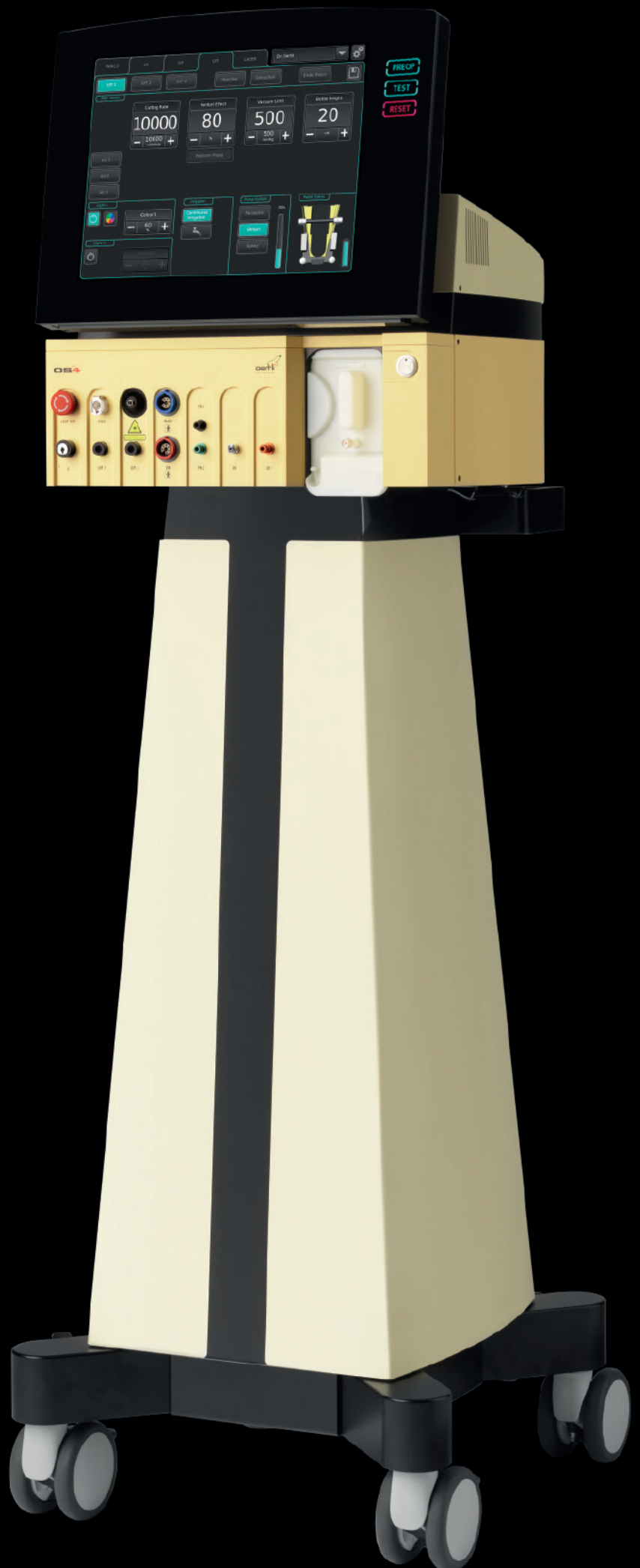


The logo features the letters 'OS' in white and the number '4' in red. A red circular line is drawn around the '4', with the top part of the circle overlapping the 'S'.

The Essence of Perfection



**OS4**  
The Essence of Perfection

*«Perfection and elegance, speed and precision: a comprehensive operating system for state-of-the-art eye surgery. Each function is exceptional, handling is a sheer pleasure and any instrument in the patient's eye reacts to the finest pedal movements like an extension of the surgeon's hand. The system incorporates innovative technology with perfection throughout, extending to every hidden detail. Conceived, developed and realised by Oertli<sup>®</sup>, the creator of exceptional surgical platforms.»*





## HDC Control

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### **Philosophy and objectives**

