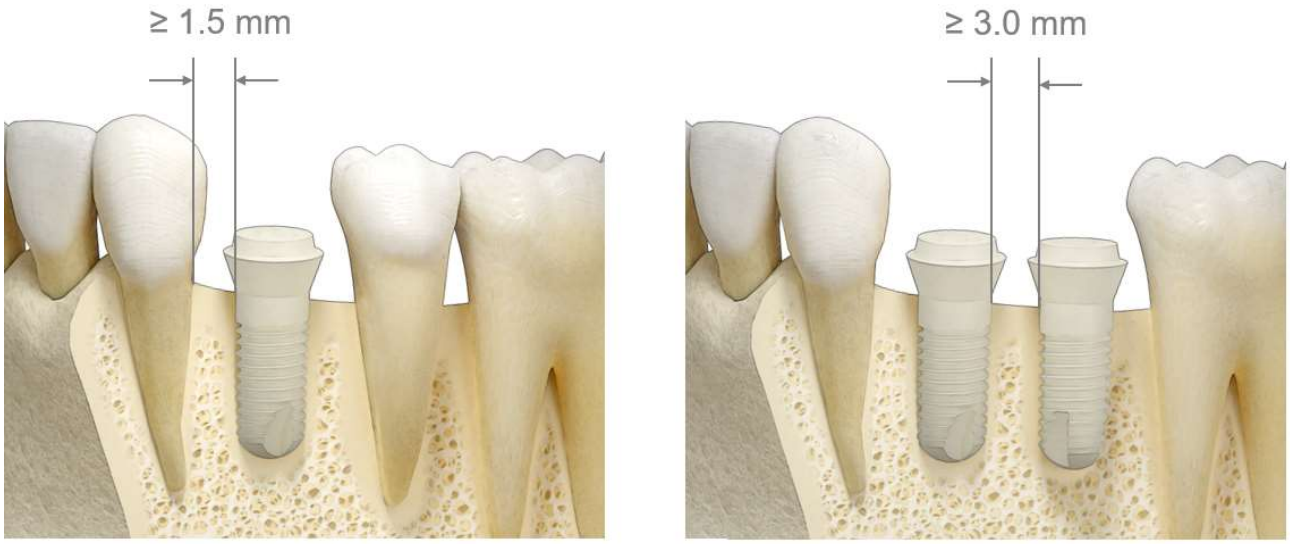
Implant endosseous diameter			**Ø 4.1 mm**	**Ø 4.5 mm**	**Ø 5.0 mm**
Implant platform diameter			**Ø 5.2 mm**	**Ø 6.2 mm**	**Ø 6.2 mm**
Tissue punch diameter	**Ø 5 mm**	**TP0005**	OK	-	-
	Ø 6 mm	**TP0006**	-	OK	OK



Flapless technique using soft-tissue punch

Implant position

In order to provide enough blood supply to the bone, there must be a minimum distance of 1.5 mm between existing teeth and an implant and a minimum of 3 mm between two implants. Consider this when the implant diameter is selected.



Distance between an implant and a natural tooth (left) and between two implants (right)

It is important to place the implant according to the position and alignment of the corresponding crown. Doing so will minimize non-axial occlusion which can be caused by extended occlusal cantilevers resulting in unfavorable tensile stress. From an occlusion point of view, it is important to achieve canine guidance in order to relieve the implant of unfavorable load during excursive or lateral movements.

In case the patient presents with group function, the lab should ensure to relieve the anatomical cusp height and cusp inclination of the implant supported crown. This will ensure the optimum monoplane occlusal surface for relief during lateral, protrusive, and excursive movements.

