

Facebow Instructions

Applicable for Item #FB400000



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Section 1: Facebow Background

The facebow is an indispensable part of the semi or completely adjustable articulator, because the upper cast is mounted in the same position as the maxilla, with respects to the cranium. Facebows are classified into two types:

- Anatomic - Anatomic (AD2, Panadent, Whip Mix, Dentatus, etc.) facebows position the upper maxilla based on the axis-orbital plane, which is determined by average values and will be described later.
- Cinematic - Cinematic facebows are sophisticated instruments such as axiographs and/or pantographs that help determine the individual values of different parameters measured in patients. These values provide more information to program the articulator and can include exact hinge axis, condyle eminence, Bennett angle, and immediate side shift.

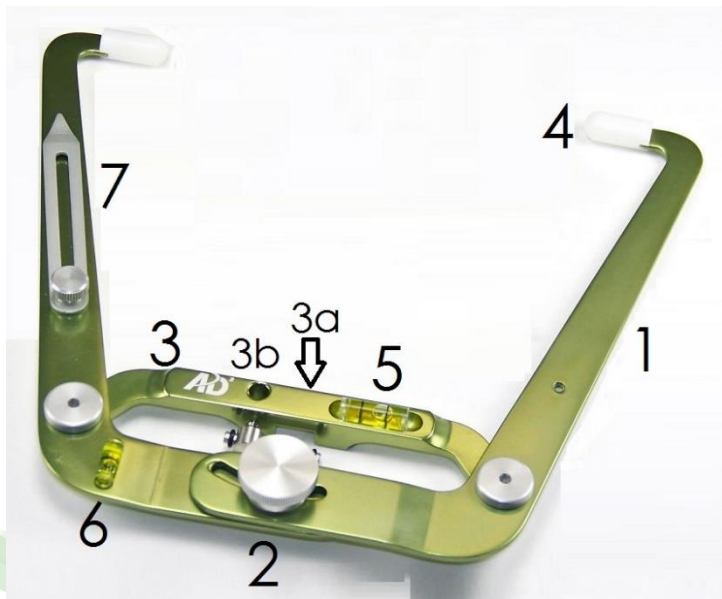
For a better understanding of these concepts, we will begin with the basic of the facebow manufactured by AD2.

Section 2: Main Components

Items include:

1. Facebow
2. Bite Fork Stem Assembly
3. Bite Fork
4. Nasion Relator
5. Mounting Table
6. Screw Toggles
7. Hex Screwdriver





Facebow Components

1. Side Arms (2)
2. Central Knob
3. Cross Bar
 - 3a - Slot for Nasion Relator
 - 3b - Hole for inserting bite fork stem
4. Ear Piece (2)
5. Transverse Bubble Level
6. Sagittal Bubble Level
7. Orbital Pointer (for third reference point)

Bite Fork Stem Components

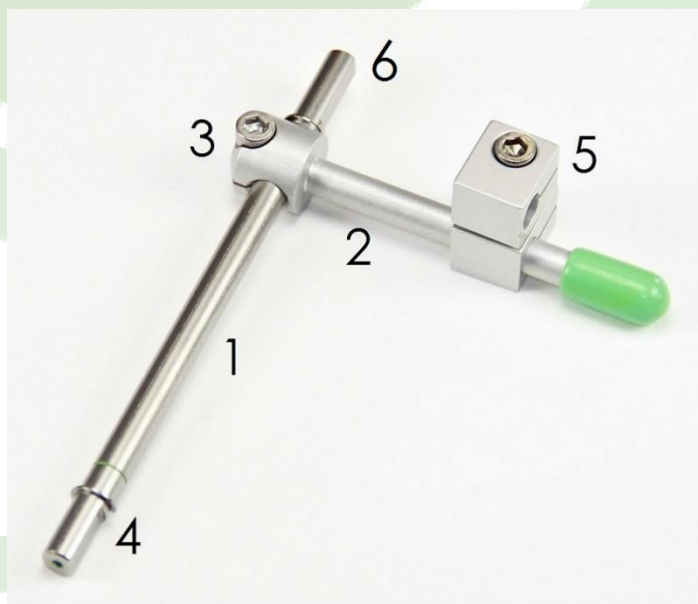
The bite fork stem connects the bite fork to the facebow and replaces the facebow when mounting the upper cast on the articulator. The components of the bite fork stem are:

