

Astra Tech Implant System®

Attachment-retained restorations

Clinical and laboratory procedures
OsseoSpeed® TX

Astra Tech Implant System®

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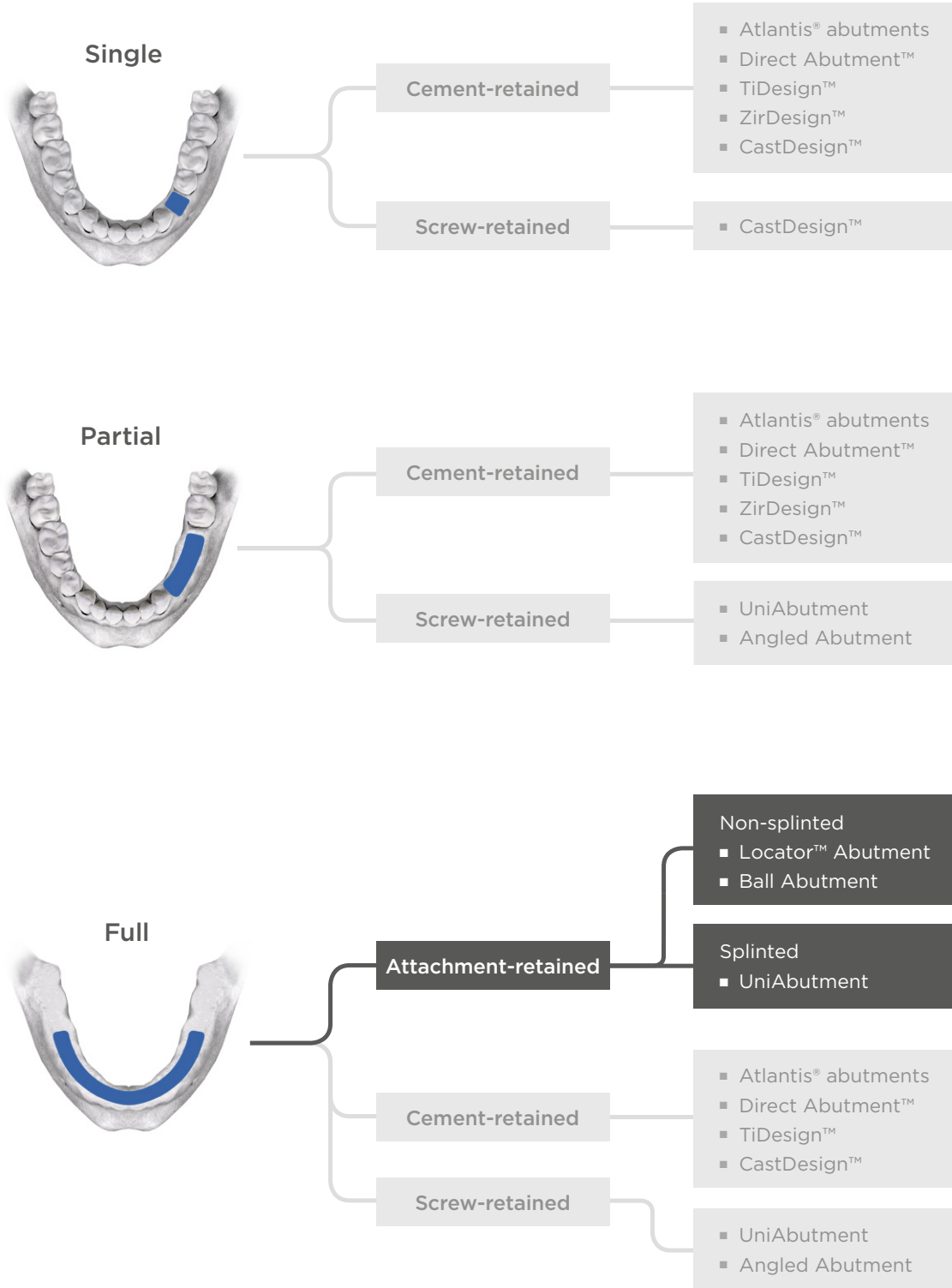
Clinical and laboratory procedures for attachment-retained restorations utilizing Astra Tech Implant System®.

