Mastering Occlusion

GAMMA DENTAL®

Products 2026

valid from March 01, 2026

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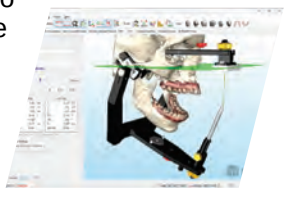
1/1 About GAMMA

The Only Constant is Change – The Only Certainty is Precision



In functional occlusal medicine, averages are unsafe shortcuts. Effective diagnosis and therapy of the stomatognathic system must reflect the individual patient's joint anatomy, neuromuscular control, as well as occlusal dynamics. At GAMMA, our guiding philosophy is simple: measure rather than assume, prevent errors before they happen, and be in control of each step in the protocol. This philosophy is the basis for capturing kinematic hinge-axis information, carrying it intact through virtual occlusion analysis and design, and reproducing it in the physical articulator for clinical verification before patient delivery.

The year 2026 brings a host of significant advancements in GAMMA's product line, beginning with the new version 8.9 of GAMMA Dental Software®. This update comes with an automated model alignment in the digital workflow for a quick and precise articulation of intraoral scans, support for face scans and textured 3D models, as well as a combined export of multiple lower jaw movements to the popular CAD/CAM application exocad. In addition, the CADIAX recording now allows the reference position to be refixed within the coordinate system view, and the entire software receives preliminary support for use within Parallels Desktop on macOS.

With great enthusiasm and passion, we will continue our strive to improving our products and services – for the benefit of the patients and the satisfaction of our customers. We appreciate your commitment to GAMMA's excellence in functional dentistry, and we thank you for your lasting interest and loyalty to our products and services.

Your GAMMA Team

1/2 About GAMMA

GAMMA – Introducing the Team

GAMMA is not only distinguishable by its ideas, products, and services, but even more so by its team of enthusiastic employees. Cooperation among the individual areas of expertise is absolutely essential for the smooth functioning of our customer-oriented concept.

According to the structure of the company, each staff member has been allocated responsibilities and to make it easier for you to find immediately the right person in charge and to provide you with an overview of the corporate structure, we would like to introduce our team:

Fritz Engleithner

Production, Procurement, Sales

Fritz Engleithner is the head of our production, procurement, and sales departments. He ensures that our products are manufactured and distributed to the highest possible quality standards.

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f.engleithner@gammadental.com

Thomas Haberl

Assistant General Manager, Research and Development, Product Management

Thomas Haberl assists the general management and coordinates GAMMA's ongoing development and research efforts. His expertise lies in software, measurement technology, and digital solutions.

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t.haberl@gammadental.com

Angelika Pokorny

Internal Sales, Accounting

Angelika Pokorny ensures a smooth customer experience from original order to delivery. She takes care of the internal communication and directs incoming customer inquiries to the appropriate staff member.

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Arlinda Emini

Internal Sales, Accounting

Arlinda Emini ensures a smooth customer experience from original order to delivery. She takes care of the internal communication and directs incoming customer inquiries to the appropriate staff member.

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1/3 About GAMMA

Markus Nurschinger

Marketing, Social Media, Quality Management

Markus Nurschinger manages our marketing communication and attends to our social media platforms. He also supports internal processes and quality assurance.

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Michael Vavryn

Quality Management, Regulatory Affairs, Customer Support, Service, Sales, Hardware Development

Michael Vavryn is your first contact for all service inquiries regarding our products. He also manages our hardware development and is responsible for product safety and regulatory affairs.

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Marco Filippovits

Production, Shipping

Marco Filippovits supports our internal and external production, assembly, and testing processes. He ensures that our products are shipped to customers timely and efficiently.

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Dominik Wilfing

Hardware & Software Development

Dominik Wilfing supports the development of GAMMA's software and hardware. He ensures that the products meet our own high standards and the expectations of our customers.

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1/4 About GAMMA

Important Information

Validity

With the publication of this catalogue, all previously published catalogues and price lists become invalid.

Product Information

The product information provided in this catalogue is limited to important characteristics and/or directions for use. This catalogue is not a substitute for the detailed descriptions and operating instructions that are included with the delivered products or available via our homepage www.gammadental.com.

Order Information

If not otherwise indicated, the article numbers always refer to one (1) unit. Any deviations from “1 unit” (e.g., package contents or sets, units, pair, 10 per package, etc.,) are marked accordingly.

Orders

To be valid, all orders must be made in writing. Please always use the GAMMA order form. To avoid incorrect deliveries, we recommend always including the article number, the number of units and the description.

Transport

Within Europe, all goods are shipped via Intersprint Transport GmbH.

Transport Costs

Transport costs are borne by the buyer and will be automatically included in the bill.

Terms of delivery

Within Europe, unless otherwise agreed upon, the delivery time is 10 business days from receipt of the written order. For deliveries to third countries outside the European Union, any applicable export and customs procedures must also be taken into account. If an item is not available within the stated period, we will inform the customer of the expected delivery date.

In case of collective (group) orders, GAMMA reserves the right to split such orders into multiple partial deliveries.

General Conditions

Our general business conditions are valid for all business transactions between GAMMA and its customers. This is especially applicable for all orders, deliveries, installations, billings, and services performed. Any deviation from these business conditions must be in written form.

You will find the general business conditions of "Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH ot the end of this catalogue or on our homepage at www.gammadental.com.

Replacement Parts

In this catalogue, only those spare parts are listed for which there is a regular demand for replacement. Please get in touch with your GAMMA service partner in case of any questions regarding other replacement parts.

Prices

All prices are listed in Euro, ex-warehouse Klosterneuburg, plus statutory sales tax and shipping costs. Prices do not include additional services for installation and training.

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About GAMMA

Suppliers, Partners, and Resellers in the European Union

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E-Mail: sales@bjfic.com
Web: www.bjfic.com

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1/7 About GAMMA

Quality Management - Management by and for the team

GAMMA's quality management team determines the important procedures and processes of our company. We don't just issue dictates; permanent self-analysis and constant improvements in our products are always in the foreground of our cooperative efforts. Our most important goal:

We offer tools for functional dentistry, perfectly suited for your dental practice.

You can find GAMMA online at www.gammadental.com. Our website provides 24/7 access to technical data sheets, instructions for use, and additional supporting information.

Furthermore, feel free to follow us on social networks to stay informed about product innovations, new software versions, education courses, trade show activities, and other interesting topics:

Facebook: GAMMA.Dental.Austria

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YouTube: @gamma_dental_official

Notes

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2/1 Articulator & Facebow

2/2 Articulator & Facebow

The Reference articulator system

The continuous developments in modern dentistry make ever greater demands on articulator systems. Their everyday application requires the highest precision, compatibility with other articulators and maximum flexibility. The increasing amount of cases requiring interdisciplinary therapeutic procedures calls for a system which can provide a standard basis for intercommunication. The development of the Reference system made a tool available, which provides solution-oriented procedures for simple standard cases as well as for complex "full mouth" reconstructions.

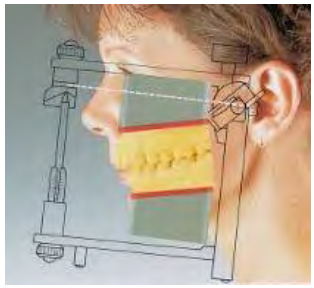
- Articulator/facebow system for arbitrary or exact mounting, relative to the hinge axis
- Synchronic calibration of articulators, with and without split-system
- An upgradeable articulator, from the simple occludator to the fully adjustable, all-purpose device
- Integrated magnet retention system
- Avoids problems caused by cast expansion, by means of block mounting
- Condylar position measurement (CPM), condylar position variation (CPV), measures and sets the occlusal plane, anterior tooth analysis
- Precast incisal table with various slopes up to a comfortable sequential table for wax-up of sequential occlusion
- Upgradeable facebows for electronic recording of the mandibular joint with CADIAX®
- Designed by practicians for the dental practice and the lab
- Designed by instructors for teaching and research

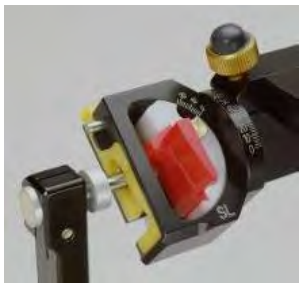
Reference SL – from centric stability to ex-centric perfection

The unique construction of the condylar housing in Prof. Rudolf Slavicek's Reference SL articulator solves this problem in a special way: not the condyles, but rather the axes, adapted from the hinge axis, glide on sagittal and transverse inserts, as lightly and easily as if on runners.

For the practice: Ideal for the everyday average patient: full dentures, part dentures, implants, full-mouth rehabilitations, functional analysis, goal-oriented initial therapy, orthodontics, orofacial surgery.

For the lab: They are all exactly the same. Safe, easy to handle, and multifunctional. Constantly upgradeable.





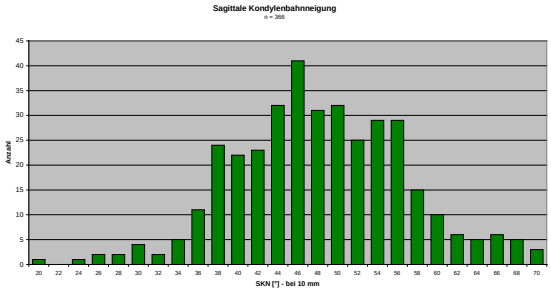
06-231380	**Reference SL articulator**
	Components and spare parts:
06-231347	Centric locks with setting rings, white (1x left, 1x right) for Reference SL from serial no. 06xxxx
06-231387	Centric locks, white (pair) for Reference SL from serial no. 07xxxx
06-231388	Distance ring (for Reference SL from serial no. 07xxxx)
06-231382	SL-centric O-rings, Ø 20mm / 2mm, red (pair)
06-231303	Reference support pin for articulator upper part
06-231383	SL retention magnet
06-231384	Magnet removal pin
06-231385	Reference SL posterior support pin
06-231912	Ball-shaped Allen key 2.5 mm
06-231308	SL Incisal pin unit
06-231307	SL Incisal pin
06-218180	SL incisal pin micro-adjustable
06-231365	SL slider

The Reference SL provides the guidance reliability of a Non-Arcon, without losing the didactic and dynamic-geometric advantages of the Arcon construction.

The user can see the guidance units and check the contact on the guide elements, without needing to perform any acrobatics to control the unit.

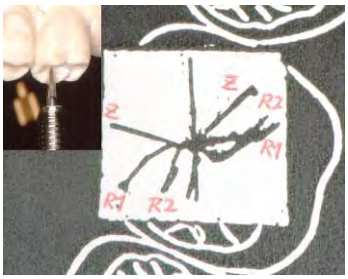
Reference SL – a practical all-rounder par excellence

The guidance elements are easily exchangeable. The user has any number of options, up to and including individually milled inserts. The articulator can be easily and effortlessly adjusted to the individual movement tracks.



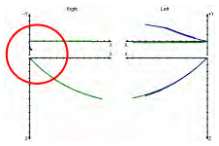
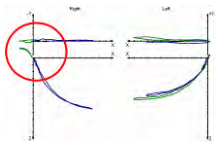
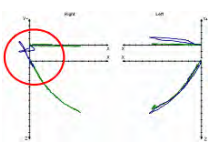
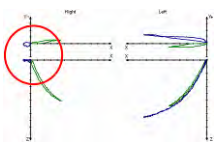
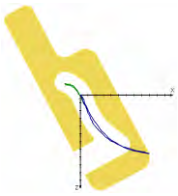
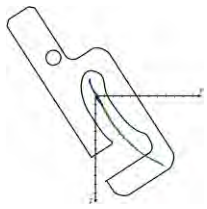
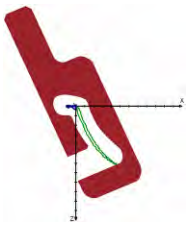
The statistics above, displaying the distribution of condylar guide inclination and compiled from registrations of over 300 patients, demonstrate the necessity of individual eccentric articulator programming.

An additional evaluation shows that the movement patterns of a large number of the patients indicate therapy-relevant retrusive movements. The SL articulator shows the differences in the formation of the occlusal surfaces.



Cusp tracks on the occlusal table showing different retrusive characteristics
(Z=none, R1=surtrusive, R2=detrusive)

2/4 Articulator & Facebow

	*Condylogram **without** working side retrusion*	*Condylogram with working side **retrusion***	*Condylogram with working side **surtrusion***	*Using a **detrusion** guide element*
Patient				
Articulator				

The SL articulator is ideally suited for displaying most mandibular movement patterns. The advantage: no time-wasting screwing and adjusting, just simply click in the guide.

06-231310	**Program Set SL** 26 pieces in a color-coded transport box, including 4 SCI inserts (pair) 4 TCI inserts (pair) 5 protrusion stop inserts (pair)

Components and spare parts:

06-231321	TCI insert black (1x left, 1x right)
06-231322	TCI insert white (1x left, 1x right) (standard equipment for articulator, not included in program set)
06-231323	TCI insert yellow (1x left, 1x right)
06-231324	TCI insert red (1x left, 1x right)
06-231325	TCI insert blue (1x left, 1x right)
06-231331	SCI insert white (standard equipment for articulator, not included in program set)
06-231332	SCI insert yellow
06-231333	SCI insert red
06-231334	SCI insert blue
06-231335	SCI insert black
06-231341	Protrusive stop, yellow 1mm (1x left, 1x right)
06-231342	Protrusive stop, red 2mm (1x left, 1x right)
06-231343	Protrusive stop, blue 3mm (1x left, 1x right)
06-231344	Protrusive stop, green 4mm (1x left, 1x right)
06-231345	Protrusive stop, black 5mm (1x left, 1x right)
06-231340	Protrusive stop set, orange 0.5 / 1.5 / 2.5mm (special part, not included in program set)
06-231346	Protrusive stop set, white 6 / 7 / 8mm (special part, not included in program set)

Protrusion Stop Set orange

Protrusion Stop Set white

Reference LF – the “Labfighter”, created for the hard work in dental labs

The semi-adjustable LF articulator is ideally suited for entry into the "Reference" line. The non-arcon construction guarantees a very good sliding behavior in the condyles. Thanks to the same height and front tooth guidance, it is ideally suited as an **addition** to the Reference SL articulator. For simple work but in the usual precision.

Benefits:

Easy to handle due to non-arcon construction method

Secure guidance, no lifting condyle due to non-arcon slide construction

High stability in centric (reference position)

Ideal for prosthetic work

To be used for many tasks in modern dental laboratory

Continuously upgradeable and fully integrated in the high-end Reference articulator line

Direct articulation of the upper cast with the Reference AB facebow

Special Mounting axis for a perfect and stable connection

Direct mounting with Transfer Stand AB 2 set. The perfect alternative to the articulation with the Reference AB facebow

06-232100	**Reference LF articulator**

Components and spare parts:

06-232101	LF Standard incisal table flat
06-232102	LF Standard incisal table attachment flat
06-232103	LF support bracket

The Reference LF Articulator: The ideal entry into the world of "occlusion" with the high-end precision of the Reference line

Reference – Mounting system with magnetic retention

The distance blocks are held in the articulator through magnetic retention. The retaining magnet is built into the articulator, so that the full height of the unit can be utilized, while maintaining consistent adhesion.

This minimizes the disturbing influences of cast expansion during the hardening process. Different heights and slopes allow for optimal use.

The red mounting plates are screwed, removable, into the distance blocks.

If the block is unscrewed from the model, it leaves a print in the cast, so that an identical block can be screwed in, if repositioning is necessary. During active treatment, the distance block should not be unscrewed.

06-231550	Mounting plates incl. nuts (50 pcs.)
06-231551	Nuts for mounting plates (50 pcs.)
06-231510	Distance block, pair, horizontal 1 (standard)
06-231511	Distance block, pair, horizontal 2 (+8mm)
06-231512	Distance block, pair, horizontal 3 (+16mm)
06-231520	Distance block, pair, slanted A (standard)
06-231521	Distance block, pair, slanted B (+8mm)
06-231522	Distance block, pair, slanted C (+16mm)
06-231525	Distance blocks set (1 pair of each of the 6 types)
06-231516	Lens head screw for distance block 1 and A (10 pcs.)
06-231517	Cylinder head screw for distance blocks 2 / 3 / B / C (10 pcs.)
06-231518	Retention disc (10 pcs.)
06-231912	Ball-shaped Allen key 2.5 mm

prices and delivery apply to 2 blocks per package

Reference – synchronic calibration without compromises

Tolerance can regularly be checked with the **calibration key**.

This unit synchronizes all Reference articulators (types A, I, LF and SL), in the range from ± 10 µm receptors exactly. So, everyone involved is working with identical machines, making it possible to exchange models and guarantee real comparisons.

The calibration key is also necessary for setting the zero point when using the CPM and CPV applications.

In the dental practice or lab, the articulator can be newly adjusted and/or readjusted. The Reference A, I, and SL articulator can be adjusted over the horizontally arranged axes. The Reference LF articulator can be adjusted over both condyle bars.

Adjustment Reference A, I and SL

Rearrange the axes with the calibration key

Casting the readjusted articulator axes

SL Adjustment set 2

Adjustment Reference LF

Separate the condyle bars by heating

Connect the condyle bars with adjustment adhesive again by using the adjustment tool and the Reference Calibration key

Adjustment tool for Reference LF

All components are equally axis-oriented. Then the models can be transferred from one articulator to another without second thoughts.

06-231900	Reference Calibration Key
06-231349	SL Adjustment Set 1 for Reference SL up to serial no. 06xxxx
06-231386	SL Adjustment set 2 for Reference SL from serial no. 07xxxx
06-231349A	Articulator axes with O-rings (pair)
06-231349H	Casings (pair)
06-232120	LF adjustment tool
05-001J	Adjustment for Reference SL articulator (device must be sent to the factory in Klosterneuburg – price excl. transport costs)
05-003J	Adjustment for Reference LF articulator (device must be sent to the factory in Klosterneuburg – price excl. transport cost)

Reference – Standard incisal tables

Standard incisal guidance tables from flat to 55 degrees; centric adjustable, mounted on self-centering base.

The flat plate was designed for lower jaw mounting and the preparation of individual autopolymeric anterior guides. The 30-, 40- and 55-degree plates are equipped with 5-degree steeper protrusive inclinations.

With periodic gradation, adapted from the natural front situation.

06-231720	Standard incisal table flat
06-231722	Standard incisal table 15degrees lateral
06-231723	Standard incisal table 30degrees
06-231724	Standard incisal table 40degrees
06-231725	Standard incisal table 55 degrees
06-231721	Standard incisal table attachment flat

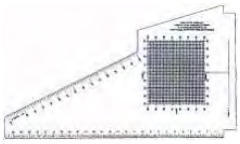
Articulator & Facebow

Reference – individual anterior guidance unit

Two-stage anterior guidance in one purely protrusive part (with track grooves), in three variations; straight, 1 mm and 2 mm curved track of the S2 distance, with 14 degree angle of inclination.

The two pins are plugged into separate jacks in the articulator and are individually adjustable to zero position. The complete unit as shown, with three exchangeable protrusion inserts.

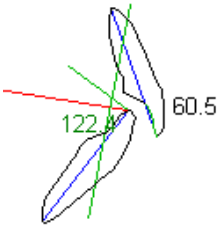
Adjustable, protrusive from 0-80 degrees, lateral from 20-65 degrees.



06-231750	Anterior guidance unit with double pin for protrusion/laterotrusion
06-000004	Weber's 3D measuring template, for metric measuring of cusp coordinates directly in the Reference SL articulator

Reference – Anterior tooth shaper

A container for hard silicone, aligned relative to the reference plane, to take front tooth impressions in the articulator. The hard putty can be cut into sections and the palatal surfaces can be measured from the profile. These values serve for evaluating the relation between anterior tooth guidance-joint guidance-occlusal plane in functional analysis, as well as for the articulator programming in reconstruction and additionally for checking the tooth position and functional surface in orthodontics.



