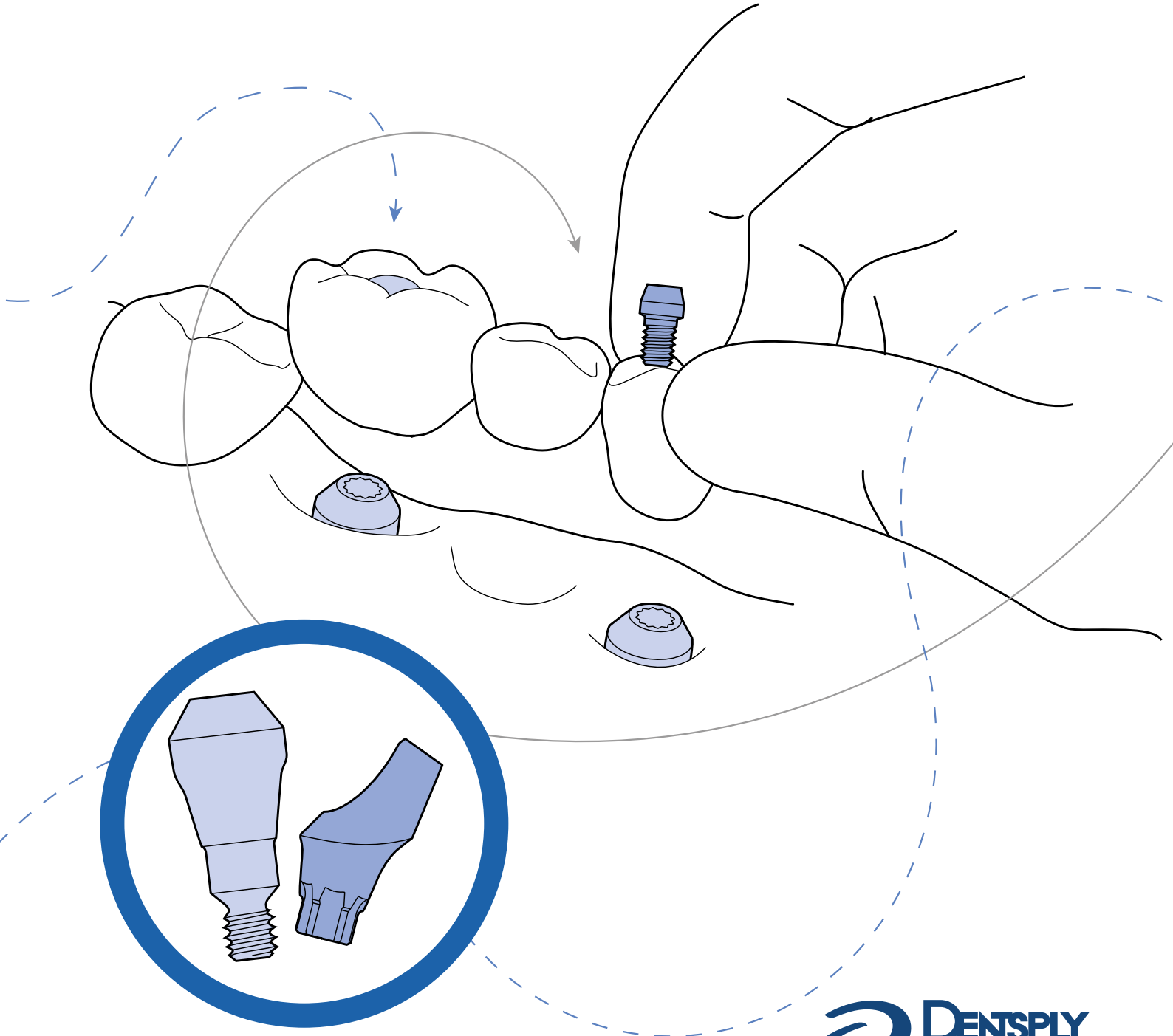
ASTRA TECH
IMPLANT SYSTEM

Clinical & laboratory manual

Screw-retained restorations

ASTRA TECH Implant System™ EV



DENTSPLY IMPLANTS

The ASTRA TECH Implant System EV is designed for ease of use and versatility in providing treatment solutions for your implant patients.

The foundation of this evolutionary system remains the unique ASTRA TECH Implant System BioManagement Complex, which has been proven to predictably provide long-term marginal bone maintenance and esthetic results.

ASTRA TECH
IMPLANT SYSTEM

CONTENTS

This manual is designed for use by clinicians who have undergone at least basic prosthetic and in-clinic implant training. Staying current on the latest trends and treatment techniques in implant dentistry through continued education is the responsibility of the clinician.

All products may not be regulatory cleared/released/licensed in all markets. Please, contact the local DENTSPLY Implants sales office for current product assortment and availability.

Product illustrations are not to scale.

Restorative overview

Temporary solutions

Single-unit

Screw-retained

- TempDesign™ EV
- Temp Abutment EV

Multi-unit

Screw-retained

- Uni Abutment EV
  – Temporary Cylinder
- Angled Abutment EV
  – Temporary Cylinder

Final solutions

Single-unit

Screw-retained

- ATLANTIS™ Crown Abutment
- CastDesign™ EV

Multi-unit

Screw-retained

- Uni Abutment EV/Angled Abutment EV
  – ATLANTIS™ ISUS Bridge
  – ATLANTIS™ ISUS Hybrid
  – Semi-Burnout Cylinder
  – Burnout Cylinder

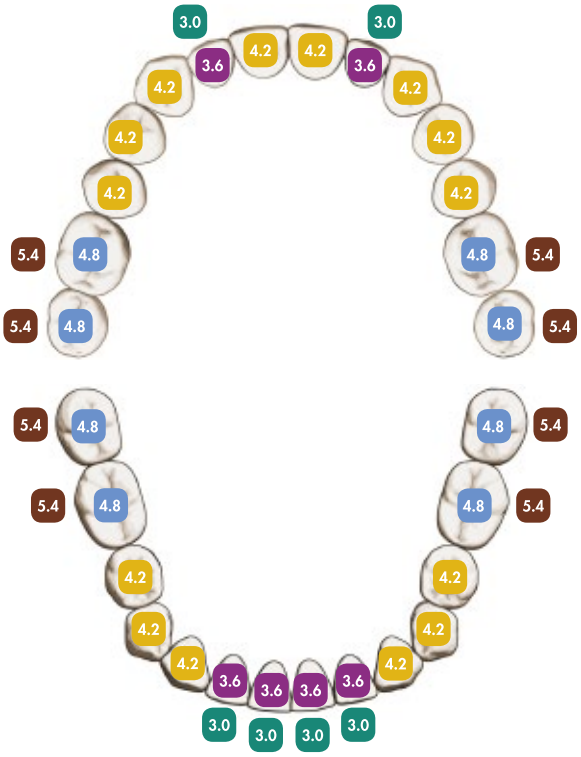
Abutment overview

ASTRA TECH Implant System EV includes an abutment assortment, including patient-specific abutments and a wide range of prefabricated abutments designed to satisfy all implant indications. The abutments are produced in different materials in order to support varying loading conditions and choice of permanent restoration.Throughout this manual symbols are used to illustrate the indexings options. Below is a comprehensive overview of the abutments and symbols.

Final abutments	Indexing option	Clinical application	Features and benefits	Page
Uni Abutment EV Titanium 	Index free 	• Partial and fully edentulous situations • All positions in the mouth	• Design facilitates non-parallel implants • Compatible with ATLANTIS ISUS • One prosthetic connection for all implant interface connections • Compensates for implants that diverge/converge up to 66 degrees	17
Angled Abutment EV Titanium 	Six positions  Index free 	• Partial and fully edentulous situations • All positions in the mouth	• 20 degree angulation • One prosthetic connection for all three implant interfaces (3.6, 4.2 and 4.8 mm) • Compatible with ATLANTIS ISUS	17
ATLANTIS™ Crown Abutment Zirconia 	One-position-only 	• Single, partial and fully edentulous situations • All positions in the mouth • Single-tooth, screw-retained restoration **Note:** Use of zirconia abutments should be carefully evaluated in situations with unfavorable loading conditions and in the molar region	• Patient-specific abutments individually designed from the final tooth shape utilizing by the ATLANTIS VAD software	33
CastDesign™ EV Base: Gold-alloy Cylinder: PMMA Burn-out plastic 	Six positions 	• Single, partial and fully edentulous situations • Screw-retained restorations, limited to single-tooth only • Cement-retained restorations, all positions in the mouth **Note:** In cases where high biteforces are expected it is recommended to select a titanium abutment if possible. CastDesign should primarily be regarded as an abutment used when no titanium option is available.	• Designed in the laboratory • Compensates for angulations up to 30 degrees	33
Temporary abutments	**Indexing option**	**Clinical application**	**Features and benefits**	**Page**
TempDesign™ EV Base: Titanium Cylinder: PEEK plastic 	Six positions 	• Single, partial and fully edentulous situations • Screw-retained restorations, limited to single-tooth only • Cement-retained restorations, all positions in the mouth	• Designed for reduction technique • Facilitates soft tissue sculpturing • Developed for esthetic temporization • Design compensates for off-set positions • PEEK plastic – recommended for clinical use up to 180 days	38
Temp Abutment EV Titanium 	Six positions 	• Single, partial and fully edentulous situations • Screw-retained restorations, limited to single-tooth only • Cement-retained restorations, all positions in the mouth	• Designed for individual build-up technique • Developed for large multi-unit restorations • Designed for long-term temporization	38

Implant size/tooth position

The design philosophy of the ASTRA TECH Implant System EV is based on the natural dentition utilizing a site-specific, crown-down approach supported by an intuitive surgical protocol and a simple prosthetic workflow.



