Patent

Patent™ Dental Implant System

User Guide for Patent™ Standard Implants

Patent

Contents

Introduction

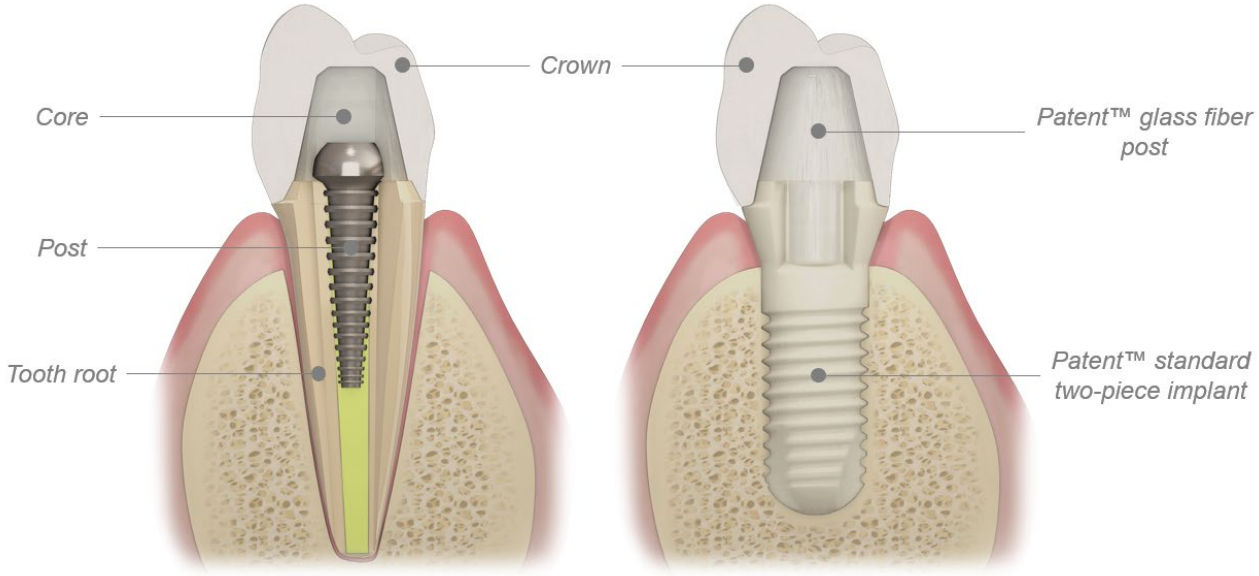
The Patent™ Standard Implant System

The Patent™ Standard Implant System is composed of transgingival implants and can be used in edentulous or partially edentulous patients. Patent™ Standard Implants are made from Y-TZP zirconia, a biocompatible ceramic, and are available as Patent™ Standard One-Piece Implant, where the abutment is already included or as Patent™ Standard Two-Piece Implant with a partial abutment, coupled to a post made from a glass fiber reinforced polymer. Both versions are suitable for fixed and removable denture.

Patent™ Standard One-Piece Implant (left)

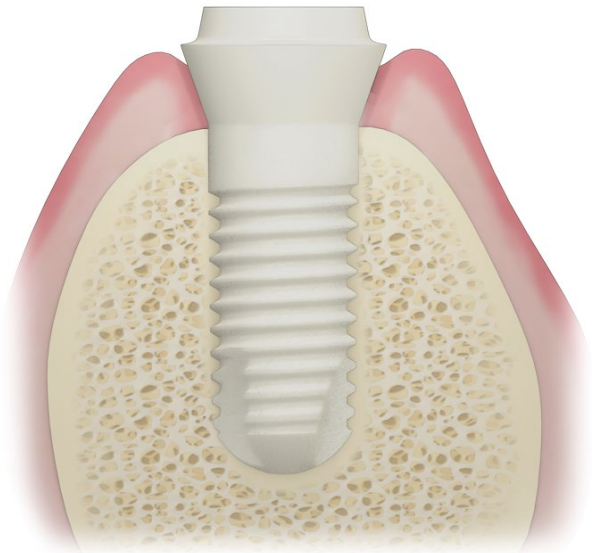
Patent™ Standard Two-Piece Implant with its Patent™ Glass Fiber Post (right)

Both versions are extremely easy to use. Especially the Patent™ Standard Two-Piece Implant, which works like a conventional restoration on a post. Once the implant is placed and stable, the Patent™ Glass Fiber Post is cemented to the partially abutment before a crown is cemented on it.



Natural tooth with post and core (left) vs Patent™ Standard Two-Piece Implant (right)

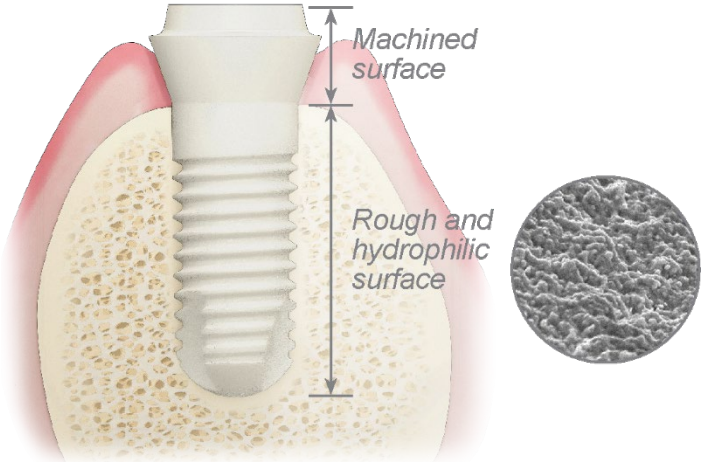
Once the Patent™ Standard Implant is placed in its bed, the finish line of its transgingival part should be equigingival.



