Placing a stainless steel crown when a custom adaptation is required
1. Select proper size crown by measuring mesio-distal width in patient’s mouth with boley gauge. Once the correct millimeter size has been established, measure crowns in kit to verify correct dimension equal to that of the original tooth.
2. Confirm by comparison with a preoperative measurement.
3. Trial fit. Slip the correct size crown onto the preparation and note its occlusal relationship to adjacent and opposing dentition. For ease of seating, apply mandibular crowns over the lingual, then press down across the broad buccal surface. With maxillary crowns, seat the buccal first, then the lingual. Check for any openings between the crown and preparations with an explorer and reform the margin if necessary to close any minor gaps.
4. Recheck Occlusion. Remove the crown and recheck occlusion for differences in the maxillary-to-mandibular relationship. If the crown prevented the opposing dentition from proper interaction, additional reduction of the preparation may be performed and fit verified. If a Unitek crown has been selected, the margin should be cramped all the way around the crown until the crown fits snugly on the preparation.
5. Isolate the tooth. Rinse the area and isolate the tooth with cotton rolls. Wash the preparation and dry thoroughly.
6. Mix cement and fill crown. Mix cement according to manufacturer’s instructions and fill the crown, care should be taken to avoid air entrapment.
8. Quickly examine the crown in relationship to surrounding teeth and check occlusion.
9. Have patient bite crown onto occlusion. This will assure a firm, natural seating in ideal occlusion with opposing dentition. If a wooden dowel, tongue blade, or plastic instrument handle is used to improve force distribution, remember to bridge as much of the quadrant as possible mesio-distally.

Note: Never place one of these implements only between the crown and its opposing tooth. This could cause the crown to be driven too deeply into the gingival sulcus and below the natural occlusal table.

10. Remove excess cement. Follow cement manufacturer’s instructions as to the proper waiting period and then remove excess cement with a scaler, explorer or similar instrument. Clean the interproximal areas by drawing a piece of knotted floss back and forth under the contact points. Make sure the gingival sulcus is washed free of excess cement.

11. The finished crown should approximate, as nearly as possible, the original tooth in terms of space occupied in the arch, proper relationship with adjacent teeth and functional occlusion with opposing dentition. An X-ray should reveal a solid seating of the crown on the occlusal surface of the preparation and a gap free marginal fit.
3M ESPE Iso-Form™ Temporary Crowns

The stainless steel crowns. **An ortho-phthalaldehyde (OPA), such as Cidex Mediclean Forte is recommended for cleaning the stainless steel crowns.**

1. Measure the mesio-distal width of the tooth.
2. Select an equivalent size crown from the kit.
3. Confirm by comparison with a preoperative measurement.
4. Vent the incisal edge of the crown with an explorer.
5. Trim the crown, using scissors, 1 mm below scribe line. Contour, crimp and polish.
6. Fill the crown with high compressive strength temporary cement.
7. Fill the crown with a high comprehensive strength temporary cement.
8. Seat the crown before the cement begins to set, allowing the excess cement from escaping.
9. Fill the crown with restorative material. To avoid air entrapment, allow some restorative material to flow through the incisal vent of cement.
10. Burnish the cervical margin of crown to a feather edge before the cement hardens completely.

**Note:** There is a line in the middle of the gage sight window. Use this line to determine the mesial-distal width. Measuring gage is cold sterilizable. Metal calipers may be used as an alternate gage.

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<thead>
<tr>
<th>Phase</th>
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display table

- Inspect the crowns after cleaning and disinfection to ensure that no dust or soil is visible.

**Manual Cleaning**

- Rinse the stainless steel crowns thoroughly under lukewarm running water to remove any visible dust/soil.
- Prepare an enzymatic detergent* (pH 7.5 - 11) per detergent label instructions.
- Completely submerge the crowns in the detergent solution and soak for at least one minute, brushing all exterior and interior surfaces of the crown with a soft bristled brush during the soak.
- Rinse under running tap water and dry with a clean, soft cloth.
- Inspect the crowns after cleaning to ensure no dust or soil is visible.

