

The perfect way to
validate findings in
the diagnosis of caries.



Now with
an external
*table
display!*



Caries identification: The latest state-of-the-art.

Perfect findings in every application.

Three reliable methods that together ensure a perfect caries diagnosis: Your trained expert eye, x-ray imaging, and the DIAGNOdent pen. Caries in its early stages and hidden caries can thus be reliably detected. This enables minimally invasive treatments, the patient is subjected to less stress, and more tooth substance is retained.

45,000 enthusiastic clinicians already own a DIAGNOdent pen. Nearly 10 years of experience with fluorescent laser technology clearly demonstrate that the identification of caries with the DIAGNOdent pen is a valuable adjunct to conventional methods, and also enables the reliable and comfortable identification of calculus during periodontic sessions.

Quick and reliable knowledge with the DIAGNOdent pen – Main features and advantages for you:

- Children and adolescents in particular have fissure caries in nearly 80% of all cases.
- Iceberg syndrome: 90% of caries is invisible (under an intact enamel surface and in the proximal region).
- The DIAGNOdent pen augments the dentist's eye and x-rays: 90% of all cases are identified.
- Identification of caries in its early stages.
- Applications: Fissure carries, proximal caries, periodontitis.
- For greater success in your practice and increased patient loyalty.

No stress and purely informative.

The combination of a classic, sharp probe and x-rays provide sufficient diagnostic information. However, mechanical identification can damage healthy tooth substance, initiating a restoration which triggers pain and stress in patients. When x-rays are taken, the patient is exposed to avoidable radiation, and x-rays are not reliable for the early detection of caries. Contrastingly, the laser fluorescence method of the DIAGNOdent pen is suitable for detecting caries without x-rays and mechanical stress. One particular advantage of the DIAGNOdent pen: Frequently children and pregnant women can avoid bitewing radiographs by using the DIAGNOdent pen.

Supplement and secure visual diagnosis and x-ray findings with the DIAGNOdent pen.



Diagnosis



The perfect assistant: Essential in professional tooth cleaning.

Practical example:

1 Professional teeth cleaning		
Removal of all hard and soft accumulations: Calculus removal with the SONICflex, manual instruments, PROPHYflex powder jet device with PROPHYpearls, DURAtec 2933 polishing contra-angle handpiece		
2 Examination with the DIAGNOdent pen		
Fissure caries Measured value: 0 – 12	Fissure caries Measured value: 13 – 24	Fissure caries Measured value: >25
Healthy tooth substance	Initial demineralisation	Strong demineralisation
Measured value: 0 – 7 Proximal caries	Measured value: 8 – 15 Proximal caries	Measured value: >16 Proximal caries
3 Dental diagnosis		
No findings	Monitoring	X-rays, caries bacteria test, saliva test
4 Measures		
Standard prophylaxis measures	Intensive prophylaxis measures, local antibacterial measures	Minimally invasive treatment
Low risk		High-risk
Fluoride toothpaste, etc.	Such as fluoridation, KaVo HealOzone, chlorhexidine	KaVo HealOzone, RONDOflex, SONICflex micro, composite filling materials and intensive prophylaxis

Results for all to see.

The measured results of the DIAGNOdent pen are sometimes difficult to read, and sometimes they do not lie within the patient's line of vision. In these instances, the optional remote display can be used.

It can be set up wherever you and your patients need to obtain clear visual confirmation that caries treatment or calculus removal is necessary.

The DIAGNOdent pen sits lightly and comfortably in your hand, and is handled like a digital instrument. The stand-alone display receives its data remotely from the DIAGNOdent pen and displays them enlarged and distinct.

Main features and advantages for you:

- Easy to use and service
- Cable-free, can be set up anywhere, no computer installation necessary
- Sterilisable grip sleeve
- Fast, easy calibration
- Improved professional cleaning: Additional safety check with each tooth cleaning



Fissure caries: Reliable identification.



Normal instruments generally cannot be used to probe tear drop-shaped fissures.

Reliable caries detection with the DIAGNOdent pen.

