stomdevice

Operating Instructions
PROTAR® evo.



Always on the safe side.

KaVo. Dental Excellence.

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

KaVo Elektrotechnisches Werk GmbH
Wangener Straße 78
D-88299 Leutkirch
Tel.: 0 75 61 / 86-0 • Fax: 0 75 61 / 86-390

CE

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

PROTAR®evo.

A 1 User notes 2
A 1.1 Meaning of the pictograms 2
A 1.2 Important information 2
A 1.3 Safety measures 2
A 1.4 Purpose and applications 3
A 1.5 Observation of the movements of the mandible in the horizontal plane 4
A 1.6 System philosophy 5
A 2 Scope of delivery – Accessories 6
A 2.1 Scope of delivery 6
A 3 Controls and functional elements 11
A 4 Preparations for start-up operation 13
A 4.1Support pin 13
A 4.2 Centric locks 13
A 4.3 PROTARevo with Splitcast (Factory adjustment) 15
A 4.4 Working with the Mounting Set Mat. No. 0.622.1121 15
A 4.5 PROTARevo without Split-cast 16
A 4.5.1 PROTARevo with magnetic fixing 16
A 4.6 PROTARevo with Splitcast 16
A 4.6.1 Calibration 17
A 4.6.2 Measuring 17
A 5 Programming possibilities for KaVo PROTARevo articulators 18
A 6 Articulation of the model 19
A 6.1 Articulation of the upper model with the KaVo Face bow ARCUS 19
A 6.2 Articulation of the upper model with the help of the Transfer Stand 20
A 6.3 Articulation of the upper model with KaVo Facebow ARCUS light 20
A 6.4 Articulation of the upper model with face bows of other manufacturers 21
A 6.5 Programme data when using non –KaVo face bows in the PROTAR Articulator 22
A 6.6 Average value method using the KaVo upper jaw model positioner Mat. No. 0.622.1781 APFnt Method 23
A 6.7 Average value method using the KaVo Mounting and Setup Aid for the upper jaw 24
A 6.8 Average value method for the lower jaw model using the KaVo Plastering Gauge Mat. No. 0.622.1171 25
A 6.8.1 Mounting of an edentulous lower jaw model 25
A 6.9 Articulation of the lower jaw model 27
A 7 Programming the articulator 28
A 7.1 Adjusting the condylar path inclination with protrusion recording block 28
A 7.2 Adjusting the Bennett angle with the left and right laterotrusion recording block 28
A 7.3 Setting the immediate Side Shift (ISS) 29
A 7.4 Adjusting the Shift-angle 30
A 7.5 Setting of a protrusion / distraction position 31
A 7.6 Setting the retrusion 32
A 7.7 Producing an individual incisal guidance 33
A 7.8 Programming the adjustable incisal plate 34
A 7.8.1 By use of a situation model 34
A 7.8.2 By use of programme data from ARCUSdigma 34
A 8 Installation of the shift angle insert in PROTARevo 7 35
A 9 Programming the articulator with data from ARCUSdigma 36
A 10 Setup aid for full dentures 37
A 10.1 Setup aid for lower jaw models according to the APFnt method (Mat. No. 0.622.2071) 37
A 10.2 3D Setup aid for lower jaw models according to the APF method 38
A 10.3 3D Setup template for upper jaw model (Mat. No. 1.002.4919) 40
A 10.4 2D Setup aid for the upper jaw (Mat. No. 1.001.9452) 41
A 10.5 2D Setup aid for the upper model for screw mounting (Mat. No. 1.001.9451) 41
A 11 Milling table with transfer plate Split system 42
A 12 Transport Box KaVo LOGICase 44
A 13 Technical data 45
A 13 Maintenance and adjustment 46

Guarantee conditions 47
Spare parts
PROTARevo 2 48
PROTARevo 3 48
PROTARevo 5 49
PROTARevo 5B 49
PROTARevo 7 50
PROTARevo 8 50
PROTARevo lower section 51

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 1 User notes

A 1.1 Meaning of the pictograms

Situation which can lead to danger, damage to materials or operating faults if the information is ignored.

Important information for operators and technicians.

Automatic mode
Automatic sequence


Close, screw in, fasten, etc.


Open, release, loosen


more, higher


less, lower


Continuous operation

Time, time sequence


Disconnect mains plug

A 1.2 Important information

The operating instructions should be read by the user before putting the unit into operation for the first time, in order to avoid incorrect operation and damage. If further language versions are required, please request these from your responsible KaVo agent. Duplication and distribution of the Operating Instructions (OI) require prior consent from KaVo.

All technical data, information and properties of the unit described in these OI instructions correspond to the situation on going to press.

Modifications and improvements to the product on the basis of technical innovations are possible.

This does not imply any right to upgrading of existing units.

KaVo assumes no responsibility for damage arising through:

external influences (poor quality of the media or poor installation)
use of incorrect information
improper use
improperly performed repairs.

The following are authorized to repair and service KaVo products:

the engineers of the KaVo agents throughout the world
the engineers of the KaVo dealers who have been specially trained by KaVo
independent engineers specially trained by KaVo.

In the event of modifications by third parties, the approvals become null and void. KaVo recommends using only original spare parts for operation and for repairs.

A 1.3 Safety measures

Safe operation and protection of the unit are ensured only through proper use in accordance with the Operating Instructions, using the tools approved for this purpose. The following should also be followed:

- the work safety regulations
- the accident prevention regulations.

In accordance with these requirements, it is the duty of the user

- *to use only flawless materials*
- *to observe the correct applications*
- *to protect the patient, and others, from exposure to injury*
- *to avoid contamination by the product.*
- *not to work not with damaged functional parts.*

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

A 1.4 Purpose and applications

The Gnathostomatic System is one of the most complex locomotor organs in the human body, largely due to its three dimensional spatial movements. In the event where a therapeutic, prosthetic or orthognathic treatment is required, a function-oriented therapy is essential.

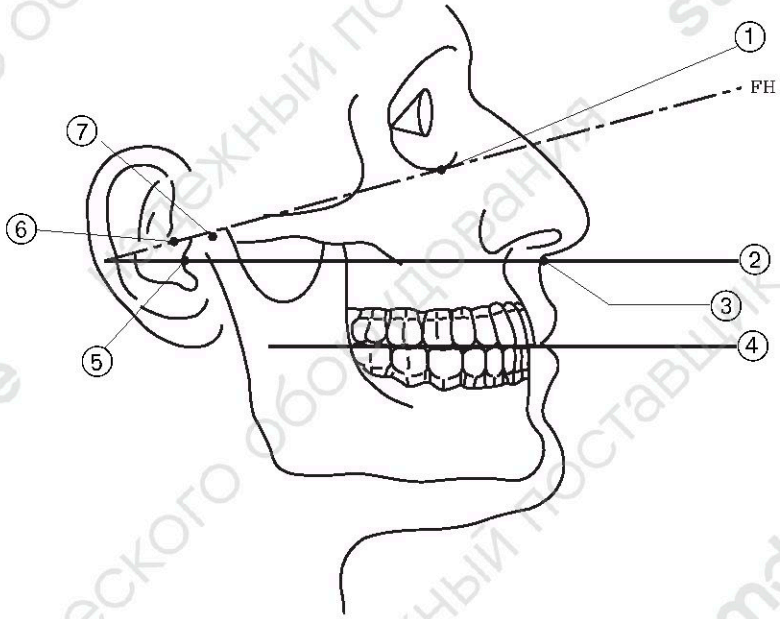
Segments of this kind of therapy, by necessity, have to be performed extra-orally, i.e. functional diagnosis, treatment planning, surgical, therapeutic or prosthodontic appliances. A simulation device which can mimic the mandibular movements and can accept the parameters of the patient's condylar and anterior guidance accurately, in addition, will retain the program of the dynamics of the mandible and the condyles, is not only necessary in the dental practice, but also in the dental laboratory.

An articulator and associated measuring devices are indispensable tools for recording and transferring existing anatomical conditions or manipulable variables, they form the basis for function-oriented therapy. A defect-free morphological condition between the temporomandibular joint, the neuromuscular system and the dentition, forms the basis for a healthy and well functioning gnathostomatic system.

In order to faithfully reproduce the movements of the mandible on an articulator, anatomical reference points and reference lines have to be identified on the patient, with regard to a system of co-ordinates. The visual connection between the subnasal point and the Tragus Medialis ⑤ for instance, forms Camper's Plane of Occlusion ② (CP).
On the other hand, the visual connection between the Porion ⑥ and the Infra-Orbital Point ① (IOP) forms the Frankfurt Horizontal Plane (FHP).

The co-ordinates of these reference points and planes result in the Horizontal Condylar Inclination (HCI) . Other terms in use: Protrusive Path - Mid-Sagittal Horizontal Inclination - Condylar Path Angle.

③ Subnasal point
④ Okklusions plane
⑦ Hinge axis



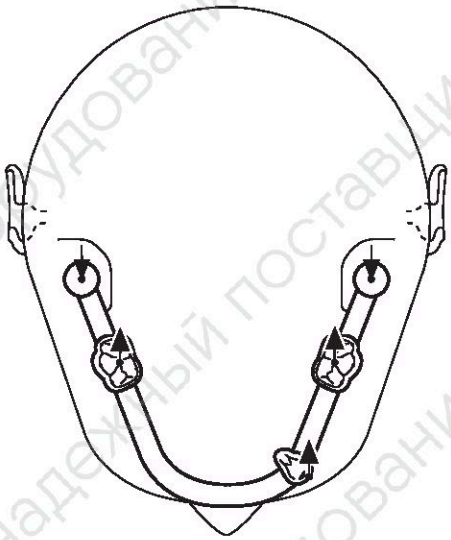
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 1.5 Observation of the movements of the mandible in the horizontal plane

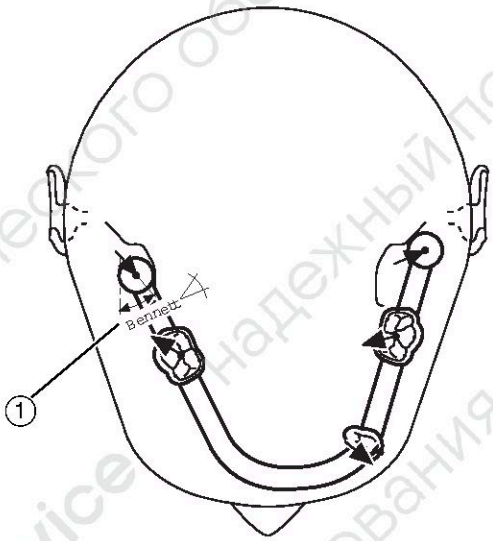
Protrusion

With protrusion, the mandible moves forward. There is ventral and caudal movement of the two condyles.
The movement tracks of the maxillary tooth are shown on the mandibular tooth.

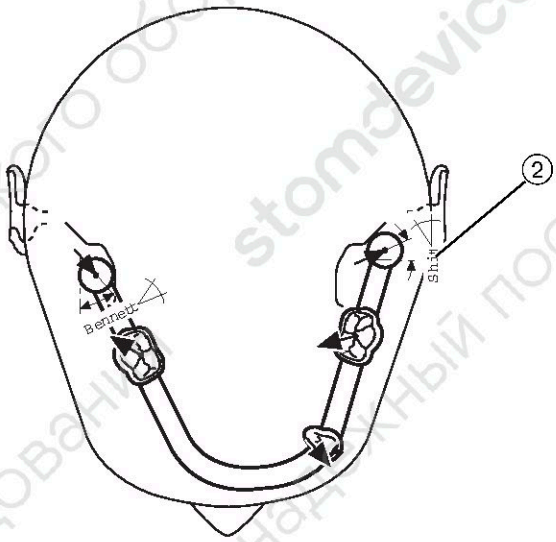


Mediotrusion and laterotrusion

In lateral occlusion, a differentiation is made between laterotrusion on the working side and mediotrusion on the non-working side.
The connection between the beginning and end point of the condyle moved inwards on the mediotrusive path forms the Bennett angle ① with the protrusion trace on the non-working side.



The condyle describes a laterotrusion on the working side. Deviations from the . laterotrusion are defined as shift angle ②.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

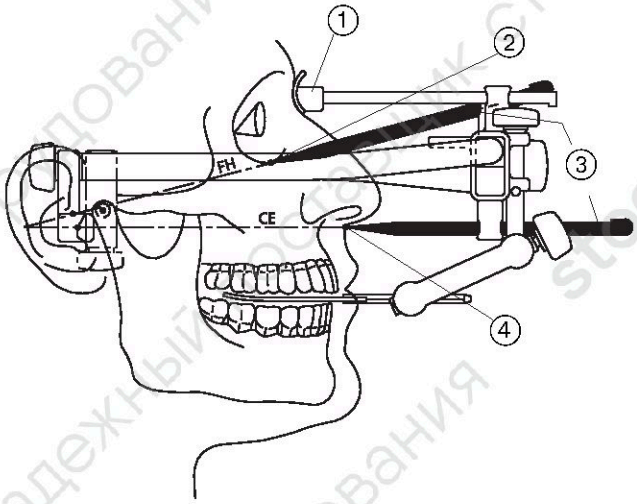
stomdevice

A 1.6 System philosophy

The articulator and face bow system from KaVo EWL is designed so that work can be carried out using either the Frankfurt horizontal plane (FH) or Camper's plane (CP).

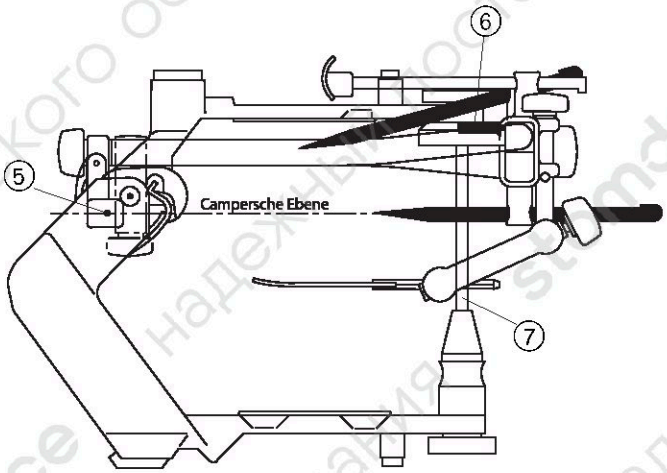
The nasal support ① provides an average alignment of the face bow with respect to the two planes. The face bow can also be individually aligned to the required reference plane ③ by using the reference pointer.

② Infra-orbital point
④ Subnasal point



In the articulator, the face bow is always inserted in the same position on the lateral reference pins ⑤ and on the incisal pin (set to zero).
The bite fork will, however, vary in its position depending on the patient's anatomy.

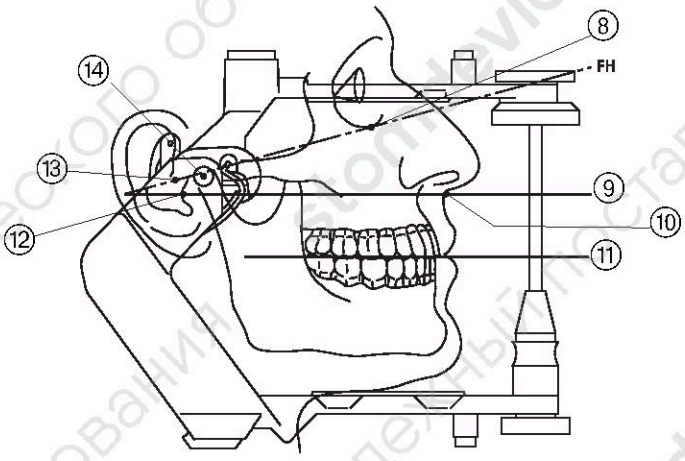
⑥ Support of the face bow
⑦ Incisal pin



In the PROTAR articulator, the models are almost parallel (deviations ± 10°) with the Camper's plane ⑨.

Advantage for dental technology:
the models mounted in an articulator have their occlusion plane ⑪ almost parallel to the Camper's plane ⑨ and thus also to the work surface.
The plaster expansion is uniform.

⑧ Infra-orbital point
⑩ Subnasal point
⑫ Tragus medialis
⑬ Porion
⑭ Hinge axis



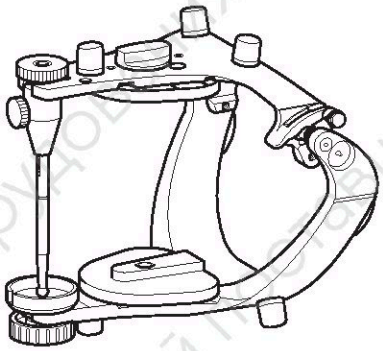
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 2 Scope of delivery – Accessories

A 2.1 Scope of delivery

EWL Articulator PROTAR®evo 2
Cast consisting of:
Articulator upper section
Mat. No. 1.002.3303
Articulator lower section
Mat. No. 1.002.3265



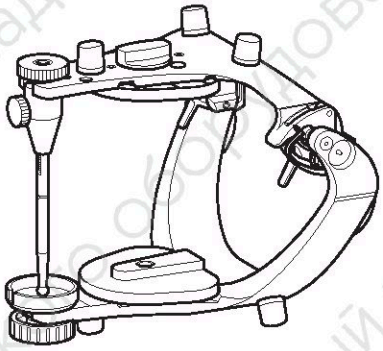
PROTAR evo 2

or

EWL Articulator PROTAR®evo 3 with-Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3307
Articulator-lower section
Mat. No. 1.002.3266

or

EWL Artikulator PROTAR®evo 3 without Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3306
Articulator-lower section
Mat. No. 1.002.3265



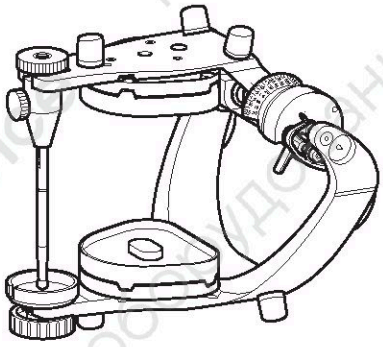
PROTAR evo 3

or

EWL Articulator PROTAR®evo 5 with-Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3313
Articulator-lower section
Mat. No. 1.002.3266

or

EWL Articulator PROTAR®evo 5 without Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3310
Articulator-lower section
Mat. No. 1.002.3265



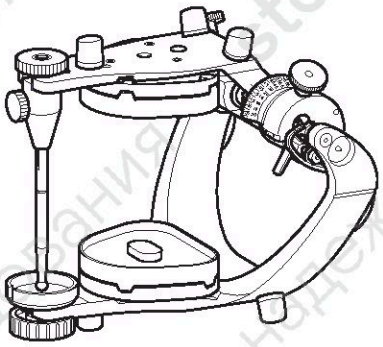
PROTAR evo 5

or

EWL Articulator PROTAR®evo 5B with-Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3314
Articulator-lower section
Mat. No. 1.002.3266

or

EWL Articulator PROTAR®evo 5B without Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3315
Articulator-lower section
Mat. No. 1.002.3265



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

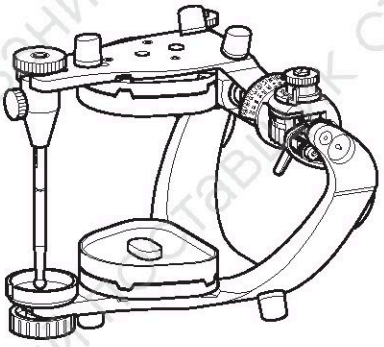
stomdevice

PROTAR®evo.

