The **Stern ERA®** is our response to the dental professional's need for a simple, dependable and highly versatile attachment system for removable prostheses. **ERA®**s are the most popular resilient dental attachments prescribed today. Used in removable partial denture treatment, tooth supported overdentures and implant cases, **ERA®** is an excellent choice for both experienced practitioners and those new to attachment procedures.
Before the ERA® concept was developed, dental professionals and their patients were experiencing problems with some resilient attachments. They were too expensive, complicated to fabricate, and too fragile or unreliable for long term patient service.

The ERA® System alleviates these problems by using new materials and patented designs. ERA® Attachments consist of a metal female component, which is intraorally fixed; and a replaceable, high density nylon male anchored in the denture base.

- They are low in cost. By eliminating the machining of expensive gold alloy components, ERA® attachments are affordable to many more patients.
- They are easy to use. Fabrication and maintenance procedures have been simplified.
- They are tough and reliable. In vitro studies* and clinical experience show ERA® attachments to be long lasting, and patients find them comfortable and easy to live with.

Worldwide...dentists prescribe, and technicians fabricate, thousands of ERA® retained restorations every month. And patients put them to hard daily use. You can join in their success.

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**ERA® Retention**

1. Female retention of the original white male, indicative of both male and female wear.
2. Female retention of a new white male, indicative of female component wear.

**Competitive Comparison**

Locator® has no resiliency

ERA® with 0.4mm resiliency

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*Study conducted by Jonathan M. Wohlford, D.D.S., Medical College of Virginia, School of Dentistry*
**ERA® Partial Denture Attachments**

The female component is either a plastic pattern, which is incorporated as part of a crown wax-pattern and cast in a hard alloy, or it is a machined steel part that can be cast into a crown. A metal female jig (which becomes part of your stone model) is available to hold the male in place for laboratory processing into the partial denture’s acrylic saddle.

You have a choice of two male designs. The **ERA®-Reduced Vertical male (ERA®-RV)** has 0.4mm of vertical resiliency and universal joint hinging. The **Micro ERA® male** has the same resiliency and hinging, but needs 0.5mm less vertical space and has a diameter of almost 1.0mm less, making it the smallest extracoronal resilient attachment in the world. The **ERA®-RV** and **Micro ERA®** males also have a projection which contacts the abutment crown above the female eyelet. This resists vertical displacement of the partial denture’s distal extension saddle.

Within the **ERA®-RV** there are three female choices. The original female drops 0.3mm from its connection to the crown. Bone loss in the edentulous area could mean that there is a significant amount of space between the attachment and the tissue. Now you can place the female eyelet closer to the tissue with two offset females. The bottom of the **ERA®-RV Offset female 2.5** drops 2.5mm from its connection to the crown and the **ERA®-RV Offset 4.5** drops 4.5 mm. We made extensive use of state of the art product engineering software during the design and testing phases of these attachments to ensure that these females are as strong as the original. Within the Micro ERA® there are two materials out of which the females are manufactured. The original female is a plastic pattern. In addition we offer a machined stainless steel female.

**ERA® Overdenture Attachments including the Micro ERA® Overdenture**

There are two female designs and two post diameters for root retained overdentures. The **ERA® Overdenture Attachment female** is a plastic pattern that is incorporated into the wax-pattern for a post and root-cap coping. It is cast in a hard alloy. It comes in the original size and the Micro, which is 20% smaller. The Micro saves 0.5mm in height and almost 1mm in width, with no loss of retention or longevity. The **ERA® Direct Placement Overdenture Attachment female** is manufactured in surgical stainless steel and cemented into a root specially prepared to receive it.

The standard size stainless steel females are made in a choice of two post diameters and four post angles to accommodate most patient’s needs. In addition, micro size females are available with the small diameter post and four post angles. It’s ideal to have the attachment parallel, however, the attachment will function normally up to 5° out of parallel with the case’s path of insertion. All ERA® Direct Placement females are titanium nitride coated.

