

**VECTOR® – POWERFUL PERFORMANCE
WITH ULTRASOUND**

GENTLE BY DESIGN



THE BENCHMARK IN LOW PAIN TREATMENT.

20 years ago, Dürr Dental instigated a shift in ultrasound technology. The result was a new method for generating ultrasound, as well as a new device for periodontitis treatment: the Vector® Paro.



LUNOS®

MAKING SMILES BRIGHTER



VECTOR® PARO – THE NEW DIRECTION IN ULTRASOUND TECHNOLOGY

When it comes to periodontitis treatment, sonic and ultrasonic instruments have established themselves as an alternative to traditional manual instruments. However, they offer disadvantages as well as advantages. Often, they move elliptically, meaning that even and vibration-free work is not always possible on every single tooth surface. This can result in irritation and unwanted loss of substance on the root surface.

This prompted Dürr Dental to develop its linear oscillation deflection method – and with it the Vector® principle, a proven periodontitis treatment system that is both gentle and protective. The ultrasonic energy is diverted to the place where it is needed – in a linear direction. Thanks to this unique oscillation deflection system, the instruments are only moved parallel to the root surface. This means that the ultrasonic energy can be used to deliver clinically efficient, non-traumatic treatment.

VECTOR® – FROM THE BASIC PRINCIPLES TO THE FINISHED SYSTEM

20 years ago, Dürr Dental started setting new standards in the field of painless, minimally-invasive periodontitis treatment with the Vector® System. Even then, the aim of Dürr Dental was to deliver a holistic, cause-oriented systematic approach. Today, this approach has evolved into a complete system. It focuses on dental care, encourages self-healing processes, supports patient comfort and facilitates dental procedures. As an ultrasonic system for sub- and supragingival treatment, the Vector® plays a leading part in this system. It is supplemented by a wide range of specific aids and consumables.

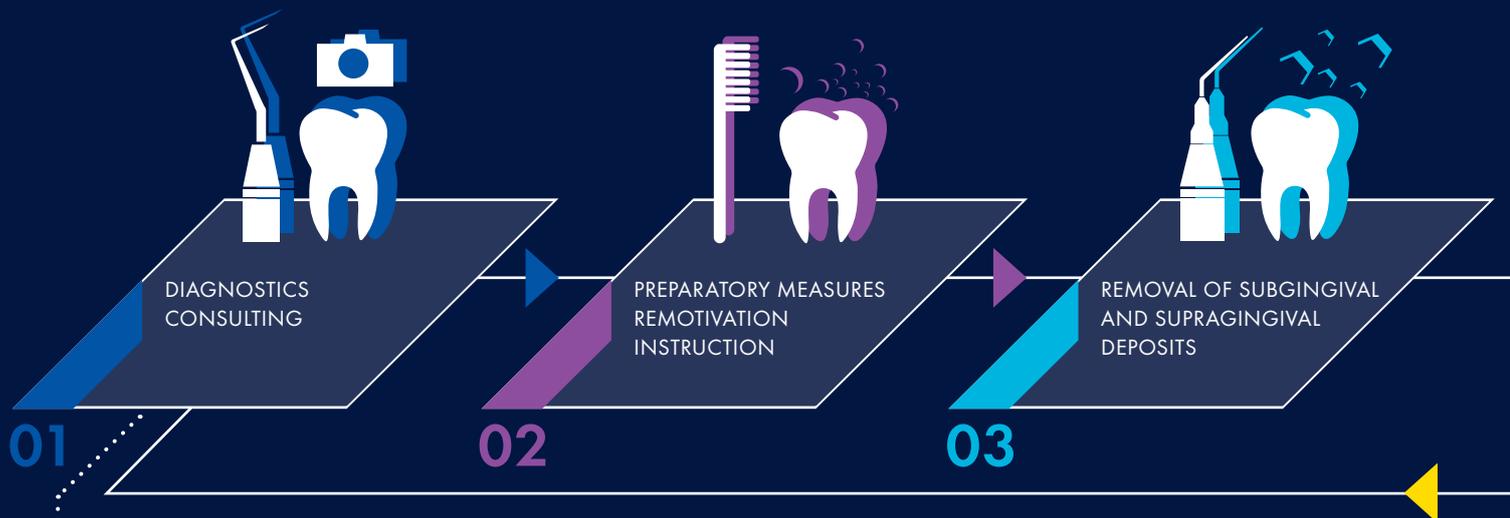
You will find the complete system for prophylaxis and periodontitis treatment on pages 4 and 5.