1. Vertical Post
2. Horizontal Arm
3. Vertical Clamp
4. Stem Tip (short)
5. Toggle Clamp
6. Stem Tip (long)

The vertical post (1) has two opposing ends. Each end has a flat surface machined into it where a thumb screw will contact it. This, in turn, will prevent the vertical post from rotating once it is locked into place in the facebow or mounting table.

- Stem Tip (long, #6) is designed to fit into the slot on the mounting table.
- Stem Tip (short, #4) is denoted by both a green dot on the end of the tip as well as a green groove on the vertical post. The short Stem Tip is inserted into the facebow crossbar hole shown by 3a above.

The vertical clamp (3) serves the dual purpose of joining the vertical post and horizontal arm together as well as allowing the user to lock them together in a specific position. Similarly, the toggle clamp (5) connects the bite fork to the bite fork stem assembly and lock it into a specific position. Please note that the toggle clamp should never be tightened without a bite fork inserted first. Failure to do so may result in the toggle clamp being bent and rendered unusable.



Bite Fork Components

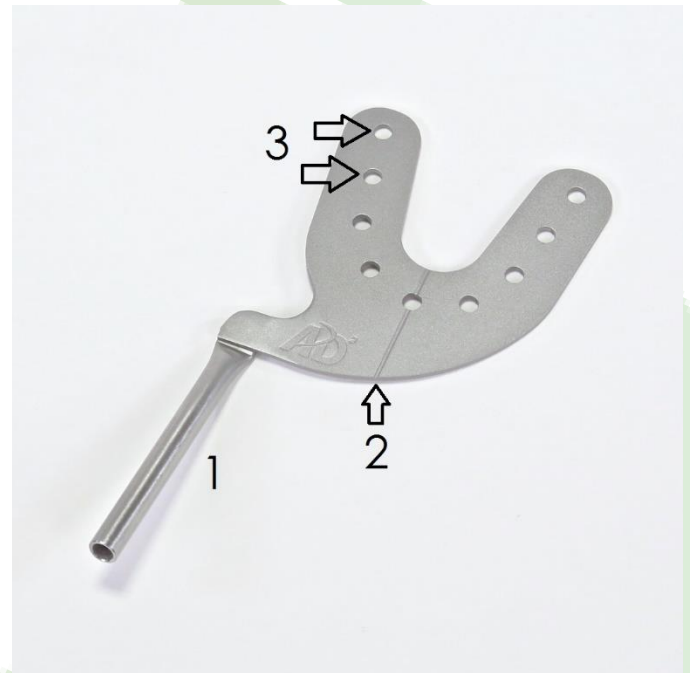
1. Bite Fork Post
2. Midline
3. Compound Retention Holes
4. Bite Fork Support

To record bite registration, a bite fork will be inserted into the patient's mouth (with the bite fork attached to the facebow via the bite fork stem assembly). To properly prepare the bite fork for use, please be sure it has been sterilized and free of all residue.

If bite registration compound (i.e. Kerr green stick) is used, the compound should be placed at the midline and in the area of the first molars. Ideally, the surface of the compound should be smooth, without irregular areas to allow for the most accurate impression of the upper incisal edges and the cusps of the upper bicuspids and molars.

As an alternative to compound, AD2 recommends the use of its Accu-Bite adhesive wax discs. Accu-Bites should also be placed at the same three locations (midline and first molar) as shown to the right.

