

Instructions for Use for Prosthetic Abutments of Implant System OT-F

Introduction

Illustrations, indications and product catalog numbers referring to the prosthetic components mentioned below are contained in detail in the OT-F[®] product catalog. Malocclusion and overloading of the implant abutment connection, the abutments and the complete prosthetic construction should be absolutely avoided.

Important instructions:

- All prosthetic components are supplied in non-sterile condition.
- Basically only new and non-used abutment screws should be used for final restoration in the mouth of the patient.
- All abutments (except for CreativeLine) should be fixed with 35 Ncm. CreativeLine should be fixed with 15 Ncm. The abutment screws may not be cemented or glued within the implant.
- Please observe the material specific minimum wall thickness for processing of the prosthetic abutments. The wall thickness may only be reduced partially – for titanium to 0.3 mm, for precious metal to 0.4 mm and for zirconium oxide to 0.5 mm
- Titanium abutments are color coded according to the color coding system in the area of the implant connection (complete or partial) and the model implant analogs in yellow (diameter 3.80) and blue (diameter 4.90 mm).
- The connection surfaces of the abutments to the implant may not be blasted or treated. The hazard of an invasion of bacteria as well as weakening of the components must be avoided.

Model preparation: Impression copings / implant analogs (Material Titanium grade 4)

Important: Impression Copings and Implant Analogs are for single use only. Multiple use is not allowed due to technical reasons (loss of precision of the thread parts resp. of Implant-Abutment-Connection). For preparation of a master model in the dental lab, the pertaining implant analogs are screw-fixed to the impression copings after impression taking. We distinguish between an open and a closed impression.

- **Open impression:** The impression copings are safely positioned and remained in the impression material of the (individually prepared) impression tray. Diameter-conform implant analogs are placed onto the hexagonal connection of the impression copings and screw-fixed with the long impression coping screw through the perforation of the individual tray.
- **Closed impression:** Impression copings which will have loosened from the impression material, must be exactly repositioned in the impression. At first the impression copings are screwed onto the corresponding implant analogs and then repositioned into the impression by carefully observing the rotation position. We recommend to prepare a removable gingival mask. The model should be made from high-quality class 4 plaster.

Temporary abutment “CreativeLine” (Material titanium grade 5)

Indications: Temporary crowns and bridges (time period is dependent on permitted durability of the acrylic material used)

Contraindications: Primary connections of abutments on diverging implants, General contraindications for implant surgery; see instructions for use of the implant system.

- Fixation with abutment screw on the implant model analog
- The knurled shaft of the abutment can be reduced in length according to the prosthetic situation.
- The circular groove marks the maximum length reduction.
- The modified abutment is then covered with opaque material.
- The slim funnel-shaped basic design favors a natural root profile in the surrounding gingival tissue by adding tooth-colored acrylic.
- The temporary abutment can be inserted immediately after exposure of the implant instead of a conventional non-rotation-safe titanium gingival healing abutment.
- A temporary crown can be inserted if the abutment is designed appropriately.

Titanium abutment „VersaLine“ (Material titanium grade 4)

Indications: Preparation of primary parts in the telescope or conical crown technique, Cemented crown and bridge restorations

Contraindications: Primary connections of abutments, Prosthetic angulation to implant axis of more than 25°, Cast-on technique, Double crowns on implant diameter 3.30 mm, Single tooth restorations with free-end cantilever

- The titanium abutment is used preferably for the crown and bridge technique, when standard restorations (as for instance with the NaturalLine Abutment) is not suitable.
- It is possible to prepare individual angulations between 0° and nearly 25° or to prepare circular shoulders which adjust to the natural contour of the gingival tissues.
- After a special modification it is possible to veneer the abutment directly with an adequate titanium ceramics.
- We recommend the use of titanium milling instruments for the preparation of this abutment.

Important note: Implants with 3.30 mm diameter are not suitable for a restoration with telescopic or conical crowns.

