

KaVo ARCUSdigma – a milestone on the way to the digital practice

ARCUSdigma – the 3-D Navigator. Your ideal support in diagnosis and therapy.

It was never that easy!



KaVo. Dental Excellence.

What is the meaning of electronic movement analysis...

... in prosthetic therapy

With the use of ceramic materials in prosthetic treatment today, excellent aesthetical restorations can be realised.

The successful, economical use of ceramic materials, more than ever requires a functional chewing surface. The expenditure of time for correcting malocclusions and the danger of damaging the ceramics when carrying out such corrections, can be largely or fully avoided.

The ARCUSdigma takes only a few minutes, to precisely determine all articulator settings and supports the dentist in determining the centric position of the lower jaw.

...in diagnosis

Temporomandibular joint troubles are being diagnosed for an ever-increasing number of patients. The ARCUSdigma analyses and documents temporomandibular movements and the therapeutic process for profound diagnostics. ARCUSdigma localises painful temporomandibular positions, using special, optionally available analytical software (according to Prof. Dr. A. Bumann). An integrated calculation module, permits the practice-oriented therapeutic realisation of the findings, with the KaVo PROTARdigma articulator, immediately after the diagnostics. Thus, it becomes possible to realise not only the therapeutically necessary occlusion, but for the first time, also to carry out dynamic occlusion in the dental laboratory and not be limited to achieving this time-consuming procedure in the dentist's chair.



Clinical studies attest to a very good reproducibility of ARCUSdigma measurements, for articulator programming.

Journal of Oral Rehabilitation: Reproducibility of jaw movements, in patients with craniomandibular disorders.

M. Stiesch - Scholz, A. Demling & A. Rossbach
Department of Prosthetic Dentistry, Hannover Medical School, Hannover, Germany



All advantages of the ARCUSdigma at a glance:

Functional denture

Savings, by massive reduction of occlusion adjustments in the patient's mouth.

- Calculation of all settings for fully-adjustable articulators, in less than 5 min.
- Upper jaw model mounting according to KaVo transfer system, or individual axis determination. With the option to select a large number of articulators from other manufacturers (page 10).
- Analysis of the centric position of the lower jaw, for the lower jaw model mounting (optional with electromyographic support).



Clinical studies of the University of Zagreb, showed up to 34% time-saving, by using the ARCUSdigma for occlusion adjustments, compared to a mean-value articulator combined with a face-bow.

Occlusal Adjustment Time Consumption Analysis, of FPDs made using Electronic and Non-Electronic Articulator-related Bite Registrations. (11.2010)

Dept. of Prosthodontics, School of Dental Medicine,
University of Zagreb, Croatia.
CATIC A, VOLAREVIC, BERGMAN L, CATOVIC A

Hygiene

without compromise, by customary smooth-surface wipe disinfection

- The ARCUSdigma concept, is based on decades-long experience with hygiene.
- Smooth, disinfectable pushbuttons and a foot-switch, control all aspects of the instrumental assessment.
- The dentist does not need a PC keyboard, while taking measurements of the patient.

Temporomandibular joint diagnosis, treatment of CMD patients

ARCUSdigma analyses and documents all necessary data, for this highly-lucrative market segment.

- Efficient movement analysis developed by professionals, for a profound diagnosis, displaying the kinematic axis and the incisal points.
- Complete documentation of therapeutic progress, in movement analysis.
- Determination of painful temporomandibular joint positions and calculation of dynamic splints. (According to Prof. Dr. Axel Bumann)
- Analysis of a therapeutic position of the lower jaw, for static splints and definitive denture, respectively.
- Optional communication with specialists, by means of a data export function, via the Internet.

Integration into the workflow

The cost-effectiveness of a practice becomes ever more important. Integrated solutions are the basic pre-requisites for new technologies.

- Compact design: immediately usable in all treatment rooms, without assembly.
- Integration options for KaVo treatment centres.
- The ARCUSdigma software is network compatible. 6 licenses for 10 terminals each.
- Simple and fast programme update, via the Internet.



Data transmission to the KaVo PROTARdigma articulator.

"Simply ingenious therapy"

Complete data transfer from the patient to the articulator is called PROTARdigma. Upper jaw model mounting with the KTS system by KaVo, or classical model mounting by means of arbitrary and individual hinge axis respectively, are the basis for any articulation. Dynamic movement parameter settings at the articulator joints and

lower jaw model mounting using ARCUSdigma, make it possible to ideally achieve the desired goal.