Below that, the table of contents provides an overview of all the relevant products and their wide range of applications.

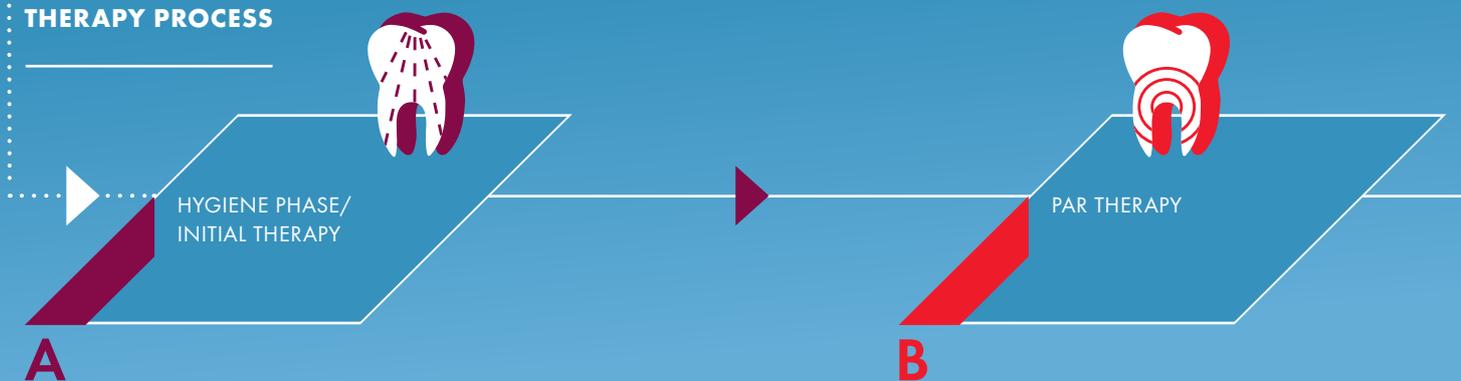
LUNOS® – BRIGHTER SMILES ALL ROUND.

Dürr Dental has developed a comprehensive prevention system for the maintenance of general oral health as well as for minimally invasive treatment of periodontitis or periimplantitis. This system accompanies and supports all steps that patients, dentists and the practice team go through during treatment.

