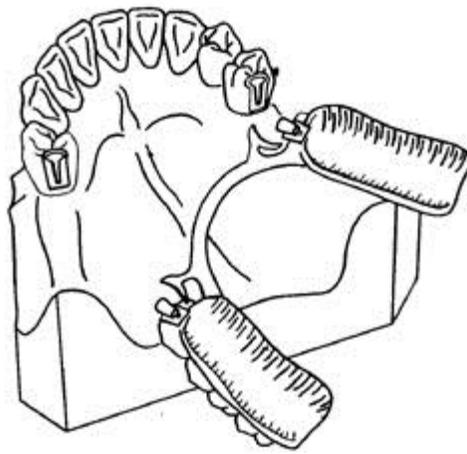
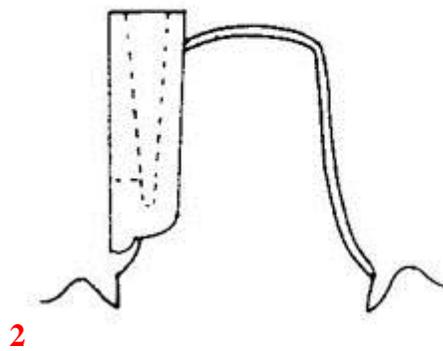
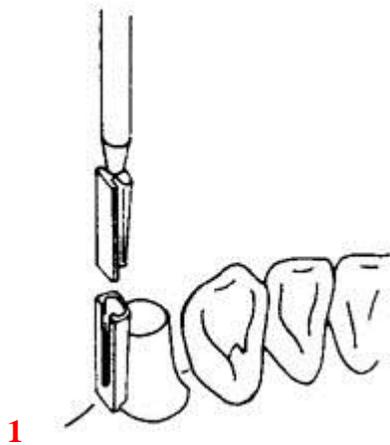




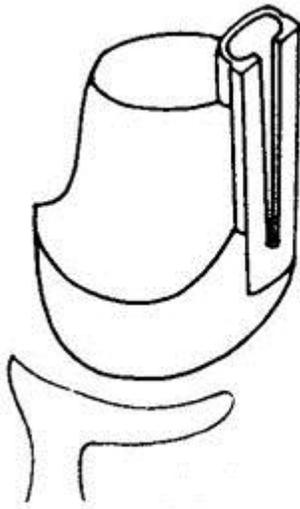
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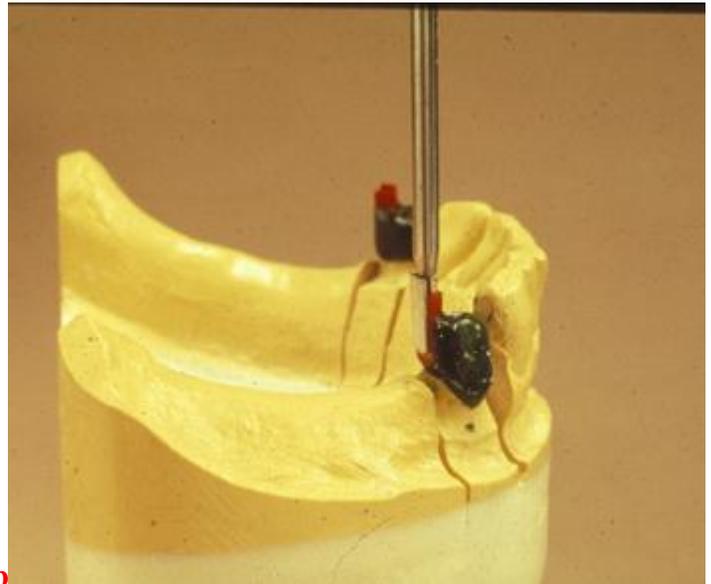
FR Attachment Instructions Removable Partial Dentures



Adjust the master cast on mounting platform of the surveyor to the chosen angle of insertion. Check to be sure the tooth preparation dies are fully seated. Position the plastic female on the Male Paralleling Mandrel (**FIG 1**). Keep the FR attachment within normal crown contour of the abutments by placing the plastic female as close as possible against the abutment preparation (**FIG 2**). The wall thickness of the plastic female is adequate to assure a full casting.