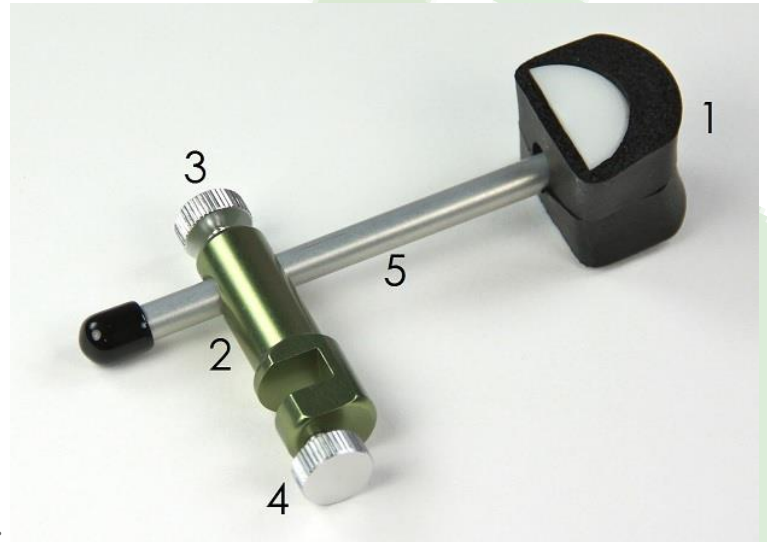
While the flat bite fork as shown above is used more commonly, AD2 provides a curved bite fork (shown right) as well with the FB400000 facebow. In cases where the patient's lower 2 molars are extruded or the upper 2 molars are not present, the curved bite fork can provide improved patient comfort.



Nasion Relator Components

1. Nasion Pad
2. Nasion Bracket
3. Upper Thumb Screw
4. Lower Thumb Screw
5. Nasion Shaft

While we will discuss the procedure for facebow recording below, the nasion relator is attached to the facebow via the slot on the nasion body (2) and then tightened using the lower thumb screw (4).



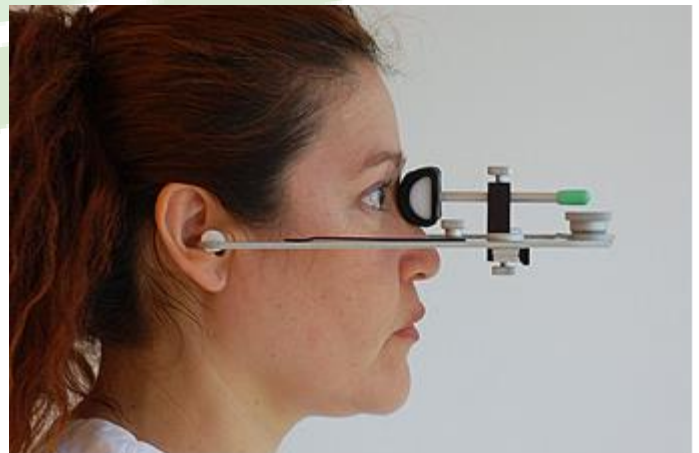
Section 3: Facebow Use – Basic Concepts

Taking a proper facebow record is necessary to mount the upper cast and reproduce the three dimensional position of the maxilla. It also provides an estimated mandibular rotating axis (hinge axis) as well as a reference plane (known as the axis orbital plane).

The facebow uses three reference points: two posterior and one anterior. The posterior points represent the rotation axis (or hinge) of each condyle, which are arbitrarily recorded in the patient's external auditory canal with the ear pieces on the face-bow. The anterior reference point or orbital point (3rd reference point) is also arbitrary and is determined by a specific distance from the nasal bridge by the nasion relator. Note that this point does not necessarily coincide with the cephalometric orbital point.

With these three reference points, we can now establish the axis-orbital plane. When the facebow record is transferred to the articulator, the upper cast is mounted on the upper member of the articulator on the axis-orbital plane.

Shown right is the axis-orbital plane recorded by the facebow. The hinge axis is determined by the ear pieces and the orbital point by the nasion relator.