EWL Articulator PROTAR®evo 7 with-
Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3319
Articulator-lower section
Mat. No. 1.002.3266

or

EWL Articulator PROTAR®evo 7 with-
out Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3318
Articulator-lower section
Mat. No. 1.002.3265



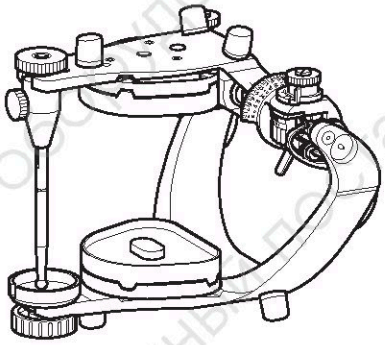
PROTAR evo 7

or

EWL Articulator PROTAR®evo 9 with-
Split-Cast consisting of:
Articulator-upper section
Mat. No. 1.002.3323
Articulator-lower section
Mat. No. 1.002.3266

or

EWL Articulator PROTAR®evo 9 with-
out Split-Cast consisting of:
Articulator-upper section
Mat.-No. 1.002.3322
Articulator-lower section
Mat. No. 1.002.3265



PROTAR evo 9

Operating Instructions PROTAR®evo
Mat. No. 1.002.5701

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

PROTAR® evo.

A 2.2 Optional accessories

Available on request:

① Incisal pointer Mat. No. 0.622.1021

② Incisal guidance 10° Mat. No. 0.622.1922
Incisal guidance 20° Mat. No. 0.622.1932
Incisal guidance 30° Mat. No. 0.622.1942
Incisal guidance 40° Mat. No. 0.622.1952
Incisal guidance 50° Mat. No. 0.622.1962
Split-cast-built-in set
Mat.-No. 0.622.1031 (without drawing)

③ Transfer stand Mat. No. 0.622 1141

④ Orbital plane guide for non-KaVo face bows Mat.-No. 0.622 1151
④b face bow holder
④c Adapter referenz pin

⑤ Jigs for average value articulator mounting Mat. No. 0.622.1171

⑥ Template holder Mat. No. 0.622.1161

⑦ Short template Mat. No. 0.622.1201

⑧ Long template Mat. No. 0.622.1211

⑨ Mounting/Setting-up aid
Upper complete prosthesis
Mat. No. 1.001.9451
for PROTARevo with screw

Clamp for non-KaVo articulator
Mat. No. 1.001.9471

⑩ Mounting/Setting-up aid
Upper complete prosthesis
Mat. No. 1.001.9452
for PROTARevo with control base

⑪ Upper-model positioner
Mat. No. 0.622.1781

⑫ Occlusion angle indicator
Mat. No. 0.622.2071

⑬ Plaster mounting sleeve
Mat. No.0.622.2212 44,0 mm
Mat. No.0.622.2222 22,0 mm
Mat. No.0.622.2232 14,6 mm

⑭ Milling table with transfer plate Split system Mat. No. 0.625.0770

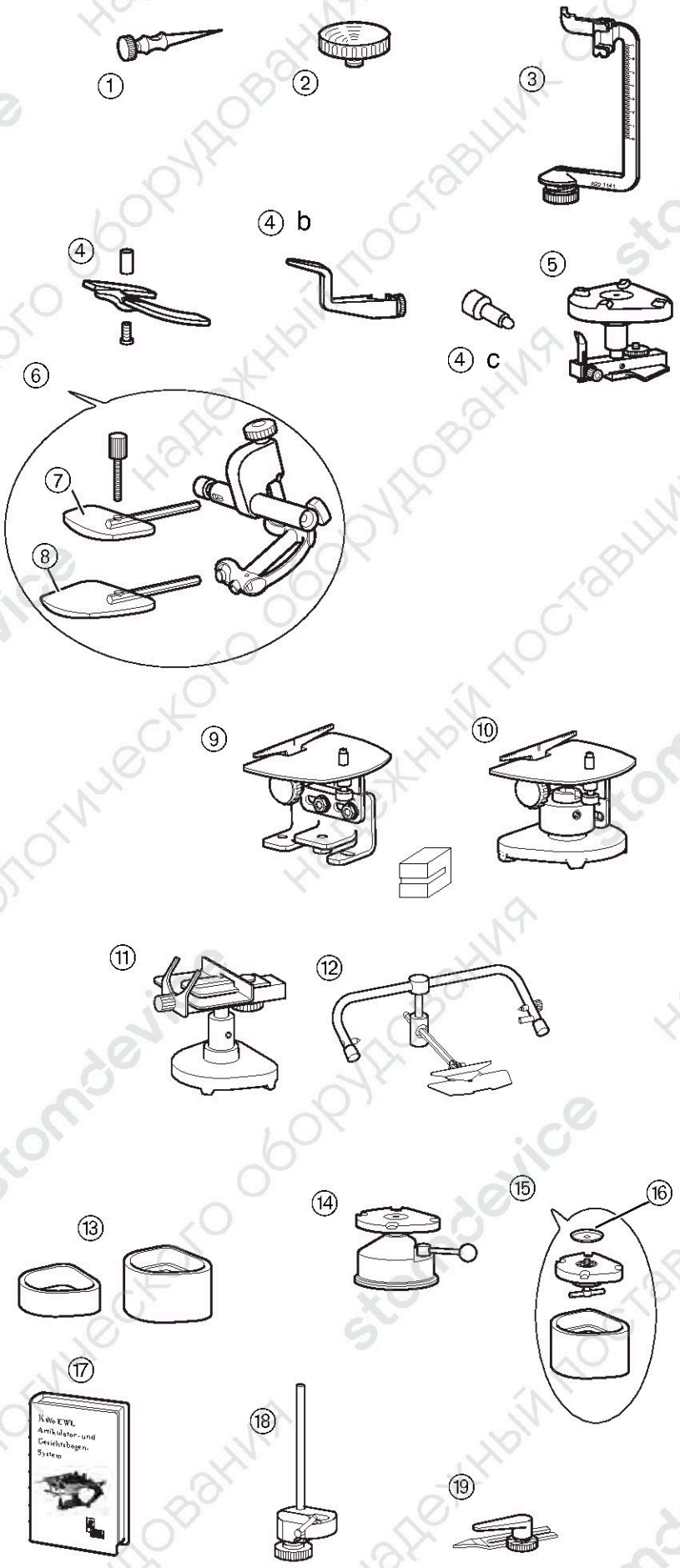
⑮ Mounting Set Mat. No. 0.622.1121

⑯ Plaster mounting disc
Mat. No. 0.622.1781

⑰ Video ARCUS /PROTAR
Mat. No. 0.622.3202

⑱ Denar adapter Mat. No. 0.622.1351

⑲ Panadent indicator Mat. No. 0.622.1371



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

Available on request:

⑳ Support pin "E " Mat.-Nr.0.622.1181
Support pin "P " Mat.-Nr.0.622.1791
Support pin "T " Mat.-Nr.0.622.1891

㉑ Adjustable incisal plate
Mat. No. 0.622.1701

㉒ Holder Mat. No. 0.622.1161

㉓ Bitefork holder Mat. No. 0.622.0901

㉔ PDR-Insert (pair) Mat. No. 0.622.1001

㉕ Shift angle inserts (pair)
Mat. No. 0.622.1111

㉖ Carrying case Mat. No. 1.000.3682

㉗ Fixing screws for mounting plates
(2 pieces) Mat. No. 1.000.3733

only for PROTARevo

㉘ Calibration gauge Mat. No. 1.002.2080

㉙ Magnetic fixture Mat. No. 1.002.4686

㉚ Mounting plates for 3 PS (pack of 10)
Mat. No. 1.002.2096

㉛ Synchronization 3PS
Mat. No. 1.002.2095

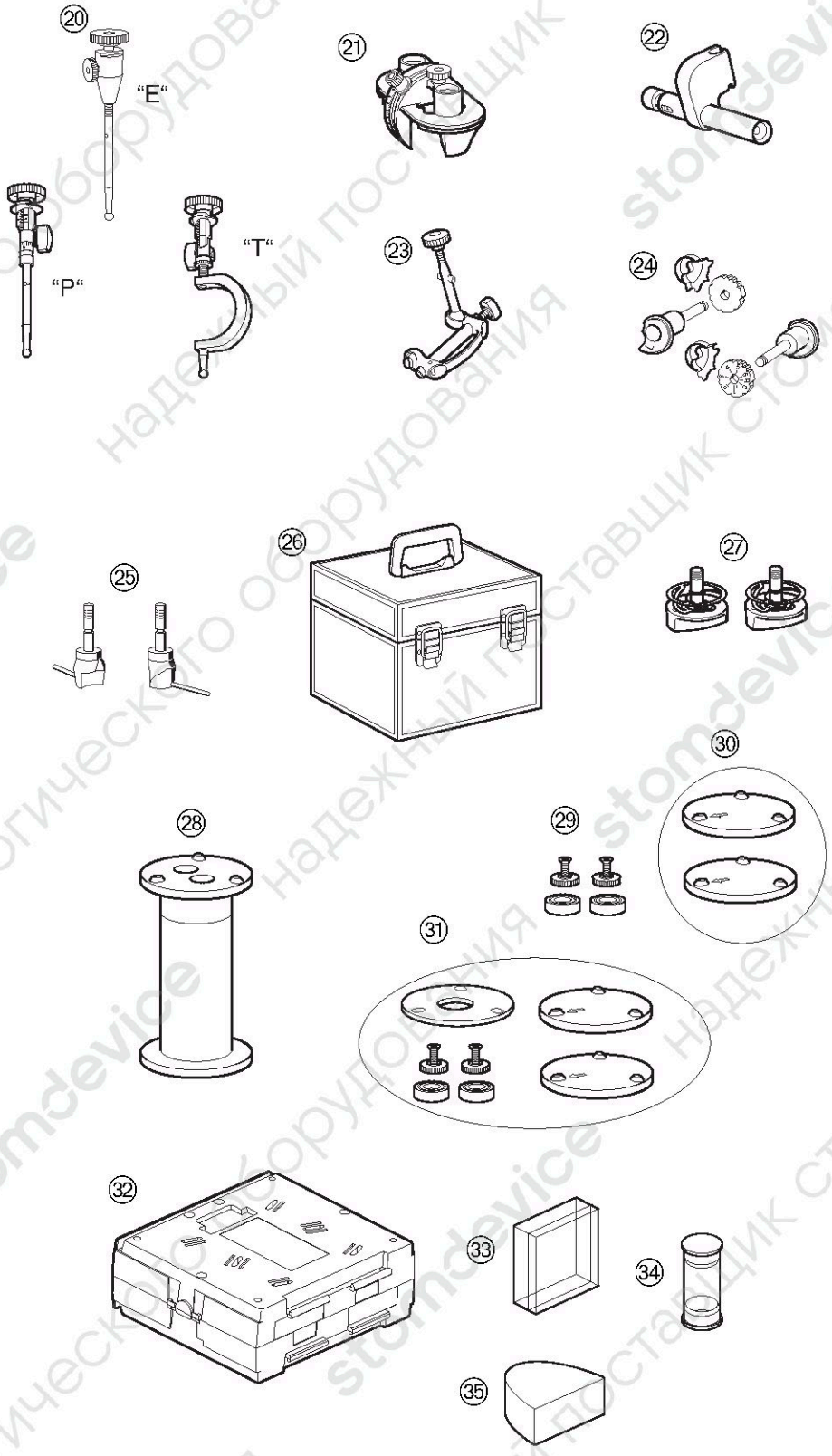
Transport box / Work trays

㉜ LOCIcase (pack of 10.)
Mat. No. 1.001.1511
LOCIcase (pack of 50.)
Mat. No. 1.000.9355

㉝ Box for registrations
Mat. No. 1.000.9354

㉞ Round canister for small parts
Mat. No. 1.000.9353

㉟ Foam sponge for securing of models
Mat. No. 1.000.9351



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

Consumable materials

① Mounting plates pack of 10
Mat. No. 0.622.0791

② Retention adapters pack of 10.
Mat. No. 0.622.1251
Retention adapters pack of 50.
Mat. No. 1.000.3089
Retention adapters pack of 50.
Mat. No. 1.001.0953

③ Mounting plates (not for Split-cast)
pack of 10 Mat. No. 0.622.1871

④ Inserts for mounting plate
pack of 20. Mat. No. 0.622.0781

⑤ Plaster mounting disc pack of 20.
Mat. No. 0.622.1481

⑥ Mounting plates for 3 PS (pack of 10)
Mat. No. 1.002.2096

⑦ Closure caps
Mat. No. 1.002.xxxx

Spare parts:

⑥ Upper section support pin
Mat. No. 0.622.1872
Shift angle inserts Mat. No. 0.622.1031

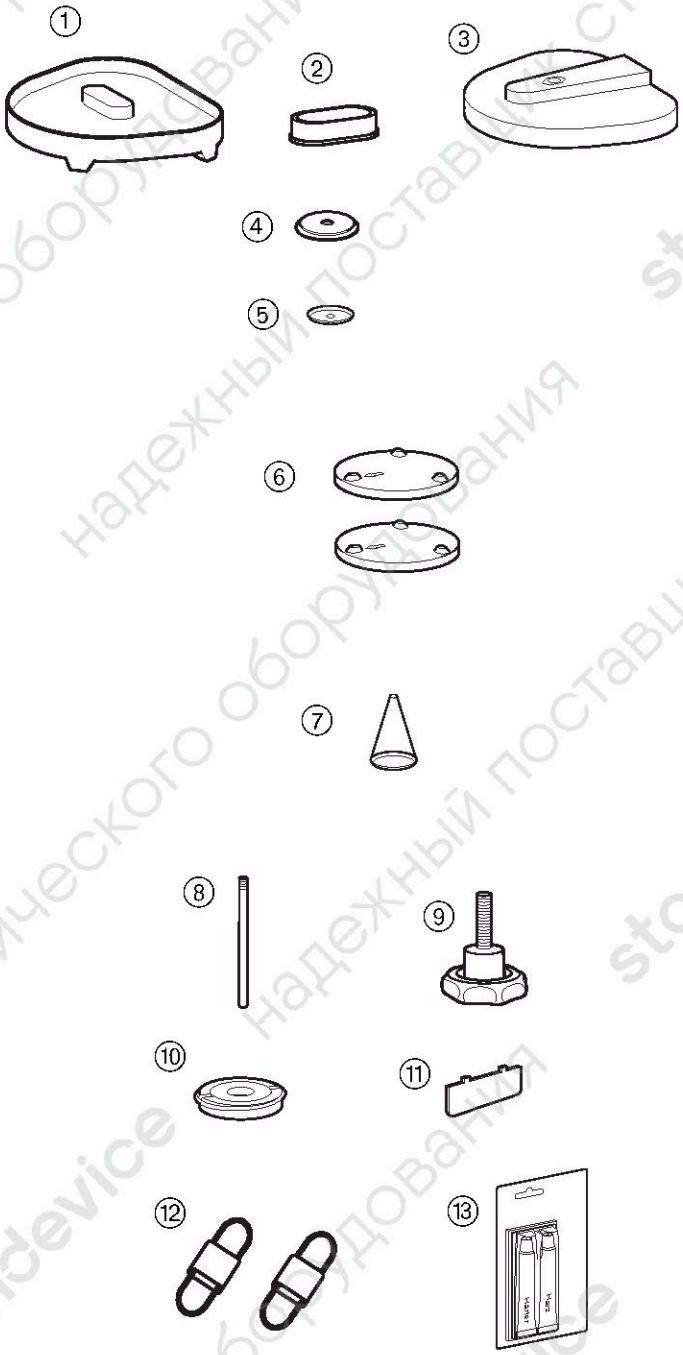
⑦ Mould release screw
Mat. No. 0.220.1741

⑧ Magnet Mat. No. 0.622.2682

⑨ Magnet wrench Mat. No. 0.411.1212

⑩ Elastic bands forPROTAR 2
pack of 10 Mat. No. 1.000.3101

⑪ Adhesive for adjustments
Mat. No. 0.359.2014



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 3 Controls and functional elements

① Articulator upper section

② Support feet

③ Hinge box, left

④ Centric lock, left

⑤ Centric lock, right

⑥ Control base

⑦ Articulator lower section

⑧ Incisal tray, 20°

⑨ Incisal plate flat

⑩ Support pin

⑪ Mounting plate, bottom

⑫ Mounting plate, top

⑬ Fixing Bennett angle and lateral movement (ISS), left

⑭ ISS setting, left

⑮ Hinge axis

⑯ Reference pin

⑰ ISS setting, right

⑱ Fixing Bennett angle and lateral movement (ISS), right

⑲ Hinge box insert, right

⑳ Hinge box, right

㉑ Spring element, right

㉒ Fixing shift angle, right

㉓ Fixing of hinge box, right

㉔ Fixing of hinge box, left

㉕ Fixing shift angle, left

㉖ Spring element, left

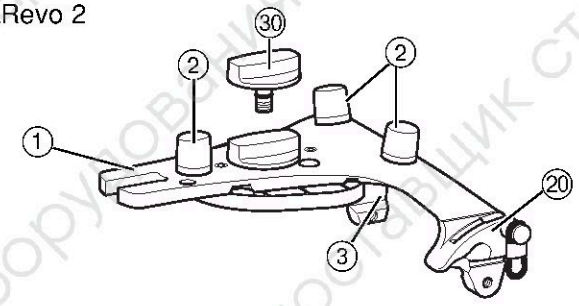
㉗ Hinge box insert, left

㉘ Ball joints

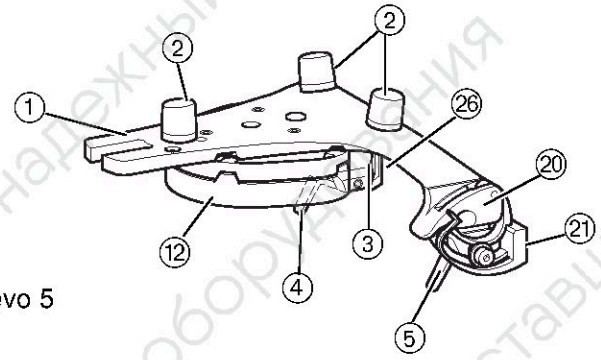
㉙ Magnet retention system

㉚ Tommy screw (optional)