Multiple considerations are required for each individual tooth, such as the support needed for the final restoration in the particular position, soft-tissue healing, and implant design and size.

The illustration indicates the recommended implant sizes in relation to the natural dentition, provided there is sufficient bone volume and space in relation to adjacent dentition.

One system – one torque

All final abutments are designed for a uniform torque (25 Ncm), for added simplicity.

Due to clinical considerations, the temporary abutments have been verified for a lower torque (15 Ncm).

A lower torque (15 Ncm) is also applied on the restorative level for the bridge screws.

Implant-abutment interface connection

The **OsseoSpeed EV** implant has a unique interface for one-position-only placement of ATLANTIS patient-specific abutments. The interface also allows for the flexibility of six-position indexing of prefabricated abutments, while index-free abutments can be seated in any rotational position.

OsseoSpeed EV

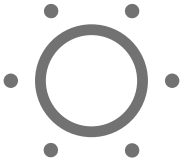
Abutment placement option

One-position-only

ATLANTIS patient-specific, CAD/CAM abutments will seat in one position only.

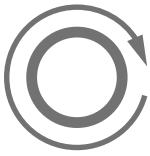
Six positions

Indexed abutments will seat in six available positions.



Index free

Index free abutments will be seated in any rotational position.



Color coding

Throughout the ASTRA TECH Implant System EV, markings, color-coding and geometrical designs simplify the correct identification of corresponding components.

Each implant-abutment connection size is identified by a specific color, which is used consistently throughout the system. The color is applied directly to components and instruments, as well as on packaging and informational material, where appropriate.

The following components and/or packaging are color-coded:

Green	Purple	Yellow	Blue	Brown
3.0	3.6	4.2	4.8	5.4
Ø 3.0	Ø 3.6	Ø 4.2	Ø 4.8	Ø 5.4

Packaging for components on implant-level

Abutment screws for two-piece abutments

Healing components

Impression and laboratory components on implant-level

Pre-operative procedures

Pre-operative examination

The pre-operative examination should include a general evaluation of the patient's health and clinical and oral radiographic examinations. Particular attention should be given to mucous membranes, jaw morphology, dental and prosthetic history, and signs of oral dysfunction.

Radiographic analysis should be used to evaluate bone topography of the residual alveolar process. The initial radiographic evaluation, together with the clinical examination, is the basis for determining whether or not a patient is a candidate for implant treatment.

If the patient is found to be suitable, a more thorough clinical examination of the area for treatment and the opposing jaw should be performed. Any local pathology in the jaws should be treated before implant placement.

Pre-operative planning

Pre-operative planning should be based on the expected restorative treatment outcome. The ASTRA TECH Implant System EV assortment is designed to meet the prosthetic needs for the tooth replacement planned. The prosthetic versatility in materials, designs and sizes is aligned with the implant for support of the tooth replacements in the different positions in the jaw.

To achieve the expected outcome, treatment planning should include all stages of the procedure, from healing time and components to provisional and final restorations.

Models mounted on an articulator give information of the relationship between the jaws and teeth. A diagnostic wax-up with the missing teeth replaced provides important information in the planning phase. Based on analysis and evaluation of the occlusal table, force distribution and preferred sites for the implants, an optimal plan can be achieved. The transparent Radiographic Implant Guides displaying implants in different magnifications are helpful in planning optimal position, direction and implant size.

SIMPLANT computer guided implant treatment software, can be used for the ASTRA TECH Implant System EV to ensure accurate planning for optimal implant position and placement.

Even though the final treatment approach may be determined at the time of surgery, consider the following based on the quality of supporting bone and expected initial stability of the implant(s):

- One- or two-stage surgical procedure
- Immediate or early loading protocol
- Expected healing time before loading

When the prerequisites for immediate loading cannot be met, an early loading protocol (at least six weeks healing period) may be considered.

In all situations, bone quality and quantity, primary stability achieved, design of restoration, and loading conditions should be carefully examined and assessed by the clinician when determining time to loading of implants for each individual case.

Before treatment begins, the patient should be informed about the results of the pre-operative examination and given a clear explanation of what is entailed by the planned treatment, including the expected outcome, maintenance requirements and risks involved.

Restorative procedures

The following chapter provides detailed procedures for restoring OsseoSpeed EV implants. Restorations can be built from implant or abutment level.

In addition to supporting a functional tooth replacement, the permanent abutment should also minimize the risk for overload and fractures by transferring forces to the implant.

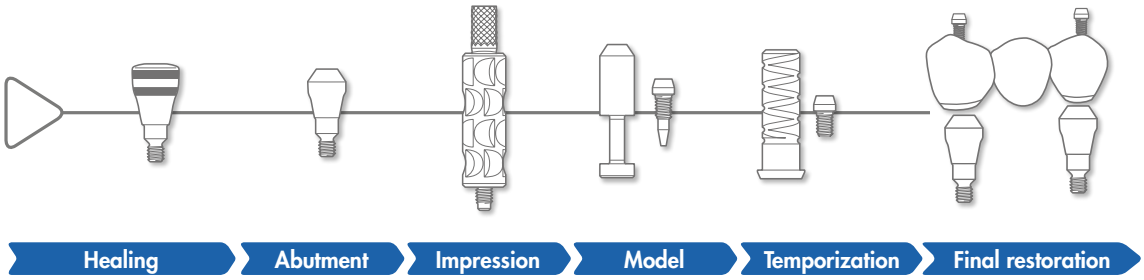
Abutment selection should take into account the following:

- Clinical application – single, partial and fully edentulous situations
- Type of restoration – technique and material
- Implant-level or abutment-level impression technique
- Anterior or posterior location
- Esthetic demands
- Implant angulations
- Tissue conditions
- Occlusal interproximal space
- Adjacent teeth

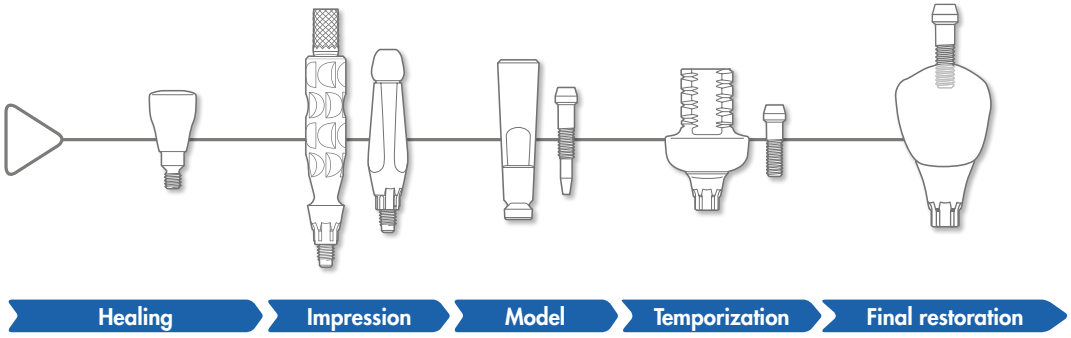
Orientation

The procedure sequence, as seen below, illustrates the different restorative stages and the products used and can be found throughout the manual for easy reference. The stage of the treatment procedure being reviewed is highlighted with a circle.

Restoring on abutment-level



Restoring on implant-level



Identification and markings

The markings, color coding, and geometrical design of the ASTRA TECH Implant System EV helps to simplify the identification of corresponding components.

Each implant-abutment connection size is identified by specific colors which are used consistently throughout the system, and have been applied directly to components and instruments, as well as on packaging and information material, where applicable.

Implant level

	3.0	3.6	4.2	4.8	5.4
Healing components	 Healing Uni EV	 Healing Uni EV	 Healing Uni EV	 Healing Uni EV	 Healing Uni EV

Products and their identification and markings for healing, impression and lab components related to ATLANTIS Crown Abutment and CastDesign EV can be seen in the cement-retained manual for Osseospeed EV.

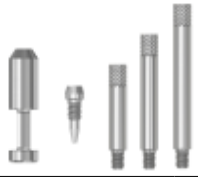
Healing Uni EV

- Marked to identify diameter
- Color coded

Uni Abutment EV Heal Cap

- Marked to identify diameter
- Color: N/A

Abutment level – Uni Abutment EV

	3.0	3.6	4.2	4.8	5.4
Healing components	 Uni Abutment EV Heal Cap EV				
Impression components	 Uni Abutment EV Pick-Up/Uni Abutment EV Transfer				
Laboratory components	Uni Abutment EV Replica Lab Bridge Screw EV Lab Abutment Pin EV 			Semi-burnout Cylinder EV Burnout Cylinder EV Temporary Cylinder EV 	

Abutment level – Angled Abutment EV

	3.0	3.6	4.2	4.8	5.4
Healing components	N/A	 Angled Abutment EV Heal Cap			N/A
Impression components	N/A	 Angled Abutment EV Pick-Up			N/A
Laboratory components	N/A	Lab Bridge Screw EV Lab Abutment Pin EV Angled Abutment EV Replica 		Angled Abutment EV – Semi-burnout Cylinder – Burnout Cylinder – Temporary Cylinder 	N/A

Bridge Screw EV

Bridge Screw EV has a light blue color. The color is not indicating any implant interface connection color.

Clinical application

OsseoSpeed EV implants are indicated for immediate placement in extraction sites and/or in partially or completely healed alveolar ridges using a one- or two-stage surgical procedure.

Implants with the OsseoSpeed surface are especially indicated for use in soft bone applications where implants with other surface treatments may be less effective.

OsseoSpeed EV implants can be used in an immediate loading protocol. However, for single-tooth replacement in soft bone or when using a 6 mm implant, where primary implant stability may be difficult to maintain, immediate loading may not be appropriate and thus not recommended.

