OPTIKON™
Man and Technology

R-EVOLUTION
OPHTHALMIC EQUIPMENT

When evolution becomes R-Evolution

Take a glance at the future

www.optikon.com

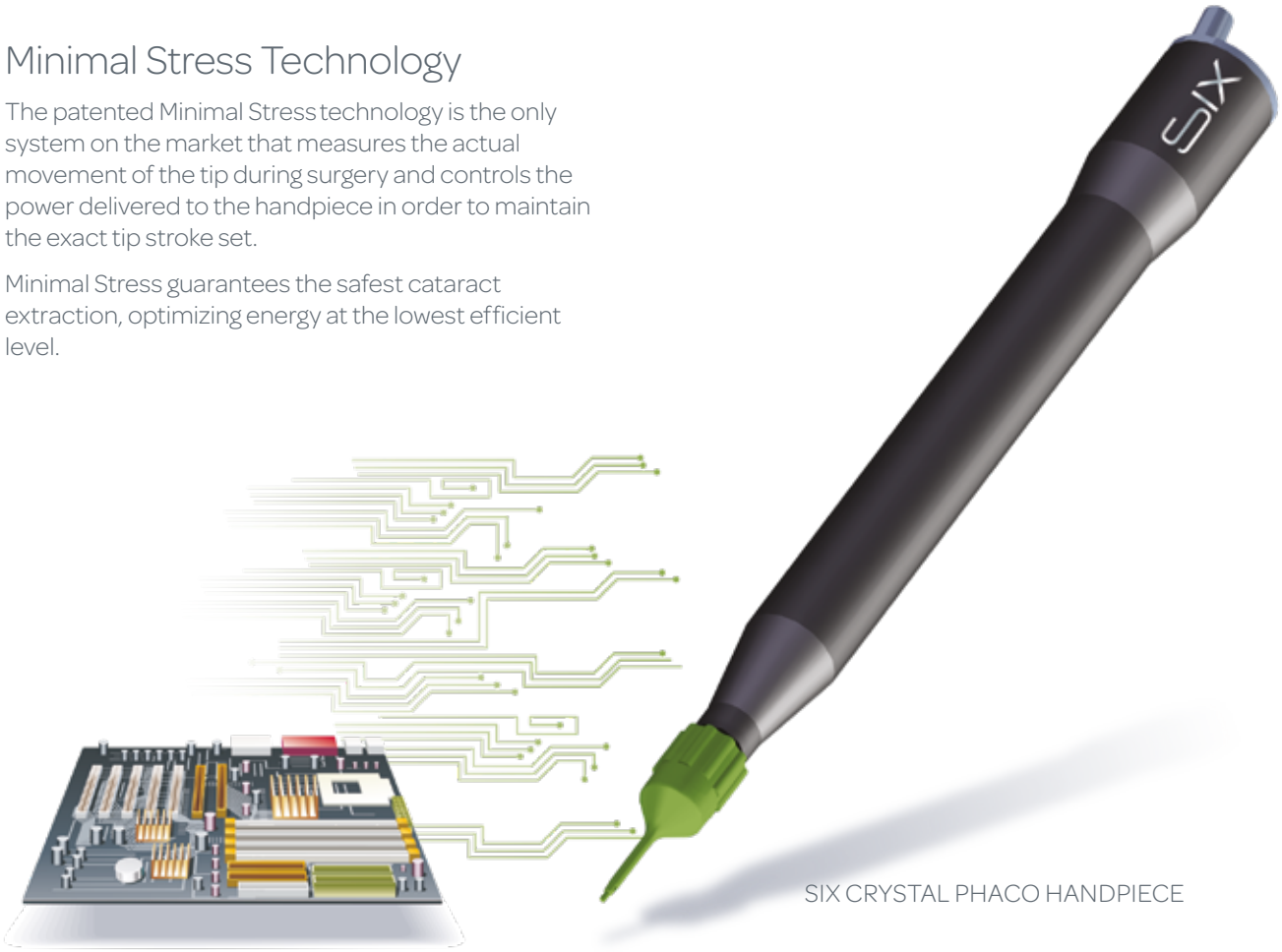
Designed to implement innovative technologies and meet every surgical requirement through continuous hardware and software developments.