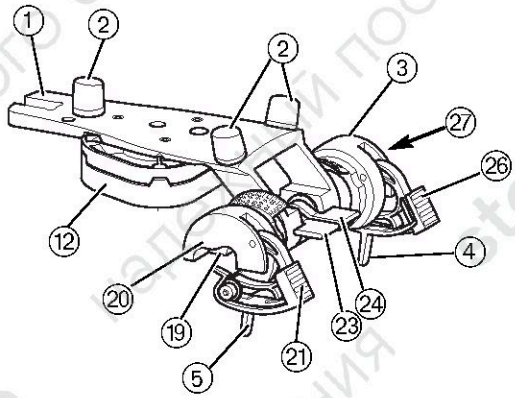
PROTARevo 2



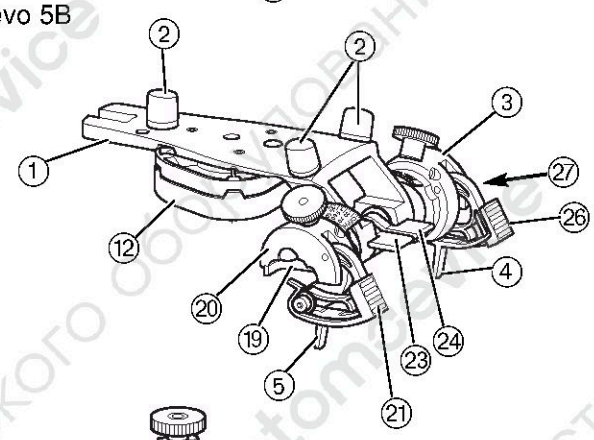
PROTARevo 3

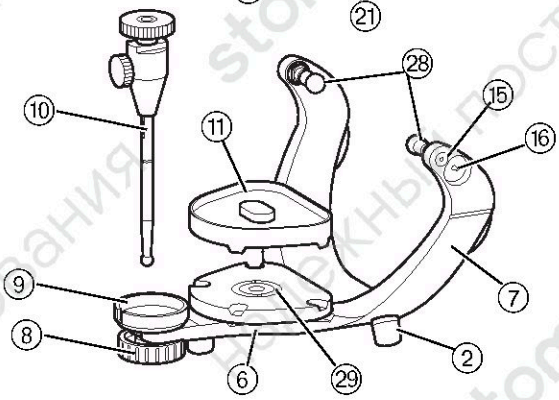


PROTARevo 5



PROTARevo 5B



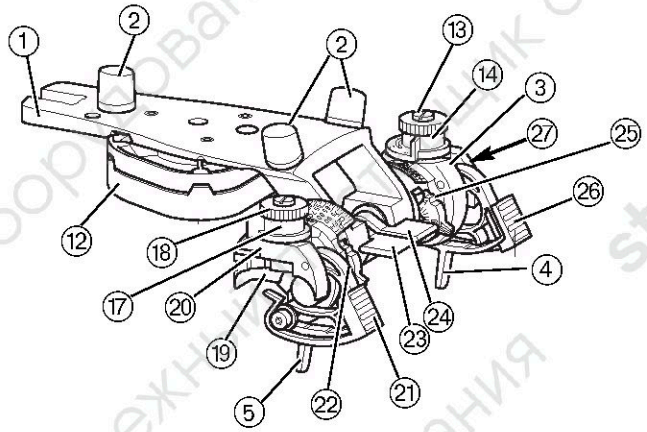


https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

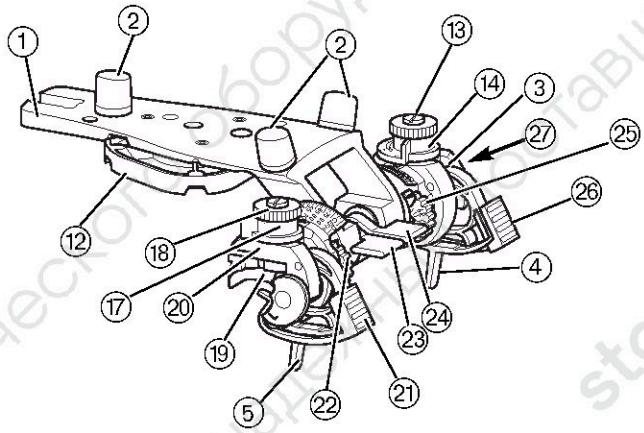
PROTAR® evo.

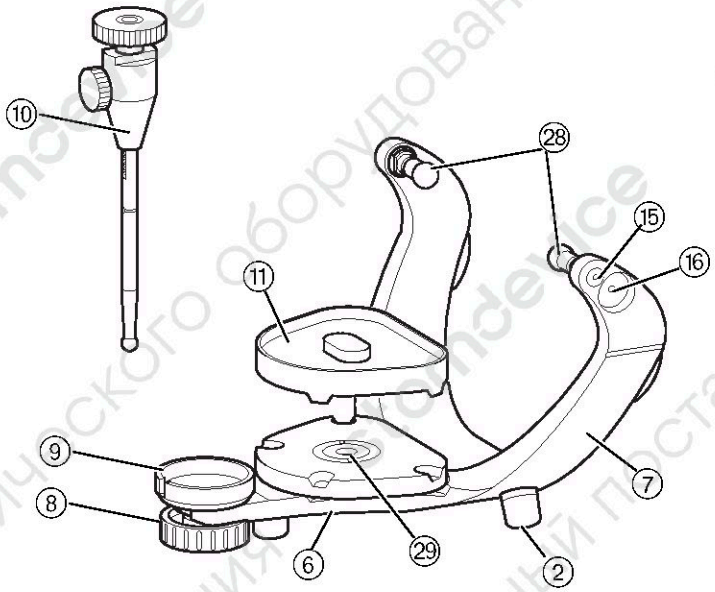
① Articulator upper section
② Support feet
③ Hinge box, left
④ Centric lock, left
⑤ Centric lock, right
⑥ Control base
⑦ Articulator lower section
⑧ Incisal tray, 20°
⑨ Incisal disc, flat
⑩ Support pin
⑪ Mounting plate, bottom
⑫ Mounting plate, top
⑬ Fixing Bennett angle and lateral movement (ISS), left
⑭ ISS setting, left
⑮ Hinge axis
⑯ Reference pin
⑰ ISS setting, right
⑱ Fixing Bennett angle and lateral movement (ISS), right
⑲ Hinge box insert, right
⑳ Hinge box, right
㉑ Spring element, right
㉒ Fixing shift angle, right
㉓ Fixing of hinge box, right
㉔ Fixing of hinge box, left
㉕ Fixing shift angle, left
㉖ Spring element, left
㉗ Hinge box insert, left
㉘ Ball joints
㉙ Magnet retention system
㉚ Tommy screw (optional)

PROTARevo 7



PROTARevo 9





https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

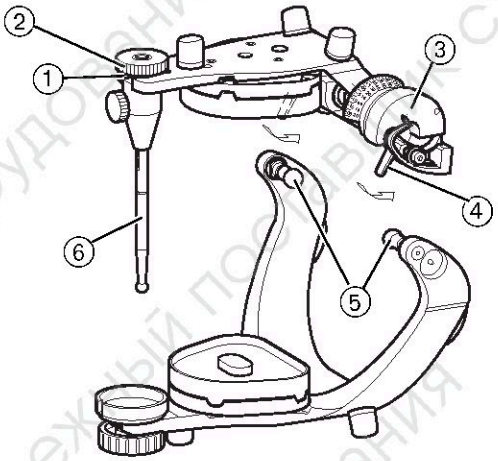
PROTAR® evo.

A 4 Preparations for start-up operation

A 4.1 Support pin

Insert support pin ⑥ into top or bottom part of articulator and screw in firmly.

Fit flat incisal plate ① with 20° incisal tray ② in the top or lower section. 10° - 50° trays can also be used instead of the 20° tray.



A 4.2 Centric locks

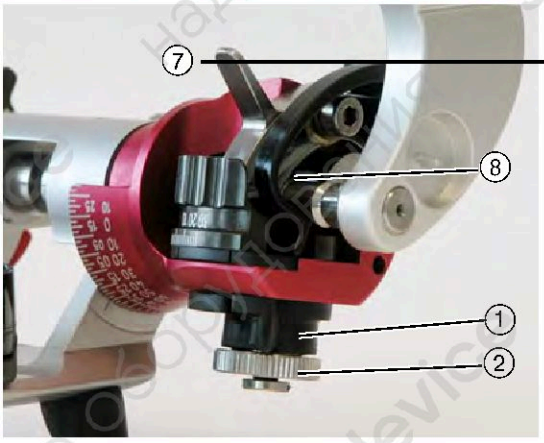
➡ **open**

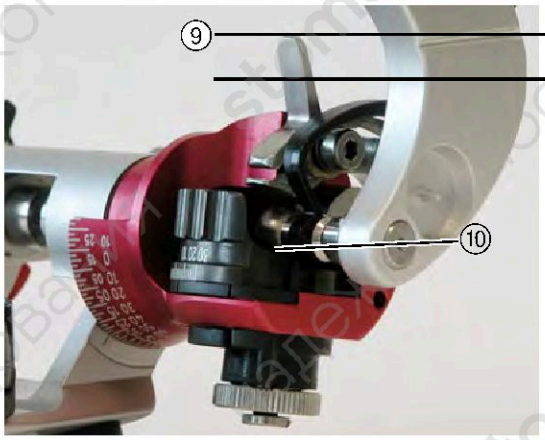
Position "0" ⑦
In position "0" the centric lock ④ is closed. The articulator upper section can only be rotated in the "closed" position



Position "1" ⑨
When the centric locks ④ are in the middle Position "1", the articulator is freely movable so that the desired articulator movements can be carried out. The spring elements ⑧ press the condyles ⑤ against the joint surfaces ⑩ of the hinge boxes ③ to prevent them from lifting off.

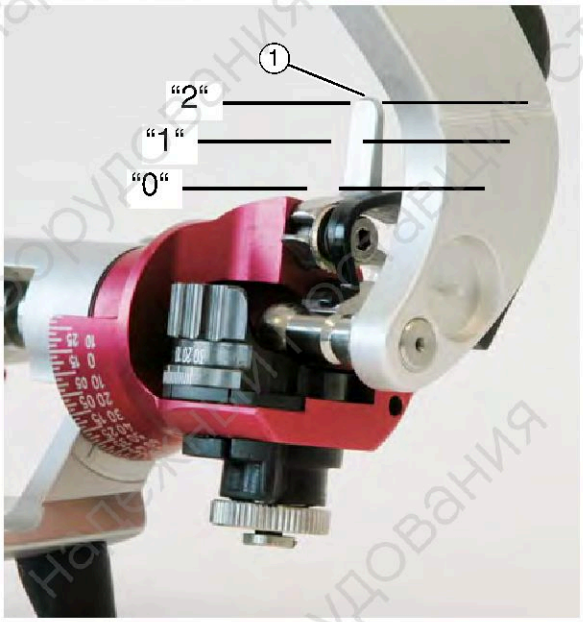
In its Position "1", the articulator can be handled like a non-Arcon articulator. This will prevent the upper and lower sections of the articulator from coming apart.



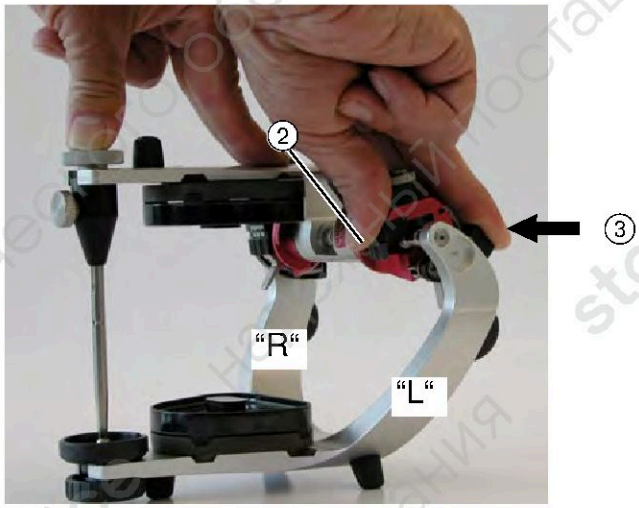


https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

Position “2“ = open ①
In this position, the upper section can be removed.



After positioning the articulator upper sections and closing the two centric locks, the articulator is now complete.



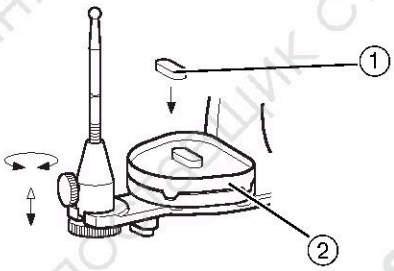
The centric locks ② can only be closed when the articulator upper section is firmly located into the condylar-ball.
The left centric lock ② must always be closed first ③.

“R“ = right
“L“ = left

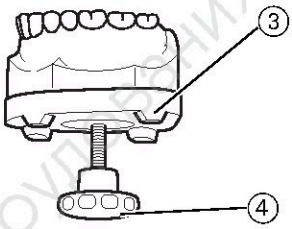
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 4.3 PROTARevo with Splitcast (Factory adjustment)

If the articulator is factory-equipped with the KaVo Splitcast, the magnetically-held control plate ② serves to accept the model. The retention adapter ① is used for retention of plaster.



After completing the work, the model is pressed out of the control plate ③ by use of the star-grip screw ④.
Finally, clean the control plate ③.

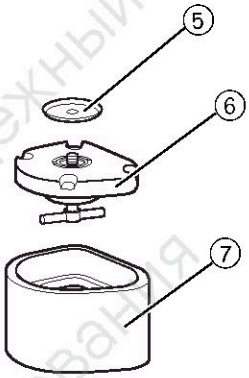


A 4.4 Working with the Mounting Set Mat. No. 0.622.1121

The mounting set enables the production of accurately fitting plaster plates for the KaVo Split- Cast.

Practical hints – function

- Snap the mounting disc ⑤ into the mounting set ⑥.
- As a rule, the mounting set does not have to be insulated.
- Remove the plaster plate after ⑥ hours, at the latest.
- After each use, immediately clean the mounting set thoroughly under running water.
- If necessary, use KaVo Separating Material (Order No. 0.622.4442). Blow off superfluous separating material.



⚠ *Never use plaster solvents to clean the mounting set.*

Mat.- No. see A 2.2

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 4.5 PROTARevo without Split-cast

If the Artikulator is factory-installed equipped without Split-cast, then the mounting plates ② (0.622.1871) are fixed with the help of a tommy screw ①.



A 4.5.1 PROTARevo with magnetic fixing

By use of the magnetic fixing 1.002.4686, a magnet ③ can be located in the PROTA-Revo in place of the capstan-head screw.Together with the 3PS mounting plates ④ a fast change of model is possible.

This method of fixing the model does not allow synchronization.



A 4.6 PROTARevo with Splitcast

(Adjustment in the laboratory)

PROTARevo articulators, which are not factory-equipped with a Split Cast , can be synchronized with the 3PS mounting plates in the laboratory.

Required accessories:
④ Mounting plate 3PS Mat. No. 1.002.2095
⑤ Calibration gauge Mat. No. 1.002.2080





https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 4.6.1 Calibration

Insert the measuring/calibration gauge ④ into the articulator lower section ②.
Fasten the adjustment plate ⑥ to the calibration gauge ④ by using a rubber band ⑤.
Evenly spread the provided special glue ③ over the adjustment plate 6 , and close the articulator upper section ①.
(Allow a hardening time of approx. 12 hours).

Set the incisal pin ⑦ to the zero position.



A 4.6.2 Measuring

The measuring/calibration gauge ⑨ is designed to check the calibration at any time in the laboratory.
To this end, the gauge is separated into two parts with the help of the two centre screws ⑧.



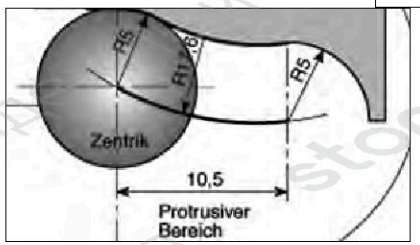
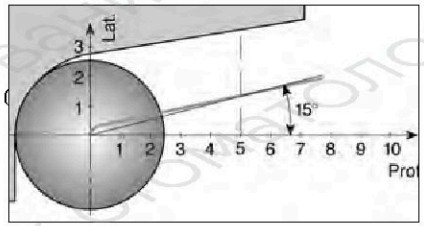
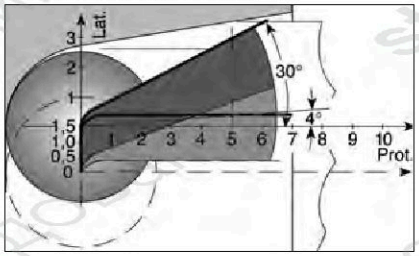
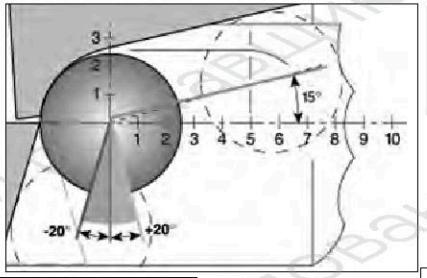
Now the calibration can be checked by using occlusal paper 0 .





https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

	PROTAR 2	PROTAR 3	PROTAR 5	PROTAR 5B	PROTAR 7	PROTAR 9
						
Saggittal condylar path		Fixed 30° zur CE 45° zur FH	Fixed 30° zur CE 45° zur FH	Adjustable -10° bis 90° (FH) -25° bis 75° (CE)	Adjustable -10° bis 90° (FH) -25° bis 75° (CE)	Adjustable -10° bis 90° (FH) -25° bis 75° (CE)	Adjustable -10° bis 90° (FH) -25° bis 75° (CE)
Horizontal condylar path - (Bennet)		Fixed	Fixed 15°	Fixed 15°	Adjustable 15°	Adjustable 0 - 30°	Adjustable 0 - 30°
Horizontal condylar path (ISS)		0 mm	0 mm	0 mm	0 mm	0 - 1,5 mm	0 - 1,5 mm
Horizontal condylar path - Shift angle		0°	0°	0°	0°	Optional - 20° bis +20° with 0.622.1111	0°
Protrusion Retrusion Distraktion					Adjustable 0 - 1,5 mm 0 - 1 mm 0 - 1,5 mm	Adjustable 0 - 6 mm 0 - 1 mm 0 - 6 mm

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 6 Articulation of the model

A 6.1 Articulation of the upper model with the KaVo Face bow ARCUS

Release clamping lever ④ and pull face bow ③ apart.