Titanium abutment “NaturalLine” (Material titanium grade 4)

Indications: Cemented crown and bridge restorations, Laterally screw-connected crowns and bridges (for individually prepared screw connections)

Contraindications: Primary connections of abutments, Prosthetic angulation to the implant axis of more than 25°, Cast-on technique Double crowns on implant diameter 3.30 mm OT-F[®], Single tooth restoration with free-end cantilever

- When selecting the appropriate abutment, the prosthetic direction with regard to the angulation in relation to the hexagonal connection to the implant should be observed. Version “A”: angulation over the flat side of the hex, Version “B”: angulation over the corner of the hex.

- The distinguished feature is the subgingival design. Starting from the implant shoulder, it extends circularly convex and ends in a surrounding gently curved chamfer. From the oral area it descends to the esthetic zone.
- The massive contour allows a special reduction by using suitable instruments (titanium drill, polisher) and to design an optimal emergence profile.
- The circular shoulder enables an exact transition to the crown to be prepared. The shoulder can be adjusted to the gingival contour.
- For single crowns an anti-rotation cementation should be made (especially for 0° NaturalLine abutments). It may be necessary to prepare an additional rotation protection into the abutment at an early stage.
- Abutment variations available: The straight 0° abutments in socket heights of 1.20 and 2.00 mm. The angulated abutments in 15° and 25° in versions A and B each.
- The abutments have an additional internal thread design which avoids loss of the abutment screw during processing.

Titanium abutment “BasicLine” (Material titanium grade 4)

Indications: Fixed cemented crown and bridge restorations, Laterally screw-connected crown and bridge restorations (for individually prepared screw connections)

Contraindications: Primary connections of abutments, Prosthetic angulation to the implant axis of more than 25°, Cast-on technique, Double crowns on implant diameter 3.30 mm, Single tooth restoration with free-end cantilever

- For a dentist-removable construction, individual horizontal screw connections can be prepared. This abutment ends in the cervical region horizontally.
- Available in the straight 0° and the angulated 15° version in two gingival heights each.
- The abutment variations 15° and 25° are directed in their angulation towards the flat surface of the hex connection (version “A”).

Goldbase Abutment “GoldLine” [Material: Base Gold/platinum alloy Ceramicor[®], manufacturer C&M Switzerland, furnace acrylic (POM)]

Indications: Individual abutments for fixed crown and bridge restorations, Individual primary parts in the telescope and conical crown technique

Contraindications: Single tooth restorations with free-end cantilever, Prosthetic angulation to the implant axis of more than 25°, Primary connections for abutments

- The base of the abutment consists of a highly precise manufactured cast-on Gold-platinum alloy and shows a perfect fit to the implant.
- The furnace fixed on the base is made of residue-free burn-out acrylic.

Processing:

The acrylic furnace of the abutment is shortened according to the prosthetic situation. The selected shape of the abutment is waxed onto the acrylic furnace. When preparing bridge or double crown constructions, a mutual insertion direction prior to modellation should be determined. Take care to prepare a circular functional surface of minimum 5 mm when designing the primary parts for the double crown technique. When investing the model, please be careful to keep a clean flow of the investing compound (containing phosphate) free of bubbles within the screw channel. Please note the instructions of the manufacturer of the investment compound. The final temperature for preheating should be kept for at least 30 minutes. A precious metal alloy is cast onto the existing precious metal basis using a regular process. The precious metal alloy should have a high level of consistency and observe the instructions of the manufacturer of the alloy. Leave the muffle to cool off at room temperature. In order to minimize the mechanical stress when removing the invested material, the precious metal base should be carefully polished with blast pearls at a pressure of approx. 1.5 bar. We recommend to use acid for removal of remaining investing material especially in the area of the implant-abutment interface (hex), or to steam-clean or to remove in an ultrasonic bath. During further processing (drilling, blasting, polishing) the connection interface must be protected from damage, therefore the abutment should be screwed onto an implant analog. When preparing a ceramic crown for direct veneering with occlusal screw connection, care must be taken that a minimum wall thickness of 0.5 mm is remaining. Due to the different thermal expansion coefficient (TEC) of the cast-on GoldLine base and the veneer ceramics, these should not have any contact. Please observe the instructions of the veneer ceramics manufacturer.