MINIMAL STRESS: U/S ENERGY

Minimal Stress Technology

The patented Minimal Stress technology is the only system on the market that measures the actual movement of the tip during surgery and controls the power delivered to the handpiece in order to maintain the exact tip stroke set.

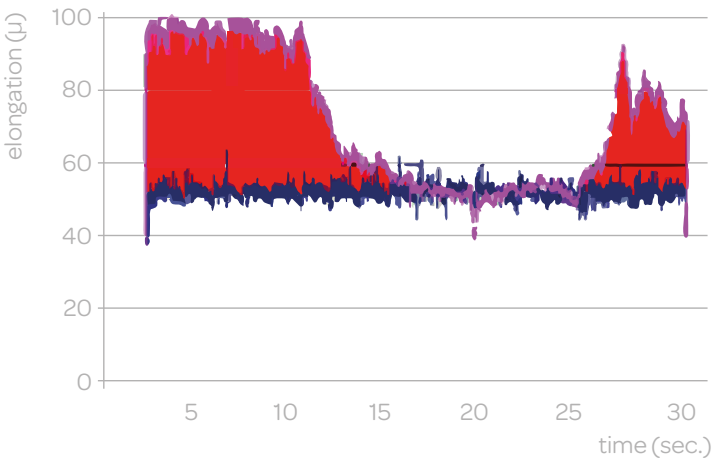
Minimal Stress guarantees the safest cataract extraction, optimizing energy at the lowest efficient level.



SIX CRYSTAL PHACO HANDPIECE

ELONGATION DYNAMIC WITH AND WITHOUT MINIMAL STRESS CONTROL

The chart shows the lower energy delivered into the eye by Minimal Stress control system compared to a standard U/S energy control system.



- Excess phaco energy without Minimal Stress control
- Elongation of the tip is not controlled
- Elongation of the tip is controlled by Minimal Stress

Reference: Data on file, Optikon

PREDICTIVE FLUIDICS

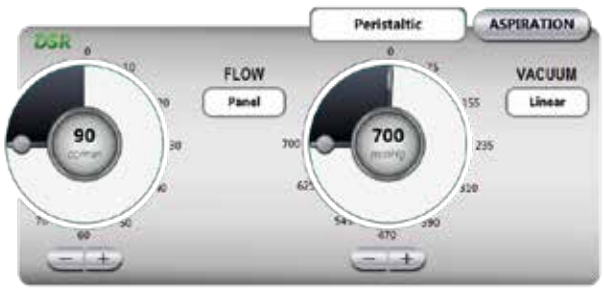
Double Pump System

The R-Evolution™ fluidics is managed by a double pump system, based on two latest generation pumps, one with flow control (peristaltic) and one with vacuum control (rotary vane for R-Evolution™ and Venturi for R-Evolution™ CR).

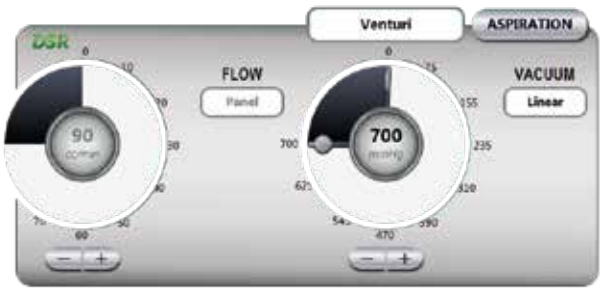
Easy choose between peristaltic and Venturi pumps through a single convenient I/A cassette.

The predictive fluidics ensures maximum flexibility and safety both in anterior and posterior segment surgery and with whichever technique used.

