BVI

Advancing Access to Micro-Incisional Combined Surgery

R-EVOLUTION
Ophthalmic Equipment

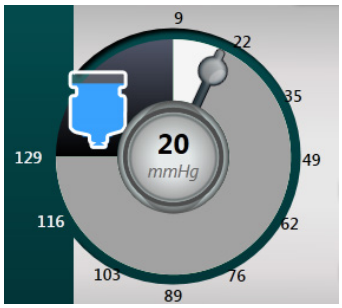
bvimedical.com

Agile Fluidics™

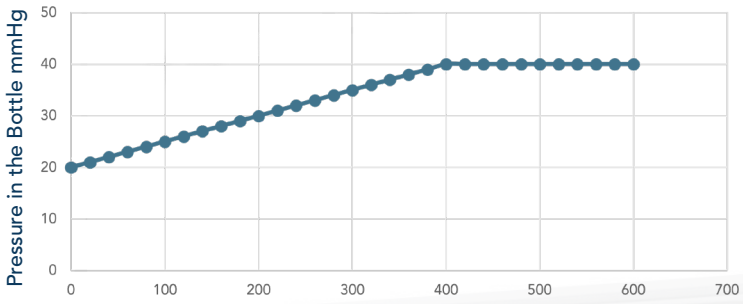
Active Irrigation System and Dynamic IOP Control

The advanced microprocessor-controlled Active Irrigation System linearly increases/decreases pressure in the irrigating solution container (up to a maximum of 20mmHg) to compensate for intraocular fluctuations caused by vacuum (up to a limit of 400mmHg). Active Irrigation System and Dynamic IOP Control act synergistically to ensure eye stability.

PROGRAMMED IOP

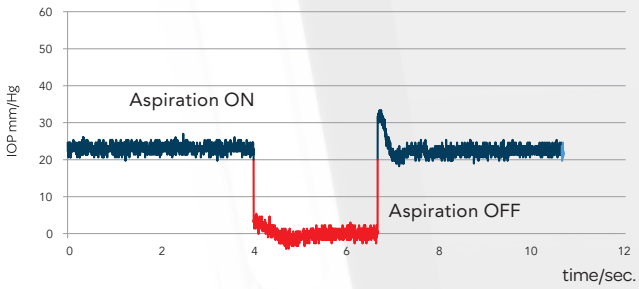


DYNAMIC IOP COMPENSATION



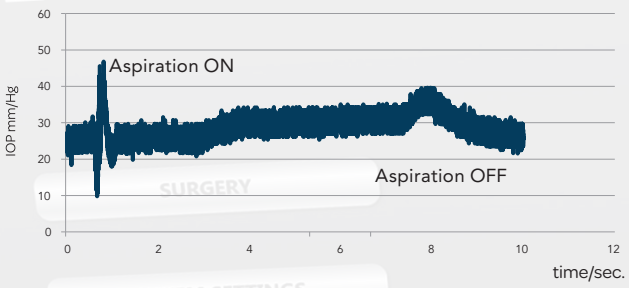
IOP MANAGEMENT

IOP 20 mmHg – VACUUM 600 mmHg
CONTROL OFF



The chart shows IOP fluctuations under active aspiration without an 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*

The R-Evolution® also features an integrated programmable IV pole supporting Gravity Fluidics.

INTERCHANGEABLE FLOW AND VACUUM PUMPS

FLOW RANGE	VACUUM RANGE	VACUUM RANGE	SELECTABLE VACUUM RISE TIME
1 -90 cc/min	5 - 700 mmHg	5 - 700 mmHg	slow or fast

Selectable aspiration system between flow (Peristaltic) or vacuum based (Venturi) pump

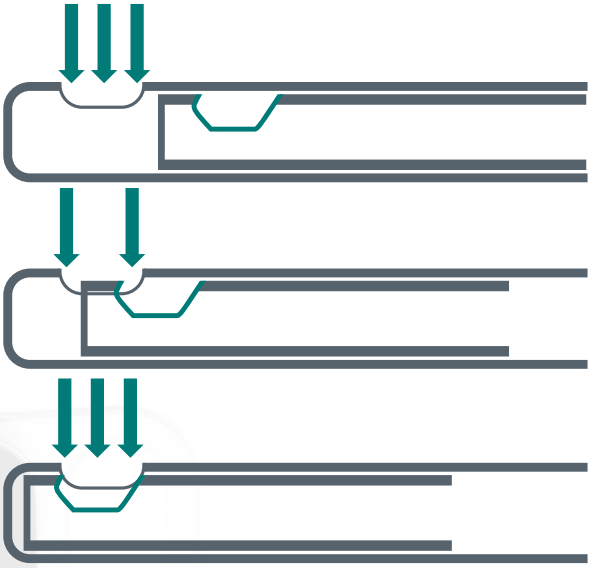
Reference:

* Data on file, BVI

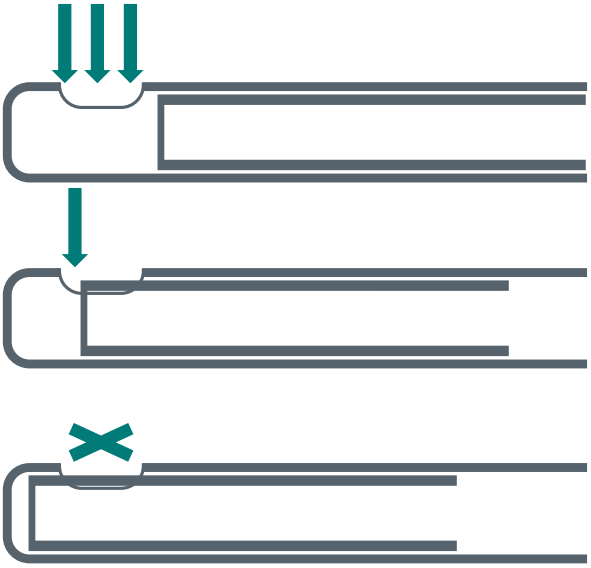
Integrated Solutions for Vitreoretinal Surgery

Twedge™ 20,000 Cuts/min Dual Blade Vitrectomy Probe

TWEDGE™ VITRECTOMY PROBE



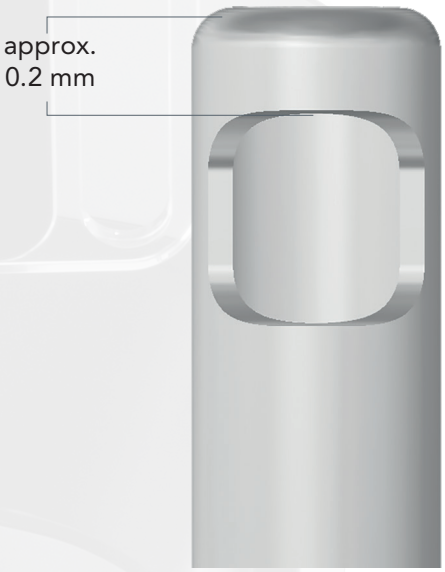
SINGLE-BLADE VITRECTOMY PROBE

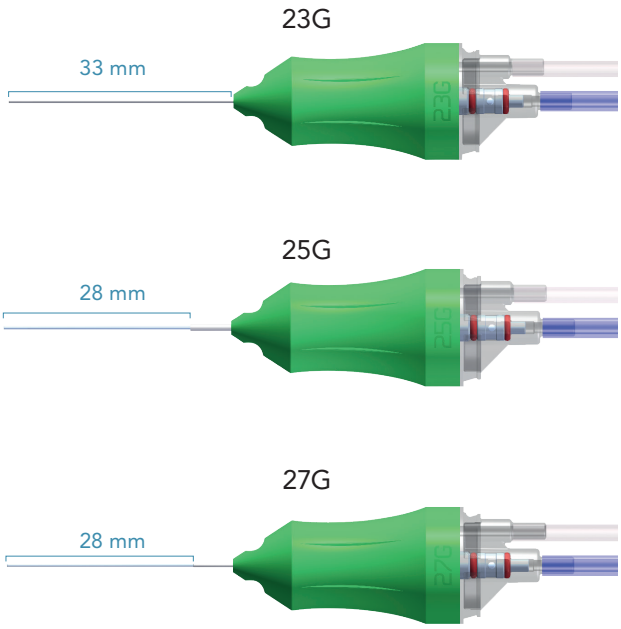


The First Dual Blade Vitrectomy Probe Ever Marketed

EVEN CLOSER TO THE RETINA

SHORT TIP TO PORT DISTANCE,
FOR ENHANCED RETINAL SHAVING ACTION





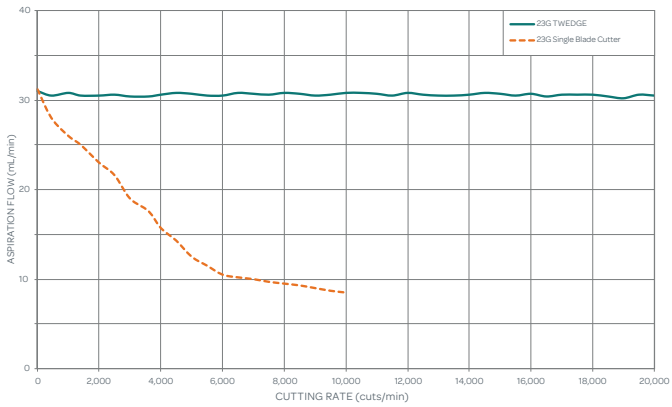
Integrated Solutions for Vitreoretinal Surgery