Based on mechanical strength considerations, it is recommended to always place the widest implant possible

Implant shape	General clinical application	3.0	3.6
Straight 	Suitable in the majority of situations.	For replacement of maxillary lateral and mandibular central and lateral incisors when there is not enough space for a wider implant.	Used in situations with limited bone volume or space between adjacent teeth, where a 4.2 mm implant is judged to be too wide.
Conical 	In situations where limited bone volume and a larger prosthetic platform is preferred.	N/A	N/A

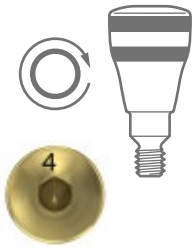
Precaution: When treatment planning for implant with 6 mm length consider the widest possible implant, a two-stage surgical approach and splinting of implants. Closely monitor the patient for peri-implant bone loss or change in the implants' response to percussion. If the implant shows greater than 50% bone loss or mobility, consider possible removal of implant.

for the edentulous space. This is particularly important in the posterior regions of the jaws where loading forces are high and considerable bending moments could be generated. In all cases, it is important to consider loading conditions when determining the number and spacing of implants.

	4.2	4.8	5.4
	Suitable in the majority of situations.	Used in situations with enough bone volume.	Suitable in situations with wide ridges and large edentulous spaces.
	Suitable in situations with limited bone volume where a 3.6 mm implant diameter is the choice but where a larger prosthetic platform is preferred.	Suitable in situations with bone volume where a 4.2 mm implant diameter is the choice but where a larger prosthetic platform is preferred.	N/A

Healing Uni EV

The healing components are developed to support the surrounding soft tissue and give a predictable treatment situation by geometries in close correspondence to the final abutments.

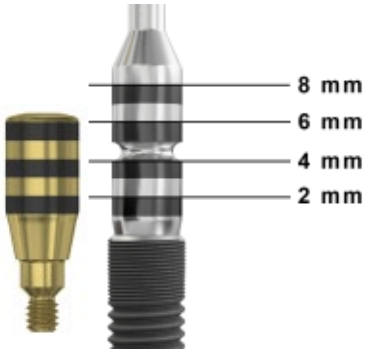


Healing Uni EV

Healing Uni EV is used for soft tissue support during the healing phase and is designed to support and simplify permanent abutment selection.

- Harmonized with the heights and diameters for the final Uni Abutment EV
- Laser etched bands for gauging

Clinical procedure

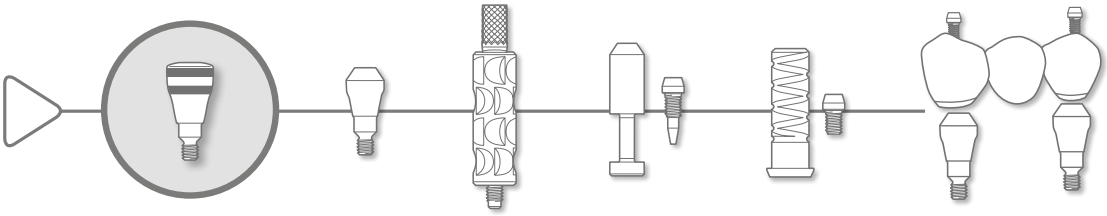


Abutment Depth Gauge EV

- One tip design for each implant interface connection.
- A waist on the tip for identification of 4–5 mm depth mark.
- Color: according to implant.
- The abutment depth gauges correspond with the Healing Uni EV laser etched bands.

Measure height

- Use the Abutment Depth Gauge EV to measure soft tissue height to select the appropriate Healing Uni EV (or Uni Abutment EV).



Pick up

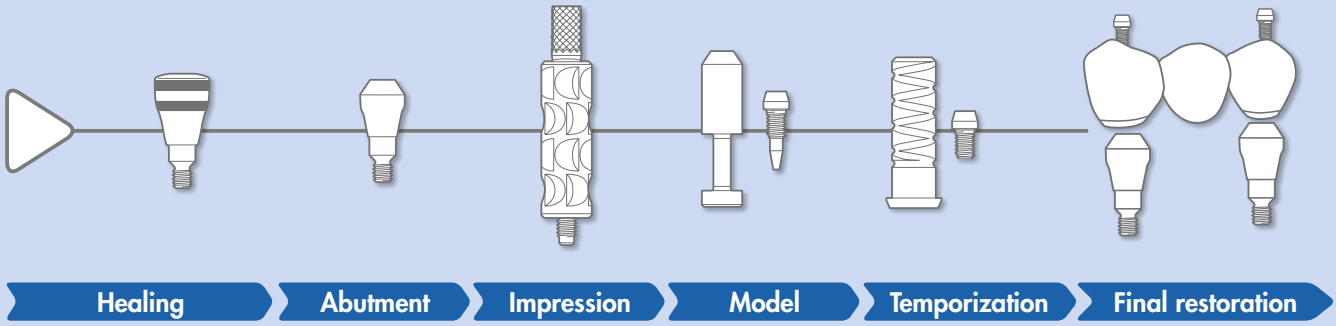
- Pick up and install the sterile Healing Uni EV directly from the blister package, using the Hex Driver EV.

Installation

- Manually seat and secure the healing abutment using light finger force (5–10 Ncm).

Workflow – Uni Abutment EV

The procedure sequence, as seen below, illustrates the different restorative stages and the products used and can be found throughout the manual for easy reference. The stage of the treatment procedure being reviewed is highlighted with a circle.



Uni Abutment EV

Clinical application

- Partial and fully edentulous situations
- All positions in the mouth

Uni Abutment EV

A solid prosthetic interface with a 33° top cone and a M1.8 mm Bridge Screw. The design facilitates non-parallel implant situations up to 66°.

- Compatible with ATLANTIS ISUS suprastructures
- All implant interface connections

Angled Abutment EV

An angled prosthetic interface with a 20° top cone and a M1.8mm Bridge Screw. The design facilitates nonparallel implant situations with unfavorable situated bridge screw channels.

- Compatible with ATLANTIS ISUS suprastructures
- Available for implant interface connections 3.6 – 4.8

Digital framework process

ATLANTIS™ ISUS Bridge

Intended for screw-retained prosthesis designed for porcelain or acrylic application. The design allows for individual space for veneering material and surface structure.

ATLANTIS™ ISUS Hybrid

Intended for screw-retained prosthesis, commonly used for acrylic denture teeth with individual support for each tooth, as a “wrap-around” or a “wrap-on” solution.

Conventional casting process

Uni Abutment EV Semi-Burnout Cylinder
Angled Abutment EV Semi-Burnout Cylinder

High precious non oxidizing gold base incorporated in the casted framework.

Uni Abutment EV Burnout Cylinder
Angled Abutment EV Burnout Cylinder

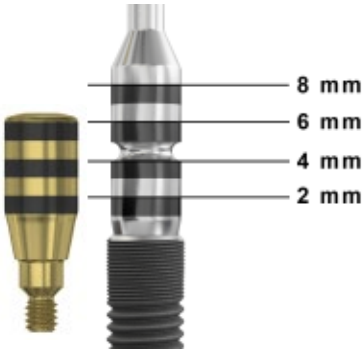
Burn-out cylinder – plastic template replaced with arbitrary metal alloy.

Uni Abutment EV

Uni Driver EV

- An installation and removal procedure with only one reusable tool

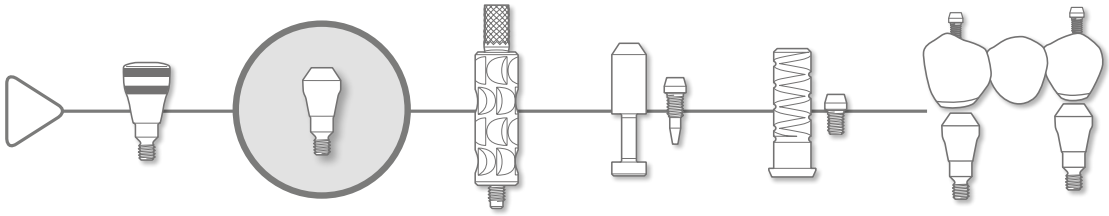
Clinical procedure



Uni Abutment EV

- Before abutment installation, remove the healing abutment or temporary restoration and register the soft tissue height for proper selection of the final abutment.
- Select the appropriate Uni Abutment EV according to the soft tissue height. It is preferable to place the abutment margin 1 mm below the soft tissue.

Note: The final Uni Abutment EV can be selected either by measuring with the Abutment Depth Gauge EV or by tissue height markings on the Healing Uni EV.

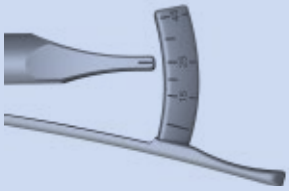


Pick up

- Attach the Uni Driver EV to the Restorative Driver Handle EV. Pick up the Uni Abutment EV with the driver by gently pressing the driver downwards. The driver is properly seated when it clicks into place.

Abutment installation

- Install the abutment using the Uni Driver EV and the handle.
- Use the Restorative Driver Handle EV together with the Uni Driver EV and Torque Wrench EV to tighten to the recommended torque (25 Ncm).
- Release the Uni Driver EV using a small wiggling motion while lifting the driver gently.



Uni Abutment EV Heal Cap

- Manually seat and secure the Uni Abutment EV Heal Cap onto the Uni Abutment EV.

Heal caps support soft tissue contouring on abutment level and also protect the final abutment.