DOUBLE PUMP SINGLE PLATE WITH EASY ASSEMBLY I/A CASSETTE



PERISTALTIC PUMP
Flow rate: up to 90 cc/min
Vacuum: up to 700 mmHg



VENTURI/ROTARY VANE PUMP
Vacuum: up to 700 mmHg

DYNAMIC SURGERY CONTROL

Double Infusion System

The R-Evolution™ infusion system consists of two different irrigation modes: the integrated programmable IV pole gravity fed and the innovative air controlled infusion.

Unlike the traditional IV pole gravity fed mode, the technologically advanced air controlled infusion mode allows the surgeon to fix the pressure levels of IOP using a pressurized source of irrigation with sterile air into the bottle.

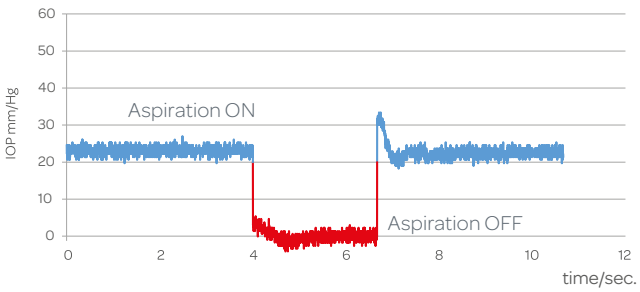
The air controlled infusion guarantees a faster reaction time to the aspiration flow variation.

Dynamic IOP Control System

The proprietary algorithm of Dynamic IOP Control is able to maintain a constant intraocular pressure, virtually eliminating the risks of high pressure and surges.

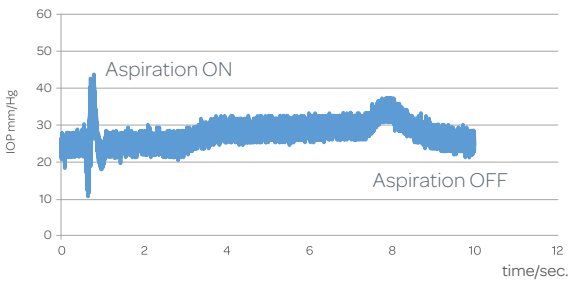
The system ensures maximum chamber stability and safety for the patient.

IOP 20 mmHg – VACUUM 600 mmHg
CONTROL OFF



The chart shows IOP fluctuations under active aspiration without a IOP control system

IOP 20 mmHg – VACUUM 600 mmHg
CONTROL ON



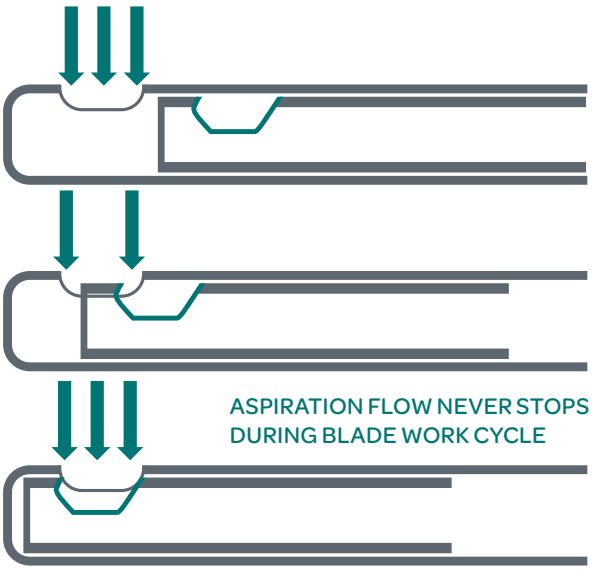
The chart shows a constant IOP value, even under active aspiration, with the Dynamic IOP Control System