Patent™ Standard Two-Piece Implant placed correctly

Patent™ surface

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



Patent™ Standard Implant surface properties

Patent 3C™ connection

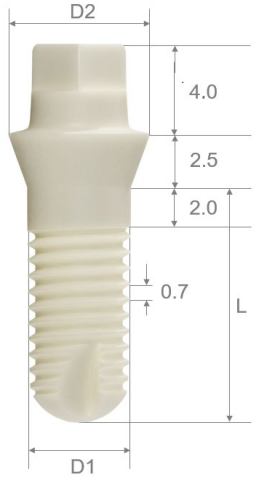
Patent 3C™ connection has been especially developed for optimal torque transmission. In addition to - its favorable wall thickness, the 3C™ connection allows to have a driving angle co-linear to the driving force, avoiding unwanted high stress concentrations.

Patent 3C™ connection

Patent

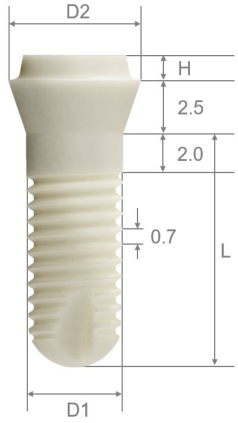
Product range and dimensions

Patent™ Standard One-Piece Implant



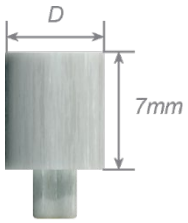
Endosseous diameter (D1)		Ø 4.1 mm	Ø 4.5 mm	Ø 5.0 mm
Platform diameter (D2)		Ø 5.2 mm	Ø 6.2 mm	Ø 6.2 mm
Length (L)	7 mm	1S4107	1S4507	1S5007
	9 mm	1S4109	1S4509	1S5009
	11 mm	1S4111	1S4511	1S5011
	13 mm	1S4113	1S4513	1S5013

Patent™ Standard 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™ Glass Fiber Post



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

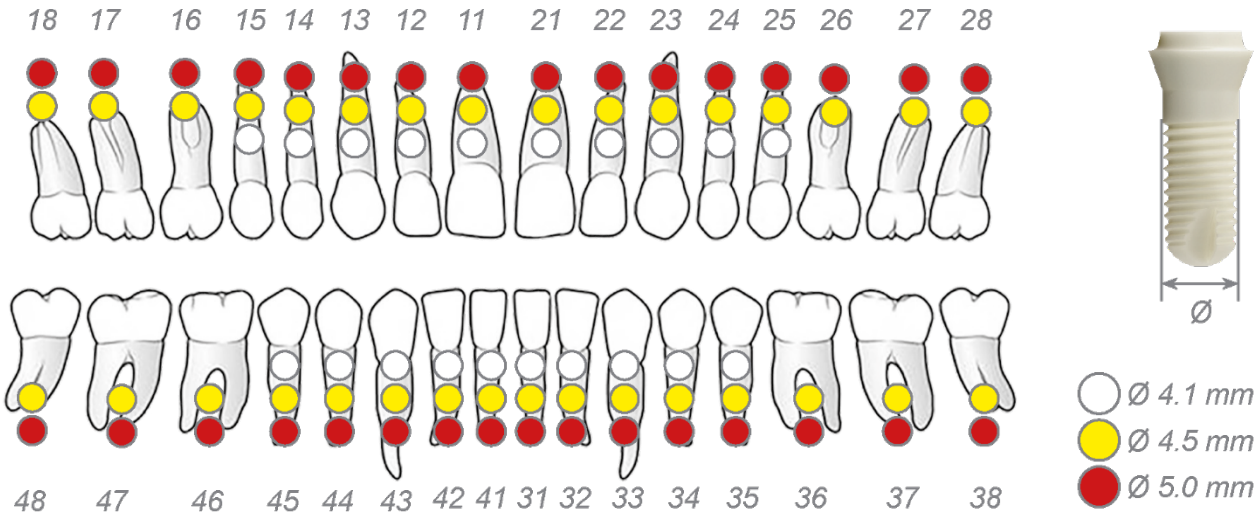
Compatibility table between Patent™ Glass Fiber Posts and Patent™ Standard Two-Piece Implants

Glass fiber post reference	Implant endosseous diameter (D1)		
	Ø 4.1 mm	Ø 4.5 mm	Ø 5.0 mm
GF00S6	OK	-	-
GF00L6	-	OK	OK
GF00L8	-	OK	OK

Indications

Patent™ Standard Implants are available in 3 different endosseous diameters:
4.1 mm, 4.5 mm and 5.0 mm

Note: A color coding is used to facilitate the identification of the implant diameter.



