

# Uni-for-Fixed™

Clinical and laboratory procedures

## Welcome to the world of Astra Tech Dental

Our goal is to provide you with product solutions and services that support and simplify your work in implant therapy, and with a commitment to reliable long-term function and esthetics without compromise.

The Astra Tech Implant System™ is developed with a biological and biomechanical approach. Every detail is carefully designed to fit together and work in harmony with each other and with nature. The implant system is proven clinically to maintain marginal bone levels which has been demonstrated in excellent long-term results.

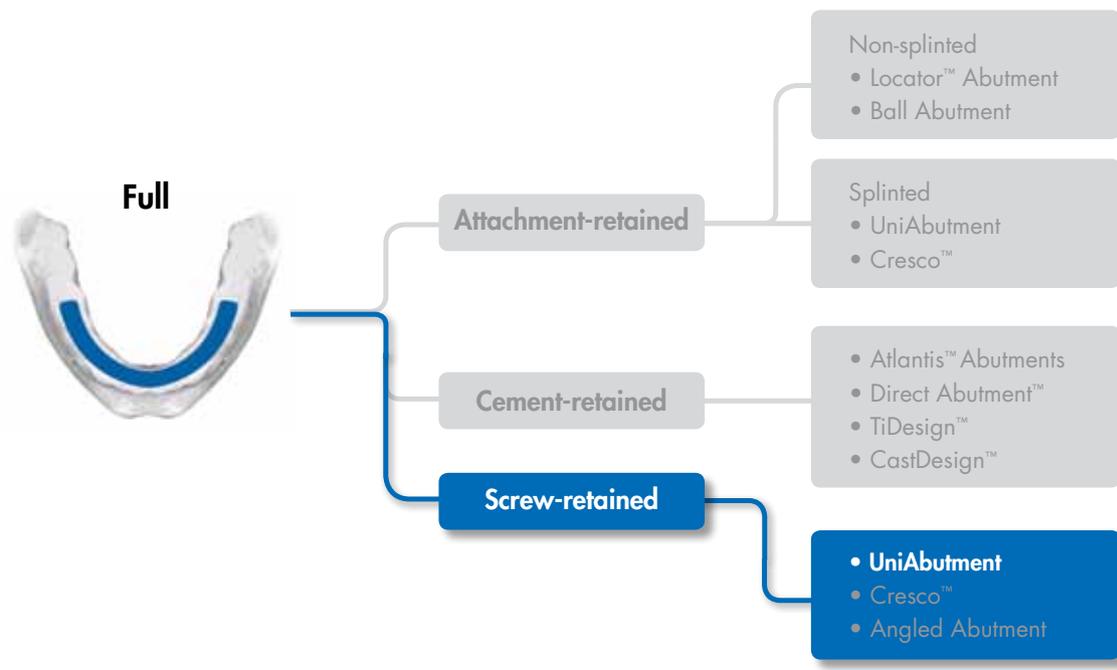
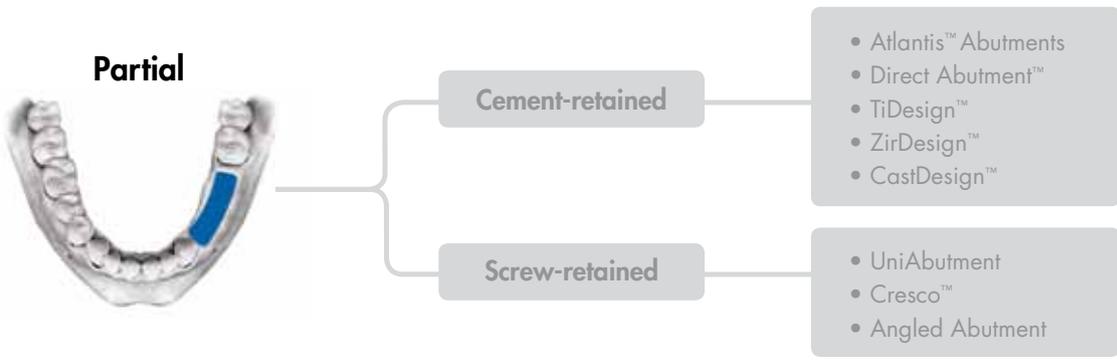
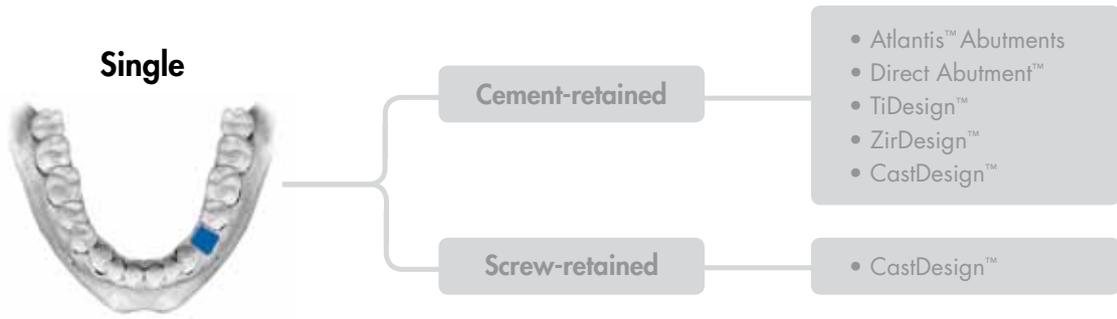
To support you in the use of the Astra Tech Implant System, we offer education seminars, training programs and materials for you and all members of your treatment team.