Reference: Data on file, Optikon

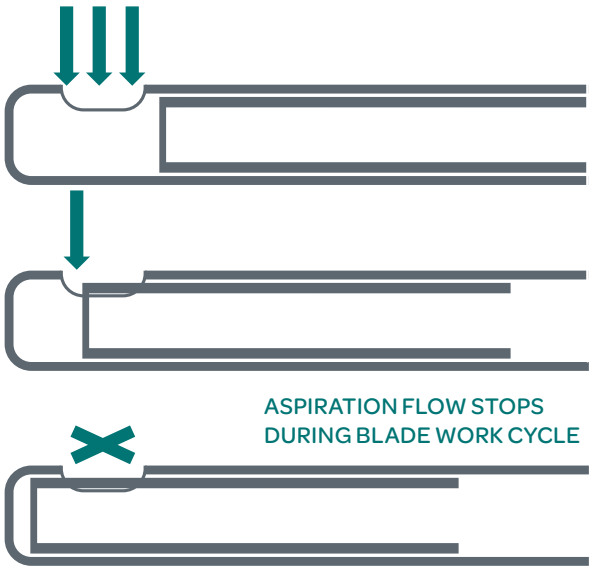
TWEDGE™

20,000 CUTS/MIN DUAL BLADE VITREOUS CUTTER

TWEDGE™

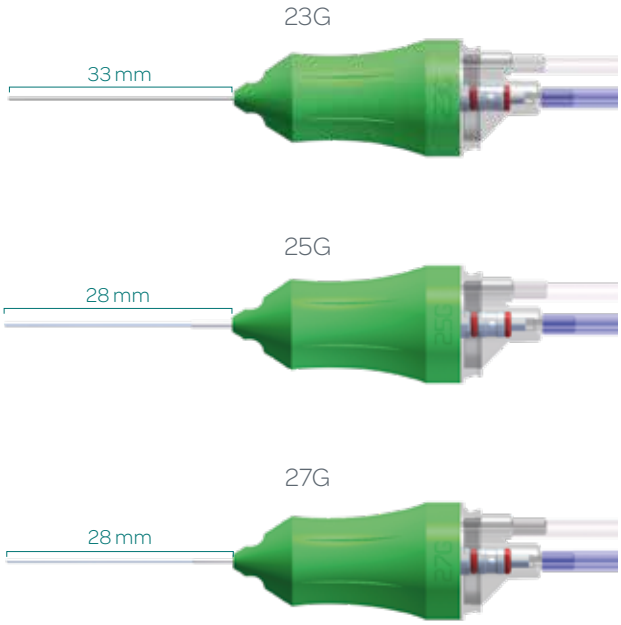


SINGLE-BLADE VITREOUS CUTTER



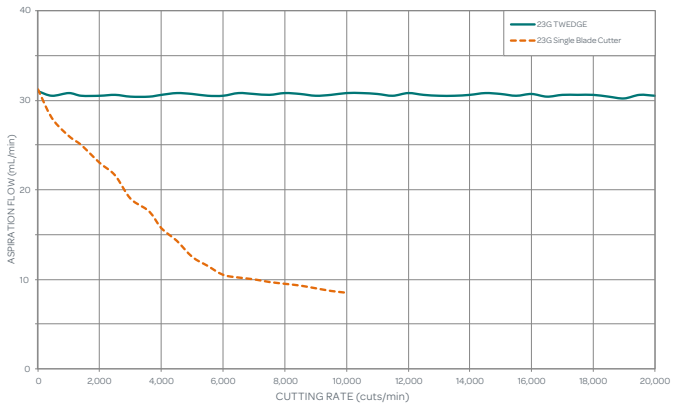
EVEN CLOSER TO THE RETINA

**The shortest tip to port distance,
the best retinal shaving action**



ON THE CUTTING TWEDGE OF TECHNOLOGY

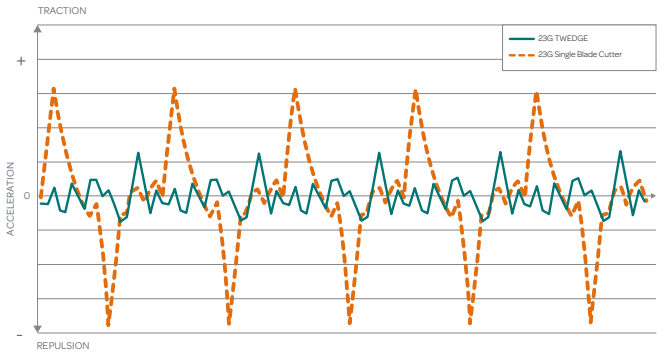
MAXIMUM AND CONSTANT FLOW AT ANY CUTTING RATE