Patent™ Standard Implants indications in the upper and lower jaw

Contraindications

Pregnancy, bone previously irradiated, diabetes, anticoagulant treatment, haemodynamic problems, teeth-grinding at night, parafunctional habits, poor bone anatomy, heavy smoking habit, uncontrolled periodontitis, malocclusion, TMJ problems, diseases in the oral cavity, insufficient mouth care, insufficient quality or quantity of the bone, retained roots, chronic or acute bone inflammations which have not healed in the position where an implant is to be inserted, localized disease of the gums, any pathologies in the neighboring teeth or allergies or hypersensitivity to chemical ingredients of materials used: Zirconia (Y-TZP).

The patient should not have any local or systemic illnesses; he/she should have a normal ability to heal, possess enough healthy bone and practice good oral hygiene.

Surgical protocol

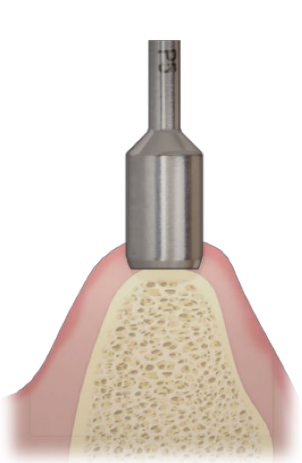
Flap/flapless

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 (REF: P 5, P 6) 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.

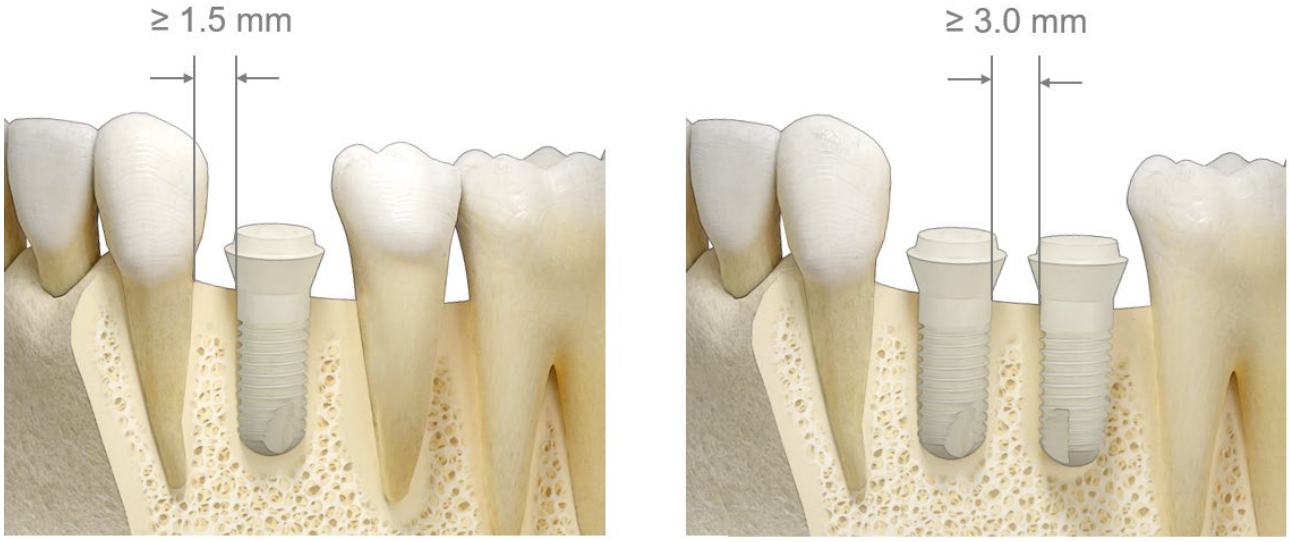
Implant endosseous diameter			**Ø 4.1 mm**	**Ø 4.5 mm**	**Ø 5.0 mm**
Implant platform diameter			**Ø 5.2 mm**	**Ø 6.2 mm**	**Ø 6.2 mm**
Punch diameter	**Ø 5 mm**	**T 5**	OK	-	-
	Ø 6 mm	**T 6**	-	OK	OK



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.