- Guiding Tip
- Harmonized with Uni Abutment EV Pick-Up diameters.
- Color: N/A

Uni Abutment EV Pick-Up/ Uni Abutment EV Transfer

Different impression components can be used to transfer the correct situation to the laboratory master model. These include pick-ups and transfers for different tray techniques. The design of each impression component takes into consideration the following aspects:

- Open- or closed-tray impression technique
- Occlusal space and adjacent teeth relation

Uni Abutment EV Pick-Up

- Integrated pin for safe handling
- Color: N/A

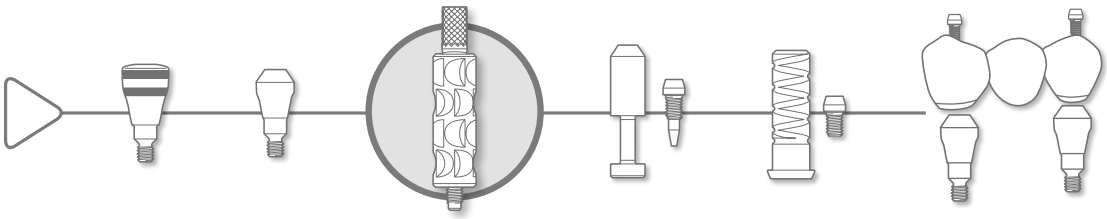
Uni Abutment EV Transfer

- Color: N/A

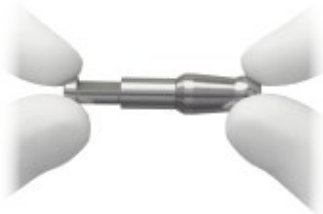
Clinical procedure – Open tray

Open Tray

- The Uni Abutment EV Pick-Ups are harmonized with the Uni Abutment EV Heal Caps (Ø 4.3 and Ø 5.5 mm) to support replication of the soft tissue and pick up the individual healed situation.
- Connect the pick-up using the Hex Driver EV.
- Secure the pick-up using manual tightening torque (5–10 Ncm).
- Apply impression material around the pick-up separately.
- Place the tray, filled with the impression material and take the impression.
- Once the impression material has set, unscrew the pin and remove the impression.
- Check the impression for correct and stable retention of the pick-ups.
- Remount Uni Abutment EV Healing Cap onto the Uni Abutment EV after taking impression.



Clinical procedure – Closed tray



Closed Tray

- Connect the Uni Abutment EV Transfer manually.
- Secure the transfer using manual tightening torque (5–10 Ncm).
- Inject elastomeric impression material around the transfers and in the tray and take the impression.
- Once the impression material has set, remove the impression from the mouth and then unscrew the transfers.
- Mount a Uni Abutment EV Replica to the transfer outside the impression and re-insert into the impression carefully. Check for correct and stable retention.
- Remount Uni Abutment EV Heal Cap onto the Uni Abutment EV.

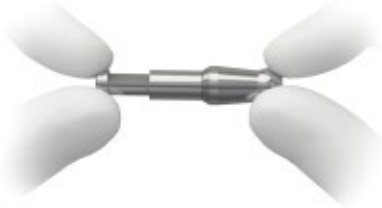
Uni Abutment EV Replica

The restorative laboratory procedure primarily requires a master model comprising abutment replicas usually fabricated from an impression with connective components, such as abutment pick-ups and abutment transfer.

Uni Abutment EV Replica

- Color: N/A

Laboratory procedure



Open Tray
Uni Abutment EV Pick-Up

- Connect the Uni Abutment EV Replica to the Uni Abutment EV Pick-Up and tighten without damaging the impression.
- Secure the pick-up using manual tightening torque (5–10 Ncm).

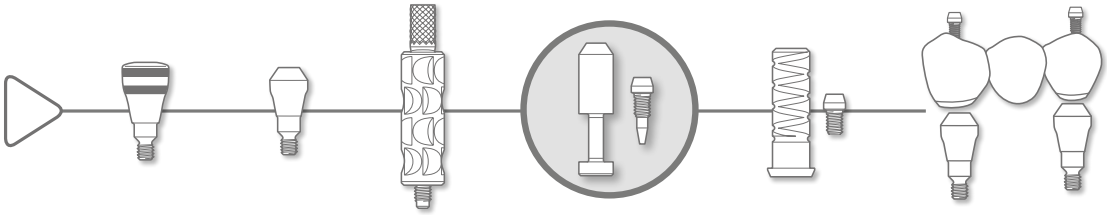
Closed Tray
Uni Abutment EV Transfer

- Mount a Uni Abutment EV Replica to the transfer outside the impression and re-insert into the impression carefully.
- Check for correct and stable retention.

Master model

- Prepare the impression for duplication with a removable soft tissue mask by applying silicone around the Uni Abutment EV Replica sites.
- Pour high quality stone and fabricate the master model.

Note: Uni Abutment EV Replica is for single use.



Laboratory products

Lab Abutment Pin EV

- Indicates direction and preserves screw access channel during wax-up and veneering.
- Available in three different lengths
- Color: N/A

The lab procedures also require product modification.

To support these customization activities, numerous corresponding lab components are necessary. These are clearly differentiated from their clinical counterparts and are not possible to use in vitro. Additionally, grinding handles, screwdrivers and the other lab products have been developed to support efficient and safe customization.

Polishing Protector Uni EV

- Protects the cylinder cone on Uni Abutment EV during finalization of restoration framework.

Lab Bridge Screw EV

Lab Bridge Screw EV fits only into the Abutment Replica EV due to its specific design.

- Cannot be used clinically on Uni Abutment EV.
- Guide tip supports efficient lab handling.
- Color: N/A

Temporization

Uni Abutment EV Temporary Cylinders provide a base for temporary bridges but are also designed to prepare the soft tissue for permanent restoration after the healing process.

Uni Abutment EV Temporary Cylinder

- Designed to support both occlusal and lateral loading conditions
- Color: N/A

Laboratory procedure

Uni Abutment EV Temporary Cylinder

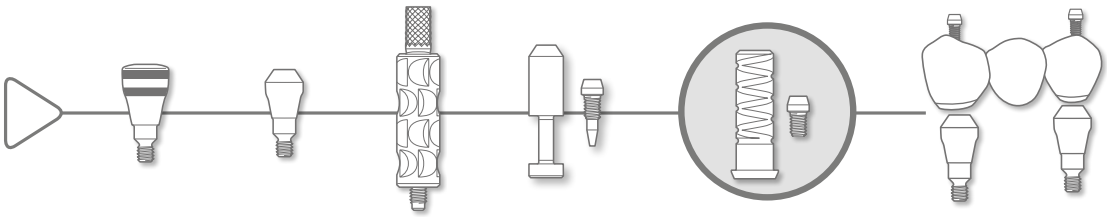
- Perform temporization at the laboratory. Take an impression on abutment level (see impression procedures section). Use a high quality stone model with a removable soft tissue mask.
- Seat the Uni Abutment EV Temporary Cylinders to the Uni Abutment EV Replicas with Lab Bridge Screw EV or Lab Abutment Pin EV.
- Try in the cylinders. Determine the need for modification and mark with a fine tip pencil.

Modification

- Release the cylinders from the model and customize in the Grinding Handle with a Uni Abutment EV Replica separately.

Laboratory Bridge Screw EV

- Use a Laboratory Bridge Screw when fabricating the temporary restoration. The screw should be replaced with a clinical Bridge Screw EV for placement of the temporary bridge in the clinical situation.



Build up

- Fabricate and attach a metal or fiber reinforced bridge framework to the cylinders.
- Opaque masking is recommended above the margin on the titanium cylinder surface for better esthetics.
- Build up the framework with prefabricated teeth and acrylic or composite veneers and avoid covering the cylinder margins.

Final restoration

- Use Lab Abutment Pin EV to preserve screw access channel during acrylic veneering.
- Finalize the temporary bridge by curing and polishing.
- Clean the temporary restoration.

Bridge installation

- Install the cleaned restoration with the Bridge Screw EV using the Hex Driver EV.
- Use the Restorative Driver Handle EV together with the Hex Driver EV and Torque Wrench EV to tighten to the recommended torque (15 Ncm).
- Seal the screw access channel using preferred technique.

Fabrication of ATLANTIS™ ISUS restoration

Laboratory procedures for ATLANTIS ISUS CAD/CAM implant suprastructures.

ATLANTIS™ ISUS Bridge

Intended for screw-retained prosthesis designed for porcelain or acrylic application. The design allows for individual space for veneering material and surface structure.

ATLANTIS™ ISUS Hybrid

Intended for screw-retained prosthesis, commonly used for acrylic denture teeth with individual support for each tooth, as a "wrap-around" or a "wrap-on" solution.

Bridge Screw EV

- M1.8 Bridge Screw
- Color: N/A

Laboratory procedure

ATLANTIS ISUS

- Order a bridge restoration with the Uni Abutment EV interface connection by creating an order in ATLANTIS WebOrder – www.atlantisweborder.com.

Note: New users must register to access ATLANTIS WebOrder. Click the Register link to start the registration process. An ATLANTIS WebOrder user guide and start-up material are also available. Contact your DENTSPLY Implants representative for assistance.

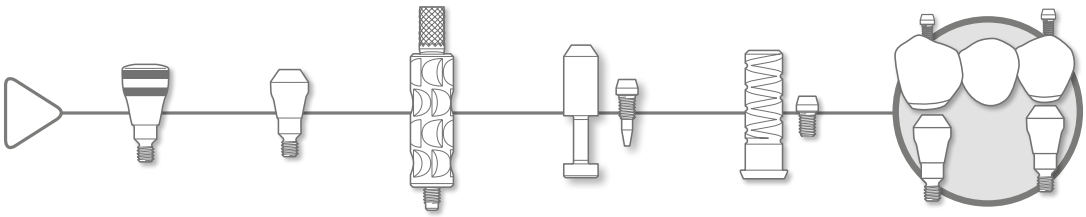
Wax up

- ATLANTIS ISUS bridge and hybrid require a diagnostic tooth set-up (referred to as "ISUS CAD design" in ATLANTIS WebOrder) or a reduced diagnostic wax-up (referred to as "Design guidance" in ATLANTIS WebOrder).
- The removable reduced diagnostic wax-up provided will be used to replicate the design of the final bridge/hybrid suprastructure. Material dimensions will be checked for strength before the milling of the implant suprastructure.