The chart shows the differences in aspiration flow (balanced salt solution, Vacuum 650 mmHg, Venturi pump, R-Evolution™ CR) that are achieved using the Twedge™ vitreous cutter (solid line) compared to a single blade vitreous cutter (dashed line), as the cutting rate changes.

In particular, the solid line shows how the flow remains constant up to 20,000 cuts/min with the Twedge™ vitreous cutter; in comparison, the flow decreases as cutting rate increases using the single blade vitreous cutter.

NO FLUCTUATIONS EVEN CLOSE TO THE RETINA



The chart shows the accelerations (porcine vitreous, 3,000 cuts/min, 300 mmHg vacuum, Venturi pump, R-Evolution™ CR) induced by the Twedge™ vitreous cutter (solid line) and a single blade vitreous cutter (dashed line), as a function of time. At every blade work cycle the reduction of stress value, using the Twedge™, generates a pulse-free action and the utmost safety close to the retina.

The advantages that can be achieved in surgical practice through the use of this instrument have been identified and proven by scientific studies carried out by Tommaso Rossi* in collaboration with Giorgio Querzoli**.

Reference:

- "Fluid dynamics of vitrectomy probes" Rossi T., Querzoli G., Angelini G., Malvasi C, Iossa M., Placentino L., Ripandelli G.; Retina. 2014 Mar; 34(3): 558-67. doi: 10.1097/IAE.0b013e3182a0e628
- "Introducing new vitreous cutter blade shapes: a fluid dynamics study" Rossi T., Querzoli G., Angelini G., Malvasi C., Iossa M., Placentino L., Ripandelli G.; Retina. 2014 Sep; 1896-904.
- "A new vitreous cutter blade engineered for constant flow vitrectomy" Rossi T., Querzoli G., Malvasi C., Iossa M., Angelini G., Ripandelli G.; Retina. 2014 Jul; 34(7): 1487-91.

Courtesy of:

* Tommaso Rossi, MD, IRCCS San Martino Hospital, Genoa

** Giorgio Querzoli, Professor of Faculty of Engineering, University of Cagliari

ANGEL
ARTERIAL NERVE GUARD

Optimal Optic Nerve Protection

R-Evolution™ CR has a proprietary algorithm and a patented system able to calculate in real time the perfusion pressure of the optic nerve and suggest the best infusion pressure in order to guarantee the utmost optic nerve and retina protection.

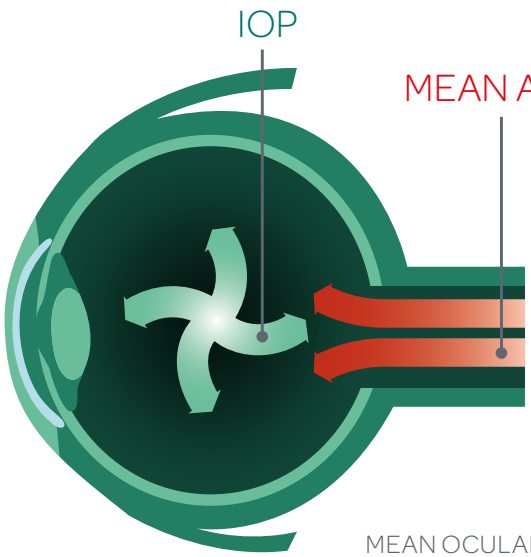
Real Time Mean Arterial Pressure Monitoring

ANGel™ allows R-Evolution™ CR to measure the patient mean arterial pressure and, since the infusion pressure is known, calculates the ocular perfusion pressure.

Consistent and constant blood flow to the optic nerve is guaranteed for a safe retinal surgery.