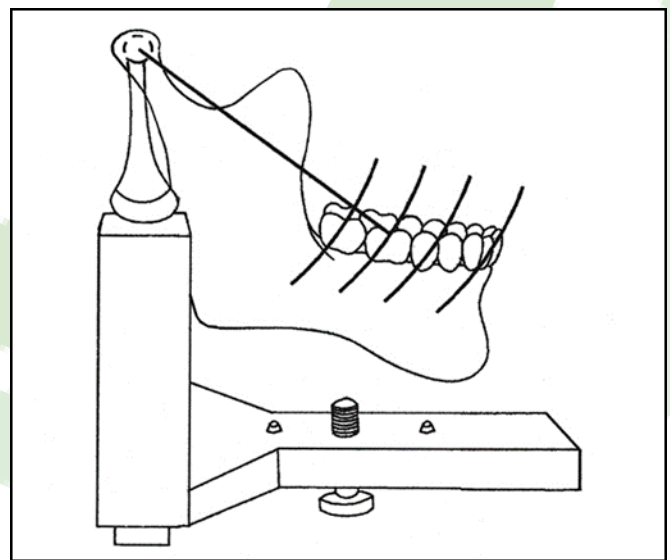


Basic Concepts (cont)

In summary, the use of a semi-adjustable articulator with a facebow will estimate the position of the maxilla in the skull as well as the relation of the mandible with the cranium, (the hinge axis). Once the lower cast is mounted on the articulator, the distance between the hinge axis and the lower teeth is established so that a mandibular closing arc can be established for each lower tooth. This is one of the reasons why the hinge axis is so important: the mandibular closing arc of the patient on the articulator shows the tooth contacts in closure.

Pictured right, the mandibular closing arc where the distance between the hinge axis and the dental arch are duplicated (or each individual tooth).

Since the reference points are determined arbitrarily, this mandibular closing arc is not exact, but for diagnostic purposes, it is considered useful system. However, there are certain therapeutic procedures where vertical dimension will be changed (i.e. orthognathic surgery, selective grinding) and it will be necessary to use a true hinge axis. In these instances, an axiograph (hinge axis recorder) will be needed to determine the true mandibular closing arc.



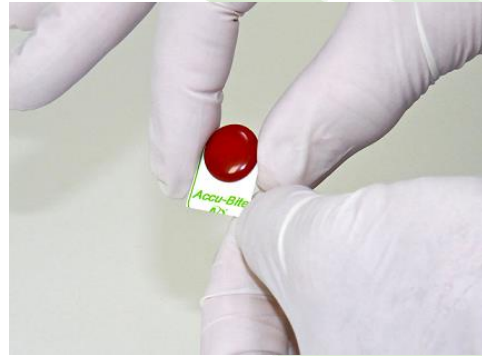
Facebow Recording Procedure

As discussed earlier, a facebow record can be taken by applying bite registration compound directly on the bite fork or by using Accu-Bite adhesive wax discs. The procedure shown below will focus on using Accu-Bite discs for this.

Step 1: Peel off an Accu-Bite strip at printed end from sheet. Avoid touching the adhesive underside near the wax disc.



Step 2: Hold Accu-Bite on the sides of the paper strip and fold back the adhesive paper near the bottom for easy removal after use.



Step 3: Place Accu-Bites at the left molar, right molar and incisor positions on a clean, dry bite fork. Avoid covering the midline mark on the bite fork.



Step 4: Place the bite fork in hot tap water (125°F/40° C) to soften the Accu-Bites (about 60 seconds). For the best Accu-Bite adhesion to the bite fork, do not place the bite fork in a water bath.



Step 5: Place the bite fork in the patient's mouth, aligning the center mark with the facial mid line. Lightly press the bite fork upwards so that the teeth indent the Accu-Bites approximately 1mm. Make sure that no teeth come in contact with the bite fork. Remove the bite fork and cool with water or compressed air.



Step 5 Option: To improve patient comfort with the bite fork, the doctor can choose to add an adhesive bite fork stabilizer to the underside of the bite fork once it has been removed from the warm water. Simply peel off the contact paper to reveal the adhesive and press the foam stabilizer to the bite fork.



