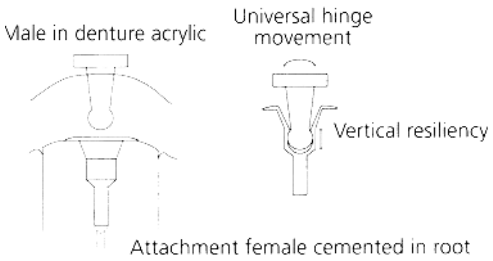
STERN ROOT ANCHOR™

Summary



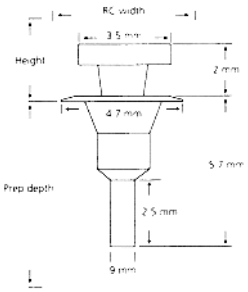
- Resilient precision attachment.
- Intraradicular ball and socket joint.
- Universal hinge.
- Nylon male, titanium female.
- Three color-coded males for three levels of retention. Lightest to strongest: white, orange, grey.
- Standard and mini size.

Fixation: Male - polymerized into denture acrylic.
Female - cemented directly in root preparation.

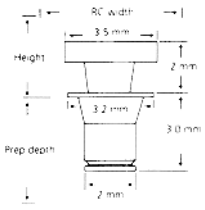
Minimum Space Required:

	Height+	FC width	Prep depth	RC width
Standard anchor	3.3mm	4.7mm	7.0mm	5.5mm
Mini anchor	3.3mm	3.2mm	4.0mm	5.5mm

+Add 1.0mm for patients with habitually strong bites.



Standard SRA



Mini SRA

Indications

- Teeth with poor crown to root ratios can be used as attachment abutments for an overdenture when periodontal conditions permit. Intraradicular connection of attachment components lowers occlusal stress on the root.
- Cases in which marginally adequate abutments do not warrant the expense of using of a cast root cap coping.

Contraindications

- When the abutments diverge to the extent that preparation of the root to receive the attachment female threatens perforation of the root.
- Patient unable to accept endodontic therapy.
- Active periodontal disease.

ATTACHMENT DESCRIPTION

The Stern Root Anchor retains and stabilizes complete overdentures and removable partial dentures using the retained roots of endodontically treated teeth. It has a minimal crown to root ratio because the attachment places the point of occlusal force application within the root.

Male Color Code:
White with black collar — Standard size for standard female
White with white collar —Standard size for mini female
Orange with black collar — Oversize for standard female
Orange with white collar — Oversize for mini female
Grey with black collar — Extra-oversize for standard female
Grey with white collar — Extra-oversize for mini female
Blue with black collar — Transfer male for standard female
Blue with white collar — Transfer male for mini female

Order Numbers

Item	Number
Standard (white) males	
For standard female, white with black collar, 5	833140
For mini female, white with white collar, 5	833240
Oversize (orange) males	
For standard female, orange with black collar, 5	833150
For mini female, orange with white collar, 5	833250
Extra oversize (grey) males	
For standard female, grey with black collar, 5	833151
For mini female, grey with white collar, 5	833251
Transfer (blue) males	
For standard female, blue with black collar, 5	833145
For mini female, blue with white collar, 5	833245
Standard female	833125
Mini female	833130

Stern Root Anchor Kits

5 root kit contains:
5 females, 10 white retention males, 5 transfer males, 5 caps, choice of bur
10 root kit contains:
10 females, 20 white retention males, 10 transfer males, 10 caps, choice of bur
10 root split kit contains:
5 std. females, 5 mini females, 10 white retention males and 5 transfer males for standard size females, 10 white retention males and 5 transfer males for mini size females,20 caps, choice of burs