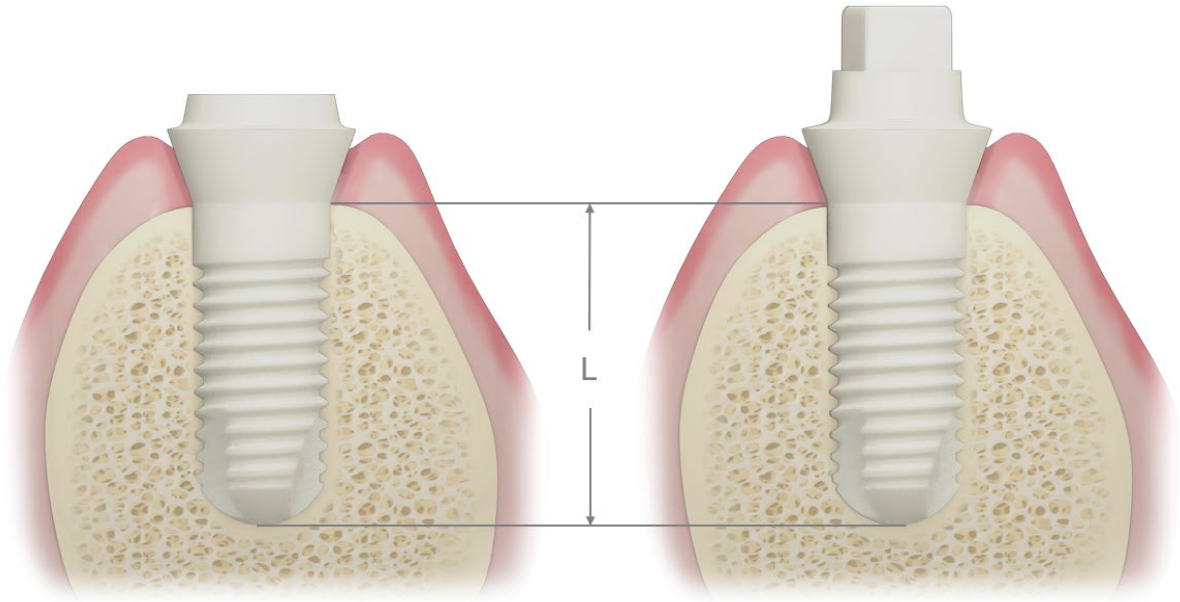
Distance between an implant and a natural tooth (left) and between two implants (right)

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.

Preparing the osteotomy

The same surgical protocol applies to both the Patent™ Standard One-Piece Implant and Patent™ Standard 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™ Standard Two-Piece Implant (left) and Patent™ Standard One-Piece Implant (right) in place

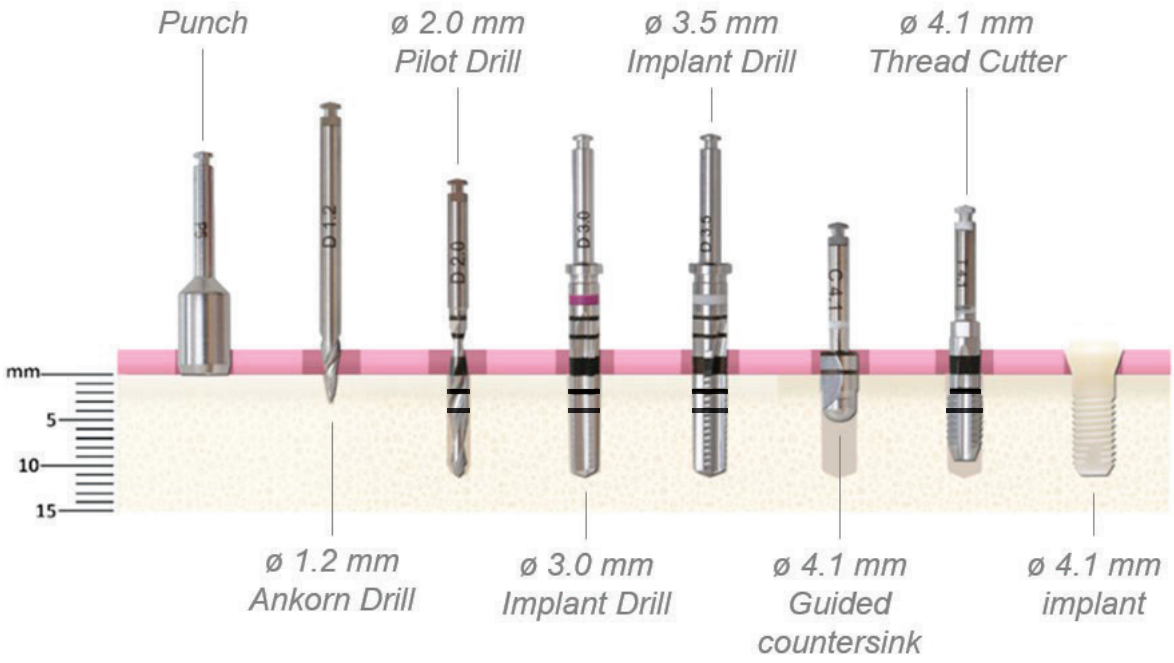
Note: For the Patent™ Standard One-Piece Implant it is especially important to set a good direction of insertion in order to allow an optimal restoration.

Drilling sequence

For hard bone, start preparing the osteotomy with the small Ø 1.2 mm Ankorn Drill (REF: D 1.2), drilling for a couple of millimeters. Then, use the Ø 2.0 mm Pilot Drill (REF: D 2.0) and drill to the desired depth.

Use the Direction indicator (REF: DI0000) to assess the axis of the osteotomy. If the direction is convenient, continue to drill with the Ø 3.0 mm Implant Drill (REF: D 3.0).

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 Implant Drill (REF: D 3.5), followed by the white Ø 4.1 mm Guided countersink (REF: C 4.1) and the white Ø 4.1 mm Thread Cutter (REF: T 4.1). Use the Thread Cutter at 15 RPM while cooling with sterile saline solution.



Drilling sequence for a ø 4.1 mm Patent™ Standard Two-Piece Implant (ø 4.1 mm x L11 mm) in hard bone

Optional instruments

The Punch, the Guided countersink and the Thread Cutter 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 Guided countersink and the Thread Cutter in hard bone.