2. Two post diameters, 1.3mm and 1.7mm. The titanium nitride coating extends onto the post to identify the larger version.
3. Angled posts: 0˚ (straight), 5˚, 11˚, and 17˚.
4. Alignment handles help you carry the female to the root and aid in evaluating the attachment’s angulation.
5. Specialized burs for root preparation:
   - Spade Drill for removing gutta percha.
   - Pilot Drill with depth reference ring for post preparation.
   - Countersink Bur for shaping the occlusal surface of the root to support the female.
6. Overdenture males. Used with both laboratory cast and prefabricated, stainless steel females.

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2. Two post diameters, 1.3mm and 1.7mm. The titanium nitride coating extends onto the post to identify the larger version.
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   - Spade Drill for removing gutta percha.
   - Pilot Drill with depth reference ring for post preparation.
   - Countersink Bur for shaping the occlusal surface of the root to support the female.
6. Overdenture males. Used with both laboratory cast and prefabricated, stainless steel females.
ERA® Bar

As with all ERA® attachments, these feature a black fabrication male with built-in spacer and there are six colored coded males for a consistent level of retention over the life of the attachment. Optional Micro ERA® metal jacket holds the attachment male securely in the denture base and comes preloaded with the black fabrication male. Males are changed without the use of auto polymerizing acrylic. A new addition is the Micro ERA®-DE Weldable which can be welded off the end of a bar.

Micro ERA® Bar female-weldable (Stainless Steel) (#811217)
Micro ERA® Bar female-weldable (Titanium) (#811218)
Micro ERA® female-Drill and Tap (Titanium) (#811219)
ERA® Bar Drill (#811221)
ERA® Bar Tap (#811222)
Micro ERA®-DE female-weldable (Titanium) (#811607)

ERA® Implant Abutments

This version of the ERA® combines the overdenture attachment concept with an implant abutment. It is made of titanium alloy. Its ERA® female is titanium nitride coated and works with the same overdenture males used for patients with natural root abutments. The prosthetic head of the abutments is also manufactured in the micro size. This attachment is reduced 20% from the original, making it the smallest overdenture implant abutment, with no loss of performance. No overdenture abutment lasts longer and none can compare to the true vertical resiliency of the patented ERA® Implant Abutment. There are straight and angled abutments to achieve functional parallelism even when implants are divergent. Like the ERA® Overdenture Attachment, it’s ideal to have the attachment parallel, however, the attachment will function normally up to 5° out of parallel with the case’s path of insertion. Tighten the abutment in the implant using either the Thumb Knob or the 20N•cm torque wrench, each combined with the ERA® socket. We make ERA® Abutments for Sterngold-ImplaMed® implants and for many other brands (compatibility chart can be found on back page).

1. ERA® Implant Abutments are made for Sterngold-ImplaMed and many other implants in standard and micro size.
2. Two-piece angled abutment for divergent implants. The abutment base threads into the implant. The attachment female is bonded to the base. Use ERA® Lock Cement, a Bis-GMA resin.
3. Six (6) attachment angles: 0˚, 5˚, 11˚, 17˚ (23˚ and 30˚ not currently available, awaiting 510(k) clearance).
4. Alignment handles help you carry the female to the implant site and aid in evaluating the attachment’s angulation.
5. The same ERA® male used with root retained overdentures is used with ERA® implant abutments.
6. We manufacture ERA® Abutments for most major implant brands and in varying cuff heights.
7. Stern ERA® standard and micro overdenture impression copings are used to create an accurate transfer impression relationship.
8. The Non-Engaging Impression Copings will record the rotational position of the internal thread of the implant, sometimes called thread timing. We make these to fit most popular implants. Two large flat sides ensure that the impression coping can only be seated into the impression in one rotational position.

Micro ERA® Bar female-weldable
Micro ERA® Drill and Tap
ERA® Bar Drill
ERA® Bar Tap
Micro ERA®-DE female-weldable

The Smallest Prosthetic Head and the only with True Vertical Resiliency!

NEW

Micro ERA®-DE female-weldable

Micro ERA® Bar Drill

Micro ERA® Bar Tap

NEW

Micro ERA®-DE female-weldable

Micro ERA® Bar Drill

Micro ERA® Bar Tap

NEW

Micro ERA®-DE female-weldable
The dentist will screw the correct Non-Engaging Impression Coping into each implant in the mouth and tighten by hand, using the Friction Driver.