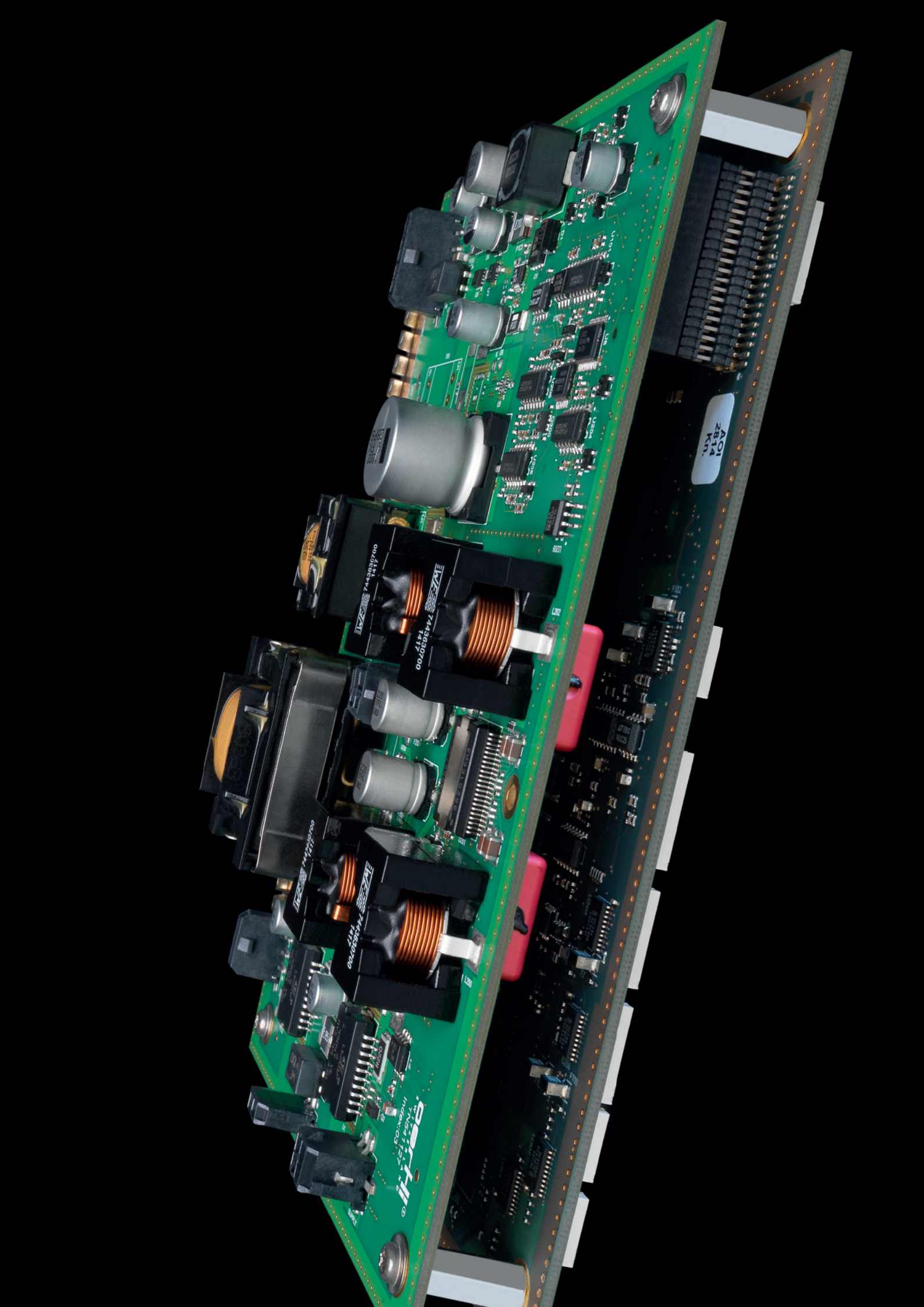
Oertli's surgical system is inspired by the human body. With its fine micro motoric functions, the human body reacts to the commands of the brain with finely tuned movements without any delay. The brain, in turn, obtains its information from the body's most cleverly and subtly attuned sensors of perception: seeing, hearing, feeling.

Within the OS4 device, the function of HDC control is therefore to perfectly unite the OS4 system with the micro motoric movements of the surgeon. Thanks to HDC control, the OS4 and its instruments react as an extension of the surgeon's hand by carrying out the commands and intuitions with the same perfection as the surgeon's own hand: delivering the highest resolution for dynamic, direct and instant performance.

### **Concept and implementation**

HDC stands for High Definition Dynamic Direct Control and covers all elements of the OS4 system: the monitoring and control unit with its computers, software programmes, circuits, drive systems, pumps, valves and its ingenious fluidics circuit. HDC control also incorporates the micro instruments with their ergonomics, the pedal and the touch-sensitive operation and visualization field. HDC is a philosophy of conceptualization that effortlessly elevates the OS4 to a class of its own.







## HDC Inner Values

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### **HDC electronics**

HDC electronics are the muscles of the OS4 – covering the whole spectrum from the finest to the most dynamic muscles! HDC control and performance electronics enables instrument activation both in the form of minute movements and immediate action: cutting, suction, liquefying, coagulating, moving, holding, letting go, building up pressure ...

### **HDC software**

With its highly efficient processors and memories, the HDC software constitutes the OS4's magnificent brain and ensures that the right information and commands flow through the machine's nerve cords with the highest degree of speed and precision at all times – from the pedal up to the instrument tip. This occurs without any delay time exactly as in the human body, since HDC software always sets the right priorities and is designed for multitasking.







## HDC User Friendliness

### **That is how work is fun!**

Everything about the OS4 is clearly arranged and simple. Behind this lies the HDC philosophy. It makes operating comfortable and safe. It starts when preparing for surgery. All connectors are easily accessible from the front and located at a convenient operating height. The self-retracting cassette inserts gently into the device, which is ideal for operating from the sterile field. The no-frills 15-inch touch screen guides the eye without visual confusion to the right function from a distance. The optional instrument tray (80 x 35 cm) can be fixed in any desired position. When not in use, it simply folds away on the side. Changeover times between surgeries are extremely short. OS4 increases performance in the OR significantly. Such efficiency saves costs.