PREVENTION PROCESS

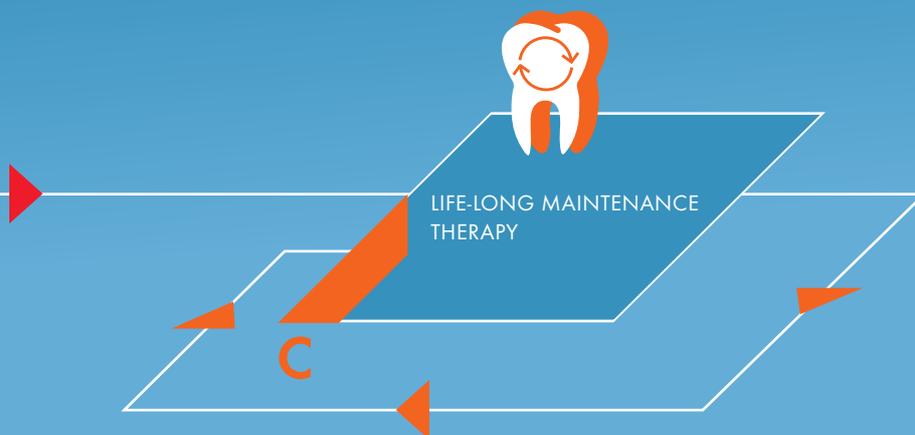


THERAPY PROCESS



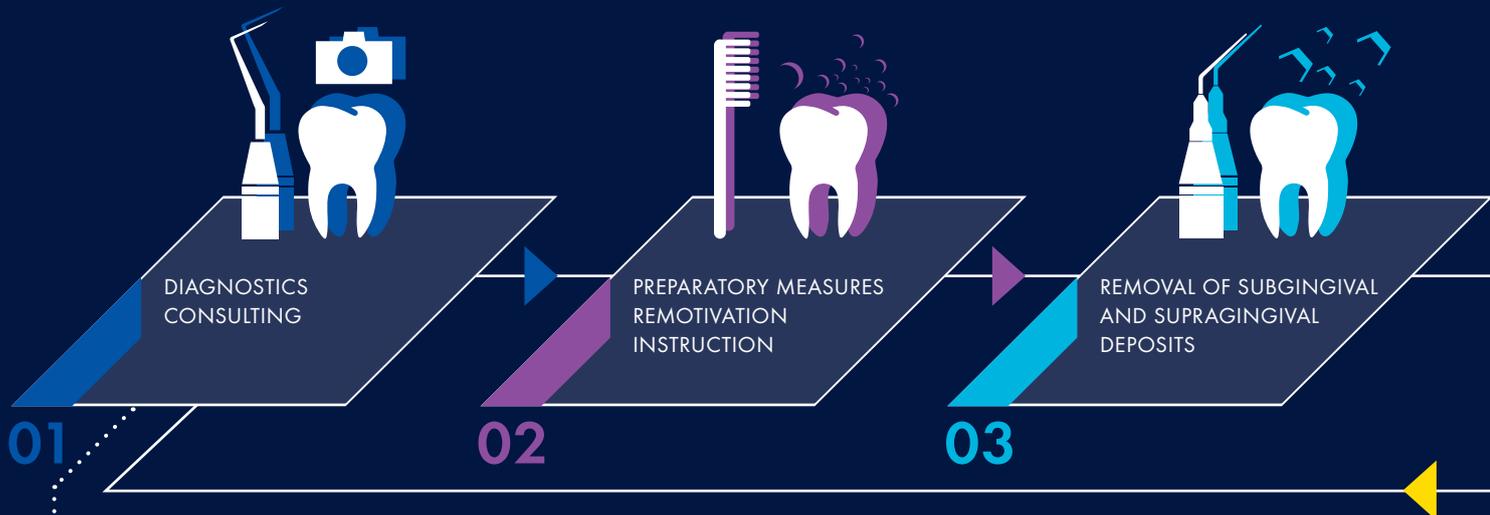


The building blocks of the system use digital imaging for diagnosis and patient communication, as well as the equipment and consumables that form part of professional prevention concepts and effective aids to increase patient comfort. All these things make the complete system from Dürr Dental efficient, gentle and effective – three features that are equally appreciated by dentists, practice personnel and patients.