Create a closed-tray impression, being careful not to displace the tissue. Carefully segregate each impression coping, recording its position, so that it can be returned to the same hole in the impression. Send the impression and the impression copings to the dental laboratory.

In the laboratory the technician will screw an implant analog onto each impression coping and insert that unit into the impression.

For those implants requiring angle correction, use one of the clear plastic ERA® Implant Abutment Gauges to determine which angle correction abutment will be used. ERA® Implant Abutments are made in 5, 11, and 17 degree versions.

In this example the 17 degree will be used. Once each tissue cuff and angle has been measured, the proper ERA® Implant Abutments can be ordered.

Screw the appropriate 0° abutment, or angle correction base, into each implant on the model using the ERA® Micro Socket and the Thumb Knob. Snap a white ERA® Alignment Handle into the appropriate angled female component.

Snap a white Alignment Handle into the other female components. Rotate each of the angled Micro ERA® Females until they all line up with the desired path of insertion of the denture.

Technique for the ERA® Implant Abutments utilizing the Non-Engaging Impression Copings

The ERA® Implant Abutment has a number of advantages when compared to other overdenture abutments. One of those unique advantages is the ability to correct the angulation of misaligned implants.

Until now, the angle correction procedure had to be performed in the mouth. However, this procedure can now be performed in the laboratory.

The ERA® Implant Abutment screws directly into the implant, bypassing any anti-rotation mechanism.

The Non-Engaging Impression Copings will record the rotational position of the internal thread of the implant, sometimes called thread timing. Two large flat sides ensure that the impression coping can only be seated into the impression in one rotational position.

In the laboratory the technician will screw an implant analog onto each impression coping and insert that unit into the impression.

The laboratory technician will use a surveyor to establish the ideal path of insertion for the overdenture. In this example, two of the implants are parallel to the appropriate path of insertion and will use the one-piece, 0 degree ERA® Implant Abutment.

It is best to add a soft tissue replica material before pouring the model. This will allow the technician to accurately measure the depth of the tissue. Sterngold’s InstaGums® is recommended.

Screw the appropriate 0° abutment, or angle correction base, into each implant on the model using the ERA® Micro Socket and the Thumb Knob. Snap a white ERA® Alignment Handle into the appropriate angled female component.

Snap a white Alignment Handle into the other female components. Rotate each of the angled Micro ERA® Females until they all line up with the desired path of insertion of the denture.
Using an indelible pen, mark a vertical line across the juncture between the implant abutment base and the Micro ERA® Female, wherever space allows. Remove the ERA® Females from the bases.

Add a small quantity of ERA® Lock Cement into the socket of the base. Also, apply a small amount of cement to the button on the bottom of the ERA® Female. Too much cement may make it difficult to completely snap the ERA® Female into the base.

Snap the Micro ERA® Female into the base, aligning the two halves of the mark. Clean up any excess cement.

The doctor will receive all of the abutments, being careful to identify each abutments position.

Each abutment is screwed into its appropriate implant and hand tightened, using the ERA® Micro Socket and Thumb Knob.

Next, each abutment is torqued to 20 Ncm, using the ERA® Micro Socket and a 20 Ncm torque wrench.

The remaining steps may be performed directly in the mouth or on the model.

Snap a Black Fabricating Male or a Metal Jacket with Black Male onto each abutment.

Small pieces of thin rubber dam are very effective at blocking out any exposed abutment surface. The rubber dam helps to prevent composite or acrylic from locking into any undercuts.

Using a Round Bur, prepare a recess in the denture over each Metal Jacket. The denture should not touch the males or it will not be seated properly on the tissue. A lingual window may be formed into each recess.

Use SternVantage® Varnish to prime the recesses over the Metal Jackets and light cure.

Add composite or acrylic over the top and sides of the Metal Jackets. Sterngold’s ERA PickUp® material is recommended.

Place additional resin in the recesses of the overdenture and seat the prosthesis into the mouth.
Passive seating is most important. If the tissue is displaced, it will be difficult to seat the attachments accurately.

