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More than 25 years science, innovation and service.

TIOLOX® implant system – the perfect fusion of function, safety and user friendliness.

tioLogic®, the patented implant system – developed from the sum of our experience. For maximum safety, perfect aesthetics and easy handling.

tioLogic® digital. Complete solution for your CAD/CAM workflow with tioLogic® implants.
Dentaurum Implants has more than 25 years of experience in implantology, the parent company has more than 130 years of expertise in the fields of dental prosthetics, titanium technology and orthodontics. The resulting synergy potential is used for groundbreaking innovations and results in solutions that are convincing – Made in Germany. Similarly, long-term scientific cooperations with experts at universities and clinics and ongoing discourse with dentists and dental technicians have been equally successful.

**tioLogic® ST implant system and tioLogic® ADVANCED.** For quick and atraumatic implant insertion and high primary stability.

**CITO mini® implant system – one-piece implants, reduced in diameter with ball abutment.**

**tioLogic® TWINFIT, the patented implant system.** The unique Abutment Switch on one implant offers maximum flexibility in prosthetic restorations.

**The brand tioLogic® is making a new appearance after 11 successful years in a modern design.**

to be continued ...
Dentaurum.
Dental competence spanning more than 130 years.
Dental technology setting standards.

Dentaurum develops, produces and sells products for dentists and dental technicians worldwide. The variety of products for dental technology, orthodontics and implantology is unique in the dental world. Dentaurum Implants, a manufacturer of implants, is a subsidiary of Dentaurum.

Quality inspires confidence.

As the oldest independent dental company in the world, we have worldwide experience with high-quality dental products. Our market success is based on consistent implementation of customer and market demands. This is why we are committed to the constant further development of the company and continuous improvement of the quality of our processes and products.

Service as added value.

There are many reasons for using Dentaurum products both in the dental practice and in the laboratory. Quality is the decisive factor. Our company philosophy is to not only offer high-quality products, but to provide additional services as well. For example, we have a wide-ranging training program for new and advanced users with an internationally experienced team of course instructors. We're happy to give you more information.
There is a high level of professional knowledge in our company that has been built up over the years in our own research and development facilities, both in Germany and in France. Highly qualified employees work together in interdisciplinary teams to find answers to the challenges the future poses. At the same time, long-standing cooperations with experts from universities and clinics contribute to finding new developments and innovations.

A further result of these efforts: a comprehensive product portfolio which is one of Dentaurum’s strengths. No other dental company has such an extensive range of products offering a total of more than 8,500 articles.
Brief description.

tioLogic® implant types are designed for insertion in the endosteal region of the maxilla or mandible. Depending on the indication, appropriate transgingival abutments are secured on the implants and fitted with a prosthetic superstructure.

The tioLogic® implant systems contain specially coordinated instruments, abutments and accessories for insertion of the implant and fabrication of the prosthetic restoration. Only original components of the tioLogic® implant systems should be combined in accordance with the instructions for use / user manuals.

Further information.

Though placement of dental implants has a high rate of success and implants have a long durability, successful treatment cannot be guaranteed. The clinician should note and document any problematic cases and inform the manufacturer Dentaurum Implants.

An inadequate number of implants, implants with insufficient length or diameter, unfavorable positioning of the implants or a statically poor prosthetic restoration can cause premature implant loss and fatigue fractures in implants, abutments and prosthetic screws under biomechanical loading.

Placement of the implants and fabrication of the prosthetic restoration should take the situation of each individual patient into account to avoid overloading the components.

Using tioLogic® implant system components in combinations contrary to the Instructions for use/ manuals can also cause mechanical failure, damage to the tissue or unsatisfactory aesthetic results.

At the time of going to press, tioLogic® implants are not known to have any side effects or to cause interactions. It cannot, however, be ruled out that in rare cases allergies to components used in the materials of the tioLogic® implant systems may occur or that there may be electrochemically-induced discomfort.

Use, availability, precautions, documentation.

The tioLogic® product range is supplied exclusively to doctors, dentists and dental technicians. It should only be used by doctors, dentists or dental technicians who are familiar with dental implantology, including diagnosis, preoperative planning, surgical technique and prosthetic treatment.
Before use, operators should ensure that they have carefully read and understood the Instructions for use / manuals of all tioLogic® implant systems. As the instructions and manuals cannot cover all aspects for immediate use, we strongly recommend that, before using the system, clinicians attend a tioLogic® implant system training course offered by Dentaurum Implants to learn the correct techniques.

**Note:** Instructions for use / manuals cannot describe every eventuality and possible application.

- Refer to the product catalogs and the surgery manuals for further information on precautions and the selection of components for the surgical procedure.
- Refer to the product catalogs and the prosthetic manuals for information on precautions and the selection of components for the prosthetic procedure.

Before using this product, the patient must be thoroughly examined by the clinician and given a detailed explanation of the product. Dentaurum Implants recommends full clinical, radiological, photographic and statistical documentation.

The clinician should ensure that the products cannot be aspirated during intra-oral use.

**Note:** Not all components are available in every country.

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**Quality, warranty and liability.**

The development, clinical testing and quality monitoring of the tioLogic® product ranges follow stipulations outlined in the Medical Device Directive 93/42/EEC. Sections 9 and 10 of our General Terms of Delivery and Payment apply with regard to warranty or liability – unless stated otherwise in the Instructions for use / manual.

Warranty and liability are rendered void in particular if the products are not used by the operator or a third party in accordance with the Instructions for use; this also applies if the tioLogic® product ranges are used in combination with products from other manufacturers, which have not been specifically recommended for use by Dentaurum Implants.

Dentaurum Implants has no control over processing and use of the product. These are the sole responsibility of the user.

All tioLogic® implant system components can be documented, e.g. in the patient file and / or PatientPass (REF 989-961-20), using the additional labels.
The surgical tray position for tioLogic® (REF 387-420-00) contains all surgical, re-sterilizable instruments and all essential re-sterilizable accessories which are necessary for the template-guided preparation of the implant site and for the insertion of all tioLogic® implant types. The basic and inner sleeves for the surgical stent are not contained in the surgical tray position for tioLogic®, as they are designed to be single-patient components to ensure optimal precision. The instruments are arranged according to the operation sequence, they are color-coded and marked with symbols. The stainless steel insert is also fitted with colored silicone inserts and laser-printed symbols for optimum orientation. It can be removed from the sterilization container using the two handles and stored separately.

