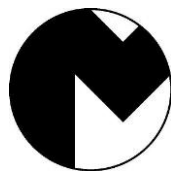




**R-010104**

**ARQUIMEDES  
PROTRUSAL SEMIADJUSTABLE  
ARCON ARTICULATOR WITH FACE BOW AND CASE**



**MESTRA®**

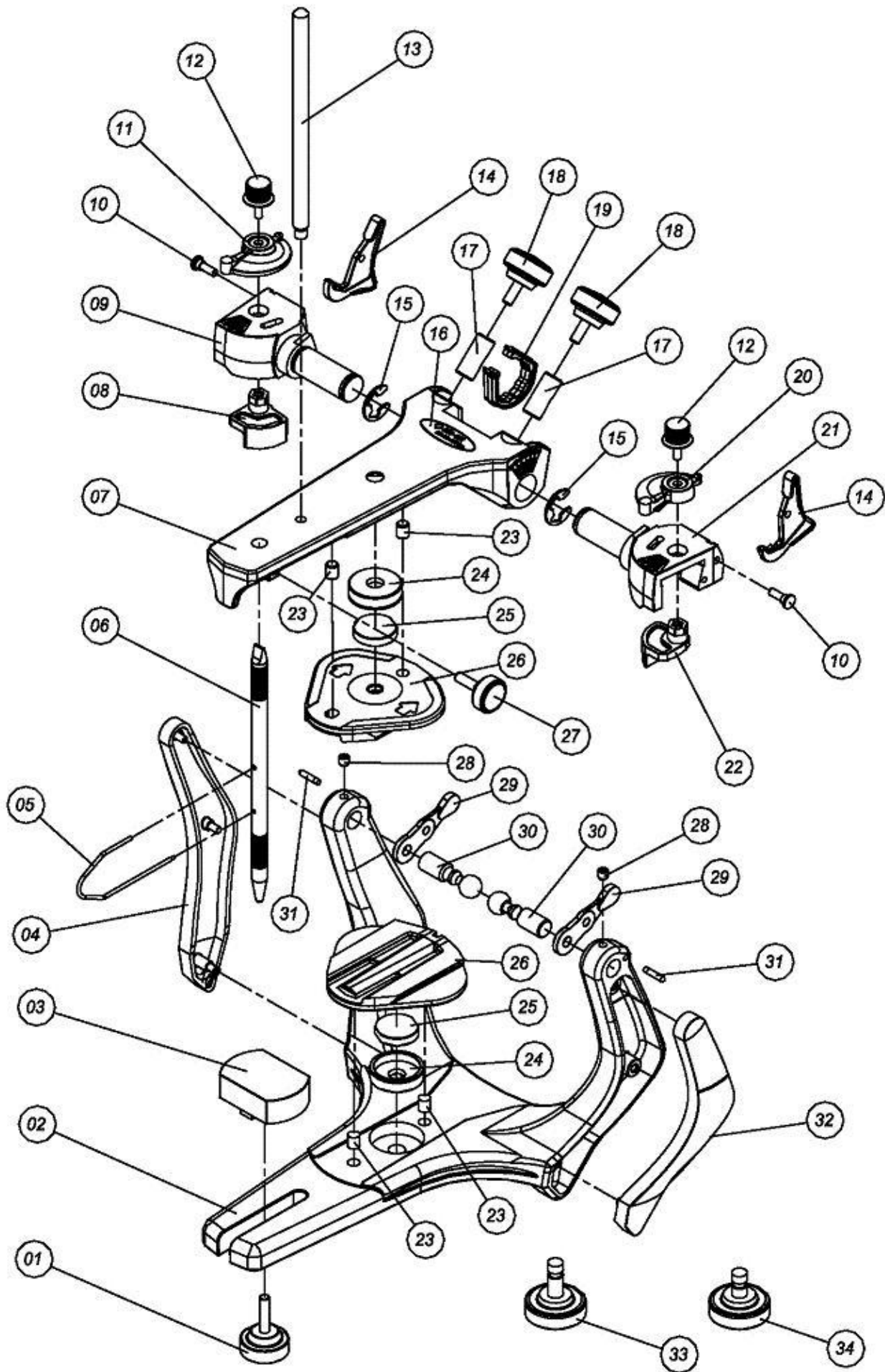
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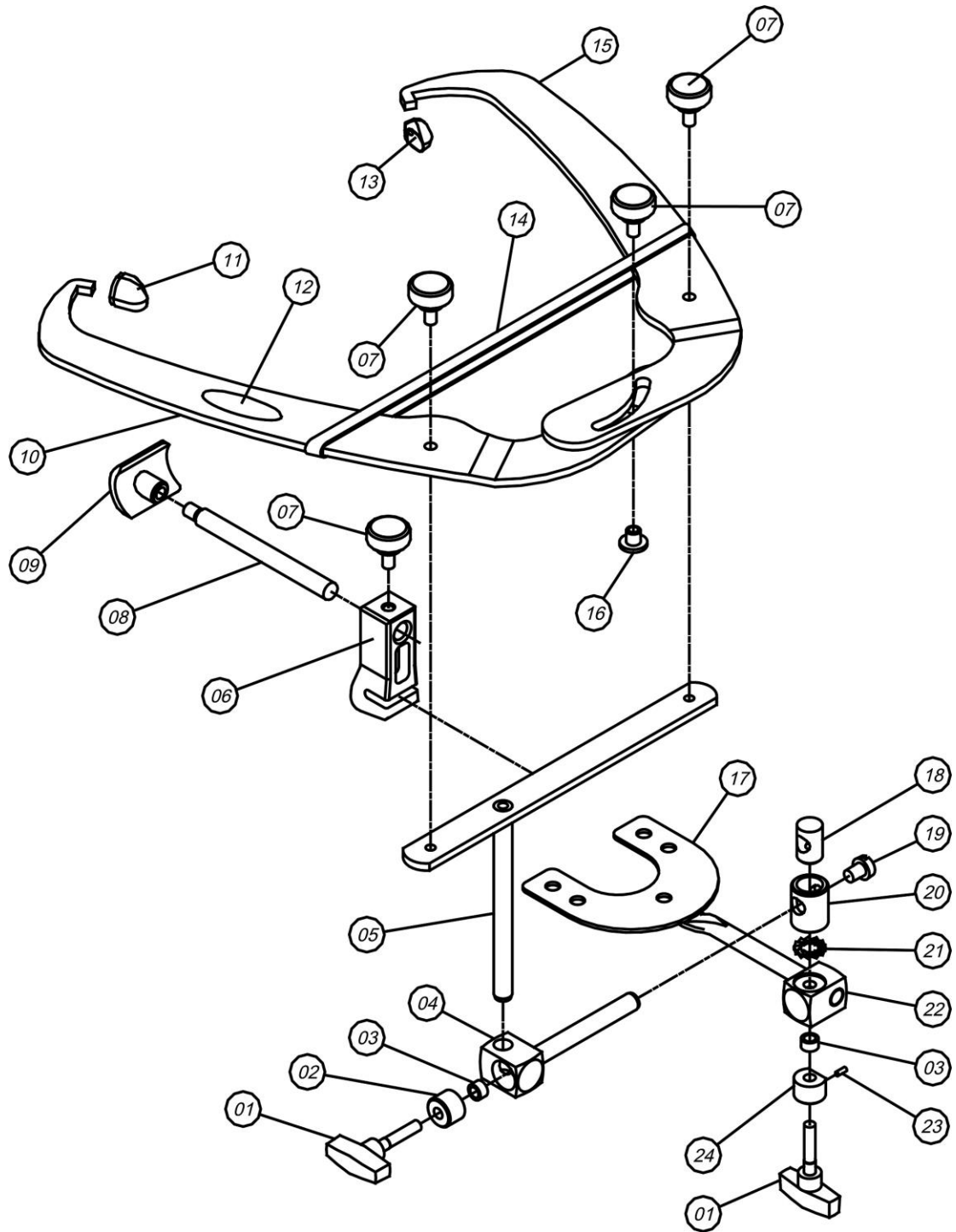
mestra@mestra.es - www.mestra.es