The support pin ② must already be located in the articulator lower section and set to the zero position.
(Remove the incisal plate ⑥ and close the centric locks, at first the left, finally the right of the upper section).

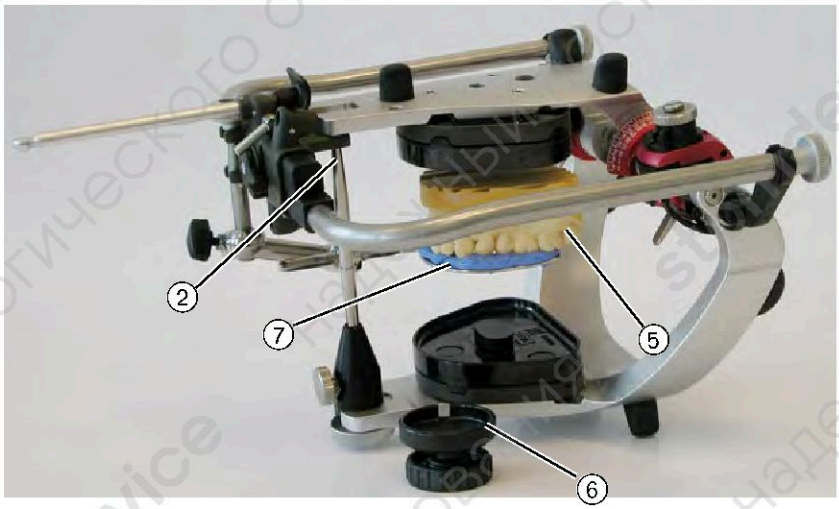


Affix the ear-pieces of the face bow to the orientation pins ① on the articulator lower section, slide the face bow together again then lock the clamping lever ④.

The face bow ③ is placed on the support pin ②.

Position the upper dentition ⑤ in the impressions ⑦ on the bite fork.

Mix the plaster to a creamy consistency, and place on the model of the upper jaw (Close the opening in the control plate with the retention adapter Mat. No. 0.622.1251) Spread the plaster over the control plate in the upper section. Close the upper section, using no pressure.



After the plaster has hardened, remove the face bow together with the bite fork from the articulator.

Release clamping lever ④, and take the facebow ③ out of the articulator.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

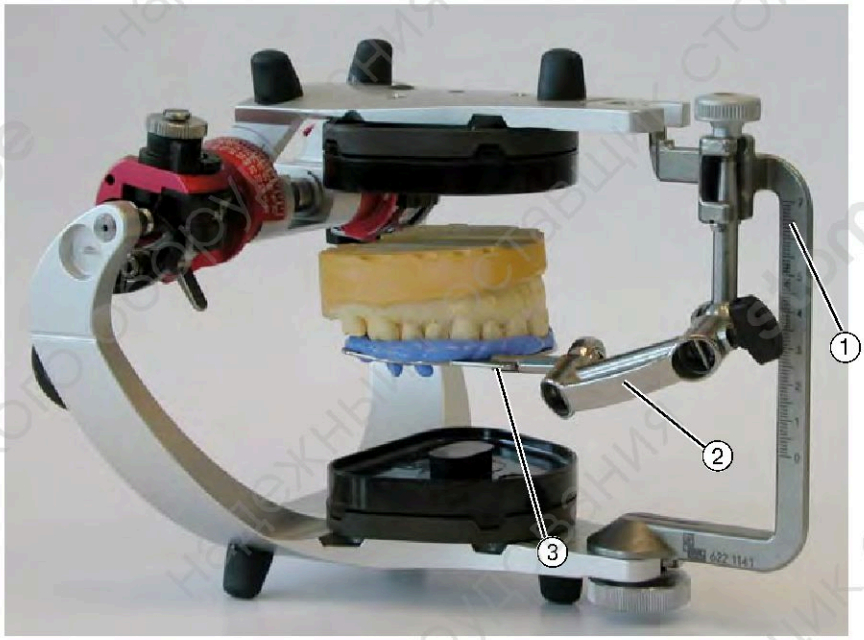
A 6.2 Articulation of the upper model with the help of the Transfer Stand

If articulation is to be carried out in the dental laboratory, it is only necessary to send the bitefork with holder.

Remove the support pin and incisal plate from the articulator.

Locate Transfer Stand ① in the lower section of the articulator.

Insert bite fork ③ with bitefork holder ② into the transfer stand ①.

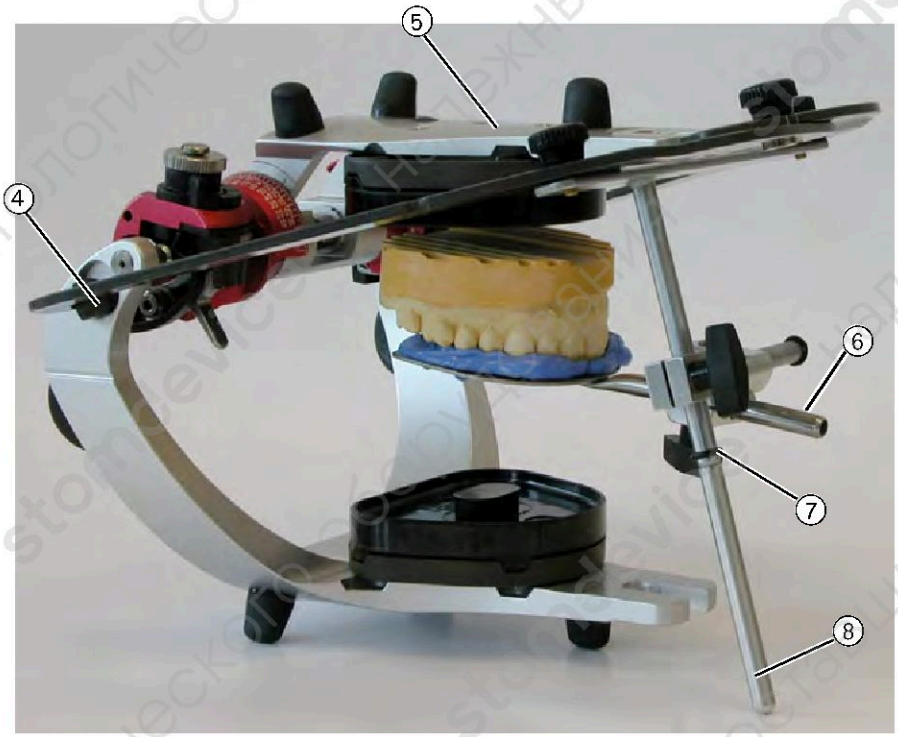


A 6.3 Articulation of the upper model with KaVo Facebow ARCUS light

Attach face bow ARCUS light with its ear-pieces ④ to the orientation pins on PROTARevo.

The provided support ⑧ is screwed into the lower end of the rod ⑦, for the bitefork holder ⑥.

Place facebow ARCUS light with its support ⑧ on the worktop.
Place the articulator upper section ⑤ on the facebow.

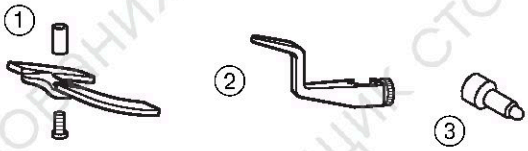


https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 6.4 Articulation of the upper model with face bows of other manufacturers

The following accessories are required:
Non-KaVo face bow reference kit
Mat. No. 0.622.1151
Consisting of:
① Reference plane (collar + screw)
② Face bow holder
③ Adapter reference pin



This accessory enables face bow systems of other manufacturers to be mounted in the PROTARevo Articulator.
For systems with a free-moving pointer, a reference plane ① is required for the articulator upper section.

(Illustration - Dentatus)
The Dentatus face bow, with its infra-orbital indicator ③, is swivelled until it contacts with the reference plane ①.



Mounting of face bows with Swivelling pointer or glabella support (eg. SAM, Whip Mix) - remove incisal plate and support pin from the articulator.

Turn the knurled screw of the transfer stand almost completely out, and push the transfer stand in its second possible position as far as the stop into the articulator lower section, then tighten the knurled screw.

Mount the face bow holder onto the transfer stand.

Locate the face bow holder with the help of the scale division and fix into position with the knurled screw.



Denar Adapter Order No. 0.622.1351
Using the Denar Adapter enables articulation with the Denar Bitefork.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 6.5 Programme data when using non –KaVo face bows in the PROTAR Articulator

The following accessories are required:
① Transfer stand Mat. No. 0.622.1141



② Non-KaVo reference kit Mat. No. 0.622.1151
consisting of:
Reference plane (collar + screw)



Face bow holder



Adapter reference pin



Manufacturer	mounting possibility	with nasal support scale value	reference pointer for infra-orbital point scale value	accessory required
Girrbach Rotofix	yes	39	66	① Transfer stand , ② Reference plane + face bow holder
Girbach Referenz	yes	51		① Transfer stand ② Reference plane + face bow holder
Dentatus	yes	-	-	② Reference plane
Hanau 153 Earpiece Face bow	yes	-	-	No accessories required front cross rod 70 mm over worktop
SAM	yes	58	-	① Transfer stand ② Face bow holder
Panadent	yes	not possible	51	① Transfer stand ② Reference plane and face bow holder and extra pointer (0.622.1371)
Hanau 164-2 Twirl-Bow	yes	-	59	① Transfer stand ② Reference plane + face bow holder
Gerber	conditional	-	-	No accessories required
Denar	yes	-	-	Adapter Mat. No. 0.622.1351
Whip-Mix	yes	56	-	① Transfer stand ② Reference plane + face bow holder Adapter reference pin
Quick	yes	56 top 49 middle 44 bottom	-	① Transfer stand ② Reference plane + face bow holder
Springbow Hanau	yes		orientate on reference plane	with bitefork support 0.622.1391
Hager und Werken	yes	46		① Transfer stand ② Reference plane + face bow holder
Ivoclar	yes		59	① Transfer stand ② Reference plane + face bow holder

further manufacturers – on request

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 6.6 Average value method using the KaVo upper jaw model positioner Mat. No. 0.622.1781 APFnt Method

The medium-value model positioner for an edentulous upper jaw model makes articulation possible, if no face bow is available.

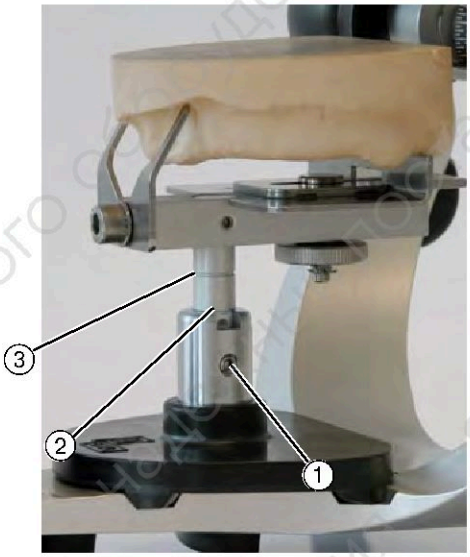
The edentulous flaps and the lowest points behind the two tubercles serve as reference points.



① Fixiing screw

② Adjustment mark if KaVo Split- Cast is not installed.

③ Adjustment mark when KaVo Split-Cast is installed.



Reference points



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 6.7 Average value method using the KaVo Mounting and Setup Aid for the upper jaw

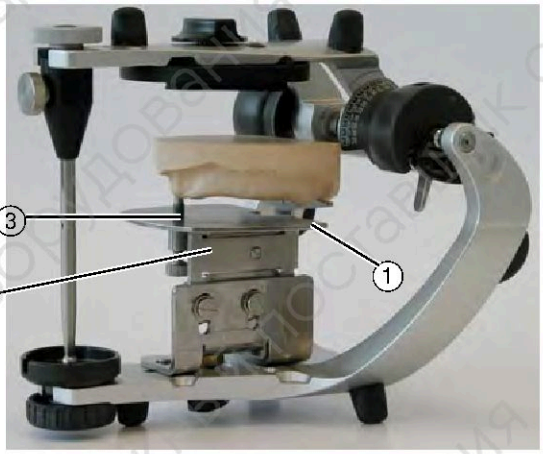
The Mounting-Setup aid
② Mat. No. 1.001.9451 (without Split-Cast- mounting)
⑤ Mat. No. 1.001.9452 (with Split- Cast-mounting)
enables medium-value articulation of an edentulous upper jaw model, if no face bow is available.

The setup aids are aligned parallel to Camper's Plane.

The mesial alignment is achieved by use of the papilla screw ③.

According to the setup method, the papilla screw is withdrawn to the appropriate length, the model with its papilla placed on the screw, and the cradle ① pushed in so far until this comes to rest at the lowest point behind the two tubercles.

By use of the adjustment screw ④, the mounting and setup aid is uniquely aligned to the occlusal plane 6 of the respective articulator.





By using the clamp 1.001.9471, the mounting and setup aid 1.001.5451 can also be fixed in the Denar, Hanau and Stratos articulators.







https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 6.8 Average value method for the lower jaw model using the KaVo Plastering Gauge Mat. No. 0.622.1171

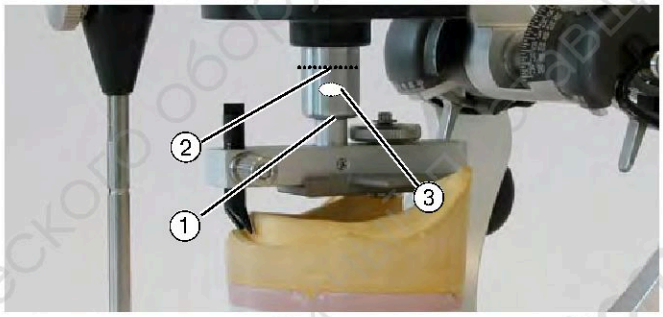
(APF Method)

The plastering gauge makes it possible for partial or fully edentulous lower jaw models to be articulated in the PROTAR articulator.



If the KaVo articulator is equipped with the Split-Cast, the plastering gauge must be fixed in Position ① (loosen screw ③)

If no Split-Cast is mounted, the gauge must be fixed in Position ②.



A 6.8.1 Mounting of an edentulous lower jaw model

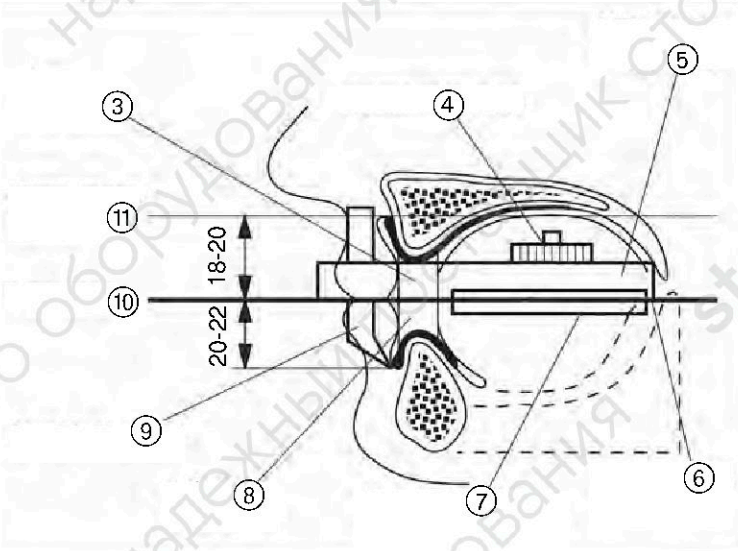
Draw a circle around the retro-molar protuberance of the lower jaw model. Mark a centre line ② and divide into three parts. The occlusal plane ① runs to the upper marking.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

Adjust the symphysis fork ⑨ to the height of the lower wax rim ⑧.



③ Upper wax rim

④ Locking screw

⑤ Average value plastering gauge

⑥ Retro-molar protuberance

⑦ Sliding foot to retro-molar protuberance

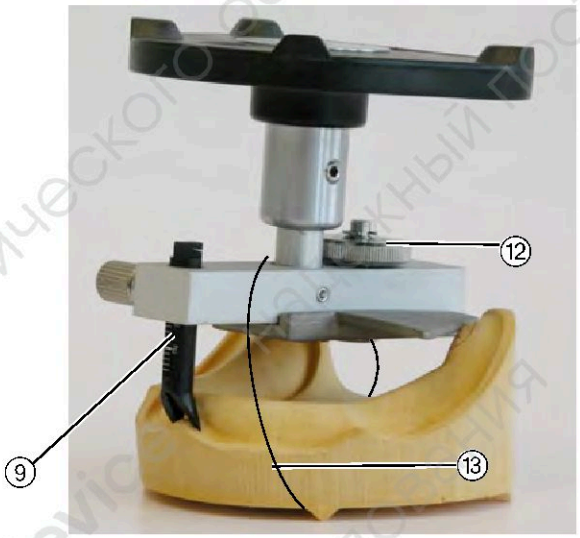
⑧ Lower wax rim

⑨ Symphysis fork

⑩ Occlusal plane

⑪ Camper's plane

After releasing the locking screw ⑫, move the sliding part to the desired position and tighten the locking screw.
Fix the plastering gauge to the model by using a rubber band ⑬.