Order

- Enter your order in ATLANTIS WebOrder (www.atlantisweborder.com). Print and send the order ticket with the model in the ATLANTIS CaseSafe box to DENTSPLY Implants.

Note: All ATLANTIS ISUS orders require design approval, which means that a design file will be sent for both "ISUS CAD design" and "Design guidance".



Clinical procedure

Design and manufacturing

- The model and the diagnostic tooth set-up are scanned.
- ATLANTIS ISUS CAD design is uploaded for customer to review and approve in ATLANTIS ISUS Viewer.
- Changes and/or approval of the design are communicated back before manufacturing.

Note: implant suprastructures are milled only after review and final approval of the CAD design, in ATLANTIS ISUS Viewer.

Final restoration

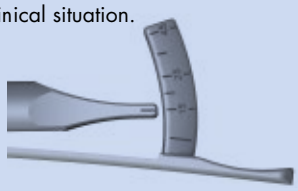
- The final prosthesis can be fabricated once the ATLANTIS ISUS implant suprastructure is received.
- Consult the separate ATLANTIS ISUS Design Guide for detailed handling procedures in the laboratory.

Note: The Lab Bridge Screw EV is recommended to be used preclinically with ATLANTIS ISUS implant suprastructures for the ASTRA TECH Implant System EV.

Final restoration

- Install the cleaned restoration with the Bridge Screw EV to recommended torque value (15 Ncm) using the restorative Driver Handle EV together with Hex Driver EV and Torque Wrench EV.
- Cover the screw head before the screw channel is filled with a suitable material.
- Check the contact with adjacent teeth and make corrections to the occlusal relation as needed.

Note: The Lab Bridge Screw should be replaced with a clinical Bridge Screw for placement of the final restoration in the clinical situation.



Fabrication of restoration

Lab procedures for conventional wax-up technique with a burnout and casting process.

Uni Abutment EV Semi-burnout Cylinder
Uni Abutment EV Burnout Cylinder

- Available in two materials for different restorative solutions
- Color: N/A

Bridge Screw EV

- M1.8 Bridge Screw
- Color: N/A

Laboratory procedure

Framework design

- Manufacture the permanent restoration according to general restorative principles; take into consideration factors like loading conditions in relation to implant position/angulation/size.
- Seat the Uni Abutment EV Cylinders to the Uni Abutment EV Replicas with Lab Bridge Screw EV or Lab Abutment Pin EV.
- Try in the cylinders. Determine the need for modification and mark with a fine tip pencil.

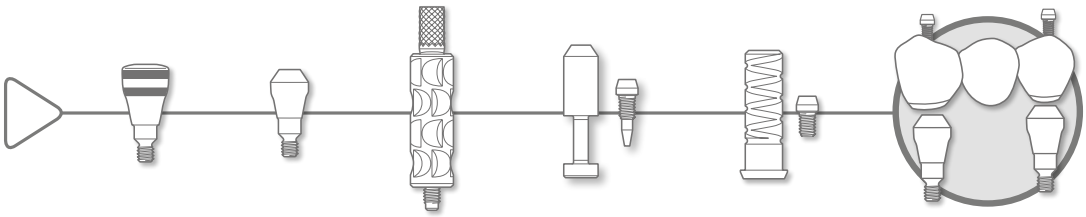
Modification

- Release the cylinders from the model and customize in the Grinding Handle with a Uni Abutment EV Replica separately.
- Perform height reduction but avoid modification on the screw seating portion of the cylinder

Note: Always mount the customizable cylinders in a Grinding Handle with a separate abutment replica for safe and easy modification. Use appropriate cutters/grinders to modify to correct height.

Wax up/Burnout

- Cylinders are integrated in a wax-up framework designed for either PFM or acrylic restoration technique.
- Use Lab Abutment Pin EV to preserve screw access channel during wax-up preparations for the investing, burn-out and cast-to procedure are made.
- The plastic part on the cylinders are combusted and only the gold base is left incorporated in the casted metal alloy framework.
- The burn-out cylinder is totally combusted and replaced with arbitrary metal alloy during casting.



Clinical procedure

Divesting

- Divest the framework. Make sure the screw access hole is free from investment material, not to violate screw joint properties and the screw seat surface is unmodified.
- Make sure not to damage the conical part of the cylinder during blasting by using the Polishing Protector Uni EV.
- The Polishing Protector Uni EV is connected to the conical part of the cylinder with a Lab bridge Screw EV to seal the cone when blasting, grinding and polishing is necessary in the area.

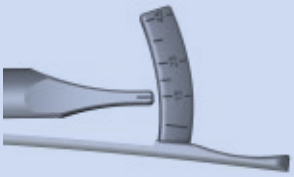
Veneering

- Try-in on model and prepare the framework for veneering. Confirm a passive fit and appropriate design.
- Veneer the metal framework with porcelain or acrylic depending on selected design and material.
- Use Lab Abutment Pin EV to preserve screw access channel during porcelain or acrylic veneering.
- Deliver the final restoration to the clinic.
- A try-in is recommended before finalizing the tightening of the restoration.

Note: Use a Lab Bridge Screw EV when fabricating the restoration. The Lab Bridge Screw should be replaced with a clinical Bridge Screw for placement of the final restoration in the clinical situation.

Final restoration

- Install the cleaned restoration with the Bridge Screw EV to recommended torque value (15 Ncm), using the restorative Driver Handle EV together with Hex Driver EV and Torque Wrench EV.
- Seal the cylinder screw channels using preferred technique.
- Cover the screw head before the screw channel is filled with a suitable material.
- Check the contact with adjacent teeth and make corrections to the occlusal relation as needed.



Angled Abutment EV

The Angled Abutment EV is a two-piece 20° abutment designed complementing the Uni Abutment EV and can be used when there is a need for altering the bridge screw access hole away from the axial direction of the implant.

Angled Abutment EV meets the same demands for uncomplicated handling of conventional as well as CAD/CAM from ATLANTIS ISUS.

Angled Abutment EV

The abutment is developed together with the implant connections (3.6/4.2/4.8) to be strong enough for high angulated prosthetics.

Angled Abutment EV is available in two marginal heights and has both six position indexing and non-indexed connection.

Application:

Partial and fully edentulous situations.

Clinical procedure

Abutment installation

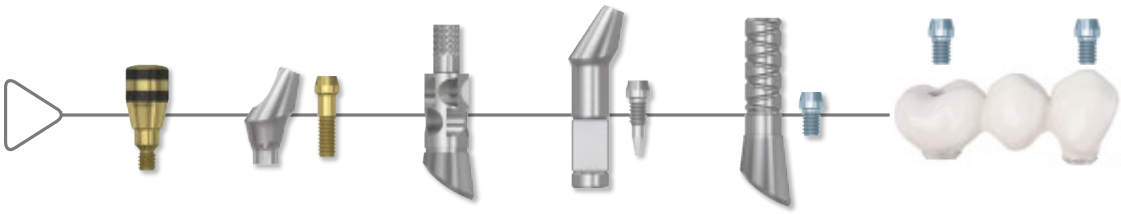
- Install the abutment with the abutment screw using the Hex Driver. The specific abutment screw delivered with the Angled Abutment EV should always be used.
- Use the Restorative Driver Handle EV together with the Hex Driver EV and Torque Wrench EV to tighten to the recommended torque (25 Ncm).
- It is recommended to position the abutment in the desired direction and then to secure the abutment screw manually before tightening to recommended final torque value.

Angled Abutment EV Heal Cap

- Manually seat and secure the Angled Abutment EV Heal Cap onto the Angled Abutment EV.

Impression procedure – Open Tray

- Pick and install the Angled Abutment EV Pick-Up. The Angled Abutment EV Pick-Up can only be seated in one position. Make sure the sleeve is in the correct position before tightening with the Hex Screwdriver EV.
- Secure the Abutment Pick-up using manual tightening torque (5–10 Ncm). Remaining transferring procedures are the same as for Uni Abutment EV.
- Mount the two-piece Angled Abutment EV Heal Cap onto the Angled Abutment EV after taking impression.



Laboratory procedure

Clinical procedure

Model making

- Place the Angled Abutment EV Replica in the correct position towards the Abutment Pick-up EV carefully.
- The Angled Abutment EV Replica can only be seated in one position.
- Secure the Abutment Replica by twisting the Abutment Pick-Up Pin using manual tightening torque (5–10 Ncm).
- Remaining model making procedures are the same as for Uni Abutment EV.

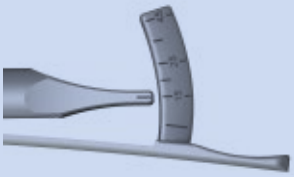
Restoration

- Place the Angled Abutment EV temporary or permanent cylinders in the correct position towards the Abutment Replica carefully.
- The cylinders can only be seated in one position.
- Secure the cylinders with the Lab Bridge Screw EV or Lab Abutment Pin EV by using manual tightening torque (5–10 Ncm).
- Remaining procedures and clinical principles are the same as for Uni Abutment EV.

Note: Use a Lab Bridge Screw EV when fabricating the restoration. The Lab Bridge Screw should be replaced with a clinical Bridge Screw for placement of the final restoration in the clinical situation.