Important note: Implants with 3.30 mm diameter are not suitable for a restoration with telescopic or conical crowns.

Note for preparation:

Melting range: 1400 – 1490°C (2550-2710°F)
Cast-on temperature: up to 1350° C (2,462°F)
Thermal expansion coefficient (25-500°C): 11.9x10⁻⁶ K⁻¹,
Thermal expansion coefficient (25-600°C): 12.2x10⁻⁶ K⁻¹

CAD/CAM abutments “HighLine” (Material: Base titanium grade 5, furnace acrylic)

Indications: Cemented crown and bridge restorations of full ceramic, Preparation of primary parts in the telescopic and conical crown technique

Contraindications: Primary connections of abutments, Prosthetic angulation to the implant axis of more than 25°, Cast-on technique, Double crowns on implant diameter 3.30 mm, Single tooth restorations with free-end cantilever

- The dental laboratory is responsible for the basic processing steps of a preparation with regard to the CAD/CAM or copy milling process used.
- For preparation and further processing of the zirconium abutment the instructions of the manufacturer of the system used should be observed. Please use only approved and certified CAD/CAM or copy milling systems and the pertaining materials.
- The connection to the implant is secured by a highly precise titanium base. The abutment screw transmits the tear strength for final fixation to the titanium base and not onto the zirconium part of the individualized abutment. The abutment is made for adhesion of the individual zirconium part on the prefabricated titanium base.
- The design of the base allows only a very precise positioning by adhesion so that transmission failures are avoided.
- The abutments have an additional internal thread design which avoids loss of the abutment screw during processing.

Processing: The furnace of the abutment can be used as wax-up base according to the preparation process. The abutment is shortened according to the prosthetic situation. The abutment shape can be waxed onto the acrylic furnace. When preparing bridge or double crown constructions, a mutual insertion direction should be determined prior to modellation. The wax-up made on the acrylic furnace individually is transmitted to the zirconium according to the process. The predetermined wall thickness of the acrylic furnace of 0.5 mm should remain at the final processing of the zirconium part. The additionally available scan screw represents the final screw channel during the scan process. Please observe the instructions of the zirconium oxide manufacturer. The thickness of the adhesive for this phase should be taken from the adhesive manufacturer instructions.

Adhesion: Basically the surfaces of both parts to receive the adhesive should first be blasted carefully with 50µm aluminum oxide. Protect the hexagonal connection of the titanium base from damage by screwing onto an implant analog prior to blasting and adhesion. Please use the laboratory screw and close the screw entrance of the titanium base with wax prior to applying adhesive. For adhesion, please observe the instructions of the adhesive manufacturer.

- Suitable adhesives are among others:
- Panavia F 2.0 OP (Opaque); Kuraray (permission of the manufacturer for using the Alloy Primer and the Ceramic Primer)
 - RelyX™ Unicem white Opaque; 3M Espe (permission of the manufacturer so far only for Lava™ Zirconium oxide)
 - Multilink Implant / Multilink Hybrid Abutment; Ivoclar Vivadent
- Please make sure to perform an additional light curing !