Finally, articulate the lower jaw model in the articulator.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 6.9 Articulation of the lower jaw model

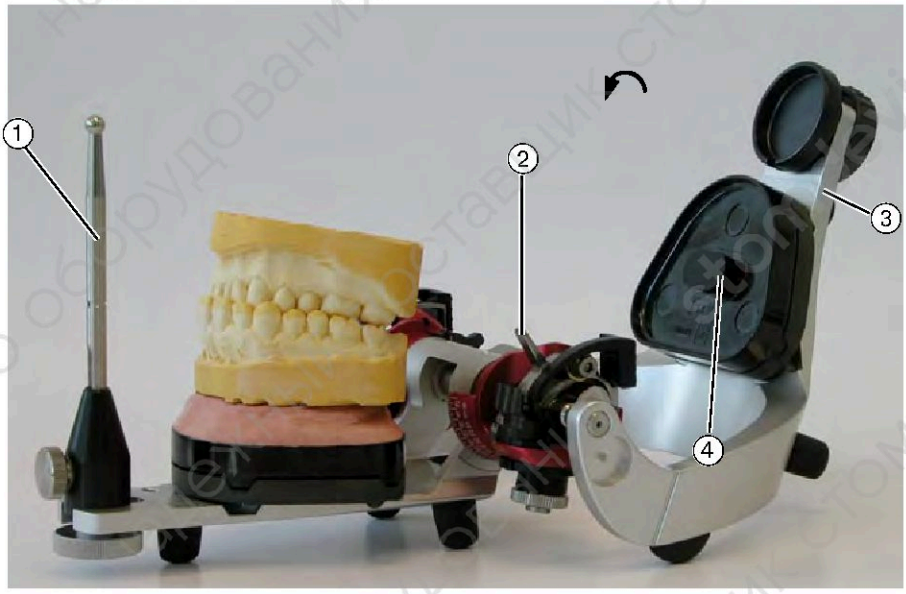
Turn the articulator upside down. (centric locks ② remain closed).

Fold out the articulator.

Set the lower jaw model on the upper jaw model, with no rocking movement.

When working without centric registration, the support pin ① is set at zero.

Close the opening in the control plate ③ with a retention adapter ④ Mat. No. 0.622.1251. Then apply plaster of a creamy consistency to the lower jaw model, and to the control plate of the articulator lower section ③.



Using no pressure, now close the articulator.

After the plaster has hardened, remove the centric registration and return support pin ① to the zero position.

The upper and lower jaws are now articulated in the correct relationship.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 7 Programming the articulator

A 7.1 Adjusting the condylar path inclination with protrusion recording block

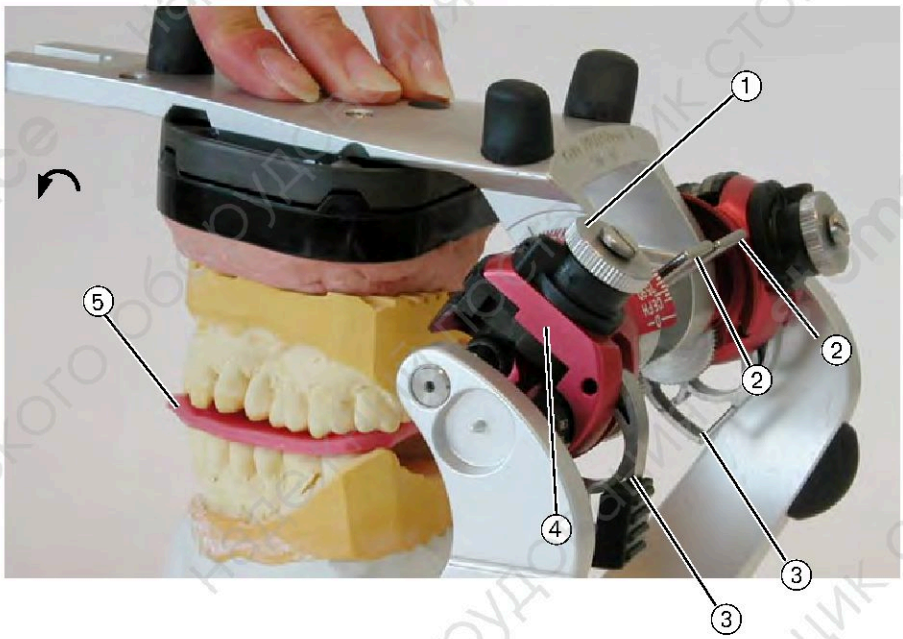
(for PROTAR 5, 5B, 7, 9)

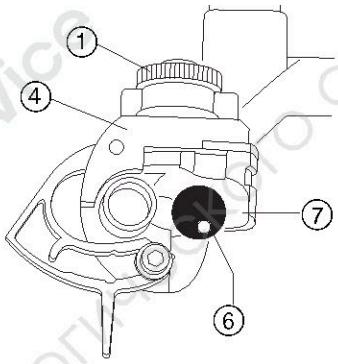
Open the two centric locks ③ and place the protrusion recording block ⑤ between the dentition of the plaster models. This pushes the lower part of the articulator forwards in relation to the top part.

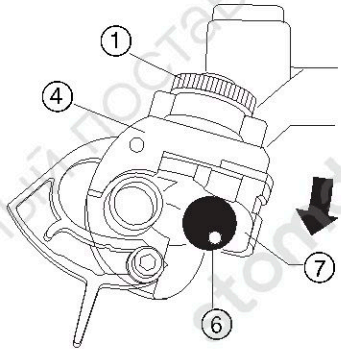
The ball joints ⑥ of the articulator now no longer touch the condyle path.

Release the clamps ② of the hinge boxes ④ and bring the respective hinge boxes ④ into contact with the ball joints ⑥.

Apply clamps ② of the hinge boxes.







A 7.2 Adjusting the Bennett angle with the left and right laterotrusion recording block

(for PROTARevo 5B, 7, 9)

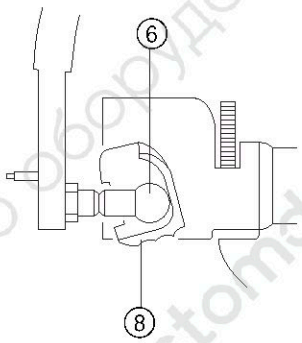
Release clamps ① and set the max. Bennett angle.

Setting the left Bennett angle
Place the right laterotrusion recording block ⑤ between the dentition of teeth of the upper and lower jaws.

Turn the left hinge box insert ⑦ until the ball joint ⑥ and insert ⑦ touch and then secure with clamp ①.

Setting the right Bennett angle
Place the left laterotrusion recording block ⑤ between the dentition of teeth of the upper and lower jaws.
Turn the right hinge box insert ⑧ until the ball joint ⑥ and insert ⑦ touch and then secure with clamp ①.

Close the centric locks ③ and place the articulator in its working position.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

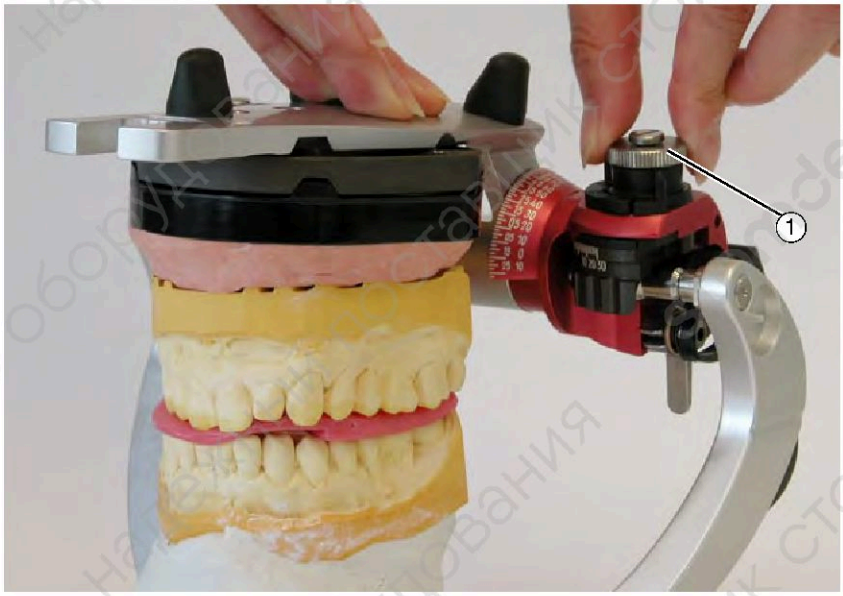
PROTAR®evo.

A 7.3 Setting the immediate Side Shift (ISS)

(für PROTAR 5B, 7, 9)

The immediate side shift (ISS) **of the** mediotrusion condyle can be preselected from "0" to "1.5 mm" (in 0.5 mm steps).

The fixing screw ① of the Bennett angle guides must be slackened by about 1/4 of a turn to make the adjustment.



Set the adjustment to the value required on the adjustment mark ② of the immediate side shift (ISS). Retighten the fixing screw.

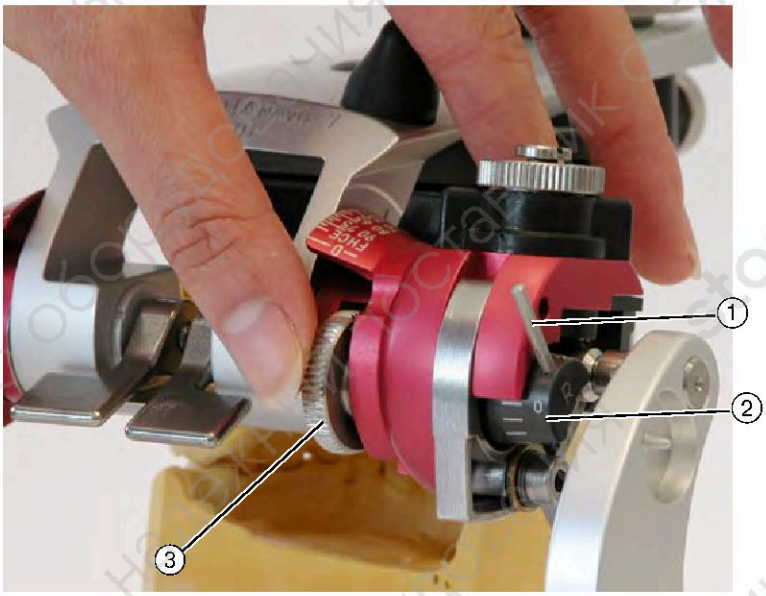
The Bennett angle selected is retained.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

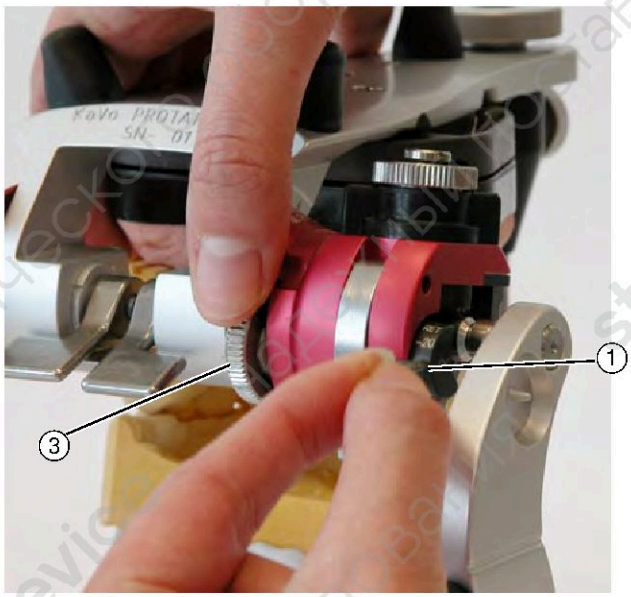
A 7.4 Adjusting the Shift-angle

If PROTAR 7 is equipped with the shift angle inserts (0.622.1111), movements on the working side (Laterotrusion side) can be exactly adjusted.

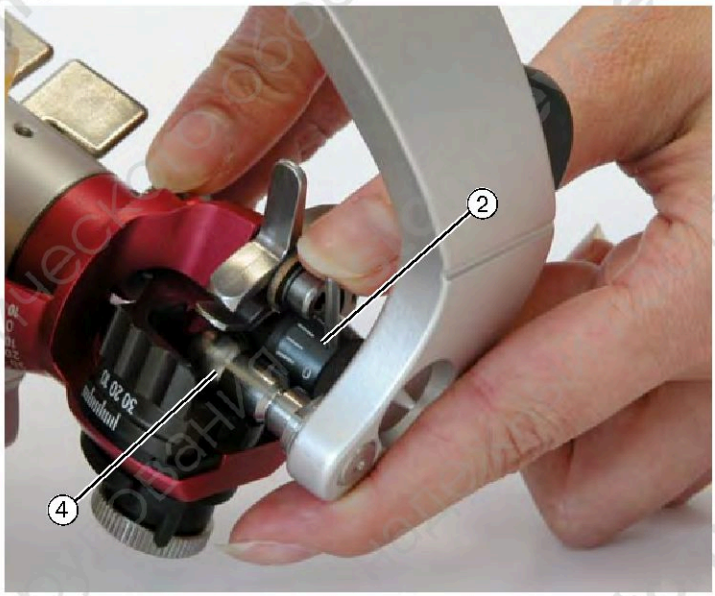


Slacken knurled screw ③ so that the shift-angle insert ② can be adjusted by turning the pin ①.

With the left lateral registration, the right Bennet angle and the left shift angle can be adjusted simultaneously.
With the right lateral registration, the left Bennet angle and the right shift angle can be adjusted simultaneously.



To adjust, turn the shift angle insert ② so far until it makes contact with the joint ball ④.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

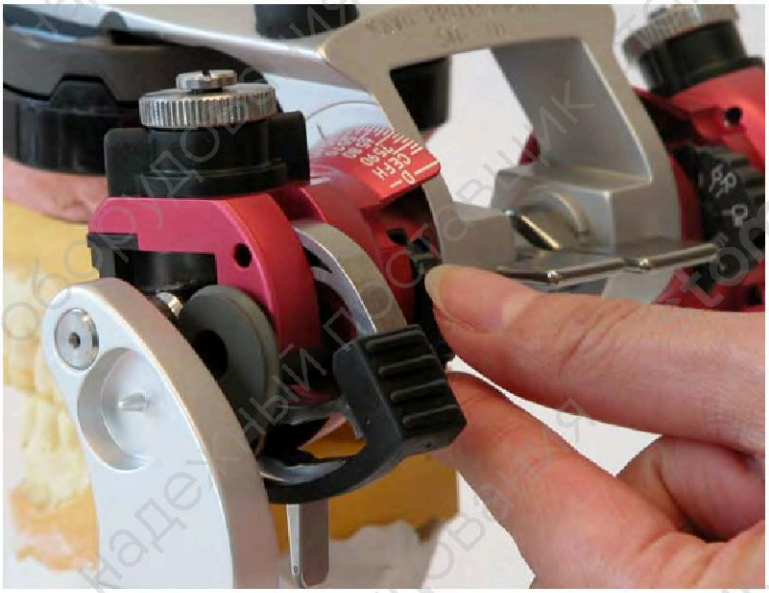
PROTAR®evo.

A 7.5 Setting of a protrusion / distraction position

PROTARevo 9

The PROTARevo 9 is constructed in the same way as the PROTARevo 7. Supplementary the PROTARevo 9 has a P/D/R-insert.

Mat. No. 0.622.1001 right / left



Defined **P**rotrusion setting
Defined **D**istraction setting
Defined **R**etrusion setting

The PROTARevo 7 can be retrofitted with **P/D/R**-insert.

Setting a guided protrusion
from 0 to 2 mm in 0,25 mm steps
from 2 to 6 mm in 0,5 mm steps



These settings are specifically guided and reproducible. The upper section stops in each protrusion setting.

Examples of uses: Protrusion guides
Grinding in the occlusion

Setting a guided distraction
from 0 to 2 mm in 0,25 mm steps
from 2 to 6 mm in 0,5 mm steps
from the centric position



These settings are specifically guided and reproducible. The upper section stops in each distraction setting.

The support pin can be readjusted accordingly.

Example of use: Bite plate guides.

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 7.6 Setting the retrusion

To produce retrusive free spaces when waxing, a retrusive movement is possible in PROTARevo 7/9.
This reduces grinding-in work on the part of the dentist. Retrusive free spaces have already been provided in the modelling.



Zero position of the Retrusion

When the lateral movement ③ (ISS) is set to 1.5 mm, the retrusive movement can be increased to 1.0 mm (in step of 0,25 mm).



In this case, no exactly centric position is possible with centric locks closed!



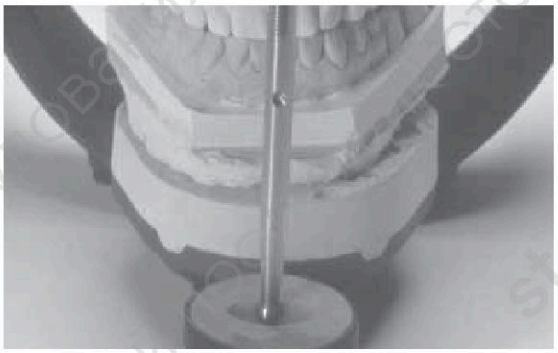
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

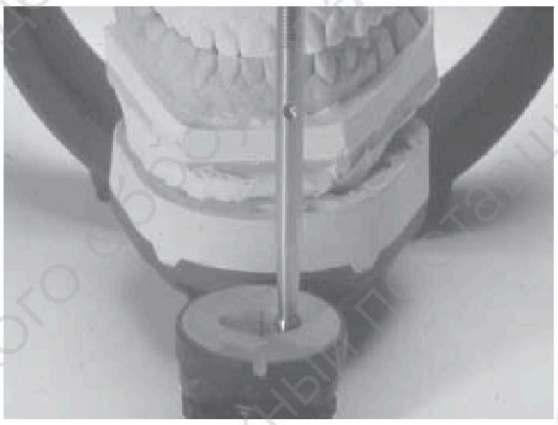
A 7.7 Producing an individual incisal guidance

The user can shape an individual incisal guidance from the flat PROTAR incisal plate.

Set the articulator centric lock to position “1“ and fold open the articulator towards the rear. Apply a release agent (petroleum jelly) to the incisal plate and the tip of the support pin. Fill the incisal plate with a doughy, stirred autopolymer so that it comes flush with the edge.