# Contents

Clinical and laboratory procedures for Uni-for-Fixed™ utilizing four implants.

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

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## Introduction

It is our goal at Astra Tech to provide clinicians with the products and support needed to restore form and function to their fully edentulous patients. This is carried out through implant-supported restorative therapies such as overdentures and cement- or screw-retained full-arch fixed restorations. Selection of these options should be based on the personal and clinical requirements of each individual patient without compromise to reliable long-term function.

The Uni-for-Fixed™ solution takes advantage of the strength and utility of the features of the Astra Tech Implant System™, and its UniAbutment to provide a screw-retained full-arch fixed restoration.

For situations where more than four implants will be utilized, placement of implants in the posterior mandible and maxilla is limited to patients with vertical alveolar ridge heights over the mandibular nerve and under the maxillary sinus of at least 7 mm. The OsseoSpeed TX implant 6 mm provides the option for these posterior implants when grafting procedures will not be utilized.

A full-arch screw-retained restoration on only four implants is an option for most patients with compromised bone. This manual illustrates how the UniAbutment, due to its strength and utility, supports this therapy when bone grafting procedures will not be utilized.

## Uni-for-Fixed™ - on four implants

### Getting started

The process begins with an existing complete denture that satisfies maxillary-mandibular relationships, vertical dimension of occlusion, and esthetics.

A duplicate of the patient's existing complete denture with radio-opaque auto-polymerizing resin is used as a radiographic template, a surgical guide, a custom impression tray, an occlusal record base, and a template for design of the final prosthesis. Refer to the lab procedure that can be performed in-office (Appendix A).

### General considerations

- A distal tilt of 20° or less will allow for the use of a one-piece abutment providing an optimal final design.
- The provisional stage can be accomplished with a removable soft relined of the existing complete denture or a fixed conversion of the existing complete denture (Appendix B and C).
- Surgical implementation can be accomplished with a traditional flap design or with a non-invasive flapless technique.
- Flapless surgery can be accomplished through computer-guided implant planning with Facilitate™ software, and a Facilitate™ surgical guide, to help ensure the plan is replicated in surgery.

### Implant and bone requirements

- A minimum buccal to lingual bone width of 6 mm
- A minimum vertical bone height of 10 mm, from canine to canine in the maxilla and between the mental foramen in the mandible
- A minimum implant diameter of 4.0 mm
- A minimum implant length of 8 mm

### Implant placement

- In the mandible, the implants in the posterior should be placed just anterior to the mental foramen.
- In the maxilla, the implant in the posterior should be placed just anterior to the maxillary sinus.
- In the mandible and the maxilla, the implants in the posterior should have a distal tilt of 15°–20° allowing the access holes on the occlusal surface to be at or distal to the marginal ridge area between the first and second premolar.



## Duplicate denture

### Existing complete denture

The patient's existing complete denture is first duplicated with a simple office procedure utilizing impression putty and radio-opaque auto-polymerizing resin. See Appendix A for full procedure.