The KaVo DIAGNOdent pen detects the different levels of fluorescence between healthy and diseased tooth substance. Even very small lesions can be detected reliably without exposure to ionising radiation. Healthy tooth substance remains unaffected: No probe, scratches or damage.



Visually, only a slight discoloration is perceptible.



The radiograph does not reveal any caries lesions.



Only the DIAGNOdent pen finds dentine caries.



The DIAGNOdent pen discovers cavities.



The DIAGNOdent pen offers the greatest advantage in measuring fluorescence in regions with fissures since the laser light is affected by even the smallest lesions.

The sapphire fissure probe can find even the smallest lesions without scratches and without impairing healthy tooth substance.

Recommend therapy: fissure caries and smooth surface caries*	
Reading: 0 - 12	Normal prophylaxis (such as fluoride toothpaste)
Reading: 13 - 24	Intensive prophylaxis (such as fluoridation, KaVo HealOzone)
Reading: > 25	Minimally invasive restorative procedures Composite filling materials and intensive prophylaxis (such as KaVo HealOzone, RONDOflex, SONICflex micro) Classic restoration for large lesions depending on the risk and findings.

*Source: Prof. Dr. Lussi, University of Bern, Switzerland



Proximal caries: Confident identification.



True added value: DIAGNOdent pen.

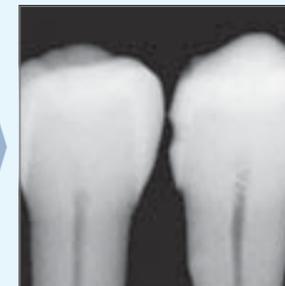
Conventional methods of identification are not sufficiently reliable to detect hidden caries. Adults in particular suffer from proximal and secondary caries, assuming that these are found since visual diagnosis is highly difficult.

Hidden caries remain hidden in two-thirds of all instances of classic examination methods. Only with the KaVo DIAGNOdent pen can you reliably detect hidden caries in the proximal region. The laser beam of the KaVo DIAGNOdent pen proximal probe makes it possible: A prism deflects the detector laser beam 100° so that nothing remains hidden around the contact point.



Visual diagnosis or diagnosis with a probe is problematic.

Findings: D2



In the previous gold standard has been x-ray diagnosis.

Findings: D2/D3



The high DIAGNOdent pen value indicates deep caries in the dentine that it is not identifiable in the dental film in this instance.



The histological sections confirm findings with the proximal DIAGNOdent pen probe:

Deep dentine caries (D4).



100% deflection of the laser beam by the prism.



Calibration reference.

Recommend therapy:
Proximal caries*

Reading: **Normal prophylaxis**
0 - 7 (such as fluoride toothpaste)

Reading: **Intensive prophylaxis**
8 - 15 (such as fluoridation, KaVo HealOzone)

Reading: **Minimally invasive restorative procedures**
> 16 (such as KaVo HealOzone, RONDOflex, SONICflex micro)
Composite filling materials and intensive prophylaxis

*Source: Prof. Dr. Lussi, University of Bern, Switzerland

Picture by: Prof. Stachniss,
University of Marburg



Identification of periodontitis: Clear, reliable and comfortable.



Identification of periodontitis:
Unique
Only with the DIAGNOdent pen!

Only the DIAGNOdent pen makes it possible:

It precisely identifies calculus and visually indicates the findings by a number for the dentist, assistant and patient to see. The perio probe of the DIAGNOdent pen detects calculus more thoroughly than conventional probes. Cleaning becomes less invasive because only those regions are cleaned where plaque actually exists. This saves you time.