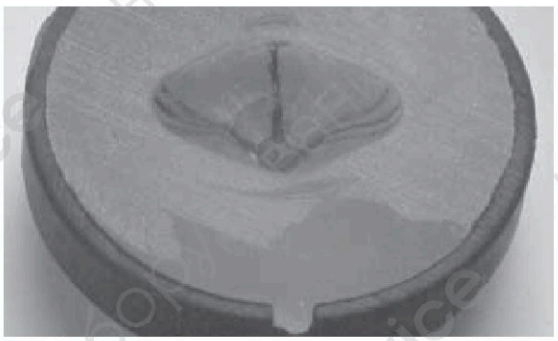


By using models before the preparation, the front incisal guidance can be transferred to the still doughy autopolymer by movements in the articulator with the support pin.



Release the individual tray from the incisal plate by levering it out with a suitable instrument in the opening in the incisal plate.

The individual incisal guidance can be reinserted, since the retention slot allows the correct position to be found accurately.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 7.8 Programming the adjustable incisal plate

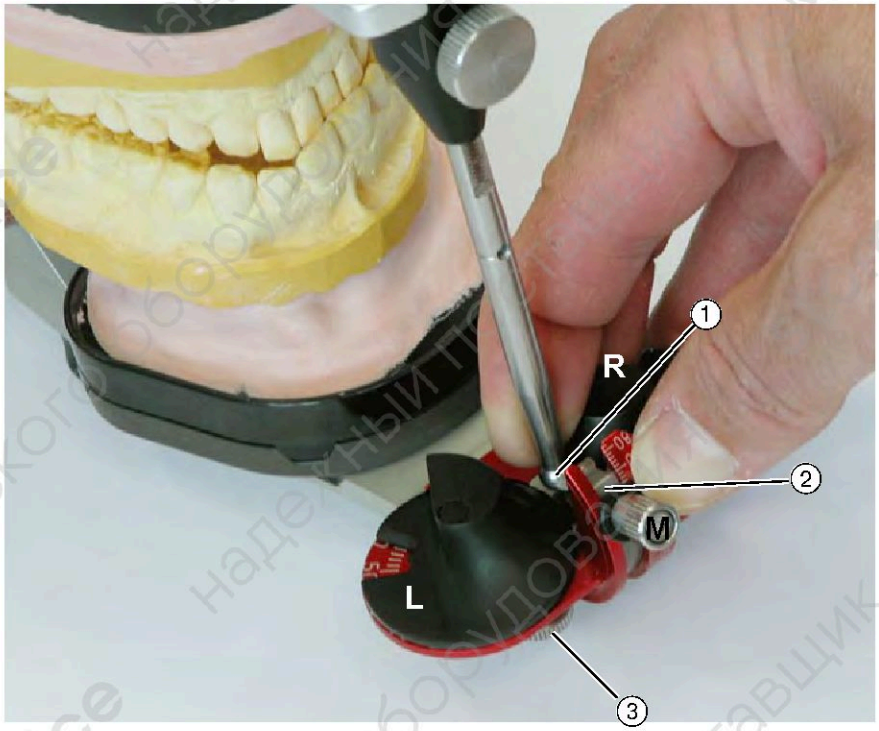
A 7.8.1 By use of a situation model

Before cutting the teeth, a situation model from the patient is produced.

The adjustable incisal plate is then programmed with this situation model.

For correct installation of the incisal plate, the middle guidance is set to a value of approx. 70° ②.

The incisal plate is then moved until contact with the ball ① of the incisal plate is reached, and then is fixed with the locking screw ③.



Move the lower jaw in the articulator to the left and set the left guidance,.
Then move the lower jaw to the right and set the right guidance.
The middle guidance can be set by moving the model along the anterior teeth.
Thus, the adjustable incisal plate records the tooth guidance.

A 7.8.2 By use of programme data from ARCUSdigma

The ARCUSdigma directly provides the programme data for the incisal plate.

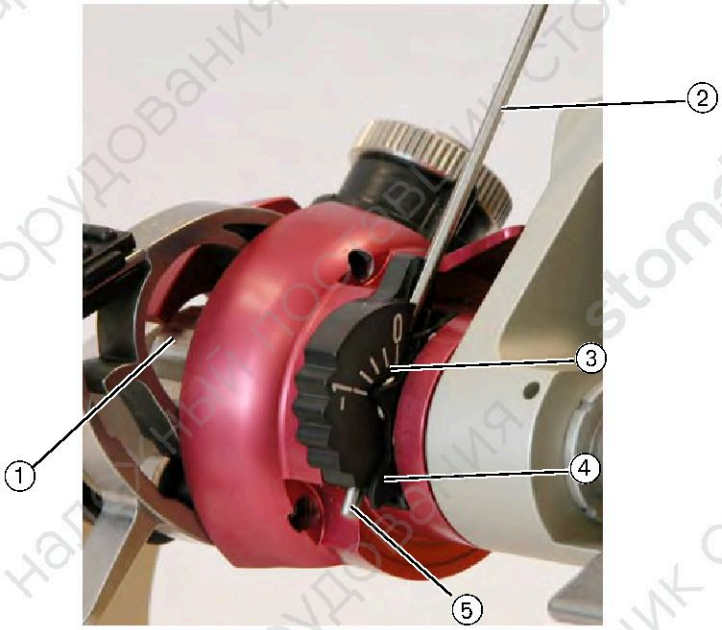
Set the values as described.

Anterior Guidance		
Right	(R)	60,0
Middle	(M)	63,6
Left	(L)	57,0

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

A 8 Installation of the shift angle insert in PROTARevo 7

First the existing protrusion/retrusion cylinder ① has to be removed.



This is achieved with the help of the provided hexagonal-slot wrench ② by using some some pressure to push out the locking pin ⑤ from the drive wheel ③.

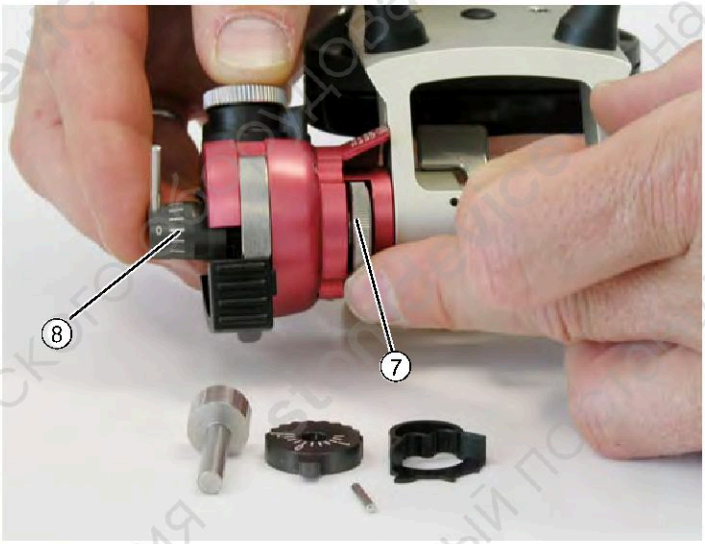
1. Remove protrusion/retrusion cylinder ①
2. Remove drive wheel ③
3. Remove black plastic stopping device ④



Installing the shift angle insert ⑥.

The shift angle insert is installed as follows:

- Push screw ⑦ in the slot.
- Push the shift angle insert ⑧ from outside into the articulator box.
- Tighten screw ⑦.



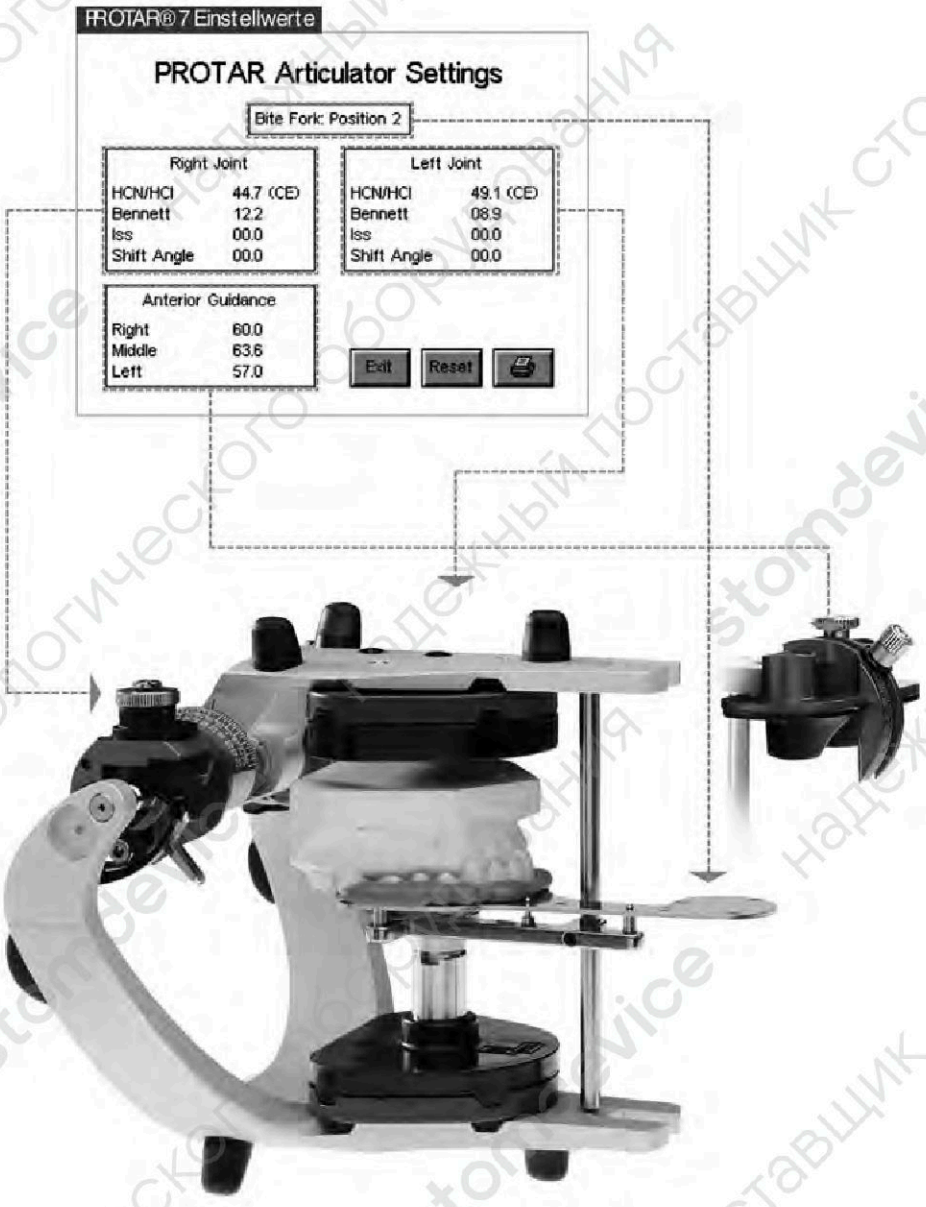
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 9 Programming the articulator with data from ARCUSdigma

(Mat. No. 1.000.8232)

PROTAR 7 together with shift angle insert (Order No. 0.622.1111) and the adjustable incisal plate (Order No. 0.622.1701) can exactly reproduce all calculated settings.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

A 10 Setup aid for full dentures

A 10.1 Setup aid for lower jaw models according to the APFnt method (Mat. No. 0.622.2071)

Attach the occlusion inclination indicator ① to the centering axis of the articulator.



Tighten screw ④.

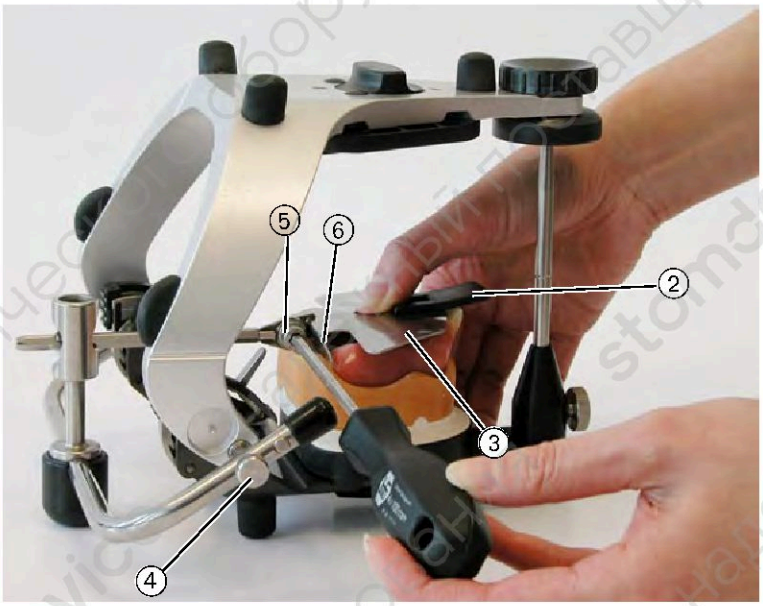
Turn the articulator upside down.

Lay template ③ on the model.

In the mesial area, place the front insert ② on the two first anterior teeth.

In the dorsal area, position the rear cross-rod ⑥ behind the two tubercles.

Tighten screw ⑤, then tighten screw ⑦. If necessary, re-adjust screw ⑤ again.



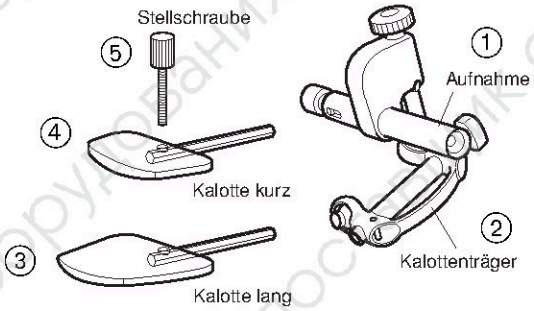


https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 10.2 3D Setup aid for lower jaw models according to the APF method

① Receptacle
② Template holder
③ Long template Mat. No. 0.622.1211
④ Short template Mat. No. 0.622.1201
⑤ Positioning screw

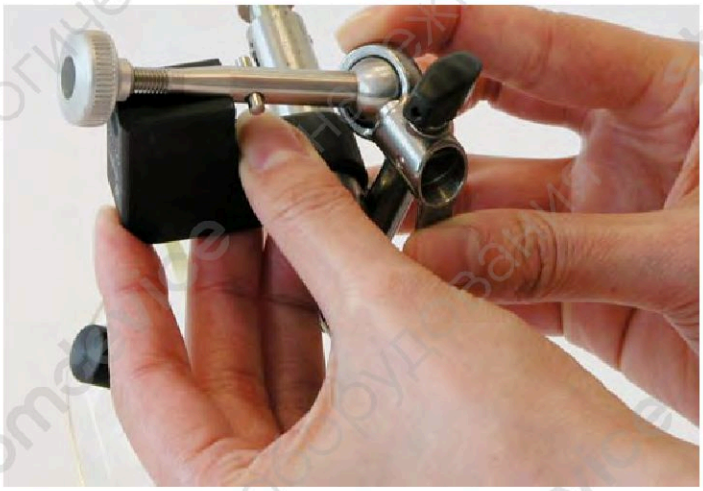


This template system can be applied generally no matter which aspects have governed mounting of the model in the articulator (face bow or jig for average-value articulator).

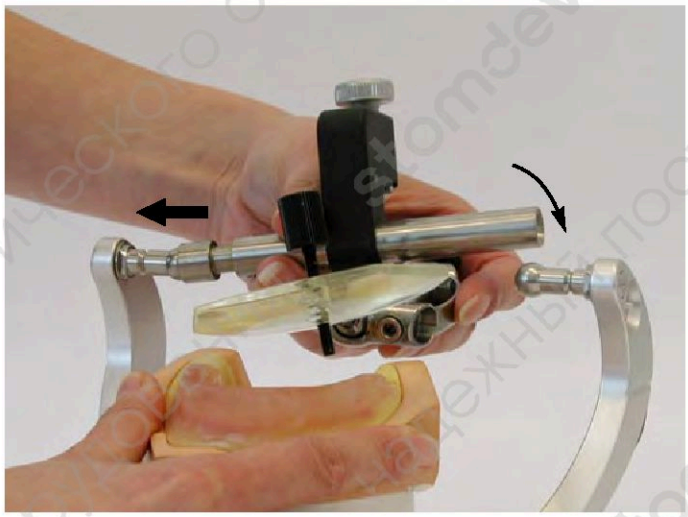


With this template system, the user is provided with a flat surface providing the reference to the occlusal plane, and a convex surface, which takes into account the compensation curves in both the saggittal and transversal directions with respect to the static position of the mandible.

The template can be universally adjusted with the aid of the template holder and the receptacle. The template can be aligned in every case whether with face bow, articulator jig or rubber band.



By pressing the receptacle together, the complete unit is fixed between the ball-joints of the articulator.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR®evo.

For alignment, the template ① is placed on the wax rim ②.
To achieve this, the wax rim must be occlusally modified so that the template is aligned in the areas of the incisors and the lower molars.
The flat surface of the template can be used, for example, for the Gerber method.



The position of the template ① is determined by the positioning screw ③, which is fixed to the model through the template.
The wax rim can now be somewhat retracted for setting up.
A small drop of sticky wax will hold the positioning screw.



The lower jaw can now be set up against the template. After removing the template holder, the articulator is once again complete.

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 10.3 3D Setup template for upper jaw model (Mat. No. 1.002.4919)

This flat setup aid for the edentulous upper jaw model is aligned by the upper wax rim.

To achieve this, the setup aid is held against the upper wax rim by a rubber band.

The setup aid is then individually fixed in the lower section of the articulator by a small amount of plaster.





https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 10.4 2D Setup aid for the upper jaw (Mat. No. 1.001.9452)

This accessory is both a plastering and a setup aid for the edentulous upper jaw.

After retracting the papilla screw ① and pushing back the setdown slider ②, settting up of the upper jaw model can now begin.