Upper jaw model mounting: either the ingeniously simple KTS method by KaVo



or classical model mounting, following an individual centric axis.



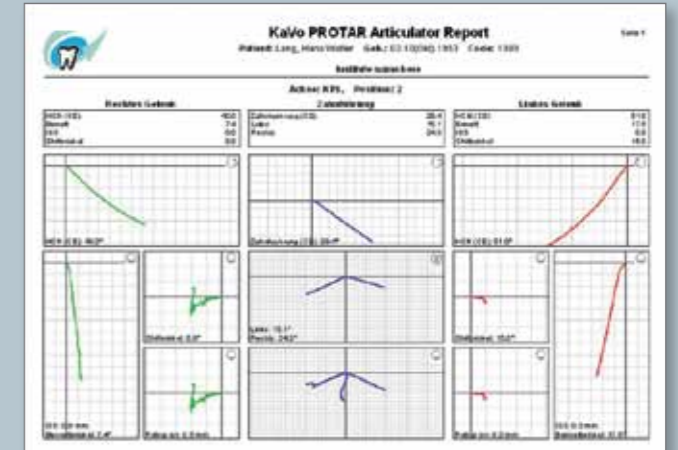
When using the KaVo PROTARdigma articulator, model mounting does not require a face-bow.

Your therapeutic success:

Analysing with ARCUSdigma...

ARCUSdigma data sheet

- Condylar path inclination
- Bennett angle
- Immediate side-shift
- Shift angle
- Anterior tooth guidance
- Canine guidance
- Localisation of the individual centric and kinematic axes, respectively
- Determination of the centric relation
- Localisation of painful temporomandibular joint positions



Example of an ARCUSdigma data sheet

...reproduce with PROTARdigma.

The legendary, highly-precise mechanics of the KaVo PROTARdigma articulator, reproduce all the movements necessary, for prosthetic therapy. Thus, the PROTARdigma articulator, provides the pre-requisites for designing a functional, chewing surface.



Temporomandibular joint diagnosis – safety due to sound support.

Analysis of the complex lower jaw movements, is the basis of a temporomandibular joint diagnosis.

The trajectories of the two temporomandibular joints and the incisal points, are shown in real-time.

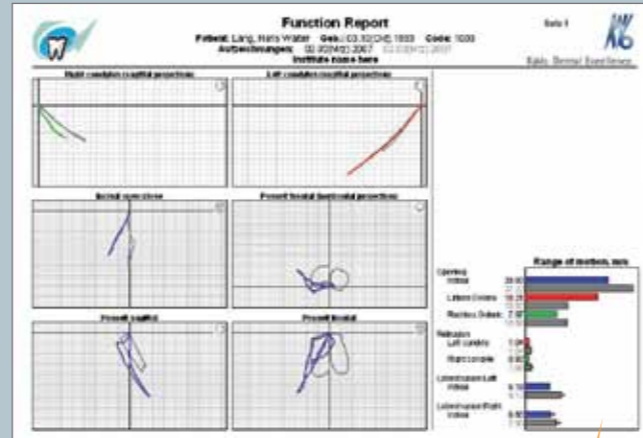
The three-dimensional movements are clearly displayed in real-time. The defined operating sequence of the ARCUSdigma, facilitates the assessment and its documentation.

Imaging procedures are an important tool in temporomandibular joint diagnosis.

In particular, static lower jaw positions can be represented.

Here ARCUSdigma offers decisive advantages, for diagnosing dynamic movements.

To record a therapeutic process, the results before and after the therapy can be graphically superimposed.



ARCUSdigma Function report

The ARCUSdigma software package, creates clearly laid out diagrams, for assessing and documenting the selected therapy.

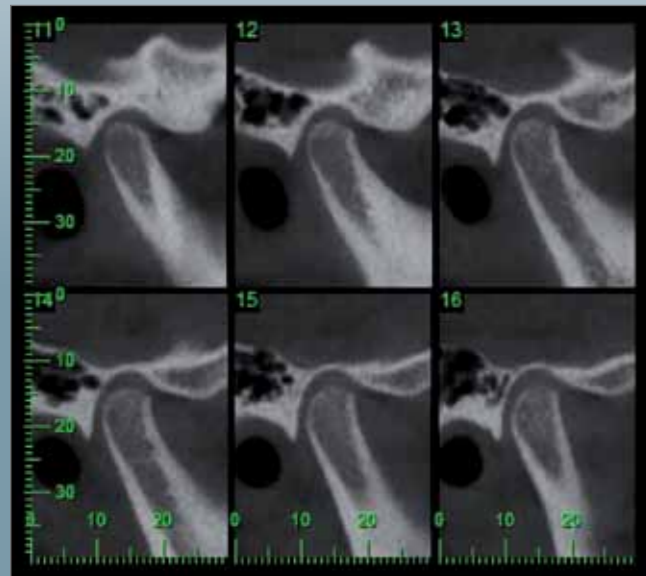
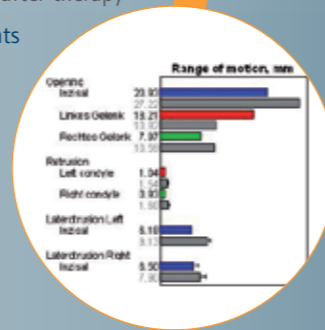
Right temporomandibular joint before therapy