### Duplicate denture

The duplicate denture, processed in radio-opaque auto-polymerizing resin, will be used as a radiographic template, surgical guide, custom impression tray, occlusal record base, and prototype for the design of the final prosthesis.



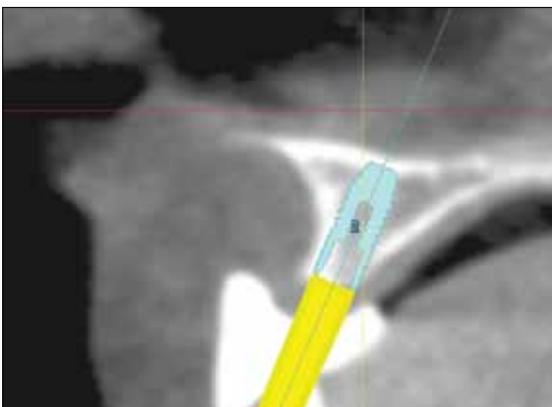
### Radiographic template

An example of a radio-opaque duplicate of a patient's existing complete denture.



### Virtual planning

The radio-opaque duplicate of the patient's existing complete denture provides the ability to view the denture base, soft tissue thickness, and tooth position without an additional scan of the patient and the denture.



### Virtual plan

Utilizing 3-dimensional planning software, such as Facilitate™, provides the clinician the ability to anticipate the position of the implant to the final prosthesis, including location of screw-access holes.

See Facilitate™ Procedure manual for step-by-step procedures.



## Implant position planning and surgical guide

The radiographic template with an adequate radiographic examination, including CT scan or panoramic radiograph, will provide the tools necessary to plan the ideal implant locations for the full-arch screw-retained prosthesis.



### Implant positioning

View the angle required to have the access hole of the UniAbutment positioned at or distal to the marginal ridge area between the first and second premolar. The angle should be 15°–20°.

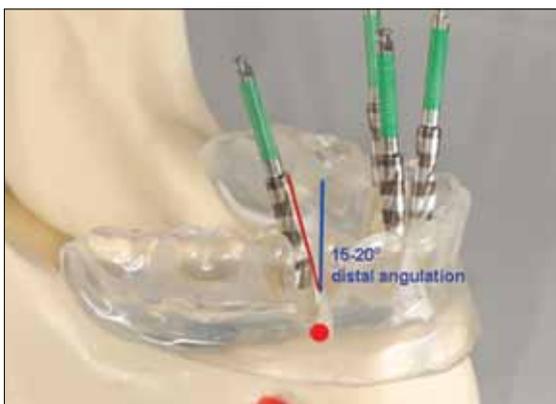
**Note:** Angles of 15°–20° eliminates the need for the Angled Abutment, which would require additional interocclusal space.



### Surgical guide

The duplicate denture/radiographic template can now be used as a surgical guide. The anterior guide holes have been placed lingual to the lateral incisors and almost perpendicular to the mandible.

The surgical guide can facilitate the proper angulation of the drill to accomplish the 15°–20° distal angulation required in the posterior.



### Angulation

The posterior guide holes are slightly anterior to the mental foramen and at an angle of approximately 15°–20° for an access hole at or distal to the marginal ridge area between the first and second premolar. The red dot represents the superior aspect of the osteotomy.



### Distal angle

The position of the Implant Driver demonstrates the distal angle provided by the surgical guide.

The guide design can be modified to the preference of the surgeon, i.e. cutting away the facial of the guide to provide an unobstructed view of the osteotomy.



### UniAbutment Selection

Select the UniAbutment with the following criteria:

- The 20° UniAbutment is the first choice for full-arch screw-retained restorations.
- The height should be selected to allow access for patient hygiene.
- Select the 45° UniAbutment when the angulation between the implants exceeds 40°.
- Select the Angled Abutment when there is a need to alter the bridge screw insertion direction away from the axial direction of the implant. Note: the use of an Angled Abutment will require more vertical space during impression-taking.



### Placement of the UniAbutment and ProHeal Caps

The UniAbutment is provided sterile, with a pre-mounted carrier.



### Abutment installation

Seat the self-guiding UniAbutment manually with the pre-mounted carrier.