A 10.5 2D Setup aid for the upper model for screw mounting (Mat. No. 1.001.9451)



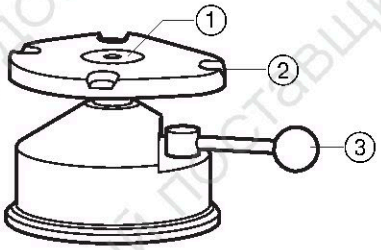
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

A 11 Milling table with transfer plate Split system

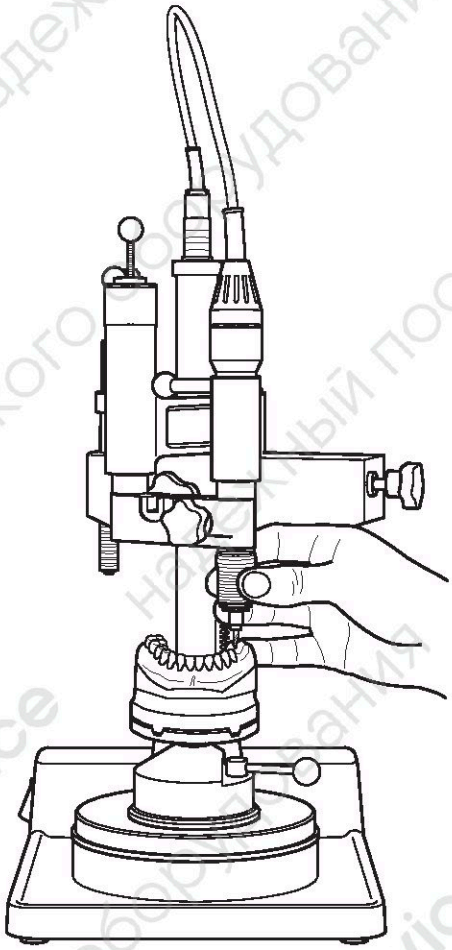
For dental laboratory work required milling operations, it is often necessary to transfer the model alternately between articulator and milling machine.

① Magnet
② control bases
③ lever



The magnetic force provides secure holding of the work also during milling operations.

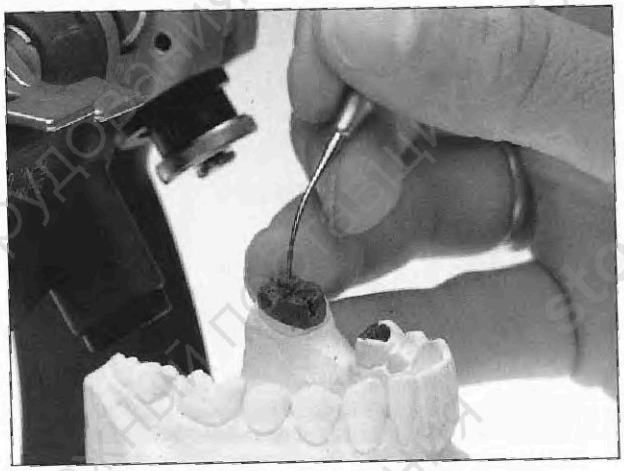
The edge-to-edge fit of the split cast system based on the articulator mounting plates guarantees precise holding of the work. The model is set just once for the milling work and can then be rotated as often as required without the need for further adjustment.



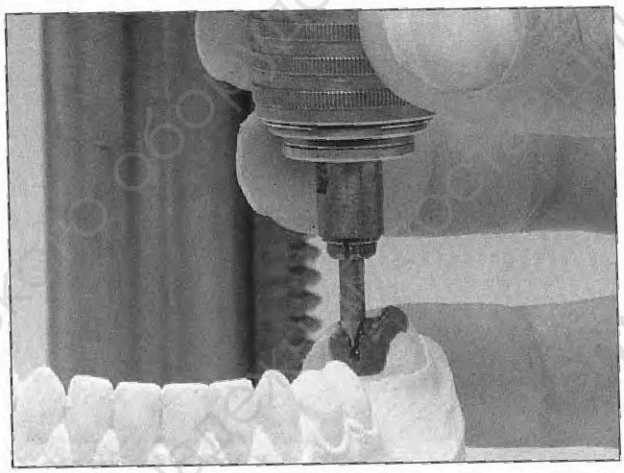
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

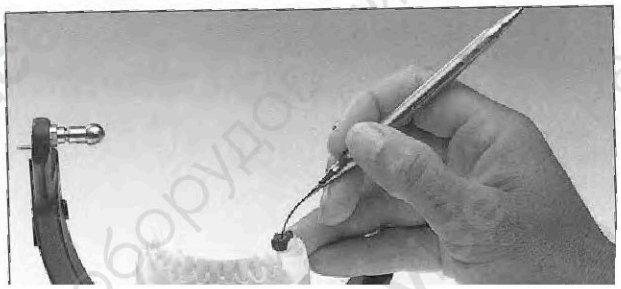
Occlusal features can be constructed in the articulator.



The necessary milling work can be carried out at any time.



By accurate fit of the transfer between articulator and milling machine, all work stages can be continuously controlled.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

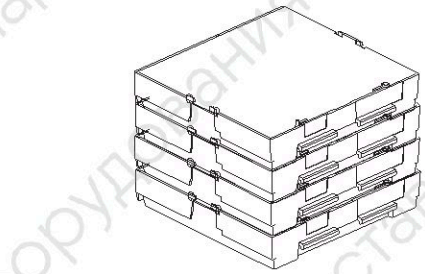
PROTAR® evo.

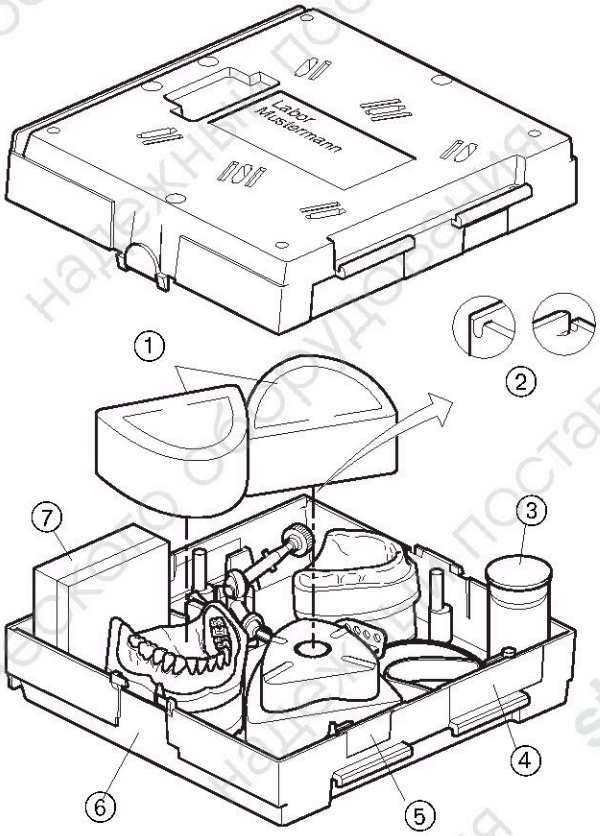
A 12 Transport Box KaVo LOGICase

KaVo LOGICase the economic stackable transport box between the dental practice and laboratory.

KaVo LOGICase is a transport box and work tray in one unit.

① Foam sponge for holding the models (50 pieces. 1.000.9351)
② For the first application at ERGOspace the side latches are opened.
③ Round canister for small parts (50 pieces. 1.000.9353)
④ Field for barcode
⑤ Field for patient's name
⑥ 10 boxes (20 half-trays 1.001.1511) 50 boxes (100 half-trays 1.000.9355)
⑦ Square container for registrations (50 pieces. 1.000.9354)





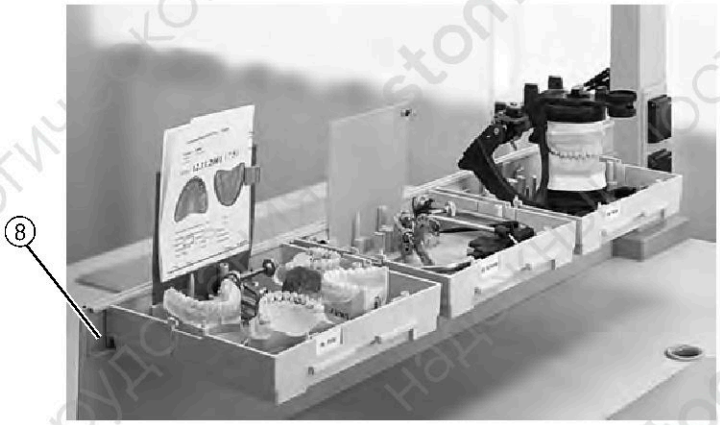
⚠ *Hygiene:*
LOGIcase can be disinfected with conventional materials.

Following contents are possible:
- 4 models
- or 4 impression trays
- KaVo ARCUS bite fork holder
- 2 containers for registrations
- 2 canisters for small parts

Special holder ⑧ for KaVo laboratory furniture programme.

Universal insert for all further furniture programmes ⑧.





https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

PROTAR®evo.

A 13 Technical data

EWL PROTAR®evo 3, 5, 7 and 9
articulators

Lower section
Intercondylar distance = fixed 110 mm

Support pin
Adjustment range from + 10 mm to - 10 mm
with locking facility

Incisal table flat

Incisal tray 20°
(Accessories 10°, 30°, 40°,50°)

Height 120 mm
with mounting plate 108 mm
+ with split cast 97 mm

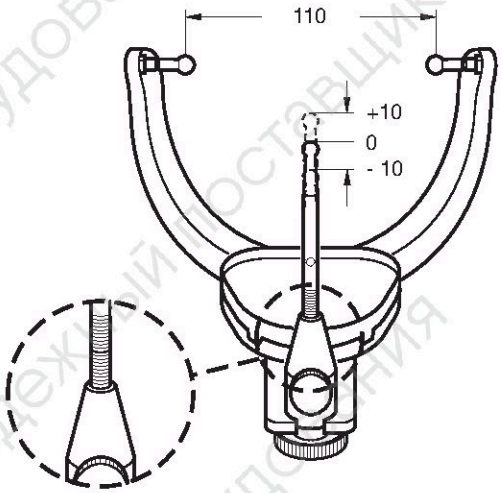
Balkwill angle 20°

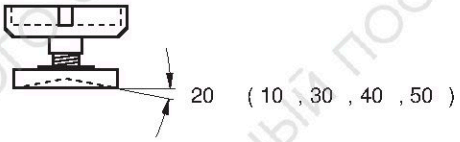
Camper's plane (CE)
parallel to the table plane

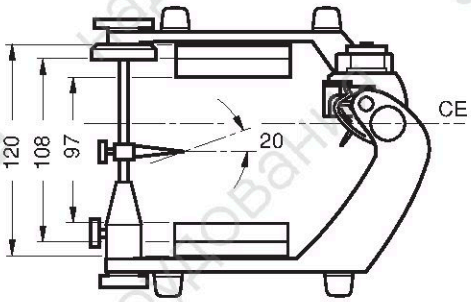
Bennett angle, curved
(after 5 mm excursion)

Weight (with Split-Cast)
Articulator lower section 490 g
Articulator upper section
PROTAR 3 360 g
Articulator upper section
PROTAR 5/7/9 520 g

Technical modifications reserved







https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

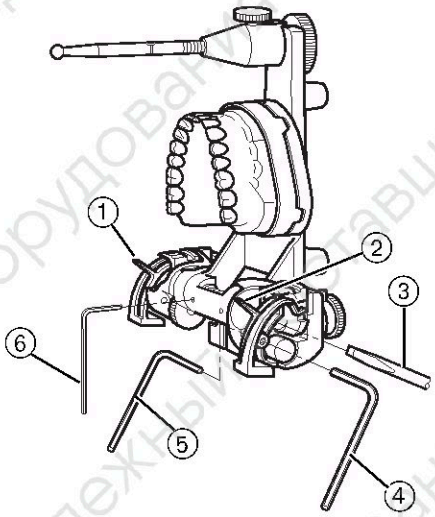
PROTAR® evo.

A 13 Maintenance and adjustment

Before starting up operation, spray the articulator with commercially available release agents (silicone sprays) - do not apply grease.

Apply a light film of oil to ball joints ⑧, magnet retention system ⑨ or mounting plate thread as required.

If the clamping levers for the HCI no longer clamp properly, they can be re-adjusted.



Tool:

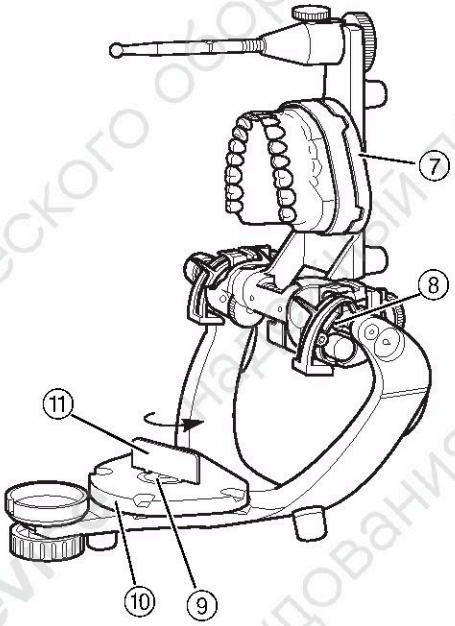
Hexagon-slot wrench 1.5 mm ⑥

Screwdriver 4.5 mm ③

For re-adjusting the centric locks ① and ②.

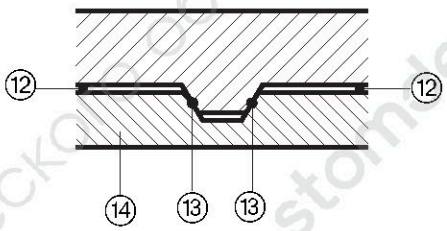
Hexagon-slot wrench outer 3 mm ④

Hexagon-slot wrench inner 2 mm ⑤

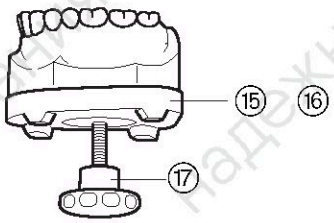


Split-cast mounting in PROTARevo 3/5/7/9. (It is advisable to check every six months with measuring and adjusting gauge 0.622.1221.)

Unscrew magnet retention system ⑨ with magnet key ⑪. For reasons of accuracy, the split-cast is aligned onto flanks ⑬. The mounting plate must come flush with the flanks ⑬. The gap ⑫ between the split cast ⑭ and the mounting plate must be parallel.



On completion of the work, press off the model using the star grip screw ⑰ of the mounting plate ⑮ - ⑯. Then clean mounting plates ⑮ - ⑯.



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

Guarantee conditions

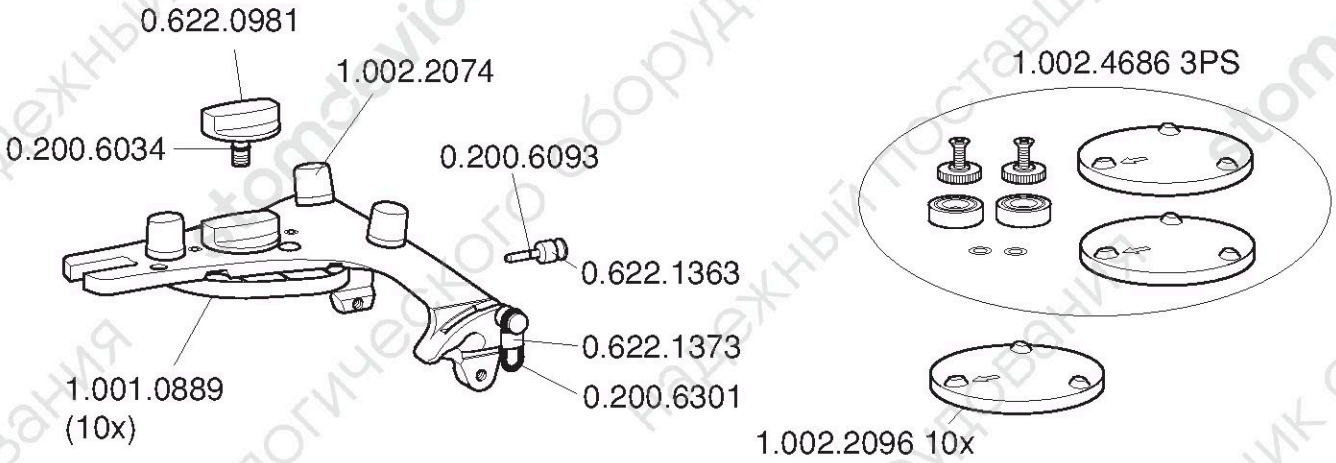
Under valid KaVo EWL delivery and payment conditions, KaVo EWL gives a guarantee of satisfactory function and freedom from faults in material and manufacture for the duration of 6 months from the date of sale certified by the vendor. After expiry of the warranty, KaVo gives a guarantee of another 6 months for damage attributable to deficiencies in the material or in manufacture.
In the case of justifiable complaints, KaVo EWL shall supply spare parts or carry out repairs free of charge. KaVo EWL accepts no liability for defects and their consequences which have arisen or could have arisen as a result of natural wear, improper handling, cleaning or maintenance, noncompliance with the maintenance, operating and connecting instructions, corrosion, impurities in the air supply or chemical or electrical influences which are unusual or not admissible in accordance with KaVo's instructions. The guarantee shall become null and void if defects or their consequences can be attributed to interventions in or modifications to the product. Guarantee claims can only be validated if they are notified immediately in writing to KaVo EWL..