The surgical tray position for tioLogic® is supplied non-sterile and must be sterilized prior to use. All components should be thoroughly cleaned, disinfected and conditioned before using for the first time (factory new) and immediately after each use (refer to chapter General information). The sterilization container and stainless steel tray insert have been designed in accordance with cleaning and sterilization guidelines.

The sterilization container has integrated hydrophobic PTFE permanent filters, which can be steam-sterilized using an EN 554 validated sterilization procedure. The permanent filters are designed to withstand up to 1000 sterilization cycles. If required, they can be removed by unclipping the mesh tray and replaced in sets of two.

For further information on cleaning, disinfection and sterilization refer to the instructions for use for the Aesculap sterilization container and Aesculap permanent filters.
## Tray content

1. **Torque ratchet**
   - Manual operation with torque control for instruments and accessories

2. **Gingiva cutter pOsition**
   - Removing the gingiva to the diameter of the implant minimally invasively with internal cooling and integrated depth stop

3. **Depth drill pOsition**
   - Preparing the implant site to the length of the implant with a 2.0 mm diameter with integrated depth stop

4. **Stepped countersink pOsition**
   - Preparing the implant site to the length and diameter of the implant with internal cooling and integrated depth stop

5. **Expander pOsition**
   - Preparing the implant site to the length and diameter of the implant with internal cooling and integrated depth stop

6. **Thread tap pOsition** or **thread tap ADVANCED**
   - Tapping the thread to the length and diameter of the implant, depth markings

7. **Sure-grip wheel**
   - Manual operation of instruments and accessories

8. **Holder for inner sleeve**
   - Manual handling for instruments and accessories

9. **Hex key ISO shank, SW 1.3, L 20.0 / 26.0 mm**
   - Hex key SW 1.3 – long and short for tightening and loosening screws with the handpiece

10. **Hex key ISO shank, SW 2.5, L 19.0 / 25.0 mm**
    - Hex key SW 2.5 – long and short for thread tapping and implant insertion with the handpiece

11. **Paralleling pin**
    - Checking parallel alignment after pilot or depth drilling

12. **Implant insertion key tioLogic®**
    - Additional insertion keys

13. **Hex key ratchet, SW 1.3, L 16.0 / 26.0 mm**
    - Hex key SW 1.3 – long and short, for manual loosening and tightening of screws

14. **Hex key ratchet, SW 2.5, L 8.0/13.0/23.0 mm**
    - Hex key SW 2.5 - long, medium and short, for manual thread tapping and implant insertion

The thread taps are not included in the tray.

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*Thread tap pOsition (use only for tioLogic® implants)*

<table>
<thead>
<tr>
<th>REF</th>
<th>Description</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>382-833-00</td>
<td>Thread tap pOsition, ø 3.3 mm</td>
<td></td>
</tr>
<tr>
<td>382-837-00</td>
<td>Thread tap pOsition, ø 3.7 mm</td>
<td></td>
</tr>
<tr>
<td>382-840-00</td>
<td>Thread tap pOsition, ø 4.2 mm</td>
<td></td>
</tr>
<tr>
<td>382-848-00</td>
<td>Thread tap pOsition, ø 4.8 mm</td>
<td></td>
</tr>
<tr>
<td>382-855-00</td>
<td>Thread tap pOsition, ø 5.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

*Thread tap ADVANCED (use only for tioLogic® ST and tioLogic® TWINFIT implants)*

<table>
<thead>
<tr>
<th>REF</th>
<th>Description</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>382-933-00</td>
<td>Thread tap ADVANCED, ø 3.3 mm</td>
<td></td>
</tr>
<tr>
<td>382-937-00</td>
<td>Thread tap ADVANCED, ø 3.7 mm</td>
<td></td>
</tr>
<tr>
<td>382-942-00</td>
<td>Thread tap ADVANCED, ø 4.2 mm</td>
<td></td>
</tr>
<tr>
<td>382-948-00</td>
<td>Thread tap ADVANCED, ø 4.8 mm</td>
<td></td>
</tr>
<tr>
<td>382-955-00</td>
<td>Thread tap ADVANCED, ø 5.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

The following is required in addition for the insertion of tioLogic® TWINFIT implants

<table>
<thead>
<tr>
<th>REF</th>
<th>Description</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>387-526-00</td>
<td>Insertion key S – ISO shank, tioLogic® TWINFIT, ø 3.3 mm</td>
<td></td>
</tr>
<tr>
<td>387-527-00</td>
<td>Insertion key M – ISO shank, tioLogic® TWINFIT, ø 3.7 mm / ø 4.2 mm</td>
<td></td>
</tr>
<tr>
<td>387-528-00</td>
<td>Insertion key L – ISO shank, tioLogic® TWINFIT, ø 4.8 mm / ø 5.5 mm</td>
<td></td>
</tr>
<tr>
<td>387-531-00</td>
<td>Insertion key S – ratchet, tioLogic® TWINFIT, ø 3.3 mm</td>
<td></td>
</tr>
<tr>
<td>387-532-00</td>
<td>Insertion key M – ratchet, tioLogic® TWINFIT, ø 3.8 mm / ø 4.2 mm</td>
<td></td>
</tr>
<tr>
<td>387-533-00</td>
<td>Insertion key L – ratchet, tioLogic® TWINFIT, ø 4.8 mm / ø 5.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

The following are recommended in addition:

<table>
<thead>
<tr>
<th>REF</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>347-514-00</td>
<td>Paralleling pin ø 1.4 mm / 2 mm, 210 mm</td>
</tr>
<tr>
<td>347-646-00</td>
<td>PentaGrip insertion key – ISO shank</td>
</tr>
</tbody>
</table>
The surgical tray pOsition for tioLogic® contains specially coordinated instruments and accessories for bone site preparation and implant insertion. All rotary instrument procedures as well implant insertion can be completed using the surgical stent. Only original components of the surgical tray pOsition for tioLogic® should be used in combination according to the instructions for use/manuals.

Preparation of the implant site.