**48150 SONDIKA - BILBAO - ESPAÑA**



Nº	Descripción
1	Incisal table screw
2	Lower frame
3	Incisal table (acrylic)
4	Finishing cover of right column
5	Occlusal plan indicator
6	Incisal pin with hole
7	Upper frame
8	Bennett angle adjusting device (Right)
9	Condylar guide (right)
10	Stabilizing elastic band pin
11	Position indicator of Bennett angle adjusting device (right)
12	Screw to fix the Bennett angle adjusting device
13	Upper frame support pin
14	Lock of upper frame
15	Condylar guide O-ring
16	Model identification label
17	Condylar guide fixer
18	Condylar guide screw
19	Pulley finishing cover
20	Position indicator of Bennett angle adjusting device (left)
21	Condylar guide (left)
22	Bennett angle adjusting device (Left)
23	Mounting plate guide pin
24	Magnetic fitting
25	Mounting plate magnet
26	Mounting plate (track) (2 U.)
27	Incisal pin screw
28	Condylar element screw
29	Stabilizing elastic band
30	Condylar element
31	Face bow's guide pin
32	Finishing cover of left column
33	Mounting plate screw (lower frame)
34	Mounting plate screw (upper frame)

# FACE BOW



N°	Description
01	Wing screw
02	Piece to fix the cross bar (without hole)
03	Elastic washer
04	Horizontal slide bar
05	Cross bar
06	Nose piece support
07	Face-bow wing screw
08	Nose piece shaft
09	Nose piece
10	Face-bow arm (right)
11	Ear piece (right)
12	Model identification label
13	Ear piece (left)
14	Elastic band
15	Face-bow arm (left)
16	Center nut
17	Bite fork
18	Connection block (internal)
19	Stopping screw
20	Connection block (external)
21	Washer for the block
22	Fork connection block
23	Affixing block pin
24	Affixing block (with hole)



## DEAR CUSTOMER

This manual is a general presentation of your product and it will give you important details to help you to solve possible problems.

Please, read it and keep this with you.

**Attention:** Before using your articulator, please read carefully all the Instructions Manual.

**Attention:** The use of the equipment by professionals not qualified can cause damage or harm to the product and/or patient.

## PRODUCT DESCRIPTION

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The articulator is an instrument used to simulate the maxillo-mandibular relation and movements of a patient in a laboratory, with the purpose of studying the occlusion and production of dental devices that will be used by the patient. These devices include complete dentures, partial dentures, bridges, crowns and bite plate, among others.

The R-010104 articulator has a special feature that enables accurate adjustments of the Protrusion of the Mandible.

This Manual contains only basic and simplified information regarding the use of the equipment, which do not replace the need of a specific course of Occlusion and/or Prosthesis, offered in many Teaching Institutions and Dental Faculties, as a compulsory discipline.

The articulator is restricted to qualified professionals.

It is important to emphasize, however, that the R-010103 articulator provides a simple, fast and highly precise way of reproducing the human mandible movements, enabling the dental professional to carry out corrective and restorative dentistry tasks more easily, rapidly and at lower costs than those of traditional, time-consuming techniques involving expensive and highly complex equipment. Furthermore, the semi-adjustable articulator produces far more accurate results than those produced by “simple hinge” articulators, which involve arbitrary mounting of the mandibular cast on the device and whose movements are also limited.

The use of the semi-adjustable articulator is therefore recommended for most prosthetic, occlusal and rehabilitation work. The technique is simple, fast and easy, offering highly satisfactory results for both the patient and professional.

# OPERATION

## PROFESSIONAL FACE-BOW REGISTRATION PROCEDURE



Fig. 1

### Dentate and partially dentate patients

a) By using bite registration material (“godiva”, wax, among others) three points on the fork are made: one frontal point, in the exact centre of the fork, and two points at the back, one at each semi-arch of the fork (fig.1).



