

**PROCEDURE CHECKLIST: SURVEY AND DESIGN**

1. Visually survey the cast for discrepancies and surface defects.
2. Remove surface defects and fill unnatural indentations.
3. Visually survey cast to determine a path of insertion.
4. Identify two (2) or three (3) points of retention that provide maximum stability across the partial and favorable anterior aesthetics.
5. Select clasp types and position with equal consideration to aesthetics, function and path of insertion.
6. Draw an outline of the partial on the master cast.  
Note: Use the red pencil when designing a Valplast® partial. The material may pick up deposits of graphite left on the stone model.  
Note: Typical clasp designs are illustrated next to their descriptions on following pages.

## **PROCEDURE CHECKLIST: PREPARING THE MODEL FOR DUPLICATION**

1. Flow heated baseplate wax into undesirable undercuts.
2. Flow heated baseplate wax into specific areas requiring relief on all cases.
3. Flow wax into severely eroded gingival crevices.
4. Flow wax along entire length of maxillary buccal and labial saddle areas where a line establishes the border extensions.
5. With a sharp instrument, scratch a fine groove into the master model tracing along the red line so the design will be indelibly transferred to the duplicate model.
6. Carve a bead line at the posterior extent of the denture (maxillary cases).
7. Carve butterfly post dam at the posterior extent of maxillary full dentures and full palate partials.

## **PROCEDURE CHECKLIST: DUPLICATE AND DESIGN TRANSFER**

1. Soak the master model in water or slurry water until it is saturated and no longer produces air bubbles from trapped air.  
Note: It is suggested that the model be soaked from the bottom but not entirely submerged.
2. Place the master model in the duplicating flask and pour the hydrocolloid material slowly into the flask until full.
3. According to the manufacturer's instructions, bench cool the flask and place it into moderately cold water until gel is completely set.
4. Remove the master model from the duplicating material and pour stone into the mold.
5. Let stand until stone has fully set.
6. Remove the working model from the duplicating material and trim if necessary. Compare working model with master model for accuracy.
7. Transfer the design onto the working model by tracing the groove with a red pencil.

## **PROCEDURE CHECKLIST: ARTICULATE AND SET-UP**

1. Boil off master model to remove relief and blocking wax.
2. Key the master models and secure them together with sticky wax in proper occlusal relationship.  
Note: The set-up will be done on the master model. With the working model being modified with the block out, the original bite registration will not fit properly on the duplicate model.
3. Mount the master models onto the articulator with the place of occlusion parallel to the bench top. Let stand for 45 minutes.
4. According to the prescription and shade, select the denture teeth that best matches the size and shape of the natural teeth.
5. Set the denture teeth in accordance with standard practices.  
Note: When grinding in teeth, create a formation that will permit Valplast® material to flow from lingual to buccal or labial areas between artificial teeth.  
Note: If the case is designated to be tried in, wax the trial denture on the master model with adequate strength for proper trial in the mouth.  
Note: The diatoric holes may be drilled at this time. We recommend, however, that the holes be placed after boilout.  
Note: If a hard base plate is used for the try-in, it is recommended that the base plate be formed on the duplicate (working) model. This will register relieved areas that would otherwise interfere with seating the base plate on the working model after the try-in.

## **PROCEDURE CHECKLIST: WAXING**

1. If the case has returned from a try-in, seat the set-up on the duplicate (working) model, altering the wax base or base plate as necessary.  
Note: If seating the set-up is problematic, take a plaster or putty matrix of the set-up on the master model and use this to reset the teeth without the base plate on the duplicate model.
2. Seal the base plate or wax base buccally, and remove the palatal or lingual connectors and flange with a hot knife.
3. Seal the set-up lingually and proceed to wax buccal and labial saddles first, removing excessively thick wax first to achieve the proper thickness.

### Maxillary:

- 1a) Flow very hot flush of wax into palatal area to achieve a waxy and somewhat uniform surface.
- 2a) Using the preformed palate or equivalent (thickness 1.5 mm), soften the wax slightly and place it over the palate with rugae formations positioned correctly.
- 3a) Carve wax to the design line and seal entirely to the model.
- 4a) Trim and carefully carve gingiva around necks of the teeth.

### Mandibular:

- 1b) Using the preformed "Lingual Bar" wax or equivalent (2mm border thickness narrowing to 1mm), wax up buccal and labial saddle areas first. Trim to the design line and seal.
- 2b) Trim gingiva around the necks of the teeth.
- 3b) Adapt the "Lingual Bar" wax to the lingual aspect of the design. Trim to the design line and seal completely.

### All Cases:

4. Clean teeth completely.
5. Flame waxed denture gently to smooth surface.
6. Check occlusion

Note: If the wax-up is carved anatomically at this point, time will be saved during the finishing stage.

## **PROCEDURE CHECKLIST: INVESTING**

1. Trim down the cusps of the abutment teeth to the wax on the buccal and lingual.
2. Soak models in water to eliminate air bubbles and to ease separation from the investment.