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

Number of uses

All Implant 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.

Complete drilling sequence for a ø 4.1 mm Patent™ Standard Two-Piece Implant - ø 4.1 mm x L11 mm

Complete drilling sequence for a ø 4.5 mm Patent™ Standard Two-Piece Implant - ø 4.5 mm x L11 mm

Complete drilling sequence for a ø 5.0 mm Patent™ Standard Two-Piece Implant - ø 5.0 mm x L11 mm

Implant packaging and labelling

Patent™ Standard Implants are packed individually and are provided sterile for single use. Patent™ Standard Two-Piece Implants are delivered with their corresponding Patent™ Glass Fiber Post, which is provided unsterile.

Patent™ Standard Implants outer packaging (left) and Patent™ Standard Two-Piece Implant labelling on the back of the outer packaging as well as color coding indication on the side of the outer packaging (right)

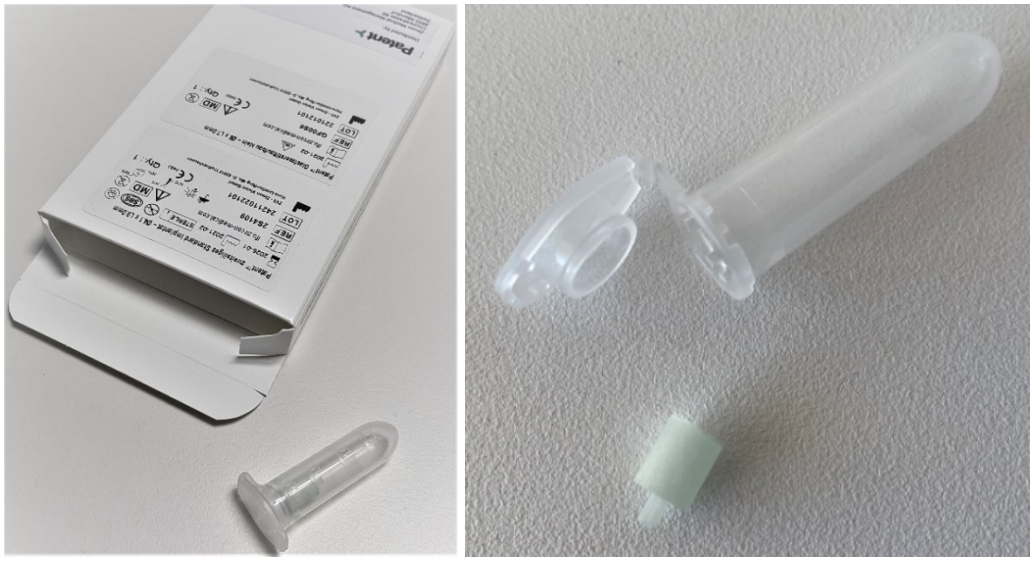
The implants are packed in a double blister, providing a double sterile barrier. An additional product label is stuck on the inner blister.

Patent™ Standard Implant packaging concept: Cardboard, outer and inner blister

In the inner blister, the Patent™ Standard Implant is held in a glass tube. To free the implant, the glass tube must be flipped around its apical end.

Inner blister open with the Patent™ Standard Implant placed in its glass tube, original position (left) and freed (right)

For Patent™ Standard Two-Piece Implants, the corresponding Patent™ Glass Fiber Post is provided with the implant. The Patent™ Glass Fiber Post is in the same outer packing as the implant but placed in a polymer vial, at the other extremity of the cardboard.



Patent™ Glass Fiber Post packaging

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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.

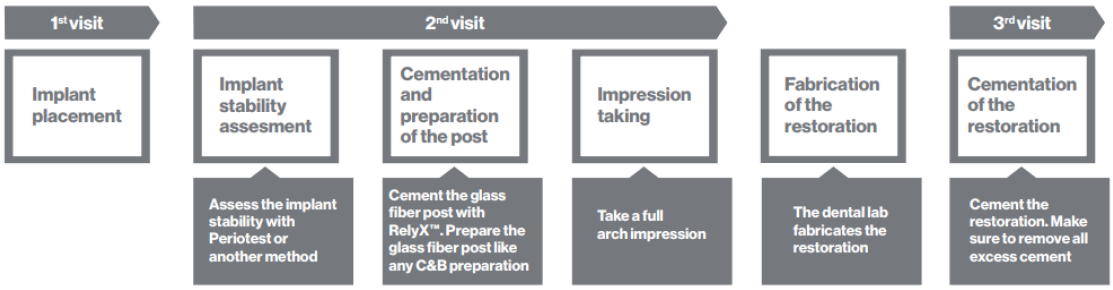
Note: If the implant must go back onto the working tray, do not place it on an operation cloth, but return it to the glass tube. Following this process will avoid contamination with textile fibers.