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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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Restorative overview



Introduction

The Astra Tech Implant System is designed to meet various clinical situations found in partially dentate and edentulous patients. It has been thoroughly investigated in numerous technical, experimental and prospective clinical studies and the extensive research and documentation have yielded a simple, flexible and reliable implant system that is clinically proven to maintain marginal bone levels. A variety of prosthetic treatment options including overdentures can be undertaken using Astra Tech Implants System as anchorage units.

There are several indications for overdenture treatment in connection with implant treatment. Functional, esthetic, phonetic and hygienic requirements in certain clinical situations support the use of the overdenture as a treatment option. The presence of at least one implant in each quadrant of the jaw, combined with a suitable attachment system, makes overdenture treatment a viable alternative when treating totally edentulous jaws.



Non-splinted attachments
in the lower jaw



Splinted attachments
in the lower jaw

Overdenture treatment in the lower jaw

In the lower jaw, the installation of a fixed bridge restoration is often possible; however, patients sometimes prefer to have an overdenture for reasons of economics. Clinical studies with the Astra Tech Implant System show that the survival rate of implants in the lower jaw is the same for overdentures as for fixed bridge restorations, regardless of the retaining system.

Based on clinical results, the following protocol is recommended in the lower jaw:

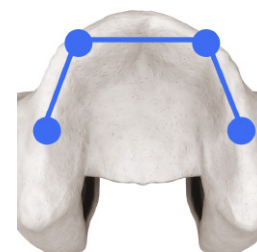
- Minimum 2 implants, splinted or non-splinted

Overdenture treatment in the upper jaw

In the upper jaw, the clinical result and long term predictability is more dependent on the mode of implant support and the design of the denture. A prefabricated or customized bar, splinting four or more implants can help to ensure equally good results as in the lower jaw.

Based on clinical results, the following protocol is recommended in the upper jaw:

- Minimum 4 implants, splinted



Splinted attachments
in the upper jaw

Treatment planning

Indications for overdenture treatment

- An unfavorable jaw relation which makes treatment with a fixed bridge restoration difficult
- Esthetic problems, e.g. the need for lip support in the upper jaw
- Phonetic problems due to loss of alveolar bone in the upper jaw
- Patient dissatisfaction with removable denture due to oral irritations and/or loss of bone for denture fixation
- A bridge option makes satisfactory oral hygiene impossible or extremely difficult to achieve
- Edentulous patients with a cleft palate
- Economic constraints

Contraindications for overdenture treatment

- At least one implant in each quadrant cannot be achieved
- Untreatable, prosthesis-related stomatitis
- Certain general illnesses and forms of medication are relative contraindications for implant treatment (e.g. osteoporosis, uncontrolled diabetes, cortisone treatment, radiotherapy)

Factors to consider

Factors which govern the planning of the overdenture treatment are the number and length of the implants, together with quality and quantity of the anchoring bone tissue.

In cases where there are three or more implants, greater accuracy is required in order to achieve proper distribution of loading on implants and mucosa.

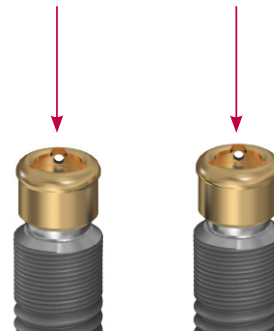
To ensure an optimal restorative treatment, make sure that the following conditions are met:

- Parallel implants
- Rigid bar connector without large distances between implants
- Appropriate length of extension bars, not too long
- Adequate resilience of the mucosa. The mucosa should not be too soft
- Provide an even load on the mucosa when the prosthesis is in function

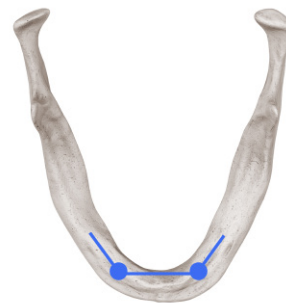
Creating an overdenture

Creating an attachment-retained overdenture can be made in different ways.

1. Creating a complete new overdenture at the laboratory.
2. When the existing denture is judged suitable for further function:
 - Laboratory conversion of an existing denture
 - Chairside retrofitting of an existing denture






Implants should be as parallel as possible to ensure optimal results.