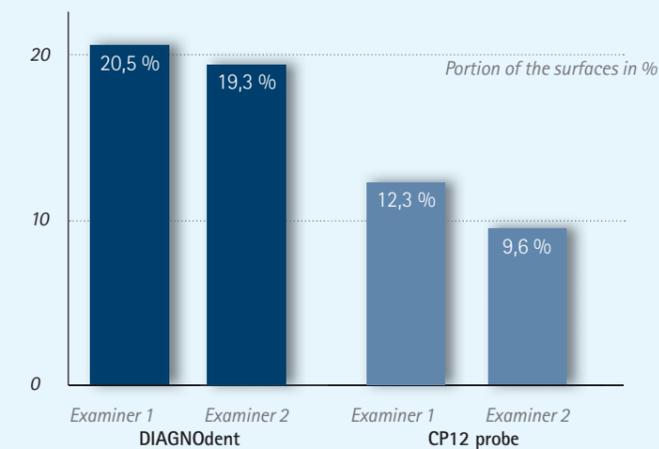
And it's only available from KaVo: Periodontitis prophylactic – accurate, reliable, convenient. With the DIAGNOdent pen and it's a special perio probe, you only clean where calculus is actually located. This saves time and decreases patient stress.

This principle has been used for years. It is the same principle that allows selective plaque removal with KaVo's KEY laser feedback system. Similar to caries, calculus contains fluorescent substances that are detected by the DIAGNOdent pen.

Attained readings:	
Reading: < 5	clean gingival pockets
Reading: 4 – 40	little calculus present or: residual calculus following partial cleaning
Reading: > 40	calculus in gingival pockets

Residual calculus detection.

More calculus is found with DIAGNOdent than with a traditional periodontal probe (n = 3,174 detection surfaces*). The findings of various practitioners with the DIAGNOdent pen were more consistent.



Main features and advantages for you:

- Patient motivation from clearly perceptible and reliable treatment.
- Saves time because unnecessary excess treatment is eliminated
- Increased income from regular recalls
- You are seen as a trendsetter who uses innovative laser technology

Probing the pocket depth before and 3 months after root cleaning.

Patients examined with the DIAGNOdent pen showed a greater drop in the number of deep pockets (> 4 mm) (n = 3,174 detection surfaces*).

Bleeding in the periodontal pocket before and 3 months after root cleaning.

Patients examined with DIAGNOdent pen had a greater reduction in bleeding index (BOPSee above „POB“) (n = 3,174 detection surfaces*).

The postoperative bleeding index improves and the pocket depth is noticeably reduced. Results of the clinical study by Prof. Frentzen of Bonn University have proven this.

Liquids such as saliva or blood cannot influence the measurements.

*Prof. Frentzen, Bonn University, Germany



Patient loyalty reinforces the bottom line.

Improved service and greater patient loyalty enhance the success of your practice.

With the DIAGNOdent pen, patient loyalty is clearly enhanced. In follow-up examinations, changes can be precisely documented, and the success of preventative measures such as fluoridation or treatment with HealOzone is visually demonstrated.

A significant reduction of the use of manual probing by innovative techniques such as the DIAGNOdent pen markedly increases patient comfort and prevents unnecessary damage to the enamel. Precise measurement with the DIAGNOdent pen enables microinvasive treatment in many cases with minimal removal of intact enamel.