Optimised Vitrectomy Fluidics with the Twedge™ Vitrectomy Probe

CONSTANT FLOW AT ANY CUTTING RATE

The chart shows the different aspiration flow* achieved using the Twedge™ vitrectomy probe (solid line) compared to a single blade vitrectomy probe (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™ vitrectomy probe; in comparison, the flow decreases as cutting rate increases using the single blade vitrectomy probe.

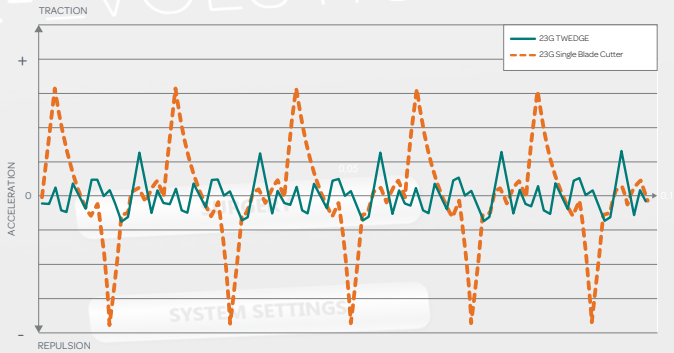


* balanced salt solution, Vacuum 650 mmHg, Venturi pump, R-Evolution® CR

ENHANCED STABILITY EVEN CLOSE TO THE RETINA

The chart shows the accelerations* induced by the Twedge™ vitrectomy probe (solid line) and a single blade vitrectomy probe (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 Twedge™ vitrectomy probe leads to significant reduction of the stress value, generating a virtually pulse-free action close to the retina.



* porcine vitreous, 3,000 cuts/min, 300 mmHg vacuum, Venturi pump, R-Evolution® CR

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 Vitrectomy Probe 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.

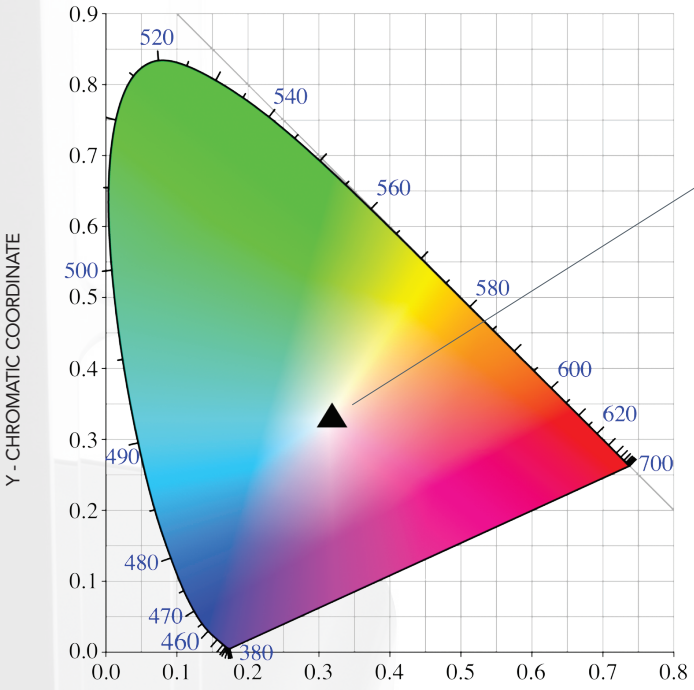
"A new Vitrectomy Probe blade engineered for constant flow vitrectomy" Rossi T., Querzoli G., Malvasi C., Iossa M., Angelini G., Ripandelli G.; Retina. 2014 Jul; 34(7): 1487-91.

LED Lighting System

The R-Evolution® CR is equipped with three independent, highly efficient LED light sources, free of harmful UV and IR emissions. In order to improve contrast and ocular tissue visualisation during VR surgery, two LED sources have 4 different selectable filters: three yellow (435nm, 475nm, 515nm), and one green.