Fig. 2

b) Position the bite fork so that the midline of the fork handle is aligned with the midline of the maxilla and place it on the upper teeth, holding it firmly in place until the registration material hardens (fig. 2). Only a small amount of registration material should be used since the purpose is to record only the cusp tips of the teeth while keeping the fork as immobile as possible (fig. 3). Afterwards it is advisable to try the cast on the registration to check its stability (absence of clearance) (fig. 4).



Fig. 3

**Note:** Alternatively, a pre-impression of the teeth can be made on the upper model and then refined in the mouth. In the case of patients who have partially jagged teeth, it is important to locate points that hold the fork stably in place, despite the missing teeth and the points used for the transfer.

c) Recline the patient in the chair to reduce the induction of tensions on the fork set and face-bow asking him to keep the fork in the same position, supporting the thumbs against the maxilla (fig. 5). Take the face-bow to the patient and introduce the fork fixation assembly into the bite fork handle, assuring that the wing nut is upside down (fig. 6). Then carefully insert the face-bow earpieces into the patient's external auditory meatus as if you were putting a stethoscope into his ears (fig. 7).



Fig. 4

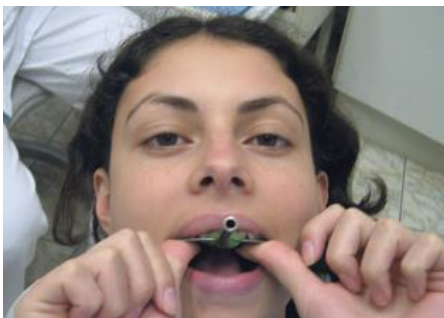


Fig. 5

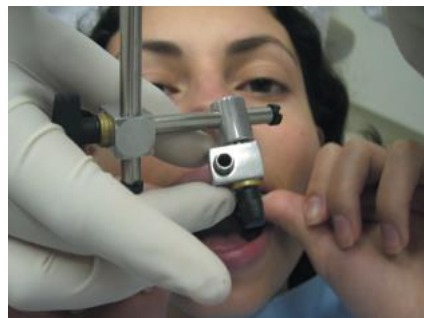


Fig. 6



Fig. 7



Fig. 8

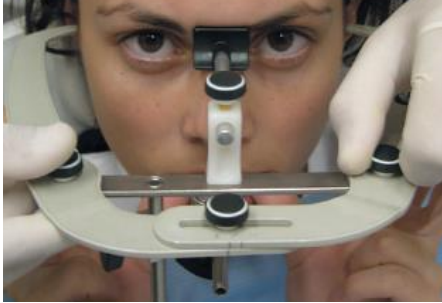


Fig. 9



Fig. 10



Fig. 11

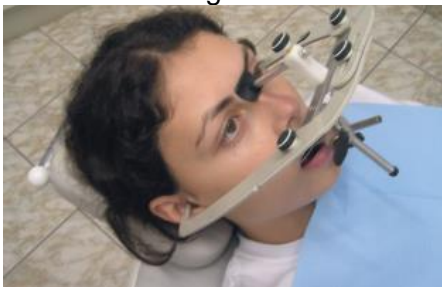


Fig. 12

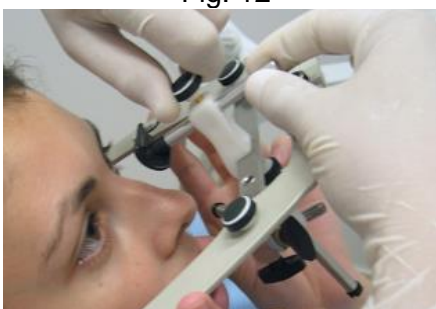


Fig. 13

- a) Place the nosepiece on the face-bow cross bar. Centre the nosepiece on the patient's nasion. Attention to the correct position of the nazium relator as indicated in pictures. The earpieces should now be carefully positioned as deeply as possible in the patient's auditory meatus and the nosepiece should be gently pressed against the patient's nasion while tightening the wing nuts of the nosepiece assembly (fig. 8). Afterwards, tighten the three screws of the Standard face-bow (fig. 9).