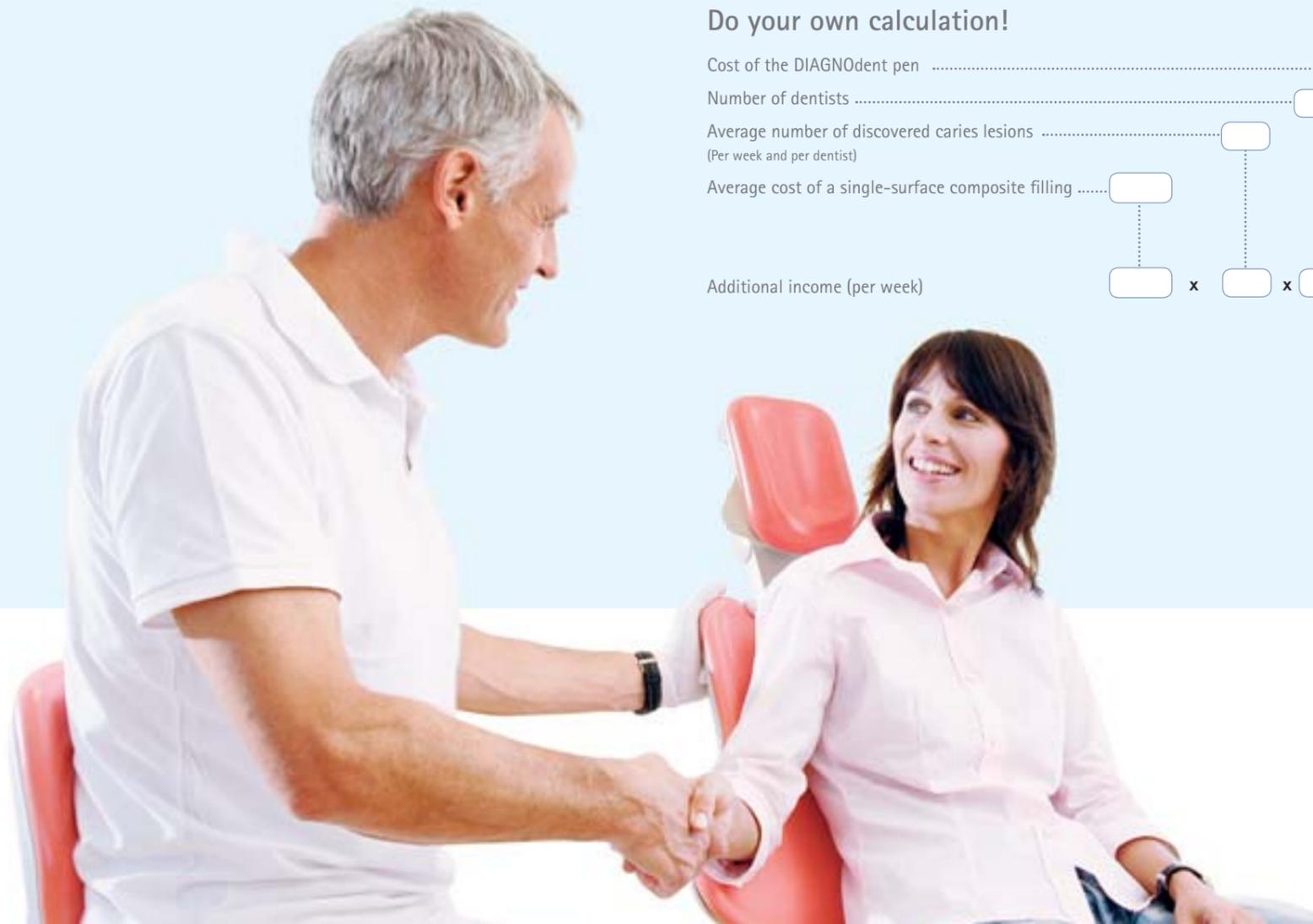
The DIAGNOdent pen decreases exposure to radiation by reducing the number of bite wing x-rays, especially in children and pregnant women.

The DIAGNOdent pen improves the bottom line in your practice by increasing patient loyalty and revealing more instances of caries.

You will become known as the dental practice with cutting-edge technology for successfully identifying early caries to the patient's benefit. In addition, the number of return patients increases, and you will have more invoiceable follow-up services such as single-surface composite fillings.

The use of the DIAGNOdent pen holds the following attractions for your patients:

- Improved patient loyalty from greater comfort and successful prevention confirmable by numbers.
- Reduced use of the manual probe, decreased abrasion of the enamel.
- In many cases, the precise measurement enables microinvasive treatment without the unnecessary removal of healthy enamel.
- With the DIAGNOdent pen, you will have more invoiceable follow-up services such as single-surface composite fillings.
- High patient loyalty and improved service increases the bottom line of your practice



Fast amortisation from expanded caries prevention:

Cost of the DIAGNOdent pen	2800 €
Number of dentists	2
Average number of discovered caries lesions (Per week and per dentist)	4
Average cost of a single-surface composite filling	70 €
Additional income (per week) $70 \times 4 \times 2 = 560 \text{ €}$	

In this case, the DIAGNOdent paid for itself within less than two months!