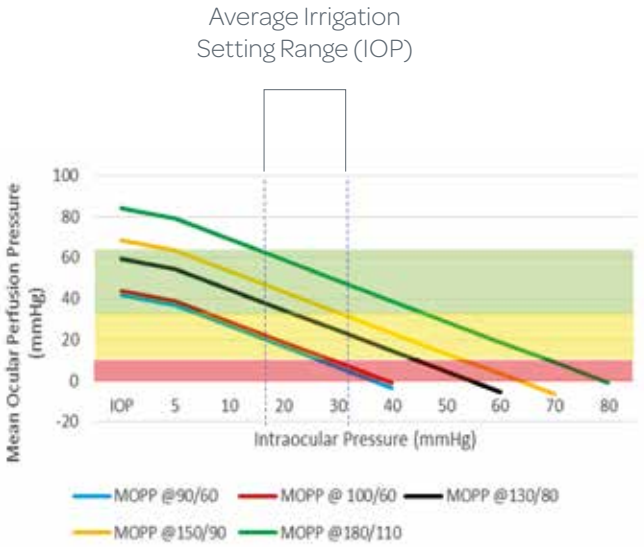
CONTINUOUS MONITORING OF OCULAR PERFUSION

Knowing the arterial systolic and diastolic blood pressure and the intraocular pressure makes it possible to detect the perfusion pressure of the optic nerve (MOPP).



MEAN OCULAR PERFUSION PRESSURE (MOPP)
MOPP = MEAN ARTERIAL PRESSURE - IOP

RELATIONSHIP BETWEEN MEAN OCULAR PERFUSION PRESSURE AND INTRAOCULAR PRESSURE



The chart shows the values of the Mean Ocular Perfusion Pressure (MOPP) and Intraocular Pressure (IOP) in five patients with different systolic and diastolic pressure.

Three coloured areas are visible:

- green area: proper perfusion of retinal vessels (MOPP>=35mmHg)
- yellow area: blood circulation in retina gradually decreases (MOPP<35mmHg)
- red area: perfusion stops (MOPP<10mmHg)

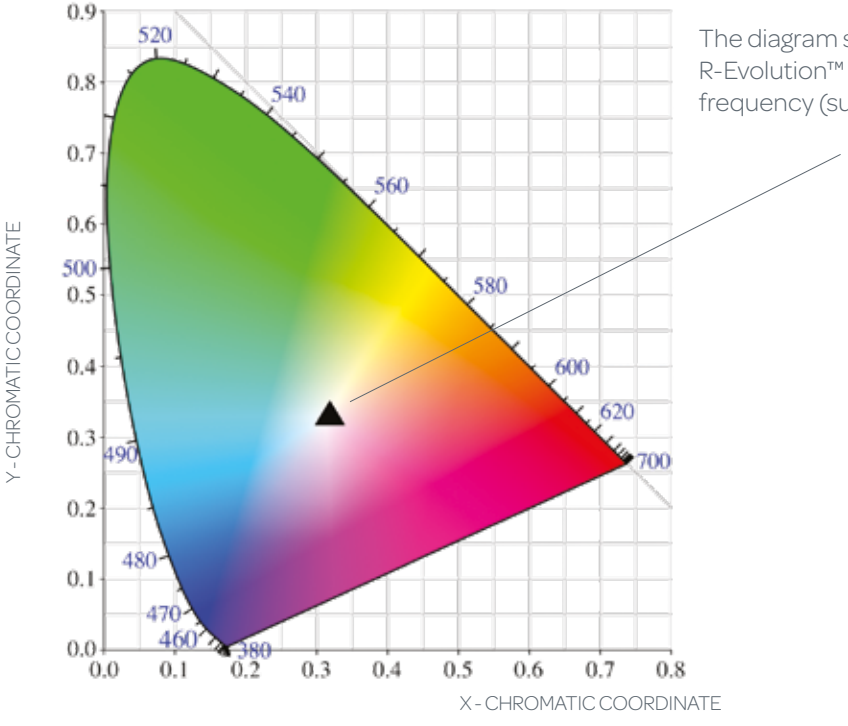
* Courtesy of Tommaso Rossi, MD, IRCCS San Martino Hospital, Genoa

LED LIGHTING SYSTEM

The R-Evolution™ CR is equipped with three independent, high-efficiency LED light sources, free of harmful UV and IR emissions.

