Articulators

It is a mechanical device represents the TMJ, maxillary and mandibular arches.
► It can be used to hold the upper and lower casts according to their relationships to facilitate the purposes of diagnosis and arrangement of artificial teeth out side the patient mouth.
► It is an instrument that acts as the patients in their absence and provide media of working without the interference of cheek, lips, saliva and tongue.

FUNCTIONS
1- To act as a patient in the absence of the patient.
• 2- Articulators can simulate all the possible mandibular movements.
3- Mounting dental casts for diagnosis and treatment planning
4- Arrangement of artificial teeth for complete and partial denture.
5- Wax up and refining the occlusion for dental restorations.
ARTICULATION REQUIREMENT

1. It must accurately maintain centric relation or occlusion.
2. Casts must be easily attached and removed.
3. The pin must be adjusted in contact with the incisal table.
4. It must open and close on a hinge.
5. There must be adequate distance between the upper and lower arms.
6. It must be stable on the work-bench.
7. It must not be too heavy.

CLASSIFICATION OF ARTICULATORS

According to the accuracy of reproduction of mandibular movements. The classification system is as follows:

- Class I Articulator (Non-Adjustable)
- Class II Articulator (Average Value)
- Class III Articulator (Semi-Adjustable) (arcon and non-arcon)
- Class IV Articulator (Fully Adjustable).
**1- TYPE I SIMPLE HINGE ARTICULATORS**

1-Single hinge movement only (opening & closing)
2-No lateral movement
3-Smaller than patient jaws
4-Very limited value in restorative dentistry and prosthodontics

![Image of a simple hinge articulator]

**2- typell mean value articulators**

1-Condylar angle fixed at 30 angle
2-No lateral movement
3-permit horizontal and vertical but not orient motions to TMJ
4-Face bow record in some designs of these articulators
5-produce an approximation of condylar movement and used to design & prepare complete dentures and simple restorations
The inclination of the condylar path

Types:
A- Sagittal (HORIZONTAL) condylar path angle

B- Lateral condylar path angle

3-type3 semi adjustable

1-Recommended for most dental restorations
2-More accurate than average value
3- Allows increase of OVD by raising the height of articulator pin.

4- is the operator choice

5- Records For a Semi-adjustable Articulator
   - Face-bow record
   - Inter occlusal record
   - Protrusive record

- This type depends on face bow transfer and protrusive condylar path obtain from the patient mouth while the lateral condylar path is adjusted according to an average value by special formula:
  - \( L = \frac{H}{8} + 12 \) (hanu`s formula)
  - \( H = \text{protrusive} \quad L = \text{lateral} \)

4- fully adjustable
An articulator that allows accurate replication of three dimensional movement of recorded mandibular motion

- **Face-bow record**
- **Interocclusal record**
- **Protrusive record**
- **Lateral records**
- Can also utilize more complex types of face-bow and lateral records.

**FACE BOW**

- Caliper like device that is used to record the relationship of maxillary arch to some anatomic reference point or points and then transfer the relationship to an articulator. It orients the cast in the same relationship to the opening axis of articulator.
TYPES OF FACE BOW

1- ARBITRARY (MAXILLARY) FACE BOW consist of 2 types
   Facial type & Ear type
2- KINEMATIC (MANDIBULAR , HING LOCATOR) FACE BOW

FUNCTION

1- locate the terminal hinge axis by the use of kinematic face bow.
2- relate the maxillary cast to the transfer axis of the articulator in the same relationship as the maxilla is related to the mandibular hinge axis.
3- relate the mandibular cast to the hinge axis by means of a centric relation record
Making the Ear Bow Record

Two posterior reference points