incorrect position

correct position

- b) With the nosepiece and the face-bow tightened and the patient holding the fork immobile, push the fork fixation assembly forward, sliding it on the fork handle until it is as close as possible to the lips, without touching them, in order to achieve increased stability. Then tighten the wing nuts of the fork: first the double articulated nut (connection block) and then the horizontal slide bar nut, so that the fork is supported at one end of its handle, resulting in less tension on it (fig. 10 and 11). To ensure proper registration, ask the patient to remove his thumbs from the bite fork and check if the fork and the face-bow are stable and immobilized (fig. 12).

- c) Loosen the wing nut of the nosepiece and remove the nosepiece assembly from the face-bow. Then, loosen the central wing nut of the face-bow and hold the cross bar of the bow at the same time the patient opens the mouth slowly, removing the whole set carefully (fig. 13,14 y 15).



Fig. 14

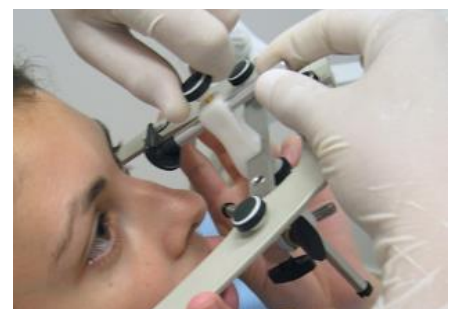


Fig. 13



## Totally edentulous patient

- a) When registering totally edentulous patients with the face-bow, use the special edentulous fork, or Conti fork (optional), to maintain the probe plate and roller wax.
  - b) After the patient's registration on the wax roller, heat both handles of the fork slightly in a flame and press them on the upper wax roller, which was previously joined to the lower wax roller, or not, with the midline of the fork handle aligned with the midline of the patient (fig. 16, 17).
  - c) Place the set (fork + wax rollers) in the patient's mouth inserting it on the alveolar dejes (fig. 18).
- Note:** When carrying out the registration with wax rollers which were previously joined, ask the patient to keep it in position and close his mouth.
- d) Repeat steps (c) to (f) of previous item.



Fig. 16

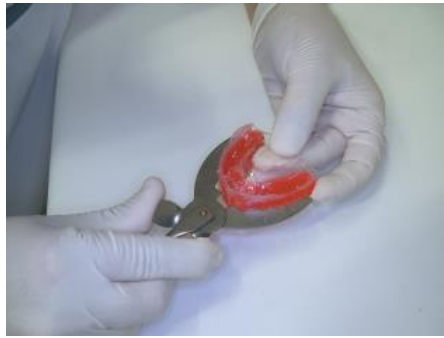


Fig. 17

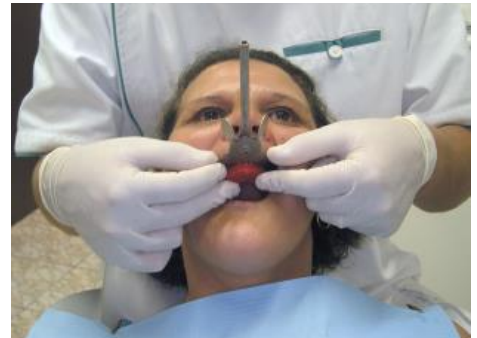


Fig. 18

## MOUNTING THE CASTS ON THE ARTICULATOR

### Preparing the articulator

The adjustments of the articulators mentioned below are only used to mount the casts on the articulator. However, the professional may choose to use other angulation techniques to personalize the settings.

To facilitate the mounting of the casts, adjust the Condylar Guides angles at  $30^\circ$  and the Bennet at  $0^\circ$  (fig. 19 and 20). Then push back the upper part of the central lock until feel the "click" (locked position fig. 21).