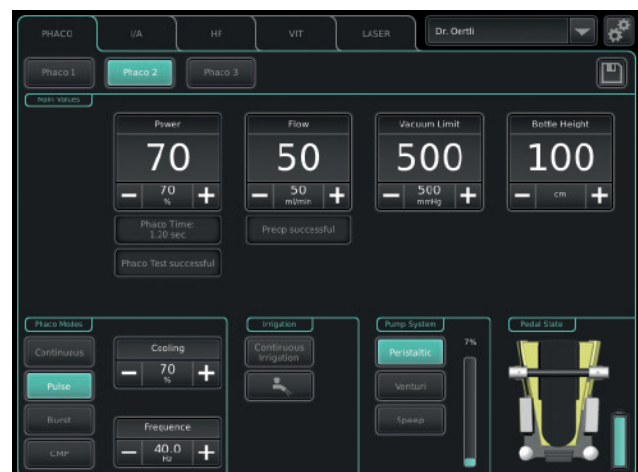


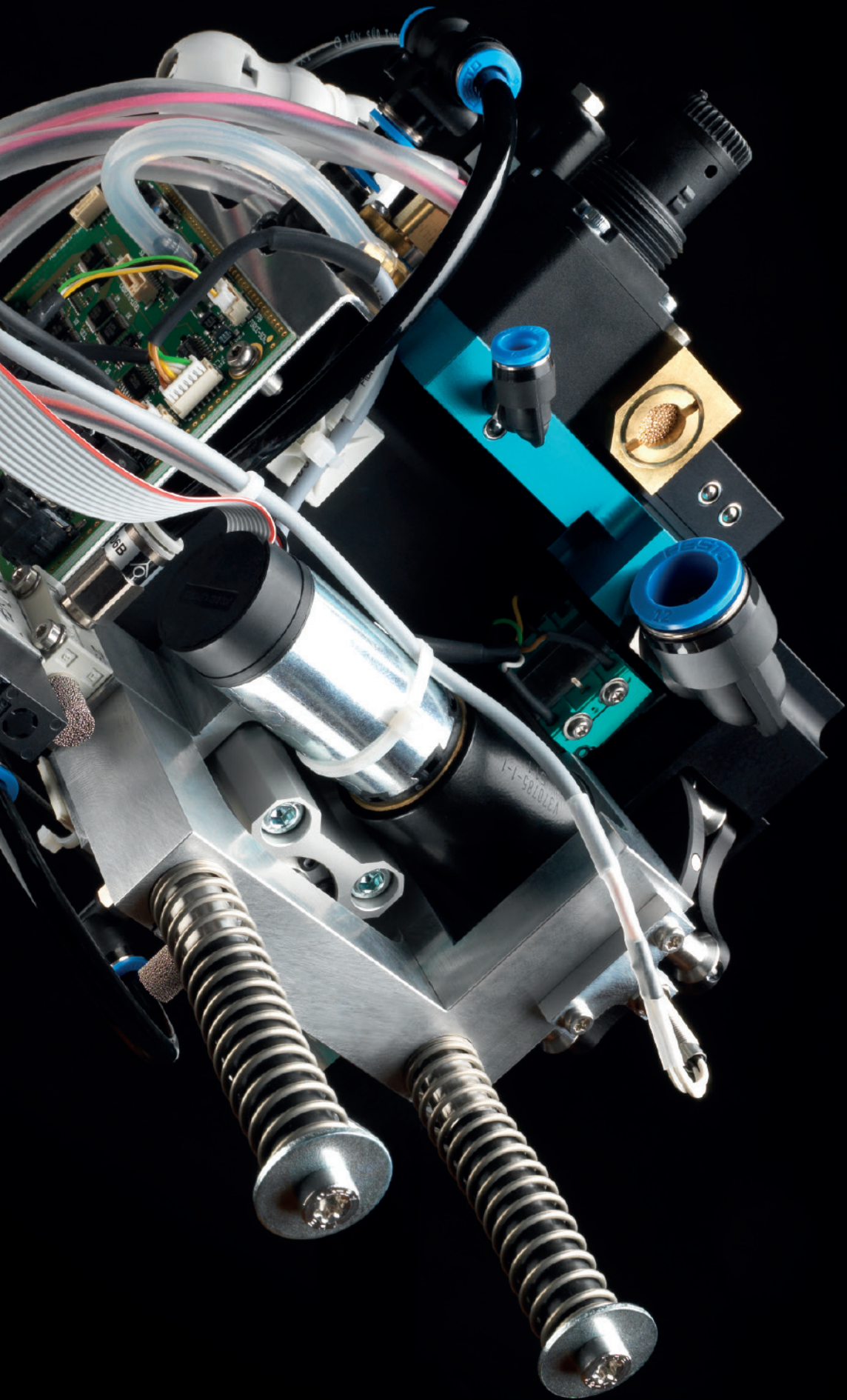




## HDC Operating Surface

HDC has tremendously increased the functionality of Direct Access®! Simple and user-friendly, the graphic operating surface provides supreme operational safety: it allows the surgeon to obtain relevant information quickly, intervene intuitively, and to master the function within seconds. The HDC philosophy ensures that there is no confusion resulting from superfluous signals and menu navigation delays.









## HDC Fluidics – the Great Progress

The greatest progress in operating technology can probably be found in HDC fluidics. The system's centrepiece, the pump technology unites a real venturi with a real peristaltic pump, thereby combining their specific strengths in the SPEEP® mode: controlled flow and controlled vacuum; speed and precision! In the most subtle resolution, flow and vacuum become a directly controllable dynamic tool for surgery of unparalleled precision: with easyPhaco® for anterior segment surgery, with Caliburn® and Continuous Flow-Cutter for posterior segment surgery.

Infusion by means of gravitational force or gas pressure – OS4 gives the surgeon the freedom of choice. Gas maintains the infusion pressure constant at the previously selected level while providing immediate compensation and dispensing with no need for IV pole movement. It thereby enables a wide pressure area, which is ideal for vitreoretinal interventions.

### «Clever valves»

A small detail of the HDC philosophy representative for innumerable subtleties of the OS4 device: the valves close and open harmoniously matching the situation by avoiding pressure fluctuation and undesired fluid flow. The sum of the smallest details results in unparalleled stability and calm in the eye.







