

# CROWN AND BRIDGE

Lecture: 5

Dr. Farid

## BITE REGISTRATION AND ARTICULATION

To fabricate fixed partial denture according to the patient's occlusion, the working cast plus the opposing cast should be mounted to an articulator.

### **Interocclusal record (bite registration):**

To transfer the relation between the upper and the lower dental arch from the patient mouth to the articulator we need bite registration.

Proper interocclusal record is important to orient the die or dies of the same arch to the opposing arch.

When enough teeth are present in both upper and lower arches we can transfer the relation by hand articulation of the cast. (No bite record is needed in such case). So we can occlude the opposing casts by hand then mount them on the articulator, however, if the remaining teeth are insufficient to produce hand articulation of the cast we have to record the bite by:

- 1- Pink base plate wax.**
- 2- Bite registration paste.**
- 3- Bite rim or occlusal rim.**

### **How to record?**

Whatever the material used to record the relation, you have to guide the mandible to the required relation (centric or eccentric).

## ***JAW MANIPULATION***

Accurately mounted casts depend on precise manipulation of the patient's mandible by the dentist.

The Bi-manipulation Technique is recommended as a reproducible technique in this technique, the dental chair is reclined and the patient's head is cradled by the examiner. With the both thumbs on the chin and the fingers resting firmly on the inferior border of the mandible, the examiner exerts gentle downward pressure on the thumbs and upward pressure on the fingers, manipulating the condyle-disk assemblies into their fully seated positions in the mandibular fossae. Next, the mandible is carefully hinged along the arc of terminal hinge closure. The most widely used material to record the occlusal relation pink base plate wax.

Then the record is taken by softening the wax at first, then applies the soft wax over the occlusal surface of the prepared teeth, then, ask the patient to bite on it, keeping in your mind that you have to guide the mandible of the patient to the reference point that you mark it, to have the correct registration.

The patient is asked then to mold the wax at the lingual area by his tongue, while by your finger adapt the wax on the labial side. After complete setting remove it from the patient mouth, trim the excess and attach it to the cast and transfer it to the articulator.

**Bite rim:** used if we have free end saddle, in this case there are insufficient teeth to provide bilateral stability, obtaining a centric record as described may not be possible. As a result, acrylic resin record bases must be fabricated. To avoid errors caused by soft tissue displacement. So we use

bite rim over the record base to record the centric relation (the same as that used for removable partial denture).

### **Articulator selection**

Handheld casts can provide information concerning alignment of the individual arches but do not permit analysis of functional relationships. For an analysis, the casts need to be attached to an articulator.

- It is a mechanical device that simulates mandibular movement. Articulators can simulate the movement of the condyles in their corresponding fossae

### **CLASSIFICATION OF THE ARTICULATORS**

They are classified according to how closely they can reproduce mandibular border movements. The aim is to create fixed partial denture in functional harmony with the patient's occlusion, also less time will be needed for adjustments at delivery

Small nonadjustable articulators (simple hinge articulator)

- Permit hinge opening only.
- Some types provide very limited lateral movements.
- The distance between the teeth and the axis of rotation is shorter than in skull, loss of accuracy.



Semi adjustable articulator

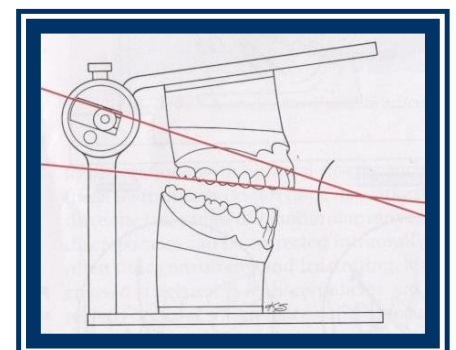
Used for most routine fixed partial dentures.

They are about the same size as the anatomic structures they represent.

### **Semi adjustable articulator classified into:**

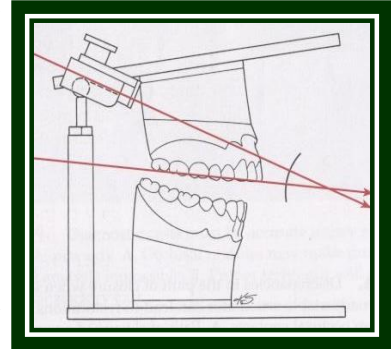
#### **A- NONARCON DESIGN.**

- Mostly used for complete denture.
- The condylar elements are placed on the upper portion of the Articulator. As consequences of their design, certain inaccuracies occur in cast restorations.