Right temporomandibular joint after therapy

Left temporomandibular joint before therapy

Left temporomandibular joint after therapy

Movements of the incisal points



Example of imaging procedures (MRT, DVT), in temporomandibular joint diagnosis



- Flawless visualisation, by integration into the treatment centre.

Take advantage of patient-oriented visualisation of the ARCUSdigma software package, as a target-oriented marketing measure, in your practice.

During measurement with the ARCUSdigma and the subsequent counselling interview, all movements are displayed on the monitor, in an easy-to-understand manner.

Statements and information from the patient, can be documented via a special input field and can be assigned to the patient, in the

ARCUSdigma database.

Representations of a therapeutic process, by measurements before and after the therapy, support clinicians in their daily practice. Measured data can be sent digitally, to practices and laboratories worldwide.

Mechanical adaptation, at the assistant element of the KaVo ESTETICA E70/E80. Data transfer, via the optional USB interface of the unit.



KaVo is the only manufacturer worldwide, offering an integrated solution.



Handling as simple as a face-bow.

The new KaVo ARCUSdigma face-bow, ideally assumes two tasks.

- Fixing the measuring sensor at the patient's head
- Transfer of the upper jaw model into the articulator

Together with a padded nosepiece, a support behind and above the ear, fixes the upper part of the sensory system to the patient's head.

The lower part of the sensory system, is fastened para-occlusally to the lower row of teeth, in order to be able to simultaneously analyse tooth guidance.

The ARCUSdigma control/display unit, assumes the complete measuring management. Easy-to-clean control panel with touch screen and TFT color display.



Testimonials.

Dr. U. Wegmann, Bonn University, wegmann@uni-bonn.de

Particularly during the past few years, we have increasingly learned how important occlusion is, not only for our stomatognathic system, but likewise, for the entire holding and supporting apparatus. Therefore, I consider it extremely important both for function diagnosis and therapy, as well as for the regular prosthetic treatment of my patients, to have reliable methods for adjusting a perfect function-oriented occlusion. With the ARCUSdigma registering system, for the first time I now have an instrument at my disposal, that offers all necessary modules for both diagnosis and therapy. In addition to the three-dimensional movement analysis of the condyles, including the incisal points, with the ARCUSdigma I can now use a computer-assisted procedure, to record all parameters for articulator programming, plus for the first time also the centric positions, using different methods. This ideal combination of multiple diagnostic and therapeutic possibilities, makes it an indispensable instrument in my everyday practice, for supplying high-quality prosthetic replacements and function therapy.

Dr. C. Mentler, Dortmund, praxis@drmentler.de

In addition to the possibility of fast and safe articulator programming, the ARCUSdigma offers recording of the individual joint paths and assists in spatially recording the position of the lower jaw. In this context, it is possible to compare the centric contact position with the habitual contact position and various manipulated positions of the lower jaw. The ARCUSdigma is a helpful complement in dental function diagnosis.

Dr. K.- R. Herrmann, Lübeck, www.kiefergelenkorthopaedie.de

Since January 2009, I have been using the ARCUSdigma with the optionally available EMG module in my practice. What could not be initially envisaged as such, but has turned out to be very important, is the use I am making of electromyography (EMG) in sight of my patients, using a wall monitor (also as biofeedback), which has become a fixed element of my treatment concept: "Temporomandibular joint orthopaedics". The temporomandibular joint orthopaedics® of Dr. Herrmann, can be carried-out with perfection, only with EMG-controlled

occlusion optimisation. As a quality control, the EMG measurements document biofunctional muscle harmony in a chewing system, adjusted with mandibular joint orthopaedics. Thus, this EMG measuring method employed for controlling the function therapy, is the mandatory pre-requisite for the KGO therapeutic approach to a dental "forever young"®. (® = DPMA registered).