Adjust the extension bars to appropriate length. Extension bars should be short to avoid lever forces.

Abutment selection

Abutments designed for attachment-retained restorations	Indication and intended use	Features and benefits	Page
<p>Locator™ Abutment Titanium</p> 	<ul style="list-style-type: none"> • Non-splinted restorations in the mandible 	<ul style="list-style-type: none"> • Designed to accommodate the maximum denture-bearing area • Self-aligning design with exceptional durability • Available in multiple vertical height options starting as low as 2.0 mm • Available in multiple retention options and replaceable • Up to 40° angle correction 	8
<p>Ball Abutment Titanium</p> 	<ul style="list-style-type: none"> • Non-splinted restorations in the mandible 	<ul style="list-style-type: none"> • Designed to accommodate the maximum denture-bearing area • Available in multiple retention options and replaceable 	19
<p>20° or 45° UniAbutment Titanium</p> 	<ul style="list-style-type: none"> • Splinted restorations in the mandible/ maxilla in combination with a bar <p>Note: It is contraindicated to use 45° UniAbutment as the only support for restorations on 3 implants or less. For these situations at least one support should be a 20°UniAbutment.</p>	<ul style="list-style-type: none"> • The design offers flexibility in the clinical situation for implants placed in non-parallel situations by maintaining an axis of withdrawal for implants converging or diverging up to angles of 90° • Available in 45° or 20° tapered top cones 	23

Locator™ attachment Components and instruments

With Locator you can offer your patients an excellent implant-supported overdenture solution. Locator provides long-term stability and ease of use, minimizing the time needed to adjust loose dentures. Its low vertical height is ideal for all overdenture patients. Cases with angulation problems and limited occlusal space can be easily corrected using Locator.



Taking into consideration clinical documentation available, non-splinted Locator Abutments are indicated in the lower jaw only.

Locator components and instruments you will need

Locator™ Abutment
Available for connection sizes:
3.5/4.0 and 4.5/5.0
Height: 0.5–5 mm.



Processing Cap



Locator™ Inserts
The Locator inserts come with five different retentive holding force levels.



Blue
680 grams



Pink
1361 grams



Clear
2268 grams



Grey
0 grams



Red
221–680 grams



Orange
907 grams



Green*
1361–1814grams

* for non-parallel implants

Locator™ Abutment Pick-up



Locator™ Abutment Replica



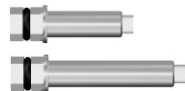
Block-out Spacer



Locator™ Core Tool



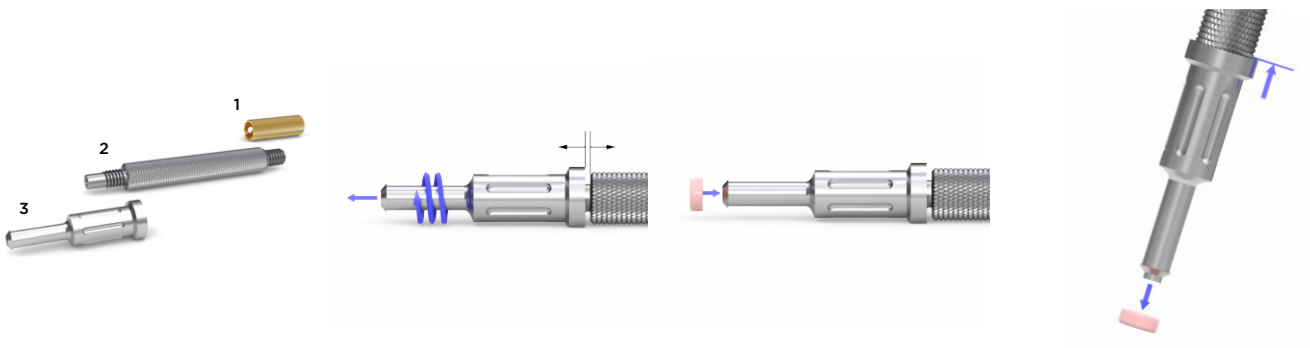
Locator™ Torque Wrench Bit



Torque Wrench



Clinical procedure – Locator™ Core Tool



Using the Locator™ Core Tool

The Locator Core Tool is made up of three tools in one:

1. Locator Abutment Driver for tightening of abutment.
2. Locator Insert Seating Tool for seating an insert into the titanium processing cap.
3. Locator Insert Removal Tool for catching and pulling the used insert out of the permanent metal housing.