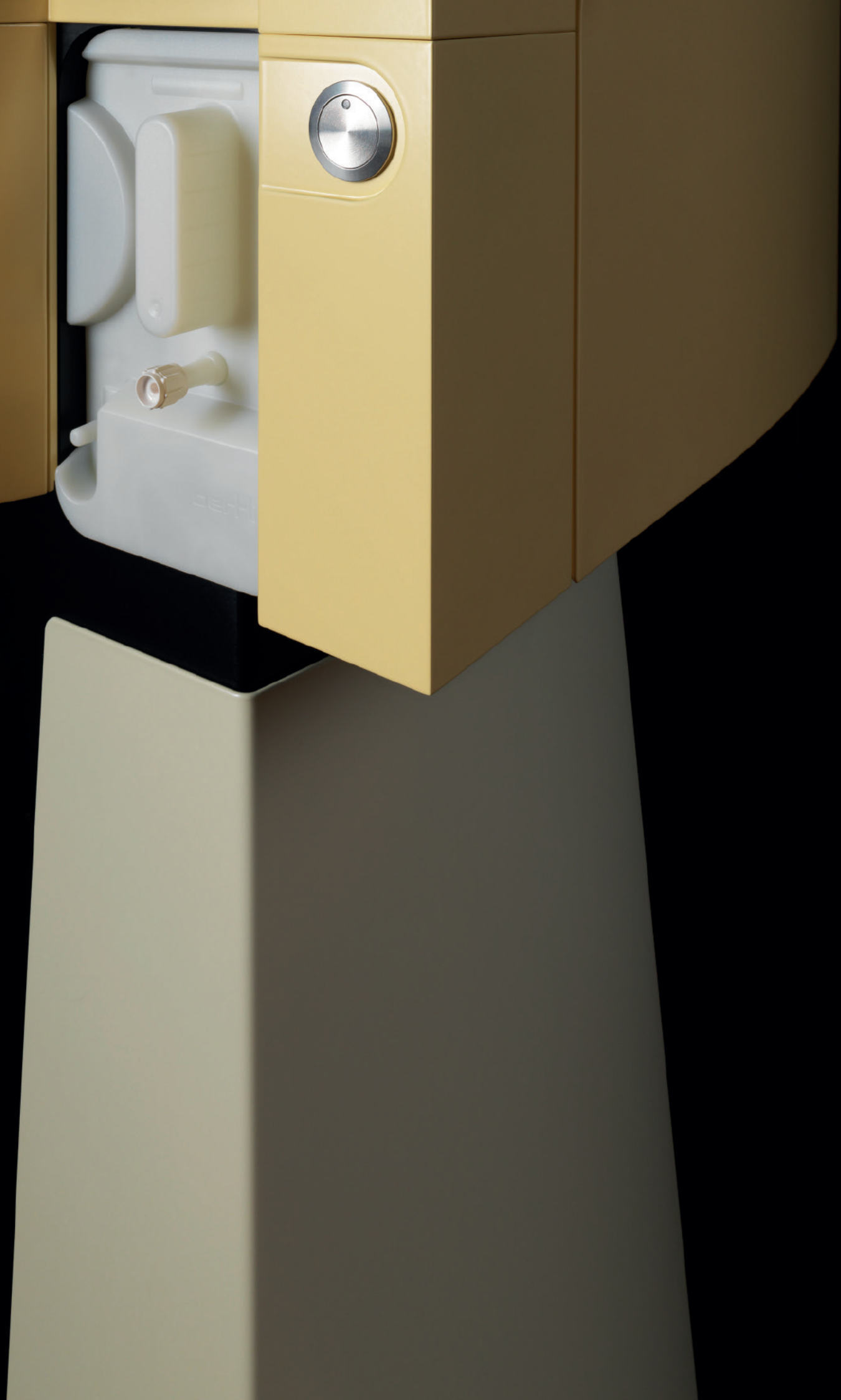
## HDC Pedal

### Fine, direct and multifunctional

Being almost an ankle in itself, the HDC pedal registers all effortless movements of your foot in any direction: forward, backward, up, down, left, right. It is also a cockpit and a control centre allowing you to define the commands.

The commands are transmitted wirelessly making the pedal position on the floor ideal at all times. The accumulators provide power for several days of surgery.









## HDC and Hexadisq®

HDC with Hexadisq® ensures gentle and efficient operation. Reacting to the minutest pedal movements, ultrasound energy makes specifically attracted nucleus fragments gently enter the easyPhaco tip while maintaining optimal chamber stability. Tip deflection is monitored, adjusted and optimised 10'000 times per second.

The superb ergonomics of Hexadisq® also play an important role in the HDC concept. Perfectly balanced in its shape and weight, the instrument unnoticeably becomes an extension of the hand, controlled by micro motoric functions and the surgeon's intuitive feeling. Even a robot can never get close to such performance!



*easyPhaco® is a development of Oertli® R&D in scientific cooperation with Prof. Rupert Menapace, Vienna.*





## easyPhaco®

### Superiority with easyPhaco®

You will be far ahead! No matter whether 2 mm or 3 mm incisions, the hardest nuclei or refractive lens exchange: with easyPhaco® technology, everything happens more speedily, safely and calmly than any other procedure can ever achieve. Where is the difference? Fluidics on! Maximum flow and vacuum guarantee consistent chamber stability, everything pushes to the tip and goes into the tip. This makes phaco times short and the whole surgery fast, safe and gentle.