### Torque wrench setting

Recommended torque for final tightening is 15 Ncm.



### Installation

Remove the plastic delivery cap and complete installation with the Torque Wrench.



### Final torque

The head of the Torque Wrench will break away from the handle when 15 Ncm has been reached. No additional torque should be applied.



### Carrier release

Release the carrier manually by unscrewing it with the plastic delivery cap or turn the torque wrench over so that "out" is facing you and turn it counter-clockwise.



### Healing cap insertion

If a provisional removable prosthesis will be utilized, select and place the appropriate ProHeal Cap. The ProHeal Cap is seated on the UniAbutment, secured and tightened using the Hex Screwdriver and light finger force.

Recommended torque is light finger force (5–10 Ncm).

Note: The Healing Cap Angled is seated on the Angled Abutment, secured and tightened with the Bridge Screw Slot using the Slot Screwdriver, and light finger force or the Torque Wrench set to 10 Ncm.



### Healing caps in place

ProHeal Caps in place and ready for tissue conditioning of the existing prosthesis (removable provisional). See Appendix B for full procedure.



## Provisional prosthesis

The provisional prosthesis can be removable or fixed depending on patient preference and cost.

Patients who have a history of wearing a complete denture are often satisfied with the existing denture and soft liner as a provisional restoration. For a removable provisional prosthesis, healing caps are attached to the UniAbutments.

Proper use of tissue conditioner/soft liner is critical for patient comfort and maintenance of the surgical site (Appendix B).

Note: for maxillary cases, the area of the ProHeal Caps in the denture has to be relieved to avoid uncontrolled loading of the implants.

## Conversion prosthesis

A provisional screw-retained full-arch fixed bridge can be easily made with the patient's existing complete denture. This is called a conversion prosthesis (Appendix C).

## Impression making for final prosthesis



### Rubber dam

If the impression is made at the time of implant placement, it is important to place a rubber dam over the UniAbuments to ensure that impression material is not expressed subgingival or into any part of the osteotomy.



### Access holes

Make the access holes large enough so that the denture duplicate can be passively placed over the UniAbutment Pick-ups. Ensure there is no contact between the UniAbutment Pick-ups and the denture duplicate.



### Pick-up impression

Make the impression by expressing the material around the seated denture, paying attention to the base of the UniAbutment Pick-ups.



### Completed impression

It is critical to make sure that the impression material has set prior to removing the guide pins.



### Prepare for working model

After removal of the Abutment Guide Pins, the denture base is removed.



### Attach replicas

Screw the Abutment Replicas Uni to the UniAbutment Pick-ups using the Abutment Guide Pins.



### Working model

The model is completed with a removable soft tissue mask for soft tissue and dental stone.



## Fabrication and use of a confirmation jig

A confirmation jig is used to confirm the accuracy of the working model. In the absence of a confirmation jig, fabrication of a frame or the prosthesis would be compromised adding time and cost to the final outcome. In the event that there is an inaccuracy, the jig is used to make a new model.

The following is one method to make a confirmation jig.



### Creating a foundation

UniAbutment Pick-ups are secured on the master cast. Dental floss is webbed around the pick-ups.

The web provides a foundation for auto-polymerizing resin or flowable composite to secure the relationship of the pick-ups.



### Resin application

Apply a loose mixture of powder and liquid to the web created in small increments.



### Assembled confirmation jig

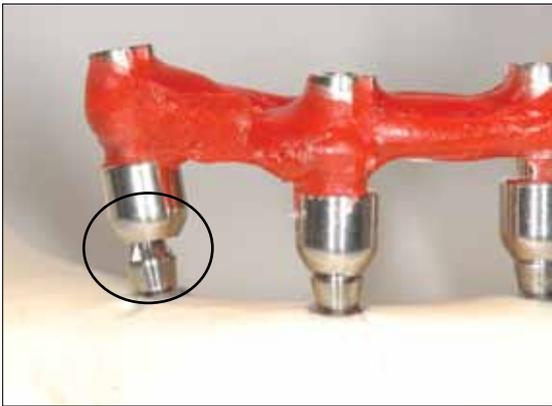
Once the resin has set, the confirmation jig is ready to be tried in the mouth.