3a

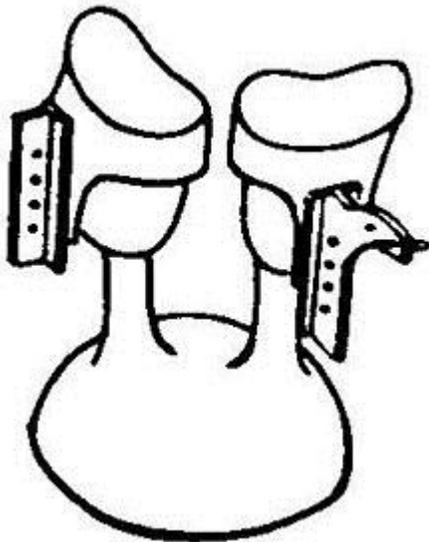


3b

After setting the female attachments parallel, complete waxing of the abutment crowns or copings.

Create a lingual wall in the coping or crown parallel to the long axis of the FR attachment (**FIG 3**). After casting, an undercut may be provided on the lingual of the coping for the terminal third of the clasp. The lingual clasp arm should rest only on the metal surface of the crown or coping. Any proximal undercut should be gradual and smooth, and no dimple should be used. The choice of the type of lingual clasp used is optional.

A roach type class is generally preferred on cuspids and bicuspids since the extra length of the roach clasp provides more flex. To avoid contact with porcelain occlusion, utilize the plastic female for a metal island surround the FR attachment.



4a



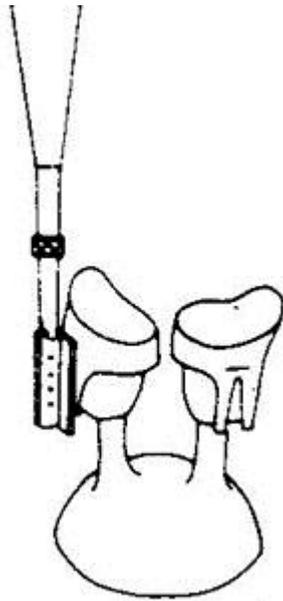
4b

Insert the metal male fully into the female. Attach a 2.5mm sprue (**FIG 4**). It is important that the sprue is attached to the sprue former parallel to the angle of insertion of the attachment (necessary for removal of the male from the casting).

Use a small amount of Cyanocrolate (super glue) to seal the FR male to the FR female. This will stop the attachment from being dislodged during the investment process. Do NOT use sticky wax or acrylic resin. The

[Preci Roto system](#) works very well.

The use of the metal male eliminates a two step investing and casting technique. When using the **Direct Cast** attachment, remove the red sleeve prior to investing.



5a



5b

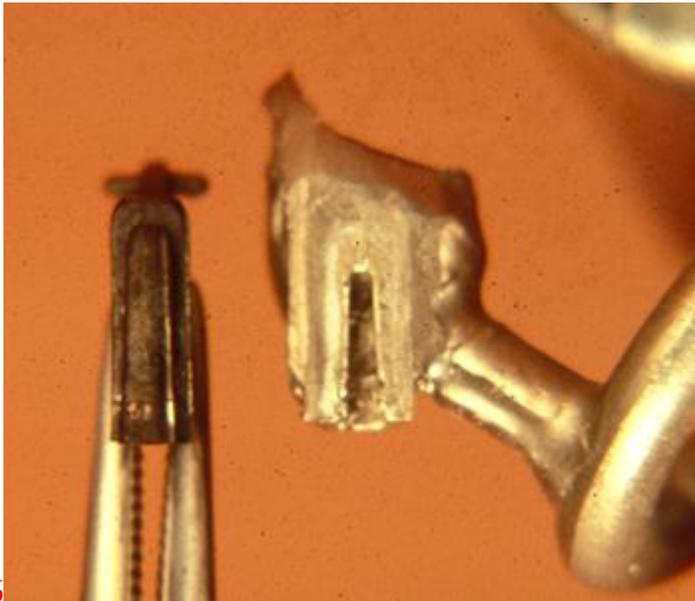
Invest and cast the crowns using the alloy of choice. Do NOT use a carbon containing investment. Burn out at 1700 degrees F with a one hour heat soak. When using a high palladium alloy, be careful not to overheat the alloy. Use an oxygen setting of 10psi when torch melting.

