

Study Casts: Trimming and Marking

There's an old school 15 min video on this topic online: <http://theopenacademy.com/content/lecture-21-orthodontic-model-trimming> Of course, some of the orthodontic details aren't so important for treatment planning casts, but you probably know the overall level of your casts could definitely be improved! Take some pride in this step.

Turn the water to the model trimmer on. Moderate water flow will enable the rotating wheel to cut easier, as well as clean itself. Then, turn model trimmer to the "ON" position.

1. **Maxillary cast.** Place the base of the maxillary model on the table of the model trimmer, which is preset at 90 degrees. Gently press the base of the cast on the rotating wheel. Trim the base of the cast parallel to the occlusal plane. Continue applying light force until the base comprises 1/3 of the overall height of the cast. The anatomical portion will comprise the remaining 2/3 of the entire cast.
2. Place the base portion of the maxillary cast on the platform of the model trimmer. Apply light force to cut the heel of the model perpendicular to the midline. Remove the cast from the model trimmer and examine it to see if it sits flat (180 degrees) when placed on the workbench.
3. Trim each side roughly parallel to the maxillary teeth, approximately 65 degrees from the heels. Allow 3-5 mm of space beyond the facial surfaces of the teeth on the cast.
4. Trim the anterior portion to form a point at the midline. Each side should have a plane from the canine to the midline. This should create a point with an approximately 85 degree angle approximately 5 mm from the labial surface of the maxillary central incisors. Be sure to leave all natural anatomical structures intact, i.e. frenum, vestibular area etc, while following the general contour of the anterior teeth.
5. Trim excess vertical height so that the vestibule is less than 3 mm deep (except in areas of muscles attachment or frenum) so that the teeth and gingival structures are clearly visible.
6. **Articulate the maxillary and mandibular cast.** Eyeball where the mandibular cast will need to be cut to roughly line up with the maxillary.
7. **Mandibular cast.** Cut the heel of the mandibular cast to match up with the maxillary cast.
8. Trim the sides of the posterior region of the mandibular cast so they are similar to the sides of the maxillary cast. Allow 3-5 mm of space beyond the facial surfaces of the teeth on the cast.
9. Trim the anterior portion of the mandibular cast to form an arc or a rounded area from the first premolar to the first premolar. Caution should be taken to prevent damaging the incisors. Cut the posterior heel corners at a 60-degree angle.

Finishing.

- **Articulate the casts** to confirm that the study models properly represent the patient's current occlusion. Make sure no bubbles on occlusal surfaces interfere with how the teeth are occluding.
- Fill in any visible voids or bubbles on the model surface with a thick mix of plaster and smooth with a gloved fingertip. Or, wet the cast and rub the surface with dry powder- the water in the bubbles will make a slurry to fill in the tiny voids.
- Let the models dry for 48 hours. Sand the base and sides of the study models with a fine grit sandpaper under slow running water. NEVER sand the teeth or anatomical structures of the casts.

Marking the Casts

- Lightly **mark the patient's highest smile line** on the maxillary cast. Refer to your photos or mark it at a subsequent appointment. This will help you determine whether or not gingival surgery will be necessary, equate clasp placement, and is overall important to esthetic considerations.
- When you have the casts articulated correctly, either with recording medium in place, looking at photos, or looking at the patient directly, lightly **mark the occlusion** with a vertical mark on each side on well articulated cusps to facilitate hand articulation when you've forgotten their occlusion. (*Trust me...you'll forget*)
- On the heels of both casts, carefully **print the patient's last name, initials, and axiUm case number, as well as the date the models were taken** (in Sharpie). Your name is optional, but the casts will get back to you faster if you put it on there as well.