Remove the denture. Fill any defects with resin and finish the prosthesis. Excess ERA PickUp® material may be removed from unvarnished areas easily.

A soft reline material, like Sterngold’s QuickLine®, is recommended to cushion the tissue and implants. This long-term self-curing silicone material is dispensed easily from an automixing gun and may be applied directly to the denture.

Replace the Black Fabrication Males with the White Final Males. This will activate the 0.4 mm vertical resiliency feature of the ERA® attachment.

Use the Micro ERA® Core Cutting Bur in a straight handpiece at medium speed to cut out the center button of the Black Male. Use two or three short cutting cycles with an in-and-out motion.

After the core has been removed, collapse the remaining ring into the open space and lift it out. The ERA® Attachment Extraction Tool is recommended.

Place the white Micro ERA® Overdenture Males on the Micro ERA® Seating Tool and snap them into the Metal Jackets.

Reseat the denture. The procedure is complete.

**To order components, please refer to the ERA® Implant Abutment Selection Chart located on page 12.**
Changing the ERA® Male

All ERA® males are mechanically anchored in the denture base. They provide both vertical resiliency and universal hinge movement. Worn males are removed with a specially designed bur and new ones snap into a metal jacket permanently processed into the denture. There is a specifically designed metal jacket for each type of ERA® male: partial denture – ERA®-RV, Micro ERA®, ERA® overdenture, and Micro ERA® overdenture. You can also anchor the males directly in the denture acrylic without the metal jacket.

2. Bur removes the center post of the male.
3. Pop the remnant of the male out with the ERA® Extraction Tool, or with any sturdy pointed instrument.
5. Snap the new male into the metal jacket or denture acrylic.
6. New male in place.

All ERA® males use the same color code:
- Black is the processing male.
- White = smallest button diameter
- Orange
- Blue
- Grey
- Yellow
- Red = largest button diameter

The six different males provide consistent retention throughout the life of the attachment.

ERA® Angle Correction

1. Snap a white alignment handle into the straight ERA® attachments. Rotate the angled ERA® female until they all line up with the desired path of insertion of the denture.
2. Mark a vertical line using an indelible pen across the juncture between the implant abutment base and the ERA® Female – wherever space allows. Remove the females from the bases.
3. Add a small quantity of ERA® Lock Cement into the socket of the base and a small amount to the button on the bottom of the female.
4. Snap in the ERA® Female, aligning the two halves of the mark. Clean up any excess cement.
1. Use SternVantage® Varnish to prime the recesses and light cure.

2. Add ERA PickUp® Material over the top and sides of the metal jackets.

3. Place additional resin in the recesses of the overdenture and seat the prosthesis in the mouth.

4. Passive seating is most important. If the tissue is displaced, it will make accurate seating of the attachments difficult.

5. Remove the denture. Fill any defects with resin and finish the prosthesis. Excess ERA PickUp® can easily be removed from the unvarnished areas.

6. A soft reline material, like Sterngold's QuickLine™, is recommended to cushion the tissue and implants during the healing phase.

ERA PickUp® Material (#220235)
1 syringes @ 15 grams and 15 tips

ERA PickUp® Syringe, Tips & SternVantage Varnish LC (#220237)
1 syringe @ 15 grams, 15 tips and 1 bottle of 5 ml* Varnish LC

SternVantage® Varnish LC (#221001)
Unfilled light cure resin, 30 ml

* 5 ml Varnish not sold separately
Common Causes of Wear for Attachments with Nylon Components

The following suggestions from the dental laboratory technicians and dentists on our technical staff, as well as some of our field survey labs, will contribute to extending the life of the prosthesis and patient comfort.

Patient Consistently Bites the Overdenture Into Place
The patient should be instructed on how to insert the prosthesis into place with his/her fingers.

Cleaning Abutments or Females with an Abrasive Cleaner
Toothpaste can be very abrasive. The patient should be instructed to remove all traces of toothpaste after brushing. The abrasive in some toothpaste can cause extensive wear on the inside of the female when the male is inserted.