Leave the castings attached to the casting button.

Immerse the casting in a rust-removing solutions such as liquid wrench for ten minutes. Then use the precision slotted center punch to separate the male attachment from the casting (**FIG 5**).

The precision slotted tip of the center punch fits over the bottom portion of the male attachment. The alignment of the sprue with the long axis of the FR attachment provides the maximum efficiency and stability for releasing the attachment from the crown or coping.

The center punch should be adjusted to **medium or low** action.



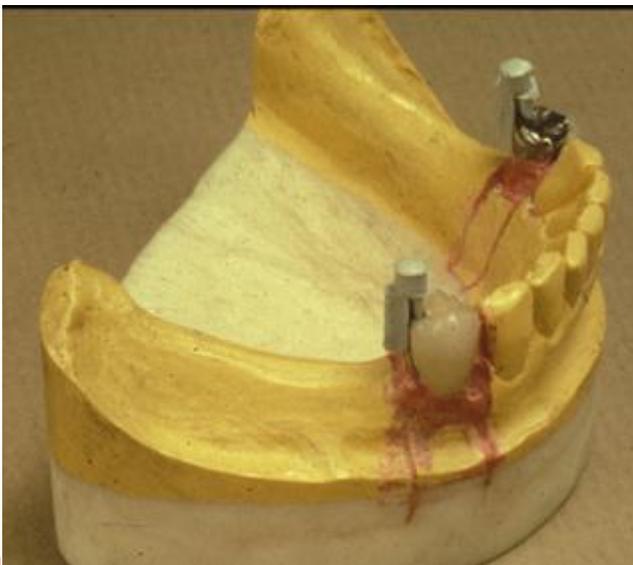
The special alloy used in the male FR attachment will not fuse to any of the dental alloys used in Crown and Bridge work. The discoloration (**FIG 6**) of the attachment which occurs during the burnout and casting stage represents a controlled oxide film which acts as a separator. The controlled oxide film is only approximately the thickness of one molecule and will not affect the absolute fit of the attachment.

The oxide film should be removed when the restoration is being polished with a fiberglass pencil, glass beads, or a rubber point.

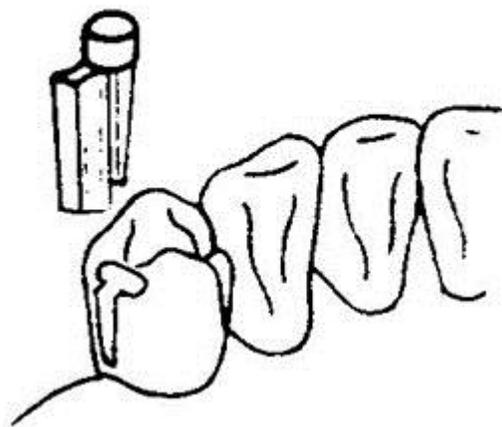
6

After finishing the copings or crowns and reducing the female attachment to the desired height, the male attachment should be checked for fit. In many cases, the burr on the occlusal of the female, created by trimming the female, has to be removed. A small rubber point or blasting with glass beads is the recommended method. To retain the intimate fit between male and female, the male attachments cast to the individual abutments should be kept separate and not interchanged.

After the crowns or copings are finished, a suitable undercut is provided in the lingual surface of the coping or crown to be engaged by the terminal clasp tip. The clasp serves the dual purpose of providing retention and also guiding the attachments of the prosthesis into position.



7a



7b

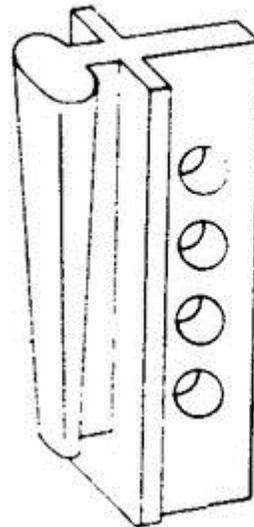
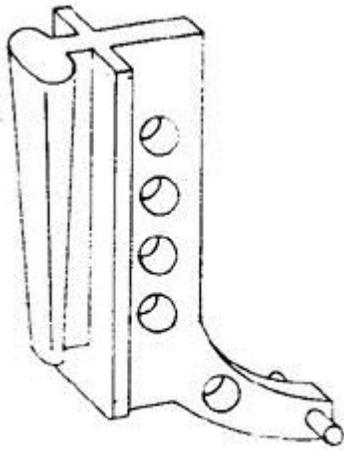
The silicone males should be inserted in the females (**FIG 7**) prior to opaque and porcelain application to eliminate the possibility of porcelain entering the females. Remove the silicone males prior to firing.