### Insertion

When placing the confirmation jig in the mouth, start with a single guide pin or bridge screw in one of the distal implants or abutments.

The objective is to achieve a passive fit so that the frame is seated completely on all Abutment Replicas Uni by a single screw.



### Inspection

Carefully examine to ensure an accurate fit.



### Sectioning

To correct the poor fit, the confirmation jig is sectioned, to allow for the component to be fully seated.



### Resin application

Reconnect the sectioned confirmation jig by applying auto-polymerizing resin intra-orally.

Pour a new model or base with dental stone. The new model is used to ensure the accuracy of the final prosthesis.

## Final prosthesis

If the duplicate denture has been used as a radiographic guide, surgical guide, custom impression tray and custom record base, and the existing complete denture satisfies maxillary-mandibular relationships, vertical dimension of occlusion, and esthetics, the final prosthesis can be finished with a single try-in and insertion appointment.



There are several options for materials and design of the final prosthesis, including a milled bar with denture teeth and acrylic, or a milled bar with individual crowns. In this case, the final prosthesis has been copy-milled from a solid block of zirconia.



Fabrication is done by the following:

1. A resin duplicate of the denture is made with UniAbutment Cylinders processed into the base. The second molars and flanges have been removed to replicate the desired shape and extension of the final prosthesis.
2. The resin duplicate is tried in to confirm maxillary-mandibular relationships, occlusion, and esthetics.
3. Adjustments can be made to the resin duplicate if necessary.
4. The final prosthesis is copy milled.
5. The prosthesis is colored and glazed.





## Duplication of an existing complete denture

Make an impression of the existing complete denture.

Place elastomeric impression material in an impression tray.

Place the denture in the impression tray.

After the material has set, trim the excess and lubricate the impression material and denture with a silicone spray.



## Denture duplication

Use a lab putty for this process.

Follow the manufacturer's instructions for use of all materials. The following procedure applies to the use of a common lab putty.

Prepare two scoops of putty using the scoop provided.



## Prepare putty

Make a narrow flat pancake with the putty and mark the putty with the scoop.



**Accelerator**

Add a line of accelerator that crosses the scoop outline.



**Activation**

Knead the accelerator into the putty and continue until the accelerator is completely incorporated. You have a working time of approximately one minute.



**Prepared for placement**

Material has been properly incorporated and shaped to facilitate placement.



**Capturing the tissue-bearing surface**

Cover the denture and impression material with lab putty.

**Note:** Notching the impression material before applying the putty will provide a more positive seat during the duplication process.



**Putty application**

Putty is applied to capture the tissue-bearing side of complete denture.



**Mold ready for fabrication of duplicate denture**

Separate and remove the existing complete denture. The appropriate material can now be used to process the clear denture duplicate.

If the duplicate will be used as a radiographic guide for a CT scan, use a radio-opaque auto-polymerizing resin.

For a guide that will be used for a panoramic, use a clear orthodontic resin and opacify the teeth.

When using the clear material, only the teeth of the complete denture should be opacified.

This can be accomplished by covering the teeth with foil or by painting the teeth with a radio-opaque material.





### Mixture preparation

Mix the selected material in a silicone dappen dish according to manufacturer's instructions.

**Note:** It is recommended to use gloves when handling the material.



### Prepared for placement

Place the material in the mold.



### Mold with resin

Adequate material is placed to slightly overfill the mold.



### Proper seating

Ensure the mold is seated securely. If adequate material has been used, flash will appear around the mold.



**Optional technique**

A pressure pot at 30 lbs/sq in. can be utilized as an optional procedure to increase the density of the duplicate denture.



**Completion of duplicate denture with model base**

After the duplicate is processed, a model base should be made to facilitate handling and preparation as a surgical guide.



### Tissue conditioning the existing prosthesis (removable provisional)

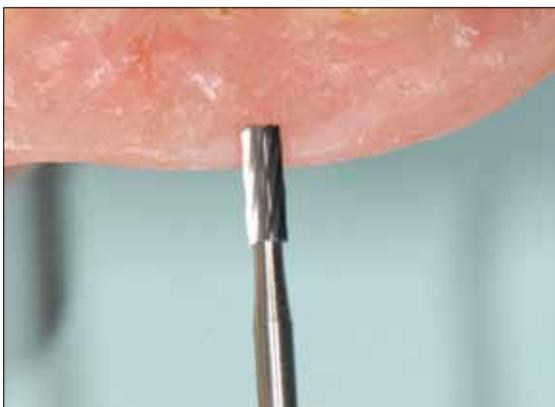
If the patient's existing complete denture satisfies maxillary mandibular relationships, vertical dimension of occlusion, and cosmetics, it can easily be converted to a satisfactory denture. Relieve the denture to provide space for the ProHeal Caps.