CONTENTS: ALL LUNOS® PRODUCTS

PREVENTION PROCESS

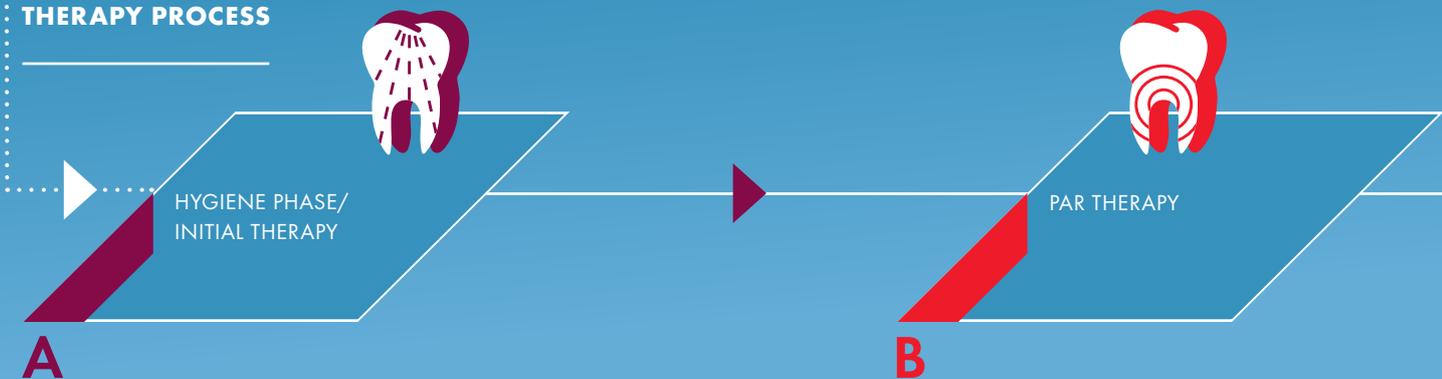


VistaCam iX HD Smart*

Lunos® Prophylaxis cushion*
Lunos® Dental rinse*

S. 10 Vector® System
S. 10 Vector® Fluid polish
MyLunos®*
Lunos® Prophy Powder*
Prophylaxis cannula*

THERAPY PROCESS



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Lunos® Prophylaxis ring*
Lunos® Fluoride gel*
Lunos® Fluoride varnish*
Lunos® Prophylaxis wellness cloth*
S. 18 Vector® patient brochure
S. 18 Vector® DVD

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Lunos® Prophylaxis wellness cloth*
Prophylaxis cannula*

*This product can be found in the system brochure from Dürr Dental.

These brochures are available from Dürr Dental free of charge. For more information please visit www.duerrdental.com

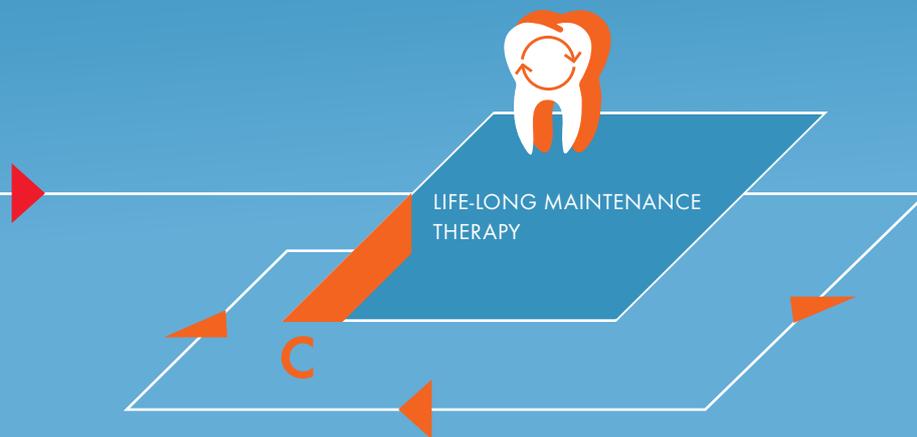
AT A GLANCE



MyLunos®*
 Lunos® Prophy Powder*
 Prophylaxis cannula*
 Lunos® Prophy Pastes*
 Lunos® Prophylaxis ring*

Lunos® Fissure sealant*
 Lunos® Fluoride gel*
 Lunos® Fluoride varnish*

Lunos® Prophylaxis wellness cloth*
 Lunos® Patient brochure*
 VistaCam iX HD Smart*