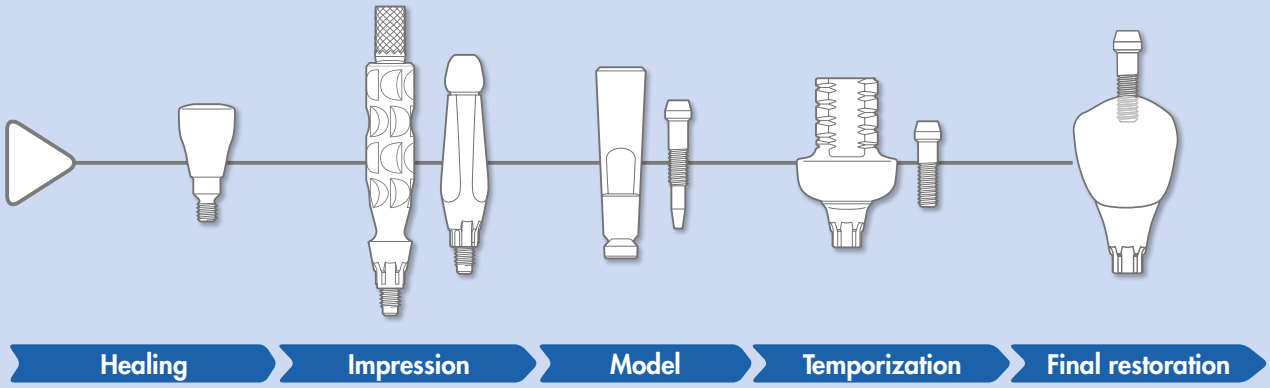
Final restoration

- Install the cleaned restoration with the Bridge Screw EV to recommended torque value (15 Ncm), using the restorative Driver Handle EV together with Hex Driver EV and Torque Wrench EV.
- Seal the cylinder screw channels using preferred technique.
- Cover the screw head before the screw channel is filled with a suitable material.
- Check the contact with adjacent teeth and make corrections to the occlusal relation as needed.



Workflows ATLANTIS™ Crown Abutment / CastDesign™ EV

The procedure sequence, as seen below, illustrates the different restorative stages and the products used and can be found throughout the manual for easy reference. The stage of the treatment procedure being reviewed is highlighted with a circle.



Single units on implant level

When working with the ASTRA TECH Implant System EV, multi-unit, screw-retained solutions must be done at abutment level to ensure the Conical Seal Design is maintained. Single-unit screw-retained solutions can be done at implant level utilizing either the ATLANTIS Crown Abutment or CastDesign EV.

Note: For detailed information about restoring on implant level, also consult the manual – Cement-retained restorations for ASTRA TECH Implant System EV.

ATLANTIS™ Crown Abutment

Clinical application

- Single, partial and fully edentulous situations
- All positions in the mouth

Note: Use of zirconia abutments should be carefully evaluated when placed in situations with unfavorable loading conditions and in the molar region.

ATLANTIS Crown abutments will only seat in one position only on OsseoSpeed EV implants. ATLANTIS Crown Abutment is an abutment for single-tooth, screw-retained restorations.

By utilizing the unique ATLANTIS VAD (Virtual Abutment Design) software, abutments are individually designed from the final crown shape and precision machined. ATLANTIS Crown Abutment is available in zirconia. The abutment is designed and produced to provide function and esthetics, and further modifications are not recommended.

- Patient-specific abutments individually designed from the final tooth shape promoted by the ATLANTIS VAD software
- ATLANTIS Crown Abutments will only fit in the one-position-only on OsseoSpeed EV implants
- Abutment Screw EV is color coded according to the implant connection

CastDesign™ EV

Clinical application

- Single, partial and fully edentulous situations
- All positions in the mouth
- Screw-retained restorations, limited to single-tooth only
- Cement-retained restorations, all positions in the mouth

Note: In cases where high biteforces are expected it is recommended to select a titanium abutment if possible. CastDesign should primarily be regarded as an abutment used when no titanium option is available.

The CastDesign EV is a non-oxidizing high precious alloy, designed and manufactured in the laboratory.

- CastDesign EV is used for fabrication of a customized abutment for screw-retained single unit restorations, using regular wax-up and cast-to techniques

Note: For screw-retained restoration, CastDesign EV shall be used for single-tooth applications only. Use of this product outside the listed indications will compromise the function of the Conical Seal Design and void the DENTSPLY Implant warranty.

ATLANTIS™ Crown Abutment

Application

- Screw-retained restorations, limited to single-tooth only.

Clinical procedure

Laboratory procedure

Impression

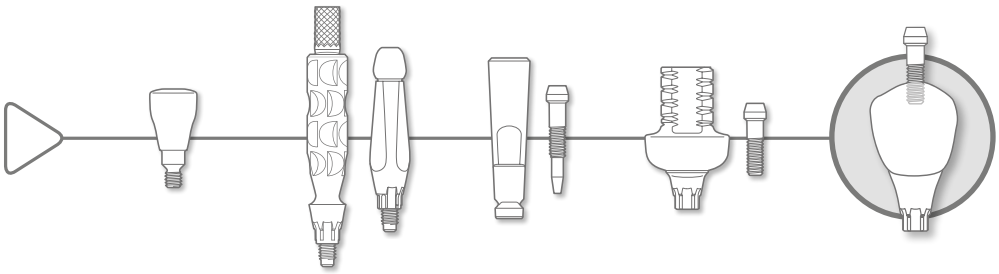
- Take an implant-level impression using an open- or closed-tray technique.
- Send the impression to your laboratory with a request for ATLANTIS Crown Abutment.

Order ATLANTIS™ Crown Abutment

- Consult the separate ATLANTIS abutments design guide for detailed handling procedures in the laboratory.
- It is possible to either scan the model and send the file, or ship the model to the ATLANTIS design and production facility.
- Order an ATLANTIS Crown Abutment for the appropriate OsseoSpeed EV implant by creating an order in ATLANTIS WebOrder – www.atlantisweborder.com.

Abutment design

- ATLANTIS Abutment designs can be reviewed and edited via ATLANTIS 3D Editor before being approved for production.



Clinical procedure

Final restoration

• When the final ATLANTIS Crown Abutment is received at the laboratory, the final restoration can be fabricated.

Note: The abutment screw delivered with the specific ATLANTIS Abutment should always be sent with the abutment to the clinician. Lab Abutment Screw EV should be used pre-clinically in combination with ATLANTIS Crown Abutment for the ASTRA TECH Implant System EV.

Note: Any modification may influence mechanical strength, and there is also a risk of a change in material properties during grinding, for example. Further modifications are not recommended.

Abutment installation

- Install the abutment with the abutment screw using the Hex Driver. The specific abutment screw delivered with the ATLANTIS Crown Abutment should always be used.
- Use the Restorative Driver Handle EV together with the Hex Driver EV and Torque Wrench EV to tighten to the recommended torque (25 Ncm).
- Cover the screw head before the screw channel is filled with a suitable material.
- Check the contact with adjacent teeth and make corrections to the occlusal relation as needed.

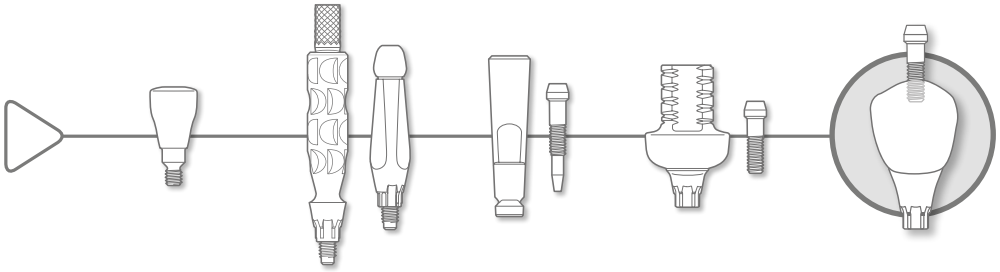
Note: ATLANTIS Crown Abutment for OsseoSpeed EV will fit in one position only.

Technical data

The ATLANTIS Crown Abutment is made from yttria-stabilized tetragonal zirconia polycrystals (Y-TZP) and has the thermal linear expansion of 10.6 x $10^{-6}/K^{-1}$. Use appropriate porcelains made for these material constraints.

CastDesign™ EV

The CastDesign EV is a non-oxidizing high precious alloy, designed and manufactured the laboratory.



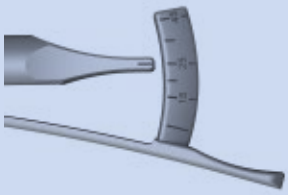
Clinical procedure

Removal of temporary restoration

- Before abutment installation, remove the healing abutment or the temporary restoration.

Abutment installation

- The abutment has six possible placement options. Manually seat the abutment in the preferred index position before securing the abutment screw using the Hex Driver.
- Use the Restorative Driver Handle EV together with the Hex Driver EV and Torque Wrench EV to tighten to the recommended torque (25 Ncm).

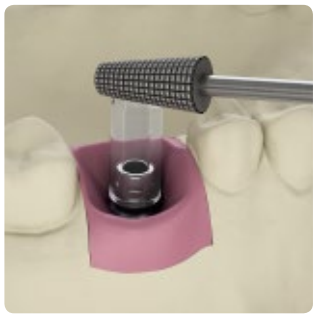


Final restoration

- Cover the screw head before the screw channel is filled with a suitable material.
- Check the contact with adjacent teeth and make corrections to the occlusal relation as needed.

Modification guideline – CastDesign™ EV

- The CastDesign EV is designed and manufactured at the laboratory.
- The abutment can be prepared to compensate for angulations, as long as sufficient retention is present and loading conditions are non-critical.
- CastDesign abutment is first reduced and shaped in wax before the cast-to procedure.
- Check the wax-up for occlusal and mesial-distal clearance, ensuring there will be adequate crown material in all directions.
- Make sure the wax-up is thick enough to avoid a miscast. The margin is normally placed below the soft tissue margin.
- Do not remove the plastic around the metal cylinder-area. Invest the waxed abutment.