**PS.:** In order to make sure that the articulator is totally locked at the centric position, check if the 2 locks (left and right) are at the locked position.



Fig. 19



Fig. 20



Fig. 21

## Upper model setting



Fig. 22

a) Fix the face-bow Standard to the upper frame of the articulator by fitting the earpiece holes on the small pins located on the external edge of the condylar guide (Fig. 22).

b) Support the front part of the Articulator Upper Frame on the cross bar of the face-bow. Close the face-bow firmly by fastening the central face-bow wing nut and placing the whole face-bow together with the upper frame on the lower frame of the articulator (Fig. 23, 24, 25).



Fig. 23

c) Place the upper cast, with retentions and previously hydrated, on the fork registration. Lift the Upper Frame of the articulator, depositing a small amount of plaster on the Upper Mounting Plate and a portion on the top of the Upper Cast. Then, using one of your hands, keep the fork and the cast in position, avoiding any movement of the Bite Fork and carefully hinge the Upper Frame until it touches the cross bar of the face-bow. Wait for the plaster to harden (Fig. 26)



Fig. 24

**Note:** The sides of the mounting plates, which are in contact with the articulator frames, should be devoid of plaster.

**Important:** In order to achieve greater stability and precision during the transfer procedure, it is advisable to use the Fork Support (optional, ref. 010102-37) and plaster type IV (fig. 27).



Fig. 25

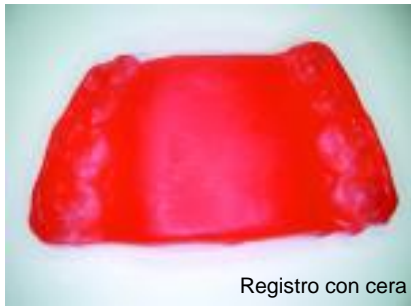
d) Remove the face-bow from the articulator.



Fig. 26



Fig. 27



Registro con cera

Fig. 28

## Interocclusal registration

To set up the mandibular (lower) cast in the articulator, you should have a record correlating the upper and lower dental arches, according to the purpose of the mounting, in one of the following ways:

Maximum Intercuspatation (MI);  
Centric Relation (CR);

These records can be made using material of the operator's preference: wax, resins, addition or condensation silicon, etc. (fig. 31 and 32).

To obtain the M.I registration, place the selected material to register the patient's arcade and ask him to occlude.

There are several techniques to obtain the R.C registration, i.e. Peter Dawson's technique (bilateral manipulation of the mandible), Lucia's JIG technique and James Long (use of plastic spacer) among others.

**Note:** For totally edentulous patients, this registration is made when the upper and lower wax rollers are joined based on the correct dimensions of the patient.



Registro con silicona

Fig. 29

## Mounting the mandibular cast

a) Place the Incisal Guide Pin in the Upper Frame of the articulator with its rounded tip pointing downward so that the upper and lower frames are parallel, i.e. on the zero marking of the Incisal Guide Pin (fig. 30).

b) Now turn the articulator upside down on the laboratory bench and affirm the lower cast, with retentions and previously hydrated, upon the interocclusal register that should be placed in the mounted upper cast (fig. 31). In totally edentulous patients, this was obtained by joining the wax rollers together.



Fig. 30



Fig. 31



Fig. 32

c) We recommend fixing the casts with rubber bands or staples (fixed with “godiva” or wax) so that they remain in position until the plaster hardens. Place a small amount of plaster on the lower part of the mandibular cast and a small amount on the mounting plate of the lower frame of the articulator to fill in the gap between them (fig. 32).



Fig. 33

d) Make sure the condylar elements are duly positioned and close the lower frame until the Incisal guide pin touches the Incisal table. Afterwards, fasten the articulator frames using rubber bands to prevent possible distortion occurred by the plaster expansion (fig. 33).

**Note:** The sides of the mounting plates, which are in contact with the articulator frames, should be devoid of plaster.