Locator™ Insert Removal Tool – Preparing

Loosen the insert removal tool by making three full turns counterclockwise. You will see a visible gap.

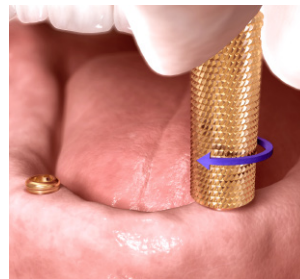
Removing

To remove an insert from the titanium metal housing, place the tip into the nylon insert and push to the bottom. Then tilt the tool so that the sharp edge of the tip grabs hold of the insert. Pull the insert out of the cap.

Discarding

To discard the insert from the tip of the Locator Core Tool, point the tool down and away from you and tighten the Insert Removal Tool back onto the Locator Core Tool. This will activate the removal pin and dislodge the insert from the tip end of the Insert Removal Tool.

Clinical procedure - Abutment installation



Abutment selection

The height of the Locator Abutment selected should be based on the highest level of tissue measured with the Abutment Depth Gauge. This will allow the retention groove to be at the appropriate supragingival height.

Abutment installation

Install the Locator Abutment into the implant manually.

Seating

Manually seat the abutment using the Locator Abutment Driver part of the Locator Core Tool.

Final tightening

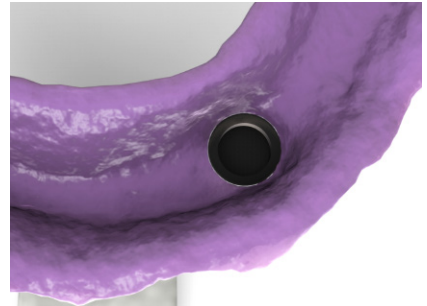
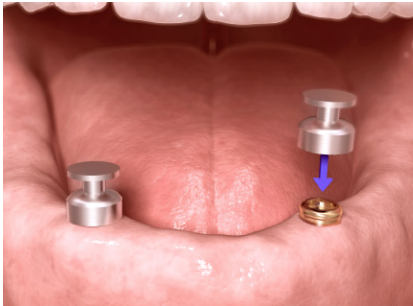
Torque the Locator Abutment using the Locator Torque Wrench Bit together with the Torque Wrench for final tightening.

Recommended torque:

● 25 Ncm

● 25 Ncm

Clinical procedure – Creating a new overdenture



Placing Locator™ Abutment Pick-up

Firmly attach the Locator Abutment Pick-up to each Locator Abutment. The pick-up should have stable friction retention.

Impression taking

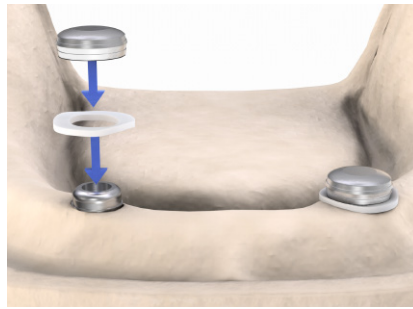
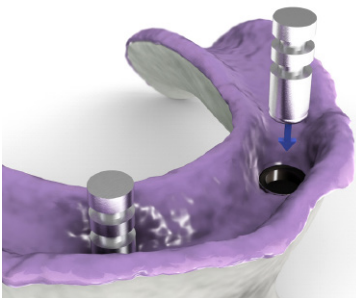
Take the abutment-level impression in a customized impression tray with an elastomeric impression material.

Remove the impression once the impression material has set.

Verifying impression

The black processing inserts of the pick-ups should be clearly visible within the impression. Send the impression to the laboratory.

Laboratory procedure – Creating a new overdenture



Working Model

Firmly place the Locator Abutment Replica in the Locator Abutment Pick-up.

Fabricate a working model with the Locator Abutment Replica and high-quality stone material.

Processing

Place the spacer over the head of each Locator Abutment Replica providing primary soft tissue support and a resilient situation. Firmly attach the Locator Processing Cap to each replica and process and cure it into the overdenture.