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

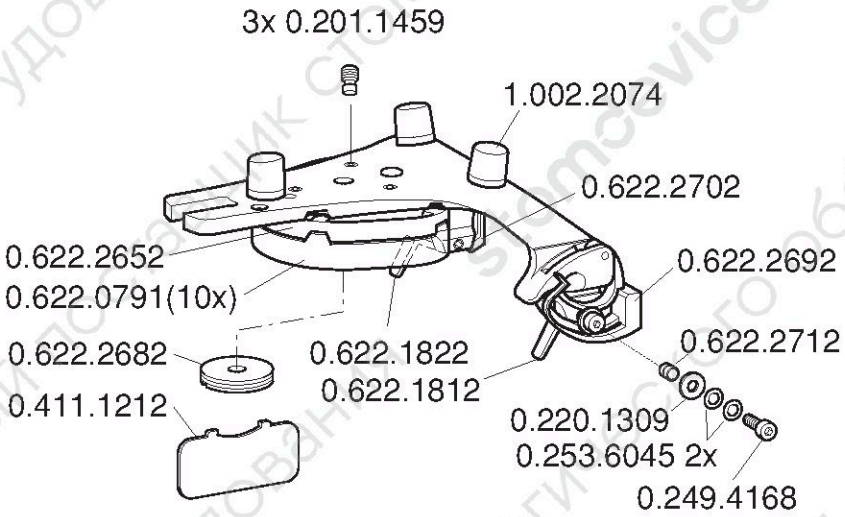
Spare parts PROTARevo 2

Mat. No. 1.002.3905 without Split-Cast

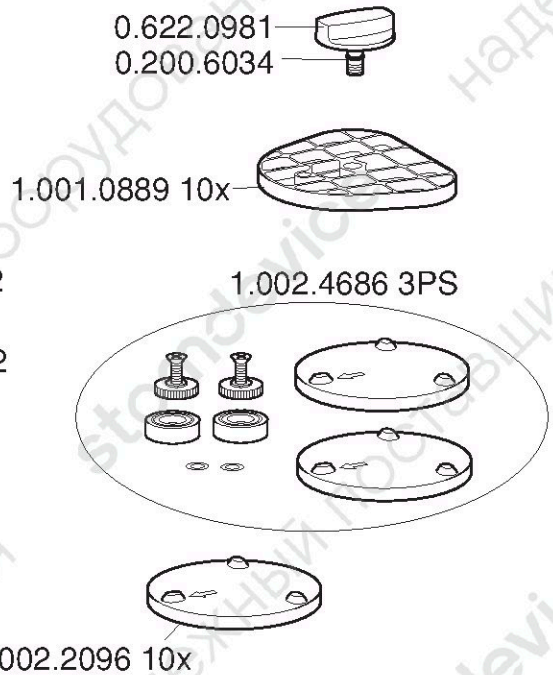


PROTARevo 3

Mat. No. 1.002.3307 with Split-Cast



Mat. No. 1.002.3306 without Split-Cast

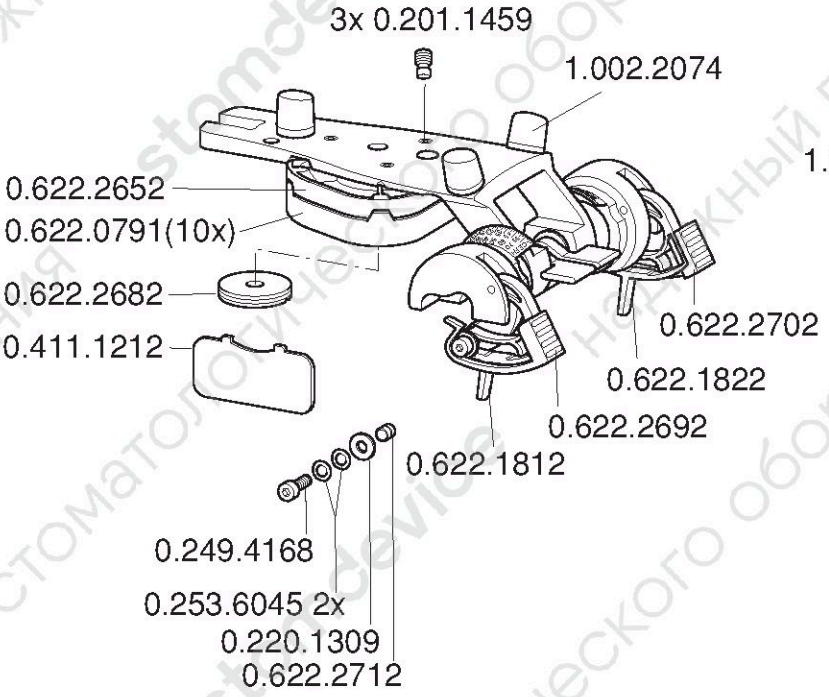


https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

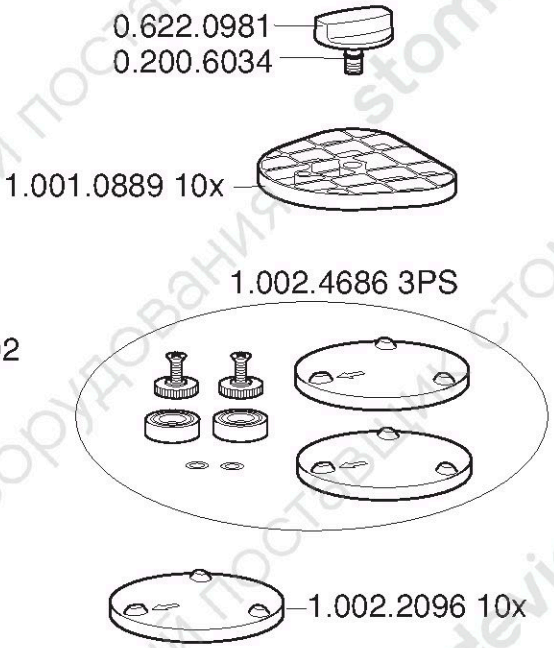
PROTAR® evo.

PROTARevo 5

Mat. No. 1.002.3311 with Split-Cast

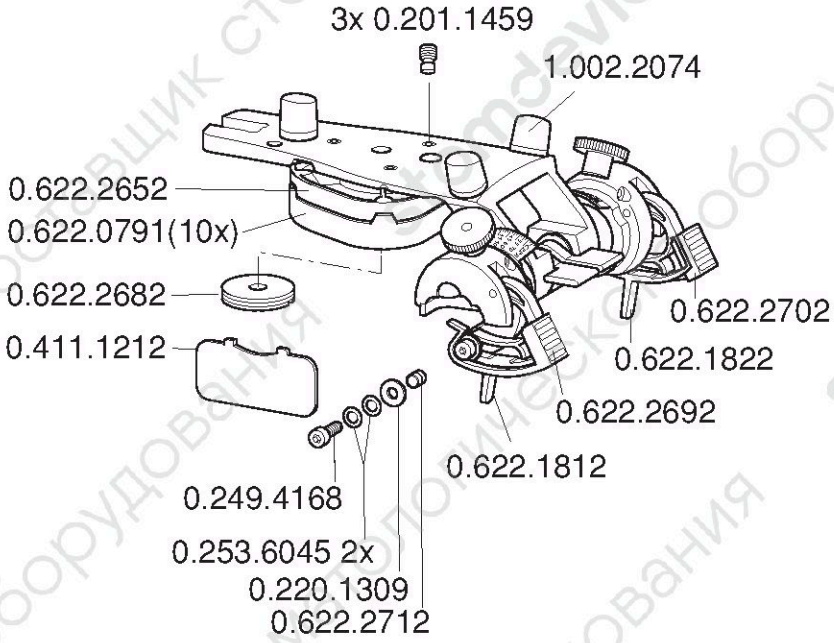


Mat. No. 1.002.3310 without Split-Cast

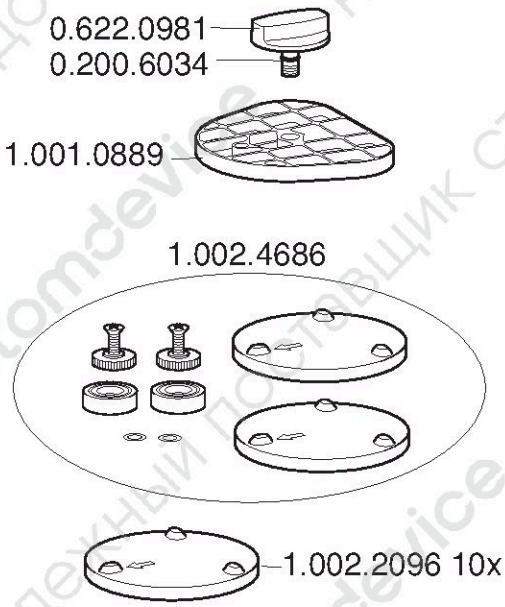


PROTARevo 5B

Mat. No. 1.002.3315 with Split-Cast



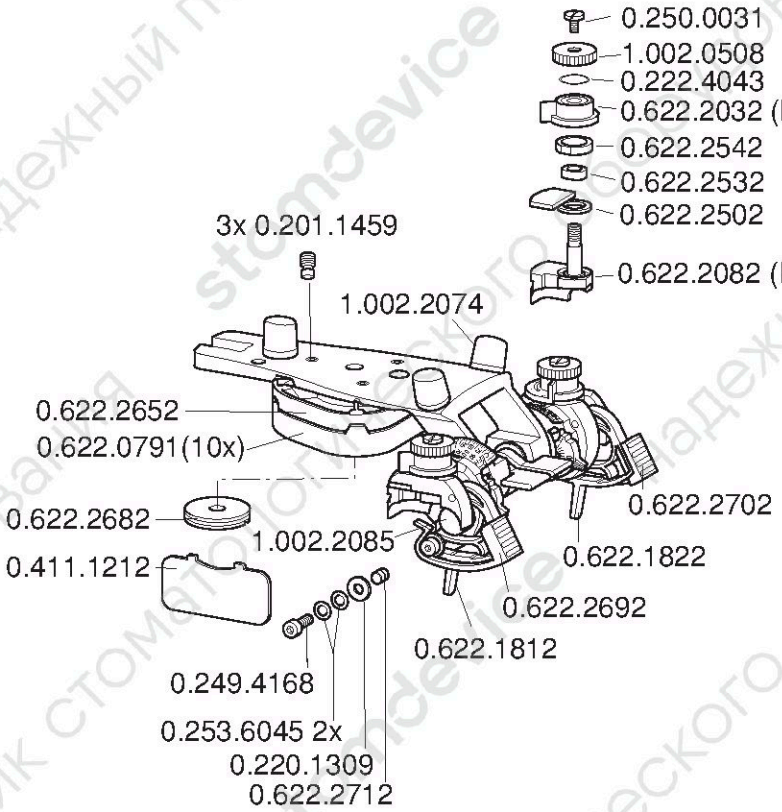
Mat. No. 1.002.3314 without Split-Cast



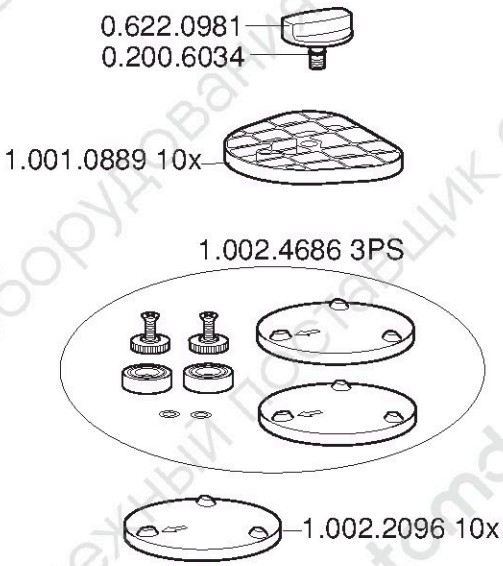
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTARevo 7

Mat. No. 1.002.3319 with Split-Cast

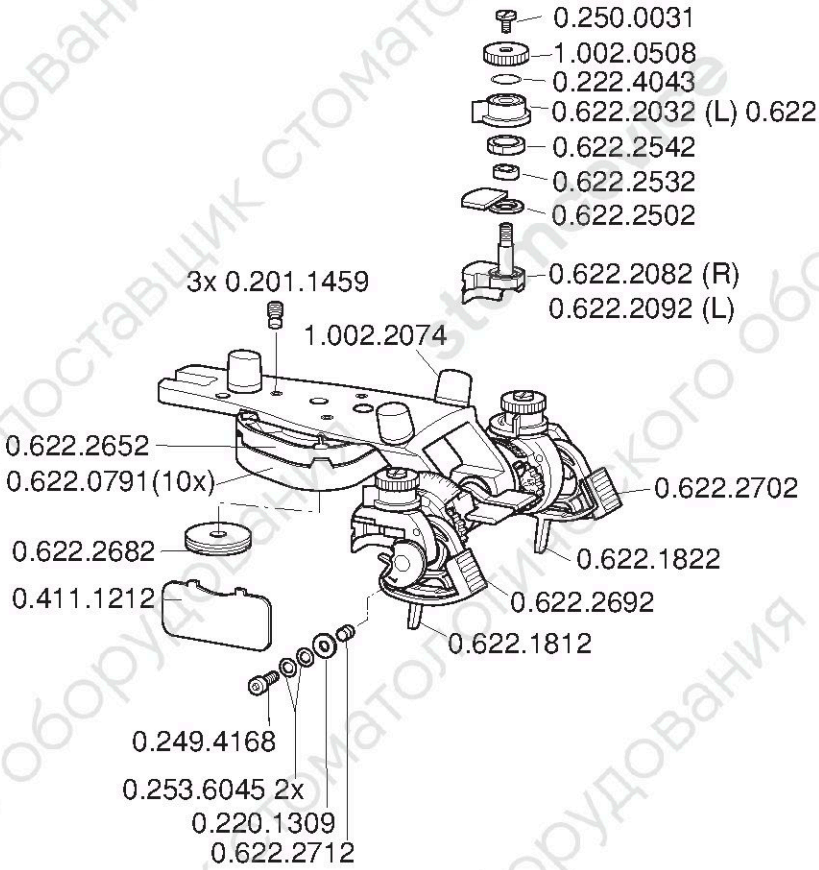


Mat. No. 1.002.3318 without Split-Cast

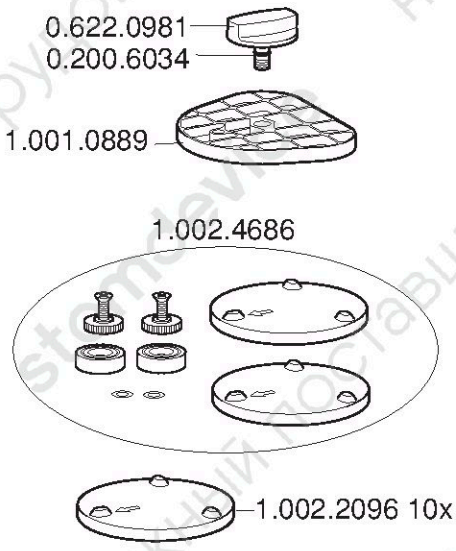


PROTARevo 9

Mat. No. 1.002.3323 with Split-Cast



Mat. No. 1.002.3322 without Split-Cast



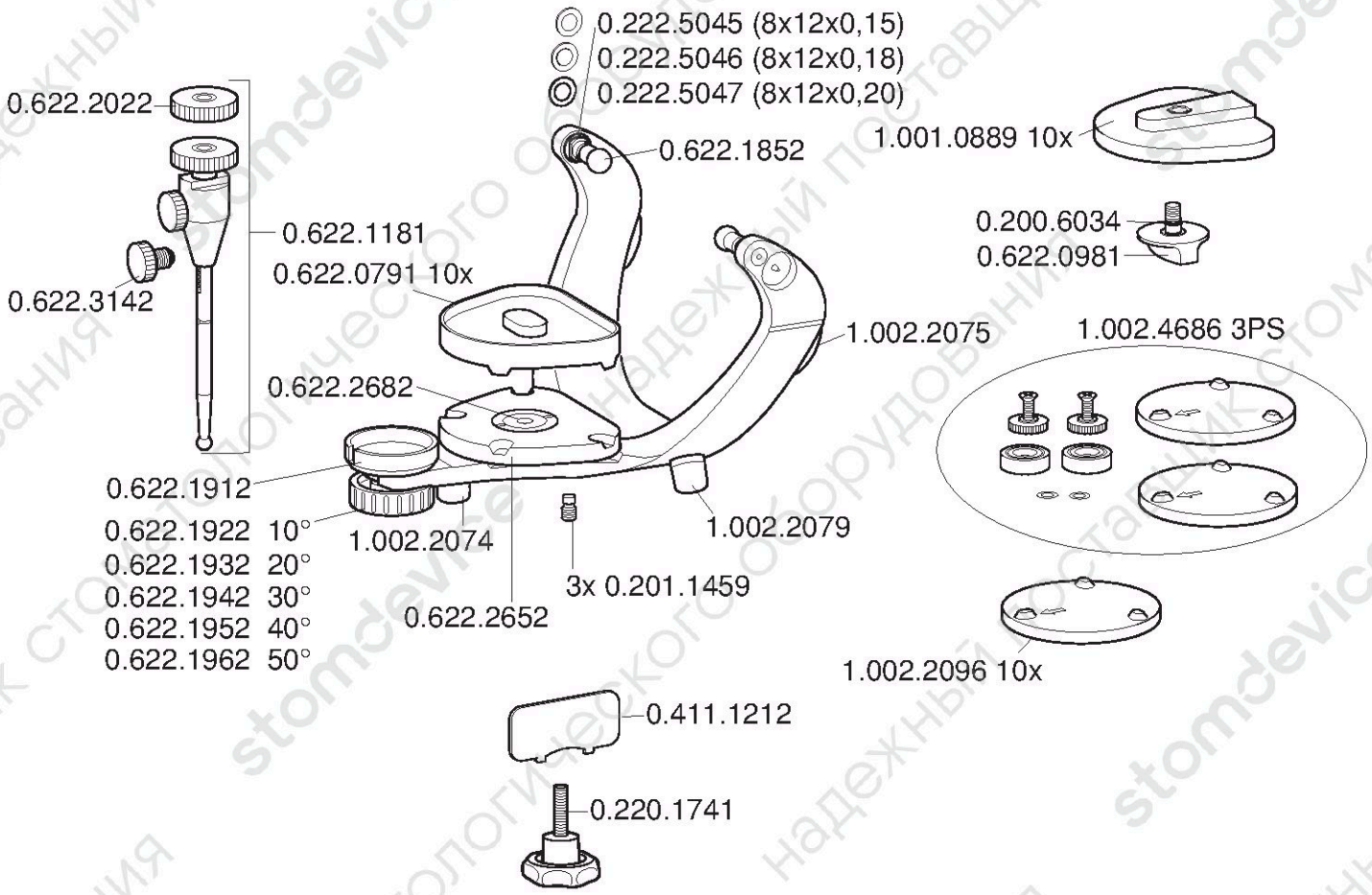
https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

PROTAR® evo.

PROTARevo lower section

Mat. No. 1.002.3266 with Split-Cast

Mat. No. 1.002.3265 without Split-Cast



https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

stomdevice

1.002.5701 • RB • 07/03 • GB • 09.20

KaVo. Dental Excellence.
D-88299 LEUTKIRCH.
Telefon 07561/86-150 · Fax 07561/86-265
Internet: www.kavo.com

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