Fig. 34

e) After the plaster hardens, turn the articulator back to its upright position (lower frame resting on the laboratory bench) and complete the work, filling the cast fixation towers with plaster for the finishing touches (fig. 34).

## Features of the railmounting plate

The possibility of reusing the Mounting Plate without breaking the model requires care with the side finishing of the plaster on the plate, i.e., the plate should not have plaster at the lateral border (fig. 35).

In order to take off the model, the plaster should be removed of from the retention hole (picture 36) and then the model should be hold while tapping the plate towards the indicated arrows located on the lower face of it (fig. 37).

**Obs.:** Una vez retirado el modelo de la placa de montaje, no garantizamos el retorno del mismo con precisión en la posición inicial de trabajo, ya que esto depende de la calidad técnica del trabajo y de los materiales utilizados (en especial el yeso).



Fig. 35



Fig. 36



Fig. 37



Fig. 38



Fig. 39

### Instructions for use the nose piece support

Slide the Nose Piece Support in the Face-Bow's Cross Bar through the groove, pressing it until realize a slight "click" indicating that the support is fully embedded. The support may be laterally moved, so that it can be placed in the position desired by the operator (fig. 38).

To withdraw the Nose Piece Support, make a movement of twist to facilitate its removal (fig. 39).

## MANDIBULAR PROTRUSION ADJUSTMENTS

Condylar Guides and Bennett Angle Adjusting Device with some special resources were used in this model to enable adjustment of Mandibular Protrusion by up to 5 mm in a controlled and accurate manner, as shown in Figure 14.

To change the position of the Condylar Guides of the articulator in relation to their Condylar Elements in order to obtain an accurate adjustment of the Mandibular Protrusion, the Protrusion Knob and its respective lock must be used, as shown in Figure 1.

To obtain this adjustment, check first if the Stabilizer Shaft

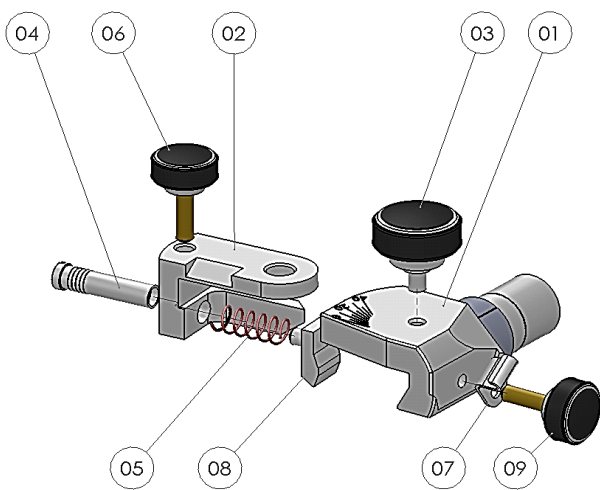
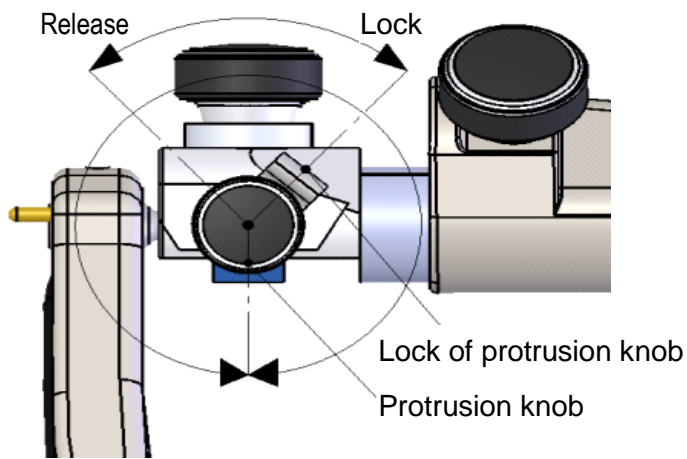
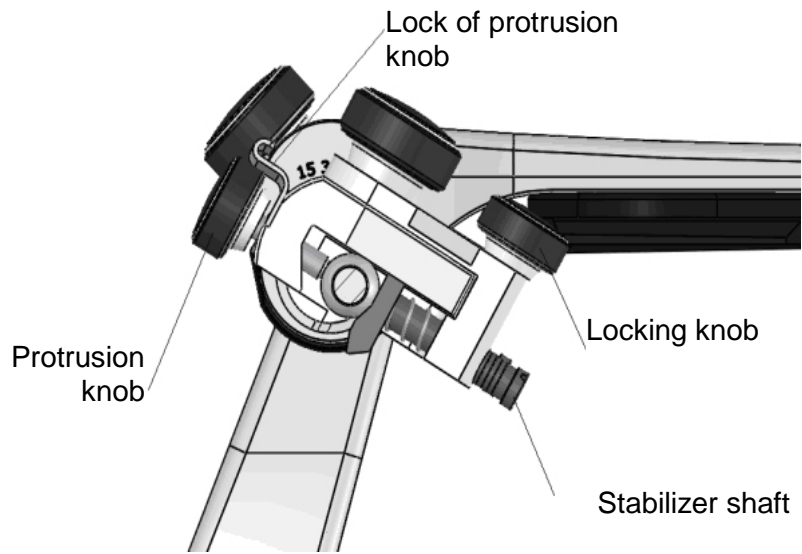
To obtain this adjustment, check first if the Stabilizer Shaft is unlocked. In sequence, release the lock of the Protrusion Knob in the anticlockwise direction and then turn the Protrusion Handle observing the mark on the Pin until the desired measurement is obtained.