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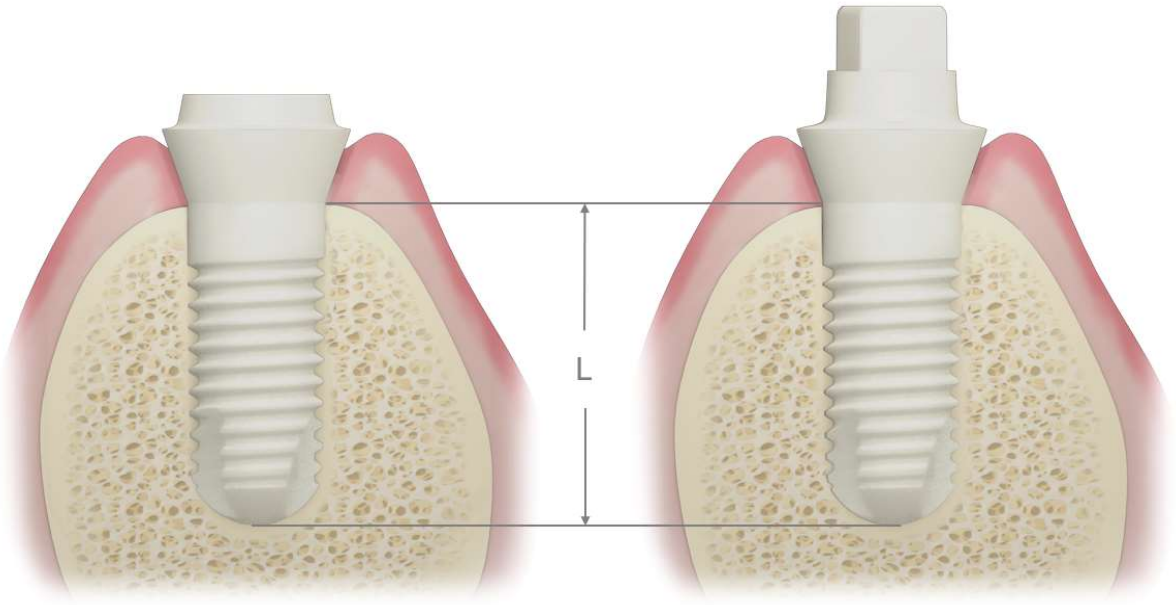
Preparing the osteotomy

The same surgical protocol applies to both the one-piece and two-piece implant. The length referenced on the implant label (L = 7/9/11/13 mm) refers to the length of the endosseous part of the implant.



Patent™ two-piece (left) and one-piece (right) implants in place

Note: For the one-piece implant it is especially important to set a good direction of insertion in order to allow an optimal restoration.

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Drilling sequence

For hard bone, start preparing the osteotomy with the small Ø 1.2 mm point drill (ref. SD0012), drilling for a couple of millimeters. Then, use the Ø 2.0 mm pilot drill (ref. SD0020) and drill to the desired depth.

Use the direction indicator to assess the axis of the osteotomy. If the direction is convenient, continue to drill with the Ø 3.0 mm drill (ref. SD0030).

In normal bone, the color of the last drill must correspond to the color of the related implant. For example: for a Ø 4.1 mm implant, the last drill is the white Ø 3.5 mm drill (ref. SD0035), followed by the white Ø 4.1 mm countersink drill (ref. CS0041) and the white Ø 4.1 mm tap (ref. T00041). Use the tap at 15 RPM while cooling with sterile saline solution.

Drilling sequence for a ø 4.1 mm two-piece standard implant (ø 4.1 mm x L11 mm) in hard bone

Optional instruments

The tissue punch, the countersink drill and the tap are optional. They can be used according to the anatomical situation and surgeon preferences. For example, in the lower jaw it is highly recommended to use the countersink drill and the tap in hard bone.

Note: for very soft bone, it is possible to underprepare the osteotomy by leaving out the last drill.

Number of uses

All Patent™ drills are designed for multiple use (maximum speed 800 RPM, intermittent drilling with ample cooling). However, they must be sharp to allow for proper performance. Blunt drills will overheat the bone and may lead to bone necrosis. It is recommended to use the drills approximately 10–15 times, depending on bone quality and the number of sterilization cycles.

Patent

Complete drilling sequence for a ø 4.1 mm two-piece standard implant (ø 4.1 mm x L11 mm)

Complete drilling sequence for a ø 4.5 mm two-piece standard implant (ø 4.5 mm x L11 mm)

Complete drilling sequence for a ø 5.0 mm two-piece standard implant (ø 5.0 mm x L11 mm)

Implant installation

Before inserting the implant, check the finished osteotomy for any residual bone chips using a direction indicator (ref. DI0000).