- The internally cooled gingiva cutter removes mucosa to the diameter of the implant and is used for all lengths of implants with the same diameter (optional). An integrated depth stop ensures that it does not exceed the predefined insertion depth. The gingiva cutter is color-coded to indicate the diameter as well as laser-printed with the implant diameter.
- The internally cooled depth drill prepares the final depth and alignment of the implant site. An integrated depth stop ensures that it does not exceed the planned insertion depth. It is laser-printed with the respective length and has a diameter of 2.0 mm.
- For technical reasons the depth drill is 1.0 mm longer than the given preparation length. This should be taken into account during diagnosis, planning and preparation.
- The internally cooled stepped countersink contours the implant site to the implant diameter. It has an integrated depth stop to the implant diameter. It has an integrated depth stop that ensures it does not exceed the planned insertion depth. The design of the cutter geometry allows bone chips to be collected in the corresponding cavities. The stepped countersink is color-coded to indicate the diameter and laser-printed with the implant diameter and length.
- The internally cooled expander prepares the fine thread section of the implant site to the diameter of the implant. The integrated depth stop ensures that it does not exceed the planned insertion depth. The expander is color-coded to indicate the diameter and laser-printed with the implant diameter and length.
- The thread tap is used manually with high-density bone (torque ratchet). It is used for the final preparation stage and has the same diameter as the implant. The depth markings allow alignment at the relevant implant length. The thread tap is color-coded to indicate the diameter and is also laser-printed.

CAUTION:
- The thread taps are NOT included in the tray.
- Use thread tap pOsition only for tioLogic® implants.
- Use thread tap tioLogic® ST only for tioLogic® TWINFIT implants.
Instruments

All rotating instruments have a laser marking on the shank to indicate the diameter and/or the length. In addition, the instruments with a specific diameter are color-coded. All reusable rotary instruments are supplied non-sterile and should be sterilized before use.

They should be thoroughly cleaned, disinfected and conditioned before using for the first time (factory new) and immediately after each use. Rotary instruments should always be checked to ensure that they are sharp, in good condition and the markings are legible, as they have a limited service life. Instruments can become blunt as a result of use and cleaning. Only instruments that are sharp and clearly marked should be used (refer to chapter General Information).

Rotary instruments – used with proper care and provided that they are not damaged or contaminated – can be reused in dense bone 30 to 40 times; any further reuse or the use of damaged and/or contaminated instruments should be avoided and the operator is responsible for ensuring the instruments are in good condition. No liability is accepted if these instructions are disregarded. To record the number of drilling applications, you can download and print the form Frequency of drilling applications toLogic® Posision at www.dentaurum.de.

Various extensions for mechanical and manual instruments are available for working in limited space conditions.
Diagnosis and planning.

This section provides a general overview of diagnosis and planning.

For more detailed information on these aspects, please refer to current literature.

Implantologists and dental technicians with many years of experience are available to answer any questions that you may have.

Indications.

All tioLogic® implant types can be used in both the mandible and maxilla for surgical immediate implantation, delayed immediate implantation and delayed implantation using either the one-stage or two-stage technique. Indications for implant insertion are small- and large-bounded saddles (one-tooth restorations, increasing the number of abutments) in the maxilla and mandible, a shortened dentition or an edentulous jaw. The possible benefits and disadvantages as well as the risks involved in implant treatment and alternative treatments should be taken into account when considering whether implant treatment is indicated.

In implantology in general, the implant diameter and length of all tioLogic® implant types should be in proportion to the prosthetic restoration.

If practical with the individual oral situation, implants with a minimum diameter of 4.2 mm should generally be used for restorations that subject the implant and superstructure to high mechanical loading.

The tioLogic® implant types S ø 3.3 mm are available for patients with narrow alveolar ridges. Due to the smaller diameter and lower load capacity (compared to the tioLogic® implant ø 4.2 mm), these implants have a limited range of indications. In edentulous jaws, at least four tioLogic® implant types S ø 3.3 mm with a splinted restoration must be inserted to ensure forces are evenly applied. Two tioLogic® implant types ø 3.3 mm may be used for restorations on ball abutments as long as movement around the axis of rotation is guaranteed. With implant-borne restorations in a partially edentulous jaw, they should be used in conjunction with tioLogic® ø 4.2 mm or ø 4.8 mm/ø 5.5 mm implants and fitted with a fixed, splinted prosthetic restoration. With single-tooth restorations, tioLogic® ø 3.3 mm implants should only be used for lower incisors or upper lateral incisors and only with a length of minimum 11.0 mm. For single-tooth restorations on tioLogic® ø 3.7 mm, ø 4.2 mm, ø 4.8 mm and ø 5.5 mm implants, a minimum length of 9.0 mm should be planned.
Contraindications.

Implants with a diameter of 3.3 mm are not suitable for single-tooth restorations of the central incisor in the maxilla or the canines, premolars or molars in the maxilla or the mandible. It is not permitted to use telescopic crown constructions on these implants. The use of LOCATOR® and tioLOC abutments for non-parallel abutments of 10° or more per implant is contraindicated.

It should be taken into account that these contraindications may be long- or short-term depending on the extent, duration and individual conditions. The current position of scientific implantological associations relating to indications and contraindications and current literature should be taken into consideration when planning implant treatment.

General contraindications for dental surgery procedures apply. These include:
- reduced immunodeficiency
- steroid treatment
- blood coagulation disorders
- uncontrolled endocrine diseases
- rheumatic disorders
- bone system diseases
- cirrhosis of the liver
- drug, alcohol or tobacco abuse
- depression, psychopathic disorders
- poor patient compliance
- chronic inflammatory diseases
- incomplete physical growth of patient

Local / personal contraindications:
- osteomyelitis
- radiotherapy in the head region
- recurring mucosal diseases
- temporomandibular joint dysfunctions
- parafunctions
- lack of vertical or horizontal bone availability, jaw defects, inadequate bone quality
- poor oral hygiene
Planning for template-guided implant insertion.

pOsition for tioLogic® is a sleeve and drill system from Dentaurum Implants that ensures reliable, minimally invasive and precise template-guided implant insertion using coordinated planning software for accurate diagnosis and 3D planning.

Precise fabrication of the surgical stent and exact transfer from the planning software to the surgical stent are basic requirements for the application of pOsition for tioLogic®.

During planning the minimum distance to critical structures must be maintained and the corresponding instructions of the planning software used must be followed.

This applies to:

- Distance to the mandibular nerve and inferior alveolar nerve.
- Distance to an adjacent natural tooth.
- Distance to an adjacent implant.
- Implant diameter and length should be determined so that there is adequate bone availability for the implant.
- Sleeve height and space between the sleeve and implant shoulder.