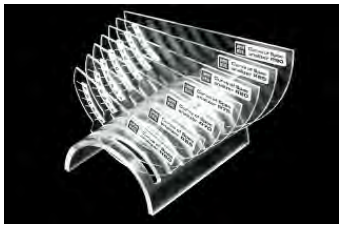
The ideal supplement to the CADIAS® cephalometric program in GAMMA Dental Software®.

06-231800	Anterior tooth shaper

Reference – Compensation Curve Analyzer

Curve of Spee Analyzer for SL-Articulator

Seven transparent templates with integrated curve radius in steps of 5 mm from R60-R90. With the help of those parts, it is possible to measure or reconstruct the curve of Spee



06-000019	Curve of Spee Analyzer for SL articulator consisting of: 7 pcs. transparent plates with integrated curve radius in steps of 5mm from R60-R90 and 1 pc axial support bar (pedestal not included)

Brux Checker

Evaluation of grinding patterns during sleep bruxism according to Prof. Sato. The foil registers bruxism by abrasion of the foil color.

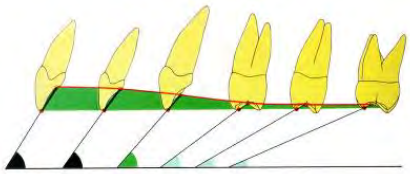
04-000050	Brux checker (10 foils)
04-000055	Casting wax fine-grained, for use in dental laboratory, appr. 70g (15 double sheets)

Incisors canine premolar guiding type

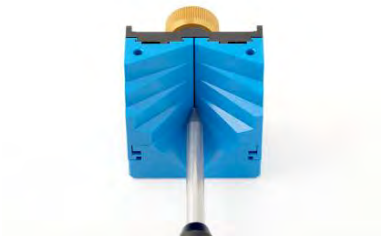
Canine guide + mediotrusive contact type

Reference – Simple conversion to sequential occlusion

Based on its flexible concept of using exchangeable guidance tables in various gradations, the sequential incisal table is geometrically and didactically easily comprehensible and allows to define occlusion concepts by predetermining an angle of disocclusion. The sequential incisal table is extremely simple and easy to use, both for examination and technical wax-up applications. The fan-shaped guide surfaces of the table allow for direct assignment to a tooth and a simple implementation of the natural sequential occlusion concept.



lateral guidance waxed with the sequential incisal table



The reconstructive wax-up concept is determined by selecting the individual elements. Depending on which occlusal surface (tooth) is being worked on, the table is set to the corresponding mark found on the side of the base plate, by sliding forward or backwards, respectively.

Guidelines are provided by a program, which processes the inclination of the joint track (CADIAX®) to the axis-orbital plane, as well as the selected Bennett element as parameters in the two-dimensional table.

The CADIAX® system calculates the ideal settings automatically.

46º (Protrusiv)
51º (Tooth 3)
41º (Tooth 4)
33º (Tooth 5)
25º (Tooth 6)

49º (Protrusiv)
55º (Tooth 3)
44º (Tooth 4)
37º (Tooth 5)
29º (Tooth 6)

53º (Protrusiv)
58º (Tooth 3)
47º (Tooth 4)
40º (Tooth 5)
33º (Tooth 6)

60º (Protrusiv)
65º (Tooth 3)
52º (Tooth 4)
46º (Tooth 5)
39º (Tooth 6)

06-000013	**Sequence Incisal Table Set** (incl. inserts in blue, orange, and green)
06-000013T	Base adapter
06-000013B	Guidance blocks, 3-part, blue
06-000013G	Guidance blocks, 3-part, green
06-000013O	Guidance blocks 3-part, orange
06-000013Y	Guidance blocks, 3-part, yellow (optional part on request)

In asymmetric cases, the inserts (colors) may be combined arbitrarily.

The.set consists of the base adapter plus three (blue, green, orange) pairs of guidance blocks. The set does not include the yellow blocks.

04-000020	Multimedia course wax-up DVD "Class I Occlusion" by Prof. Slavicek and team ISBN 978-3-9501261-3-6
04-000021	Multimedia course Wax-up DVD "Class II, III, Cross Bite" by Prof. Slavicek and team ISBN 978-3-9501261-4-3

Reference – Occlusal plane measurement and adjustment

This unit allows you to measure and/or lay out the individual occlusal plane in degrees. In two parts for the different inclinations of the right and left dentition.

Mounting takes place in the Reference articulator.

06-231850	Occlusal plane measuring unit

Reference – flexible Condylar-Position-Measurement (ICP vs. RP)

CPM SL (**C**ondyar-**P**osition-**M**easurement adapter) – A pair of mechanical measurement adapters for the metric comparison of the centric and intercuspal positions of the mandible. Adaptable on the SL articulator- so it is not necessary to buy a special appliance!

06-231350	CPM-SL incl. marker pin (pair)
06-231351	CPM-SL marker pin
06-231352	Reference writing labels (8 sheets, each 25 labels)
06-231353	Transparent protective foil

E-CPM - **E**lectronic **C**ondylar **P**osition **M**easurement

06-230600	E-CPM Set consisting of: CADIAX® compact 2 (01-10E200-2), E-CPM upgrade (06-230610) for electronic condylar position measurement

E-CPM Upgrade – upgrade device for CADIAX® *compact 2* for electronic measurement of condylar positions
system requirement: CADIAX® *compact 2* (01-10E200-2)

06-230610	E-CPM upgrade for CADIAX® compact 2

A-CPM – Mechanical condylar position measurement,
a stand-alone system without the need for electronics

This device enables a quantitative measurement comparing different lower jaw positions and the resulting effect on the jaw joint.

For condylar position analysis and to guarantee the quality of the prosthetic reconstructions the support function of the posterior occlusion in ICP can be checked in relation to a centric reference position (RP) of the mandible.

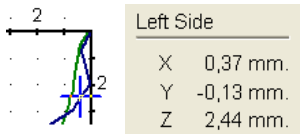
06-230620	A-CPM upgrade set mechanical (digital measurement unit, mechanic flags, marker pin, Allen key, writing labels)
06-230630	Reference-CPM Set for condylar position measurement consisting of E-CPM upgrade for CADIAX® compact 2 (06-230610) and A-CPM Upgrade Set mechanical (06-230620)
06-230631	Diagnostic notes condylar position measurement (60 sheets)
06-230632	A-CPM writing labels (10 sheets each 12 labels)

Reference – Change condylar position with the variator

CPV (**C**ondylar-**P**osition-**V**ariator): enables exact metric positioning of the condyle position in three spatial directions, e.g., for setting a therapeutic mandible position, for making splints, or for a set-up in orthodontics.

Ideal for application in combination with the CADIAX® Registration System. A joint position determined by CADIAX® can be set directly in the device!

The calibration key (06-231900) is necessary for determining the centric zero position!



06-230750	**Reference CPV** **Condylar Position Variator**

Facebows MD CE

No model should be mounted without first determining a spatial jaw relation. With the Reference system, GAMMA offers the possibility of transferring arbitrary and exact models of the upper jaw. With the proven and tested 3D joint support the facebows can be applied simply and safely.

Reference AB – Anatomic facebow MD CE

Parallel adjustable anatomic facebow, with 3D joint support. With this facebow, there is no undesirable axis displacement, e.g., from a shearing effect. Its box-like construction and double-clamping ensure the utmost stability. In its construction, the Reference AB facebow is aligned with the AO-plane (hinge axis-orbital plane), the front reference point lies 22 mm below the lowest recession of the Glabella.

06-230430	**Reference AB facebow** **(incl. 3D joint support)**

Components and spare parts:

06-230433	Reference AB attachment screw
06-230435	Reference AB porus supports (pair)
06-230436	Reference AB articulator adapter screw (pair)
06-230491	Mounting axes (pair) for Reference AB facebow for articulation in the Reference LF articulator
06-230443	Glabella support for Reference AB facebow complete
06-230444	Glabella cushion comfort (5 pcs.)
06-230445	Glabella support comfort (incl. 3 pcs. glabella cushion comfort)
06-230470	3D joint support for Reference AB facebow
06-230471	Reference adapter screw (for 3D joint support)
06-217611	Bite fork, partial (2 pcs.)
06-230465	Recording plates for Reference AB facebow, red (pair)
06-230111	Recording plates (flag) for CADIAX® *compact* flag adapter (pair)
01-SP0046	Flag adapter incl. screws for Reference AB facebow (pair)
04-402709	Impression compound bars (15 pcs.)

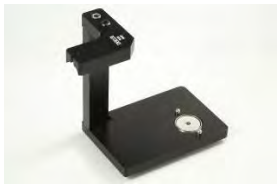
For leaving the axis-orbital plane, an accessory set is available with adjustable orbital pointer. However, in this case, mounting is then only possible in the upper jaw transfer stand (Art. # 06-230510). Sterilizable, detachable ear plugs.

For data recording with CADIAX® *compact* 2, the AB-Bow can be upgraded with easy-to-use accessories. The advantages are obvious: one bow, two applications!

Mounting elements:

06-230480	Facebow support
06-230490	Orbital pointer for Reference AB facebow incl. mounting axes
06-230585	Bite fork support
06-230566	Mandible mounting clamp - for a stable free-standing position of the articulator during LJ mounting

06-216280	Transfer stand AB Receives the facebow registration from the AB bow. The Reference distance blocks plus mounting plate serve as transfer table.
06-231400	Transfer stand AB 2 For direct transfer of upper jaw model in articulator without Reference AB facebow
06-231401	Transfer stand AB 2 set Receives the facebow registration from the AB facebow. consisting of: Transfer Stand AB 2 (06-231400) and bite fork support (06-230585



Reflitex: for model transfer and possible conversion from Reference into the Artex® system.

06-216320	Reflitex combination set: 3-piece Splitex® plate set for Reference articulators Simply 'click-in' upper and lower jaw plates. The SL is adjusted to the Artex® level.
06-216321	Upper jaw plate for Reflitex combination set
06-216322	Lower jaw plate for Reflitex combination set
06-216330	Reflitex combination set for CPM 2-piece Splitex plate set (UJ plate and LJ base plate) for E-CPM and A-CPM. Simply click in upper and lower jaw plates.
06-216281	Reflitex base plate for transfer table or CPM
06-216011	Splitex® distance plate +10mm Synchronization Artex® Carbon to Artex® Standard

® SAM is a trademark of SAM Präzisionstechnik, Artex is a trademark of Amann-Girrbach Dental,

Reference AB facebow Junior MD CE

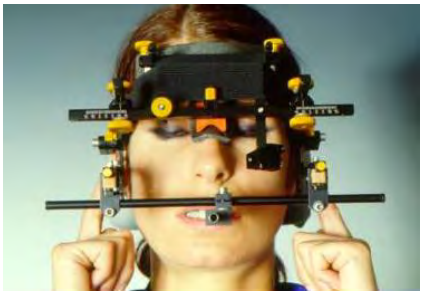
The Reference AB facebow Junior is designed for smaller patients. The patient-friendly design is easy to handle and has a reduced weight by 40% compared to the Reference AB facebow. It has a comfortable glabella support with soft cushion.

Transfer into the articulator can be made with transfer stand AB-Junior or AB2-Junior.

06-230430-J	**Reference AB facebow junior** (incl. 3D joint support junior)
06-230470-J	3D joint support for Reference AB facebow junior incl. bite fork, partial small
06-217611-J	Bite fork, partial small (2 pcs.)
06-216280-J	Transfer stand AB junior Receives the facebow registration from the AB bow junior. The Reference distance blocks plus mounting plate serve as transfer table.
06-231400-J	Transfer stand AB 2 junior For direct transfer of upper jaw model in articulator with 3D joint support from Reference AB facebow junior
01-SP0040-J	Retention straps for Reference AB facebow junior (pair) incl. pins
01-SP0046-J	Flag adapter incl. screws for Reference AB facebow junior (pair)

2/15 Articulator & Facebow

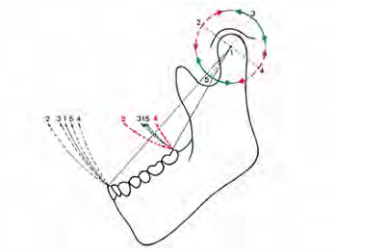
Reference – Exact hinge axis with the Condylograph MD CE



A high-precision facebow system, for the dentist working with functional analysis in dentistry. The upper facebow is fixed securely to the head by means of 3-point support technology (Nasion and twice on the forehead) and the head-neck flex-band. The side arms lie without pressure on the ear-saddle. The facebow is mounted easily and safely and is comfortable for the patient to wear.

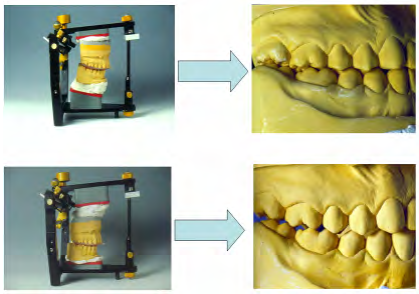
The light construction of the mandibular bow allows for precise setting of the registration pins onto the exactly determined hinge axis.

Why use the exact hinge axis?



Effects of mandibular rotational movements with different mounted axis points

The graphic shows the effects of mandibular opening- and closing movements during changes in the position of the hinge axis point of rotation in the articulator. With the anatomic facebow, the joint axis is mounted to a statistical axis point, derived from the examinations of a number of patients. This can lead to a considerable deviation of the mounted axis to the actual kinematic axis.



Example of ICP in the articulator with strongly deviating hinge axis mounting or model position

An exact mounting of the hinge axis is indicated in cases where vertical modifications are carried out, e.g., splint therapy or milling-in, vertical changes during reconstructions, in total prosthetics or implant prosthetics.

The condylograph carries the measurement sensory system used in the CADIAX® 4 system

A further important point, with regard to registration with CADIAX®: in order to eliminate geometric distortions in the movement tracks, caused by rotation, the hinge axis must always be located exactly.

The upper jaw model transfer with exact localized hinge axis and individual reference plane in the Reference, Artex® and SAM® articulators.

Indications:

- **Cases with planned vertical modifications**
- **Working with centric registration**
- **Remounting restorations**
- **Remounting in total prosthetics**
- **For exact occlusion analysis in the articulator**
- **For distortion-free joint analysis with CADIAX®**

2/16 Articulator & Facebow

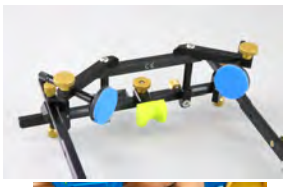
04-GCR309	**Condylograph Set standard** incl. transfer stand for Reference articulator (for Artex®, SAM®, Denar®/Hanau® on request) Facebow set consisting of: Cranial facebow Condylograph, Kinematic mandible bow, 3D-joint support incl. bite fork partial, Reference point indicator, Upper jaw transfer stand and supplementary parts for transfer to Reference articulator	
04-GCR311I	**Condylograph *comfort* I Set** incl. transfer stand for Reference articulator (for Artex®, SAM®, Denar®/Hanau® on request) Facebow set consisting of: Cranial facebow Condylograph comfort I, Kinematic mandible bow, 3D-joint support incl. bite fork partial, Reference point indicator individual, Upper jaw transfer stand and supplementary parts for transfer to Reference articulator	
04-GCR010I	Condylograph comfort I facebow incl. reference point indicator individual, retention straps, soft glabella cushions)	
04-GCR013	Extension set for Condylograph / Condylograph comfort - To enable working with CADIAX® compact 2 / CADIAX® compact 4 using patient's individual axis consisting of: 06-230111 - Recording plates for CC flag adapter (pair) 06-235155L - CC Flag adapter (1x left) 06-235155R - CC Flag adapter (1x right) 06-235156 - Allen head screw M4 (pair) for CC flag 06-235165 - Condylograph Porus supports (pair) for CC2 Recorder 2.9.2 or GDSW 7.6.9	

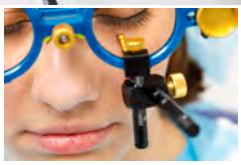
Components and spare parts for upper facebow:

06-230292	Forehead neck band for Condylograph (5 pcs./pack)
06-230288	Retention straps for Condylograph comfort (3 pairs/pack), version 1
06-230290	Retention straps for Condylograph *comfort*, version 2
06-230291	Reference headband for Condylograph comfort I
06-230260	Bite fork for Condylograph and Condylograph *comfort*
06-230240	3D joint support Condylograph (incl. bite fork partial)
06-230245	3D joint support Condylograph comfort (incl. bite fork partial)
06-217611	Bite fork, partial (2 pcs.)
06-235145	Axis indicator holder (pair)
06-230370	Axis needles and sockets (pair)
06-230155	Axis pins, long (pair)
06-230156	Axis pins, short (pair)

2/17 Articulator & Facebow

06-230110	Red flags (pair) Recording plates for Condylograph and Condylograph comfort,
06-230111	Recording plates (flag) for CADIAX® compact flag adapter (pair)
06-230270	Glabella support for Condylograph
06-230285	Reference point indicator for Condylograph
04-230225	Forehead pads round for Condylograph (2 pcs.)
04-230275	Glabella support comfort for Condylograph incl. 3 pcs. glabella cushions comfort
06-230286	Reference point indicator T fixed (22mm) for Condylograph comfort
06-230287	Reference point indicator P fixed (22mm) for Condylograph comfort
06-230284	Reference point indicator individual for Condylograph comfort I





Components and spare parts for mandible facebow:

06-235306	Mandible facebow, indiv. adjustable
06-231352	Reference writing labels (8 sheets, each 25 labels)
06-230335	Occlusal tray clutch, large
06-230330	Occlusal tray clutch, small (standard)
06-230345	Functional occlusal clutches (5 pcs./pack)
06-230345A	Functional occlusal clutches chadded (4 pcs./pack)
06-230350	Mandibular clamp for LJ bow

Components and spare parts for articulator mounting:

06-230510	Upper jaw transfer stand for Reference incl. reference plane adjustment reed and distance ruler
06-230511	Upper jaw transfer stand for Artex® incl. reference plane adjustment reed and distance ruler (please inquire for availability)
06-230511C	Upper jaw transfer stand for Artex® Carbon incl. reference plane adjustment reed and distance ruler (please inquire for availability)
06-230512	Upper jaw transfer stand for SAM® incl. reference plane adjustment reed and distance ruler (please inquire for availability)
06-230520	Reference plane adjustment reed for transfer stand Reference
06-230521	Reference plane adjustment reed for 06-230511 Transfer stand Artex® (please inquire for availability)
06-230521C	Reference plane adjustment reed for 06-230511C Transfer stand Artex® Carbon
06-230522	Reference plane adjustment reed for 06-230512 Transfer stand SAM® (please inquire for availability)
06-230530	Distance ruler
06-230570	Pedestal support
06-230566	Mandible mounting clamp - For a stable free-standing position of the articulator during LJ mounting

GAMMA Digital Workflow

Reference – Accurate transfer of intraoral scans to the virtual articulator

The Digital Transfer Block Set allows transferring intraoral scans directly from the facebow to the correct position in the virtual articulator – no plaster models required. It can be used with the Condylograph facebows and exact hinge axis as well as with the Reference AB facebow and anatomic hinge axis.

(Please refer to chapter “Software - Digital” for further information)

06-230950 Digital Transfer Block Set (3 pcs.)