#### **BOTTOM HALF**

3. Mix standard base stone and invest model to eliminate all undercuts.  
Note: Cover clasp tips only if necessary to eliminate undercuts.
4. Let stand until stone is fully set.
5. Attach sprue leads to the posterior portion of the waxed partial denture.  
Note: The sprue opening of the flask must be completely filled to prevent leakage.
6. Paint tinfoil substitute onto the stone areas of the bottom half and allow to dry completely.
7. (Optional) paint the wax pattern areas with debubbler to allow stone mixture to flow against the wax smoothly.

#### **TOP HALF**

8. Make sure that nothing will prevent the halves of the flask from having metal-to-metal contact.
9. Mix Val-Stone™ or die stone into a firm but flowable mixture and tap into tooth and crevice areas with a brush.
10. Cover entire partial carefully to avoid air bubbles.
11. Place flask half over bottom half and fill remainder of flask.
12. Tap or vibrate to allow stone to settle until half is filled completely with stone.  
Note: Bolts may be placed upward through the flask across a diagonal to help stabilize the flask halves for this part of investing. Do not turn flask upside down as this will cause stone to peel away from wax and create a rough surface.
13. Let stand until stone sets fully.

#### **PROCEDURE CHECKLIST: BOILOUT**

1. Remove bolts from flask (if bolted for investment).
2. Place the flask into the boilout tank for ten minutes (just enough to soften wax).
3. Remove the flask from the boiling water and carefully separate the halves.
4. Rinse the wax from the separated halves under boiling running water.
5. Wash surfaces with soap and water or wax solvent.  
Note: Clear Windex® with degreaser (or equivalent) is very effective to remove wax residues).
6. Let flask bench cool to evaporate moisture from the stone.  
Note: Do not coat with tinfoil substitute until flask has cooled completely to room temperature.

Note: Preparation of teeth for mechanical retention can begin as soon as the flask is cool enough to handle.

Injecting Valplast®  
Please Note the Following Before Beginning:

A) **It is characteristic of the furnace, as it is first warmed up, to exceed its designated temperature. Do not make any adjustment to the furnace based on the preheating stage.**

B) **It is essential that a cylinder be placed in the furnace as it is warmed up. It is also advisable to place a clean cylinder in the furnace as it cools down.**

C) **Between cycles, the cylinder should be allowed to warm for at least 7 minutes before a tube is placed in the cylinder for melting.**

D) **It is advisable, for your protection, to use heat-protective gloves when handling the furnace, cylinders, resin tubes, discs, and flask. Very high heat is involved with the furnace and material in processing and injecting.**

The injection procedure consists of these steps:

- 1) Spray the inside of the plasticizing cylinder with the silicone Mold Release Spray and insert in the furnace.
- 2) Switch the furnace on and **preheat** for at least 20 minutes.
- 3) When the preset temperature has stabilized, spray an aluminum tube with the *Mold Release Spray* and place it, crimped end first, all the way into the cylinder. Then spray the appropriate sized bronze disc with Mold Release Spray, and insert it in the cylinder against the end of the tube. Use the thick disc for medium and small tubes, and the thin disc for large tubes.
- 4) Allow the resin to plasticize for **11 Minutes** in the furnace. In the meantime, position the flask, sprue end up, directly under the shaft of the press. You can locate the correct position by lowering the shaft above the flask. Make sure the shaft is fully raised after positioning so that you are ready for injection.
- 5) After 11 minutes, remove the cylinder from the furnace, **maintaining it in its horizontal position**, until you have brought it above the protrusion at the sprue opening of the flask. Then you may turn it vertically, leaning the end of the cylinder on the projection so the tube does not fall out.
- 6) Turn the levers of the press with a rapid, steady motion. You will feel a little resistance until the shaft reaches the tube. The springs may compress slightly at this point. Continue to apply firm pressure by turning until the tube bursts. After the tube bursts, continue to turn the handles quickly until the springs have fully compressed. This is the indication that the resin has been fully injected into the flask. If the springs relax after a few seconds, retighten the levers to bring the springs into their compressed position again. The levers will lock into this compressed position, and should be left this way for a full three minutes. Only then may the pressure be relieved and the levers disengaged.
- 7) Remove the flask and separate the cylinder from the flask with a twisting motion. You should not hammer the cylinder as this would damage its shape. Clean out the remnants of the compressed aluminum tube from the cylinder using the knock-out stand as a platform,

and hammering the knock-out rod provided. Be sure not to discard the bronze disc along with the remnants of the aluminum tube. Note that the cylinder will retain heat for some time after injection.

Always be sure to clean out the cylinder thoroughly and check that the bronze disc will slide easily through the cylinder. Be sure to preheat the cylinder after replacing it in the furnace, for at least 7 minutes prior to the next injection.

8) After removing the cylinder, allow the flask to cool on the bench naturally for at least 30 minutes.

## **OPENING THE FLASK**

When the flask has cooled, loosen the bolts and remove the case from the flask. Hammer directly against the exposed investment button, avoiding hitting the aluminum flask directly. Use an air hammer, motorized chisel, or plaster nippers to remove the investment from the case.