*easyTip® CO-MICS, ideal for 1.6 – 1.8 mm incisions  
Astigmatism-neutral sub 2 mm surgery without making any compromises in regard to efficiency and chamber stability. Work with a vacuum of 350 mmHg and 30 ml flow.*



*easyTip® 2.2 mm, ideal for 2.2 – 2.4 mm incisions  
Turn the vacuum on to 650 mmHg and 60 ml flow and enjoy absolute chamber stability and efficient emulsification.*



*easyTip® 2.8 mm, ideal for 2.8 – 3.2 mm incisions  
Work with maximum vacuum and flow and do not worry about the height of the bottle. You can emulsify even the hardest nuclei without any problems or clogging.*







## HDC in Bipolar Technology

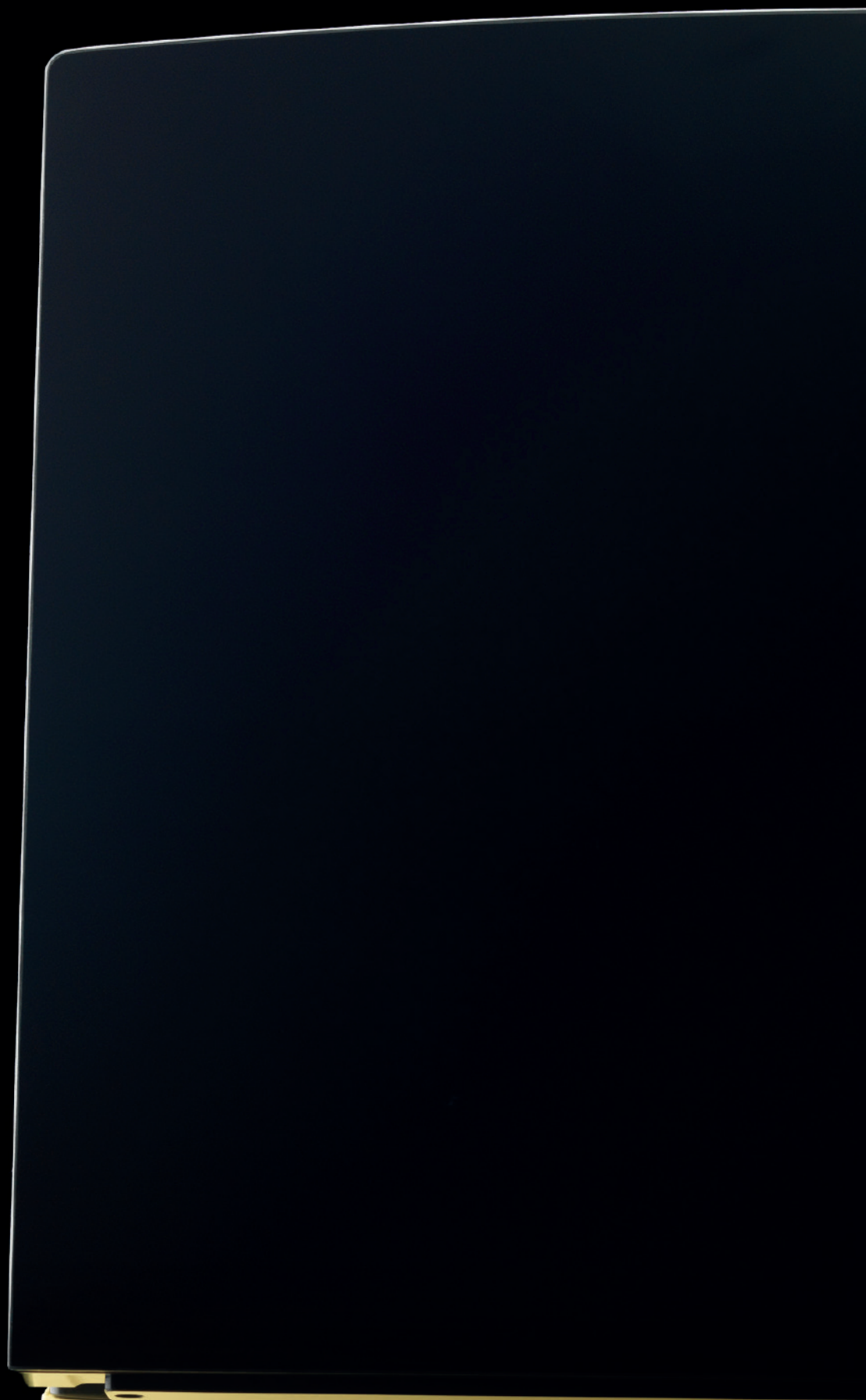
HDC achieves extremely fine and directly controlled doses of RF energy, perfectly designed for tested and proven applications of bipolar technology from micro haemostasis on the retina to tissue separation in capsulotomy and glaucoma surgery. Tips with cleverly thought-out geometry and choice of material make bipolar diathermy to the true instrument of precision.

### **RF capsulotomy guarantees safety in difficult cases**

RF capsulotomy melts the capsule bag without any tearing with forceps or needles, but by gently sliding over the tissue, even underneath the iris. Thus, RF capsulotomy has proven itself in innumerable difficult cases since 1991, not only when safely correcting rhexis that have got out of control but also in targeted approaches such as:

- no fundus reflex
- hypermature, traumatic and intumescent cataract
- narrow pupils
- rhexis phimosis
- juvenile cataracts





