

DENAR®
Mark 300
SERIES
ARTICULATOR
SYSTEM



Models
310, 320, 330
& LabRelator
Instruction
Manual



ACKNOWLEDGEMENTS

Practicing dentists, technicians, and educators expressed a need for an easy to use, yet extremely accurate, articulator system offering interchangeability of articulated casts, intuitive features, and an intelligent ergonomic design.

The new Denar® Mark 300 series went through many rounds of laboratory testing to ensure interchangeability within 20 microns. Several dentists also spent valuable time putting this articulator through excursive movements to ensure highly precise simulations of the patient's mandibular motions.

Many thanks for the advice and support from current users of Denar® instrumentation enabling us to develop an articulation system based on simplicity, accuracy, and stability.

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IMPORTANT:

Your Denar® Mark 300 Series Articulator is a precision instrument manufactured to precise tolerances and designed to give you years of trouble-free service. Like all precision instruments, it must be handled carefully to avoid damage. When transporting the articulator, always remove the upper member from the lower member and store separately in the instrument case.

Please check online at www.whipmix.com for the most current instructions and parts list.

INTRODUCTION

Who Should Use the Denar® Mark 300 System

Doctors Who Want:

- To mount casts quickly and easily on a semi-adjustable instrument that accurately reproduces mandibular movements.
- Confidence in creating repeatable movements when casts are mounted on another Mark 300 Series articulator.
- A complete system for determining the maximum accuracy of fit in developing well-functioning restorations.
- To produce restorations by means of checkbite records and/or the functionally generated path (FGP) techniques.
- A semi-adjustable articulator with adjustment capabilities for protrusive condylar inclination, progressive side shift, and immediate side shift.
- Casts mounted on a very rigid articulator in the position of maximum intercuspation.

Technicians Who Want:

- A practical, rigid, and easy to use articulator.
- To efficiently produce restorations that require fewer remakes.
- To receive mounted casts.
- Quality workmanship providing tightened tolerances and durable finishes.
- Ability to accurately replicate patient movements.

Educators Who Want:

- An economically priced articulator and facebow for student issue without violating sound anatomical principles.
- Occlusal instruments that fulfill the needs of all restorative departments.
- To avoid the need for the student to have a separate articulator for each restoration under construction.

Students Who Want:

- To study Occlusion and the movement of the temporomandibular joint.
- An instrument with intelligent modular design and ergonomic features.

THE NEW DENAR® MARK 300 ARTICULATOR SYSTEM FEATURES:

Protrusive Condylar Inclination:

Model 330 **Model 320** adjustable 0 – 60 degrees,

Model 310 fixed at 25 degrees.

Model 330

Progressive Side Shift:

Model 330 adjustable 0 – 15 degrees

Model 320 **Model 310** fixed at 15 degrees.

Immediate Side Shift:

Model 330 adjustable 0 – 2 mm.

Model 320 **Model 310** fixed.

Elastic Retainers hold upper and lower members together and assist in smooth operation of lateral excursions.

Positive centric latch allows the upper and lower members to be separated or positively locked together in centric relation in both open and closed positions.

Stable in 3 positions.

Built-in magnetic mounting system.

Durable anodized finish on all mechanical parts.

Easy to clean powder coating on all mounting surfaces.

All adjustments secured by finger screws; no tools needed.

LabRelator:

For mounting only. Non-removeable upper member does not allow excursive movements.

Interchangeable with all Mark 300 series articulators.

Smaller in size for easy handling.

Durable anodized finish for easy cleaning.



Model 320



Model 310



LabRelator



MARK 300 ARTICULATOR SYSTEM

Articulator Manipulations

To attach the incisal pin, thread the top thumbscrew into the opening on the front of the upper member until it slides back as far as it will go. Tighten the top thumbscrew (figure 1).

To assemble the articulator, hold the upper member approximately parallel to the lower member and simply place it on the lower member.