Zirconium abutment “CeraLine” (Material: Base titanium grade 5, Abutment Zirconium oxide)

Indications: Cemented crown and bridge restorations in full ceramics, Preparation of primary parts in the telescopic and conical crown technique

Contraindications: Primary connections of abutments, Prosthetic angulation to the implant axis of more than 25°, Cast-on technique, Double crowns on implant diameter 3.30 mm, Single tooth restoration with free-end cantilever

The connection to the implant is guaranteed by a highly precise titanium base. The abutment screw transmits the tear strength to the titanium base during final fixation, and not onto the zirconium part of the final abutment. The abutment is made of highly solid Yttrium stabilized zirconium oxide. These prefabricated moulds can be modified by trimming with a water cooled turbine. A veneering with suitable zirconium ceramics and color characterization is also possible. After these modifications have been made, the final zirconium part is fixed onto the titanium base by adhesive. The design of the base allows a precise positioning at adhesion so that transmission failures are avoided. The abutments have an additional internal thread design which avoids loss of the abutment screw during processing.

Processing: At first, the zirconium part is modified according to the prosthetic situation. Please use only water-cooled turbine handpieces and suitable diamond trimmers. When preparing a bridge or double crown construction, a mutual insertion direction should be determined first. A minimum wall thickness of 0.5 mm should remain at the final trimming of the zirconium part.

Adhesion: Basically the surfaces of both parts for adhesion should first be blasted carefully with 50µm aluminum oxide. Protect the hexagonal connection of the titanium base from damage by screwing the basis onto an implant analog prior to blasting and adhesion. Use only the laboratory screw and close the screw entrance of the titanium base with wax prior to adhesion. For adhesion please observe the instructions for use of the adhesive by the manufacturer. Suitable adhesives are among others:

- Panavia F 2.0 OP (Opaque); Kuraray (permission of the manufacturer for using the Alloy Primer and the Ceramic Primer)
 - RelyX™ Unicem white Opaque; 3M Espe (permission of the manufacturer so far only for Lava™ Zirconium oxide)
 - Multilink Implant / Multilink Hybrid Abutment; Ivoclar Vivadent
- Please make sure to perform an additional light curing.

Bar connection “ProfiLine” [Material: Adapter titanium grade 4, bar connection acrylic (POM), bar connector titanium grade 4, bar connector precious metal (Ceramicor[®])]

Indications: Confectioned or individually milled bar constructions for anchoring of implant-supported complete prosthetic constructions in the edentulous maxilla and mandible.

Contraindications: Combination of periodontal (tooth) and implant-supported constructions, Combinations with other anchoring elements (for instance ball head attachment)

- Two-piece abutment to prepare confectioned as well as individually milled bar constructions.
- First step is to select the adapter corresponding to the implant diameter and the prevailing gingival height. The adapter with the hex is the connection to the implant.
- Second step according to the following preparation (direct casting, cast-on, soldering, laser welding, or adhesion) is the selection and insertion of the bar connector of acrylic, of titanium or of precious metal.
- The conical connection between adapter and bar connector allows an adjustment of divergences between the implants of up to 40°.
- The corresponding abutment screw is supplied with the adapter. The bar is fixed directly onto the implant by placing the screw through the adapter.

Note:

- Please observe to keep an absolutely tension-free fit for all bar constructions (passive fit; Sheffield test) in the mouth of the patient.
- Bilateral extensions of the bar beyond the posterior implants may be useful for static reasons. These should not, however, extend over a length of max. 5 mm (premolar width). Please consider the number of implants inserted for such extensions.
- If only two implants are placed, the bar shape (round bar; drop-shaped) should permit a slight rotation of the anchored prosthetic construction parallel to the jaw articulation axis.
- An off-central loading of the implants by an unfavorable bar connection is to be avoided.
- Please observe basically to design a suitable dimension of the bar construction.
- When using an adhesive, please follow the instructions of the manufacturer of the adhesive.

Bar Connector Acrylic (POM):

- Made of burn-out acrylic.
- This element is included in the complete individual bar modellation and casting.
- When investing the modellation please take care that a clean blister-free flowing from the screw

channel with (phosphate based) investing compound is possible.