OS4

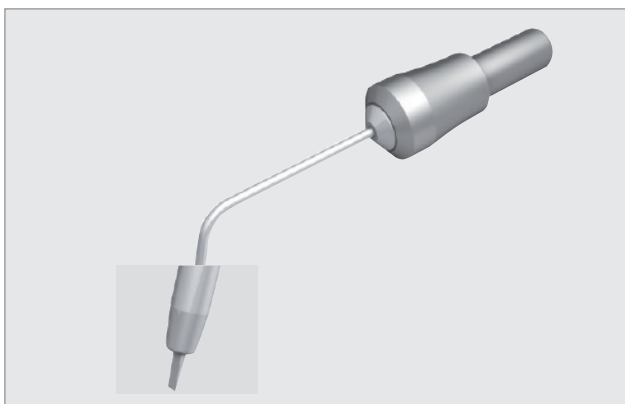


## HDC in Glaucoma Surgery

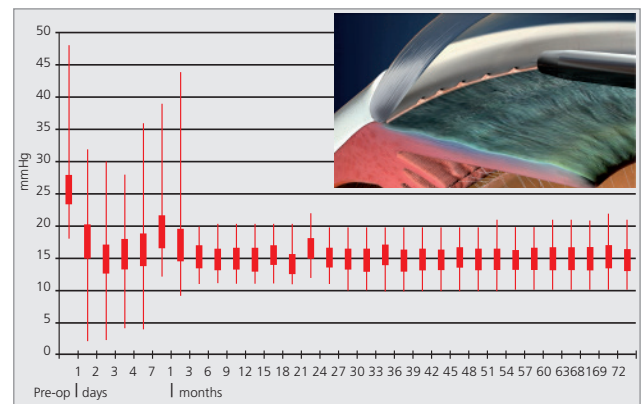
### HFDS® ab interno MIGS technology

High Frequency Deep Sclerotomy ab interno creates direct access from the anterior chamber to the Schlemm's canal and further to the sclera. The resistance of the trabecular network is thus avoided. The abee® glaucoma tip is led through a paracentesis of 1.2 mm and creates six little sclerotomy pockets in the iridocorneal angle.

- Ideally combined with cataract surgery
- Very short intervention times
- No bleb formation
- No corneal scars
- No fibroblasts moving to the sclerotomy
- Procedure can be repeated

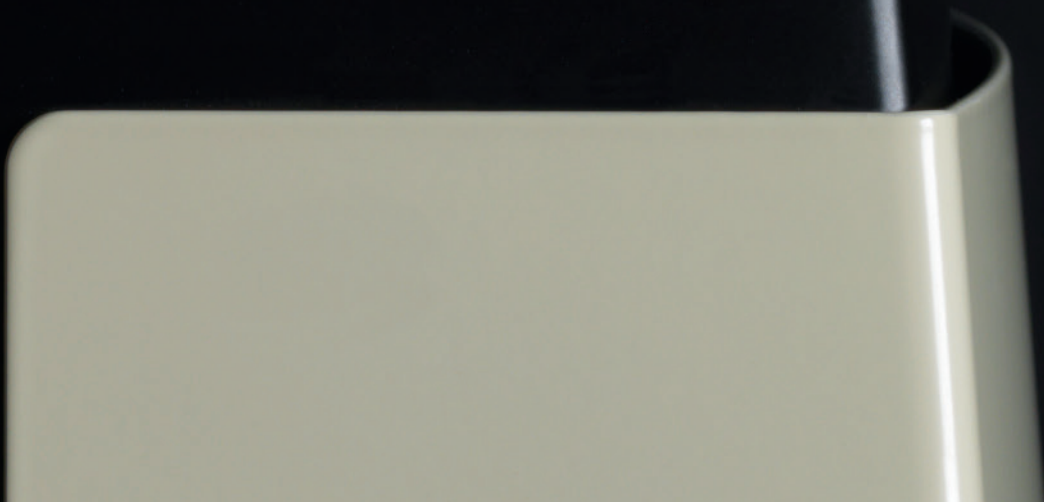


abee® glaucoma tip



Excellent long time results (72 months) after performed HFDS® procedure.

*Bojan Pajic: Long-term Results of a Novel Minimally Invasive High-Frequency Deep Sclerotomy Ab Interno Surgical Procedure for Glaucoma, European Ophthalmic Review, Volume 6, Issue 1, Spring 2012, ISSN 1756-1795*