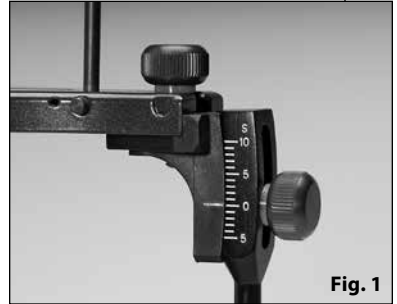


Fig. 1

Centric Latch Operation

When the articulator is closed it can be locked in the centric position by pushing the centric latch to the down position (figure 2).



Fig. 2

Support Pin

The built in support pin allows the upper member of the articulator to stand completely open while the articulator is setting flat (figure 3). To ensure the support pin remains in position, use the red lock pin to hold the lifted support pin in place. With the articulator facing you, lift the support pin and push the lock pin to the right (black o-ring exposed) to lock in place (figure 4). To lower the support pin, first push the lock pin to the left.

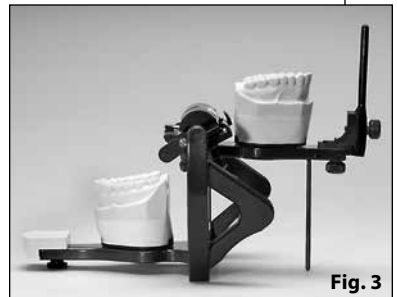


Fig. 3

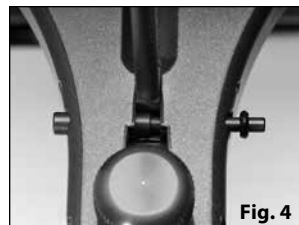
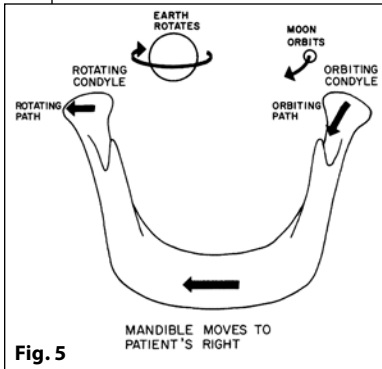


Fig. 4

Articulator Adjustments



The articulator is a mechanical equivalent of the lower half of the head – a mechanical jaw so to speak. In order to discuss the adjustments of the articulator or specifically the fossa controls, it would be helpful to discuss the condylar paths of movement of the human mandible. In a lateral mandibular movement the condyle on the side toward which the mandible moves is termed the rotating condyle (figure 5). The condyle on the side opposite the side towards which the mandible moves is termed the orbiting condyle.

In a lateral mandibular movement the orbiting condyle moves inward, downward and forward and orbits about the rotating condyle which is simultaneously rotating and moving outward during the lateral mandibular movement.

- Orbiting path – the path of movement of the orbiting condyle.
- Rotating path – the path of movement of the rotating condyle.
- Protrusive path – the path of movement of the condyles in a straight protrusive movement.

The Mark 300 System has been designed for simplicity and efficiency. The different Models allow different levels of adjustment and enable Clinicians to choose based on their needs.

Model 330 incorporates a complete range of adjustments: Protrusive Condylar Inclination, Immediate Side Shift and Progressive Side Shift.

Model 320 allows Protrusive adjustment but Progressive Side Shift is fixed at 15° thus eliminating any chance of balancing side occlusal contact.

Model 310 incorporates anatomical averages based on clinical research. Protrusive movement is fixed at 25° and Progressive Side Shift is fixed at 15°. The angles were selected as offering the least amount of interference, based on studies by Dr. Harry Lundeen and Dr. Carl Wirth.

Protrusive Adjustments

Protrusive Condylar Inclination: the angle of the fossa in relation to the occlusal plane.

Model 330 Model 320 The inclination of the protrusive condylar path can be adjusted by loosening the protrusive adjustment thumbscrew. The protrusive condylar path inclination scale is below the protrusive adjustment thumbscrew and is calibrated in increments of 5 degrees (figure 6). The protrusive adjustment range is 0 – 60 degrees.