Digital workflow with AB facebow

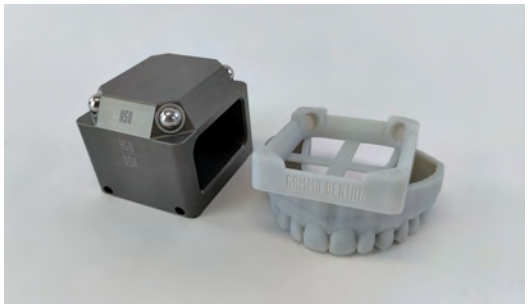
06-230950 Digital Transfer Block Set

Reference – Reliable mounting system for 3D-printed models

The Reference Print&Click system completes the digital workflow by enabling the accurate mounting of 3D-printed models in the articulator. This allows for a final functional verification of digitally designed restorations. Prior to 3D-printing, the digital models are attached to a base plate that reliably clicks into a mounting block of the suitable height.

(Please refer to chapter “Software - Digital” for further information)

06-230960 Reference Print&Click Set (6 pcs.)



06-230960 Reference Print&Click Set

3/1 Recording – CADIAX®

Recording of mandibular movements with CADIAX®

MD CE 0483

Electronic registration of mandibular movement is now a standard procedure in many dental practices. The range of application is diverse: CADIAX® offers individual patient value-settings for semi- and fully adjustable articulators, thus satisfying all of your needs, from joint-related reconstructions to the analysis of dysfunction.

- Bilateral, simultaneous, timed 3D registration of condylar movement
- Registration of sagittal and transversal condylar tracks
- Automatic conversion of the joint track curves for the articulator
- Electronic Condylar-Position-Measurement (CPM) directly on the patient
- Individual or standardized registrations according to Prof. Slavicek
- Variety of evaluation- and display possibilities, including zoom functions, replay, overlays, 3D-animation and articulator calculations
- Registration of hinge axis rotation (only CADIAX® *4*)
- Hinge axis localization and adjustment with real-time display (only CADIAX® *4*)
- Computer-supported incisal table calculations

CADIAX® - You CAN believe your eyes!

CADIAX® measures near the joint, on the axis; a distinct advantage in the practice. On the one hand, the proven electronic measurement technology guarantees high precision; on the other hand, the system is easily comprehensible and transparent. With CADIAX®, you can review and control at any time, ideal for your practice.

The hinge axis determined by CADIAX® is precisely transferred to the articulator through the facebow, which is extremely stable.

CADIAX® - One recording system serves a variety of articulator systems

At the push of a button, CADIAX® calculates articulator value-settings for the **Reference SL** and **Reference LF** articulator as well as for several other articulator systems, such as:

Artex®, Denar®, Hanau®, Ivoclar®, KaVo®, Panadent®, Reference®, SAM®, WhipMix®.

Sagittal Condylar Guidance Reference® SL

Inlay	Right			Left		
	3rd mm	5th mm	10th mm	3rd mm	5th mm	10th mm
Straight	70	70		60	64	58
Convex	•64	•68		•54	•60	•60
Retrusiv	Black	Black		Black	Black	Black

Transverse Condylar Guidance Reference® SL

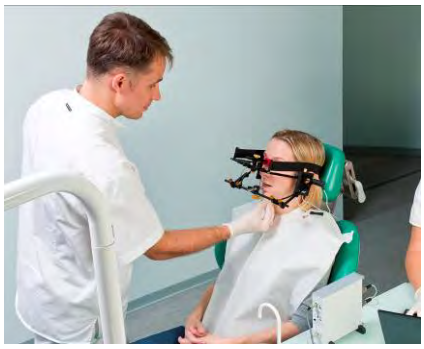
	Right			Left		
	3rd mm	5th mm	10th mm	3rd mm	5th mm	10th mm
WHITE	•11	•15	•13	•6	•12	•11
YELLOW	0	0	0	0	0	0
RED	0	0	0	0	0	0
BLUE	0	0	0	0	0	0

® SAM is a trademark of SAM Präzisionstechnik, Artex is a trademark Amann-Girrbach Dental, Denar & Hanau are trademarks of Whipmix, KaVo is a trademark of KaVo, Whipmix is a trademark of. Whipmix, Panadent is a trademark of Panadent, Ivoclar is a trademark of Ivoclar

3/3 Recording – CADIAX®

CADIAX® – Analyse data

Analytics relative to therapy and standardized documentation are called for in running a modern, evidence-based dental practice. GAMMA offers two systems (CADIAX® *compact* 2 and CADIAX® *4*) which, depending on their application, offers solutions for any situation.



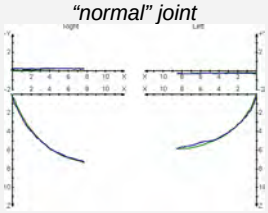
The *compact* system was designed for standard cases. Perfectly qualified for articulator programming, with additional options for screening dysfunction.

Its "big brother", CADIAX® *4*, measures translational- and rotational mandibular movements at the exact hinge axis, using a double-stylus system. The system fulfils all the needs of the dentist working in functional analysis. In addition to the standard movements, the system can also register functional- and parafunctional movements: chewing, speaking, bruxism. Using these as overlays to the limiting movements, you can ascertain any deviations from the average patterns.

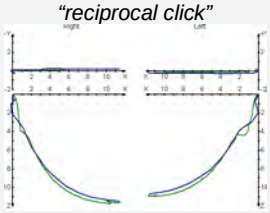
With the electronic Condylar-Position-Measurement (CPM), the difference between centric joint position and ICP can be measured, directly on the patient. This is not only of analytic interest, but also serves in ensuring the quality of dental reconstructions.

Condylograms and analysis based on registrations with CADIAX® 4

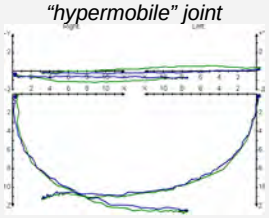
"normal" joint



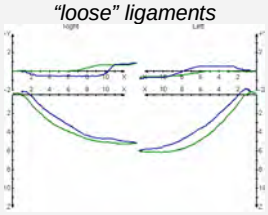
"reciprocal click"



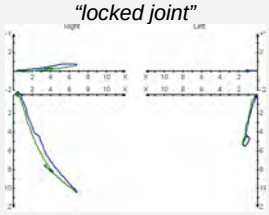
"hypermobile" joint



"loose" ligaments



"locked joint"



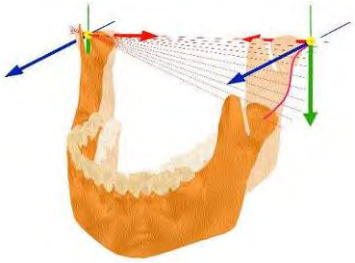
CADIAX® – Therapy-relevant data

Paying attention to the individual patient's functional pattern helps in minimizing the risks of therapy. Strategic planning of occlusal parameters, in conjunction with habitual hinge axis movements, provides a solid basis for deciding on therapeutic measures. For example, decisions regarding the occlusal plane, inclination of anterior guidance, or eccentric disocclusion concepts based on the posterior joint guidance are easily arrived at and comprehensible.

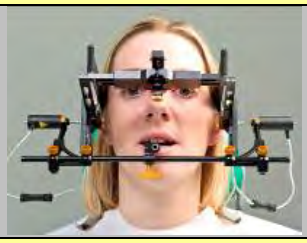
3/4 Recording – CADIAX®

CADIAX® – Joint specific splint positions

In conjunction with the Condylar-Position-Variator (Art. # 06-230750), therapeutic splint positions can be planned and implemented exactly in all spatial directions.

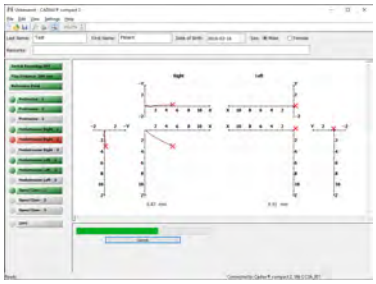


CADIAX® – Comparing the systems

	CADIAX® *compact 2*	**CADIAX® *4***
		
Joint axis	Anatomic – arbitrary or exact	Kinematic – exact computer-assisted hinge-axis localization
Facebow	Reference AB, Reference AB Junior	Condylograph, Condylograph *comfort*
Reference plane	Frankfurt plane (FH)	Axis-Orbital plane (AOP) or chosen arbitrarily
Control	Windows® PC	Windows® PC
ADC (internal resolution)	16 Bit (0.01 mm)	16 Bit (0.01 mm)
Data transfer	USB	USB
Stylus	Single (only translation)	Double (translation and rotation)
Flag	40 x 40 mm	60 x 60 mm
Recording time	4.5 seconds	variable from 4.5 – 18 seconds
Number of recordings	12 + 10 CPM	Practically unlimited
Printout	Only through Windows PC	Only through Windows PC
Scope or application	Individual value settings for several articulator systems Instrumental functional analyses in preliminary examination (“Screening”) Documentation Quality assurance Quality control	Individual value settings for several articulator systems Instrumental detailed analyses Scientific examinations/evaluations Documentation Quality assurance Quality control
Application time (expert user)	About 7 min.	About 30 min.

Recording – CADIAX®

CADIAX® *compact* 2 – Articulator calculation and more MD CE 0483



Recording system consisting of an electronic measuring system and an easily manageable Windows software for quickly registering mandible joint movements. Uses the Reference AB facebow, fixed to the head and holding the flags, and a mandible bow, adjusted to an arbitrary hinge axis. CADIAX® *compact* 2 is easy to use and the results are reproducible.

The system saves following curves, max. 3 per patient: protrusion, mediotrusion right and left, open/close. In addition, 10 CPM positions may also be recorded.

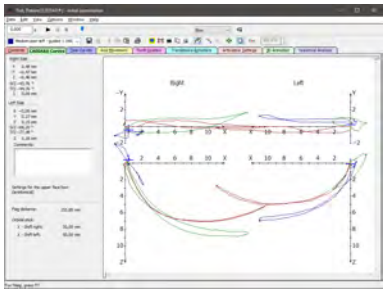
The individual patient's articulator calculations are done at the push of a button. For documentation, the curves are printed out directly on a color printer. Optionally, the data can be saved in the GAMMA Dental software.

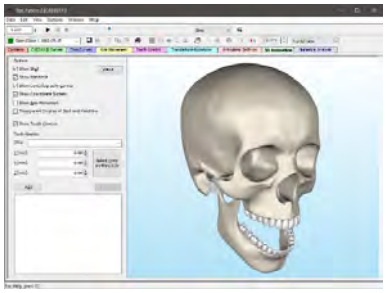
01-10E200-2	CADIAX® compact 2 incl. recording software (not including facebow) Electronic registration system, consisting of • Electronic box • 2 Flags • 2 Styli • Foot switch • USB cable • User manual (English) • Recording software • Systainer case	
06-230430	Reference AB facebow (incl. 3D joint support)	
06-230451	LJ bow set for CADIAX® compact consisting of: 06-230460 - Mandible bow 06-230330 - Clutch small 01-SP0039 - Pins for retention straps Reference AB facebow (pair) 01-SP0041 - Retention straps for Reference AB facebow (pair)	
01-10E300-2	**CADIAX® *compact* 2 basic system**	consisting of CADIAX® compact 2 (01-10D200-2), Reference AB facebow (06-230430), LJ bow set (06-230451) and recording software (03-GDSWCC2)

GAMMA Dental Software® (GDSW) MD CE 0483

GAMMA Dental Software® is the ideal supplement to CADIAX 4. A variety of analysis options, in conjunction with a modern database system. (Details about GAMMA Dental Software® can be found in the chapter “Software - Digital”)

03-GDSWCC2	**Recording software for CADIAX® *compact* 2** Includes basic file management and articulator calculation
03-GDSWViewer	**GAMMA Dental Software®, "Viewer" version** Includes GAMMA Document Browser case documentation tool as well as read-only access to the CADIAX®, CADIAS®, and CADIAS® 3D modules
03-GDSWC	**GAMMA Dental Software®, "C" version** Includes GAMMA Document Browser case documentation as well as condylography recording with CADIAX® compact 2 and CADIAX® condylography analysis
03-GDSWC3D	**GAMMA Dental Software®, "C3D" version** Includes GAMMA Document Browser case documentation as well as CADIAS® 3D virtual occlusion analysis
03-GDSWC3Dplus	**GAMMA Dental Software®, "C3D+" version** Includes GAMMA Document Browser case documentation as well as condylography recording with CADIAX® compact 2, CADIAX® condylography analysis, CADIAS® cephalometric analysis, and CADIAS® 3D virtual occlusion analysis
03-GDSWAM	**GAMMA Dental Software®, "AM" version** Includes GAMMA Document Browser case documentation as well as all other modules: condylography recording with CADIAX® 4 and CADIAX® compact 2, CADIAX® condylography analysis, CADIAS® cephalometric analysis, and CADIAS® 3D virtual occlusion analysis





Please note the system requirements!

CADIAX®*4* – *The high-end system*

One basic unit – all options for registration

The compact construction and its flexible range of application are the most impressive features of the CADIAX®*4* system.

CADIAX® *4* data process is easy both for data registered with the CADIAX® *compact* 2 single stylus system or with the double stylus system of CADIAX® *4.*

Consequently, the system can be upgraded in a modular way and the user is granted maximum flexibility in regard of registration of condylar movements and data evaluation.

Minimum space requirement and ergonomic handling are some of the advantages of CADIAX® *4*.

CADIAX®*4* is high precision; its 16 Bit ADC enables a resolution of 1/100 mm.

Power is supplied via USB port. Data transfer and data exposure of CADIAX® *4* are done in real time, this rapid data transfer makes it possible to display positions on the screen before recording, so that the user can control the reference position once more and correct it if necessary.

Replacement parts/accessories for CADIAX® compact MD CE 0483	
06-230452	Upgrade Set Individual for AB facebow consisting of: 06-235306 - Mandible facebow, indiv. Adjustable 06-230370 - Axis needles 01-SP0040 - Retention straps 06-230330 - Clutch small 06-231352 - Reference writing labels 06-230111 - Recording plate
04-GCR013	Extension set for Condylograph / Condylograph comfort To enable working with CADIAX® compact 2 / CADIAX® compact 4 using patient's individual axis. consisting of: 06-230111 - Recording plates for CC flag adapter (pair) 06-235155L - CC Flag adapter (1x left) 06-235155R - CC Flag adapter (1x right) 06-235156 - Allen head screw M4 (pair) for CC flag 06-235165 - Condylograph Porus supports (pair) for CC2 Recorder 2.9.2 or GDSW 7.6.9
04-GCR010I	Condylograph comfort I facebow incl. reference point indicator individual, retention straps, soft glabella cushions
06-235306	Mandible facebow, indiv. adjustable
06-230335	Occlusal tray clutch, large
06-230330	Occlusal tray clutch, small (standard)
06-230345	Functional occlusal clutches (5 pcs./pack)
06-230345A	Functional occlusal clutches chadded (4 pcs./pack)
06-230350	Mandibular clamp for LJ bow
06-230444	Glabella cushion comfort (5 pcs.)
06-230445	Glabella support comfort (incl. 3 pcs. glabella cushion comfort)
01-SP0029	Axis locator
06-230370	Axis needles and sockets (pair)
01-SP0040	Retention straps for Reference AB facebow (pair) incl. pins
01-SP0043	Mechanic set for Reference AB facebow
01-SP0046	Flag adapter incl. screws for Reference AB facebow (pair)
01-SP0027	Foot switch for CADIAX®
01-SP0020M	Measuring stylus, CADIAX® compact
01-SP0023M	Measuring flag, CADIAX® compact

01-SP0052-MSET-10	Measurement sensor system CADIAX® compact 2, with magnet-retention technology (2 flags, 2 styli)
01-SP0052-MSET-10U	Measurement sensor system CADIAX® compact 2, with magnet-retention technology (2 flags, 2 styli), in exchange for used flags/styli
01-SP0060	Upgrade Set CADIAX® compact to compact 2 w/o measurement sensors
01-SP0062	USB cable for CADIAX®
01-SP0063	Retention strap for CADIAX® electronic box, 25mm
01-SP0064	Systainer case for CADIAX® *compact* 2

CADIAX® *4* MD CE 0483

The high-end condylography system from GAMMA.

CADIAX® *4* provides high-resolution registration of all ranges of free mandibular movement. In addition to all of the possibilities of articulator- and incisal table programming, CADIAX® *4* especially meets the demands of a functional registration system.

The dynamic hinge axis location makes it easy to locate and reproduce the exact axis. Transfer of the bite registration in the articulator, relative to the axis, is carried out with the same facebow in one process. CADIAX® *4* is a closed system. It is based on many years of scientific and practical experience and was conceived and developed for the everyday practice.

CADIAX® *4* measures translation and rotation. The high-precision electronics (16-bit ADC) work with an internal measurement resolution of 0.01mm. The system records practically any number of movements, up to a duration of 18 seconds per registration.

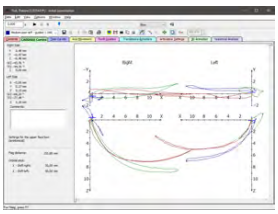
08-00G200	CADIAX® *4* (not including facebow and software) Electronic registration system, consisting of: - Electronic box - 2 flags (large) - 2 double styli - Foot switch - USB cable - User manual - Systainer case Prerequisites: - Condylograph / Condylograph comfort - GDSW "AM" version

Recording – CADIAX®

08-00G200AM	CADIAX® *4* incl. GDSW "AM" version (not including facebow) consisting of: 08-00G200 + 03-GDSWAM Electronic registration system, consisting of: - Electronic box - 2 flags (large) - 2 double styli - Foot switch - USB cable - User manual - Systainer case Prerequisites: - Condylograph/Condylograph comfort	
04-GCR309	Condylograph Set Standard incl. transfer stand for Reference articulator (for Artex®, SAM®, Denar®/Hanau® on request) Facebow set consisting of: - Cranial facebow Condylograph - Kinematic mandible bow - 3D-joint support incl. bite fork partial - Reference point indicator - Upper jaw transfer stand and supplementary parts for transfer to Reference articulator	
04-GCR311I	Condylograph *comfort I set* incl. transfer stand for Reference articulator (for Artex®, SAM®, Denar®/Hanau® on request) Facebow set consisting of: - Cranial facebow Condylograph comfort I - Kinematic mandible bow - 3D-joint support incl. bite fork partial - Reference point indicator individual - Upper jaw transfer stand and supplementary parts for transfer to Reference articulator	

GAMMA Dental Software® (GDSW) MD CE 0483

GAMMA Dental Software® for Windows® is prerequisite for the CADIAX® *4* application. GDSW offers a variety of analysis options, paired with a modern database system.
(Details about GDSW can be found in the “Software - Digital” chapter).



03-GDSWAM	**GAMMA Dental Software®, "AM" version** Includes GAMMA Document Browser case documentation as well as all other modules: condylography recording with CADIAX® 4 and CADIAX® compact 2, CADIAX® condylography analysis, CADIAS® cephalometric analysis, and CADIAS® 3D virtual occlusion analysis	

Please note the system requirements!