Find an overview of the supported software systems about Guided Surgery:
www.dentaurum.de/deu/guided-surgery-uebersicht-30464.aspx
The overview shows the assignment of the implant diameter to the corresponding sleeves (basic sleeves / inner sleeves):

<table>
<thead>
<tr>
<th>Implant diameter</th>
<th>Ø 3.3 mm</th>
<th>Ø 3.7 mm</th>
<th>Ø 4.2 mm</th>
<th>Ø 4.8 mm</th>
<th>Ø 5.5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic sleeve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner diameter</td>
<td>4.3 mm</td>
<td>4.3 mm</td>
<td>4.8 mm</td>
<td>5.4 mm</td>
<td>6.1 mm</td>
</tr>
<tr>
<td>Outer diameter</td>
<td>5.1 mm</td>
<td>5.1 mm</td>
<td>5.6 mm</td>
<td>6.2 mm</td>
<td>6.9 mm</td>
</tr>
<tr>
<td>Inner sleeve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth drill</td>
<td>2.05 mm</td>
<td>2.05 mm</td>
<td>2.05 mm</td>
<td>2.05 mm</td>
<td>2.05 mm</td>
</tr>
<tr>
<td>Outer diameter</td>
<td>4.3 mm</td>
<td>4.3 mm</td>
<td>4.8 mm</td>
<td>5.4 mm</td>
<td>6.1 mm</td>
</tr>
<tr>
<td>Inner sleeve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stepped countersink</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner diameter</td>
<td>2.85 mm</td>
<td>3.15 mm</td>
<td>3.65 mm</td>
<td>4.25 mm</td>
<td>4.95 mm</td>
</tr>
<tr>
<td>Outer diameter</td>
<td>4.3 mm</td>
<td>4.3 mm</td>
<td>4.8 mm</td>
<td>5.4 mm</td>
<td>6.1 mm</td>
</tr>
</tbody>
</table>
Description implant insertion.

The sleeves for the pOsition for tioLogic® system are manufactured from titanium grade 5 and guarantee exact guidance of the corresponding drills. All sleeves are designed as single-patient components to ensure this exact guidance with each drilling procedure. Any additional use can result in inexact drill guidance and associated inaccurate positioning of the implant.

The basic sleeves guide the gingiva cutter and expander. The corresponding inner sleeves guide the depth drill and stepped countersink. The inner sleeves are inserted in the respective basic sleeves (color-coded) and secured with a silicone ring to ensure positional stability during use. They have a grip section which, due to its special bending zone, can be adapted three-dimensionally according to the amount of space available orally. The inner sleeves can also be screw retained on the inner sleeve holder using their grip section. This ensures optimal application of the inner sleeves particularly in the distal region, as the entire grip section is extended and there is also the above-mentioned three-dimensional adaptability.
Fitting the surgical stent.

Before the start of surgery check that the diagnostic information is complete, including the surgical stent that was fabricated and disinfected beforehand.

When fitting the disinfected surgical stent check that it is correctly positioned, e.g. on the residual dentition of a partially edentulous jaw. Positioning of the surgical stent in the patient’s mouth must correspond exactly with planned positioning of the surgical stent in the planning software. The gingiva or other structures should not interfere with the correct fit of the stent. If this is the case, the gingiva must be mobilised or the structure adapted so that it is possible to fit the stent without any interference. Raising a gingival flap also makes it easier to view the operation site.

Gingival incision pOsition.

As an alternative to the method for opening the mucosa described above, the gingiva can be removed minimally invasively using the gingiva cutter pOsition. The gingiva cutter has a color-code, which is marked with the planned final implant diameter (here: red for Ø 4.2 mm). The internally cooled gingiva cutter is inserted in the basic sleeve (here: red for Ø 4.2 mm) and cuts through the mucosa to the bone. The stent must be removed to allow excision of the separated mucosa.

Gingival incision is completed using a green contra-angle handpiece (500 – 800 min⁻¹) and sufficient cooling using a sterile cooled physiological saline solution (5°C / 41 °F). Drilling should be completed intermittently without pressure, to allow the tip of the gingiva cutter to cool.
Depth drilling position.

The correct color-coded inner sleeves should be used for application of the depth drill (refer to p. 19).

The internally cooled depth drill prepares the final depth and alignment of the implant site independent of the implant diameter. The respective inner sleeve for depth drilling should be used for application of the depth drill position (here: red for ø 4.2 mm). The inner sleeve is inserted in the corresponding basic sleeve (here: red for ø 4.2 mm) and accurately guides the depth drill with the diameter 2.0 mm. The respective depth drill is selected according to the planned length of the implant (here: length 15.0 mm) and inserted through the corresponding inner sleeve as far as the integrated depth stop. This ensures that the planned insertion length is not exceeded, even with an unfavorable view of the site. All depth drills have internal cooling and a diameter of 2.0 mm. They are laser-printed with the respective length. For technical reasons the depth drill is 1.0 mm longer than the given preparation length. This should be taken into account during planning and preparation.

Depth drilling is completed using a green contraangle handpiece (500 – 800 min⁻¹) and sufficient cooling using a sterile cooled physiological saline solution (5°C / 41 °F). Drilling should be intermittent without applying pressure to ensure that the tip of the drill can cool.
Stepped countersinking position.

The correct color-coded inner sleeves should be used for application of the stepped countersink (refer to p. 19).

The internally cooled stepped countersink widens the implant site to correspond to the implant contour. The respective inner sleeve for stepped countersinking should be used for application of the stepped countersink position (here: red for ø 4.2 mm). The inner sleeve is inserted in the corresponding basic sleeve (here: red for ø 4.2 mm) and accurately guides the stepped countersink. The respective stepped countersink is selected according to the planned length and diameter of the implant (here: red for ø 4.2 mm, length 15.0 mm) and inserted through the corresponding inner sleeve as far as the integrated depth stop.

This ensures that the planned insertion length is not exceeded, even with an unfavourable view of the site. All stepped countersinks have internal cooling and a special cavity for collecting bone chips. They are laser-printed with the respective diameter and length and color-coded to indicate the diameter. For technical reasons the stepped countersink is 1.0 mm longer than the given preparation length. This should be taken into account during planning and preparation.

Depth drilling is completed using a green contra-angle handpiece (500 – 800 min⁻¹) and sufficient cooling using a sterile cooled physiological saline solution (5°C / 41 °F). Drilling should be intermittent without applying pressure to ensure that the tip of the stepped countersink can cool.
Expanding position.

After use of the stepped countersink, the fine thread section of the implant site is prepared to the diameter of the implant using the internally cooled expander. The internally cooled expander (here: red for ø 4.2 mm) is inserted through the basic sleeve (here: red for ø 4.2 mm) as far as the integrated depth stop.

The expander is laser printed with the respective diameter and color-coded to indicate the diameter.