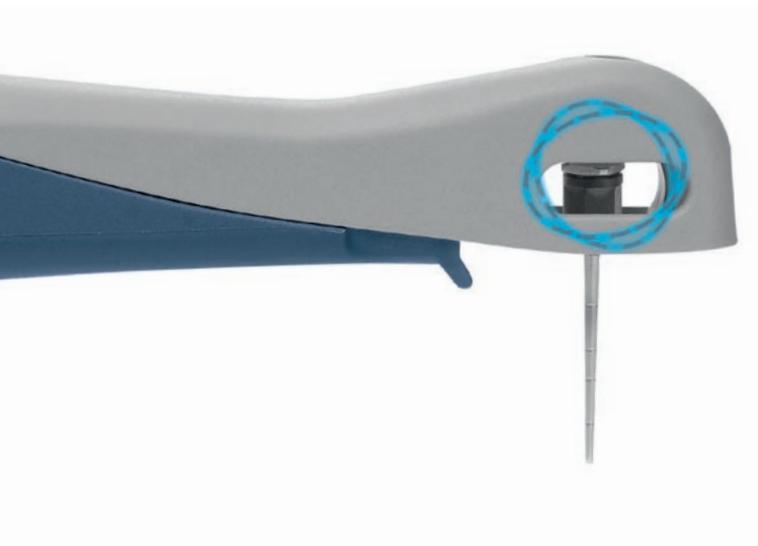
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THE VECTOR® PRINCIPLE – GENTLE USE OF ULTRASONIC ENERGY.

CONDUCTED THROUGH THE RING

Gentle to teeth, hard on deposits



In the Vector® principle, ultrasonic oscillations are skilfully reshaped into a linear up-and-down motion. The core element is a resonance ring, which is briefly deformed by high frequency stimulation and then returns to its starting position. With this ultra-rapid change of shape, the resonance ring reshapes the ultrasonic oscillations through 90° into a linear movement of the instrument. This means that instruments move axially in parallel to the tooth surface, eliminating the unwanted vibrations that otherwise occur while working.

The vibration-free operational mode means a considerable increase in touch sensitivity for the therapist. As the instruments move parallel to the root surface, the Vector® Scaler can be used for clinically efficient and non-traumatic treatment.



OUTSTANDING SENSITIVITY OF TOUCH

Top results in ultrasonic therapy

With Vector® Paro, you can trust in your senses when administering treatments. This is because the unique oscillation deflection allows the therapist to control his or her highly sensitive work precisely, since the ultrasonic instruments work completely without unwanted vibrations. Already during the treatment process, the quality of the surface being treated can be controlled thanks to a high degree of touch sensitivity. This is enabled by the linear motion of the instrument. This ensures completely vibration-free work and enables touch control comparable to that of a diagnostic probe.

This process is supported and optimised by the polishing ingredients in Vector® Fluid polish, which is applied in the same process by the Vector® Paro unit. It effectively removes biofilm from the surface and gently smoothes the surface during the treatment.

Gentle treatment with the Vector® principle is the only method capable of distinguishing between root cement and concrement. Only treatment with Vector® results in no notable loss of dental substance.*



LOSS OF SUBSTANCE:

Root surface following hand planing



SMOOTH AND CLEAN:

Tooth root surface after Vector® therapy



THE VECTOR® PRINCIPLE:

- 1 | Linear deflection of the ultrasound dynamics in the Paro handpiece
- 2 | Instrument moves axially, parallel to the surface of the root
- 3 | Precise 90° deflection in the vertical direction
- 4 | Vibration-free work
- 5 | Careful removal of biofilm, bacteria and deposits
- 6 | Smooth, clean surfaces
- 7 | Thorough and sensitive like no other system

* Kishida et al. (2004); see list of references (page 19), paragraph 8.

THE VECTOR® SYSTEM – A SYNERGY OF DESIGN AND FUNCTION.

Even after 20 years, it is still the standard for minimally invasive and painless ultrasonic technology*: the linear oscillation deflection from Dürr Dental. This ingenious piece of technology is installed in the Vector® Paro. Supplemented with a large selection of instruments and helpful accessories, Vector® represents the pinnacle of minimally invasive ultrasonic treatment. With high tech equipment throughout the system.

A PIONEERING ADDITION



Vector® Fluid polish optimises polishing on the basis of hydroxyapatite and promotes low-pain treatment.

- ✓ LACTOSE-FREE
- ✓ GLUTEN-FREE

PIONEERING SYSTEM



A carefully coordinated range of accessories completes the Vector® System. You will find all the components in the Vector® brochure from Dürr Dental.



* Braun et al. (2003); see list of references (page 19), paragraph. 1.

PIONEERING TECHNOLOGIES

Paro handpiece with oscillation deflection for gentle subgingival treatment. Modern scaler technology with 6 LEDs enables the best overview for supragingival and subgingival application.