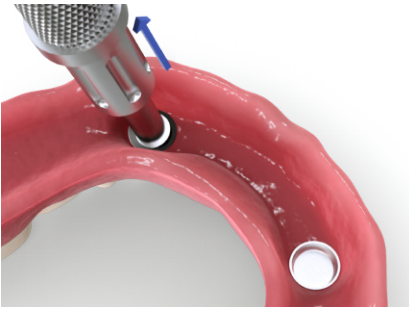
Remove the overdenture and discard the spacer after the acrylic has cured.

Finishing

Add acrylic as necessary. Use a burr to remove excess acrylic, and polish the overdenture base.

Send the final overdenture with the Locator Processing Cap and insert to the clinician.

Clinical procedure - Creating a new overdenture



Removing

Remove the black processing insert using the Locator Insert Removal Tool.

Inserting

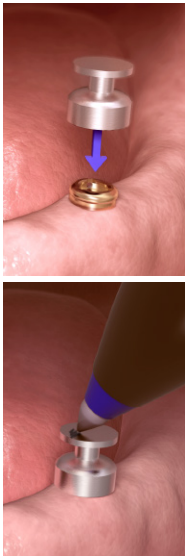
Press the preferred Locator insert into the Processing Cap's metal housing, using the Insert Seating Tool.

Final result

Seat the overdenture over the Locator abutments.

Verify that the required retention is obtained. Gradual increase of retention is always recommended. It is best to start with low retention.

Clinical procedure - Converting an existing denture with lab support



Marking

Firmly attach the Locator Abutment Pick-up to each Locator Abutment. The pick-up should have stable friction retention.

Mark the top of the pick-up using articulating paper, denture pencil, pressure-indicating paste, etc.

Reaming

Place the existing denture over the Locator Abutment Pick-up and remove. A landmark will now be visible on the denture.

Use an acrylic laboratory burr to relieve the denture base in the indicated areas. Ream enough room to accommodate passive fit when seated over the pick-up.

Impression-taking

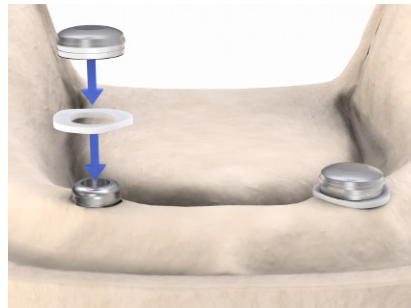
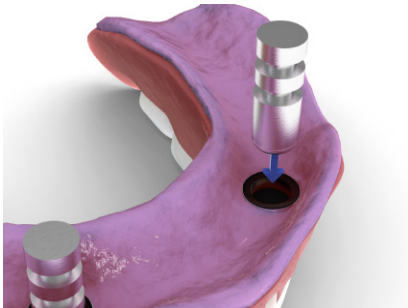
Take an impression using the existing denture as an impression tray with an elastomeric impression material. Remove the impression once the impression material has set.

Verifying the impression

The black processing inserts of the pick-ups should be clearly visible within the impression. Make a reline if needed.

Send the impression to the laboratory for processing.

Laboratory procedure - Converting an existing denture with lab support



Working model

Firmly place the Locator Abutment Replica in the Locator Abutment Pick-up.

Fabricate a working model with the Locator Abutment Replica and high-quality stone material.

Processing

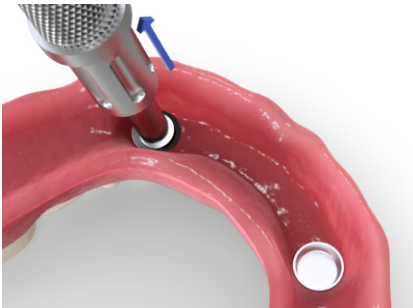
Place the spacer over the head of each Locator Abutment Replica providing primary soft tissue support and a resilient situation. Firmly attach the Locator Processing Cap. Process and cure it into the overdenture. Remove processed denture and discard the spacer once acrylic has set.

Finishing

Add acrylic as necessary. Use a burr to remove excess acrylic, and polish the overdenture base.

Send the final overdenture with the Locator Inserts to the clinician.