Step 6: Shave off the excess compound, leaving imprints about 1mm deep.



Step 7: Install the nasion relator in the slot on the facebow crossbar as shown.



Step 8: Insert and lock the short end of the bite fork stem (with the green dot and groove) to the facebow. The flat surface of this end must face the thumb screw.



Step 9: With the hex screw driver, loosen the vertical clamp on the bite fork stem.



Step 10: Continue using the hex screw driver to loosen the toggle clamp on the bite fork stem.

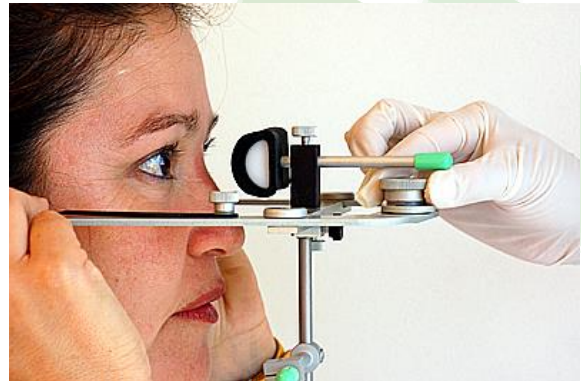
Observational Note: Steps 6, 7, 8 and 9 are generally done by a dental assistant before the facebow recording begins.



Step 11: Loosen the central knob located on the anterior end of the face-bow with ½ turn counter clockwise.



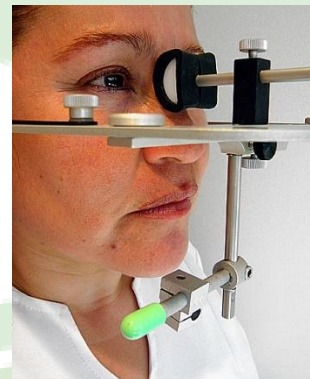
Step 12: Instruct the patient to separate the side arms of the facebow and insert the ear pieces into the ears (push in and forward). Note that this can also be done by an assistant. Once completed, tighten the central knob to lock the width of the facebow.



Step 13: While the patient (or assistant) is still holding the facebow arms, place the nasion relator on the patient's nasion. Use the nasion relator like a plunger, using gentle pressure to push the relator against the patient. This will move the earpieces more forward to approximate the condyles. Lock the nasion in place by tightening the upper thumb screw as shown.



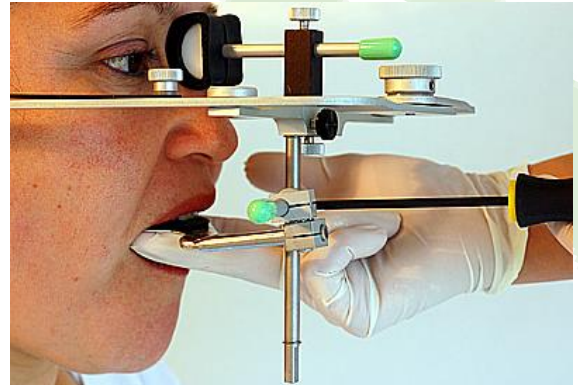
Step 14: Check that the vertical clamp and toggle clamp on the bite fork stem are loose. Also confirm that the toggle clamp is facing down and is on the right hand side of the patient.



Step 15: Slide the bite fork through the hole in the toggle clamp and put it in the patient's mouth, seating the teeth in the indentations in the Accu-Bites (or registration compound). Make sure the bite fork seats firmly and there is no movement.



Step 16: Stabilize the bite fork with the index and middle fingers and tighten both the vertical clamp and toggle clamp with the hex screw driver. When completed, double check the stability of the bite fork.



Step 17: Loosen the center knob of the facebow and ask the patient (or assistant) to open the side arms and remove it from the ears. When removing, the facebow should come down and forward.



Step 18: Loosen the thumb screw that joins the bite fork assembly to the facebow.



Step 19: Remove the bite fork assembly, package it carefully and send it to the lab so the upper cast can be mounted.