Clean all surfaces of the denture and wipe with alcohol.



### Prepare for soft reline

Roughen the internal aspect of the denture and make sure there are no fragments of previously placed tissue conditioner.



### Create finishing line

Ensure the flange of the denture is instrumented and create a finishing line on the labial side of the denture.



### Lubricate

Lubricate the portion of the denture that is directly beyond the finish line.



### Soft reline

Select an appropriate material for a soft reline. Follow the manufacturer's instruction for proper use of the product. Place material into the tissue-bearing area of the denture. Pay close attention to proper proportions for optimal results.



### Material setting

Allow the patient to rest for one minute with denture in place. Teeth should be touching in centric occlusion. Complete muscle border molding by lightly manipulating the patient's lips and cheeks. Ask the patient to lightly touch their upper lip with their tongue.

Remove the denture and place it in hot water for five minutes.



### Remove excess

Remove excess material with a sharp blade and a hot waxing instrument. Seal the margin with a hot spatula.



### Set soft reline

Place the denture in cold water for two minutes and finish the margin with a rotary instrument.



### Apply sealant

Coat the internal aspect of the denture with sealant and allow to sit for at least five minutes.



### Check fit

Wash denture with soap, rinse with clean water, and place in patient's mouth. A proper relined along with proper maintenance will provide a comfortable, stable provisional prosthesis for several weeks. For maxillary dentures, check that the denture is relieved to avoid uncontrolled loading of the implants.



### Patient comfort

A patient will benefit greatly from a relined denture until the final restoration is delivered.

**Appendix C: Fabrication of a conversion prosthesis***Courtesy of Residents of UNC, School of Dentistry, Prosthodontics***Fabrication of a conversion prosthesis (fixed provisional)**

If the patient's existing complete denture satisfies maxillary-mandibular relationships, vertical dimension of occlusion, and esthetics, it can easily be converted to an interim fixed bridge on the UniAbuments.

Impression material is expressed onto the top of the UniAbument and then the prosthesis is seated until the material is set. This will create the landmarks in the denture to open channels for the cylinders.

**Prepare for cylinders**

A 2.0 diameter Twist Drill is utilized to clear an opening from the landmarked tissue-bearing area to the occlusal surface.

Each opening is adjusted to prepare for the orientation of the cylinders.

**Cylinder orientation**

The ideal orientation of the cylinders through the prosthesis is now confirmed.

**Check for passivity**

It is critical that the channels allow passive seating of the Temporary Cylinders Uni. There should be no contact between the denture and the hardware. Any contact will prevent the prosthesis from relating properly to the opposing arch.

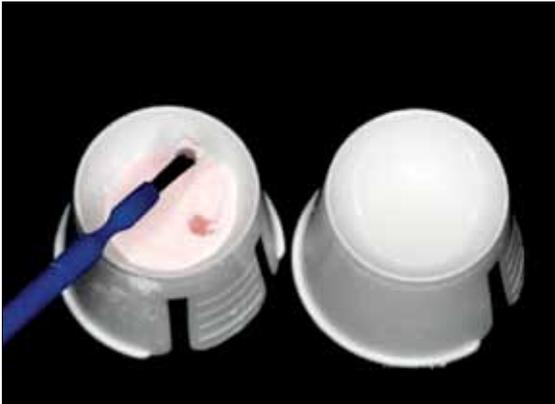
Adjust the height of the Temporary Cylinders Uni to be at or slightly below the external surface of the denture.