Do your own calculation!

Cost of the DIAGNOdent pen	€
Number of dentists	
Average number of discovered caries lesions (Per week and per dentist)	
Average cost of a single-surface composite filling	
Additional income (per week) $\text{€} \times \text{€} \times \text{€} = \text{€}$	

Scientists and dentists agree.

„High reliability“

„... with greater than 90% reliability, DIAGNOdent pen technology measures carious lesions that were not detectable with x-rays or a probe. Reservations are overcome by the combined use of an intra-oral camera, x-rays and the DIAGNOdent.“

Mark E. Hyman DDS, Greensboro, NC, USA

„An outstanding instrument“

The DIAGNOdent pen, along with a clinical evaluation and the consideration of the individual caries risk factors, enhance early identification of caries and diagnosis.

Based on the favourable reproducibility of its values, the DIAGNOdent pen is an outstanding instrument for detecting the development of lesions in regular examinations.

Prof. Dr. Adrian Lussi, University of Bern



Study	summary
<p>„The intra/inter-examiner reproducibility of the new DIAGNOdent pen on occlusal sites.“ Kühnisch J, Bücher K, Hickel R. <i>Ludwig-Maximilians-University of Munich, Department of Conservative Dentistry and Periodontology, Munich, Germany. jkuehn@dent.med.uni-muenchen.de</i></p>	<p>Based on the documented reproducibility, the DIAGNOdent pen should be used in addition to visual inspection and x-rays.</p>
<p>„Clinical evaluation of DIAGNOdent pen in detection of occlusal caries in children.“ Olmez A, Tuna D, Oznurhan F. <i>Department of Pediatric Dentistry, School of Dentistry, University of Gazi, Turkey. aysegul@gazi.edu.tr PMID: 16937852 [PubMed - indexed for MEDLINE]</i></p>	<p>The DIAGNOdent pen with its great sensitivity is a helpful addition to visual inspection in the discovery of occlusal caries.</p>
<p>„Clinical study of the use of the laser fluorescence device DIAGNOdent pen for detection of occlusal caries in children.“ Anttonen V, Seppä L, Hausen H. <i>Oulu Municipal Health Center, Finland. voukko.anttonen@ouka.fi PMID: 12566634 [PubMed - indexed for MEDLINE]</i></p>	<p>The DIAGNOdent pen it is an appropriate tool for routine examinations in children.</p>
<p>„Detection of approximal caries with a new laser fluorescence device.“ Lussi A, Hack A, Hug I, Heckenberger H, Megert B, Stich H. <i>Department of Operative, Preventive and Paediatric Dentistry, School of Dental Medicine, University of Bern, Bern, Switzerland. adrian.lussi@zmk.unibe.ch PMID: 16508265 [PubMed - indexed for MEDLINE]</i></p>	<p>The new laser fluorescence system is a helpful additional instrument for the detection of proximal caries. Given the favourable reproducibility, the DIAGNOdent can be used to monitor the development of caries.</p>
<p>„Performance of conventional and new methods for the detection of occlusal caries in deciduous teeth.“ Lussi A, Francescut P. <i>Department of Operative, Preventive and Paediatric Dentistry, School of Dental Medicine University of Bern, Bern, Switzerland. adrian.lussizmk.unibe.ch</i></p>	<p>The DIAGNOdent pen can be used as an additional instrument for detecting occlusal caries. Given the favourable reproducibility, the device can be used to monitor the development of caries.</p>

You can find these and additional studies on the Internet at:
www.kavo.com/diagnodent-studies



At a glance – KaVo DIAGNOdent® pen and accessories.

Product	Order number
DIAGNOdent pen 2190	1.002.7000
DIAGNOdent pen Display 2191	1.004.8400
DIAGNOdent pen sapphire fissure probe	1.002.6967
DIAGNOdent pen sapphire proximal probe	1.002.6970
DIAGNOdent pen sapphire perio probe	1.004.0370
Sterile cassette for DIAGNOdent pen probes 2190	1.002.7011