**Semi-automatic cleaning**

- Rinse the stainless steel crowns thoroughly under lukewarm running water to remove any visible dust/soil.
- Prepare an enzymatic detergent* (pH 7.5 - 11) per detergent label instructions and fill the ultrasonic cleaner with the detergent.
- Place the crowns into a basket, submerge the basket in the ultrasonic cleaner and sonicate for at least one minute.
- Rinse under running water and dry with a clean, soft cloth.
- Inspect the crowns after cleaning to ensure no dust or soil is visible.

**Disinfection Procedure**

**Manual Disinfection**

- Prepare an ortho-phthalaldehyde** high level disinfectant (pH 7.5 - 11) per instructions of the disinfectant manufacturer.
- After cleaning, completely submerge the crowns in the disinfectant solution for the soak time recommended on the disinfectant label.
- Remove crowns from the disinfectant solution and submerge them in purified water for one minute with agitation.
- Dry crowns with a clean, soft cloth. Perform the post-drying step in a clean place, or use filtered air for drying to prevent recontamination.

**Inspection**

- Inspect the crowns to ensure the size marking is clearly visible. Discard the crown if size marking is not legible.
- Inspect the crowns for any damage after cleaning and disinfection.
- Dispose of damaged crowns before storage.
- Store the stainless steel crowns under dry and dust-free conditions.

*An enzymatic detergent, such as Enzol®, Cidezyme®, or Neodisher® Mediclean Forte is recommended for cleaning the stainless steel crowns.

**An ortho-phthalaldehyde (OPA), such as Cidex® OPA, Rapicide® OPA or Metricide® OPA is recommended for manual disinfection of the stainless steel crowns.

**3M ESPE Strip Crown Forms**

3M ESPE Strip Crown Forms simplify composite work for permanent anterior, bicuspid and pedo anterior restorations. Trimmed and filled with restorative materials, they automatically contour the restorative material to match natural dentition; they then strip off easily, leaving a smooth surface. Strip crowns are ideal for both chemical and photo curing composites, as well as a matrices for temporary crown and bridge materials. Strip crowns feature thin interproximal walls, natural anatomical shape, Palmer notation on each crown tab and sufficient strength for easy handling.

1. Select appropriate strip crown and trim to desired size with Unitek curved festooning scissors.
2. Trial fit the strip crown over the tooth to be restored.
3. Vent the incisal edge of the crown with an explorer.
4. Follow manufacturer’s instructions for etching tooth and applying dental adhesive.
5. Fill the crown with restorative material. To avoid air entrapment, allow some restorative material to flow through the incisal vent of the form.
6. Immediately place the filled strip crown on the prepared tooth, using finger pressure to seat firmly.

**Chamfer Preparation**

1. Gently push the crown over the preparation. The cervix of the crown will automatically stretch over the finish line.
2. Fill the crown with high compressive strength temporary cement and seat the crown by having patient close into occlusion until the cement begins to harden. A precise cervical fit helps prevent the cement from escaping.
3. Burnish the cervical margin of crown to a feather edge before the cement hardens completely.
4. Burnish occlusal for clearance if necessary.

**Shoulder Preparations**

1. If necessary, slightly flare the cervix of the crown on the stretch block to start passage over shoulder of preparation. Do not over expand.

**Note:** Stretch blocks are available in Iso-Form kits or sold separately for both molars and bicuspids.

2. Load cement in crown. Place the crown over the preparation. Push gently to expand the cervix over the shoulder. Burnish the flared cervix of crown to tooth.

**3M ESPE Gold Anodized Temporary Crown**

3M ESPE Gold Anodized Crowns are made from a medium-hard aluminum for durability and function. Gold anodization minimizes metallic taste and galvanic shock for greater patient comfort.

1. Measure the mesio-distal width of the tooth.
2. Select an equivalent size crown from the kit.
3. Confirm by comparison with a preoperative measurement.
4. Trial fit the crown. If trimming is necessary, scribe a line following the contour of the gingiva.
5. Trim the crown, using scissors, 1 mm below scribe line. Contour, crimp and polish.
6. Trial fit again and check for contact and tissue blanching.
7. Fill the crown with a high comprehensive strength temporary cement.
8. Seat the crown before the cement begins to set, allowing the excess cement to flow out under pressure.
9. Follow the cement manufacturer’s instructions as to the proper waiting period and remove excess with an explorer or scaler.