Denture Cleaners
Patients who use denture cleaner should be advised to follow the manufacturer’s instructions. Most require a soak time of only 5 to 15 minutes then rinse and store overnight in only water. Patient should avoid leaving the overdenture in the cleaning solution for extended time or overnight since many cleaners can have a detrimental effect on the surface of the nylon males and cause them to loose their retention. The cleaning solution can actually attack the nylon of the males, causing it to soften in approximately 1-2 months. Solutions containing Chlorine may cause the nylon males to become hard and brittle. This will cause premature wearing of the males, and eventually, some wear of the females.

Insertion of the ERA® Blue, Grey, Yellow or Red Colored Male
The insertion of the blue, grey, yellow or red males prematurely can cause excessive wear in the male. Keep in mind that the least amount of retention required by the patient is best.

The dentist should always process the prosthesis first with the Black Fabrication Male, core out that male, and then snap in the White Male Attachment which is the least retentive. Then, if the patient wants more retention, the Orange Male should be used. Only step up one degree of retention at a time.

Tobacco Chewing
Silica in the juices created by chewing tobacco can be very abrasive, and may be a cause of wear to the male and the female.

Pickup of Attachments Chairside
The dentist should make sure that the patient does not bite down once the prosthesis has been placed. We cannot determine the strength of a patient’s bite. Too much pressure can cause the tissue to be displaced. Once the composite around the male has set and the pressure relaxed, the tissue returns to a normal state raising the attachment slightly. This can cause the attachment to snap in and out constantly as the patient talks or chews, causing excessive wear of the male. To avoid this problem, have the patient bite passively. As patient relaxes bite, the dentist should passively hold the prosthesis in place until the acrylic or composite cures.

ERA® Fabrication Tips for Plastic Females
Distal Extension (Reduced Vertical and Micro)
Although the ERA female is a plastic burnout pattern and can be cast in virtually any alloy, care should be taken to choose a hard alloy. The two most important aspects to consider are Vickers hardness and Ultimate Tensile strength. These attributes will provide optimum retention and long life of the female eyelet. A minimum Vickers of 200 and an Ultimate Tensile of at least 75,000 psi is recommended.

Overdenture
We should pay particular attention to the cast Overdenture application of ERA. Prescriptions in these cases often request a yellow crown and bridge alloy. In choosing this kind of alloy, use a type IV metal that allows you to harden the finished casting to a high Vickers Hardness. There are many of these on the market today including Stern’s Apollo, a 46% type III that can be hardened to 230 Vickers. Hardening techniques for C+B metals are relatively standardized. First, anneal the finished casting by heating and quenching and then harden by heating and slow cooling. (Refer to specific alloy manufacturer for temperatures and detailed hardening technique.) This is a simple step that can ensure a successful case.

WARNING: Great care must be taken when using debubblizers on plastic patterns. These materials may present problems in investing and burnout of the patterns. You must be sure that there are no puddles in or around the attachment. Also take care to fill the inside of the female pattern with a small brush before investing the rest of the pattern.

Finishing the Cast ERA® Females
Females are divested in a normal fashion by either sandblasting lightly or stripping in ultra-sonic solution. Care should be taken that the inside of the female is not over sandblasted as this will oversize the female eyelet. Glass beads or light polishing with rubber points can be used to create a clean finished look to this interior surface. The outside surface is not a crucial dimension and can be rubber wheeled and polished but should not require stone or carbide finishing.

Parallelism
It’s ideal to have the attachment parallel, however, the attachment will function normally up to 5° out of parallel with the case’s path of insertion. If the attachments are off by more than 5° you might not realize maximum life span of the males.

Path of Insertion
We would like to stress the importance of a short flange in the anterior region. Appliances designed to engage the labial undercut will interfere with proper seating. In cases of deep labial undercut, it should be blocked out before the processing of the denture base. Engage no more than 1 mm of undercut. Full extension of the flange into the vestibule will still provide lip support and help prevent food entrapment.
ERA Mini® Dental Implant System

Zimmer Dental is now the worldwide exclusive distributor of the ERA Mini Dental Implant System and related products. Designed for both transitional and long-term denture stabilization, the ERA Mini Dental Implant System features the capability to correct implant misalignment. Four unique angle options offer flexibility to achieve the desired path of insertion for denture stabilization, even when implants are placed in narrow, resorbed ridges.