Depth drilling is completed using a green contraangle handpiece (500 – 800 min⁻¹) and sufficient cooling using a sterile cooled physiological saline solution (5°C / 41 °F). Drilling should be completed intermittently without pressure, to allow the tip of the expander to cool.
**Thread tapping.**

**CAUTION:**
The thread taps are NOT included in the tray.
Use thread tap pOsition only for tioLogic® implants.
Use thread tap tioLogic® ST only for tioLogic® TWINFIT implants.

Depending on the quality of the bone, a recommended option is to complete preparation of the implant site using the thread tap through the basic sleeve. The thread tap is the same diameter as the available implant diameters and has the corresponding color-coded groove (here: red ø 4.2 mm) and a laser marking on the shank. The thread tap does not have an integrated depth stop and is not guided using the basic sleeve. The depth reached can be read at the upper edge of the basic sleeve using the depth markings on the thread tap pOsition. When using thread taps ADVANCED, the reached depth can be read at bone level. Corresponding depth markings on the thread tap indicate when the planned implant length is attained (here: L 15.0 mm).

The thread should be tapped gradually in several preparation stages using light axial finger pressure until the relevant depth mark is level with the upper edge of the basic sleeve. Two to four preparation stages may be required depending on the bone density to ensure that the threads are clearly defined and the correct depth is attained.

Alternatively thread tapping can be completed using a green contra-angle handpiece (max. 10 min⁻¹) and sufficient external cooling using sterile cooled physiological saline solution (5 °C / 41 °F).

After thread tapping is completed, the alveolus should be thoroughly rinsed with sterile, cooled physiological saline solution (5 °C / 41 °F).
Adapt preparation protocol according to the indication and situation of each patient if required.

<table>
<thead>
<tr>
<th>Soft bone quality</th>
<th>ø 3.3</th>
<th>ø 3.7</th>
<th>ø 4.2</th>
<th>ø 4.8</th>
<th>ø 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingiva cutter pOsition¹</td>
<td>(X)</td>
<td>(X)</td>
<td>(X)</td>
<td>(X)</td>
<td>(X)</td>
</tr>
<tr>
<td>Depth drill pOsition²</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Stepped countersink pOsition¹</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Expander pOsition¹</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thread tap ADVANCED¹/³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread tap pOsition¹/⁴</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Exemplary illustration of rotary instruments with ø 4.2 mm (red).
² The insertion depth/length of the depth drill depends on the implant length.
³ Use thread tap ADVANCED only for tioLogic® ST and tioLogic® TWINTIT implants. Thread taps must be used if implant insertion torque exceeds 40 Ncm. The depth scales must be observed.
⁴ Use thread tap pOsition only for tioLogic® implants. Thread taps must be used if implant insertion torque exceeds 40 Ncm. The depth scales must be observed.
- Exemplary illustration of rotary instruments with ø 4.2 mm (red).
- The insertion depth / length of the depth drill depends on the implant length.
- Use thread tap ADVANCED only for tioLogic® ST and tioLogic® TWINFIT implants. Thread taps must be used if implant insertion torque exceeds 40 Ncm.
- The depth scales must be observed.
- Use thread tap position only for tioLogic® implants. Thread taps must be used if implant insertion torque exceeds 40 Ncm.
- The depth scales must be observed.

X Preparation depth in accordance with implant length

( ) Optional application
(taking into account the respective bone quality)

<table>
<thead>
<tr>
<th>Medium bone quality</th>
<th>Hard bone quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø 3.3</td>
<td>ø 3.7</td>
</tr>
<tr>
<td>(X)</td>
<td>(X)</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>X</td>
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<tr>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

(X) Optional application
(taking into account the respective bone quality)
Implant insertion – tioLogic® and tioLogic® ST.

**tioLogic® and tioLogic® ST implant types.**
The implant holder and the insertion aid attached to the implant are designed to ensure contact-free insertion with all indications.

**Manual insertion.**
The hex key SW 2.5 mm (available in three different lengths) is inserted into the insertion aid, the implant is released from the implant holder by a ¼ turn and manually inserted into the prepared implant site through the basic sleeve. The planned implant position is attained when the groove on the insertion aid is level with the upper edge of the basic sleeve.

**Handpiece insertion.**
The hex key SW 2.5 mm (available in two different lengths) is inserted into the insertion aid, the implant released from the implant holder by a ¼ turn and inserted into the prepared implant site through the basic sleeve using a handpiece. The planned implant position is attained when the groove on the insertion aid is level with the upper edge of the basic sleeve.

If the placement aid does not have a groove, it should be removed as follows:

After implant insertion through the basic sleeve (not to the full insertion depth), the screw in the placement aid should be loosened using the hex key SW 1.3 and the placement aid removed. If the implant turns when loosening the screw, the holding key for placement aid should be used to provide rotational security.

The suitable insertion key (S, M, L) is fitted, secured on the implant using the locking screw and the implant screwed into position. The planned implant position is attained when the groove on the insertion key is level with the upper edge of the basic sleeve.
Implant insertion – tioLogic® TWINFIT.

tioLogic® TWINFIT implant types.
The silicone seal with the closure screw is removed.

**Note:**

Do not tilt as the implant lies loose in the inner container.

The implant is then grasped using the handpiece insertion key. The insertion key is designed to ensure contact-free insertion with all indications.

**Manual insertion.**

The adapter ISO shank / ratchet is placed on the insertion key. After making a slight turn, the insertion key snaps into place in the implant and can be inserted manually through the basic sleeve into the prepared implant site.

**Handpiece insertion.**

The insertion key is put into the tioLogic® TWINFIT implant. After making a slight turn, the insertion key snaps into place in the implant and can be inserted through the basic sleeve into the prepared implant site using the handpiece.

A torque of 40 Ncm should not be exceeded with any insertion procedure. The motor speed during handpiece insertion should not exceed 10 min⁻¹. Use of an excessive torque or motor speed can damage the implant site.

The additional 5 marks on the insertion key correspond to the 5 rotational security stops in the implant and allow alignment of the rotational security stops with regard to the subsequent prosthetic restoration. The implant position can be finely adjusted if a point in the final position is not aligned exactly towards the buccal or in the direction of the alignment mark placed on the basic sleeve by the dental technician. Special insertion keys are available for tioLogic®, tioLogic® ST and tioLogic® TWINFIT and for the series of abutments S, M and L.
Transgingival healing.