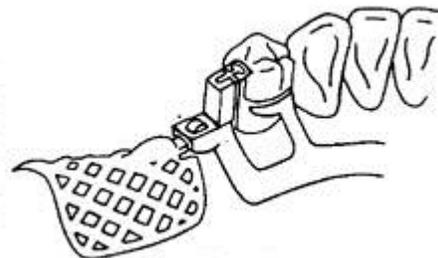
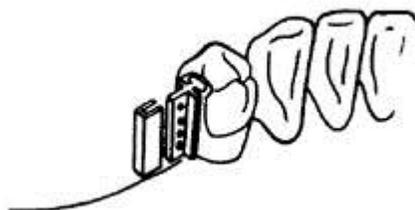
The master model is prepared for duplication. The use of the FR silicone male is a distinct advantage in both accuracy and time in obtaining an accurate reproduction of the female attachment in the refractory model.

The silicone males are seated in the crowns on the master model and the duplicating material is poured in the normal manner (**FIG 8**). When the model is removed from the duplicating material, the undercut on the occlusal surface of the silicone male accurately positions the silicone males in the model.

Pour and remove the refractory model from the mold. The silicone males readily separate from the refractory material providing an accurate reproduction of the females. The silicone males may be recovered from the duplicating material and used over and over again.



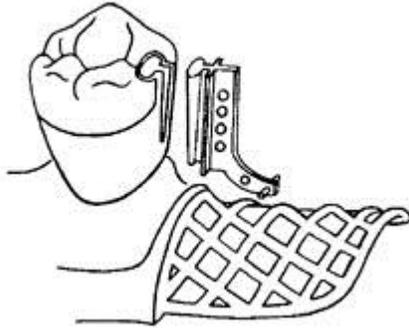
Two types of FR attachment males are available. Use the [Self Cure FR attachment](#) male (**FIG 7**) with the tail extension when no hinges are being used and/or the male is to be attached to the cast partial frame with self cure resin on the master model. The [Direct Cast FR attachment](#) male (**FIG 8**) without the tail is used in combination with the [DSE Hinge](#) and/or if a fixed connection or direct casting between the partial restoration and the saddle retention is preferred.



Prepare the refractory model. Insert the Direct Cast FR male in the refractory model. Check the seating of the

male attachment. For direct casting or when using the DSE Hinge, slip the red plastic sleeve over the perforated retention of the male attachment (**FIG 9**).

Wax the DSE stress-relief hinge to the red sleeve. Complete waxing of the metal frame in the usual manner. A lingual clasp should be used. The lingual clasp arm helps to guide the prosthesis into place and provides added retention (**FIG 10**).



If the Self Cure FR male with the tail section is selected, the female attachment can be blocked out prior to duplication and pouring the refractory model. The cast frame is attached to the FR male with self curing resin on the master model (**FIG 11**).

After casting and finishing the partial denture frame, the height of the male attachment is reduced so that it blends in with the occlusal surface of the crown. If an electro-polishing unit is used, it is **mandatory to protect the male attachment with rubber latex** to prevent dimensional loss of the attachment which will result in diminishing retention and fit.

The finishing operation also includes refining the lingual wall of the crown and providing a suitable undercut to receive the terminal third of the clasp. Retention is obtained by both the tapered attachment and the clasp. A smooth concave surface is preferred for the clasp undercut which makes insertion and removal easier.

Processing the acrylic saddles to the cast partial frame requires the use of an accurate stone processing model. Insert the silicone males into the females on the master model and duplicate using the same technique as for the refractory model. Pour up the accurate stone processing model, and process the acrylic in a normal manner.

An alternative technique is to position the crowns in the duplicating material prior to pouring the stone, and process over the crowns.