

Record Base and Occlusion Rims

Record base: an interim denture base (temporary form) used to support the record rim material for recording maxilla-mandibular records.



Uses of record base

1. Support of the occlusal rims.
2. Recording maxillomandibular relation.
3. Carry artificial teeth to perform the try-in procedure.
4. Gives an idea about the contour, extent, and esthetics of the denture.

Requirements of record base

1. The record base must have rigidity.
2. The record base must have accuracy and stability.
3. The borders should be developed in the same manner as the borders of the finished denture.
4. All surfaces that contact lips, cheek, and tongue should be smooth, round, and polished.
5. The crest, labial, and /or buccal slopes should be thin (1.5 mm) to provide space for teeth arrangement.

The accuracy of maxillo-mandibular relation record is affected by:

1. Rigidity of record base.
2. Stability of record base.
3. The movability of the record bases.
4. The smoothness of the polished surfaces contributes to the comfort of the patient allowing normal jaw movements.

Types and materials used in the construction of record bases

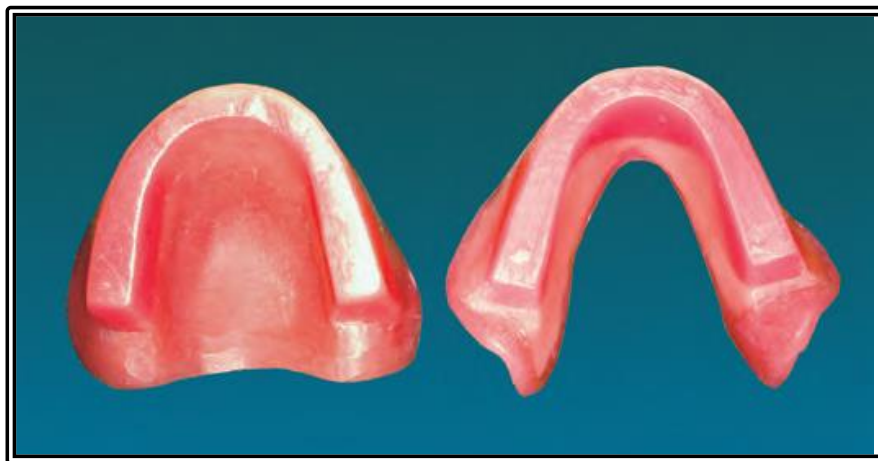
1. **Temporary record bases:** they are discarded and replaced by denture base material once their role in establishing jaw relation, teeth arrangement, and try-in is complete as those made from:
 - Shellac base plate.
 - Reinforced shellac base plate.
 - Auto-polymerizing acrylic resin.
 - Visible light cure acrylic resin.
 - Vacuum-formed vinyl and polystyrene.
 - Base plate wax (rarely used because it lacks rigidity and dimensional stability).

2. **Permanent record bases:** they are not discarded and become part of the actual base of the finished denture as those made from:
 - Heat cure acrylic resin.
 - Gold.
 - Chromium-cobalt alloy.
 - Chromium-nickel alloy.

For strength, rigidity, and a good adaptation of the bases on the cast and intraorally, auto-polymerizing acrylic resin is generally the material of choice for the construction of record bases.

Occlusion Rims (record or bite rim)

Occlusion rim: the occlusal surfaces fabricated on record bases for the purpose of making maxillomandibular relationship records and/or arranging teeth.



Requirements of occlusal rim:

1. It must be securely attached to the base.
2. All the surfaces should be smooth for patient comfort and relaxation.
3. The position should be in the anticipated position of the artificial teeth.
4. It should be contoured to support the lip and cheeks accurately allowing the muscles of facial expression to act in a normal manner in recording maxillomandibular relation.
5. Upper and lower bite rims should be flat and occlude properly with each other inside the patient's mouth with no space between them.

Materials used in the construction of occlusal rims

1. Wax:

- a. Bite blocks wax (readymade occlusion rim).



- b. Paraffin wax or base plate wax sheets (handmade occlusion rim).