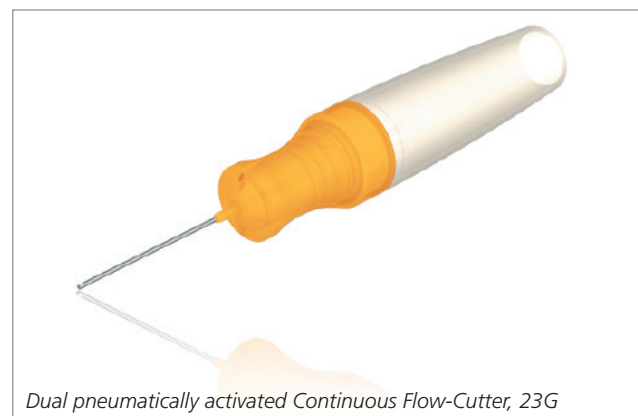






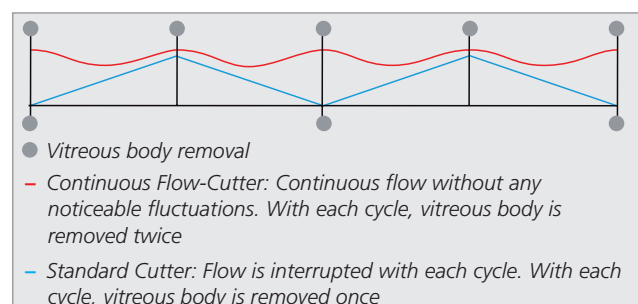
## HDC and Continuous Flow Vitrectomy

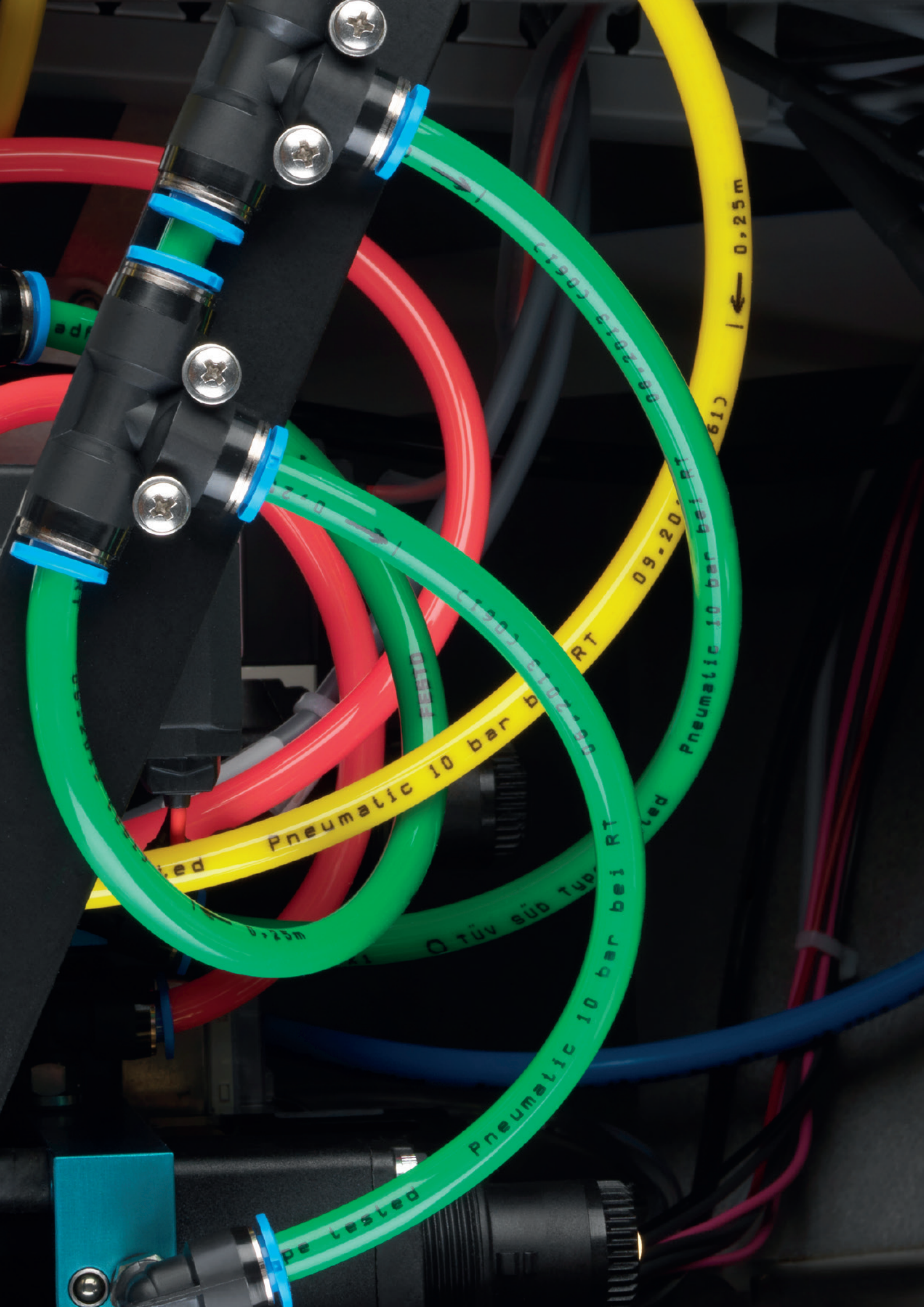
When marketing its dual pneumatic Twinac drive and starting a new era of tear-free high speed cutting, Oertli® set the benchmark for strongest cutting power years ago. Now, HDC philosophy brings about yet another quantum leap! The continuous flow cutting conception excels at continuous flow and perfect portioning of the vitreous body removal. Thanks to SPEEP® mode, both lowest flow rates and highly rapid vitreous body removal take place with safe vacuum control and become your new, unimaginably effective tool.



### Hearing the vitreous body!

Have you aspirated vitreous body or just fluid at the opening of the Continuous Flow-Cutter? The high-resolution sensor technology and fluidic control of the OS4 detects this instantly and informs you by emitting an audible signal. A great aid for precision surgery!







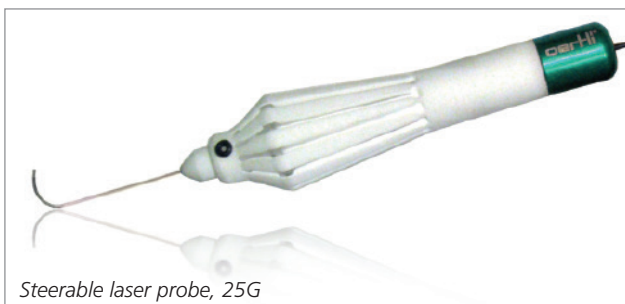
## HDC for Improved Visualisation

### Real laser integration

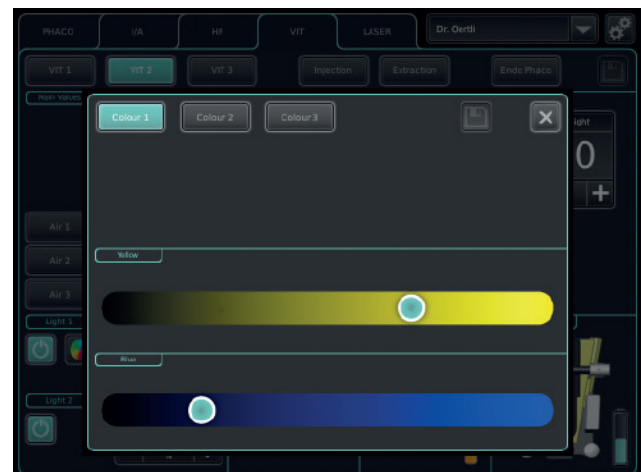
Key switch, laser exit and emergency stop are perfectly located beside the other connectors. When activating the laser function, the OS4 pedal immediately becomes the laser pedal without any manipulations. Settings, displays and control are integrated into the graphic DirectAccess® panel. Thus, the endo laser perfectly gets in line with the operating procedure.