Clinical procedure - Converting an existing denture with lab support



Removing

Remove the black processing insert using the Locator Insert Removal Tool.

Inserting

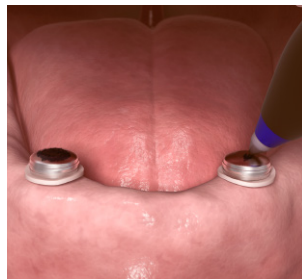
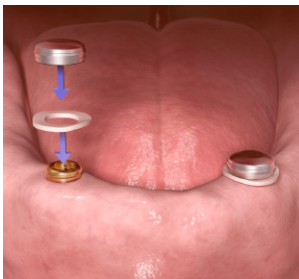
Press the preferred Locator insert into the Processing Cap's metal housing, using the Insert Seating Tool.

Final result

Seat the overdenture over the Locator abutments.

Verify that the required retention is obtained. Gradual loading is always recommended. It is best to start with low retention.

Clinical procedure – Converting an existing denture – chairside



Placing

Place the spacer over the head of each Locator Abutment providing primary soft tissue support and a resilient situation. Firmly attach the Locator Processing Cap.

Marking

Mark the top of the Processing Cap using articulating paper, denture pencil, pressure-indicating paste, etc.

Reaming

Place the existing denture over the Processing Cap and remove. A landmark will now be visible on the denture.

Use an acrylic laboratory burr to relieve the denture base in the indicated areas. Ream enough room to accommodate passive fit when seated over the Processing Cap.

Processing

Fill relieved areas in the denture with acrylic of choice and seat the denture over the Processing Caps without compressing the soft tissue too much. Follow manufacturer's recommendations for use. Remove processed denture once acrylic has set.

Clinical procedure - Converting an existing denture - chairside



Finishing

Add acrylic as necessary. Use a burr to remove excess acrylic, and polish the overdenture base before removing the black processing insert.

Removing

Remove Spacer from the Locator Abutment. Remove the Processing Insert from the Processing Cap in the overdenture using the Locator Insert Removal Tool.

Inserting

Press the preferred Locator insert into the Processing Cap's metal housing, using the Insert Seating Tool.

Verify that the required retention is obtained. Gradual loading is always recommended. It is best to start with low retention.

Final result

Seat the overdenture over the Locator abutments.

Verify that the required retention is obtained. Gradual increase of retention is always recommended. It is best to start with low retention.

Ball attachment Components and instruments

The clinical process for the ball attachment is quick and easy. The Clix Metal Housing is cured into the denture and custom retention is achieved with the plastic insert, snapped into the housing. The Clix Inserts are available in three different strengths, offering optimal retention for every individual situation.

The Clix attachment is designed to virtually eliminate wear on the Ball Abutment and minimize the need for maintenance. Changing the Clix Inserts to alter the retention is done easily.

Taking into consideration clinical documentation available, non-splinted Ball Abutments are indicated in the lower jaw only.



Ball attachment components and instruments you will need

Ball Abutment



Ball Abutment Pick-up



Ball Abutment Replica



Ball Wrench



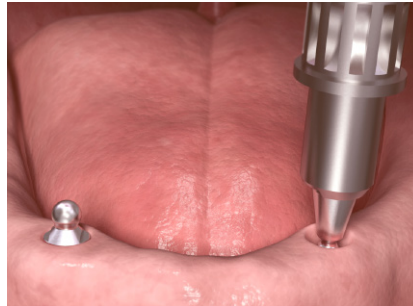
Torque Wrench



Ratchet Wrench



Clinical procedure - Installation



Abutment selection

The height of the Ball Abutment selected should be based on information using the Abutment Depth Gauge. The highest point of the soft tissue margin should be at or slightly "apical" to the tapered neck of the Ball Abutment.

Abutment Installation

Seat the Ball Abutment into the implant with the Ball Wrench.

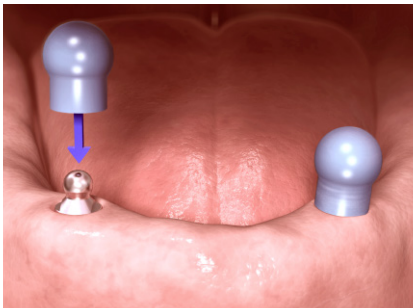
Final Tightening

Torque the Ball Abutment into the implant with the Ball Wrench in combination with the Torque Wrench or Ratchet Wrench.