Prosthetic procedure for Patent™ Standard Two-Piece Implant

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

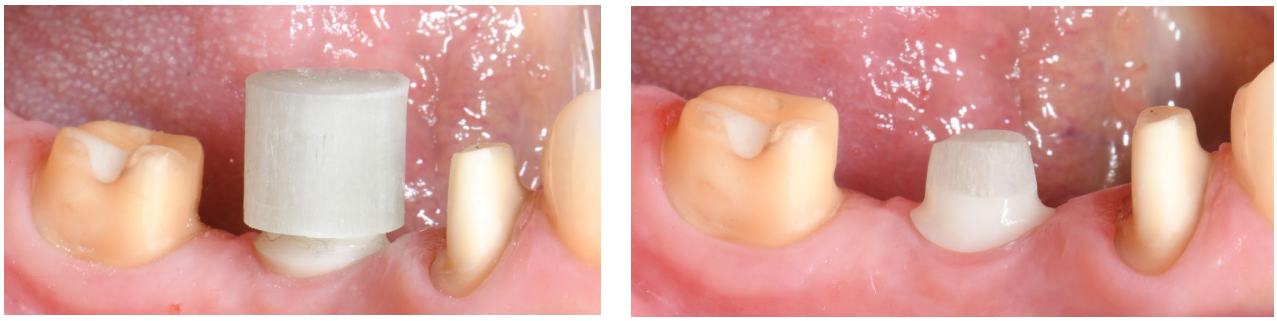


Chairside preparation procedure overview

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 diamond bur at high speed and water cooling.



Patent™ Standard Two-Piece Implant with Patent™ 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.

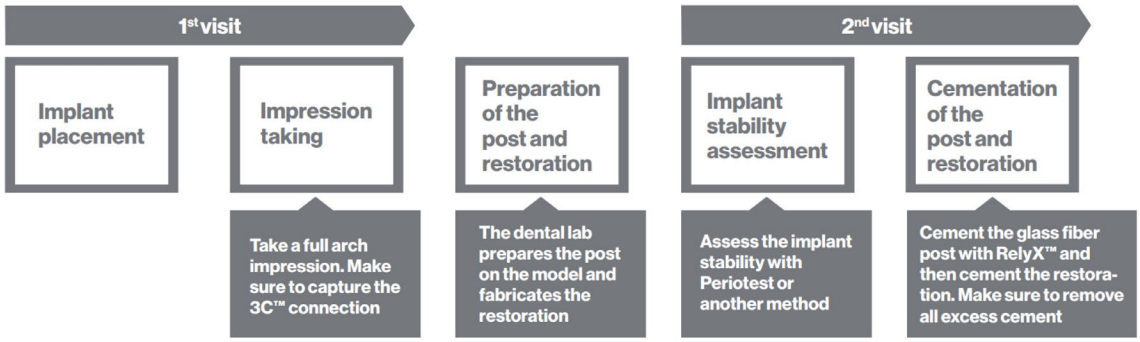
Take a conventional full arch impression.

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

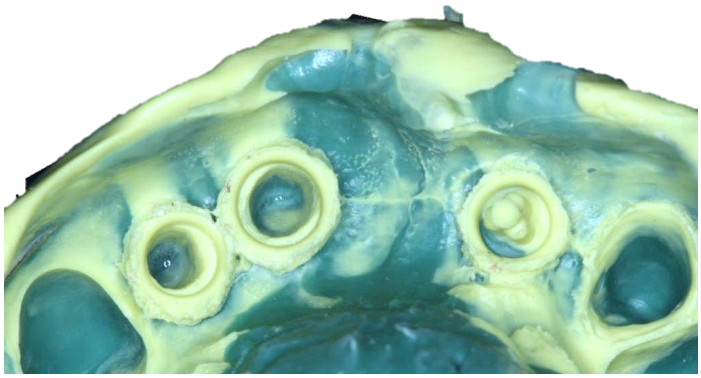


Lab preparation procedure overview

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™ Standard Two-Piece Implant

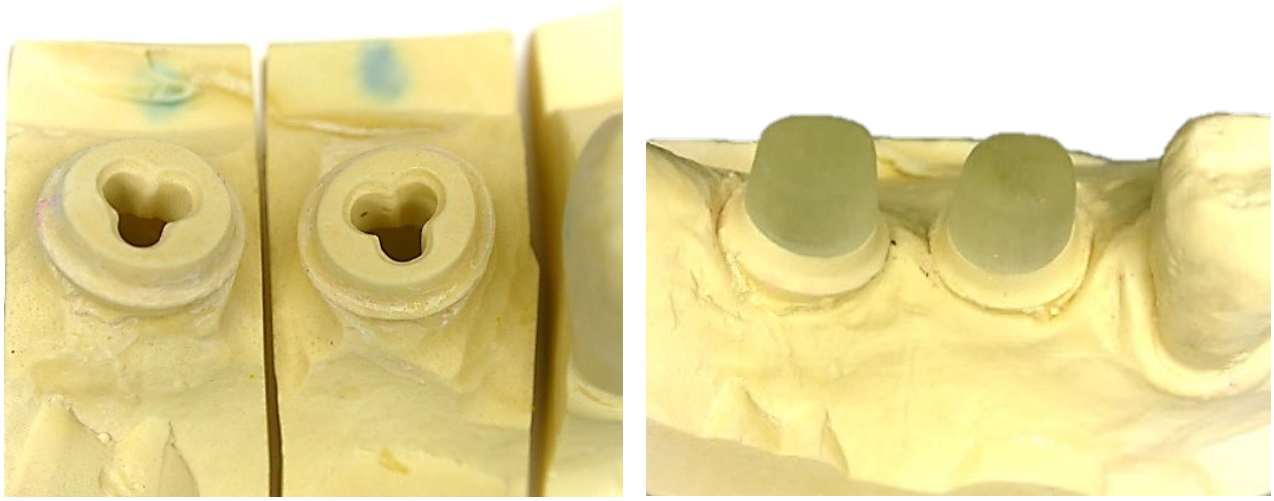
Recommendation: If gingiva retraction is necessary to take the impression, use a retraction paste or retraction cords.

