A. The MassadTM Edentulous Low Temp Impression Tray Introduction

1. Definitive impression making can be performed with these special thermoplastic stock trays specifically designed to meet the requirements of the edentulous patient. These trays are for one time use only. They are not autoclavable. However, they can be cold sterilized if contaminated before use.

2. The maxillary tray is anatomically designed with low vestibular borders and release areas for various muscle attachments. The posterior of the tray is contoured in a u-shape for precise capturing of the functional hard/soft palate throat form.

3. The retention slots positioned throughout the tray are engineered to make adhesion of the impression material when used in combination of the manufacturer’s supplied impression adhesive to strengthen the bond of the material to the tray. The trays vestibular borders also have retention groves for further adhesion of the impression materials to the borders of the trays. Finally, the handle is built for optimal lip length facilitating a smooth impression without obstruction of finger movement, which could rock the tray thereby resulting in a non-predictable result.

4. The mandibular tray also has an enhanced handle allowing optimal positioning, decreasing obstruction of the fingers thereby reducing and/or eliminating movement of the tray during the material polymerization. The anatomical design allows for precise capturing of the mylohyoid and the retro-mylohyoid space. The tray is extended in this area in order to negotiate the sublingual gland and fatty tissues, which may impede a smooth impression in this sulcular area. This further allows the operator to obtain an optimal functional lingual extension.

5. Additionally, the ergonomic finger supports allow the operator to place his or her fingers in a way that provides even pressure without tipping of the tray.

B. The maxillary impression:

1. Sizing the tray:
   a. Simply observe the size of the patient’s ridge. Select one of the five sizes of maxillary trays and choose the one that appears to be close in size. Heat the tray in a warm water between 165 to 170 degrees Fahrenheit submerging the entire tray except the handle for approximately five to fifteen seconds so the tray becomes very rubbery. Remove the tray immediately out of the controlled heated water bath and placed directly into the mouth. Then shape either by the patient moving their lips and tongue or the operator molding the tray for an optimal fit. It is highly recommended that cheek retractors be utilized to enhance this procedure. It is vital that once the tray becomes rubbery in the temperature controlled water bath that it is taken directly to the mouth since it has an extremely fast cool rate. Once placed in the mouth, the adjustment either by the operator or the patient can be done within five seconds. The tray will solidify back to a hardened form within ten-15 seconds. Once the tray is removed, evaluate for correctness. When cooled, place back into the mouth to make sure there is a passive but optimal fit. Since there are five trays to choose from, approximately 98% of all patient’s ridge sizes can be accommodated. Caution: Do not over-heat trays. Maximum heating times: <40 seconds small trays and <60 seconds large trays. Do not place in patient’s mouth if the water bath temperature exceeds 165oF (74oC).
b. Tissue Stops Procedure:
   i. The addition of tissue stops are critical. Place these tissue stops in the four locations equally distributed onto the maxillary tray with rigid fast-set viscosity of polyvinyl siloxane impression materials (also called PVS).
   ii. Place in the patient’s mouth and center the tray with the maxillary arch while keeping it approximately 2 mm away from the vestibular sulcus. Do not over seat the tray. Rest fingers on the trays finger rest to allow for bilateral stabilization.
   iii. Allow the impression material to set according to manufacturers guidelines. Remove and evaluate the four tissue stops.

   Note: The stop procedure will allow for:
   1. Adequate space for the final impression material.
   2. Stabilization of the tray in the most center position.
   3. Re-orientation of the operator to the repeatable path of insertion when reinserting the tray for the finalization of the impression. Allow the operator a tactical sense of resistance preventing over seating of the tray.
   4. Proper functional border molding by spacing the tray into the center and slightly short of the vestibular sulcus, thereby allowing detail while the border molding impression procedure is being performed.

C. Border Molding Procedure
   1. Next, place a rigid viscosity, PVS material, on the peripheral tray borders and along the post-palatal tray area. The rigid viscosity replaces previously used wax compound. Seating the tray is now easy and should prevent the operator from over seating due to the tissue stops previously placed.
   2. Border molding the maxillary arch can be optimally accomplished by detailing the functional movements listed below.
      a. Ask the patient to "pooch" their lips outward with a sucking motion. Then, ask the patient to smile as forcefully as possible. The "pooching" of the lips outwards and the forcible smile movements will allow the anterior frenum, sulcus, and buccal frenum and sulcus to be functionally identified.
      b. Next, in order to determine the post-zygomatic vestibular sulcus and the hamular frenum, which is located in the hamular notch to be appropriately identified, ask the patient to drop their mandible downward by opening as wide as they can and then close, then repeat this process several times. This action allows the translation of the coronoid process to move the musculature to its terminal position creating a definitive and dynamic posterior border.
      c. Also, the functional hard and soft palatal junctions, also known as the post-palatal zone, must be identified at this time by asking the patient to breathe in as deeply as they can and the operator will then occlude the nostrils while the patient is asked to cough forcibly. Occlude the nostrils while the patient is coughing will facilitate the movement of the soft palate migrating to the most anterior position. Once this has been completed, the tray can be removed and evaluated. It should be noted that the post-palatal zone area will appear asymmetrical.
      d. Note if the tray rubbed through or displaced the impression material from the tray, this indicates a pressure and should be relieved prior to the final impression wash. It is also necessary, after these areas of pressure have been relieved, to additionally remove 1mm from the height of the impression border to allow for the final wash material to flow without resistance.
D. Final Wash Procedure