Recommended torque:

- 25 Ncm
- 25 Ncm

Clinical procedure - Creating a new overdenture



Placing the Ball Abutment Pick-up

Firmly attach the Ball Abutment Pick-ups and check to ensure that they are securely in place. The pick-ups should have a stable friction retention.

Verify that there is adequate space in the tray for impression material and the Ball Abutment Pick-up. It is essential to have enough space around the copings to achieve good retention within the impression material.

Impression taking

Take the abutment-level impression using a customized impression tray and an elastomeric impression material. Remove the impression once the impression material has set.

Verifying the impression

The pick-ups should be captured in the impression and be clearly visible. If the pick-ups remain seated on the Ball Abutments, remove and re-seat them in the impression. Send the impression to the laboratory.

Laboratory procedure – Creating a new overdenture



Working model

Place the Ball Abutment Replicas firmly into the Ball Abutment Pick-up.

Fabricate a working model with the Ball Abutment Replica and high-quality stone material.

Final result

The final restoration option is to be decided by the clinician and fabricated accordingly.

The Ball Abutment has standard ball dimensions ($\text{Ø}2.25$ mm) meaning that the most commonly over-denture solutions will be compatible.

Profile Bar System

Components and instruments

With the Profile Bar System you can offer your patients a customized cast bar with built-in retention system.

The metal housings are cured into the denture and custom retention is achieved by using plastic inserts that snap into the housing. The inserts are available in three different strengths, offering optimal retention for each individual situation. Changing the inserts to alter retention can be done in seconds.

Profile Bar System components and instruments you will need

OD Cylinder



Laboratory Bridge Screw



Bridge Screw



20° UniAbutment Pick-up



45° UniAbutment Pick-up



20° UniAbutment Replica



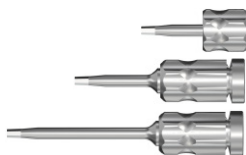
45° UniAbutment Replica



Torque Wrench Bit Hex



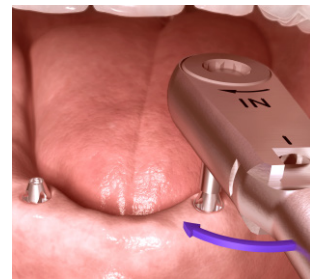
Hex Screwdriver



Torque Wrench



Clinical procedure - Installation



Abutment selection

Select the appropriate abutment using the Healing Abutment Uni. The bands correspond to millimeters as well as to the available UniAbutment heights. The Abutment Depth Gauge can also be used.

Removing

Remove the Healing Abutment Uni using the Hex Screwdriver.

Abutment installation

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

Final tightening

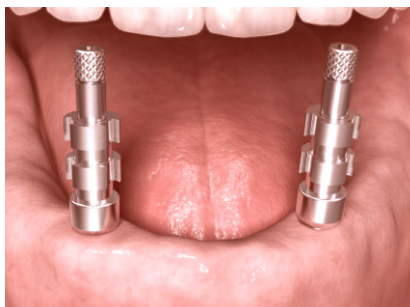
Remove the Delivery Cap. Use the Torque Wrench, preset at 15 Ncm for final tightening. The preset torque is reached when the handle snaps away.

Recommended torque:

● 15 Ncm

● 15 Ncm

Clinical procedure - Abutment-level impression



Releasing

Release the Carrier manually by unscrewing it with the Delivery Cap, or turn the Torque Wrench upside down and turn it counter-clockwise.

Seating UniAbutment Pick-up

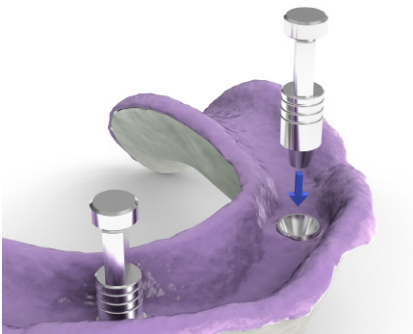
Select the appropriate Abutment Pick-up. Make sure the pick-up is in the correct position before tightening the abutment guide pins with the Hex Screwdriver using light finger force.