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 on the model and fabricate the restoration.



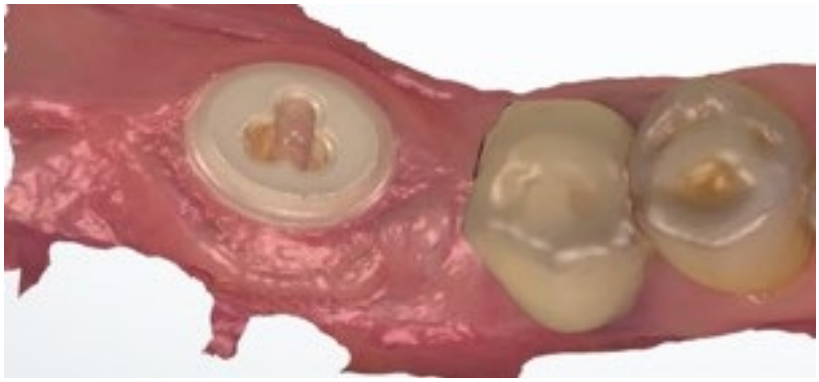
Model with Patent™ Standard Two-Piece Implants (left) and corresponding Patent™ Glass Fiber Posts prepared (right)

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.

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™ Standard Two-Piece Implant

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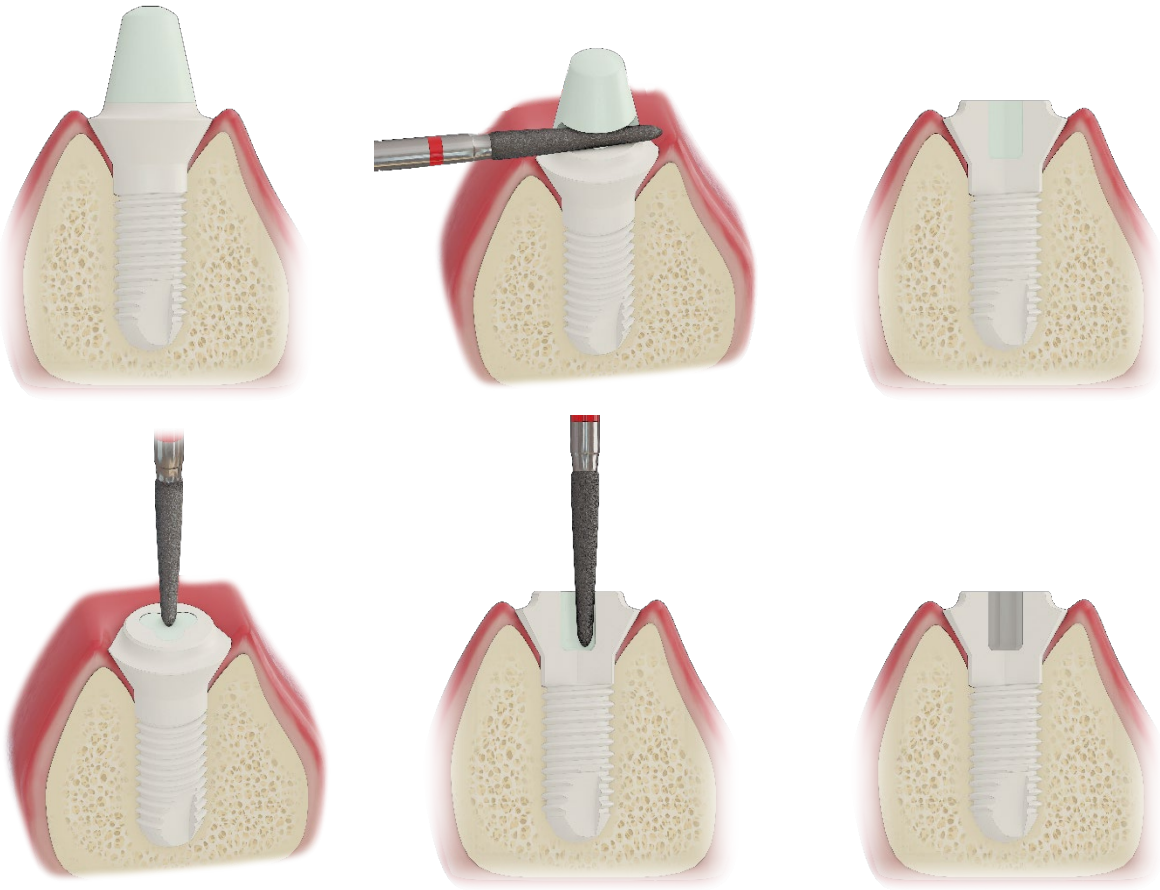
Retrieval of the post

Remove the crown. Cut off the core part from the implant head using a 1.0 mm diamond bur. Use the same bur to clean out each of the three channels of the 3C™ implant connection.