Item	Number
SRA 5 root refill kit; standard females, without bur	833080
SRA 5 root kit; standard females, RA diamond bur	33015
SRA 5 root kit; standard females, FG diamond bur	833020
SRA 5 root kit; standard females, one-step drill	833021
SRA 5 root refill kit; mini females, without bur	833085
SRA 5 root kit; mini females, RA diamond bur	833025
SRA 5 root kit; mini females, FG diamond bur	833030
SRA 5 root kit; mini females, one-step drill	833031
SRA 10 root refill kit; standard females without bur	833090
SRA 10 root kit; standard females, RA diamond bur	833035
SRA 10 root kit, standard females, FG diamond bur	833040
SRA 10 root kit, standard females, one-step dril	833041
SRA 10 root refill kit, mini females, without bur	833095
SRA 10 root kit, mini females, RA diamond bur	833045
SRA 10 root kit, mini females, FG diamond bur	833050
SRA 10 root kit, mini females, one-step drill	833051
SRA 10 root split kit, RA diamond burs	833066
SRA 10 root split kit, FG diamond burs	833067
SRA 10 root split kit, one-step drills	833068

TOOLS LIST

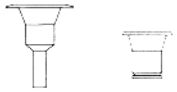
Item	Number
One-step drill for standard female	833111
One-step drill for mini female	833121
Latch (RA) diamond bur for standard female	833105
Latch (RA) diamond bur for mini female	833115
Fric. grip (FG) diamond bur for standard female	833110
Fric. grip (FG) diamond bur for mini female	833120
Caps, 5	83155
Female replicas, 5	833160
Laboratory spacers, 5	833170

FABRICATION INSTRUCTIONS

Preparation of the Female Site

There are two female designs: standard size and mini. The standard size is larger in its exterior dimensions than the mini female and has a post.

Site preparation requirements are similar for both females - varying in the size and shape of the socket prepared in the root to receive the female (Fig. 1). This variation is controlled by using a corresponding, specially designed carbide drill for each female. Alternatively, specially shaped diamond burs can be used. The use of a diamond bur or a carbide drill is the dentist's choice.



Standard & Mini

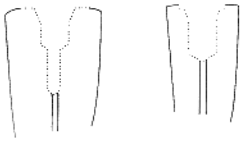
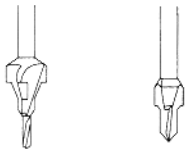


Fig. 1



One-step drill
Standard & Mini

Technique using one-step carbide drills:

1. Complete endodontic procedures.

2. Reduce the tooth to slightly above the gingival level.

3. Use the appropriate Stern Root Anchor drill (standard or mini) to form a retention site in the occlusal surface of the root for cementation of the attachment female. Use low speed rotation and copious application of cooling water while cutting. Cut to the full depth of the bur, creating an occlusal seat for the attachment female. The drill has a built in stop to prevent over drilling. The female should be placed with its long axis within 5º of parallel to the denture's path of insertion. It need not follow the root canal. When the root is at a significant angle to the path of insertion consider the possibility of root wall perforation. Either use the mini size female, or forgo use of the Stern Root Anchor. The Stern ERA Direct Placement Overdenture Attachment, for example, could be substituted because it requires less root preparation and can accommodate highly divergent abutments.

Alternative Instrumentation for Standard and Mini Female Site Preparation

Specialized diamond burs are available for shaping a prepared site for the standard female and the mini female. The diamond bur shank is supplied in either an RA (right angle) latch design for slow speed dental hand-pieces, or as an FG (friction grip) for high-speed hand-pieces.

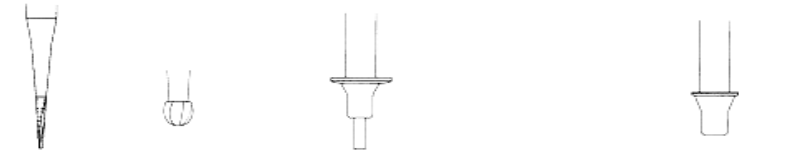
Technique using diamond bur.