**Temporary Cylinder Uni pick-up**

The acrylic resin intra-oral Temporary Cylinder Uni pick-up procedures are as follows:

- Place rubber dam over UniAbutments.
- Seat denture over the UniAbutments.
- Place and secure the Temporary Cylinders Uni onto the UniAbutments with Bridge Screws and check centric occlusion.
- Replace Bridge Screws with Abutment Guide Pins.
- Ensure there is no contact between the denture and the Temporary Cylinders Uni.
- Apply powder and liquid auto-polymerizing resin around each Temporary Cylinder Uni.
- Ensure gentle tooth closure in centric occlusion.
- Hold denture in place until the resin has set. Follow manufacturer’s recommend time for setting.
- After setting is complete, remove Abutment Guide Pins and denture.



**Considerations**

Pre-pick-up:

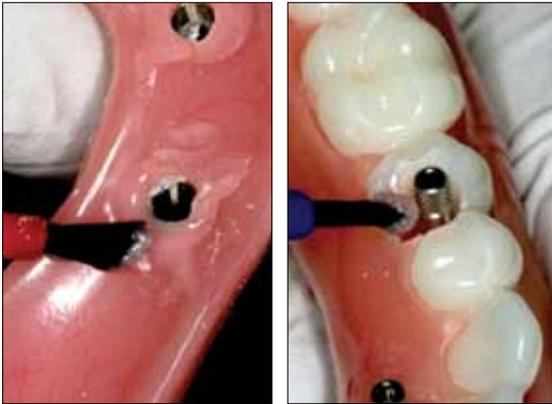
- Prosthesis must be fully seated on posterior ridge.
- Prosthesis must have the proper occlusal relationship.
- Make sure that acrylic does not flow into the head of the screw interfering with the engagement of the driver.



Post-pick-up:

- Ensure each Temporary Cylinders Uni is secure with the Abutment Guide Pin.
- Verify the cylinders seat passively at each abutment.
- Make sure no acrylic resin is left in the mouth.





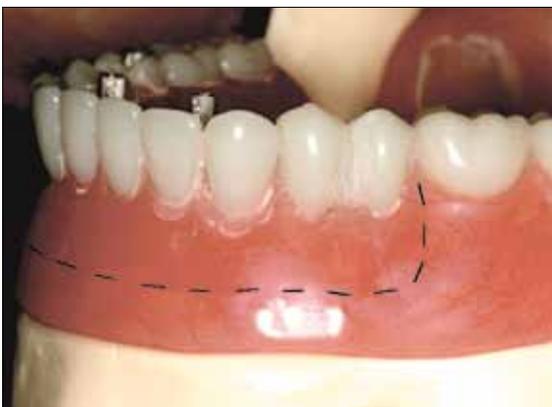
### Fill voids

Check prosthesis for any voids on the tissue-bearing and the occlusal surfaces. Use acrylic resin to fill any voids.



### Block screw-access holes

A wood stick or a cotton swab shaft can be utilized to block out the screw-access holes to prevent resin from entering the cylinders while filling in voids on the occlusal surface.



### Flange removal

Draw a line to indicate the extension of the denture. The customary finish will be on the distal of the second premolar. Utilize an acrylic trimming bur to remove the flanges.



### Finishing

Contour for proper esthetics and to allow access for patient hygiene.

Finish the prosthesis to a high polish for optimal hygiene and patient comfort.

# Uni-for-Fixed™

## Components and instruments you will need\*

### Screw-retained abutments



20° UniAbutment



45° UniAbutment



Angled Abutment

### Instruments



Removal Tool M1.4, short

### Healing components



20° ProHeal Cap



45° ProHeal Cap



Healing Cap Angled



Removal Tool M1.4, long

### Impression and laboratory components



20° UniAbutment Pick-up



45° UniAbutment Pick-up



Angled Abutment Pick-up



Abutment Replica Uni 20°



Abutment Replica Uni 45°



Abutment Replica Angled



Lab Bridge Screw, hex



Lab Bridge Screw, slot



Abutment Guide Pin, M1.4

### Bridge screws and cylinders



Bridge Screw, hex



Bridge Screw, slot

#### Temporary Cylinder



Uni 20°



Uni 45°



Angled

#### Semi-Burnout Cylinder



Uni 20°



Uni 45°



Angled

#### Burnout Cylinder



Uni 20°



Uni 45°



Angled

#### Titanium Cylinder



Uni 20°



Uni 45°



Angled

\* See Product catalog for complete list of products and reference numbers.