CADIAX® *4* complete system

08-00G310AM:
consisting of CADIAX® 4 (08-00G200), GAMMA Dental Software®, "AM" version (03-GDSWAM) and Condylograph set (04-GCR309)

08-00G410IAM:
consisting of CADIAX® 4 (08-00G200), GAMMA Dental Software®, "AM" version (03-GDSWAM) and Condylograph comfort Set I (04-GCR311I)

3/10 Recording – CADIAX®

08-SP0010A	Upgrade CADIAX® 4 from CADIAX® diagnostic
08-SP0010U	Upgrade CADIAX® 4 from CADIAX® diagnostic, in exchange for old main unit
08-SP0010AF	Upgrade CADIAX® 4 from CADIAX® diagnostic incl. flags
08-SP0010UF	Upgrade CADIAX® 4 from CADIAX® diagnostic incl. flags, in exchange for old main unit

Replacement parts / components for CADIAX® 4	
08-SP0100-MSET	Measurement sensor system CADIAX® 4 with "M" magnet technology (2 flags, 2 styli, incl. case)
08-SP0100-MSETU	Measurement sensor system CADIAX® 4 with "M" magnet technology (2 flags, 2 styli, incl. case) in exchange for used flags/styli
08-SP0107	CADIAX® *4* stylus cable
08-SP0002M	Measuring stylus, CADIAX® 4
08-SP0117	CADIAX® *4* flag cable
08-SPGL01M	Measuring flag, left, for CADIAX® *4*
08-SPGR01M	Measuring flag, right, for CADIAX® *4*

Replacement parts/ accessories for CADIAX® diagnostic	
04-GCR010I	Condylograph comfort I facebow incl. reference point indicator individual, retention straps, soft glabella cushions
06-230240	3D joint support Condylograph (incl. bite fork partial)
06-230245	3D joint support Condylograph comfort (incl. bite fork partial)
01-SP0027	Foot switch for CADIAX®
02-000014	USB-Serial adapter only usable in combination with serial cable 02-SP0044)
02-SP0044	Serial cable
02-SP0002M	Measuring stylus, CADIAX® diagnostic
02-SP0107	CADIAX® diagnostic stylus cable
02-SP0108	CADIAX® diagnostic flag cable (for flags with SNr. CFLMxxxxx)
02-SPGR01M	Measuring flag, right, for CADIAX® diagnostic
02-SPGL01M	Measuring flag, left, for CADIAX® diagnostic

Case documentation with GAMMA Dental Software®

MD CE 0483

Case documentation is the collection and evaluation of individual findings of a patient with the goal of arriving at an overall assessment result and treatment objective. A documentation system must be relevant to therapy and must meet the demands of running a modern dental practice. GAMMA provides a logically laid out system that makes possible the acquisition and administration of such patient data and fully supports the user in their assessment.

GAMMA Dental Software® (GDSW) is a modular system that comprehensively covers the requirements of modern clinical and instrumental functional analysis and functional therapy:

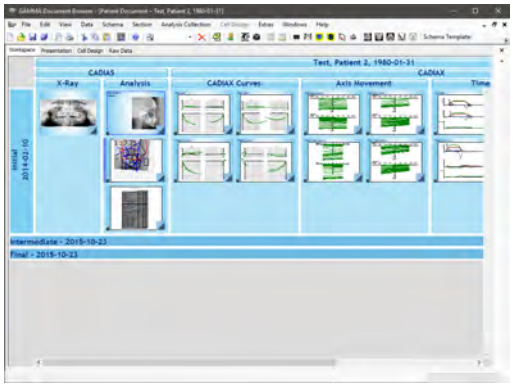
- **Anamnestic findings**
- **Cephalometric analysis and planning**
- **TMJ examination**
- **Articulator programming**
- **Wax-up**
- **Tooth and periodontal status**
- **Virtual occlusion analysis**

The close integration and compatibility to facebows and articulators makes the software an ideal interdisciplinary communications medium during the practical course of therapy.

Data Management

GAMMA Dental Software® is equipped with a modern patient management system, which allows for a completely autonomous patient case documentation independent of third-party systems.

This database system not only permits the management of general patient information, but also the association of various data generated by the individual software modules. The system also supports the storage of arbitrary external data such as pictures and Microsoft Word documents, which can therefore be aggregated with all other patient data in a single location.



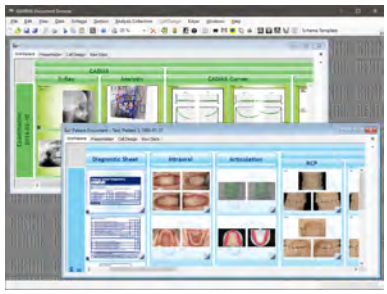
The system also supports the open VDDS-media interface for communication with the most common software products for practice administration. Among others, this includes the following vendors: *Baumgartner, Dampsoft, Evident, Solutio, Lutz Hergesell, Open Dental*.

The openness with regard to the integration of foreign data and interfaces to other applications is a main focus of GAMMA Dental Software®. Continue reading to learn more about the individual software modules and their extensive range of features.

The Modular Structure

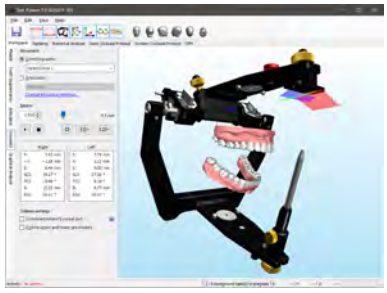
The architecture of GAMMA Dental Software® is modular and may be configured according to the needs of your practice and/or laboratory. This chapter gives an overview of the available modules.

GAMMA Document Browser



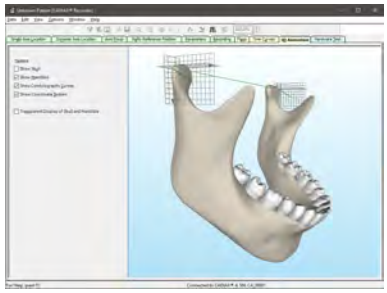
GAMMA Document Browser is a comprehensive database and documentation tool. In addition to the data of other software modules, it aggregates complete photo documentations as well as any external documents. The software allows for quick and easy data presentation, which makes it an excellent communications tool suitable for a dental office, dental laboratory, or for students.

CADIAS® 3D Virtual Occlusion Analysis



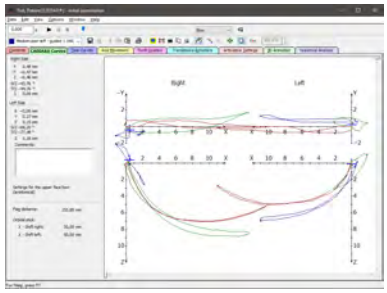
CADIAS® 3D integrates all available patient data into a virtual patient and allows for virtual functional analysis and the design and manufacturing of functional dental prostheses. Basis is a pair of 3D dental models obtained either with a 3D scanner or from third-party CAD/CAM software. An important requirement is the correct spatial correlation of these models with the hinge axis-orbital coordinate system. Only then is it possible to relate the 3D models with other data such as CADIAX® condylography records and CADIAS® cephalometric analyses.

CADIAX® Condylography Recording



As an extension of the CADIAX® analyses module, this module allows carrying out condylography registrations with the CADIAX® 4 system.

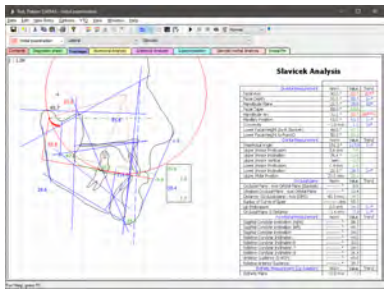
CADIAX® Condylography Analysis



The CADIAX® analysis module processes condylography recordings of the CADIAX® *compact* 2 and CADIAX® 4 devices. It provides a variety of display options, such as time curves, translation/rotation, and 3D animation, as well as calculations for programming the articulator and for the wax-up procedure.

This module is also suitable for CADIAX® *compact* 2 users who want to take advantage of the full potential of the system.

CADIAS® Cephalometric Analysis



Focal point of the CADIAS® module is the cephalometric analysis, which can be combined with other data, such as clinical functional analysis or CADIAX® condylography recordings.

The software is available with the following combinations of application modules:

03-GDSWCC2	**Recording software for CADIAX® *compact* 2** Includes basic file management and articulator calculation
03-GDSWViewer	**GAMMA Dental Software®, "Viewer" version** Includes GAMMA Document Browser case documentation tool as well as read-only access to the CADIAX®, CADIAS®, and CADIAS® 3D modules
03-GDSWC	**GAMMA Dental Software®, "C" version** Includes GAMMA Document Browser case documentation as well as condylography recording with CADIAX® compact 2 and CADIAX® condylography analysis
03-GDSWC3D	**GAMMA Dental Software®, "C3D" version** Includes GAMMA Document Browser case documentation as well as CADIAS® 3D virtual occlusion analysis
03-GDSWC3Dplus	**GAMMA Dental Software®, "C3D+" version** Includes GAMMA Document Browser case documentation as well as condylography recording with CADIAX® compact 2, CADIAX® condylography analysis, CADIAS® cephalometric analysis, and CADIAS® 3D virtual occlusion analysis
03-GDSWAM	**GAMMA Dental Software®, "AM" version** Includes GAMMA Document Browser case documentation as well as all other modules: condylography recording with CADIAX® 4 and CADIAX® compact 2, CADIAX® condylography analysis, CADIAS® cephalometric analysis, and CADIAS® 3D virtual occlusion analysis

Overview of available software modules:

Software module	**Viewer**	**C**	**C3D**	**C3D+**	**AM**
GAMMA Document Browser	✓	✓	✓	✓	✓
GDSW classic	✓	✓	✗	✓	✓
CADIAS® 3D Virtual Occlusion Analysis	✓(*)	✗	✓	✓	✓
CADIAX® Condylography Analyses	✓(*)	✓	✗	✓	✓
Condylography with CADIAX® compact 2	✗	✓	✗	✓	✓
Condylography with CADIAX® 4	✗	✗	✗	✗	✓
CADIAS® Cephalometric Analysis	✓(*)	✗	✗	✓	✓

(*) read-only access

System requirements:

The following minimum requirements apply for all software modules including CADIAX® and CADIAS®:

Operating system	Windows 10 Version 22H2 (64-bit) or Windows 11 Version 23H2 (64-bit)
Processor	x64-based mid-range multi-core processor (Intel Core i5, AMD Ryzen 5 or comparable)
Main memory	4 GB RAM
Screen	720p resolution with 8-bit color depth

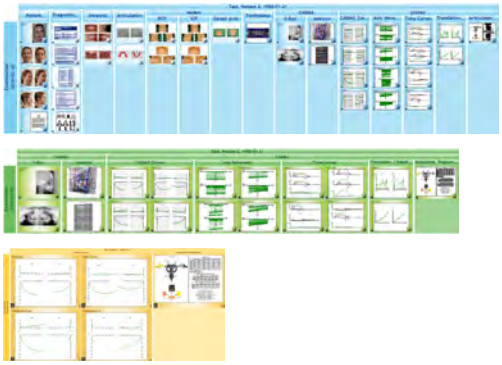
The following additional minimum requirements apply for the CADIAS® 3D software module:

Main memory	8 GB RAM
Graphics	Mid-range graphics card with DirectX 11.1 support and 2 GB graphics memory (Nvidia GeForce RTX 4060, AMD Radeon RX 7600 or comparable)
Screen	1080p resolution with 8-bit color depth

GAMMA Document Browser

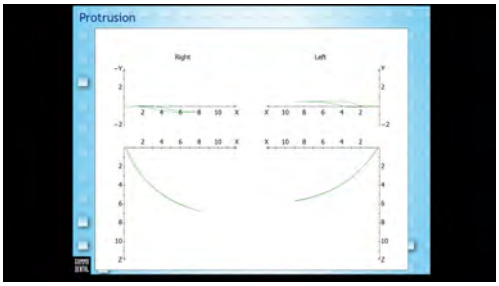
Customizable Workspace

The layout of the workspace in GAMMA Document Browser is completely customizable in respect to the user's requirements. For example, it is possible to conveniently and comprehensibly display all kinds of heterogenous data such as patient photos, CADIAS® x-rays, CADIAX® condylography recordings and all evaluations thereof, such as tracings and articulator settings, side-by-side. In addition, the software provides multiple predefined layouts that the user can easily alternate between.



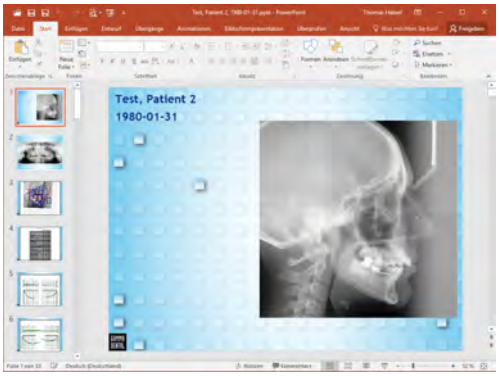
Case Presentation

GAMMA Document Browser ensures that entered patient data is consistently kept in a presentable and print-ready format. Indeed, the software also promotes the camera-ready case presentation in front of patients and conference audiences and can further be used for illustration purposes in scientific publications or internet presences. For this purpose, the application offers a fully integrated presentation feature.



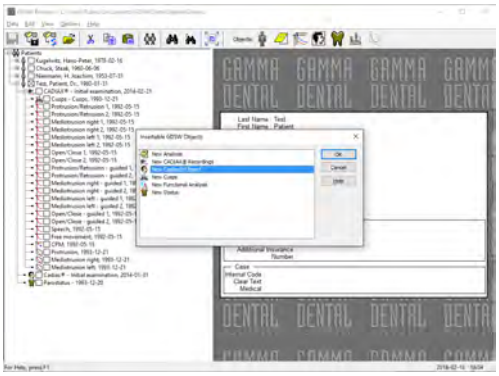
PowerPoint® Export

For easily transferring the patient documentation stored in GAMMA Document Browser into other applications, the software provides multiple export functionalities. For example, it is possible to save presentations directly in the format of Microsoft PowerPoint or to copy images of particular cells for easy insertion into the clipboard. All image data imported into the patient file can easily be exported again at any time. Similar to the image import, this can be carried out by simply dragging the images into and out of the workspace (drag-and-drop).



Data Transfer from GDSW classic

GAMMA Document Browser stores its data in a standalone patient database, which can be used independently from GDSW classic or even in a parallel fashion. To transfer data into the new format, GAMMA Document Browser provides a conversion functionality. This conversion does not only transfer the general patient information, but also all other data saved in the patient file, such as CADIAX® condylography curves or CADIAS® x-ray tracings. This data is automatically prepared for a structured and presentable display in the workspace. During this procedure, the original GDSW classic is preserved without any changes.



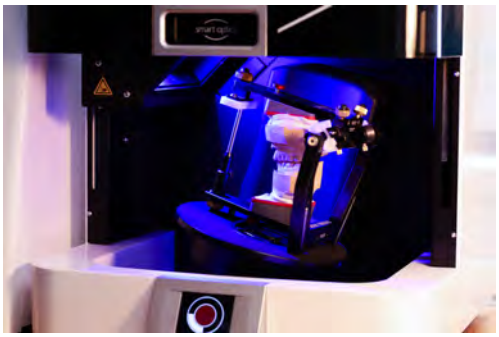
Digital Workflows

CADIAS® 3D supports the import of 3D upper and lower jaw models either using an indirect digital workflow with articulated plaster models or a novel direct digital workflow with intraoral scans.

Indirect Digital Workflow

The indirect digital workflow extends the conventional analog workflow with a subsequent step of digitizing the articulated plaster models in a lab scanner. It combines the excellent accuracy of analog dental models with the additional possibilities only provided by virtual functional analysis in CADIAS® 3D.

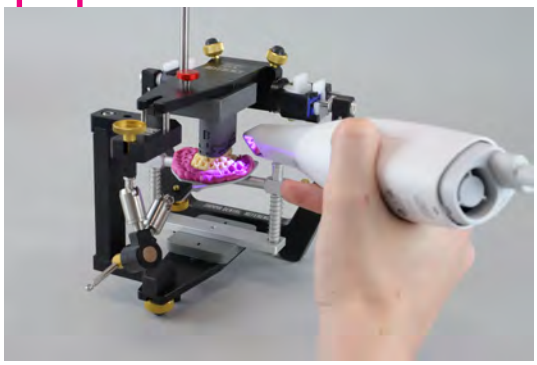
Model scans can easily be imported directly from lab scanners by CADstar (cadstar.dental), smart optics (smartoptics.de), or Zirkonzahn (zirkonzahn.com) or from the exocad® CAD/CAM software (exocad.de).



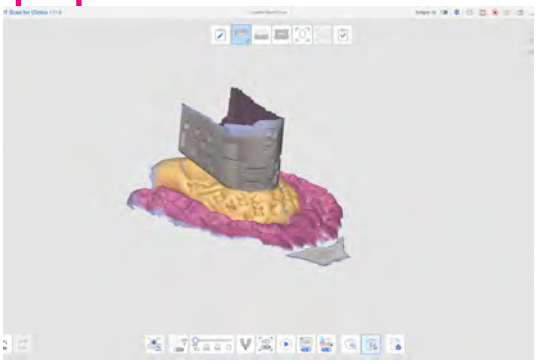
Direct Digital Workflow

1 The new and innovative direct digital workflow of the GAMMA system allows for an accurate articulation of intraoral scans, without a digital facebow. The digital transfer block set is required (order No: 06-230950).

2 After mounting the anatomic or exact facebow in the articulator or transfer stand, an additional scan is performed with the intraoral scanner. This scan captures the relationship of the bite fork to the appropriate transfer block.



3 The outside pattern of the transfer block is scanned together with the full-arch impressions of the upper jaw. The gap in-between is filled with soft impression material to allow for a single contiguous scan of the surface.



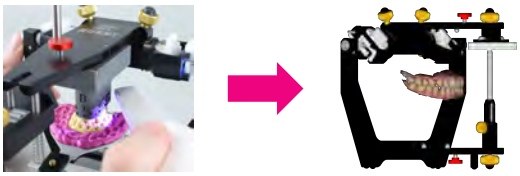
4 The bite fork scan is used to align upper and lower jaw intraoral scans during the import in CADIAS® 3D. The scans can thus be positioned accurately in the virtual articulator, which is a prerequisite for functional analysis.

Print&Click – Creating 3D-Printed Models for Articulator Mounting

A fully digital workflow usually entails the absence of physical models, which complicates crucial steps such as the final functional verification of digitally designed restorations. The Reference Print&Click Set (order no. 06-230960) solves this problem by facilitating the accurate articulator mounting of 3D-printed dental models.

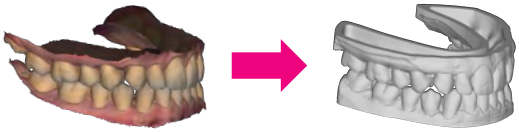
1 Articulate Intraoral Scans

Intraoral scans are transferred to the virtual articulator using GAMMA's unique digital workflow.



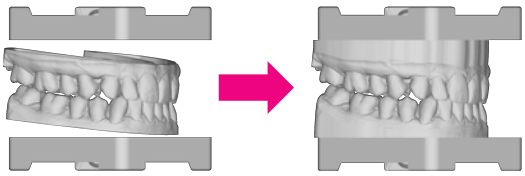
2 Create Printable Models

The articulated intraoral scans are converted to printable models using a Model Creator application such as by exocad, 3Shape, or Medit.



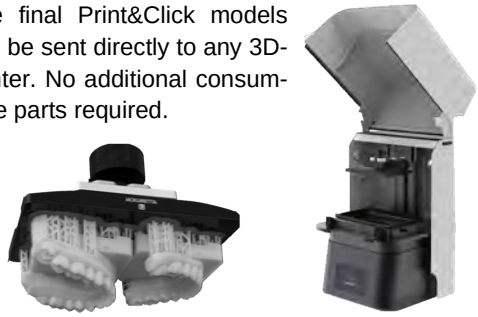
3 Connect to Base Plate

In the CADIAS® 3D software, the printable models are connected to a base plate that clicks onto a suitable Print&Click mounting block, preserving the hinge-axis relation of the digital models.



4 Send to 3D-Printer

The final Print&Click models can be sent directly to any 3D-printer. No additional consumable parts required.