1. After endodontic treatment and decoronation of the tooth, a pilot hole is made using a #700 carbide bur. Make the hole to a depth of 7mm for the standard female or 4mm for the mini female.

2. Enlarge the pilot hole with a #6 carbide round bur to a depth of 3 to 4mm for the standard female or 3mm for the mini female. Steps 1 and 2 remove the bulk of material in preparation of the site.

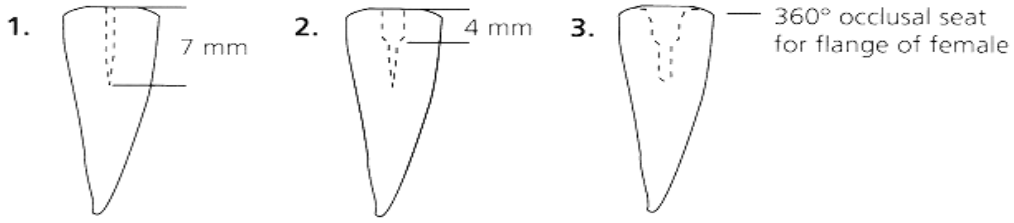
3. Complete shaping of the preparation with either a standard or a mini Stern Root Anchor diamond bur as is appropriate. Use cooling water while cutting; even at low speeds the large surface contact area of these burs generates heat. Cut to the full depth of the bur, creating an occlusal seat for the attachment female.

Required Burs:



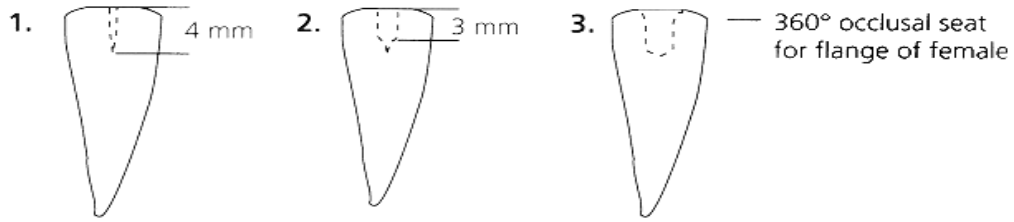
#700 #6 std. SRA dia. bur or mini SRA dia. bur

Root preparation for standard female:



#700 bur #6 round bur std. dia. bur

Root preparation for mini female:



#700 bur #6 round bur mini dia. bur

Cementation of the Standard and the Mini Females

The standard and the mini females are directly placed in the prepared root.
1. Snap the nylon male in the female component and, using the male as a handle, test the fit of the female in the preparation. The female should fit precisely. If the preparation is oversized fill it with a bonded composite and re-prepare the site.

2. Cement the female into place, again using the male as a handle. Be sure the male is fully seated in the female with the centering collar covering the female opening. This is to prevent any excess cement from entering the female. ERA Lock composite resin cement works well in this application (order no. 811902).

3. Round off the root, moving the rotary instrument from the female's metal flange to the root surface, creating a gently domed form with a smooth contact between the female and the root

Placement of the Nylon Male

The male component can be incorporated into the denture base during laboratory processing of the: denture, or it can be added to the denture as a clinical procedure (the most popular technique). Be sure to select the correct male based on the type of female and the retentive strength desired. Seethe Male Color Code list.

Laboratory technique:

1. After cementation of the female in the root, the dentist snaps a transfer (blue) male into the female. The male must be completely seated with its centering collar in contact with the female. This assures correct positioning of the male (Fig. 2).

2. Make an impression over the transfer male. Take care to not compress the soft tissue covering the edentulous ridge. The transfer male is withdrawn in the impression. It is designed with light retention and removes easily from the female (Fig. 3).

3. Place a plastic covering cap in the female to prevent foreign material from entering and send the impression to the laboratory.

4. Snap a plastic laboratory female on the transfer male in the impression and pour a cast (Fig. 4). The same replica is used Centering CCL to represent both standard size and mini females. The plastic Transfer (blue) female replica is now a part of the denture processing model (Fig. 5).