The LED lighting system allows surgeons to optimise tissue visualisation thanks to constant brightness and longer life time versus Xenon, furthermore guaranteeing the ideal 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, BVI

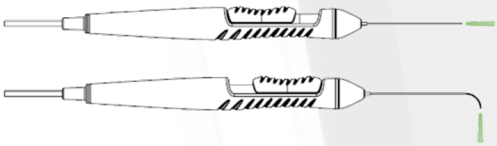
Integrated Green Laser Module: Diode Pumped and Doubled Frequency

Laser Nd: YVO (532nm)

GREEN LASER MODULE WITH MAIN SCREEN INTEGRATED INTERFACE

- **LASER class:** IV green
- **Cooling System:** Thermo-Electric
- **Laser Type:** YaG solid state frequency duplicate
- **Laser Power:** Adjustable from 50mw to 2000mW
- **Pulse duration:** adjustable from 10ms to 2 sec.
- **Interval:** adjustable from 0 to 1 sec.

LASER PEDAL



LASER OUTPUT

LASER OUTPUT

Integrated Solutions for Vitreoretinal Surgery

Automatic Fluid-Air eXchange

AIR-FLUID EXCHANGE ACTIONABLE THROUGH FOOT PEDAL

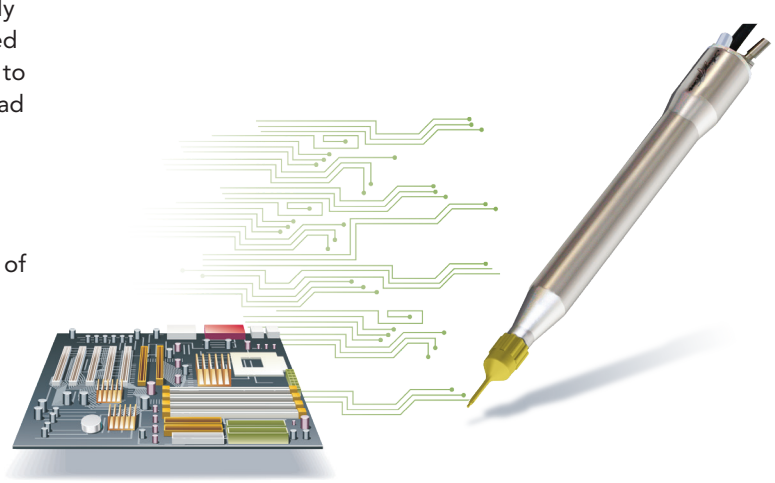
Fluid-Air and Air-Fluid eXchange is enabled by the machine-driven automatic switch and is actionable through the wireless foot pedal, enabling operation without the 3-way stopcock.

Optimized Energy Management

Minimal Stress™ Technology

The patented Minimal Stress™ technology is the only system on the market that uses a feedback-controlled energy delivery to the piezoelectric crystals in order to mantain the exact tip stroke set point even under load conditions.

Minimal Stress™ technology optimises U/S energy delivery, always ensuring consistency between programmed and actual phaco tip stroke regardless of nucleus hardness.