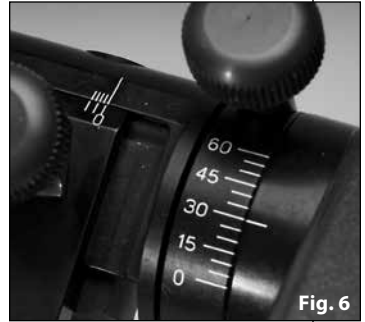


Fig. 6

Immediate Side Shift Adjustment

Immediate Side Shift: a mandibular side shift in which the orbiting condyle moves essentially straight medially as it leaves centric relation.

Model 330 The medial fossa wall can be displaced straight medially by means of the immediate side shift adjustment. The scale for the immediate side shift adjustment is lateral to the protrusive adjustment thumbscrew on top of the fossa. The scale is calibrated in 0.5 millimeter increments on the upper scale and 1 millimeter increments on the lower scale. Figure 7a shows an immediate side shift of 0 mm. To set the immediate side shift, loosen the thumbscrew below the scale and align the marks of the lower scale with either the long mark of the upper scale for shifts of 1 or 2 mm, or with the smaller marks for shifts of 0.5 or 1.5 mm. Figure 7b shows an immediate side shift setting of 1.5 mm. The immediate side shift range is 0 – 2 mm.

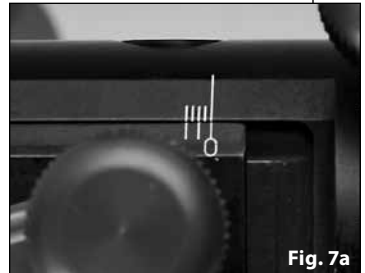


Fig. 7a

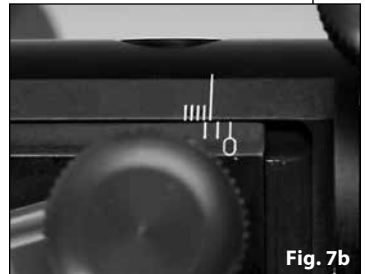


Fig. 7b

Once you have set the immediate side shift, tighten down on the thumbscrew. This will hold immediate side shift in place as you use the Bennett lever to adjust progressive side shift.

Progressive Side Shift Adjustment



Fig. 8

Progressive Side Shift: the path the orbiting condyle follows on the medial wall of the fossa as it orbits around the rotating condyle.

Model 330 The angle of inclination of the medial fossa wall to the sagittal plane can be adjusted by moving the progressive side shift Bennett lever from 0 to 15 degrees. The scale for the progressive side shift adjustment is beside the adjustment thumbscrew and is calibrated in 5 degree increments (figure 8). Once immediate and progressive side shift are set, tighten the

thumbscrew to ensure the settings stay as needed.

MOUNTING A CAST ON THE MARK 300 SERIES

In addition to a facebow recording (figure 9) the only records needed for complete programming of the Mark 300 Series are:
a lateral bite record
a centric relation bite record
a protrusive bite record



Fig. 9

If anterior teeth are to be restored, a customized anterior guidance table is fabricated to precisely copy the desired guidance.

The Slidematic facebow is used to record condylar axis (figure 9).

The upper cast is related to the condylar axis. The index for the facebow fork corrects the position of the cast to relate it to the condylar axis instead of the ear holes. This is an automatic correction (figure 10).

Make sure that mounting plate divots are clean of all dust, dirt or other debris before mounting casts.

NOTE: To enhance accuracy, the mounting plates have been designed so that they do not fit perfectly flat against the articulator member. You may notice a slight gap.

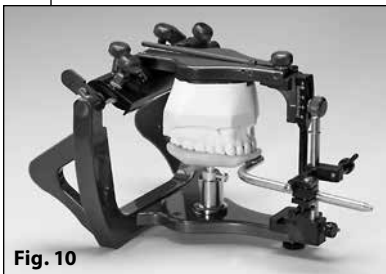


Fig. 10

A centric relation bite record is made (figure 11).



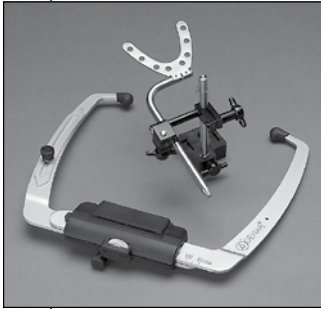
The lower cast is related to the upper cast by alignment into the centric relation record (figure 12).