5. Before processing the denture base put an attachment male in the female replica. The male must be completely seated with its centering
collar in contact with the female replica. The centering collar will
correctly position the male during denture processing (Fig. 6).

Collar postitions male

Fig. 2

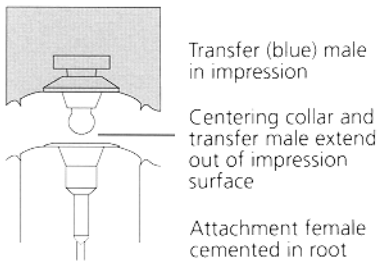


Fig. 3

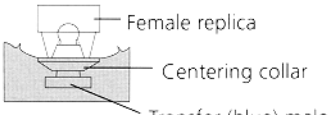


Fig. 4

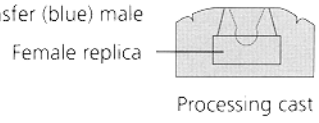


Fig. 5

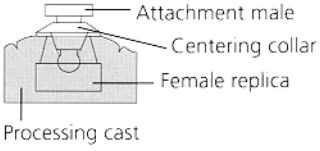


Fig. 6

6. Process, recover and finish the denture (Fig. 7).

7. Relieve any denture acrylic in contact with the model representation
of the root surface and remove the centering collar from the male (Fig. 8).The dentist may need to further adjust the denture base acrylic in the attachment area to prevent contact between the denture and the root and impingement of the soft tissue during function (Fig. 9). Denture base contact with the root can act as a fulcrum point as the denture moves in function. This will cause excessive wear of the attachment and can cause the male and female to disengage.

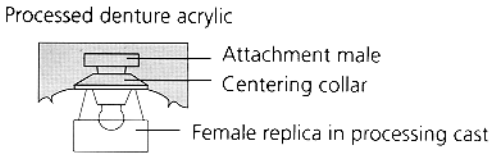


Fig. 7

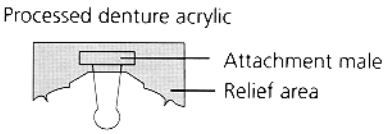


Fig. 8

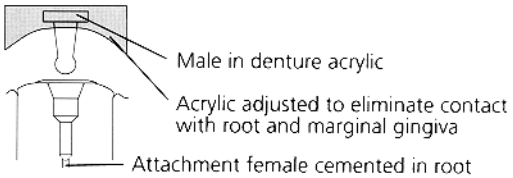


Fig. 9

Clinical technique:

1. After cementation of the female in the root, the dentist places a plastic covering cap in the female. Make an impression for denture processing. The rounded head of the covering cap will create a reference point locating the attachment site in the finished denture (Fig. 10). Send the impression to the laboratory.

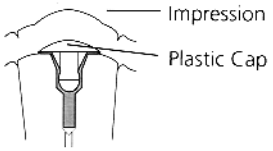


Fig. 10

2. The completed denture is returned to the clinic. Check the retention of the male to be used in the denture by trying it in the female in the patient's tooth. Snap the male into the female. Make sure the male centering collar is in contact with the female.

3. Using the depression from the covering cap as a guide, prepare a recess in the denture base acrylic to accommodate the male. Also, cut a lingual window for visibility (optional). Trial seat the denture and observe the male through the lingual window. There must be no contact between the male and the denture, nor between the denture and the root surface (Fig. 11). If the dentist desires, the plastic spacer described in the technique for immediate dentures can be used during laboratory processing to create space for the male.


Fig. 11

4. Examine the area of the attachment for any undercuts which need to be blocked out to prevent set acrylic from locking the denture in place. Mix autopolymerizing denture resin. Wet the denture base at the attachment site with acrylic monomer. Put a small amount of the mix in the relieved area of the denture and around the head of the male. Also paint some resin around the male centering collar with a small brush or spatula. Use the resin sparingly. More can be added later.