For optimal gingival management in transgingival healing, there is the choice of conical and cylindrical gingiva formers for the tioLogic® and tioLogic® ST systems and of anatomical and cylindrical gingiva formers for the tioLogic® TWINFIT system. The conical and anatomical gingiva formers are designed to form a wide gingival contour. Depending on the type of prosthetic restoration, this can make it easier for the clinician to fit the restoration. The gingiva formers are selected according to the series of abutments, gingival height and insertion depth of the implant. They are available for the series of abutments S, M or L and the different gingival heights. As particularly gentle on the tissue, there is the option of 4Base pillars directly with the tioLogic® TWINFIT system and bridges, bars, as well as AngleFix abutments in the tioLogic®/tioLogic® ST system.

Starting torque:
- Gingival former: manually or 15 Ncm

If a temporary restoration is fitted, the denture should be relieved during gingiva forming. The impression should not be taken until the tissue is completely free of inflammation.

Important:
The gingiva formers, 4Base abutments and bridge, bar and AngleFix abutments must be sterilized before insertion in the implant.

Immediate restoration (temporary abutment).

It is possible to fit a long-term, non-functional immediate temporary restoration on implants if there is adequate primary stability and no recession of the implant site. In aesthetically relevant areas the peri-implant structures are preserved and formed with a temporary abutment.

An optimal impression can then be taken. Temporary abutments are available for the S, M and L series of abutments. They are supplied non-sterile and made from high-strength plastic (PEEK), which can be quickly and easily customized. The temporary abutment can be faced directly with composite or fitted with a temporary crown or bridge. The crown should only be retained with temporary cement.

Starting torque:
- Temporary abutment intraorally: 15 Ncm
- Temporary abutment on the model: manually
Subgingival healing.

If the mucosa has not been removed using the gingiva cutter but was exposed using an alveolar incision, the implant is sealed using the closure screw and healing is completed subgingivally.

With tioLogic®/tioLogic® ST implants, the closure screw is unscrewed from the implant holder using the hex key SW 1.3 and inserted in the implant. To remove the closure screw of tioLogic® TWINFIT implants, press the hex key SW 1.3 into the closure screw and pull it from the silicone lid. The closure screw is then put into the implant and tightened. Closure screws should fit flush on the implant to ensure that bone tissue growth cannot penetrate into the implant. The closure screws are inscribed with S, M or L corresponding to the series of abutments. Closure screws are intended for single use only.

If open healing is planned or indicated, the relevant gingiva former (S, M or L) is inserted into the implant instead of a closure screw.

**Starting torque:**
- Closure screw: manually or 15 Ncm
- Gingival former: manually or 15 Ncm

Documentation.

There are also four peel-off stickers with the REF and LOT numbers inside the blister packaging for documentation in the PatientPass (REF 989-961-20).

**Surgical protocol.**

All the important implant-related data for each case can be documented in the surgical protocol (REF 989-966-02).
Postoperative treatment, healing stage, follow-up.

Patients should attend regular recall appointments for checkups at brief intervals after implant insertion, during the healing stage and after implant exposure.

Post-operative treatment.

Following surgery, the first step should be immediate extra-oral cooling of the patient (avoid hypothermia) and the patient should rest for about an hour. The sutures are removed after 7 to 10 days. Further checks should be carried out after 14 and 21 days. Gingival healing and oral hygiene must be precisely monitored during the entire healing stage.

All instruments used during surgery should be thoroughly cleaned, disinfected and sterilized. Components like the torque ratchet should be dismantled (see chapter Reusability of surgical instruments). The silicone rings used with the instruments should be replaced. Blunt instruments should be discarded and replaced, as they can cause overheating of the bone, which can result in implant failure.

Healing stage.

The healing stage in the mandible is normally 3 months and in the maxilla 6 months. It can vary depending on the bone quality, the surgical procedure used and the patient’s anatomy.

If examinations after the healing stage indicate osseo-integration of the implant, the prosthetic restoration can then be fabricated. Detailed information on this is contained in the Prosthetic Manual tioLogic®/tioLogic® ST (REF 989-960-20) and tioLogic® TWINFIT (REF 989-913-20).

Follow-up.

Patients should be entered into a regular recall program after the restoration has been fitted to ensure the long-term success of the implantological restoration. Patients should be given instructions on the appropriate hygiene regime for the implants and restoration.

Further information is contained in the tioLogic® PatientPass (REF 989-961-20).
Safety instructions.

- Only use tioLogic® prosthetic components in combination with tioLogic®/tioLogic® ST implants.
- Only use tioLogic® TWINFIT prosthetic components in combination with tioLogic® TWINFIT implants.
- Temporary restoration in situ up to 180 days
- No primary bracing of abutments
- No single restoration with cantilever unit
- Restoration with a length ratio to the length of the implant 1:1.25
- The implant should not be subjected to mechanical stress.

The implant is exposed after the healing stage. The patient should be prepared in the same way as for other surgical procedures. The patient is given a local anaesthetic. The implants can be bared using different techniques and aids, e.g. by using a scalpel or laser. If a scalpel or a laser is used, the peri-implant tissue (attached gingiva) is conserved and optimum aesthetic results are achieved (gingiva management).
### Cleaning and disinfection – Basic instructions.

<table>
<thead>
<tr>
<th>Use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All instruments should be cleaned, disinfected and sterilized before each use. This applies</td>
</tr>
<tr>
<td>in particular to initial use, as all instruments are supplied non-sterile (clean and disinfect</td>
</tr>
<tr>
<td>after removing the transport packaging). Thorough cleaning and disinfection are essential for</td>
</tr>
<tr>
<td>an effective sterilization. The operator is responsible for the sterility of the instruments</td>
</tr>
<tr>
<td>and should always ensure that only properly validated procedures relating to the unit and the</td>
</tr>
<tr>
<td>product are used for cleaning, disinfection and sterilization, that the equipment used (disinfector,</td>
</tr>
<tr>
<td>sterilizer) is regularly serviced and checked and that the validated parameters are maintained</td>
</tr>
<tr>
<td>during each cycle. The current legal regulations in the relevant country as well as the hygiene</td>
</tr>
<tr>
<td>regulations of the dental practice or hospital should be adhered to. This applies in particular</td>
</tr>
<tr>
<td>to the different instructions regarding effective inactivation of prions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preconditioning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose dirt should be removed from the instruments immediately after use (within maximum 2 hours).</td>
</tr>
<tr>
<td>Loose dirt should be removed under running water or using a disinfectant solution; the disinfectant should not contain aldehyde (may cause fixation of blood debris) and should have certified efficacy (e.g. DGfM or FDA approved and CE marking); it should also be suitable for disinfection of the instruments and be compatible with the instruments (see chapter Material resistance). Only a soft brush or a clean, soft cloth should be used for removing dirt manually, metal brushes or steel wool should never be used.</td>
</tr>
<tr>
<td>If applicable: rinse all hollow sections of the instruments five times using a disposable syringe (minimum volume 5.0 ml). Note that the disinfectant used for preconditioning is only for personal protection and cannot be regarded as a substitute for subsequent disinfection after cleaning.</td>
</tr>
</tbody>
</table>

| A mechanical procedure (disinfector) should be used if possible for cleaning and disinfection. |
| Because of its inferior efficacy and reproducibility a manual procedure – even with an ultrasonic cleaner – should only be used if a mechanical procedure is not an option. |
| Preconditioning is required in both cases. |

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Mechanical cleaning / disinfection (disinfector or washer disinfector).