**Note:** each "mark" on the Stabilizer Shaft corresponds to the distance of 1.0 mm of protrusion.



*Ensure that the sphere of the Condylar Element remains in contact with the end of the Protrusion Knob screw during adjustments.*

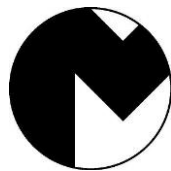
*After obtaining the ideal position of the protrusion adjustment, lock the knob by turning the Lock in the clockwise direction until they are firmly fixed, as shown in Figure 15.*



1	010103-01	Right condylar guide
	010103-11	Left condylar guide
2	010103-02	Right wing
	010103-12	Left wing
3	010103-03	Fixation knob of the wing
4	010103-04	Stabilizer shaft
5	010103-05	Stabilizer spring
6	010103-06	Locking knob
7	010103-07	Lock of protrusion knob
8	010103-08	Stabilizer
9	010103-09	Protrusion knob

## MAINTENANCE AND CLEANING

- This manual only contains basic and simplified information regarding the use of the instrument and under no circumstances it is a substitute for a proper training course. The articulator and face-bow are products aimed at the exclusive use of qualified dental Professionals.
- The Mestra face-bow is designed for use with Mestra own articulator and vice-versa. Therefore, Mestra does not guarantee precision when its face-bows are used with other products.
- The R-010104 articulator is not interchangeable, i.e. the casts mounted on one articulator model should not be transferred (mounted) to any other articulator. Therefore, Mestra does not guarantee precision when casts mounted on one articulator are transferred to another.
- Before using the articulator and face-bow, the professional should check the instrument for possible damage, distortion of the incisal pin, face-bow's parallelism, proper centricity of the incisal pin in relation to the lower frame, etc. Should any abnormality be found, contact your distributor.
- The face-bow should be cleaned with warm water prior to its use. The Bite Fork must be autoclaved and the Earpieces disinfected with a bactericide or with 70° alcohol.
- Mestra recommends only warm water for the general cleaning of the articulator and facebow.
- When using “godiva” or any other registration material, special care should be taken to avoid excessive heating of the material, which might burn the patient's mouth. Mestra urges the user to carefully follow the instructions of the registration material manufacturer.
- Because the articulator is a precision instrument, it should be handled, transported and stored carefully. Use the plastic case.



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