5. Seat the denture. Guide the patient into light occlusal contact to maintain the correct relation between the denture and the opposing arch. Excess material will be expressed through the lingual window. Do not exert pressure which
compresses the soft tissue because the tissue will rebound when the pressure is released, lifting the denture and creating an incorrect resting relationship between the attachment components.

6. After the autopolymerizing resin has cured, remove the denture. Pull the centering collar off the male and examine the male site. Relieve the acrylic over the remaining root surface. Check for contact between the denture and the root surface in function. Any contact areas should be further relieved. If there are any voids in the acrylic fill them with a new acrylic mix.

7. Teach the patient the path of insertion and how to engage the attachment. The male should be snapped into the female using only finger pressure, never by biting down on the denture.

Immediate Overdenture

Laboratory components of the Stern Root Anchor are used to estimate the future location of the attachment.

1. Complete endodontic treatment. Make an impression for overdenture fabrication. Send it to the laboratory. Pour a stone model and mount it in an articulator.

2. Modify the model by reducing the teeth to receive Stern Root Anchors to approximately 1mm above the gingival level. Reduce the teeth to be extracted as usual for immediate dentures.

3. At each attachment site, use a No. 42 twist drill to make a hole in the model parallel to the case's path of insertion. Set a plastic Stern Root Anchor spacer in the hole. Make the hole deep enough so the spacer seats completely. The spacer creates the minimum space in the denture required to place the male. It also indicates the future location of the male component and is a guide in denture set-up (Fig. 12).

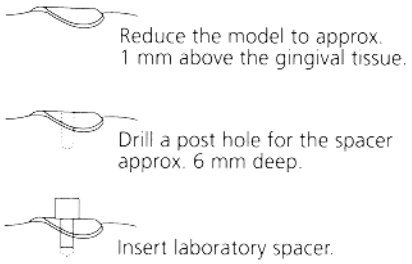


Fig. 12

4. Complete the denture, processing against the spacers.

5. When finishing the denture, remove the portion of the plastic spacer extending from the denture base. Leave the remainder imbedded in the denture. It is removed later by the dentist. Return the finished denture to the clinic.

6. Perform tooth reductions and extractions for delivery of the overdenture. Initially, many dentists have the patient wear the denture without the attachment. This allows for mucosal changes following delivery, and a more stable relationship between the denture and the tissue when the attachment is placed.

7. Follow the clinical technique described above for installation of the Stern Root Anchor attachment. Remove the plastic spacers with a bur to place the males.

SERVICING

Relining the Overdenture

When relining or rebasing the denture the attachment male is replaced.

Technique

1. Cut the old male out of the denture and place the correct transfer male in the female. Using standard clinical techniques, make a reline impression in the denture, which picks up the transfer male. Take care to not compress the soft tissue covering the edentulous ridge.

2. In the laboratory, snap a plastic female replica on the transfer male in the impression and pour a dental stone-processing cast. The laboratory female becomes part of the cast. Proceed with relining or rebasing procedures. Follow the technique for processing a denture base against the male. See: Placement of the nylon male; Laboratory technique, Steps 5-7.

3. If desired the impression can be made without the transfer male, and the new male can be incorporated into the relined or rebased denture as a clinical procedure.

Daily Maintenance by the Patient

Exposed dentine at the occlusal surface of the abutment root should be treated daily with water free, 0.4% stannous fluoride gel for protection against decalcification and secondary caries. All exposed root surfaces should be protected whether or not the roots support attachments. Do not use gel, which has passed its expiration date.

1. Clean the denture.

2. Perform oral hygiene care as instructed by the dentist.

3. Place a drop of gel in each root depression of the denture - both at sites, which have Stern Root Anchor males, and at any other abutment root sites.

4. Insert and seat the denture.