**Measuring Gage**

Three pairs of tapered blades are on each measuring gage. Insert gage blades from the lingual over the top of prepared tooth. Slide the gage toward the buccal surface until blade contacts adjacent teeth. Look at the gage to establish crown size.

**Note:** There is a line in the middle of the gage sight window. Use this line to determine the mesial-distal width. Measuring gage is cold sterilizable. Metal calipers may be used as an alternate gage.

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**Note:** There is a line in the middle of the gage sight window. Use this line to determine the mesial-distal width. Measuring gage is cold sterilizable. Metal calipers may be used as an alternate gage.
7. Immediately remove excess material with an explorer or fine scaler.
8. Allow chemical curing composites to harden before removing the strip crown. The strip crown may be removed from light curing composite after the recommended curing cycle.
9. After the restorative has hardened, cut the strip crown with an explorer or fine scaler and peel the crown form off the tooth.

**Finishing**

1. Finish the enamel-composite margin and make any necessary adjustments. A Sof-Lex™ superfine disc, manufactured by 3M ESPE, works well for polishing labial surface.

**3M ESPE Polycarbonate Temporary Crowns**

3M ESPE Polycarbonate Crowns are made of polycarbonate alloyed with micro-glass fibers. This gives the crown superior performance while permitting trimming, crimping, contouring and shaping without breaking or shattering the crown. The polycarbonate crown has a memory and will hold a crimp similar to a metal crown. Polycarbonate crowns also feature low water absorption, excellent anatomy and exceptional durability.

1. Select the proper size crown by measuring the unprepared tooth or mesial-distal width. The mold guides of the polycarbonate kit are valuable for selecting the proper size crown.
2. Trim the cervical contour by using crown scissors. Contouring can also be accomplished by grinding with a bur, stone or diamond.
3. For longer lasting restoration, it is recommended that an acrylic material be used for lining the polycarbonate crown prior to cementation.
   a. Put doughy acrylic mix into crown and place over lubricated preparation.
   b. When acrylic reaches rubbery stage, remove crown and trim excess material.
   c. Briefly, reseat crown into place to correct any distortion caused by trimming.
   d. Remove crown and allow acrylic to self-cure.
   e. When acrylic has cured, grind crown to finish line of preparation. Seat crown using cement of your choice.

**Note:** Crowns can also be lined with 3M ESPE composites. To improve adhesion, the inside of crown should be first primed with 3M™ Unitek™ Concise™ orthodontic bonding plastic bracket primer (No. 1965) immediately before applying the composite.

**Cementing**

1. Cement the crown with a zinc oxide eugenol (Z.O.E.) or a temporary hard-setting cement of choice. Tooth shade can be modified by choice of the cementing medium.

**Note:** Acrylic and Z.O.E. cement will bond with polycarbonate. Other cements will not bond and will hold the crown in place by mechanical retention. Mechanical retention can be enhanced by grinding a few grooves or notches on the crown interior with an inverted cone bur.

**Note:** Eugenol and some acrylics are solvents for polycarbonates; care should be taken to avoid direct contact between these and the crown.

**Buccal-Lingual Adjustments**

1. Using a separating disk, cut through mesially-distally up to the incisal edge.
2. Carefully, heat the incisal edge over a Bunsen burner and press crown together.
3. Place an acrylic lining. The acrylic lining will fill the mesial-distal separations and weld the crown into an integral unit.

**Storage and Use**

These products are designed for use at room temperature, and are designed for single use only.

**Disposal** — See the Material Safety Data Sheet (available at www.3MESPE.com or through your local subsidiary) for disposal information.

**Customer Information**

No person is authorized to provide any information which deviates from the information provided in this instruction sheet.

**Caution:** U.S. Federal Law restricts this device to sale or use on the order of a dental professional.

**Warranty**

3M ESPE warrants this product will be free from defects in material and manufacture. 3M ESPE MAKES NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining the suitability of the product for user’s application. If this product is defective within the warranty period, your exclusive remedy and 3M ESPE’s sole obligation shall be repair or replacement of the 3M ESPE product.

**Limitation of Liability**

Except where prohibited by law, 3M ESPE will not be liable for any loss or damage arising from this product, whether direct, indirect, special, incidental or consequential, regardless of the theory asserted, including warranty, contract, negligence or strict liability.

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