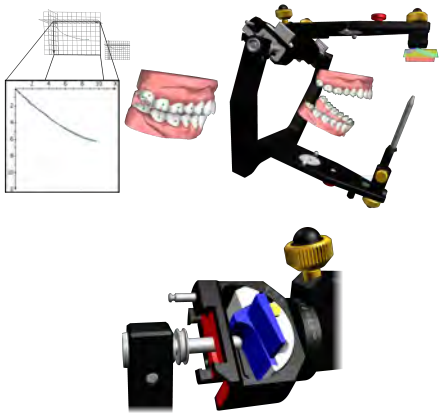


06-230960 Reference Print&Click Set

CADIAS® 3D Virtual Occlusion Analysis

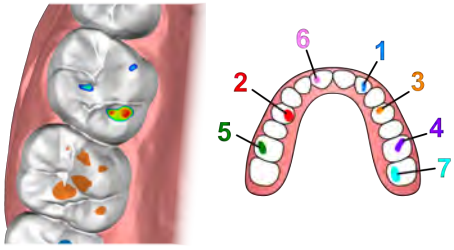
Virtual Articulator

This function allows the application of a virtual articulator with the 3D dental models of the patient. While the condylar housing can be adjusted individually, it is also possible to use a setting based on the recorded CADIAX® data. Furthermore, a movement simulation based on the real movement recordings of the patient is possible, not limited to the movements (protrusion, mediotrusion right or left) only, but to simulate all functional movements (e.g. speech, bruxism, chewing, etc.) and to evaluate the effects on occlusion. The user can decide whether to use free mandibular movements according to the recording, tooth guidance or the individually adjustable incisal table.



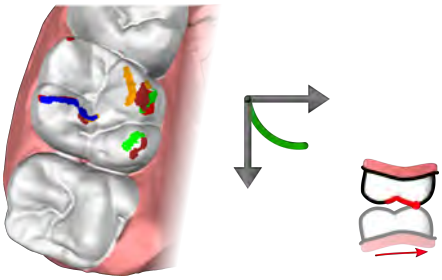
Static Occlusal Protocol

This feature allows the evaluation of the occlusal contacts in detail but also in the dynamic course of the open-close movements in reference position. In a mathematical simulation, the articulator is closed with rotation – starting from zero position for mounting. As soon as a first contact is found, the contacting segmented tooth in the upper jaw model will be dismissed from the mathematical model. This procedure is repeated until the computation of all teeth, i.e. the contact sequence, is complete.



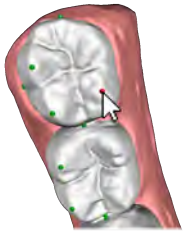
Dynamic Occlusal Protocol

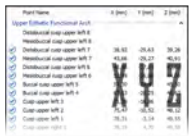
The feature for calculating a dynamic occlusal protocol allows the evaluation of the real guidance areas on the surface of the upper jaw teeth. Here, the two models will be rotated together until the first contact point for a user-defined selection of teeth has been found. Subsequently, the lower jaw model will be animated according to articulator movements or condylography curves, whereby the models will be guided with permanent contact. The resulting paths will be visualized directly on the surface of the 3D models.



3D Point Digitizing

CADIAS® 3D allows the user to 3-dimensionally digitize morphologic or functional occlusal points on the scanned models and to store their coordinates. Similar to the digitizing of points and contours on 2D x-ray images, this functionality is easily operated by moving the mouse cursor and clicking at the desired positions on the model. The program constantly shows the 3-dimensional coordinates (X/Y/Z) of the current position. With a simple click, this position will be saved, marked, and the coordinates will be allocated to the respective point.



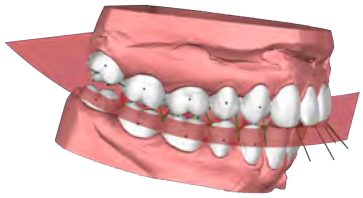


Numerical Analysis

Based on the digitized morphologic and points, CADIAS® 3D calculates the various values of the real spatial occlusion of the individual patient. The advantage, compared to other conventional methods, is the accuracy of the measurements and calculations. Compared to the occlusal analyses in cephalometry, it is additionally possible to get exact and differentiated calculations of the symmetry of the models. This means, it is possible to compare the left and the right occlusion.

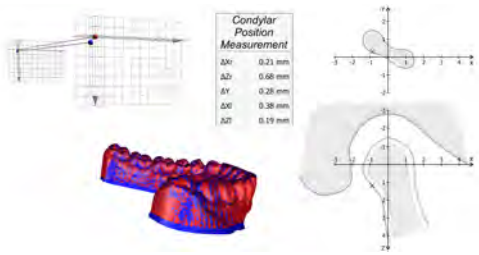
Graphical Analysis

The program allows the user the illustrative and interactive display of lines, planes, and analyses in a 3-dimensional patient. The user can show various basic planes (Axis-Orbital plane, median-sagittal plane) in the articulator. The various calculated occlusal planes are displayed transparently, the morphological guidance paths F1-F2, F1-F3, and F2-F3 are visualized as lines for easy interpretation.



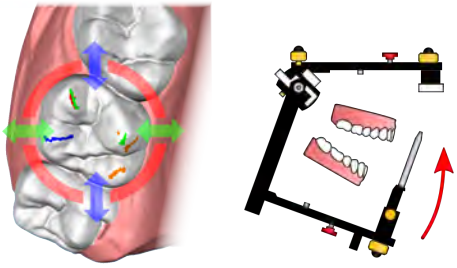
Condylar Position Measurement (CPM)

By using this function, the program automatically calculates the displacement in relation to the hinge axis of the jaw joints with the dental arch in reference position (RCP) and terminal occlusion (ICP). A numerical and graphical evaluation is presented in a comprehensible form.



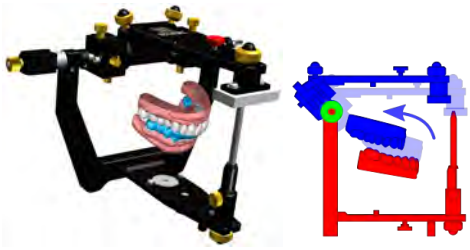
Visualized Treatment Objectives (VTOs)

VTO stands for “Visualized Treatment Objective” and describes the visualization of a given treatment objective in consideration of the current occlusal situation and the intended outcome. CADIAS® 3D allows you to freely and interactively reposition jaw models or individual teeth while visualizing the changes to the functional guidance paths and the anatomical parameters in real-time.

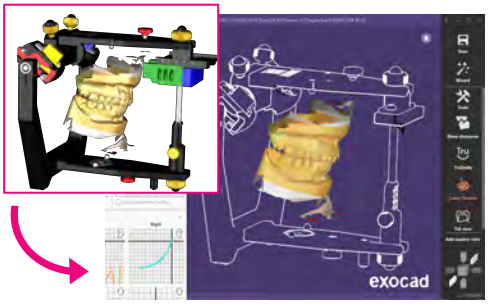


Virtual Condylar Position Variator (CPV)

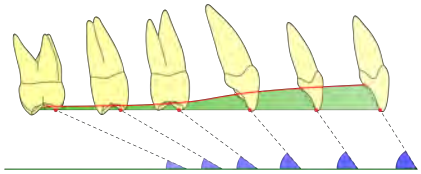
The CADIAS® 3D module includes a virtual representation of the Condylar Position Variator (CPV) device, which allows the precise repositioning of the upper or lower jaw models based on numeric values. These can be taken from a selected condylography curve, e.g., to move the lower jaw model to the desired therapeutic position.



Occlusion Design & CAD/CAM Export

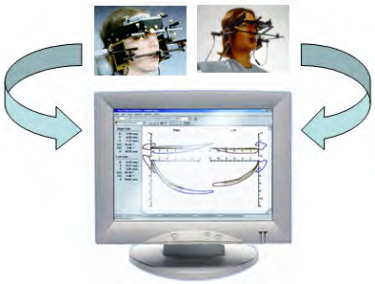


The Occlusion Design feature in CADIAS® 3D can be used to simulate articulator movements guided by the Sequence incisal table. The table's guidance angles incrementally decrease from anterior to posterior according to the concept of sequential occlusion by Prof. Rudolf Slavicek. Condylar guidance can be set to use either the articulator's SCI inserts or patient-individual CADIAX® movement registrations. The generated movements can subsequently be exported to the Jaw Motion Import module of the exocad® CAD/CAM application in order to create a functional sequential wax-up virtually.



Further, it is also possible to export the upper and lower jaw models in the occlusal situation created using the VTO feature. Several open 3D file formats are supported to ensure correct data transfer to CAD/CAM. This enables the manufacturing of bite splints for a therapeutic lower jaw position defined using the virtual CPV.

CADIAX® Condylography Analysis



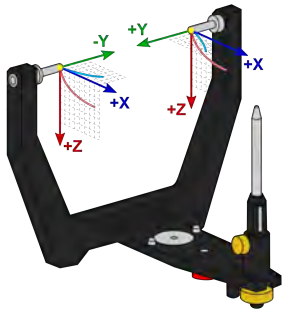
The CADIAX® Analyses module processes and stores data from all CADIAX® registration systems, CADIAX® *compact* 2 and CADIAX® 4.

The program includes a variety of display options, as well as conversions for setting the articulator and wax-up technique. In addition to detailed analyses of mandibular movement, it allows for expanded articulator calculations, including the setting of individual anterior guidance units.

The software is especially suitable for CADIAX® users who want to take advantage of the full potential of their device. All the details of the condylography data are clearly displayed on the screen of the PC.

The three-dimensional display of mandibular movement is clear and easily comprehensible for the patient. This is extremely helpful when explaining planned therapeutic measures to the layperson.

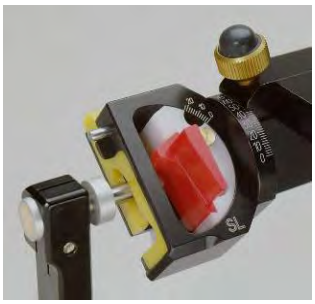
Movement Simulation Through Eccentric Articulator Programming



Using the facebows of the CADIAX® *compact* 2 and the CADIAX® 4 systems, the coordinate system, which is defined by right and left hinge axis points and the anterior reference point, is transferred directly to the articulator.

This leads to an interlocking system with a logical workflow. Through the mechanical connection between registration and the articulator, CADIAX® provides a precise hinge axis relation for maximum reproducibility.

The data acquired with the registration systems can then be used in the calculation programs for individual patient settings in the articulator.

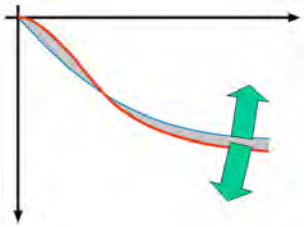


All calculations are based on the manufacturer's geometry for the various articulators.

Calculations for sagittal protrusion inserts are made with the protrusion track on hand, by evaluation of the X/Z diagram.

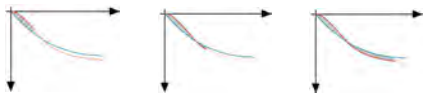
Calculations for transversal inserts are made with the mediotrusive movements on hand, by evaluation of the X/Y diagram.

The mathematical adaptation of the given articulator characteristics is carried out following a "best-fit" process. The articulator insert (blue) is rotated until it coincides, as closely as possible, to the patient's registration (red). If the articulator includes various inserts, the program will determine for the best fitting one.



CADIAX® always calculates values for 3, 5 and 10 mm, always processing the total track progression from the origin (reference position) to the given value.

Rechts			Links		
3rd mm	5th mm	10th mm	3rd mm	5th mm	10th mm
59°	54°	43°	49°	39°	33°



0-3 mm *0-5 mm* *0-10 mm*

Excursion movement

Compatibility as a feature

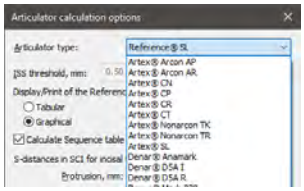
In addition to the perfectly suitable Reference SL articulator, CADIAX® users have several other articulator systems at their disposal, which are compatible with the software:

Artex®, Denar®,

Hanau®, Ivoclar®,

KaVo®, Panadent®,

SAM®, Whip Mix®



Pre-Calculated Occlusal Guidance Wax-Up – CADIWAX®

The simulation in the articulator is determined by three adjustable guidance units: the two condylar joints and the adjustable incisal table.

Posterior guidance is already given with the CADIAX® registration.

Occlusion concepts and their implementation in wax-up are defined by means of the incisal table. By adjusting the guidance surfaces in the table, more or less rotation is brought into the movement, i.e., the inclinations of the guidance surfaces on the tooth are determined.

GAMMA Dental Software® includes suggested preset concepts, as well as the possibility of implementing an individual, computer-generated occlusion concept.

Method for incisal table calculation

- (●) Sequential occlusion concept according to R. Slavicek
- ( ) Group-function 3-8
- ( ) User-defined occlusion concept

R. Slavicek's natural concept of sequential occlusion is included as standard feature in the software.

® SAM is a trademark of SAM Präzisionstechnik, Artex is a trademark Amann-Girrbach Dental, Denar & Hanau are trademarks of Whipmix, KaVo is a trademark of KaVo, Whipmix is a trademark of. Whipmix, Panadent is a trademark of Panadent, Ivoclar is a trademark of Ivoclar

For the sequential table, the calculations are based on the values of the joint guidance, in relationship with the spatial cusp coordinates, determined by statistical means.

Gamma Sequenz Inzisaltisch

Kondylareinstellungen am Artikulator für die Gamma Sequenz Inzisaltischberechnung

SKN rechts:	60°
SKN links:	51°
TKN rechts:	WEISS / 0°
TKN links:	WEISS / 4°

Vorgeschlagene Einstellungen für den Sequenz Inzisaltisch

Protrusion:	ORANGE
Lateral rechts:	ORANGE
Lateral links:	ORANGE

For exact calculations, the cusp coordinates of the mandible are entered. GAMMA Dental Software® then calculates an incisal table setting for each tooth, depending on the desired concept.

Berechnete vertikale Höckerposition

	Rechts				Links			
	MZW	Tisch	T - S1	T - S2	MZW	Tisch	T - S1	T - S2
1	46,2°	46°	34°	55°	46,2°	46°	34°	55°
2	46,2°	46°	34°	55°	46,2°	46°	34°	55°
3	36,2°	48°			36,2°	53°		
4	23,8°	36°			23,8°	42°		
5	16,8°	27°			16,8°	32°		
6m	10,7°	17°			10,7°	21°		
6d	9,2°	6°			9,2°	9°		
7m								
7d								
8m								
8d								

In addition, the program calculates an idealized radius of the curve of Spee and, depending upon the occlusion concept and cusp angles, an optimal inclination of the occlusal plane, according to functional parameters.

Höckerneigung	20°	25°	30°
Balancierte Okklusion 1/6	15°	10°	5°
Balancierte Okklusion 1/7	24°	19°	14°
Eckzahnkontrollierte Okklusion 1/6	6°	1°	-4°
Eckzahnkontrollierte Okklusion 1/7	15°	10°	5°

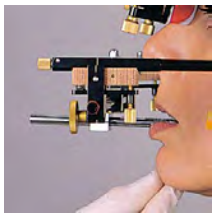
TMJ Assessment

CADIAX® records the spatial movement of the hinge axis of both temporomandibular joints simultaneously, bilaterally and in elapsed time. Converted to the intercondylar distance, the system offers the possibility of using differential evaluation of the movement tracks in statics and dynamics.

The advantages of condylographic examination are apparent:

- The method is non-invasive and carried out quickly
- The patients are not exposed to radiation
- The results are dynamically reproducible, independent of the therapist
- The examination can be carried out in the dental practice; the results are immediately available
- The ideal enhancement for interdisciplinary communication

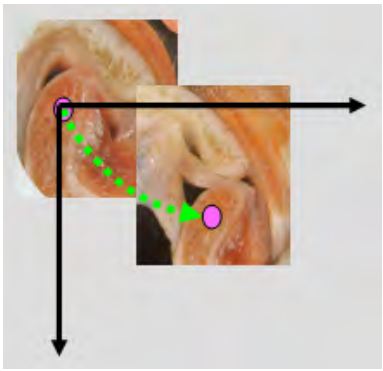
Application of an individually adjustable mandible bow (order No.: 06-235306) for setting the exact hinge axis is absolutely necessary when performing condylography for TMJ assessment. If using the bow with CADIAX® *compact* 2, the hinge axis is mechanically adjusted before registration.



The individual writing bow, adjusted onto the hinge axis as a requirement for condylographic TMJ assessment

The foundation of assessment is the standardized orthopedic description of the mobility and motility of the TMJ, with the following parameters:

- Quantity
- Quality
- Characteristics
- Symmetry
- Timing (comparison between left and right TMJ)
- Speed phenomena
- CPM
- Function und parafunction



Among others, the following movements can be evaluated: protrusion/retrusion, mediotrusion right and left, open/close, as well as all sorts of functional movements like speech, bruxism, and chewing.

The Principles of Condylographic Examination

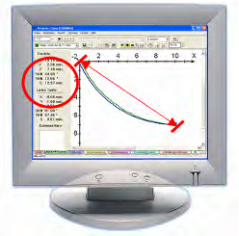
The initial condylographic findings are purely descriptive. These serve the acquisition of patient data and are the baseline for comparing subsequent recordings.

Subsequent interpretation requires the differential evaluation of the results with clinical- and instrumental functional analyses, because the condylography registrations cannot be evaluated separately, but only in conjunction with the other findings of the cranio-mandibular system.

The “Normal” Joint

Condylographic findings are based on the principle of comparative assessment with statistically obtained movement patterns of a “normal joint”. The following illustrations display non-guided movements, without tooth contact and without the use of an incisal pin. All graphics are provided solely for illustrative purposes and must not be used as the basis of comparison for actual recordings.

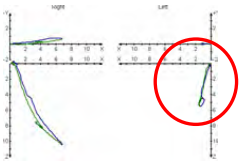
Quantity



Describes the maximum excursion distance of the translatory part of a movement track, measured from the reference position to the most excursive point of the movement. The quantity is described as *reduced*, *average* or *hypermobile*.

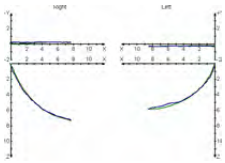
With GAMMA Dental Software®, this value can be read quickly and clearly, by clicking on the maximal excursive point in the CADIAX® curves.

Reduced



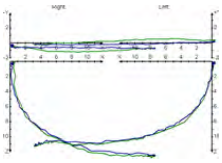
Reduced quantity left during opening

Average



average quantity of a protrusive record

Hypermobile



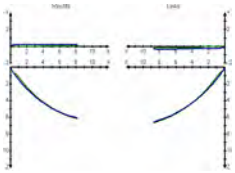
Hypermobility shown in an Open/Close movement

Quality

Normal registrations are reproducible, distorted and frictionless movements of synovial joints. Excursion- and incursion tracks practically overlap. The quality is described as *excellent*, *average* or *poor*.

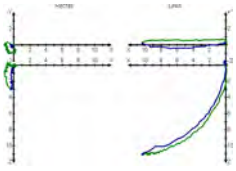
With a variety of view and zoom options, Gamma Dental Software® offers an ideal and vivid program for evaluating the quality of joint track recordings.

Excellent



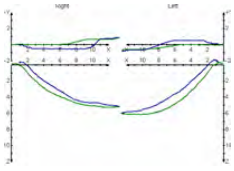
Excellent Quality of a protrusive record

Average



Average quality of a left medi-otrusive record

Poor



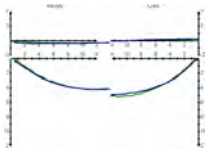
Poor quality in open/close

Characteristics

The characteristic is described as *concave*, *straight*, *convex* or *changing*. Normal tracks show an anterior concave characteristic.

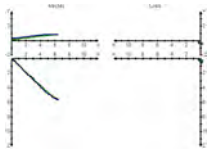
GAMMA Dental Software® provides the possibility to superimpose curves with a deviation from the "ideal" tracing with other recordings, serving differential assessment.