### Endo laser – unrestricted operating range

Safely inserting and removing, controlling in every direction with the lightest finger pressure: thanks to HDC philosophy, new functions have been created. The movability of the endo laser tip widely opens up access to periphery and enables setting whole rows of laser points by fine movements of your fingertips.

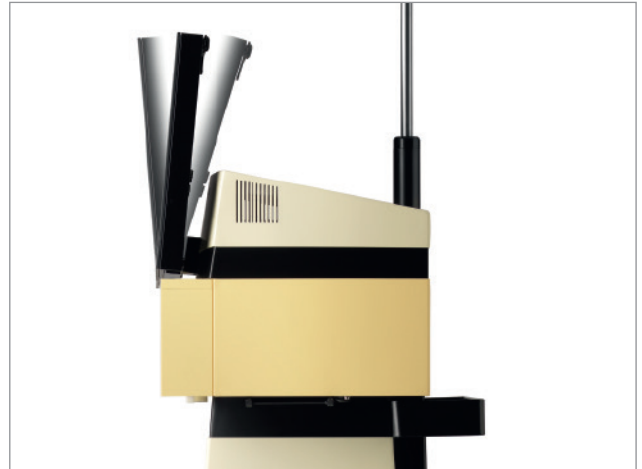


HDC enables real individualisation of light, matching the operative situation, colourings used and the habits of the surgeon. Yellow or blue can be added and mixed, the intensity increased or decreased. Being stored as preselection combinations, the individualisation settings are immediately available for various manoeuvres without needing to change filters.



### Aspirating, holding, removing

SPEEP® mode adds true precision characteristics to I/A instruments and Continuous Flow-Cutter! Very carefully controlled, structures and particles can be aspirated, and moved and manipulated in the state of being held. One movement of the foot – and they safely vanish in the instrument. Thereby, vacuum always remains under safe control and suction power instantly reacts to pedal commands.



# Functionality

The OS4 is available in the three device variants with the following functionalities:

Function	Anterior segment	Anterior and posterior segment	Anterior and posterior segment with endo laser
Phaco	✓	✓	✓
I/A	✓	✓	✓
Dia/Kaps/HFDS Glau*	✓	✓	✓
Anterior vitrectomy	✓	✓	✓
Posterior vitrectomy	–	✓	✓
Injection / extraction	–	✓	✓
Endo phaco	–	✓	✓
Laser	–	–	✓
Active infusion (GFI)	✓	✓	✓
Fluidic & gas exchange	–	✓	✓
LED light	–	✓	✓
LED+ light	–	✓	✓

\* The HFDS Glau function is optional.



# Module Structure

## Fluidic System

- Peristaltic pump
- Venturi pump
- SLEEP® mode
- Gravity infusion, electric pole drive
- Active infusion (GFI)
- Tubing system with integrated closed pressure sensor
- Auto Venting
- Limitable back flow
- Preop, self-testing & reset functions

## Control

- Control panel with 15-inch one touch glass monitor
- Dual linear wireless multifunctional pedal
- Storing of setting values for 50 surgeons
- Audio signals
- DirectAccess® for easy operability

## Pedal

- Wireless
- Integrated laser control
- User specific assignment
- Dual linear or linear
- 18 functions
- Reflux function

## Anterior Segment

### Phaco Function

- 3 programme memories with DirectAccess®
- Ultra sound phaco with auto-tuning
- Hexadisq® handpiece with 6 piezo plates
- Linear, PULSE, BURST and CMP
- easyPhaco®, CO-MICS and MICS technology
- Dual linear phaco

### I/A Function

- 3 programme memories with DirectAccess®
- Continuous irrigation

### Anterior Segment Vitrectomy

- 3 programme memories with DirectAccess®
- Pneumatically driven guillotine cutter 20G, 23G, 25G
- Linear 10 to 5,000 cuts per minute
- Single cut
- Dual linear or linear pedal control
- Irrigation/aspiration/cut
- Irrigation/cut/aspiration

## Posterior Segment

### Vitrectomy

- 3 programme memories with DirectAccess®
- Pneumatically driven guillotine cutter 20G, 23G, 25G
- Pneumatically driven Continuous Flow-Cutter 20G, 23G, 25G
- Linear or progressive, 10 to 10,000 cuts per minute
- Single cut
- Endo phaco

### Endo illumination

- Goodlight® LED light source
- Goodlight® LED Plus light source with adjustable colours
- Two independent light exits
- Anti-glare panoramic lighting
- Filter-free exit

### Air

- Fluid/air exchange
- Fluid/air changeover via pedal
- Panel or pedal activation
- Constant pressure control with compensation reservoir
- 3 programme memories with DirectAccess®
- Alarm function
- Electrical pump

### Visco

- Injection
- Extraction
- Linear pedal control

### Endo laser

- Green endo laser 532 nm
- Laser control without extra pedal
- Laser output power controllable with pedal
- Laser class: pilot beam 3R, work beam 4

### RF Function

- Capsulotomy
- HFDS® ab interno MIGS glaucoma surgery
- Conjunctiva coaptation
- Macro diathermy
- Endo diathermy





## HDC Control

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«HDC control perfectly unites the OS4 system with the micro motoric movements of the human body. Thus, the OS4 and its instruments react as an extension of the surgeon's hand by carrying out the commands and intuitions with the same perfection as the surgeon's own hand: delivering the finest resolution for dynamic, direct and instant performance.»

### Disclaimer

All information given in this publication is correct at the time of going into press. Oertli® reserves the right to make changes without prior notice as a result of enhancements to the design or safety of products. The details specified in the relevant quotation or delivery documents shall apply.



[www.oertli-os4.com](http://www.oertli-os4.com)