When the glass tube is removed from the packaging, hold a finger with sterile gloves over the implant to make sure it remains in the tube.

Caution! When transporting the implant from its packaging to the implant site, hold the implant with the apex up. The implant is purposely not retained by the insertion tool and could fall off.

The whole implant thread must be completely inserted into the bone. To achieve this, the cylindrical part of the implant without threads should be inserted as far as possible into the bone until the flared collar rests on the cortical bone. If the cylindrical part cannot be placed at the desired depth with a maximum torque of 35 Ncm, the implant has to be immediately removed from its site and a countersink drill with the same diameter as the implant must be used to expand the osteotomy to a depth of maximum 2 mm.

Caution! In order to avoid too much pressure on the cortical bone (insertion of the emergence profile into the cortical bone), do not exceed an insertion torque of 35 Ncm.

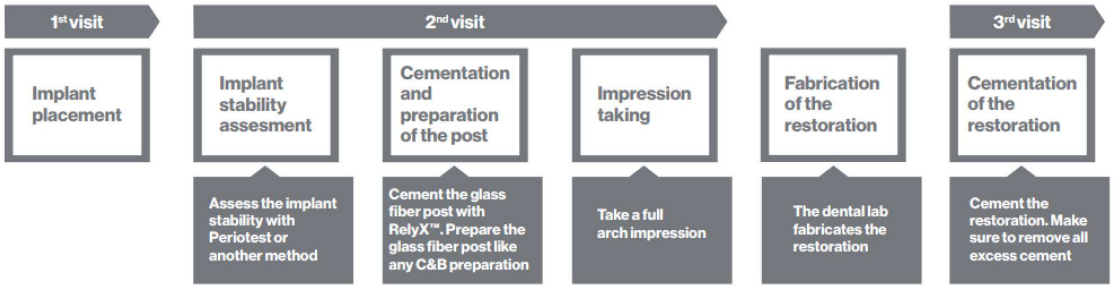
Note: If the implant must go back onto the working tray, do not place it on an operation cloth, but return it to the glass tube. Following this process will avoid contamination with textile fibers.

Prosthetic procedure for Patent™ two-piece implants

There are two restorative workflows:

- Chairside preparation, i.e. the post is prepared chairside intraorally after cementation
- Lab preparation procedure, i.e. the post is prepared on a model in the lab

Chairside preparation

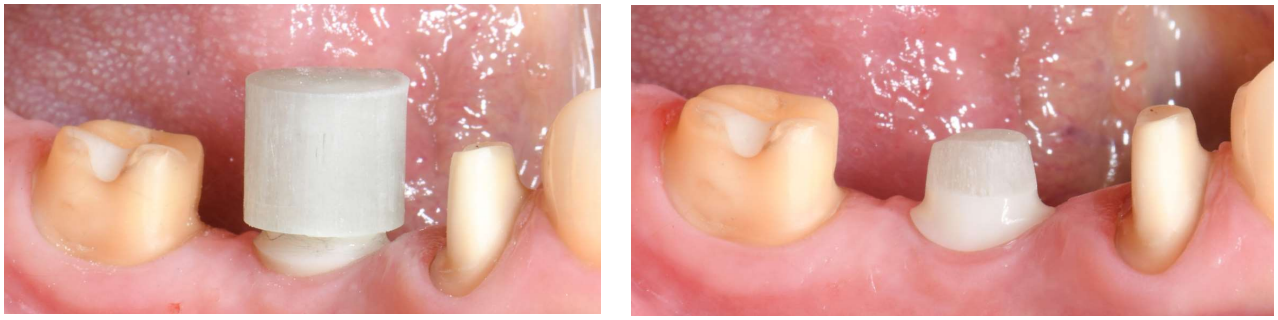


Chairside preparation procedure overview

Cement the post as you would do with any glass fiber post. For cementation, we recommend using an MDP type cement (internal testing has shown that RelyX™ Unicem 2 Automix from 3M™ ESPE provides the best results). Make sure that no air bubbles get trapped. Hold the post in place under axial pressure, let it harden and remove the excess of cement.