Technical data

Melting range:1400–1490°C/2552–2660°F
Coefficient of thermal linear expansion for alloy:
25–500°C /77–932°F 12.3 (10–6/°C)25–600°C /77–1112°F 12.7 (10–6/°C)
Base: Non oxidizing gold alloy Au 60%, Pd 20%, Pt 19%, Ir 1%
Cylinder: PMMA burnout plastic

- Burnout and cast the abutment by using an alloy compatible with the CastDesign EV metal thermal expansion coefficient. Make sure the casted abutment including screw access hole is free from investment.
- Make sure not to damage the conical connection and the screw seat of the CastDesign abutment during blasting, not to violate the conical seal.
- Make sure to keep the screw seat surface unmodified, not to violate screw joint properties.

Note: CastDesign EV will absorb a lot of heat during burnout and casting. Make sure to compensate for this by increasing the period of time and temperature. Raise the temperature slowly to the final burnout temperature.

The cast-on alloy must have a casting temperature that is below the solidus (1400°C/2552°F) of CastDesign EV.

For the best possible results, please follow the guidelines below.

Design

- Minimize the extended design from the center axis.
- Angulation must not exceed 30 degrees.
- Extended pillar height in combination with highly angled abutment must be carefully evaluated.
- Re-design of the margin should be avoided
- Do not modify or extend gold and/or porcelain onto the conical part of the abutment.
- It is not possible to apply porcelain directly to the high-precious alloy of the CastDesign EV.

Handling

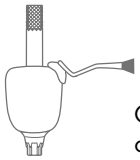
- Before investing the modified abutment, it is important to remove all excessive wax from the metal areas, which should not be modified. The metal should also be cleaned with acetone to ensure safe investing, thus minimizing the risk of air bubbles or unwanted casting errors.
- Investing and burnout time should follow the recommendations from the manufacturer of the investment material. The burnout time should be extended when plastic parts are included in the invested object.
- Investment material should be removed carefully and without modifying the surface configuration in the conical area, indexing part or the screw seat of the abutment.
- Blasting, grinding, cutting and polishing must not be done on the conical part, indexing part or the screw seat of the abutment.

Temporization

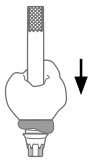
TempDesign™ EV Temp Abutment EV

Function as customized bases for temporary implant-level restorations and allow for further sculpturing of the soft tissue as needed.

Screw-retained, single-unit solutions only

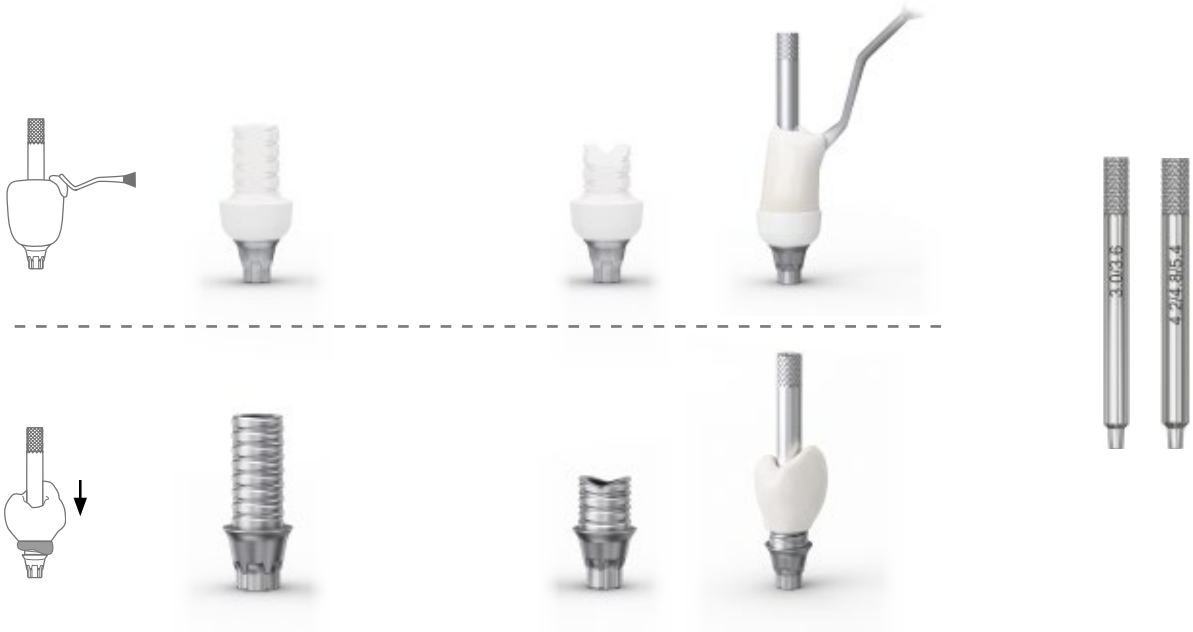


Composite crown built up and cured directly onto the modified temporary abutment.



Prefabricated plastic crown shell/denture tooth, integrated to the modified temporary abutment with acrylic.

Laboratory procedure



Abutment selection

- Try in the abutment and mark for modification.
- Use a Laboratory Abutment Screw EV when fabricating the temporary restoration.
- Harmonize the abutment margin with the soft tissue shape.
- Design the abutment to function as retentive base for the composite/acrylic.

Note: The Lab Abutment Screw EV is developed exclusively for use with Implant Replica EV. Clinical abutment screws should not be used in the laboratory.

Composite crown

- Build up the crown structure on the abutment by layering the different composite veneers; keep screw access hole open by using a Lab Pin Design EV.

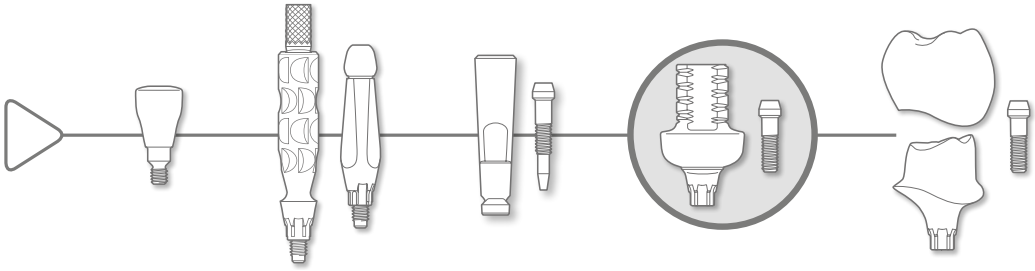
Prefabricated plastic crown

- Select a plastic crown shell/denture tooth.
- Modify it to fit the abutment with a screw access hole.
- The PEEK plastic part of TempDesign EV only bonds mechanically to dental acrylics and composite.
- Fill the crown with acrylic and position it on the abutment; keep screw access hole open by using a Lab Pin Design EV.

Note: Only the PEEK plastic part of TempDesign EV bonds mechanically to dental acrylics and composite.

Lab Pin Design EV

- Lab Pin Design EV used for maintenance of screw access channel during the laboratory procedure
- Friction fit to the Lab Abutment Screw EV
- Two sizes, 3.0/3.6 and 4.2/4.8/5.4



Clinical procedure

Finishing

- Finalize the temporary crown abutment design by curing. Adjust if necessary and polish the restoration.
- Mount the abutments in a Grinding Handle with a separate replica for safe and easy modification.
- Use grinders manufactured for the specific abutment and restorative material.
- Perform a final try-in on the model.

Abutment installation

- The abutments have six possible placement options. Manually seat the abutment in the preferred index position before securing the abutment screw using the Hex Driver.
- Final tightening to the recommended torque (15 Ncm) using the Restorative Driver Handle EV together with machine Hex Driver EV and Torque Wrench EV.

Note: Abutment Screw EV should only be used clinically.

- Cover the screw head before the screw channel is filled with a suitable material.
- Seal the crown abutment hole using a preferred technique.
- Check the contact of the adjacent teeth and correct occlusal relation.

Note: For chair side modification by the clinician, the lab abutment screw is also recommended together with the appropriate implant replica and a grinding handle to avoid intra-oral grinding.

Torque Wrench EV – restorative handling

A torque wrench together with a Restorative Driver Handle are used to tightening of abutment screws and/or bridge screws.

When used together with the Surgical Driver Handle, the torque wrench can also be used for implant installation and adjustment.

Prosthetic instruments

Prosthetic instruments specifically designed for the ASTRA TECH Implant System EV.

- Hex Driver EV, manual and machine
- Uni Driver EV machine
- Torque Wrench EV
- Torque Wrench EV Restorative Driver Handle
- Torque Wrench EV Restorative Driver Handle Low

Assemble

- Attach the head of the wrench to the body by pushing the components together and turning them in opposite directions until there is an audible click.

Attach

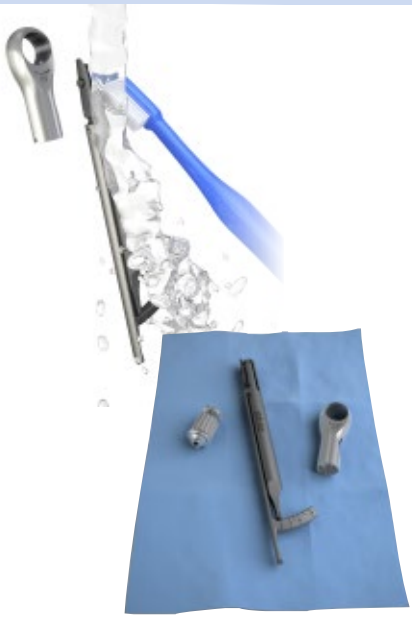
- Attach the Hex Driver EV into the Restorative Driver Handle and then into the wrench until there is an audible click.