Patent™ Glass Fiber Post removal procedure

Prosthetic procedure for Patent™ Standard 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™ Surgical Kit contains all instruments in the Surgical Cassette necessary to place Patent™ Standard Implants.

Note: If necessary, the instruments as well as the implants can be measured optically thanks to a millimeter ruler printed on the right side of the inner tray of the Patent™ Surgical Kit.

Patent

Patent™ Dental Implant System

Patent™ Standard Implants and Patent™ Glass Fiber Posts

Reference Nr.	Article description	Dimensions
1S4107	Patent™ Standard One-Piece Implant	Ø 4.1 mm x L7.0 mm
1S4109	Patent™ Standard One-Piece Implant	Ø 4.1 mm x L9.0 mm
1S4111	Patent™ Standard One-Piece Implant	Ø 4.1 mm x L11 mm
1S4113	Patent™ Standard One-Piece Implant	Ø 4.1 mm x L13 mm
1S4507	Patent™ Standard One-Piece Implant	Ø 4.5 mm x L7.0 mm
1S4509	Patent™ Standard One-Piece Implant	Ø 4.5 mm x L9.0 mm
1S4511	Patent™ Standard One-Piece Implant	Ø 4.5 mm x L11 mm
1S4513	Patent™ Standard One-Piece Implant	Ø 4.5 mm x L13 mm
1S5007	Patent™ Standard One-Piece Implant	Ø 5.0 mm x L7.0 mm
1S5009	Patent™ Standard One-Piece Implant	Ø 5.0 mm x L9.0 mm
1S5011	Patent™ Standard One-Piece Implant	Ø 5.0 mm x L11 mm
1S5013	Patent™ Standard One-Piece Implant	Ø 5.0 mm x L13 mm
2S4107	Patent™ Standard Two-Piece Implant	Ø 4.1 mm x L7.0 mm
2S4109	Patent™ Standard Two-Piece Implant	Ø 4.1 mm x L9.0 mm
2S4111	Patent™ Standard Two-Piece Implant	Ø 4.1 mm x L11 mm
2S4113	Patent™ Standard Two-Piece Implant	Ø 4.1 mm x L13 mm
2S4507	Patent™ Standard Two-Piece Implant	Ø 4.5 mm x L7.0 mm
2S4509	Patent™ Standard Two-Piece Implant	Ø 4.5 mm x L9.0 mm
2S4511	Patent™ Standard Two-Piece Implant	Ø 4.5 mm x L11 mm
2S4513	Patent™ Standard Two-Piece Implant	Ø 4.5 mm x L13 mm
2S5007	Patent™ Standard Two-Piece Implant	Ø 5.0 mm x L7.0 mm
2S5009	Patent™ Standard Two-Piece Implant	Ø 5.0 mm x L9.0 mm
2S5011	Patent™ Standard Two-Piece Implant	Ø 5.0 mm x L11 mm
2S5013	Patent™ Standard Two-Piece Implant	Ø 5.0 mm x L13 mm
GF00S6	Patent™ Glass Fiber Post small	Ø 6.0 mm x H 7.0 mm
GF00L6	Patent™ Glass Fiber Post large	Ø 6.0 mm x H 7.0 mm
GF00L8	Patent™ Glass Fiber Post large	Ø 8.0 mm x H 7.0 mm

Instruments

Reference Nr.	Article description	Dimensions
P 5	Punch P 5	Ø 5.0mm
P 6	Punch P 6	Ø 6.0mm
EXT	Dental Drill Extension 15mm	15mm
D 1.2	Ankorn Drill Ø 1.2mm	Ø 1.2mm
D 2.0	Pilot Drill Ø 2.0mm	Ø 2.0mm
D 3.0	Implant Drill Ø 3.0mm	Ø 3.0mm
D 3.5	Implant Drill Ø 3.5mm	Ø 3.5mm
D 3.8	Implant Drill Ø 3.8mm	Ø 3.8mm
D 4.3	Implant Drill Ø 4.3mm	Ø 4.3mm
T 3.5	Thread Cutter Ø 3.5mm	Ø 3.5mm
T 4.1	Thread Cutter Ø 4.1mm	Ø 4.1mm
T 4.5	Thread Cutter Ø 4.5mm	Ø 4.5mm
T 5.0	Thread Cutter Ø 5.0mm	Ø 5.0mm
C 3.5	Guided countersink Ø 3.5mm	Ø 3.5mm
C 4.1	Guided countersink Ø 4.1mm	Ø 4.1mm
C 4.5	Guided countersink Ø 4.5mm	Ø 4.5mm
C 5.0	Guided countersink Ø 5.0mm	Ø 5.0mm
DI0000	Direction indicator	N/A
ID001S	One-piece Implant Driver Small	N/A
ID002S	Two-piece Implant Driver Small	N/A
ID002L	Two-piece Implant Driver Large	N/A
525-1000900-F	One-piece torque wrench	N/A
1-1000274	Wrench adapter	N/A
SC0000	Patent™ Surgical Cassette	N/A
SK0000	Patent™ Surgical Kit (complete)	N/A

Patent

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