Note: for patients sensitive to the type of cement recommended above, glass ionomer cement can be used.

After the cement has set, prepare the post with a tungsten carbide bur at high speed and water cooling.



Patent™ two-piece implant with glass fiber post cemented (left) and prepared (right)

Note: Do not overheat the post, since it will have a negative effect on the material properties.

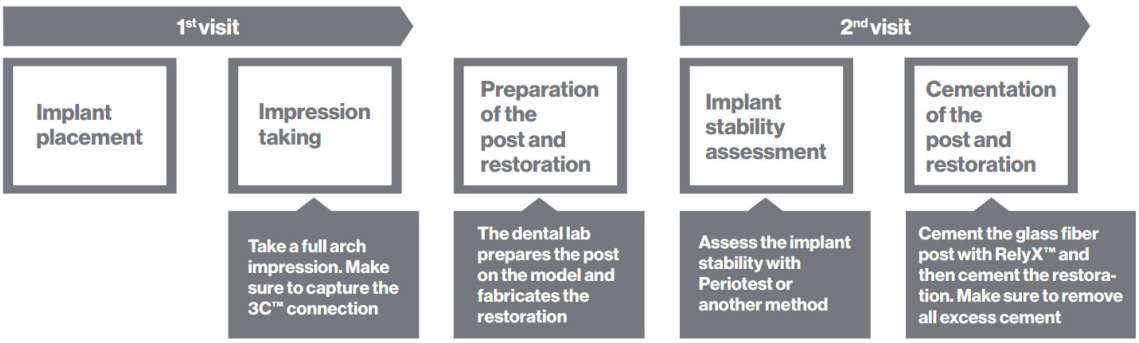
Take a conventional full arch impression.

Recommendation: If gingiva retraction is necessary to take the impression, use a retraction paste or retraction cords. Pay special attention to not disturb the soft tissue attachment.

Cement the final crown. Make sure that all excess cement is removed.

Note: In case a temporary restoration should be placed, it is important to isolate the glass fiber post with Vaseline oil or a similar separation medium, otherwise the temporary prosthesis will stick permanently to the glass fiber post.

Lab preparation procedure

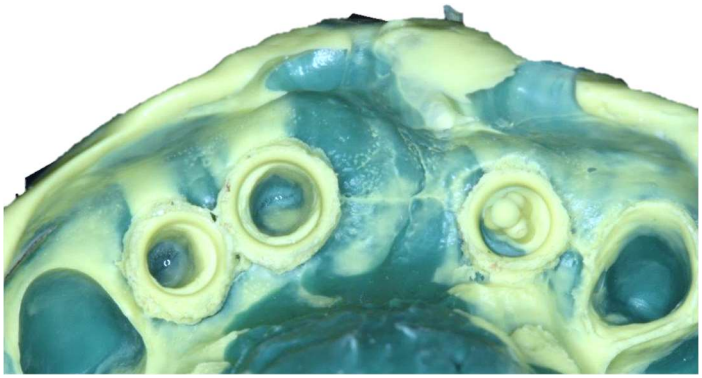


Lab preparation procedure overview

To take an impression of the 3C™ connection intraorally no impression posts are necessary. Insert impression material into the 3C™ connection and take a conventional full arch impression, as you would do with a crown or post.

The 3C™ connection should be captured well in the impression material, with no bubbles.

Please follow the recommendation of the impression material manufacturer, especially regarding the time required for hardening.