The completed mounting permits closure of the casts to contact in centric relation (figure 13).



ACCESSORIES



Denar® Slidematic Facebow

The time-saving design of this device eliminates the need for transferring the entire facebow to the articulator. It is a fast, easy and accurate means of transferring the proper maxillary relationships. Transfer only the transfer jig assembly to the articulator thus freeing the measuring bow to be used for the next patient.



Simplified Occlusal Plane Analyzer

Designed for analyzing the Curve of Spee and the Curve of Wilson.



Universal Occlusal Stand

Allows you to mount the working casts at Bonwill's Equilateral Triangle. Includes two interchangeable tables – flat and curved. The flat table accepts the Kois index tray.



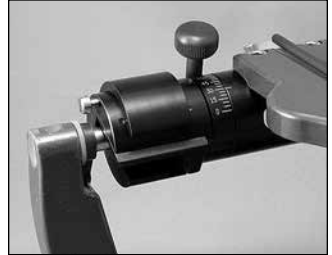
Centri-Check for the Mark 300 Series

Use in conjunction with centric relation bite records to verify accuracy.

ACCESSORIES

FlexTrack

Provides the flexibility of movement in both open and closed condylar tracking. Fits Mark 310 and 320 instruments only.



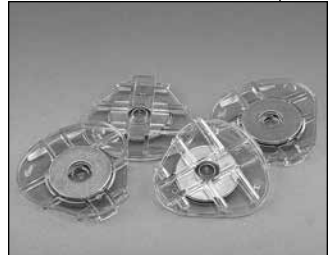
Maxillary Cast Support

The adjustable "T" supports the bitefork and maxillary cast when mounting the facebow record on the articulator. Works with both magnetic and traditional plates. Item 003401-000.



Mark 300 Magnetic Mounting System

Provides magnetic retention without adding steps to the process, casts are mounted in one quick step. Compatible with Denar® Mark 300 Series only.



ACCESSORIES

Denar® Pins and Tables

All Denar® incisal pins and tables are interchangeable between articulators. Incisal pins can be raised and lowered on an arc, simulating the natural arc of closure. The pins and tables must be used in the combinations listed.

P2T2: Long Centric/Adjustable foot and Custom Platform, step.

P2T3: Long Centric/Adjustable foot and Adjustable table.

P4T4: Short Round with support or Short Round Black with support and Custom Platform, flat. Item #20011386 and #110240.

P6T6: Tapered and Adjustable. Item #20011397 and #110635.

Dawson Fossa Guide Pin and Custom Platform, flat.

Anterior Determiner and Custom Platform, flat.

CALIBRATION PROCEDURES

All Mark 300 Series articulators are calibrated at the factory. If you would like to have your articulator recalibrated, please call 800-626-5651 for a return authorization number.

CARE AND MAINTENANCE

Your Whip Mix articulator is a precision instrument and requires care and maintenance. Periodic cleaning and lubricating as described below will assure prolonged life and dependable service from the instrument. Failure to follow these instructions will void your warranty.

Cleaning

Use a mild soap and water solution with a very soft brush to dissolve accumulations of wax and to wash away carborundum grit. Then air dry and lubricate. DO NOT use strong detergents, alkalies, gasoline or naphtha as cleaning agents!

Storage

Store the articulator in a clean, dry atmosphere free of plaster and carborundum dust, away from acids, alkalies or corrosive medicaments. **Wait a full day after mounting casts before storing the articulator in a carrying case or corrugated carton.** Moisture dissipation from the stone in an enclosed area causes alkalinity of the stone mixture which can damage the articulator surface.

WARRANTY

Whip Mix Corporation warrants the articulator system to be free from defects in material and/or workmanship for a period of one year. In the event of a defect, please notify the factory in writing prior to returning the instrument. Whip Mix Corporation will, at its option, either repair, replace or issue credit for such defects.

Because Whip Mix Corporation is continually advancing the design and manufacturing method of its products, it reserves the right to improve, modify or discontinue products at any time, or to change specifications or prices without notice and without incurring obligations.



RESTORATIVE ORAL HEALTH

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