The LED lighting system allows surgeons to perfect tissue visualization and guarantees the maximum protection against phototoxicity.

CHROMATICITY DIAGRAM

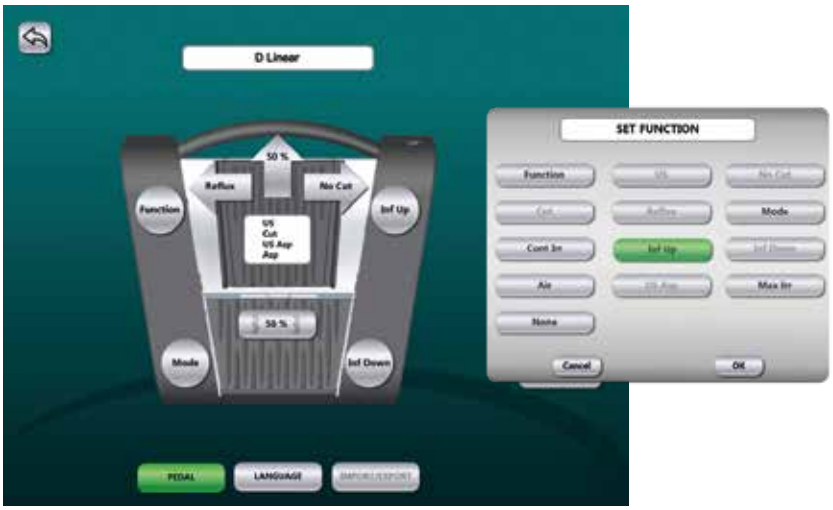


The diagram shows the ideal positioning of the R-Evolution™ CR LED sources in the safest white light frequency (sunlight).

Reference: Data on file, Optikon

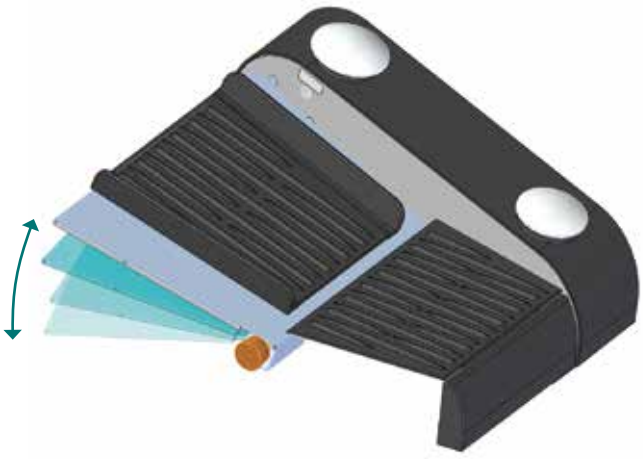
FULL CONTROL FOOTPEDAL

Highly advanced programmable, dual linear, wireless footpedal for complete control over up to 20 different functions.

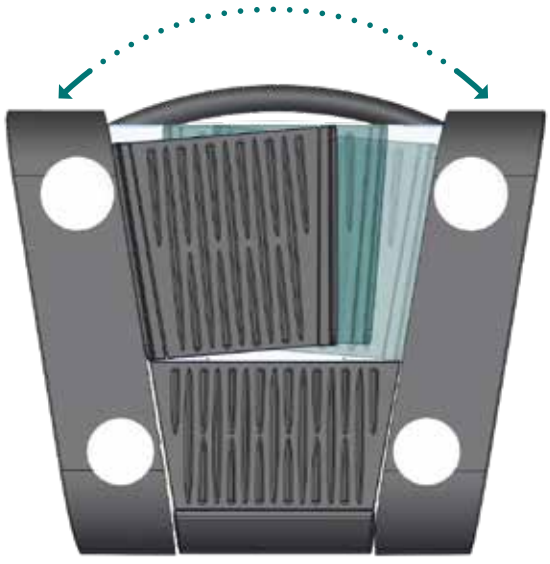


- Easy-to-use touchscreen set-up and customized function assignment
- Dedicated programmability for both anterior and posterior segment surgeries
- Utmost flexibility with dual linear control
- Complete control for any surgical procedure