Conventional impression of a Patent™ two-piece implant

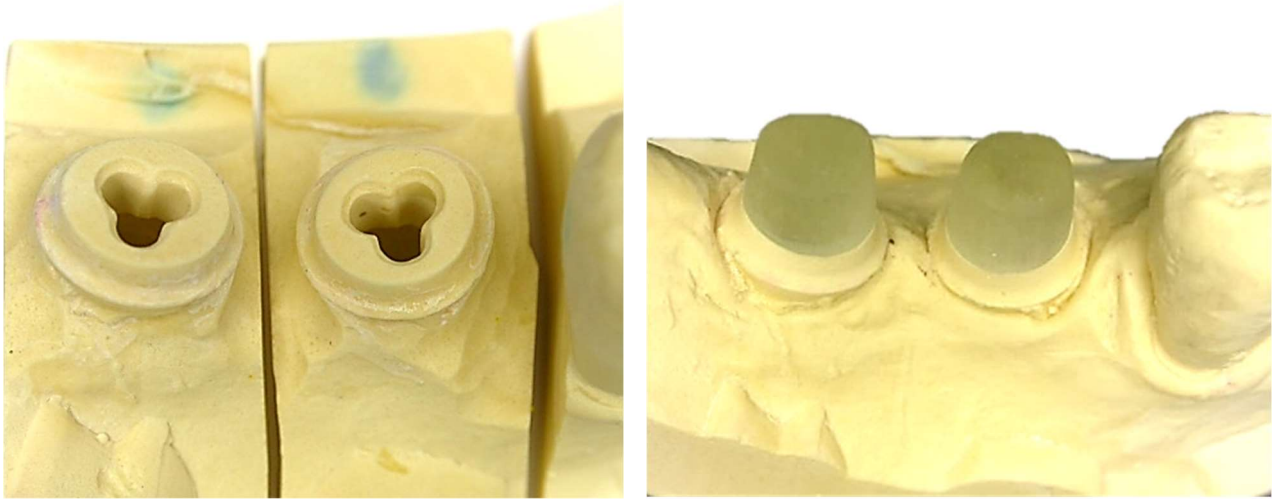
Recommendation: If gingiva retraction is necessary to take the impression, use a retraction paste or retraction cords.

After taking the impression, we recommend sealing the 3C™ implant connection with an A-silicone.

Send the impression to the dental lab where a model will be fabricated without replicas.

Note: in order to avoid potential interferences in the model due to bubbles captured in the impression, it is recommended for the lab technician to drill a hole underneath the 3C™ connection, in order to ensure that the glass fiber post will be fully inserted.

The dental lab will prepare the glass fiber post and core on the model and fabricate the restoration.



Model with Patent™ two-piece implants (left) and glass fiber posts prepared (right)

When the lab has returned the prepared post and restoration, cement the post as you would do with any other glass fiber post. Cement the final restoration. It is recommended to cement the crown and the post at the same time. For cementation, we recommend using an MDP type cement (internal testing has shown that RelyX™ Unicem 2 Automix from 3M™ ESPE provides the best results). Make sure that no air bubbles get trapped. Hold the post in place under axial pressure, remove excess cement and let it harden.

Note: for patients sensitive to the type of cement recommended above, glass ionomer cement can be used.