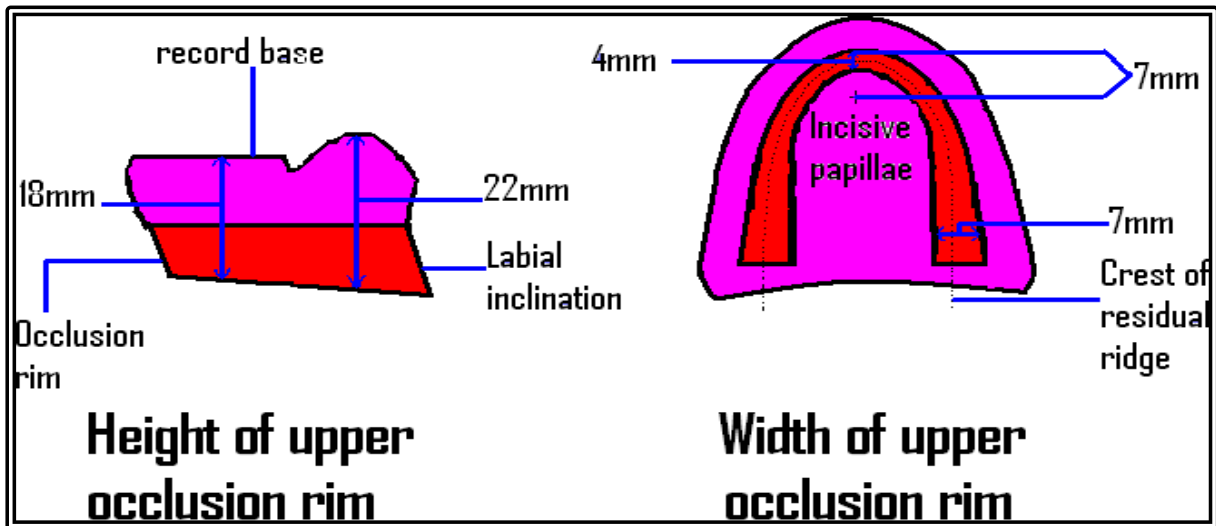
2. Modeling compound.

*Wax is used more frequently since it is easier to manage in the registrations and in the arrangement of teeth.

Measurements of maxillary occlusion rim

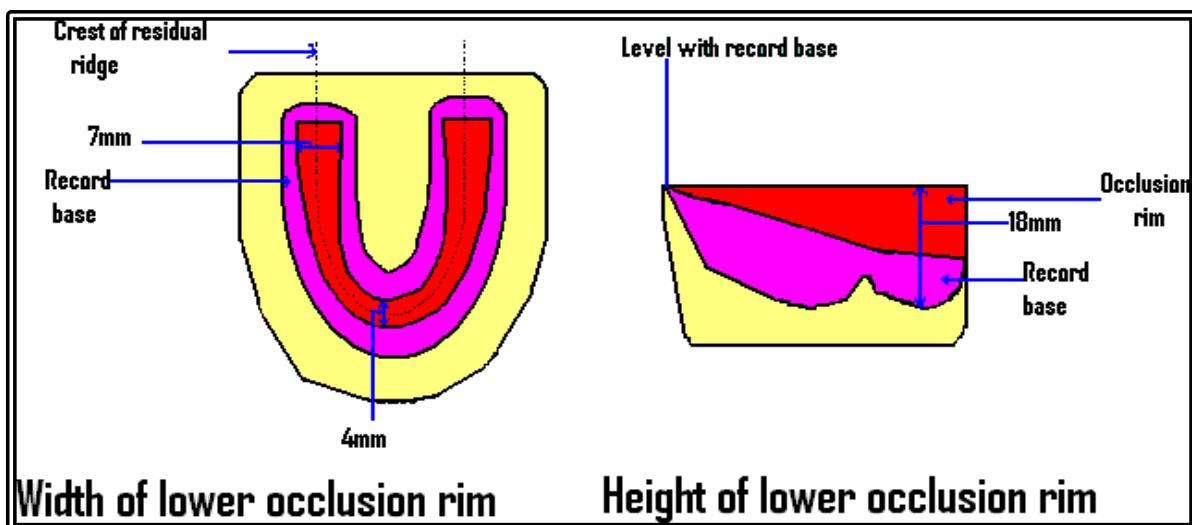
1. They should be directly over the crest of the residual ridges.
2. The occlusal height of the maxillary rim should be 22 mm from the labial flange lateral to the labial frenum and 18 mm from the buccal flange to the tuberosity area.
3. The final wax rims should be 4 mm wide anterior and gradually, become wider posterior to measure 7 mm.

4. The maxillary rim should have a slight labial inclination and the maxillary labial surface should be 7 mm anterior to the line bisecting the incisive papillae.
5. Its level should be (1-2mm) lower than the upper lip at rest.
6. It should touch the vermilion border of the lower lip in the pronunciation of letters (f and v).