When choosing and using a disinfector, ensure that
- the efficacy of the disinfector has been certified (e.g. DGHM or FDA approved and CE marking according to DIN EN ISO 15883),
- a certified program for thermal disinfection (minimum 5 min. at 90 °C / 194 °F or an A0 > 3000) is used (with chemical disinfection there is the risk of disinfectant residue on the instruments),
- the program used is suitable for the instruments and has an adequate number of rinse cycles,
- it uses only water that is sterile or has a low bacteria count (max. 10 bacteria / ml) and is low in endotoxins (max. 0.25 endotoxin units / ml) (e.g. purified water / highly purified water) for rinsing,
- the air used for drying is filtered,
- the disinfector is regularly serviced and checked,
- the Instructions for use of the disinfector are observed.

Cleaning agents.

When choosing a cleaning agent system, ensure that
- it is suitable for cleaning metal and plastic instruments,
- an additional disinfectant with certified efficacy (e.g. DGHM or FDA approved and CE marking) is used – provided that thermal sterilization is not used – and that it is compatible with the cleaning agent used, an additional disinfectant with certified efficacy (e.g. DGHM or FDA approved and CE marking) is used – provided that thermal sterilization is not used – and that it is compatible with the cleaning agent used,
- the concentrations given by the cleaning agent and disinfectant manufacturer are strictly adhered to.

Procedure.

1. Dismantle the instruments as far as possible.
2. Place the dismantled instruments in the disinfector. Ensure that the instruments do not come into contact with one another.
3. Start the program.
4. Remove the instruments from the disinfector when the program is complete.
5. Check and pack the instruments in a clean area as soon as possible after removal (see chapter Care, monitoring, maintenance, packaging), if necessary after additional drying.

Manual cleaning and disinfection.

When choosing a cleaning agent and disinfectant, ensure that
- they are suitable for cleaning and disinfecting metal and plastic instruments,
- the cleaning agent, if used, is suitable for ultrasonic cleaning (no foaming),
- a disinfectant with certified efficacy (e.g. DGHM or FDA approved and CE marking) is used and that it is compatible with the cleaning agent used,

Combined cleaning agents / disinfectants should not be used if possible.

The concentrations and reaction times given by the cleaning agent and disinfectant manufacturer should be strictly adhered to. Always use freshly prepared solutions, water that is sterile or has a low bacteria count (max. 10 bacteria / ml) and is low in endotoxins (max. 0.25 endotoxin units / ml) (e.g. purified water / highly purified water) and always use filtered air for drying.
Procedure - cleaning.

1. Dismantle the instruments as far as possible.

2. Immerse the dismantled instruments fully in the cleaning solution for the recommended reaction time (if required use an ultrasonic cleaner or brush carefully with a soft brush). Ensure that the instruments do not come into contact with one another.

   If applicable: rinse all hollow sections of the instruments five times at the beginning and at the end of the reaction time using a disposable syringe (minimum volume 5.0 ml).

3. Then remove the instruments from the cleaning solution and rinse thoroughly at least three times with water.

   If applicable: rinse all hollow sections of the instruments five times using a disposable syringe (minimum volume 5.0 ml).

4. Check the instruments (see chapter care, monitoring, maintenance, packaging).

Procedure - disinfecting.

5. Immerse the dismantled, cleaned and checked instruments fully in the disinfectant for the recommended reaction time. Ensure that the instruments do not come into contact with one another.

   If applicable: rinse all hollow sections of the instruments five times at the beginning and at the end of the reaction time using a disposable syringe (minimum volume 5.0 ml).

6. Then remove the instruments from the disinfectant and rinse thoroughly at least three times with water.

   If applicable: rinse all hollow sections of the instruments using a disposable syringe (minimum volume 5.0 ml).

7. Pack the instruments in a clean area as soon as possible after removal (see chapter care, monitoring, maintenance, packaging), if necessary after additional drying.

Note: Proof of basic suitability for effective manual cleaning and disinfecting was provided by an independent, accredited test laboratory using Bodedex® forte cleaning agent and Korsolex® plus disinfectant (Bode Chemie, Hamburg, Germany). The procedure described above was taken into account during the tests.

Care, monitoring.

Instruments should be checked after cleaning or cleaning/disinfection for corrosion, damaged surfaces, chipped edges and contamination. Damaged instruments should be discarded (limited reuse see p. 15). Instruments that are still contaminated should be cleaned and disinfected again.

Maintenance.

Reassembly of instruments (see chapter Reusability of surgical instruments).

Instrument oil should not be used if possible. If oil is to be used, ensure that only instrument oils (white oil) are used, which – depending on the maximum sterilization temperature used – are approved for steam sterilization and certified biocompatible.

Packaging.

Arrange the cleaned and disinfected instruments as required in the sterilization tray.

Wrap the instruments and sterilization tray in disposable sterilization packing (single or double wrap) and / or pack in sterilization containers that meet the following requirements:

- DIN EN ISO/ANSI AAMI ISO 11607-1/2
  (formerly: DIN EN 868/ANSI AAMI ISO 11607)
suitable for steam sterilization (temperature resistant to min. 134 °C / 273 °F adequate steam permeability)
adequate protection of the instruments and sterilization packaging against mechanical damage
regularly maintained according to the manufacturer’s instructions (sterilization containers)

Sterilization procedure.

Sterilization should only be completed using the sterilization procedures listed below; other sterilization procedures are not approved.

Steam sterilization.

- fractional vacuum method
- steam sterilizer in accordance with DIN EN 13060 or DIN EN 285
- maximum sterilization temperature 134 °C / 273 °F (plus tolerance in accordance with DIN EN ISO/ANSI AAMI ISO 17665 (formerly: DIN EN 554/ANSI AAMI ISO 11134)
- sterilization time (exposure time at the sterilization temperature) max. 20 mins at max. 135 °C / 275 °F
- max. pressure: 2.2 bar

Flash sterilization or gravitational method should never be used.