Patent

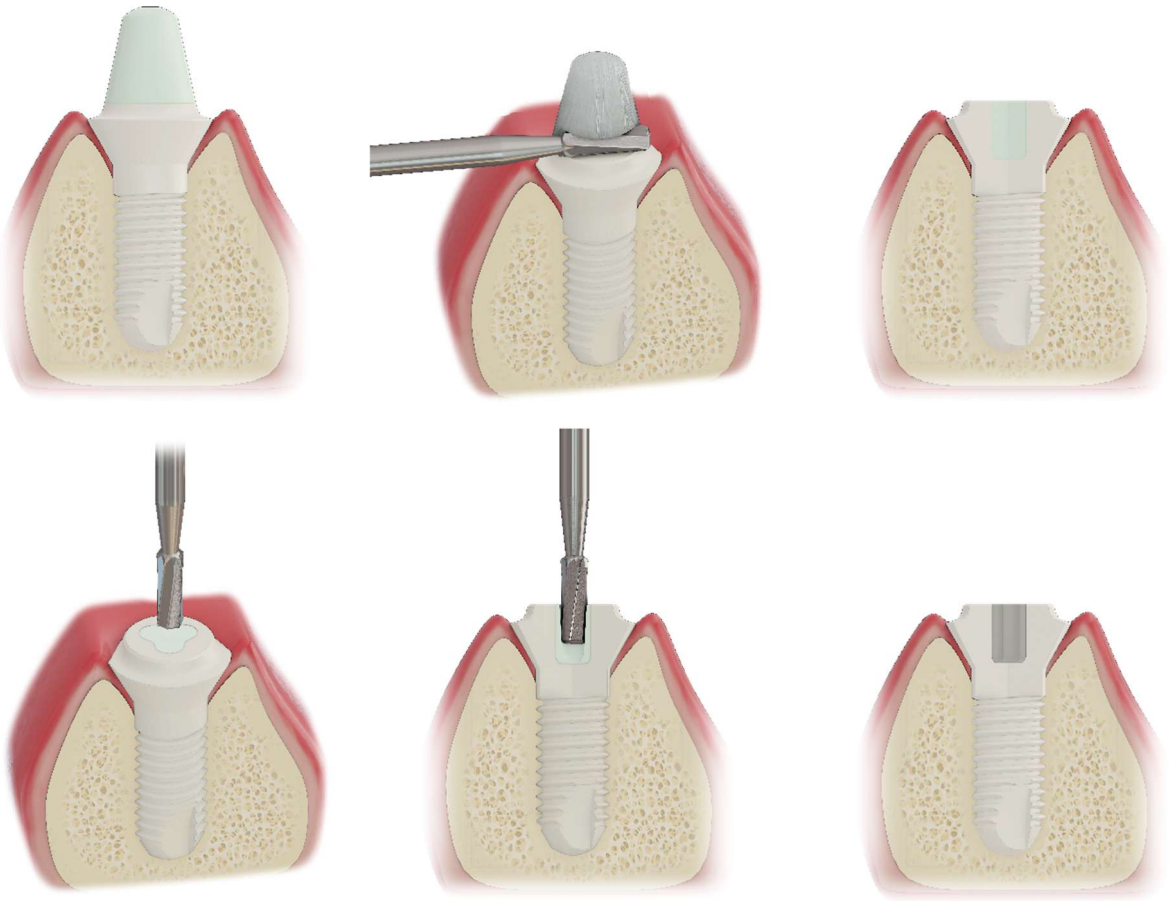
Digital impression

To take a digital impression, an intraoral scanner must be used. For the lab preparation procedure, the 3C™ connection can be scanned directly. For the chairside procedure, a scan of the intraorally prepared glass fiber post can be scanned as a conventional preparation. Then the data can be sent to the desired CAD/CAM solution.

Intra-oral scan of a Patent™ two-piece implant

Retrieval of the post

Remove the crown. Cut off the core part from the implant head using a 1.1 mm tungsten carbide bur. Use the same bur to clean out each of the three channels of the 3C™ implant connection.



Glass fiber post removal procedure

Prosthetic procedure for Patent™ one-piece implants

Clean the post from all plaque and biofilm, then take a conventional impression.

Recommendation: If gingiva retraction is necessary to take the impression, use a retraction paste or retraction cords.

When the crown is delivered from the lab, clean the post, and cement the final crown. Make sure that all excess cement is removed.

Prosthetic design

For the design of the prosthetic construction it is important to avoid cantilevers, off-center contact points, and extensive cusps. At the try-in it is important to check the bite carefully.

Recommendation: For large reconstructions there should be a maximum pontic length of 12 mm. For full-arch restorations, section the bridge. Ensure there are no cantilevers.