Anterior-concave



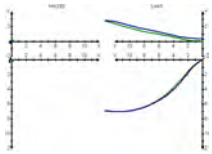
Anterior concavity in the sagittal tracing for both sides

Straight

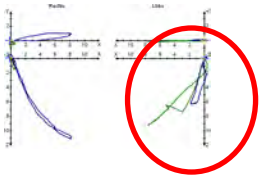


Mediotrusion right shown with straight characteristics

Changing



Left mediotrusion with changing characteristics from convex to concave)



Example of a superimposition of open/close and mediotrusion left movements

The superimposition of joint tracks has special importance in the evaluation of the movement characteristics. The illustration left shows the overlay of an open/close movement (blue), with a left mediotrusion track (green).

The steep and extremely shortened opening track does not match the distinctly longer mediotrusion. An indication of anterior disk displacement of the left joint, with possible partial reduction.

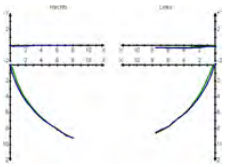
Symmetry

Right-left comparison of quantity, angularity, quality, and characteristic of symmetrical registrations (protrusion/retrusion and open/close). In symmetrical movements, no noticeable transversal movements take place.

In the examination for symmetry, it has to be considered that the "symmetric" patient is not the norm. Thus, slight asymmetries are to be expected and considered "normal". The evaluation of symmetry can only be carried out for open/close and protrusion/retrusion.

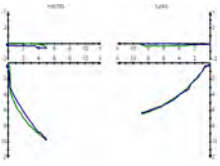
The clear and comprehensible displays of GAMMA Dental Software® allow for evaluation of functional symmetry according to graphic and numerical standards.

Symmetrical joint track



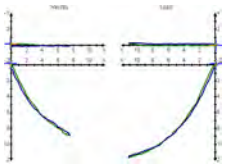
Symmetrical joint track, protrusion

Sagittal asymmetry of track inclination



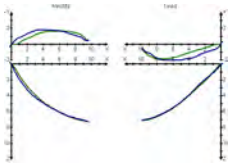
Protrusion with extreme differences in inclination

Sagittal asymmetry in quantity



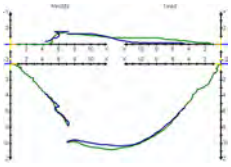
Clearly extended tracing of left joint

Transversal asymmetry



Strong transversal asymmetry of a protrusion track, caused by occlusal interferences

Sagittal and transversal asymmetry



Extreme right-left differences in open/close

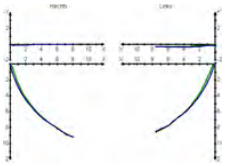
Timing and phenomena of speed

Dynamic evaluation of symmetric and asymmetric movements in translation and rotation.

Observing speed phenomena of the sagittal, transversal and rotational components of hinge axis movement. Normal joint movements generally register speeds of less than 60 mm/sec.

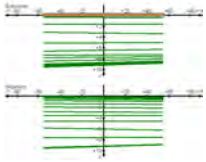
Gamma Dental Software® provides the possibility for evaluating elapsed time by means of the view aspects “Axis movements”, “Translation-Rotation” and “Time curves”.

The “normal” tracing



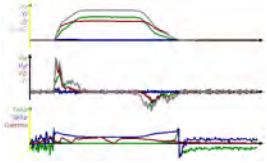
Symmetric joint track

Axis movement separated in ex- and incursion

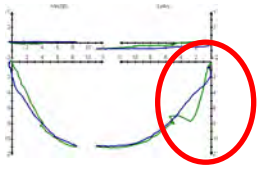


The even hinge axis movement in excursion and incursion, separated

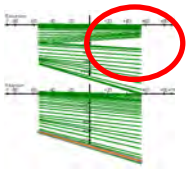
Time curves show the condylographic parameters drawn over the time axis



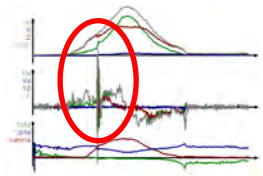
The time curves of a normal registration



Reciprocal TMJ clicking of the left side

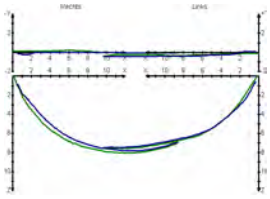


Blockage and acceleration visible in the axis movements

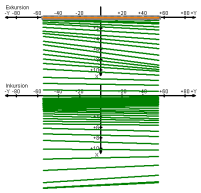


Exact localization of luxation, using time curves

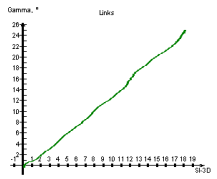
The significance of the hinge axis rotation



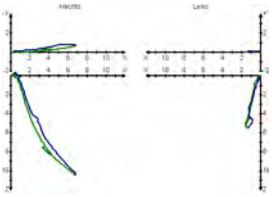
Normal open/close movement



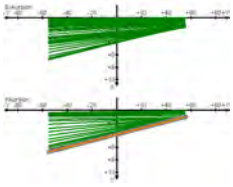
Blockage free hinge axis movement in excursion and incursion



Translation-rotation diagram shows a harmonious development of translation and rotation



Locked joint on the left side



Axis movements show the blocked joint

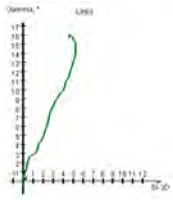


Diagram of translation-rotation in a “locked joint” case

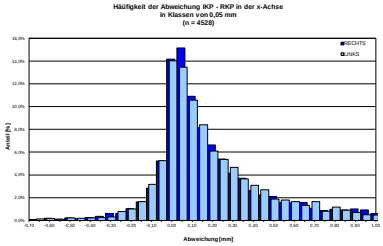
Condylographic Assessment Including Functional Occlusion

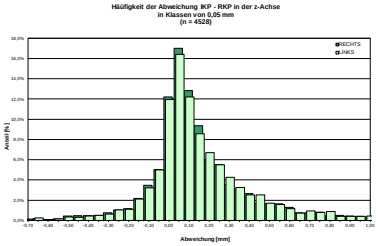
Prerequisite for these assessments is that the registrations have been carried out with the functional occlusal clutch**.**

CPM (Condylar Position Measurement)

CPM measures the spatial difference between the reference position (centric) and a second mandible position (e.g., maximum intercuspation ICP). The registrations are superimposed with a simple protrusion movement and evaluated.

The ICP (or closed bite position) normally lies on the reference position or slightly anterior, on the habitual protrusion track





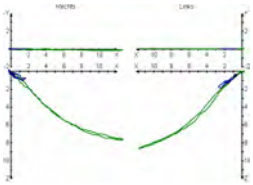
A CPM allows measuring the existing intercuspation in relation to the joint and to perform a post-reconstructive check of the new occlusion situation. For example, deviations in cranial direction during the measurement (compression) have significance for TMJ assessment. These kinds of registrations are indications that the occlusion in the molar area is not bearing sufficient force.

Recording of functions

Among others, the following functions of the masticatory organ can be documented and evaluated using condylar track registration: mastication, speech, clenching and bruxism, swallowing.

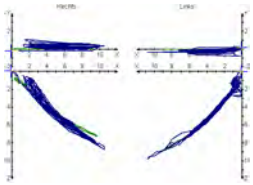
The relation of any movements to the border movements of the TMJ can be viewed and evaluated.

Speech



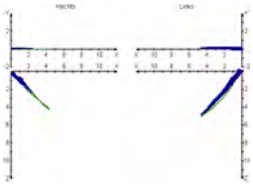
Speech recordings document the phonetic function

Mastication



Mastication: the very informative function of chewing

Bruxism

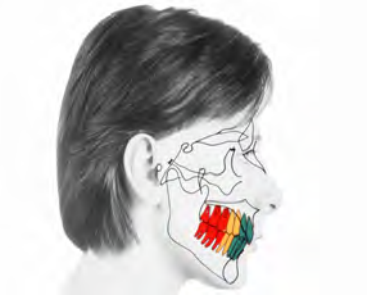


Bruxism- a dominant function of the masticatory organ

CADIAS® Cephalometric Analysis

CADIAS® is the sophisticated cephalometric analysis and planning module of GAMMA Dental Software®.

The program links teleradiographic information from the x-ray program with the articulator, condylography, and other patient findings.



Cephalometric Analysis – Essential Part of Interdisciplinary Assessment

Cephalometric analyses are often wrongly considered to be relevant only for orthodontic assessment and treatment planning. However, these analyses are of significant value for the assessment and treatment strategies of comprehensive interdisciplinary dentistry. Considering the statistical distribution of skeletal classes in the overall population, it is evident that skeletal class I is not the “norm”, but rather, at only 37%, represents a clear minority. The majority of skeletal relations follow a class II principle. Because of the considerable compensatory mechanisms involved during dento-facial development, most of these cases still achieve normal dentition, or a close facsimile. Nevertheless, after completion of development, this results in a large number of malocclusions and dysgnathias.

Therefore, when planning treatment for complex reconstructions, it is extremely important to analyze the relation in each individual case, before taking therapeutic action. This applies first of all to treatment of non-dysfunctional patients, but even more so for patients with dysfunction. All of these patients benefit from a systematic assessment procedure with standardized data-acquisition and evaluation, appropriate to the complexities of the stomatognathic system.

CADIAS® offers:

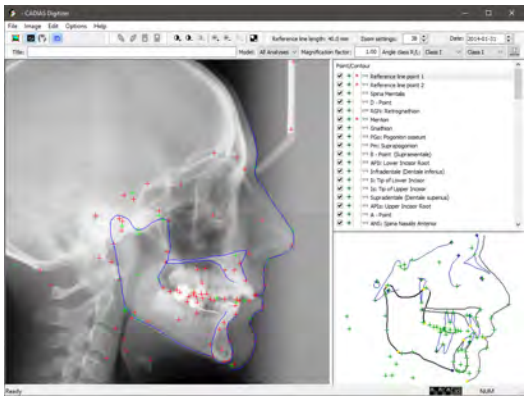
- Statistical analyses, based on individual standards, taking into consideration the functional compensation mechanisms
- Dynamic analyses by including the articulator’s reference plane and therewith a link to clinical and functional analysis (CADIAX®)
- Interactive treatment visualization, with immediate feedback from all of the statistical and dynamic analyses

Point and Contour Input from the Ceph

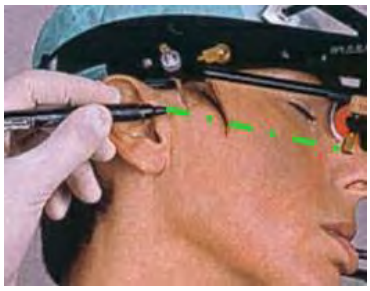
Input of points and contours on the x-ray image is carried out directly on the computer screen. X-ray images can be loaded from digital image files.

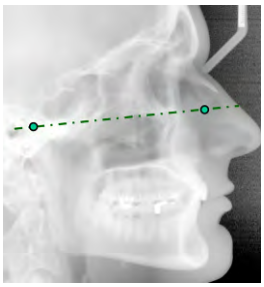
The program provides a list of points and contours, which should be entered one after another. Interactive help and explanatory functions for the entries can be invoked when needed.

A Zoom window can be displayed permanently to magnify the current cursor position and simplify the identification of points on the screen. Picture display parameters, such as brightness, contrast, or magnification can be adjusted as needed.

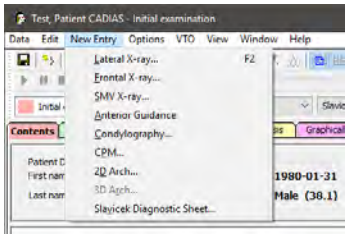


Generally, the lateral x-ray is taken after condylography. Before removing the writing bow (adjusted to the exact hinge axis), you must mark the position on the skin and make a small pencil-mark, so that the positions will be visible on the x-ray. The anterior reference point (orbital) will be marked in the same way.





Further input in CADIAS®, which can be linked to the lateral x-ray analysis:



- Frontal x-ray
- SMV x-ray
- Anterior guidance
- Condylography (CADIAX®)
- CPM (CADIAX®)
- Dental arch
- Form sheet for initial diagnostic findings

Frontal and SMV x-ray

These aspects are entered similarly to the lateral x-rays, and extend the possibilities for analysis, especially with regard to symmetrical skeletal and dental aspects.

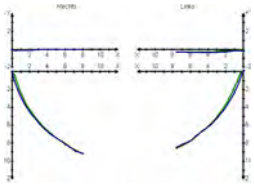
Anterior Guidance

Entering an anterior guidance allows exact functional analysis of the incisors.

With the tooth shaper (order No.: 06-231800), filled with hard silicone, an impression is made of the upper incisor, cut on the lingual concavity, and entered in the program.

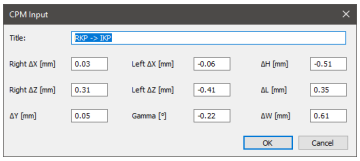
Condylography

The appropriate protrusion tracings are selected from the list of CADIAX® condylography registration data and, using Copy/Paste, entered into the CADIAS® program.



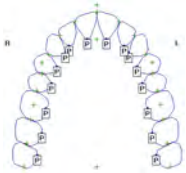
CPM

CPM is also input from CADIAX®, or by graphic registration, using an input form.

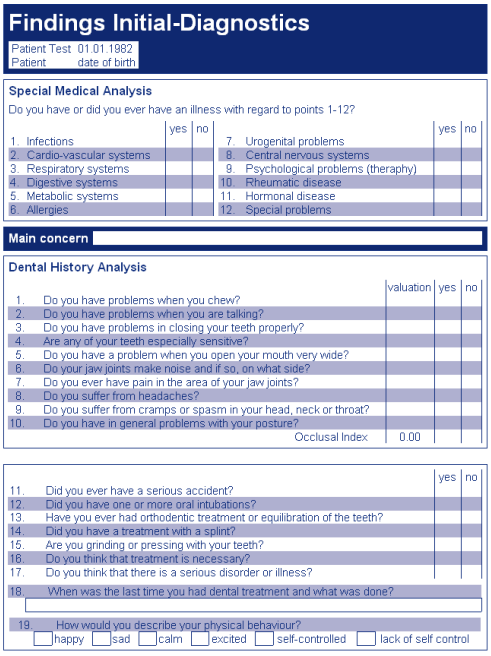


Dental Arch

To digitize the dental arch, the models are placed on a scanner, with occlusal surfaces facing down, and transferred as pictures to the computer.



Form Sheet for Initial Diagnostic Findings



Findings Initial-Diagnostics

Patient Test 01.01.1982
Patient date of birth

Special Medical Analysis

Do you have or did you ever have an illness with regard to points 1-12?

	yes	no		yes	no
1. Infections			7. Urogenital problems		
2. Cardio-vascular systems			8. Central nervous systems		
3. Respiratory systems			9. Psychological problems (theraphy)		
4. Digestive systems			10. Rheumatic disease		
5. Metabolic systems			11. Hormonal disease		
6. Allergies			12. Special problems		

Main concern

Dental History Analysis

	valuation	yes	no
1. Do you have problems when you chew?			
2. Do you have problems when you are talking?			
3. Do you have problems in closing your teeth properly?			
4. Are any of your teeth especially sensitive?			
5. Do you have a problem when you open your mouth very wide?			
6. Do your jaw joints make noise and if so, on what side?			
7. Do you ever have pain in the area of your jaw joints?			
8. Do you suffer from headaches?			
9. Do you suffer from cramps or spasm in your head, neck or throat?			
10. Do you have in general problems with your posture?			
Occlusal Index	0.00		

	yes	no
11. Did you ever have a serious accident?		
12. Did you have one or more oral intubations?		
13. Have you ever had orthodontic treatment or equilibration of the teeth?		
14. Did you have a treatment with a splint?		
15. Are you grinding or pressing with your teeth?		
16. Do you think that treatment is necessary?		
17. Do you think that there is a serious disorder or illness?		

18. When was the last time you had dental treatment and what was done?

19. How would you describe your physical behaviour?
☐ happy ☐ sad ☐ calm ☐ excited ☐ self-controlled ☐ lack of self control

Muscle Diagnosis

	left +	left ++	right +	right ++
1. shoulders and neck				
2. atlanto-occipital region				
3.a M.temporalis ant.				
3.b M.temporalis med.				
3.c M.temporalis post.				
4.a M.masseter (superficial)				
4.b M.masseter (deep)				
5. Tuber maxillae				
6. M.pterygoideus medialis				
7. M.mylohyoideus				
8. M.digastricus				
9. suprahyoidale M.				
10. infrahyoidale M.				
11. Larynx				
12. M.sterno-cleido-mastoideus				
13. M.omohyoideus				
14. Tongue				

	+	++
15. comparative palpation of jaw joints		
a) lateral poles, statically		
b) lateral poles, in rotation		
c) retral joint space		
d) Lig.temporo-mandibulare		

Preliminary Brainstem Nerve Analysis

1. N.olfactorius (analysis)	
2. N.opticus (analysis)	
3. N.oculo-motorius (clinical mobility)	
4. N.trochlearis (clinical mobility)	
5. N.trigeminus (clinical palpation and sensitiveness)	
6. N.abducens (clinical mobility)	
7. N.facialis (clinical mobility)	
8. N.stato-acusticus (clinical check of equilibrium and hearing)	
9. N.glosso-pharyngeus (clinical and analysis)	
10. N.vagus (analysis)	
11. N.accessorius (clinical and analysis)	
12. N.hypoglossus (clinical and analysis)	

This easily clearly arranged form sheet is designed to cover all of the questions in dental anamnesis. The user can process the form with the mouse or fill out the fields with the keyboard:

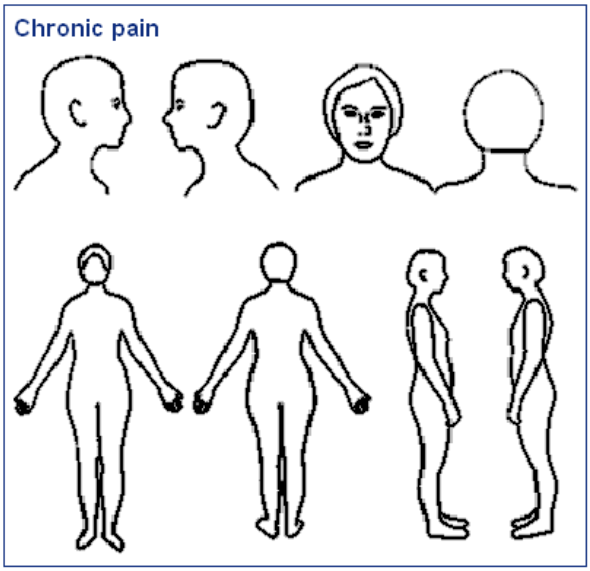
- The patient's main concern
- Special medical anamnesis
- Dental anamnesis

Calculation of the occlusal index is automatically carried out based on the inputs in the dental anamnesis. It reflects the patient's own subjective feelings, regarding his/her complaints. A comparison of the subjective and objective situation is a key to evaluation.

Comparative muscle analysis is geared to an evaluation of the differences of the two sides. Palpation is carried out symmetrically, simultaneously and evenly while the patient is sitting comfortably. The patient indicates any differences between left and right and indicates any possible pain in the palpated areas.

After the bilateral comparison, an evaluation of asymmetry can be made. This can offer insights into any possible disharmonious functional processes.

The examination sheet for chronic pain, tooth status and the possibility for including myofunctional problems, round out the program into a complete anamnesis package.

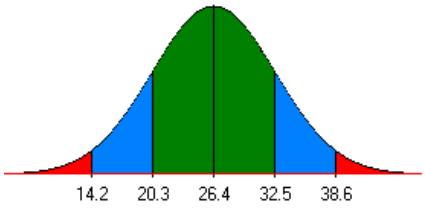


CADIAS® Analyses

Based on the input data, CADIAS® provides a variety of static and dynamic analyses, which are generally offered as tracings and/or numerical lists from specific authors.