Do not use hot-air sterilization, X-ray sterilization, formaldehyde or ethylene oxide sterilization or plasma sterilization.

Correct storage.

After sterilization the instruments should be stored dry and dust-free in the sterilization packaging.

Material durability.

When choosing the cleaning agent and disinfectant, ensure that they do not contain the following components:

- organic, mineral or oxidizing acids (maximum permitted pH 9.5, a neutral/ enzymatic cleaner is recommended)
- strong alkali
- organic solvents (e.g. alcohol, ether, ketones, benzene)
- oxidation agents (e.g. hydrogen peroxide)
- halogens (chlorine, iodine, bromine)
- aromatic/halogenated hydrocarbons
- heavy metal salts

Never clean instruments and sterilization trays with metal brushes or steel wool.
**Torque ratchet**

**Disassembly.**

Completely loosen torque adjustment screw ➄ and remove the spring ➃. Pull ratchet head ➁ with the threaded rod from the scale sleeve ➂.

*After assembly and before each use check the correct function of the torque ratchet.*

*Blocking function – “∞” mark.*

*Ratchet head, assembled.*

*Ratchet head, disassembled.*

*Never loosen these screws as the ratchet will lose its torque function.*
Assembly.

To assemble the torque ratchet correctly, connect the components in the following order: first remove the pin ➅ as described above and insert the ratchet wheel ➀.

Caution: To avoid confusion, the ratchet wheel ➀ can only be inserted on one side.

Lubricating point (●)

Lubricate the areas marked with the drop symbol with maintenance oil for handpieces. Then assemble the ratchet components as described below and perform a function test.

Slide the spring ➄ back over the torque adjustment screw ➅. Pass the ratchet head ➁ with the threaded rod through the scale sleeve ➆ and screw to torque adjustment screw ➅.

After assembly and before each use check the correct function of the torque ratchet. If there is an audible regular ratchet noise and the mechanism of the torque limit functions, the instrument is functioning correctly.

Sterilization.

The instrument must be sterilized with steam at 134 °C / 273 °F for 18 minutes.

Apply the regulations in force in the country where the instrument is used.

Before sterilization, the torque ratchet must be completely assembled and set to the lowest torque.

Sterilize according to sterilization cycles recommended by the manufacturer of the autoclave. We recommend the use of devices equipped with a vacuum pump (type B) to decrease the risk of formation of air pockets.

We advise against the use of a hot air sterilizer because it can lead to ageing of the spring and subsequently have an adverse effect on the instrument’s precision. Find more information on the preparation of medical devices at www.rki.de or www.a-k-i.org.
Material composition.

Implants ø 3.3, 3.7 and 4.2 mm
Titanium Grade 5

Implants ø 4.8 and 5.5 mm
Titanium Grade 4

Closure screws
Titanium Grade 5

Depth-stop sleeves
Polycarbonate USP Class VI

Gingiva former
Titanium Grade 5

Impression post:
- Impression post, open
- Screw for impression post, open
- Impression post, closed and screw
- Impression cap for impression post, closed

Temporary abutments:
- Screw for temporary abutment

Titanium abutments:
- Titanium abutments straight/angulated
- CAD/CAM titanium base, thin
- CAD/CAM titanium block, thin

Scan abutments
Titanium Grade 5

Stainless steel abutments:
- Cast-to base
- Burn-out acrylic

4Base abutments

4Base caps:
- 4Base plastic caps
- 4Base titanium cap, laser weldable
- 4Base titanium cap, adhesive technique
- 4Base closure screw
- 4Base impression post, open
- Screw for 4Base impression post, open
- 4Base impression post, closed
- Impression cap for 4Base impression post, closed
- 4Base scan cap

4Base laboratory implant
Titanium Grade 5

Ball abutment
Titanium Grade 5

Ball abutment laboratory implant
Aluminum

Matrix Dalbo®-PLUS
Titanium Grade 5

Lamellae retention insert
Elitor®

tioLOC abutment
Titanium Grade 5

LOCATOR® matrix
Titanium Grade 5

LOCATOR® retention inserts
Titanium Grade 5

LOCATOR® laboratory implant
DuPont™ Zytel® 101L NC10 Nylon (Polyamide 66)

LOCATOR® impression cap:
- Insert LOCATOR® impression cap

Prosthetic screws:
- AnoTite screws
- Prosthetic screws

Titanium Grade 5

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Titanium Grade 4 DIN EN ISO 5832-2

Chemical composition [% by mass]

- O: 0.4 % max.
- Fe: 0.5 % max.
- C: 0.1 % max.
- N: 0.05 % max.
- H: 0.0125 % max.
- Ti Residue

Physical and mechanical properties

- 0.2% yield strength: 520 MPa min.
- Tensile strength: 680 MPa min.
- Elongation at rupture: 10 % min.

Titanium Grade 5 DIN EN ISO 5832-3

Chemical composition [% by mass]

- Al: 5.5 % – 6.75 %
- V: 3.5 % – 4.5 %
- Fe: 0.3 % max.
- C: 0.08 % max.
- N: 0.05 % max.
- H: 0.015 % max.
- O: 0.2 % max.
- Ti Residue

Physical and mechanical properties

- 0.2% yield strength: 780 MPa
- Tensile strength: 860 MPa
- Elongation at rupture: 10 % min.

Precious metal alloy

Chemical composition [% by mass]

- Au: 60 %
- Pt: 19 %
- Pd: 20 %
- Ir: 1 %

Physical and mechanical properties

- Density: 17.5 g/cm³
- Melting range: 1400 °C – 1490 °C
  2552 °F – 2714 °F
- Tensile strength: > 750 MPa
- Hardness: > 215 HV5
- 0.2 % yield strength: > 650 MPa
- Modulus of elasticity: 136 GPa
- Elongation at rupture: > 2%
- CTE [25 – 500 °C / 77 – 932 °F]: 11.9 x 10⁻⁶ K⁻¹
- CTE [25 – 600 °C / 77 – 1112 °F]: 12.2 x 10⁻⁶ K⁻¹
- Condition: 15 – 75 % KV
- Precious metal abutment S: 0.307 g
- Precious metal abutment M: 0.359 g
- Precious metal abutment L: 0.482 g

PEEK

Chemical composition [% by mass]

Thermoplastic high-performance polymer

Physical and mechanical properties

- Yield strength: 95 MPa
- Elongation: > 25 %
- Modulus of elasticity: 4.2 GPa
- Operating temperature: 260 °C/300 °C (500°F/572°F)
  (continuous/temporary)