PIONEERING INDEPENDENCE

A large removable water tank means that there is no need for a fixed water supply.



PIONEERING SHAPE

Both handpieces impress with exceptional operator friendliness.



PIONEERING SIMPLICITY AND HYGIENE

The clearly laid out operating panel is simple and intuitive to operate. There are no gaps or cracks in the surfaces, so they fulfil the highest hygiene requirements. The unit automatically indicates when cleaning is due and facilitates the rinsing of the media conveying system. Handpieces and instruments can be reprocessed in validated manual or automatic processes.



PERIODONTAL TREATMENT WITH THE PARO HANDPIECE.

INITIAL THERAPY

The main targets for the initial treatment are thorough removal of biofilm and the mineralised components of the biofilm in the form of calculus, and smoothing of the root surface down to the base of the pockets. Although the mineral ingredients do not actually trigger periodontal inflammation, they provide an ideal breeding ground for renewed growth of periodontal pathogenic germs.

The precisely coordinated Paro instruments are made from high-quality surgical steel and allow this type of treatment to be carried out in a clinically efficient and successful manner. The exceptionally fine hydroxyapatite particles in the Vector® Fluid polish optimise the polishing process and reduce hypersensitivity following treatment. The pocket is always rinsed out thoroughly - with no aerosol formation. Thanks to hydrodynamic effects, the bacterial count is reduced dramatically.



PARO TOOL KIT

Instrument box with 5 instruments incl. lid with torque wrench



MOLARS



Condition at the start of treatment



Condition after 3 months



Condition after 1 year



Condition after 3 years

© Dr. Meuksch

MAINTENANCE TREATMENT (RECALL)

Even after thorough cleaning of the root surface, bacteria will resettle in the periodontal pockets within a few days. For this reason, the initial therapy must always be followed by maintenance therapy or supportive periodontitis treatment (UPT) at regular intervals in order to prevent re-infection of the pockets. The intervals between recall sessions must be determined individually for each patient.

The Vector® System offers ideal instruments for this type of treatment made of flexible plastic, along with carbon fibre reinforced probes and prophylaxis curettes. These are especially gentle, even to sensitive surfaces, and are therefore suitable for implant cleaning, mucositis or periimplantitis treatment.

In combination with Vector® Fluid polish, biofilm is effectively removed, thus providing effective control over the bacterial resettlement. And this can be done in a really gentle manner.



KEY FEATURES:

- Targeting the causes of periodontitis
- Gentle and effective removal of bacteria and biofilm
- Low pain therapy*
- Efficient concretum removal without irritation
- Greatest possible retention of regenerative tissue
- Root surface cleaning right down to the bottom of the pockets
- No damage to soft tissue or root surfaces
- Effective even in anatomically difficult areas

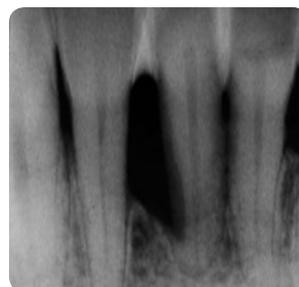
FRONT TEETH



Condition at the start of treatment



Condition after 3 months



Condition after 1 year



Condition after 3 years

© Dr. Mauksch

*Braun et al. (2003); see list of references (page 19), paragraph 1

PERIIMPLANTITIS THERAPY WITH THE VECTOR® PARO.

MUCOSITIS/ PERIIMPLANTITIS TREATMENT

In order to keep dental implants and peri-implant soft tissue healthy, regular and systematic removal of bacterial deposits and biofilm is absolutely vital – just like for prophylaxis treatment for gingivitis and periodontitis. Implants are surrounded by bacterial plaque. Regular professional cleaning is essential here. Otherwise, inflammatory changes in the soft tissue can occur that – in the worst-case scenario – can lead to loss of the implant.

Vector® instruments are designed especially for this type of treatment. They permit reliable and thorough cleaning of implant surfaces without damaging the implant. Instruments manufactured from special fibre-reinforced composites and plastic instruments made especially for treating implant surfaces enable clinically successful periimplantitis treatment.