Norm Calculations

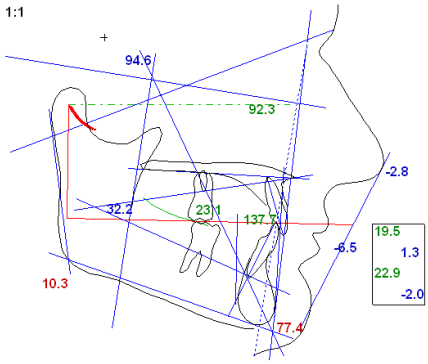
Most of the standards used in CADIAS® have been calculated according to the patient's age and gender. Values lying within the first standard deviation are displayed in green; values lying between the first and second standard deviation are displayed in blue; values lying outside the second standard deviation are displayed in red.



System- and User-Defined Analyses

The program is equipped with a number of predefined points, values, numerical analyses and tracings. With all of these system settings, you will almost always find what you need.

However, if further individualization of the analyses is necessary, do not hesitate to contact us.



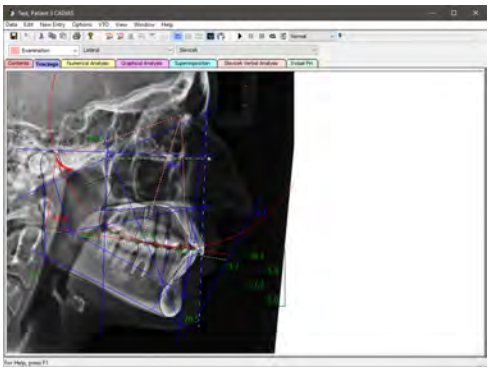
Tracings

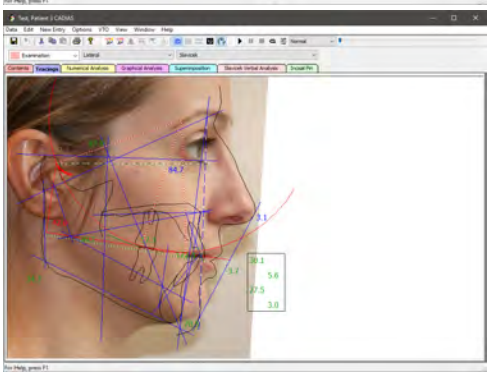
The digitized x-ray is displayed in tracings. The program shows the input contours, as well as the most important measuring planes and values.

The following author-specific tracings are included in the program's scope of delivery, among others:

- Slavicek
- Sato
- Ricketts
- Jarabak
- Sassouni
- Bergen
- Björk
- Steiner

It is also possible to overlay the cephalometric tracing on the patient's lateral photograph.





Numerical Analyses

These author-specific analyses give a list of values, which are generally sorted in chapters, thus offering a valuable summary from a cephalometric point of view.

By simply clicking on any value, you will get an explanation of the value and the calculation of the trend.

Skeletal Measurement	Norm	Wert	Trend
Facial Axis	90.0 °	88.1	
Facial Depth	89.8 °	81.6	2-**
Mandibular Plane	23.3 °	26.8	1D*
Facial Taper	68.0 °	71.6	1B*
Mandibular Arc	30.8 °	40.6	3B***
Maxillary Position	65.0 °	62.2	1-*
Convexity	0.2 mm	3.6	1X*
Lower Facial Height (by R.Slavicek)	45.7 °	44.2	
Lower Facial Height to Point D	52.2 °	51.0	

Excerpt of the skeletal measurement from the Slavicek analysis

Interactive Slavicek Verbal Analyses

In the Slavicek verbal analysis, values of individual problem groups are summarized and used to form statements based on statistical reference values.

Click on any of these statements to arrive at an explanatory field, appearing under the list, which displays the determining- and interrelated values.

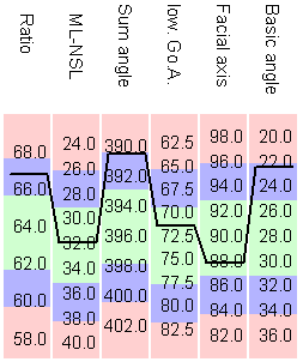
With this option, the program offers an excellent possibility for recognizing the interrelationships among individual values and for analyzing their evaluation.

The skeletal trend of the skull is dolichofacial
The skeletal trend of the mandible is extremely brachyfacial
Skeletal class is II with tends to I
The maxilla is positioned neutral, with tendency to retrognathic
The mandible is positioned strongly retrognathic
The lower facial height is normal
Dental class unknown
The protrusion of the upper incisor is diminished
The inclination of the upper incisor is extremely diminished (6.9°!)
The protrusion of the lower incisor is diminished
The inclination of the lower incisor is normal
The interincisal angle is increased
Occlusal concept: Canine dominan
No functional statement available

Graphical Analyses

In the graphical analyses, various areas of analysis are displayed in spreadsheets:

Skeletal relation, Compensation, Occlusal plane, Maxilla, Mandible, Lower face height, Growth type, Skeletal profile, Maxillo-mandibular position.



Graphical analysis for growth type

Incisal Pin Table

This table allows the exact conversion of planned modifications of the vertical position in the articulator.

For example, with the index, modifications of cephalometric values planned in the VTO can be calculated to the height of the incisal pin. This means that you can exactly convert the planning on the x-ray through the modified height of the articulator.

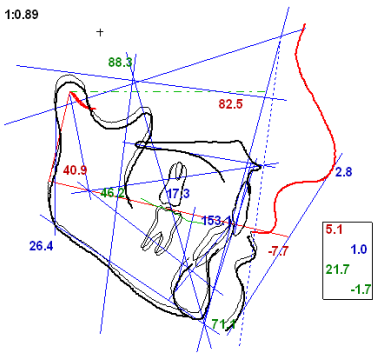
Incisal Pin Height	0.0	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0
Lower Facial Height	44.2	44.6	45.0	45.5	45.9	46.3	46.7	47.5	48.2	49.0	49.7	50.4	51.7
LFH. (Norm)	45.7	45.8	45.9	46.1	46.2	46.3	46.4	46.6	46.8	47.0	47.2	47.4	47.8
LFH. (Variation)	-0.0	0.4	0.8	1.3	1.7	2.1	2.5	3.3	4.0	4.8	5.5	6.2	7.5
Menton Vertical	0.0	0.4	0.8	1.2	1.6	1.9	2.3	3.0	3.6	4.3	4.9	5.4	6.5
Pogonion Sagittal	0.0	-0.9	-1.8	-2.6	-3.5	-4.4	-5.3	-7.1	-8.9	-10.7	-12.5	-14.3	-17.9
Incision Inf. Vertical	0.0	0.5	1.1	1.6	2.1	2.6	3.1	4.0	5.0	5.9	6.7	7.6	9.2
Incision Inf. Sagittal	0.0	-0.6	-1.2	-1.8	-2.4	-3.0	-3.7	-4.9	-6.2	-7.5	-8.8	-10.2	-12.8

Incisal Pin Height	0.0	-1.0	-2.0	-3.0	-4.0	-5.0	-6.0	-8.0	-10.0	-12.0	-14.0	-16.0	-20.0
Lower Facial Height	44.2	43.7	43.3	42.8	42.3	41.9	41.4	40.4	39.3	38.2	37.1	35.9	33.4
LFH. (Norm)	45.7	45.6	45.5	45.4	45.3	45.2	45.1	44.9	44.7	44.4	44.2	44.0	43.5
LFH. (Variation)	-0.0	-0.5	-0.9	-1.4	-1.9	-2.3	-2.8	-3.8	-4.9	-6.0	-7.1	-8.3	-10.8
Menton Vertical	0.0	-0.4	-0.8	-1.3	-1.7	-2.2	-2.7	-3.7	-4.7	-5.8	-6.9	-8.2	-10.8
Pogonion Sagittal	0.0	0.9	1.7	2.6	3.5	4.3	5.2	6.9	8.6	10.2	11.8	13.4	16.4
Incision Inf. Vertical	0.0	-0.5	-1.1	-1.7	-2.2	-2.8	-3.4	-4.7	-5.9	-7.3	-8.6	-10.1	-13.1
Incision Inf. Sagittal	0.0	0.6	1.2	1.7	2.3	2.9	3.4	4.5	5.5	6.5	7.4	8.3	9.8

Overlay and Comparison

Overlays and comparisons are useful in various areas. For instance, orthopedic or dental modifications directly planned on the screen can be displayed with overlays of the original situation.

Of course, comparisons of findings are also possible, before, between, during and after treatment.



Superimposition of a planned repositioning of the mandible with the original situation

Evaluations Based on the Lateral X-Ray

Providing graphical visualization of the skull, uncovering dynamic interrelationships and offering the possibility of recognizing compensatory processes, x-ray analysis often set a decisive course to treatment planning. However, placing too much emphasis on any single aspect should be avoided. When combined with the other findings, x-ray analysis can be a meaningful contribution towards the final assessment.

In general, cephalograms are analyzed according to the following aspects:

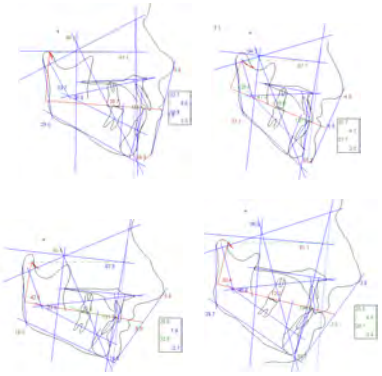
- Skeletal evaluation
- Vertical evaluation
- Occlusal plane evaluation
- Dental analysis
- Aesthetic evaluation
- Dynamic analysis
- Compensation mechanisms
- VTO

Skeletal Evaluation

Mandibula and maxilla are evaluated separately, as skeletal units. After this basic classification, the principle of the architecture will be reclassified to an appropriate subgroup of facial patterns, based on the values at hand.

A significant aspect of skeletal assessment involves the position of the jaw, relative to the reference structures of the skull, as well as the relative relation of the lower jaw to the upper jaw.

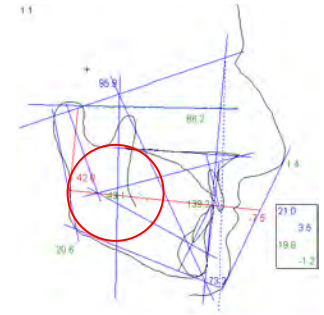
This individual preparation is so important, because all of the further analytical results can then be compared to the individualized values which correspond to the patient's skeletal pattern.



The "uniform face" does not exist; the variations in skeletal relations are manifold

Evaluation of the Vertical Dimension

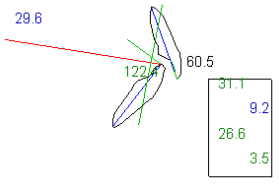
During growth, an individual distance develops between the upper and lower jaw: in individual cases, this vertical can be necessary as compensation for skeletal discrepancies. Therefore, this parameter is attributed a special significance in assessment and treatment planning. This system classifies patients according to their skeletal principles. This is followed by the calculation of an individual vertical and a comparison with the current situation. This can supply valuable information for planning therapy. However, the "norm", as a principle of classification, should not be dogmatically set as the goal.



The individual lower face height as an important parameter for planning therapy

Dental Analysis and Occlusal Plane Evaluation

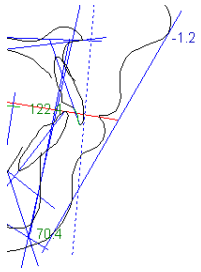
The anterior tooth situation and the occlusal plane, important for many functions, are decisive elements of the dental analysis. Here, it is very important to take into consideration the morphology of the lingual functional surfaces of the anterior teeth. First, the occlusal plane is evaluated statically. It is defined relative to the mandible and evaluated.



Magnified display of the anterior tooth situation

Aesthetic Evaluation

In the lateral x-rays, the soft tissues are displayed nicely, using soft filtering. This allows you to evaluate the facial aesthetics, and also to make a quality evaluation of the circumoral structures. The tooth position within and relative to the lip structures is important for evaluation and planning. The position of the upper- and lower lips in the facial profile can be evaluated in relation to aesthetic planes of reference.



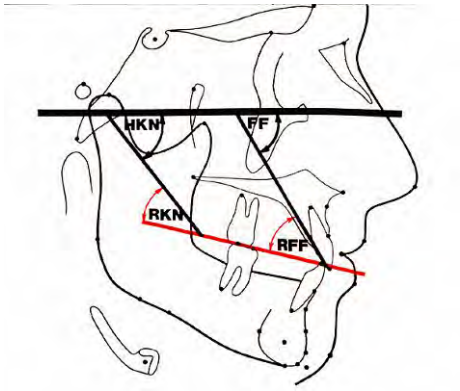
Dynamic Analyses

A significant element of lateral x-ray analysis is the dynamic examination of mandibular movement. This is achieved by transferring the recordings of hinge axis movement. With this supplement, it is possible to identify the functional determinants in their interrelationships and carry out a meaningful assessment.

The dynamic is defined through the relation of the sagittal condylar track inclination (SCI) to the occlusal plane and its inclination (OPI) as the *relative condylar inclination* (RCI):

RCI = SCI – OPI

From this simple formula, an optimal inclination of the occlusal plane, adhering to functional aspects, can be planned easily, as a whole or for individual teeth.

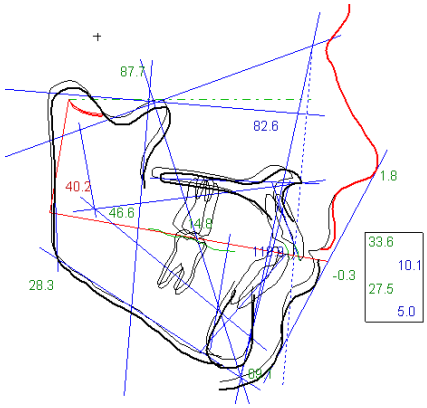


Schematic illustration of relative condylar track inclination and relative anterior guidance

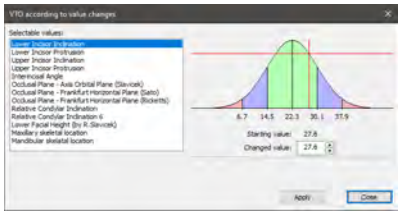
Visualizing Treatment Objectives with CADIAS® – VTO

The program offers visualization possibilities for given treatment objectives on the x-ray display, which allows keeping track of important parameters and treatment steps on the computer screen. The following actions can be displayed:

- Modification of the vertical situation
- Orthopedic tooth movements (rotation and shifting)
- Orthopedic TMJ movements of the maxilla and mandibula
- Surgical treatment simulation
- Mandibular positioning, using condylography data (CADIAX®)



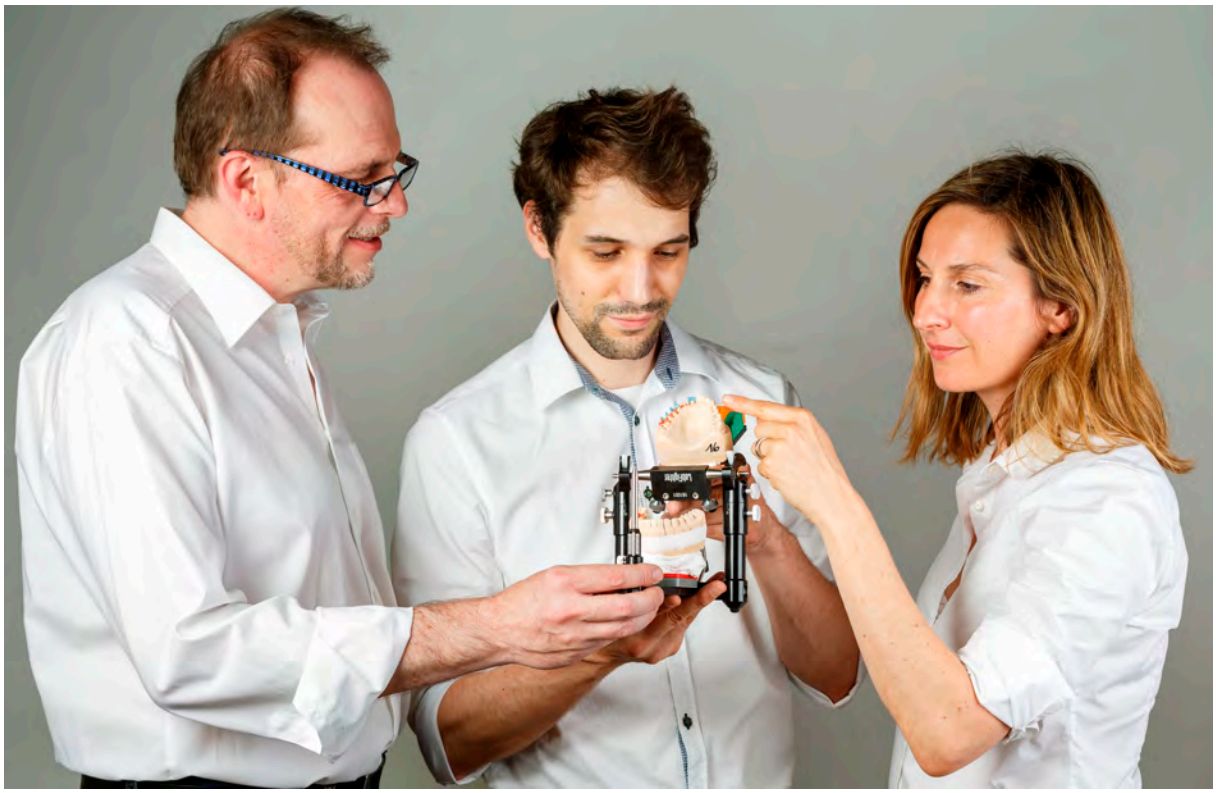
Skelettale Vermessung	Norm	Wert	Trend	Norm	Wert	Trend
Fazialachsenwinkel	90.0 °	87.7		90.0 °	86.1	
Fazialtiefe (Fazialebenenwinkel)	88.4 °	82.6	1.-	88.4 °	82.2	2.**
Mandibularplanum (Unterkieferebenenw.)	24.5 °	28.3		24.5 °	27.5	
Kinnwinkel (Facial Taper)	68.0 °	69.1		68.0 °	70.4	
Collumwinkel (Unterkieferbogenwinkel)	27.5 °	40.2	36***	27.5 °	43.2	36***
Maxillare Position	65.0 °	65.0		65.0 °	61.4	1.*
Konvexität (Punkt A)	1.0 mm	1.6		1.0 mm	-1.2	1.*
Untergesichtshöhe (Slavicek Norm)	46.1 °	46.6		45.9 °	45.4	
Untergesichtshöhe zu D	52.8 °	52.0		52.4 °	51.8	



During planning, you can make use of all static and dynamic analyses and call up a comparison of the planned situation with the original situation in index form or graphic. Using the incisal table chart, you can transfer various planned parameters back to the articulator.

You can save as many VTO items as you like for each patient case. The program documents all alterations automatically, allowing you to retract individual modification steps as needed.

5/1 Service, Maintenance & Training



5/1 Service, Maintenance & Training

Service, maintenance, and training

Over the last several years, we at GAMMA have continuously built up our service and advisory team. Not least, because we are convinced, that being constantly at our customers' service and permanently "on call" with customer support is the best way to ensure successful application of the GAMMA system. In practical terms, this means service- and customer-oriented direction for proper application of our product. Above all, close contact to our customers also brings us important market feedback, which we use towards continuous product improvement and development.

Through our international contacts, we always stay informed about the latest developments in the "functional" business, just as we ourselves make constant efforts to improve our systems and encourage innovation.