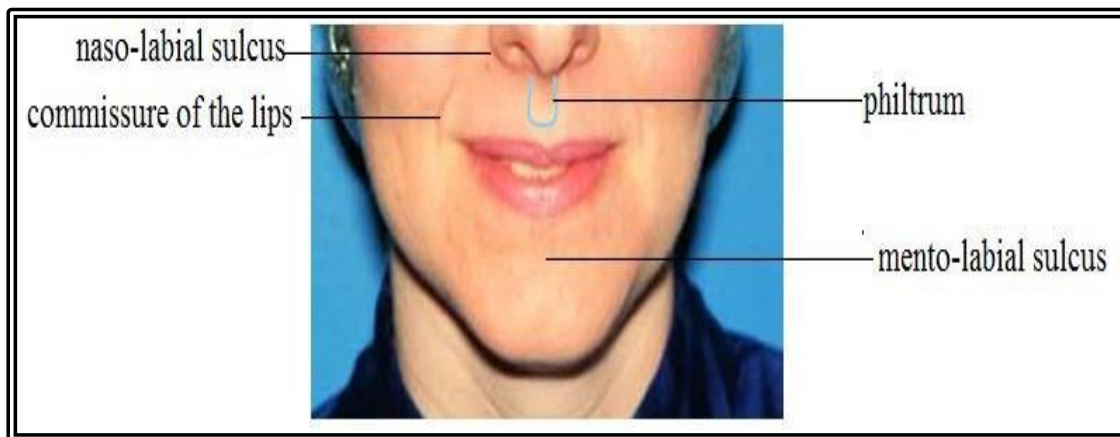
Measurement of mandibular occlusion rims

1. It should occupy the space over the crest of the residual ridge.
2. The occlusal height should be 18 mm from the labial flange lateral to the labial frenum and should be level with the acrylic base posteriorly.
3. The labio-lingual thickness should be approximately 4 mm anteriorly and also increase posteriorly to be 7 mm in the molars area.
4. Its level should be with the lower lip anteriorly and it should be flush to two-thirds height of the retromolar pad posteriorly



Generally, the basic fabrication of occlusion rims is a laboratory procedure and the final contouring is accomplished at the dental chair by the dentist prior to the recording of maxillomandibular relation. The anatomic guides aid in determining the proper contouring of the anterior section of upper and lower occlusion rims are:

1. The naso-labial sulcus.
2. The mento-labial sulcus.
3. The philtrum.
4. The commissure of the lips.



When the lip is under-supported by the bite rim:

The nasolabial and mentolabial sulci become deeper, the philtrum is flattened, and the commissures droop.

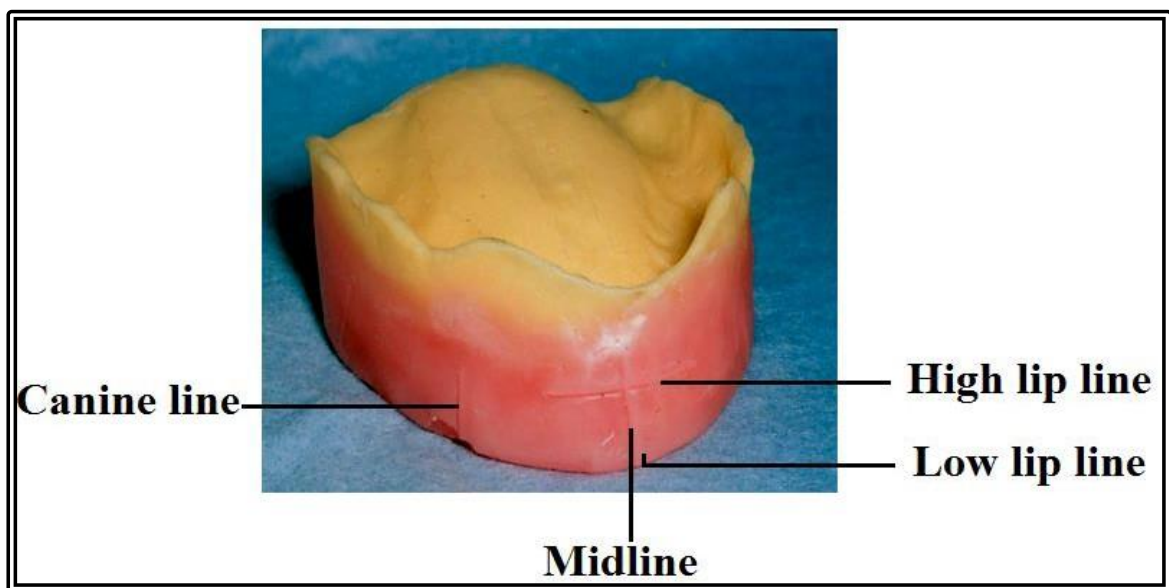
When the lip is over-supported by the bite rim:

The nasolabial and mentolabial sulci are distorted and shallow, the philtrum is partially or totally is obliterated and the commissures are distorted laterally.