Try to preserve the duplicate model without cracking it. We recommend that a portion of the prefinishing, especially on upper cases, be done before the case is removed from the duplicate model to prevent warpage due to heat build-up while grinding.

Wash the case off and brush it under water to remove loose stone and residue from the surface.

## **FINISHING**

### **GENERAL**

First, cut off the sprues at the junction points using a fiber cutter (“Econo-Cutter”) or heavy cut-off wheel. Reduce the area around the sprue junction to bring it in its final formation using a Diamond Cap bur or other large bur. The *Pink Grinding Wheel* may also be used for reduction of the sprue area.

We recommend that as much of the pre-finishing and overall reduction of the palate or lingual connector be done before lifting the case off the duplicate model.

Once the sprue junctions on the lingual and palatal surfaces are reduced, lift the case off the model with a dull-edge knife or other flat instrument. Clean the tissue surface with a small stiff bristle brush.

Guided by the design line scratched into the duplicate model, trim the edges and the periphery extensions with a rough grinding wheel. The *Pink Grinding Wheel* provided with the system is most effective for this reduction. You may also use the Diamond Cap or a sandpaper trimming disc for quick reduction of the edges.

For all trimming, finishing, and polishing procedures, it is essential to keep changing the position of the Valplast® prosthesis continuously to prevent localized overheating of the resin. The general movement in finishing should attempt to reduce and smooth the surface simultaneously.

### **FITTING THE CASE**

To relieve the uprights or any inside portion of the case, use a *Vulcanite bur* or *Bullet Shape Grinding Stone*. As you fit a Valplast® case, bear in mind that retention is based on close contact of the denture surface and the gingival areas. In free-end saddle cases, remember not to remove the existing undercuts at the distal of the natural tooth adjacent to the replacement. The major connecting lingual plate between the free-end saddles should be left somewhat heavier than the in-between replacements.

The case should snap into position when it is properly fit and remain firmly seated on the model. You may need some time to get accustomed to the flexibility of the material and how it passes over high points before snapping into position. If the path of insertion is difficult, look for blockages in more rigid or solid areas of the saddle and uprights before relieving excessively from the clasp or lingual and buccal flanges. Bear in mind that the resin will be slightly more flexible at body temperature than at room temperature. So a definite retentive snap is desirable, as long as the retention does not create excessive pressure on tissue and teeth.

If any butted teeth were designed to fill immediate extraction sites and not already scraped out of the master model when the set-up was done on the duplicate, this is the time to compensate by scraping out the master model to fit the case in position.

If festooning and anatomical indications are needed, use a smaller grinding wheel. We suggest that the waxing is completed anatomically to save time and reduce the exposure to grinding during finishing.

## **PRE-POLISHING**

It is essential to smooth the entire surface of the Valplast® partial with the *Brown Rubber Wheel* before polishing. A quick, smooth, and light motion will allow you to obtain a velvety-smooth surface, popping off any small strings with a light contact of the wheel.

A sharp blade, such as our *Valplast Knife* can be used to remove any edges or strings, as well as to carve a clean edge around the necklines of teeth.

Once the surface is rubberized and smooth, the case is ready for polishing.

## **POLISHING**

The materials used for polishing Valplast® include rag wheels, a B-20 Brush, Course or Medium-Course Pumice, Brown Tripoli Compound, and Val-Shine™ High Polish Compound. We suggest using a rag wheel that is not stitched together

1. Apply the pumice with a wetted rag wheel. With a properly rubberized surface, the pumice application should take only a short while longer than for acrylic.
2. A smooth but dull finish can be obtained using the Tripoli compound with a dry rag wheel. During the tripoli application, it is essential to dip the Valplast® case in water constantly to prevent excessive build-up of heat on the surface.
3. The oily residue from the Brown Tripoli can be removed, while also clearing out deposits in the interproximals by using a B-20 Brush with no polishing compounds.
4. After rinsing the case, a final high luster can be obtained using the Val-Shine™ compound applying it with a dry rag wheel. You can use a low speed at first with a very light touch, and brief application at high speed using a very light touch against the surface of the case.

Note that it takes some practice to create a surface similar to an acrylic shine. The uniform smoothing of the rubber wheel, pumice, and tripoli is the key to allowing the Val-Shine™ to produce a mirror finish.

5. After polishing, drop the case in an ultrasonic or wash the case thoroughly to remove all particles and residue left over from polishing. At this point the case should be checked once more for any distortions or discrepancies.

Should you find any discrepancies in fit at this point, immerse the case in very hot water for a minute or so. Then place the case immediately on the master model. If you see that any of the retentive arms fail to contact the tissue surface, remove the case from the model and immerse the section in the hot water for a minute. As you remove it from the hot water, bend the area inward with your finger coaxing it into the proper position as you replace it quickly on the model.

## **PACKING A VALPLAST® CASE FOR DELIVERY**

Valplast® cases should be delivered in water. After your disinfecting procedure, put the case in the "Safe-T-Bag" provided with your material with a small amount of water and seal it.

Accompany the shipment with the Valplast® Certificate to indicate that the case has been processed with Genuine Valplast® resin.