Handling

- Use a finger on the top of the driver handle to keep it steady and in place. Then gently pull the arm of the torque wrench in the direction of the arrow until the desired torque is achieved.

Note: The arm of the torque wrench must not go beyond the end of the scale, as this could result in inaccurate torque readings.

The arrow on the head of the wrench shows the direction in which the wrench is functioning.



Disassemble

- Press the driver handle to remove it from the head of the wrench, and remove the head by pressing a finger into the recess (1) and gently pulling the head (2).

Cleaning and drying

- The three separated parts are now ready for cleaning using water and a brush. Let the parts dry.

Sterilization

- Follow the manufacturer's instructions for use.

Torque guide for ASTRA TECH Implant System™ EV

Installation procedures	Recommended torque
Implant installation	≤45 Ncm 
Healing components	Manual/light finger force (5–10 Ncm)
Temporary restorations on all levels	15 Ncm 
Final restorations on implant level	25 Ncm 
Final restorations on abutment level	15 Ncm 

Cleaning and sterilization

All drills, except the single use Precision Drill EV, can be used approximately ten times. If drills are not reused, dispose them in a sharps container immediately after the implant procedure is completed.

Note: Single use products should not be reused.

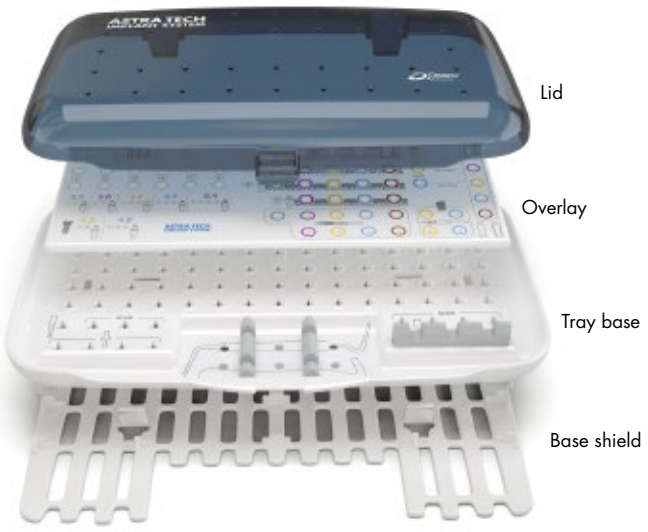
Remove residual tissue or bone debris by immersing the used products in lukewarm water (<40°C/104°F). Do not use fixation agents or hot water as this could influence subsequent cleaning results. Products should be kept in a wet environment until the next step is initiated. For Direct Driver EV Ø 3.3, Ø 4 and Ball Abutment Driver EV storage in a wet environment is mandatory.

If cleaning is delayed more than 120 minutes, place the devices in a bath of a cleaning and disinfection solution to avoid drying of soil and/or debris, blood and other contaminations.

Preparation for cleaning

Disassembly is required for the following products:

- Surgical Tray
- Impression components (pick-ups/transfers)



Manual procedure

Apply detergent, Neodisher MediClean-Forte (Dr. Weigert, Hamburg) or similar solution to all surfaces. Scrub the outer and, if applicable, the inner side of the product, with a soft bristled nylon brush until all visible soil and/ or debris is removed. Flush the inner channels/lumen with cleaning solution using an irrigation needle connected to a syringe. Check channels/lumen for residual soil and/or debris. Run the products in an ultra-sonic bath with cleaning solution for minimum ten minutes. Drills and trays excluded. Rinse under clean running water until all trace of cleaning solution is removed. Flush the inner channels/lumen with water using an irrigation needle.

Prepare a bath with a disinfection solution, ID 212 instrument disinfection (DÜRR SYSTEM-HYGIENE) or similar, according to the detergent manufacturer's instructions. Immerse the products completely for the time specified by the manufacturer. Flush the internal channels/lumen using an irrigation needle for a minimum of 3 times. Rinse under clean running water until all trace of disinfection solution is removed. Flush the inner channels/lumen with water using an irrigation needle.

Dry the products using medical compressed air and clean lint-free single-use wipes.

Automated procedure

Place instruments in a washer-disinfector, Vario TD or similar, according to recommendations from the supplier.
Example of Vario TD washing program:

- Pre-wash, 20°C
- Cleaning with detergent, Neodisher MediClean-Forte (Dr. Weigert, Hamburg) or similar solution 45–55°C
- Neutralization
- Intermediate rinse
- Disinfection, >90°C (preferable 93°C), 5 min
- Drying

Inspection and function testing

Drills shall be replaced as soon as their cutting capability diminishes. Discard blunt or damaged products.

Packaging pre-sterilization

Thoroughly dry everything prior to the sterilization process to prevent the risk of corrosion. Assemble the tray and re-position the drills and instruments using drill/letter numbers, where applicable. It is recommended to wrap the instruments and tray according to the sterilization wrap manufacturer's instructions. It is recommended to place the abutments, screws, and applicable products in a sterilization bag.

Note: For US: Use FDA cleared sterilization bag and 16 minutes dry time at the end of the steam sterilization cycle.

Sterilization

Steam sterilization with a pre-vacuum cycle (134°C/275°F for 3 minutes).

Sterilization procedure for zirconia products

The products should not be sterilized in a steam autoclave. The process can affect the mechanical properties of the material.

For ZirDesign abutment: Liquid Chemical Sterilization/ High Level Disinfection is recommended.

Note: For US: Dry heat (160°C/320°F for 4 hours) is the recommended procedure.

For ATLANTIS abutment in zirconia: Dry heat (160°C/320°F for 4 hours) is the recommended procedure.

Storage

The products should be stored, in their package, in a dry place, at normal temperature (18–25°C/64–77°F). Use the sterilized components within the stated time period from the sterile bag manufacturer.

Note: For maintenance and cleaning of Contra Angles and Torque Wrench EV, follow the manufacturer's instructions.

Statement Cleaning and sterilization of ASTRA TECH Implant System EV products

The cleaning and sterilization instructions for ASTRA TECH Implant System EV assortment has been developed and validated by DENTSPLY Implants. The instructions have been developed in accordance to, and evaluated by the standards stated please see below.

Both the VarioTD program (recommended for automated reprocessing) and the Neodisher Mediclean Forte (Dr. Weigert) detergent are recommendations and can be substituted with similar programs and detergents. For more information, please see http://www.miele-professional.com and/or www.drweigert.com.

Surgical Tray EV is made of PPSU (Polyphenylsulfone) material which may be sensitive for some chemicals containing acetate e.g. ethyl acetate. Consult your detergent manufacturer for compatibility of used detergent with PPSU if Neodisher Mediclean Forte is not used.

If alternative procedures are used it is the responsibility of the user to ensure that the cleaning and sterilization procedure chosen achieves the desired results.

- ANSI/AAMI ST79:2010 & A1:2010 Comprehensive guide to steam sterilization and sterility assurance in health care facilities.
- ANSI/AAMI ST81:2004/(R) 2010 Sterilization of medical devices – Information to be provided by the manufacturer for the processing of resterilizable medical devices.
- AAMI TIR12:2010 Designing, testing, and labelling reusable medical devices for reprocessing in health care facilities: A guide for medical device manufacturers.
- EN ISO 17664:2004 Sterilization of medical devices – Information to be provided by the manufacturer for the processing of resterilizable medical devices.
- EN ISO 15883-1:2009, Washer-disinfectors – Part 1: General requirements, terms and definitions and tests.
- EN ISO 15883-2:2009, Washer-disinfectors – Part 2: Requirements and tests for washer-disinfectors employing thermal disinfection for surgical instruments, anaestetic equipment, bowls, dishes, receivers, utensils, glassware, etc.
- ISO/TS 15883-5:2005, Washer-disinfectors – Part 5: Test soils and methods for demonstrating cleaning efficacy.
- EN ISO 17665-1:2006, Sterilization of health care products – Moist heat – Part 1: Requirements for the development, validation and routine control of a sterilization process for medical devices.

Key references* supporting screw-retained restorations with ASTRA TECH Implant System™

Fixed full restoration

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*For the complete reference list, see www.dentsplyimplants.com

Notes

ASTRA TECH
IMPLANT SYSTEM
BioManagement Complex™

A successful implant system cannot be determined by one single feature alone. Just as in nature, there must be several interdependent features working together. The following combination of key features is unique to the ASTRA TECH Implant System:

- **OsseoSpeed™** — more bone more rapidly
- **MicroThread™** — biomechanical bone stimulation
- **Conical Seal Design™** — a strong and stable fit
- **Connective Contour™** — increased soft tissue contact zone and volume

About DENTSPLY Implants
DENTSPLY Implants offers comprehensive solutions for all phases of implant therapy, including ANKYLOS®, ASTRA TECH Implant System™ and XiVE® implant lines, digital technologies, such as ATLANTIS™ patient-specific CAD/CAM solutions and SIMPLANT® guided surgery, SYMBIOS® regenerative solutions, and professional and business development programs, such as STEPPS™. DENTSPLY Implants creates value for dental professionals and allows for predictable and lasting implant treatment outcomes, resulting in enhanced quality of life for patients.

About DENTSPLY International
DENTSPLY International Inc. is a leading manufacturer and distributor of dental and other healthcare products. For over 115 years, DENTSPLY's commitment to innovation and professional collaboration has enhanced its portfolio of branded consumables and small equipment. Headquartered in the United States, the Company has global operations with sales in more than 120 countries.

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