Uses of the bite rims:

1. Determination of maxillomandibular relation, including:
 - *Determination of vertical and horizontal jaw relation.
 - *Determination of the centric and eccentric jaw relation.
2. Setting up or arrangement of teeth.
3. Orientation of occlusal plane.
4. Determination of the shape of the arch.
5. Support of the facial muscles.
6. Selection of teeth which includes the determination of:

- Midline position: which is drawn in the occlusion rims according to the face midline.
- Canine lines position: which is drawn in the bite rims at the corner of the mouth on each side or is opposite to lines drawn downward from the borders of the ala of the nose.
- The width of 6 anterior teeth: which is equal to the distance between the right and left canine lines.
- The width of posterior teeth: which is equal to the distance between the canine line and the end of the bite rim posteriorly.
- High lip line: which is determined by drawing a line on the upper wax rim when the patient smiles and the whole anterior incisors should be seen, it is used to determine the height of upper anterior teeth.
- Low lip line: a line drawn on the upper wax rim when the patient's lip is relaxed so that about 2mm of anterior teeth should be seen.

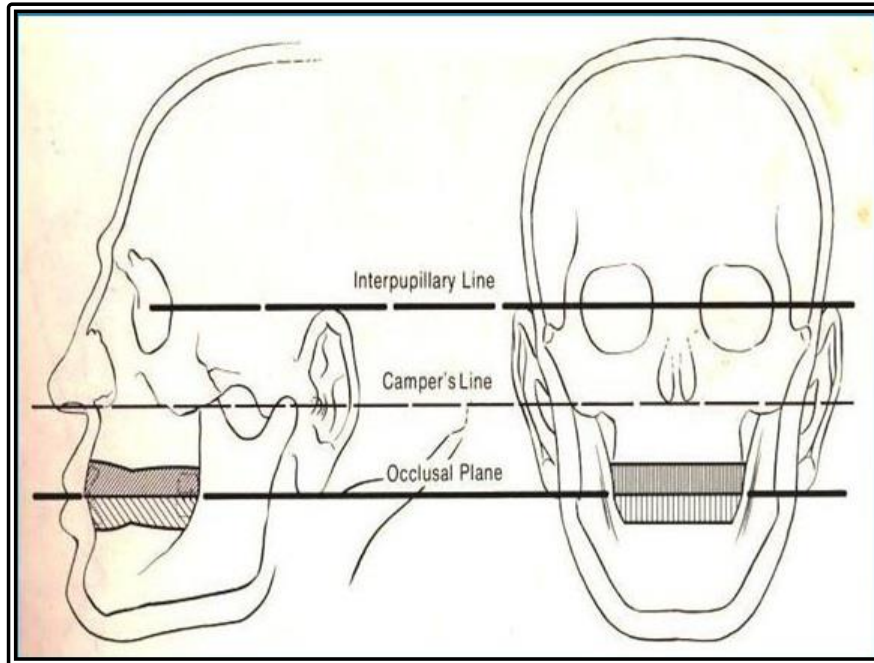


Occlusal plane

It's an imaginary surface that is related anatomically to the cranium and theoretically attached to the incisal edges of the incisors and the tips of the occluding surfaces of posterior teeth. Mostly, it is determined by the upper occlusal rim with the help of a device called fox bite.

The height of the occlusal plane should be 1-2mm below the relaxed upper lip or with it in old-age patients. Generally, each case should be considered separately in relation to the height of the lip, age of the patient, and sex of the

patient, e.g. for the patient that has a long lip, the height of the occlusal plane should be with the border of the upper lip, while for the patient with short lip, there is more than 2 mm showing from upper lip. So, each case should be considered separately for best appearance.



Fox bite (Fox plane guide)

An appliance used to check the parallelism of the wax occlusal rim anteriorly and posteriorly. Or, it is an appliance used for orientation and determination of the occlusal plane on the bite rims. It consists of anterior, lateral, and inner parts.

1. The inner part: should be applied on or attached to the upper bite rim inside the patient's mouth.
2. The anterior part: which represents the anterior part of the occlusal plane of the upper occlusion rim should be parallel to the interpupillary line of the patient (an imaginary line running between the right and left pupils of the patient's eyes when the patient is looking straight forward).
3. The lateral part (anteroposterior occlusal plane): which represents the posterior part of the occlusal plane should be parallel to the ala-tragus line or Camper's line (imaginary line running from the inferior border of the ala of the nose to the superior border of the tragus of the ear).