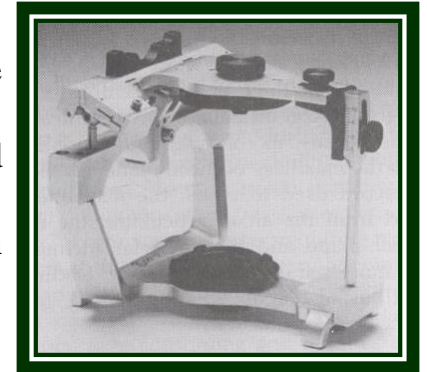
## B- ARCON DESIGN

- The condylar spheres are attached to the lower component of the articulator and the mechanical fossae are attached to the upper member of the instrument. Thus, the arcon articulator is anatomically correct, which makes understanding of mandibular movements easier
- The angulations of mechanical fossae are fixed relative to the occlusal plane of the maxillary cast
- The Mechanical fossae can be adjusted to mimic the movements of the mandible through the use of inter occlusal Records.



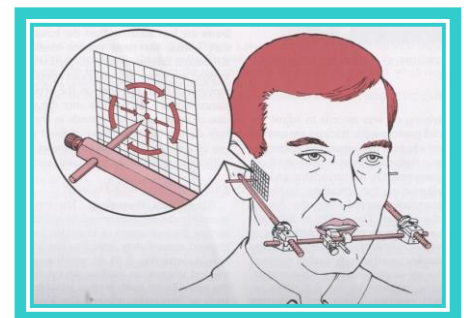
## FULLY ADJUSTIBLE ARTICULATOR

- Give a wide range of positions that can be set to follow the patient's border movements of mandible.
- Require skill and understanding from both dentist and technician.
- Useful in treating complex cases such as full mouth rehabilitation and abnormal jaw movements.
- Can accept kinematics hinge axis face-bow.
- Can register Bennett angle and side shifts of mandible.
- Rather than relying on wax records to adjust the articulator, special pantographic tracings are used to record the patient's border movements in a series of tracings.



## Face-bow

- It is a rigid caliper-like device that used for:
  - 1- Locating the condylar axis.
  - 2- Relating the maxillary cast to the same axis on the articulator that is present in the skull.

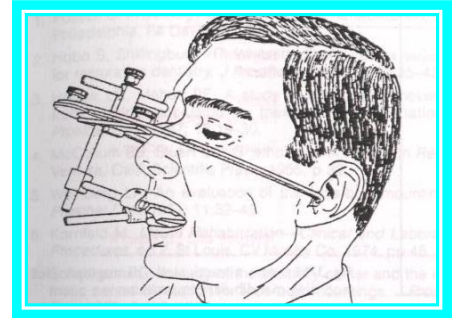


There are two types of Face-bow:

**1- Arbitrary Face-bow**

**2- Kinematic Face-bow**

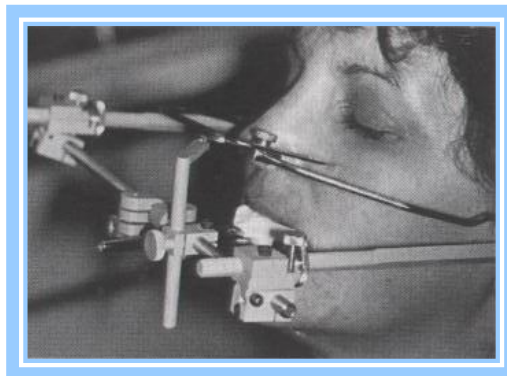
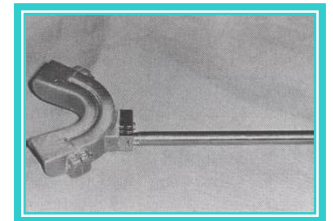
The main difference between them lies in the accuracy in locating the condylar axis. The arbitrary type provides an error of about 5mm between the true hinge axis and an easily identifiable landmark, usually the external acoustic meatus.



The kinematic type is more accurate and can determine the location of the mandible.

The Face-bow of:

A clutch (an impression tray-like metal device) attached onto mandibular arch using heavy body silicon impression material. The Face-bow is fastened to the clutch and adjusted so that its styluses could be positioned lateral to the TMJ's in close proximity to the patient's skin in order to locate the terminal hinge axis during opening and closing of patient's mouth.



Reference: Contemporary Fixed Prosthodontics