The ERA Mini Dental Implant System includes implants, surgical instruction and ERA® prosthetic components as well as processing, relining and patient education materials, making Zimmer Dental a one-stop shop for components to perform the entire chairside procedure of denture stabilization.

To learn more about the ERA Mini Dental Implant System or to place a U.S. order, please contact your Zimmer Dental sales representative or call 1 (800) 854 7019. For information or orders outside the U.S., please contact the appropriate Zimmer Dental representative from their global network.
# ERA® Implant Abutment

The smallest prosthetic head and the only with true vertical resiliency!

- ERA® Abutments are manufactured for most popular screw and cylinder implants.
- Components and product numbers vary with the implant type.
- Varying cuff heights are available, depending on implant platform and range from 0.5 mm to 6.5 mm.
- Four angles to accommodate divergent implants: 0˚ (straight), 5˚, 11˚ and 17˚.
- Refer to the ERA® ordering information on this page for compatibility and ease in ordering, reference the group letter.

Call 800-243-9942 for assistance in ordering or go online to www.sterngold.com for an interactive ERA Implant Abutment Selection Chart. For most current and updated availability visit: www.sterngold.com/Sterngold/Implants/ERA_Select.aspx

## ERA® Implant Abutments fit the following implants:

<table>
<thead>
<tr>
<th>Size</th>
<th>Manufacturer</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3.5</td>
<td>Internal</td>
<td>B</td>
</tr>
<tr>
<td>3.75</td>
<td>Internal</td>
<td>C</td>
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<tr>
<td>4.0</td>
<td>Internal</td>
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<tr>
<td>4.5</td>
<td>Single Stage</td>
<td>B</td>
</tr>
<tr>
<td>5.0</td>
<td>Single Stage</td>
<td>C</td>
</tr>
</tbody>
</table>

### Odin Innovations™

- 3.5 External Hex Minipal™
- 3.75 External Hex Minipal™
- 4.0 External Hex Cylinder
- 4.5 External Hex Cylinder
- 5.0 External Hex Cylinder
- 3.3 Self-tapping Threaded
- 3.3 Cylinder Minipal™
- 3.3 External Hex Cylinder
- 3.75 CL™ Self-tapping
- 3.75 Self-tapping Threaded
- 3.75 Standard threaded
- 4.0 External Hex Cylinder
- 4.5 External Hex Cylinder
- 5.0 External Hex Cylinder

### URC

- 3.0 Osteo Standard ST
- 3.25 Osteo Standard ST
- 3.75 Osteo Standard ST
- 4.0 Osteo Standard ST

### Implant Direct

- 4.0 ENDOPER® Ext. Connection
- 4.0 UNILAG® Ext. Connection

### Peri-Implant

- 3.25 Bud Screws
- 3.25 Bud Screws

### Biologic International

- 4.5 Silicone Screw
- 4.0 Micro-Lok Screw
- 4.0 Micro-Lok Cylinder
- 3.3 Micro-Lok Screw
- 3.3 Micro-Lok Cylinder

### Implant Direct

- Legacy
- Legacy
- Legacy
- Legacy
- Legacy

### Dentistry

- 2.0 Abutments
- 2.0 Abutments
- 3.0 Abutments
- 3.0 Abutments
- 3.0 Abutments

### Med

- 3.3 Internal Hex**
- 3.75 Internal Hex**
- 4.0 Internal Hex**
- 5.0 Internal Hex**

### SO Corporation

- 3.0 Setos
- 3.0 Setos
- 3.0 Setos
- 3.0 Setos

### ERA Micro

- ERA Micro Head only
- ERA Standard Head only

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Product names are trademarks or registered trademarks of their respective companies. ERA® is protected by U.S. patents 4,540,367; 5,120,222 and 5,195,891; and other foreign patents.

Order online at www.sterngold.com

23 Frank Mossberg Drive • Attleboro, MA 02703 USA

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