# Recommended tightening torque

Type of product

Torque – Ncm

● X-Small ● Small ● Large

<p>Cover Screw</p> <p>Healing Abutment Healing Abutment Uni ProHeal Cap Healing Cap Angled</p>		<p>● Manual*</p>	<p>● Manual*</p>	<p>● Manual*</p>
<p>TempDesign™</p> <p>Temporary Abutment</p> <p>20°/45° Cresco™ Insert for Astra Tech Implant System™</p> <p>20°/45° UniAbutment</p> <p>Bridge Screws Cresco™ Bridge Screw</p>		<p>● –</p>	<p>● 15</p>	<p>● 15</p>
<p>Atlantis™ Abutments for Astra Tech Implant System™</p> <p>ZirDesign™</p> <p>TiDesign™</p> <p>CastDesign™</p> <p>Angled Abutment</p>		<p>● 15***</p>	<p>● 20</p>	<p>● 25</p>
<p>Direct Abutment™</p> <p>Ball Abutment</p> <p>Locator™ Abutment</p>		<p>● –</p>	<p>● 25</p>	<p>● 25</p>

\* Only light finger force (5–10 Ncm) using a manual screwdriver or contra angle preset at 25 rpm and 5–10 Ncm torque.

\*\* Only light finger force (5–10 Ncm) using a manual screwdriver. Do not use a Ratchet Wrench or Torque Wrench.

\*\*\* **Note:** Available for TiDesign™, Atlantis™ Abutment, titanium and Atlantis™ Abutment, GoldHue™.

## Sterile packaging

The Healing Abutments, UniAbutments, Angled Abutments and Healing Caps are delivered sterile. The products are sterilized by irradiation and intended for single use only. The label on the package is color coded Aqua or Lilac to indicate the connection sizes. The package is comprised of a plastic container with a cap. There is a foil under the cap that serves as the sterile barrier.

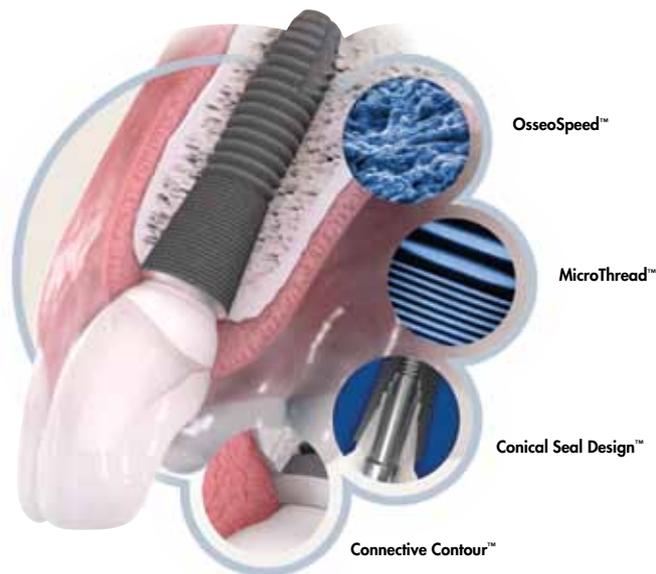


Product	Material	Sterilization	Package
<b>Healing Abutment Uni</b>	Titanium	The product is sterilized by irradiation and intended for single use only.	The sterile plastic insert, inside the container, contains the Healing Abutment Uni.
<b>20° UniAbutment 45° UniAbutment</b>	Titanium	The product is sterilized by irradiation and intended for single use only.	In the container the UniAbutment is packed pre-mounted with a disposable carrier in stainless steel. The carrier also serves as an installation device, together with a plastic insertion head.
<b>Angled Abutment</b>	Titanium	The product is sterilized by irradiation and intended for single use only.	The sterile plastic insert, in the container, contains the Angled Abutment. The abutment is packed together with the Angled Abutment Screw.
<b>ProHeal Cap</b>	Titanium	The product is sterilized by irradiation and intended for single use only.	The sterile plastic insert, in the container, contains the ProHeal Cap.
<b>Healing Cap, Angled</b>	Titanium	The product is sterilized by irradiation and intended for single use only.	The sterile plastic insert, inside the container, contains the Healing Cap. The cap is packed together with a Bridge Screw Slot.





# Astra Tech 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