Impression-taking

Use a standard or customized impression tray. Make an opening in the tray for the guide pins. Cover the hole with wax. Make sure the guide pin can penetrate the hole and wax without interfering with the tray during impression-taking.

Inject the elastomeric impression material around the abutment pick-up and into the impression tray and place intraorally.

Laboratory procedure – Abutment-level impression



Working model

Place the UniAbutment Replica in the UniAbutment Pick-up. Check the impression for correct and stable retention of the abutment replicas. Tighten the replica into the impression tray.









Fabricate a working model with the abutment replicas and high-quality stone material.

Final result

The final restoration option is to be decided by the clinician and fabricated accordingly.

The OD Cylinder can be used in combination with the most commonly bar solutions.

Recommended tightening torque

Type of product		Torque - Ncm		
		X-Small	Small	Large
Cover Screw		● Manual*	● Manual*	● Manual*
Healing Abutment Healing Abutment Uni ProHeal Cap Healing Cap Angled		● Manual**	● Manual**	● Manual**
TempDesign™		● —	● 15	● 15
Temporary Abutment		● 15	● 15	● 15
20°/45° UniAbutment		● —	● 15	● 15
Bridge Screws		● —	● 15	● 15
Atlantis® abutments for Astra Tech Implant System® ZirDesign™ TiDesign™ CastDesign™ Angled Abutment		● 15***	● 20	● 20
Direct Abutment™ Ball Abutment Locator™ Abutment		● —	● 25	● 25

* 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 - Gold shaded.

Non-sterile abutments

Before installation, the abutments must undergo a cleaning and sterilization procedure. The cleaning should preferably take place in an ultrasonic unit with a mixture of dishwashing detergent and water. For sterilization procedures, follow the instructions below.

Abutment	Sterilization procedure
Locator™ Abutment	Steam sterilization with a pre-vacuum cycle (134°C/270–275°F for 3 minutes).

Sterile abutments

Product	Sterilization	Package
Healing Abutment	The product is sterilized by irradiation and intended for single use only.	The Healing Abutment is delivered in a sterile plastic container.
UniAbutment	The product is sterilized by irradiation and intended for single use only.	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.
Ball Abutment	The product is sterilized by irradiation and intended for single use only.	The Ball Abutment is delivered in a sterile plastic container.

References on overdentures

Maxillary overdentures

Slot W, Raghoobar GM, Cune MS, Vissink A, Meijer HJ. Maxillary overdentures supported by four or six implants in the anterior region: 5-year results from a randomized controlled trial. *J Clin Periodontol* 2016;43(12):1180-87.

Slot W, Raghoobar GM, Vissink A, Meijer HJ. Maxillary overdentures supported by anteriorly or posteriorly placed implants opposed by a natural dentition in the mandible: A 1-year prospective case series study. *Clin Implant Dent Relat Res* 2014;16(1):51-61.

Locator attachment in the mandible

Bilhan H, Geckili O, Sulun T, Bilgin T. A quality-of-life comparison between self-aligning and ball attachment systems for two-implant-retained mandibular overdentures. *J Oral Implantol* 2010;37(sp1):167-73.

Emami E, Cerutti-Kopplin D, Menassa M, et al. Does immediate loading affect clinical and patient-centered outcomes of mandibular 2-unsplinted-implant overdenture? A 2-year within-case analysis. *J Dent* 2016;E-pub Apr 22, doi:10.1016/j.jdent.2016.04.009.

Gjengedal H, Dahl L, Lavik A, et al. Randomized clinical trial comparing dietary intake in patients with implant-retained overdentures and conventionally relined denture. *Int J Prosthodont* 2012;25(4):340-7.

Schincaglia GP, Rubin S, Thacker S, et al. Marginal bone response around immediate- and delayed-loading implants supporting a locator-retained mandibular overdenture: A randomized controlled study. *Int J Oral Maxillofac Implants* 2016;31(2):448-58.

Roe P, Kan JY, Rungcharassaeng K, Lozada JL. Immediate loading of unsplinted implants in the anterior mandible for overdentures: 3-year results. *Int J Oral Maxillofac Implants* 2011;26(6):1296-302.

Ball or bar attachment in the mandible

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