RECALL/IMPLANT TOOL KIT

Instrument box with 4 instruments incl. lid with torque wrench



*Karring et al. (2005); see list of references (page 19), paragraph. 6

PROFESSIONAL DENTAL CLEANING WITH THE SCALER HANDPIECE.

VARIED APPLICATIONS

Professional dental cleaning is possible to the highest standards with the Scaler handpiece from Dürr Dental. Particularly slender instruments for supra- and subgingival treatment enable efficient but gentle plaque removal.

The piezo-ceramic drive allows efficient removal of deposits while providing the best and gentlest possible protection of sensitive tissue structures. The fact that the Scaler handpiece can be partially dismantled makes cleaning and disinfection particularly easy.

A TECHNICAL HIGHLIGHT

In addition to the modern and timeless unit design and the ergonomic Scaler handpiece, six powerful LEDs, connected in parallel, ensure the best possible lighting - even in areas that are hard to see. The sterilisable light conductors combine a long service life with excellent cost-effectiveness.

THE
VECTOR® SCALER
IS ALSO
AVAILABLE
AS A SEPARATE
UNIT



SCALER TOOL KITS

with separate torque wrench instruments for subgingival and supragingival applications with the Vector® Scaler



ACCESSORIES

PARO AND SCALER HANDPIECES

Both handpieces impress with excellent ergonomics. The Paro handpiece with unique deflection of oscillations enables particularly gentle subgingival treatment. The Scaler handpiece is equipped with 6 powerful LEDs for the best possible overview of the work as it is being carried out.



VECTOR® FLUID POLISH

03 A B C / S. 06-07

Vector® Fluid polish is a hydroxylapatite-based polishing fluid with increased removal capacity and a fresh mint flavour. It optimises the polishing and supports painless treatment.



TOOL KITS

- Paro tool kit incl. torque wrench
- Recall/Implant tool kit incl. torque wrench
- Scaler tool kits with separate torque wrenches



STERILISATION AND STORAGE BOX

The box has a perforated base and insert for sterilisation and storage of the relevant handpiece and tool kits. It is optionally also available with a silver lid (for the Paro handpiece) or with a blue lid (for the Scaler).



RINSING ADAPTER

With the practical rinsing adapters you can easily rinse the inner lumens of handpieces and instruments with the aid of a standard syringe and disinfect them following validated procedures.



VECTOR® CLEANER

Ready-to-use solution for the removal of acid-soluble deposits in the hose system and in the handpieces of the Vector® system.

- Intensive cleaning effect
- Excellent material compatibility



VECTOR®/RINSENDO DISINFECTANT

Ready-to-use solution for disinfecting the liquid channel in the Vector® hose system and in the RinsEndo handpiece.

- Broad range of action
- Excellent material compatibility



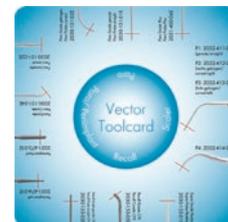
MULTIFUNCTIONAL FOOT SWITCH

The units can be easily operated with the aid of the foot switch, or via wireless or cable connection.



TOOLCARD

The toolcard is used to monitor instrument wear.



SERVICE KIT

This set contains replacement parts such as seals, nozzles, O-rings etc.



SERVICE AND SALES PACKAGES

SERVICE



VECTOR PATIENT BROCHURE

A C / S. 06-07

We can help you educate patients about periodontitis treatment with our free patient information brochures.



VECTOR DVD

A C / S. 06-07

A film provides a detailed account of how the instruments can be used. Animated instructions for use and further documents provide additional information.

SALES PACKAGES

The Vector® System is available in the following versions:



VECTOR® PARO

Vector® Paro periodontal treatment unit incl. Paro handpiece, flexible foot switch, Vector® Fluid polish, Vector®/RinsEndo disinfection, Vector® cleaner, service kit, steri-box, Paro tool kit, Recall/Implant tool kit.