- Please observe the instructions of the manufacturer of the investing material. The final temperature for preheating should be kept for at least 30 minutes.
- Please make sure to select a precious metal alloy of high stability property. The instruction of the alloy manufacturer should be observed.
- Leave the muffle to reduce to room temperature.

Bar Connector Titanium (grade 4)

- For gluing or for laser welding with the individual casted titanium bar.
- Individually confectioned bars have to be separated from the bar connectors prior to investing and then casted separately. We recommend a welding on the master model or better an adhesion in the mouth of the patient. Please observe the instructions of the manufacturer of laser units.

Bar Connector Precious Metal (Ceramicor[®])

- Connection bars can be directly soldered and individually prepared bars can be casted on directly.
- We recommend to invest and to cast the bar modellation separately from the precious metal elements. This enables the user to solder, weld or glue the parts.
- The investment of the modellation is made with a phosphate-containing investment material. The instructions of the manufacturer of the investment material must be followed. The final temperature for preheating should be held for at least 30 minutes.

Cast-on: In general processes the precious metal alloy can be directly casted onto the prefabricated precious metal bar connector. When selecting the precious metal alloy the highest fixation abilities should be considered. Please follow the instructions of the alloy manufacturer. The muffle should slowly cool off to room temperature. In order to minimize mechanical load at removal from investment, the area of the precious metal bar connector should be carefully blasted with beads by using a pressure of ≤ 1.5 bar. We recommend to either use acid or steam or an ultrasonic bath for removing any remaining investment material especially in the area of the connection to the ProfiLine Adapter (cone). For the following preparation of the ProfiLine abutment (milling, blasting, polishing) the connection area should be protected from possible damage by placing it on a model analog.

Note for preparation:

Melting range: 1400 – 1490°C (2550-2710°F)
Cast-on temperature: up to 1350° C (2,462°F)

Adhesion: We recommend to separate individually prepared bars from the bar connectors prior to investing and to cast them separately. For achieving a passive fit, we recommend to weld/solder on the master model or rather use an adhesive in the mouth of the patient.

Ball Head Abutment “TeLine” (Material: Ball head plus O-ring titanium grade 4, O-ring black FKM 75, O-ring red VMQ 40, Matrix Dalbo[®] Plus elliptic[®] titanium grade 4, lamella retention insert Ellitor[®])

Indications: Anchorage of full prostheses in the edentulous maxilla and mandible in connection with two implants for achieving a transversal rotation axis, Anchorage of total prostheses in the edentulous maxilla and mandible in connection with four or also with six implants

- Contraindications:** An uneven number of implants per jaw, Implants inserted in non-symmetrical position. A combination with other retention elements (for instance telescopes or also natural teeth), Disparallel implants of more than 20° divergence
- This abutment is screwed onto the implant with the octagon driver.
 - For anchoring, the user can choose between O-Ring attachment and Retention Anchor Dalbo[®] Plus elliptic.

O-Ring Attachment

At first a red O-ring is inserted into a titanium metal housing. This ring remains in the housing during the laboratory processing and is replaced by the second red O-ring for final insertion of the denture. As an option, a black O-ring with higher retention ability is available.

Retention Anchor Dalbo[®] Plus elliptic[®]

This retention cap consists of two parts: a titanium housing with retention wings for fixation in the denture, and therein a Lamella Retention Insert screw-in, made of precious metal (Ellitor[®]), for which the forces can be individually adjusted by using an Activator Key (200-1,200 gram). Dalbo[®] Plus elliptic[®] can be used for up to 20° divergence of the implant. For detailed information, please refer to the separate instructions supplied with the product.

Note: The implants should be positioned in the corresponding jaw area symmetrically, for static reasons and for achieving a parallel rotation axis to the jaw articulation axis. An uneven number of implants should be avoided.

*Manufacturer Cendes & Métaux, Switzerland

Explanation of the symbols

	Do not reuse		Use by
	Keep dry		Manufacturer
	Caution		Do not use if the packaging is damaged
	Consult instruction for use		None sterile