SINGLE LINEAR



DUAL LINEAR



Simultaneous linear control of two different system functions with smooth up-and-down and simple left-to-right movements.

Technical Specifications

	R-EVOLUTION	R-EVOLUTION CR
FLUIDICS		
Integrated IV Pole - Gravity	●	●
Pressure Controlled Infusion	●	●
Dynamic IOP Control	●	●
Reflux	●	●
Auto Venting	●	●
Disposable Unique I/A Cassette	●	●
Peristaltic Pump	●	●
Venturi Pump	-	●
Rotary Vane Pump	●	-
DSR (Dynamic Setting Regulation)	●	●
Linear/Panel Control	●	●
PHACOEMULSIFICATION		
Minimal Stress U/S Phaco	●	●
Six Crystal U/S Handpiece	●	●
U/S Emission Modes: Continuous, Burst, Micro Duty Cycles Pulsed, P.E.M.	●	●
HD Pulse (Occlusion Mode)	●	●
Autolimit (Occlusion U/S Power Limit)	●	●
DSR (Dynamic Setting Regulation)	●	●
Straight, Bent Phaco Tips 19Ga, 20Ga, 21Ga, 22Ga	●	●
Linear/Panel Control	●	●
ANTERIOR VITRECTOMY		
Twedge™ Dual Blade Cutter 23Ga, 25Ga, 27Ga	●	●
Cutting Rate up to 8,000 cuts/min	●	-
Cutting Rate up to 20,000 cuts/min	-	●
Linear/Panel Control	●	●
POSTERIOR VITRECTOMY		
Twedge™Dual Blade Cutter 23Ga, 25Ga, 27Ga	-	●
Cutting Rate up to 20,000 cuts/min	-	●
Single Cut	-	●
DSR (Dynamic Setting Regulation)	-	●
Endo Phaco	-	●
ANGel™ Continuous Perfusion Pressure Monitoring	-	●
Linear/Panel Control	-	●

	R-EVOLUTION	R-EVOLUTION CR
ILLUMINATION		
3 Independent HID LED Sources	-	●
Phototoxicity Filters	-	●
Colour Enhancing Filters	-	●
Spot, WA, Shielded WA Fiber Optics 20Ga, 23Ga, 25Ga, 27Ga	-	●
Multiple Ga Chandelier	-	●
AIR		
Air/Liquid Replacement	-	●
Footpedal Activation/ Deactivation	-	●
Electric Pump	-	●
Automatic Stopcock	-	●
TAMPONADES (FLUIDS)		
Injection 0.4 - 5 bar	-	●
Removal up to 700 mmHg	-	●
Simultaneous Active Aspiration	-	●
Linear/Panel Control	-	●
DIATHERMY		
Eso Diathermy	●	●
Endo Diathermy	-	●
Eso Diathermy Instruments	●	●
Endo Diathermy Disposable Probes 23Ga, 25Ga, 27Ga	-	●
Linear/Panel Control	-	●
ENDO LASER		
Optional Integrated Green Laser Module 532 nm with Footswitch	-	●
Laser Power up to 2,000 mW	-	●
Adjustable Pulse Interval	-	●
Straight, Angled Laser Probes 20Ga, 23Ga, 25Ga, 27Ga	-	●
FOOTPEDAL		
Simultaneous Dual/Single Linear Control	●	●
Wireless - Bluetooth	●	●
Programmable up to 20 Functions	●	●
Rechargeable	●	●

Distributed by

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