VECTOR® PARO PRO

Vector® Paro Pro periodontal treatment unit incl. Paro handpiece, Scaler handpiece, flexible foot switch, Vector® Fluid polish, Vector®/RinsEndo disinfection, Vector® cleaner, service kit, 2 steri-boxes, Paro tool kit, Recall/Implant tool kit, Scaler P1 tool kit.



VECTOR® SCALER

Vector® Scaler periodontal treatment unit incl. Scaler handpiece, flexible foot switch, Vector®/RinsEndo disinfection, Vector® cleaner, steri-box, Scaler P1 tool kit.

VECTOR® REFERENCES

1. **Braun et al. (2003)** Subjective intensity of pain during the treatment of periodontal lesions with the Vector®-system. *J.Periodontal Res.* 38, 135-140.
2. **Christgau, M., Männer, T., Beuer, S., Hiller, K.-A., and Schmalz, G. (2007).** Periodontal healing after non-surgical therapy with a new ultrasonic device: a randomized controlled clinical trial. *J. Clin. Periodontol.* 34, 137-147.
3. **D’Ercole, S., Piccolomini, R., Capaldo, G., Catamo, G., Perinetti, G., and Guida, L. (2006).** Effectiveness of ultrasonic instruments in the therapy of severe periodontitis: a comparative clinical-microbiological assessment with curettes. *New Microbiol.* 29, 101-110.
4. **Hoffman, A., Marshall, R.I., and Bartold, P.M. (2005).** Use of the Vector scaling unit in supportive periodontal therapy: a subjective patient evaluation. *J. Clin. Periodontol.* 32, 1089-1093.
5. **Kahl M, Haase E, Kocher T, Rühling A.** Clinical effects after subgingival polishing with a nonaggressive ultrasonic device in initial therapy. *J Clin. Periodontol.* 2007; 34, 318-24.
6. **Karring, E.S., Stavropoulos, A., Ellegaard, B., and Karring, T. (2005).** Treatment of periimplantitis by the Vector system. *Clin Oral Implants Res* 16, 288-293.
7. **Kawashima, H., Sato, S., Kishida, M., and Ito, K. (2007b).** A comparison of root surface instrumentation using two piezoelectric ultrasonic scalers and a hand scaler in vivo. *J. Periodont. Res.* 42, 90-95.
8. **Kishida, M., Sato, S., and Ito, K. (2004).** Effects of a new ultrasonic scaler on fibroblast attachment to root surfaces: a scanning electron microscopy analysis. *J. Periodont. Res.* 39, 111-119.
9. **Kocher, T., Fanghänel, J., Schwahn, C., and Rühling, A. (2005a).** A new ultrasonic device in maintenance therapy: perception of pain and clinical efficacy. *J. Clin. Periodontol.* 32, 425-429.
10. **Rupf, S., Brader, I., Vonderlind, D., Kannengiesser, S., Eschrich, K., Roeder, I., and Merte, K. (2005).** In vitro, clinical, and microbiological evaluation of a linear oscillating device for scaling and root planing. *J. Periodontol.* 76, 1942-1949.
11. **Schwarz, F., Bieling, K., Venghaus, S., Sculean, A., Jepsen, S., and Becker, J. (2006).** Influence of fluorescence-controlled Er:YAG laser radiation, the Vector system and hand instruments on periodontally diseased root surfaces in vivo. *J. Clin. Periodontol.* 33, 200-208.
12. **Schwarz, F., Aoki, A., Sculean, A., Georg, T., Scherbaum, W., and Becker, J. (2003).** In vivo effects of an Er:YAG laser, an ultrasonic system and scaling and root planing on the biocompatibility of periodontally diseased root surfaces in cultures of human PDL fibroblasts. *Lasers Surg Med* 33, 140-147.
13. **Sculean, A., Schwarz, F., Berakdar, M., Romanos, G.E., Brecx, M., Willershausen, B., and Becker, J. (2004).** Non-surgical periodontal treatment with a new ultrasonic device (Vector-ultrasonic system) or hand instruments. *J. Clin. Periodontol.* 31, 428-433.

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Subject to technical changes