Dr. Pfanne, Steina, fpfanne@t-online.de

We have been using ARCUSdigma in our practice for 2 years. Thanks to ARCUSdigma, we are able to transmit the patient information to our laboratory, in a very "close-to-reality" fashion. We were able to achieve improvements, both in splint therapy and prosthetic treatment. The use of the technology is simple, relevant for our practice and comfortable for the patient. The associated software package is "mature" and has been completely integrated into the practice routine. We are therefore totally convinced users of ARCUSdigma.

Dentallabor Herbert Thiel GmbH, Amtzell, www.thiel-dental.com

Several hundred ARCUSdigma measurements, both with the ARCUSdigma 1 and the new, distinctly more comprehensive ARCUSdigma 2, have for many years been the basis of our extensive, functional restorations. Due to the numerous analytical options of the ARCUSdigma 2, we obtain extensive, reliable patient data, for elaborate, complete restorations. With the data from the EPA test and a confirmed ARCUSdigma centric, we produce not only bite splints, but also Re-Po splints with functional elements. The possibility to program our PROTAR articulator three-dimensionally, according to measured ARCUSdigma values, makes it possible for us to create occlusion surfaces that are not only visually attractive, but also functional. The purchase of the ARCUSdigma for our laboratory, with the intention to make it available to our customers, has turned out to be a high-quality marketing tool.

Dentallabor Mühe GmbH, Cottbus, info@muehe-dentallabor.de

Due to the optimal temporomandibular joint measurement with the ARCUSdigma and the transfer of these values to the articulator, a precise, functional chewing surface and anterior tooth design is possible.



ARCUSdigma variants and accessories.

		Material number	ARCUSdigma USB 1.005.2301	ARCUSdigma SD 1.002.2300
Articulator programming	KaVo PROTAR		●	●
	SAM		●	-
	Girrbach Artex		●	-
	Reference		●	-
	Stratos		●	-
	Panadent		●	-
Determining centrics	guided centric		●	●
	Adduction field		●	-
	Gothic arch		●	-
Lower jaw positioning			●	-
Movement analysis	Diagnosis module		●	●
Comparison of occlusal position	EPA		●	●
Localisation of painful temporomandibular joint positions	EAEF	1.005.4122	○	-
Analysis of muscle activity	EMG	1.005.4123	○	-
PROTARdigma		1.005.4121	○	○
Attachment to KaVo E70/E80		1.005.4127	○	○
Active USB extension cord (5m)		1.004.6953	○	-
Upper jaw bite fork		1.000.8518	●	●
Lower jaw attachment		1.000.9291	●	●
Support pin registration with ARCUSdigma		1.002.9162	○	○
Occlusal plane display		1.002.5159	○	○

● Standard equipment ○ Optional equipment - Not possible

Technical specifications.

Sensory system

- Ultrasonic run-time measurement 40 KHz
- 16 Measuring paths
- Measurement accuracy +/- 0.1 mm
- Reading rate 50Hz
- Weight lower jaw sensory system 38 g

ARCUSdigma control unit

- Medical Device Class 1
- W 345 mm, D 300 mm, H 100 mm
- Weight 340 g
- Mains/battery operation
- Data storage via USB port or SD card

Databases

- Central database for storing arbitrary digital information
- Import/export function, for static and dynamic measurements
- Network software, with 6 licences for 10 workstations each, included

ARCUSdigma analytical software

- For Windows XP, (Windows 7. 32/64 Bit currently under way).
- Coordinates of the selected axis system and the incisal points.
- Measuring path recording +/- 0.1 mm
- Angle values +/- 2°
- Distance/time diagram
- Muscle activity potential (optional)
- ASCII data export (e.g. virtual articulator for CAD CAM)



ARCUSdigma also solves your task!

Therapy support



- Articulator programming, for fully-adjustable articulators.
- 3 methods for centric determination.
- Analysis of a therapeutic position (for static splints).

Diagnosis support



- Mandibular movement analysis
- Localisation of painful temporomandibular joint positions (optional), for dynamic splints.
- 3D comparison of arbitrary occlusal positions.
- Analysis of muscle activity (EMG) optional.

Workflow



- Integration into the treatment centre.
- Integrated, electronic face-bow
- Can be operated without PC during measurement
- Export/import function
- Network software
- Compact design
- Battery operation possible

Further information



- ARCUSdigma live treatment (CD/DVD)
www.kavo.com/arcusdigma



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