Customer service means:

- Direct contact to the customer
- Well-trained consultants for medical products
- Online Support
- Advanced training sessions
- Close partnership with renowned Institutes and Universities
- Road Shows
- Participation at exhibitions

The GAMMA CADIAX® systems are medical products of class I with measuring function according to Regulation (EU) 2017/745. Legal regulations mandate that our customers have these appliances checked at regular intervals for electrical safety and measurement function.

05-002	Annual CADIAX® service (device must be sent to the factory in Klosterneuburg - price excl. transport costs)
05-001J	Adjustment for Reference SL articulator (device must be sent to the factory in Klosterneuburg - price excl. transport costs)
05-003J	Adjustment for Reference LF articulator (device must be sent to the factory in Klosterneuburg - price excl. transport costs)

5/1 Service, Maintenance & Training

Software maintenance

It is our duty to ensure that, with the Gamma Dental Software®, our customers receive a functionally reliable system at their disposal. We work constantly at improving and further developing the software as well as creating new modules and functions.

Most GAMMA users appreciate to have regular supervision in product application as well as periodical training sessions, so that new staff has no problems in handling the software.

In addition to the normal telephone **Hotline**, we have a special service: **Software support online**. With this system, our software technicians can have direct access to the customer's computer. The customer can follow each of the technician's manipulations directly on the computer screen. This not only solves the software- or configuration problem quickly and easily, but also serves as an individual training session!

To take advantage of this service, you only need an internet connection. Our technicians will then give you all further details. The connection set-up only takes a few minutes.

Immediately after concluding a software maintenance contract, the following company services are automatically at your disposal:

- Telephone information (or information via Fax or Email) for questions concerning the software.
- Information about update releases and announcements regarding new program versions, containing details of performance range
- Telephone information (or via fax, e-mail) about the usage of the program
- Telephone information about program interfaces of the software, in order to link individual modules of the software with other programs.
- Availability of the latest program version; this version will be sent via a download link. The end user is responsible for setting up and running the new updates on the computer
- Free online software maintenance

Naturally, we cannot provide all of these services at no cost. Therefore, we offer a system calculated on the modules, that represents the graded maintenance costs, according to the software version being used:

Software maintenance for GAMMA Dental Software®	
05-GDSWC	Software maintenance for GAMMA Dental Software®, "C" version
05-GDSWC3Dplus	Software maintenance for GAMMA Dental Software®, "C3D+" version
05-GDSWC3D	Software maintenance for GAMMA Dental Software®, "C3D" version
05-GDSWAM	Software maintenance for GAMMA Dental Software®, "AM" version

5/1 Service, Maintenance & Training

MEDIA FOR INSTRUCTION & PRACTICAL USE:

04-000020	Multimedia course wax-up DVD "Class I Occlusion" by Prof. Slavicek and team ISBN 978-3-9501261-3-6	
04-000021	Multimedia course Wax-up DVD "Class II, III, Cross Bite" by Prof. Slavicek and team ISBN 978-3-9501261-4-3	

Books by GAMMA DENTAL Edition

Book “The Masticatory Organ”
A fascinating book by Dr. R. Slavicek, full of experiences concerning the functions and dysfunctions of the masticatory organ. An important work, very helpful for understanding the possibilities of the GAMMA system.

ISBN 978-3-9501261-1-2 **Book “The Masticatory Organ”** by Prof. Dr. Rudolf Slavicek

Book series "Concepts on Oral Medicine" by Prof. Dr. Rudolf Slavicek (3 books)”
Facts and documentations concerning the treatment of patient cases along the principles of the Vienna School of Interdisciplinary Dentistry - in English and German - includes 3 volumes (more than 1,500 pages)

ISBN 978-3-9501261-6-7 **Book “Concepts in Oral Medicine”** by Prof. Dr. Rudolf Slavicek

Training and further education

Training and further education are important factors in successfully integrating a functional dentistry.

We maintain close cooperation with renowned training academies and universities, and our own team of advisors is being well trained. We want to provide you with reliable contact partners, who will be at your service in “word and deed”.

For information about the latest course program and the partner training institutes who offer seminars, courses, and university courses, using our system, please request from or visit below mentioned contacts:

VieSID
Vienna School of Interdisciplinary Dentistry

Phone: +43 2243 21962
Internet: www.viesid.com
e-mail: info@viesid.com

MAINTENANCE CONTRACT 2026
for GAMMA Dental Software®

☐ **GDSW "AM"** ☐ **GDSW "C3D+"** ☐ **GDSW "C3D"** ☐ **GDSW "C"**

(check the appropriate version/option)

This is a contract between the user of the software and "GAMMA" MEDIZINISCH-WISSENSCHAFTLICHE FORTBILDUNGS GmbH, a company formed under the laws of the Republic of Austria. (GAMMA)

Terms of contract

1. Contents of the contract: GAMMA provides maintenance for the product **GAMMA Dental Software**, hereafter named "software" for supporting operating systems, under the following conditions:

2. Duration and cancellation of contract: The contract is concluded for an unspecified period of time, with a minimum duration of the contract of ☐ 12 months / ☐ 24 months / ☐ 36 months and may be terminated by either party, subject to 3 months' notice, until the end of the calendar year. Cancellation on special grounds (i.e., death, forced retirement for health reasons) is possible at any time. In this case, an aliquot part of the annual fee will be reimbursed to the end user, commensurate with the portion of unused service.

3. Scope of performance: Upon receipt of the fees stated in item 4, GAMMA will provide the following services:

a.) Telephone information (or via fax or e-mail) in response to questions concerning software problems from Monday to Friday, 9 AM to 4 PM (local time Vienna; excluding public or annual holidays). The call should be made by the end user or an authorized representative.

b.) Information about update releases and announcements regarding new program versions through releases containing details of performance range.

c.) Information (via phone, fax, or email) in response to questions concerning the software respectively program interfaces of the software, in order to link individual modules of the software with other programs: Monday-Friday, 9 AM to 4 PM (local time Vienna; excluding public or annual holidays). The call should be made by the end user or an authorized representative.

d.) Availability of the latest program version. This version will be provided including all of the corresponding documentation. The new version replaces the directly preceding version with the same serial number. All conditions of the license contract remain valid. The end user is responsible for setting up and running the program updates on the computer.

e.) Provide remote software support at no extra cost.

Any information given does not make up for user training but are based on the knowledge level of an experienced user.

4. Fees and conditions of payment:

maintenance fee	per month	per year
GDSW "AM"		
GDSW "C3D+"		
GDSW "C3D"		
GDSW "C"		
Additional workstations		
Number of required workstations		

The yearly maintenance fee is charged in advance at the beginning of the calendar year of proportionally at validity of the contract. Payments of the invoices are due within 8 days, without deductions. These prices do not include sales taxes. Any legally applicable taxes will be included in the bill.

The maintenance costs are to correspond with changes in the consumer index of the Austrian Central Bureau of Statistics. The index is calculated by comparing the indexes of the beginning and end of the calendar year, or part of the year, respectively. The change will be set as the calculation basis for the following year.

5. Terms of Use: The customer is obliged to use the software exclusively for his own office. Passing on of software to third parties is not permitted.

6. License extension: If the customer receives an extended license of the software (e.g., by buying an upgrade from GDSW "C" to "AM"), the contract becomes automatically extended and adjusted to the new software version. This applies especially to the maintenance fees, described in item 4, which will be increased accordingly.

7. Written form: Collateral agreements, changes and amendments of this contract require the written confirmation of the contractual partners in order to be valid. The same applies for any waivers regarding the requirement for written confirmation.

8. Costs: The purchaser bears all costs, expenses, taxes, and fees incurred, relative to the construction and implementation of this contract.

9. Miscellaneous: If any individual conditions of this contract are, or should become void or inoperative, this will not affect the validity of the remaining provisions. Any invalid provision will be replaced by such valid provision which corresponds most closely to the sense of the provision in question.

10. Copyright: Software, instruction manuals, and other accompanying written materials are intellectual property of GAMMA and protected against copying through copyright laws, international treaty provisions and other national laws.

11. Legal jurisdiction: This contract and all parts thereof are governed by Austrian law. The parties agree that all legal disputes arising from this contract shall be settled by the Austrian court having subject-matter jurisdiction.

12. Liability: GAMMA is liable for damages, only insofar as gross negligence or malicious intent can be demonstrated on its part. Liability for simple negligence is precluded. In no event shall GAMMA be liable for any special, incidental, or consequential damages, including loss of sales, loss of profits, non-attained savings, loss of interest fees, or for damage claims of a third party against the end user.

"Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH
Wasserzeile 35
3400 Klosterneuburg
Austria

_____

_____

_____
Name and address of the user

_____
Date and Signature

_____
Date and Signature

General business conditions of "Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH (GAMMA) Wasserzeile 35, A-3400 Klosterneuburg – Austria

In principle, the contractual parties undertake to display mutual loyalty. GAMMA requires that its co-workers comply with the provisions of the data protection laws.

If any individual conditions of this contract are, or should become void or inoperative, this will not affect the remaining contents of this contract. The parties will work together as partners towards an arrangement which approaches the sense of the inoperative provision as nearly as possible.

1 Tending an offer and conferring of contract

1.1 A contract is effected exclusively by means of written confirmation or upon delivery of goods by GAMMA.

1.2 Collateral agreements, changes and amendments of this contract require the written confirmation of the contractual partners in order to be valid. The same applies for any guarantees regarding features, as well as for any waivers regarding the requirement for written confirmation.

1.3 Quotations are, in principle, subject to change without prior notice.

2 Terms of payment, prices, taxes and charges

2.1 Prices are valid ex-warehouse Klosterneuburg, Austria, exclusive of all incidental costs as well as of the statutory Value Added Tax and, unless specifically noted otherwise, are given in Euros. Prices are valid only for the order on hand.

2.2 In case of failure to meet the term of payment, the client is obliged to pay the customary bank interest charges on the buying price.

3 Right of detention, compensation, cession

3.1 The client may not refuse to meet his/her obligations on the basis of any possible counter-claims, nor may the client withhold payment or make pretension to compensation for costs that may be incurred, unless the grounds and the extent of these claims are undisputed by GAMMA, or are legally established and binding.

3.2 Cession of a client's claims against GAMMA is only possible with the express permission of same.

4 Delivery date, Term of delivery

4.1 The delivery date begins when the client receives the confirmation of order from GAMMA.

4.2 The term of delivery is complied with if, before its expiry, the product has left the GAMMA warehouse in Klosterneuburg, Austria (shipping date or postmark), or when written notice is given that the product is ready to be shipped.

4.3 The term of delivery will be extended as necessary in cases of labor disputes, in particular strikes and lock-outs, or in case of unforeseen hindrances, which are beyond the control of GAMMA, insofar as these hindrances can be demonstrated to have a considerable influence on the production or delivery of the product. This also applies to the sub-contractor, if such problems should materialize. Even if the aforementioned circumstances occur at a time when there is already a delay, no claims may be made on GAMMA. Any agreed-upon contractual penalty is invalid under these circumstances.

4.4 The prerequisite for compliance with the term of delivery is that the client fulfills all contractual obligations.

5 Devolution of risk and receipt (of goods), compulsory inspection and compulsory complaint, acceptance

5.1 Risk is transferred to the client, at the latest, with the dispatch of the shipment, even in the case of a part-delivery, or when GAMMA has undertaken to perform other services. Redeliveries are carried out at the risk of the client.

5.2 Part-deliveries are permissible, § 8.1 takes priority.

5.3 If the client is a qualified merchant, he/she is required to inspect the goods immediately and to inform GAMMA, in writing, within 10 days at the latest, of any substantiated defects or deficiencies, i.e., wrong goods or wrong quantities. After the expiration of this term, the product is considered to be accepted. In cases of "hidden" defects, the client (qualified merchant) bears the burden of proof.

5.4. In case of defects on deliveries, caused during transport, the carrier has to be informed immediately at time of takeover

5.5 Acceptance can only be refused in case of considerable defects or deficiencies.

6 Proprietary rights

6.1 GAMMA retains proprietary rights to the product until all of the obligations of the business transaction (including future business arrangements) have been settled (including all balance payments due from account current).

6.2 The client may only utilize the product in the normal course of business, and confers upon GAMMA the joint-ownership of any new product resulting from the connection or combination of the GAMMA product with any other products. Upon disposal (sale), the client will transfer to GAMMA, in advance, for security reasons, the sum of the invoiced amount of its purchase price, in accordance with the joint-ownership agreement. The transfer will be accepted by GAMMA.

6.3 In case of breach of contract on the part of the client, especially in cases of default of payment, GAMMA has the right to reclaim the product(s), after a default reminder, and the client is obliged to return the product(s).

7 Liability for wrong goods and/or wrong quantities

7.1 In principle, GAMMA is liable for damages, insofar as gross negligence or intent can be demonstrated on its part, within the scope of legal provisions. Liability for simple negligence is precluded. As far as legally allowed, compensation is precluded, in any case, for consequential damages and property damages, non-attained savings, loss of interest fees, and damages from claims of a third party against GAMMA. GAMMA assumes liability for defects and/or deficiencies in the shipment, including the absence of features which are explicitly guaranteed, to the exclusion of further claims, notwithstanding § 8, as follows, if the shipment is not considered to be accepted, in accordance with § 5.3: all of these parts are to be repaired, free of charge, or replaced with new ones, if they display defects and/or deficiencies which can be attributed to GAMMA, within 2 years of delivery on movable parts, within 3 years of delivery for non-movable parts, and if GAMMA has received written notification of these defects and/or deficiencies. All replacements remain the property of GAMMA.

7.2 After a written complaint to GAMMA AG of wrong goods and/or wrong quantities, the client is obliged to allow GAMMA the opportunity to carry out any and all repairs and/or shipments of replacements, which it may deem necessary, according to its judgment and responsibility; otherwise, GAMMA is free from any liability. Only in extreme circumstances, involving a threat to the operational security and to prevent excessive or disproportionately greater damage, whereby GAMMA must be informed immediately, or if GAMMA is delayed in repairing a defect, does the client have the right to repair a defect himself/herself, or to have a defect repaired by a third party. In this case, the client may demand reimbursement from GAMMA, for the necessary costs incurred.

7.3 GAMMA assumes the immediate costs for the repairs and/or delivery of replacements- insofar as the complaint proves to be valid- the costs of the replacement items, including shipment charges, and reasonable costs for dismounting and installation; further, according to individual circumstances, the costs which may actually be necessary for engaging assemblers and assistants. Any other costs are borne by the client.

7.4 The term of liability for the replacement is 3 months, but this term must extend to at least the expiry date of the original shipment's term of liability. The term of liability for wrong goods and/or wrong quantities will be extended for the amount of time of interrupted operation, necessitated by the repairs.

7.5 GAMMA bears no liability for the consequences of any possible inappropriate alterations or repair work, carried out by the client or a third party, without previous, express authorization from GAMMA.

8 The client's right of rescission and other liability of GAMMA

8.1 The client can rescind the contract, if it is clearly impossible for GAMMA to provide complete service, prior to the devolution of risk. The same is true for incapability on the part of GAMMA. The client can also rescind the contract if, after placing an order for products of the same type, it is finally impossible for GAMMA to deliver the required number of part of the shipment, and the client has a legitimate interest in refusing part-delivery; if this is not the case, the client may proportionately reduce the amount of his/her obligation.

8.2 If this impossibility arises during an already existent delay in acceptance or through the encumbrance of debt on the part of the client, the client remains under the obligation to pay.

8.3 The client has the right of rescission, if GAMMA, in the absence of mitigating circumstances, allows the expiration of two appropriately set term-extensions for repairs or the delivery of replacements, relative to wrong goods or wrong quantities attributable to GAMMA, in accordance with the conditions of delivery. The client is obliged to allow two attempts at repairs. The client's right of rescission is also valid in other instances involving two unsuccessful attempts at repair or delivery of replacements on the part of GAMMA.

8.4 All further client claims are precluded, especially regarding conversion, price-reductions and compensation for damages of any kind, including those damages not arising on the product itself. This preclusion of liability is not valid in cases of malicious intent or gross negligence on the part of the proprietor or managerial employee, or in those cases in which liability for defects and/or deficiencies in the product is assumed for personal injury and material damages on units in private use. This preclusion also does not apply to missing features, which are explicitly guaranteed, if the express purpose of said guarantee is to protect the user against damages, not arising on the product itself.

9 Copyright protection

9.1 Designs, models, software, tools, programs, documentations and the like, from GAMMA, are the intellectual property of GAMMA and, although no specific protection exists, they may not be copied by the client or used in any way for reproduction, nor may they be ceded to a third party, neither free of charge nor for remuneration, nor used in any manner other than within the scope of the conditions agreed upon by GAMMA and the client.

9.2 In the case of orders, according to the client's own specifications (drawings, designs, etc.) the client assumes liability. In this way, the patent rights will not be infringed upon.

10 Installation

10.1 If installation of the product is agreed upon in writing, GAMMA will install the product for the client, in a state of operational readiness. The following constitute the prerequisites for installation:

a. the client has, and makes available, an appropriate location for the apparatus, including all of the proper connections (water, electricity, etc.).

b. the apparatus may not have been altered by the client before installation.

10.2 The installed product is considered to be in operational readiness after being subjected successfully to the GAMMA functional testing process, and witnessed to by the client's counter-signature on the certificate of acceptance. If the client does not sign the certificate of acceptance, despite a successful functional test, GAMMA will instruct the client as to the consequences of exceeding the acceptance deadline and will offer an extension of at least two weeks: if the client does not offer an explanation before expiry of this extended term, operational readiness is assumed as certified nevertheless, with the date of the functional test.

10.3 If, after delivery, the agreed-upon installation of the product cannot be effected by GAMMA, for reasons attributable to the client, GAMMA AG will instruct the client as to the consequences of exceeding the deadline and offer the client a deadline of 30 days; if the installation has still not been carried out upon expiry of this term, also for reasons attributable to the client, operational readiness is considered as certified from the date of delivery.

10.4 GAMMA assumes no obligations for connecting the product to any apparatus or appliance belonging to the client, which has not been supplied by GAMMA.

11 Privacy policy

11.1 The customer agrees that his personal data, namely name, address and email address will be processed for marketing purposes (sending of advertising material by post or email). This consent can be revoked at any time. The revocation does not affect the legality of the previous processing. Our full privacy policy can be found at: http://www.gammadental.com/privacy.htm

12 Concluding stipulations

Unless otherwise agreed to, the applicable legal provisions in effect between qualified merchants are exclusively according to Austrian law, also when the contract is carried out in another country. The territorial jurisdiction of the relevant court for the registered seat of the GAMMA is the exclusive authority, in case of possible disputes and/or litigation. The above-mentioned conditions are applicable to consumer sales, within the intent of the consumer protection laws, only insofar as the consumer protection laws do not specifically make other provisions.

O R D E R F O R M

To: **"**Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH
Wasserzeile 35
3400 Klosterneuburg – Austria
Tel.: +43 2243 34140
Fax.: +43 2243 34140 90
E-Mail: office@gammadental.com **VAT-ID-No.:** ATU37002505

Customer: _____ **Customer-No.**: _____
_____ **VAT-ID-No.**: _____
_____
_____

Pos	Article-No.	Product description	Quantity	Price (EUR)

Desired delivery date: _____

TOTAL

Plus statutory tax and shipment.

Unless otherwise stated, prices for installation and training are not included

Notes:

This is a legally effective contract between you as customer and "Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH. The valid general terms and conditions are part of this contract and are explicitly accepted by the customer. You can find the general terms and conditions listed on the backside of this form, on our homepage (www.gammadental.com) or ask for the terms at any time in our office. "Gamma" Medizinisch-wissenschaftliche Fortbildungs GmbH reserves the right to reject the order within a period of 30 days after the order form was signed.

_____ _____
For GAMMA: Date, Signature For the customer: Date, Signature

Tel: +43 2243 34140 0
Fax: +43 2243 34140 90
www.gammadental.com
office@gammadental.com