1. In the final wash procedure, it is recommended that a mono phase and/or a light phase viscosity impression material be utilized. The rationale here is to obtain a static imprint without creating distortion of the soft tissue. There are different degrees of soft tissue, which may have to be accounted for. In some cases, it is observed that the tissue in the pre-maxillary area may be more mobile than the area posterior to this on the ridge. In this case, it would be suggested that the anterior tissue stop be removed before the final wash thereby allowing more space for the final wash. The purpose for this is that if the anterior tissue is extremely mobile, the final wash material could create some displacement; however, by removing the anterior stop, this will allow space in the tray along for a light viscosity material to be placed to minimize and/or eliminate any distortion of this soft tissue.

2. Once the wash material has been placed into the mouth, ask the patient to repeat the border molding procedure. This will take approximately one minute depending on the manufacturer’s suggested set time. Once the final wash has been completed, remove the impression from the mouth and evaluate the detail before casting the final impression into stone.

E. The Mandibular Impression

1. Once again, evaluate the size of the ridge and then choose from one of the five mandibular impression tray sizes to match the approximate size of the patient’s ridge. Place the body of the tray in a controlled temperature water bath at a temperature between 165 degrees centigrade to 170 degrees centigrade and immerse the entire tray body except the handle for approximately five to 15 seconds, or until the tray becomes rubbery. Use cheek retractors to open the mouth wide. Then remove the tray from the hot water bath insert the tray while it is rubbery and either mold it or have the patient “pooch” their lips outward and smile. The tray should now shape very closely to the patient’s ridge. Once again, the tray will solidify very quickly due to it’s fast cool rate, therefore this procedure should be done quickly in order to get the desired result.

2. Next, once the tray has been heat shaped in the mouth, remove and place tissue stops in three areas on the mandibular tray. Then insert into the mouth and apply just enough pressure to create indentations in the impression material. Once the material has set, practitioner should then remove the tray and evaluate the tissue stop areas. Apply adhesive to the borders of the tray to begin the border molding impression procedure.

F. Border Molding Procedure

1. Flow the rigid viscosity PVS material around the peripheral borders of the tray and then place into the patient’s mouth and have the patient go through a border molding procedure. On the lower arch, the procedure will include the patient being asked to stick their tongue outward and then move it side to side.

2. Secure the tray in the mouth and ask the patient to “pooch” out forcibly and then smile or grin excessively in order to shape the peripheral borders with the impression material.

3. Next, use finger and thumb, at the corner of the mouth, and pull the lip upward and to the center on each side to assist in the border molding procedure. All of these manipulations will shape the peripheral border according to the functional movements of the lips, cheeks, and tongues, thereby decreasing and/or eliminating any overextensions. Once the material has polymerized, remove the impression from the mouth to identify if there are any areas in which the material was pushed off the tray due to pressure while the patient was moving. If any of these areas are identified, be aggressively trim them prior to the final wash procedure.

4. Then additionally, remove approximately 1 mm from the entire peripheral border of the impression material to allow for a smooth, uninhibited, final wash. The border molding procedure cannot be overemphasized since this has been found to eliminate overextensions if done according to directions. Once this has been completed, proceed to the final wash procedure.
G. **Final Wash Procedure**
   1. Place a mono-phase or light viscosity on the entire tissue surface of the impression and then place into the mouth and have the patient repeat the border molding procedure.

H. **Conclusion** *Review the overall impression making steps:*
   1. Size the tray to visually to see that it fits the patient's arch. Then, immerse the tray body into a controlled temperature water bath at 160 degrees to approximately 170 degrees Fahrenheit for approximately ten to 30 seconds or until the tray body becomes rubbery. The smaller trays will require less heating time compared to the larger trays. With the help of cheek retractors, quickly remove the tray from the heated water bath and place it directly into the mouth and adjust it to where it will fit the ridges appropriately. Ask the patient to “pooch” their lips outward and smile, or if necessary, physically bend the tray to approximate a very close, custom fit. The tray should be removed within five to ten seconds. Since the cool rate is extremely rapid, the tray will begin to harden. Once this has been completed, then place tissue stops; four on the upper arch and three on the lower arch.
   2. Complete a border molding procedure while the patient is going through the functional movements of the facial muscles. After the border molding procedure has been completed and evaluated and trimmed as necessary, complete a final wash procedure with a mono-phase or light viscosity PVS material, repeating the border molding procedure and then removing the tray for analysis. This entire procedure, once the practitioner has gone through the protocol several times, can be completed within 15 minutes.