Instruments

Patent™ surgical kit

Patent

Patent™ standard line article list

Implants

Reference Nr.	Denomination	Dimensions
1S4107	Patent™ Standard Line – One-Piece Implant	Ø 4.1 mm x L7.0 mm
1S4109	Patent™ Standard Line – One-Piece Implant	Ø 4.1 mm x L9.0 mm
1S4111	Patent™ Standard Line – One-Piece Implant	Ø 4.1 mm x L11 mm
1S4113	Patent™ Standard Line – One-Piece Implant	Ø 4.1 mm x L13 mm
1S4507	Patent™ Standard Line – One-Piece Implant	Ø 4.5 mm x L7.0 mm
1S4509	Patent™ Standard Line – One-Piece Implant	Ø 4.5 mm x L9.0 mm
1S4511	Patent™ Standard Line – One-Piece Implant	Ø 4.5 mm x L11 mm
1S4513	Patent™ Standard Line – One-Piece Implant	Ø 4.5 mm x L13 mm
1S5007	Patent™ Standard Line – One-Piece Implant	Ø 5.0 mm x L7.0 mm
1S5009	Patent™ Standard Line – One-Piece Implant	Ø 5.0 mm x L9.0 mm
1S5011	Patent™ Standard Line – One-Piece Implant	Ø 5.0 mm x L11 mm
1S5013	Patent™ Standard Line – One-Piece Implant	Ø 5.0 mm x L13 mm
2S4107	Patent™ Standard Line – Two-Piece Implant	Ø 4.1 mm x L7.0 mm
2S4109	Patent™ Standard Line – Two-Piece Implant	Ø 4.1 mm x L9.0 mm
2S4111	Patent™ Standard Line – Two-Piece Implant	Ø 4.1 mm x L11 mm
2S4113	Patent™ Standard Line – Two-Piece Implant	Ø 4.1 mm x L13 mm
2S4507	Patent™ Standard Line – Two-Piece Implant	Ø 4.5 mm x L7.0 mm
2S4509	Patent™ Standard Line – Two-Piece Implant	Ø 4.5 mm x L9.0 mm
2S4511	Patent™ Standard Line – Two-Piece Implant	Ø 4.5 mm x L11 mm
2S4513	Patent™ Standard Line – Two-Piece Implant	Ø 4.5 mm x L13 mm
2S5007	Patent™ Standard Line – Two-Piece Implant	Ø 5.0 mm x L7.0 mm
2S5009	Patent™ Standard Line – Two-Piece Implant	Ø 5.0 mm x L9.0 mm
2S5011	Patent™ Standard Line – Two-Piece Implant	Ø 5.0 mm x L11 mm
2S5013	Patent™ Standard Line – Two-Piece Implant	Ø 5.0 mm x L13 mm
GF00S6	Patent™ – Glass fiber post and core Small	Ø 6.0 mm x H 7.0 mm
GF00L6	Patent™ – Glass fiber post and core Large	Ø 6.0 mm x H 7.0 mm
GF00L8	Patent™ – Glass fiber post and core Large	Ø 8.0 mm x H 7.0 mm

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Instruments

Reference Nr.	Denomination	Dimensions
TP0004	Patent™ Tissue Punch	Ø 4.0 mm
TP0005	Patent™ Tissue Punch	Ø 5.0 mm
TP0006	Patent™ Tissue Punch	Ø 6.0 mm
T00035	Patent™ Tap	Ø 3.5 mm
T00041	Patent™ Tap	Ø 4.1 mm
T00045	Patent™ Tap	Ø 4.5 mm
T00050	Patent™ Tap	Ø 5.0 mm
CS0035	Patent™ Counter sink	Ø 3.5 mm
CS0041	Patent™ Counter sink	Ø 4.1 mm
CS0045	Patent™ Counter sink	Ø 4.5 mm
CS0050	Patent™ Counter sink	Ø 5.0 mm
EXT001	Patent™ Extension	N/A
SD0012	Patent™ Surgical drill	Ø 1.2 mm
SD0020	Patent™ Surgical drill	Ø 2.0 mm
SD0030	Patent™ Surgical drill	Ø 3.0 mm
SD0035	Patent™ Surgical drill	Ø 3.5 mm
SD0038	Patent™ Surgical drill	Ø 3.8 mm
SD0043	Patent™ Surgical drill	Ø 4.3 mm
DI0000	Patent™ Direction indicator	N/A
ID001S	Patent™ One-piece Implant Driver Small	N/A
ID001L	Patent™ One-piece Implant Driver Large	N/A
ID002S	Patent™ Two-piece Implant Driver Small	N/A
ID002L	Patent™ Two-piece Implant Driver Large	N/A
TW0001	Patent™ Surgical torque wrench	N/A
WA0001	Patent™ Wrench Adapter	N/A
SC0000	Patent™ Surgical Cassette (empty)	N/A
SK0000	Patent™ Surgical Kit (complete)	N/A

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