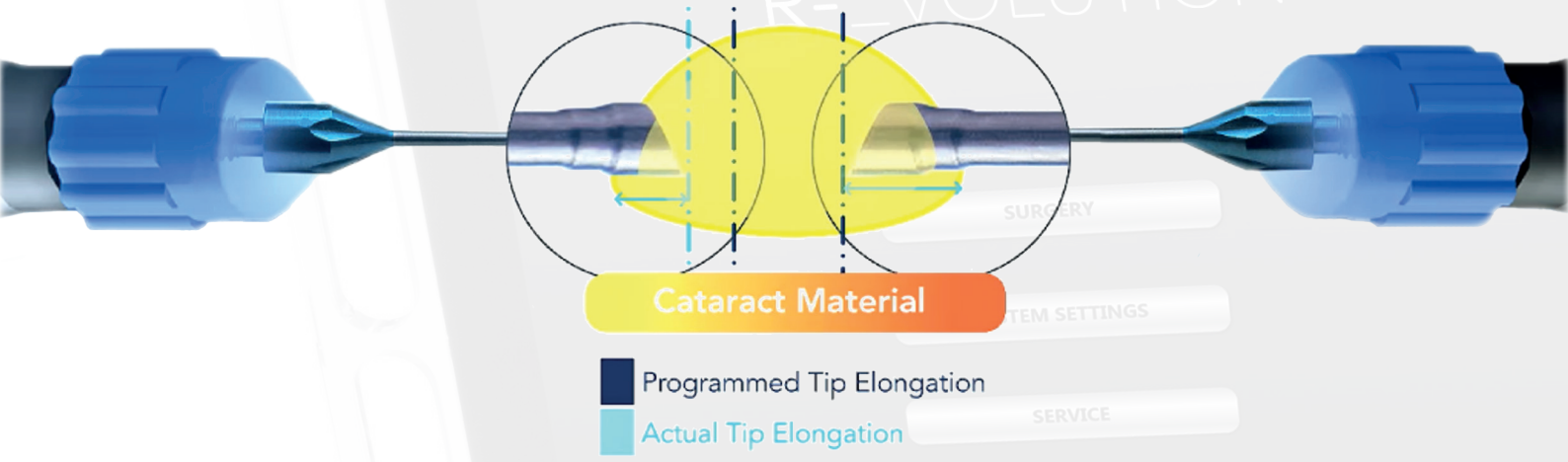


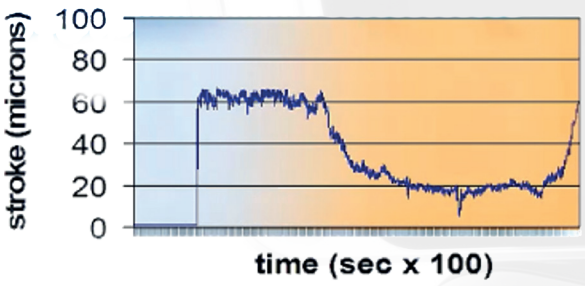
TRADITIONAL U/S DELIVERY TECHNOLOGY

TIP ELONGATION
PROGRAMMED ≠ ACTUAL

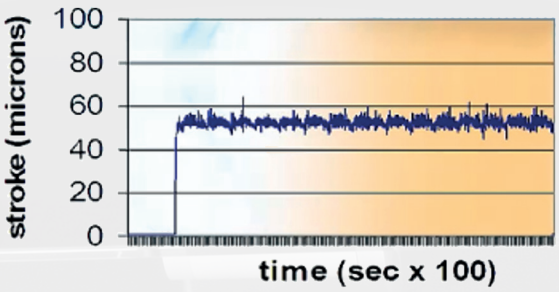
BVI® MINIMAL STRESS™ U/S DELIVERY TECHNOLOGY

TIP ELONGATION
PROGRAMMED = ACTUAL





NO consistency between the programmed phaco tip stroke and the actual tip elongation, when the phaco tip faces the resistance presented by hard lens material.*



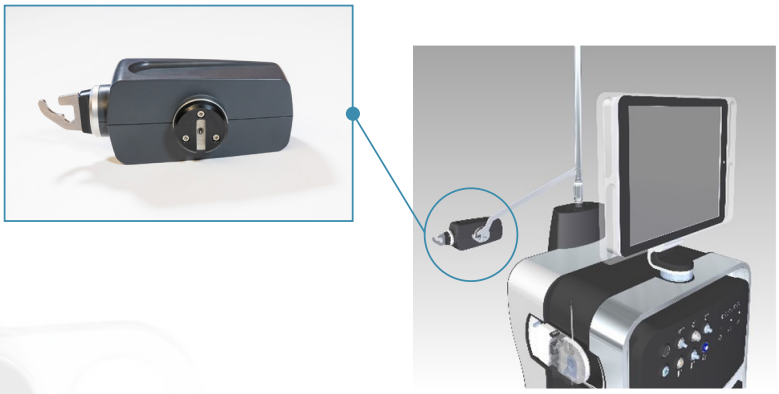
Maintained consistency between the programmed phaco tip stroke and the actual tip elongation, when the phaco tip faces the resistance presented by hard lens material.*

Reference:
* Data on file, BVI.
Rossi T, et al. Testing a Novel Device for Accurate Ultrasound Delivery During Crystalline Lens Phacoemulsification Surgery. TVST Journal, February 2020.

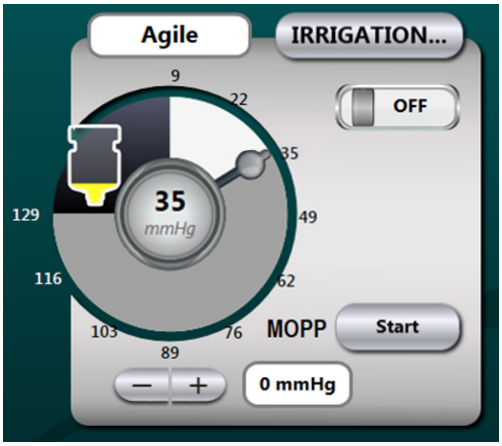
Intuitive User Interface

Irrigating Solution Continuity Guard

The Irrigating Solution Continuity Guard (ISCG) informs the OR staff about the remaining irrigation level into the fluid container, designed to increase surgeons' and nurses' confidence.



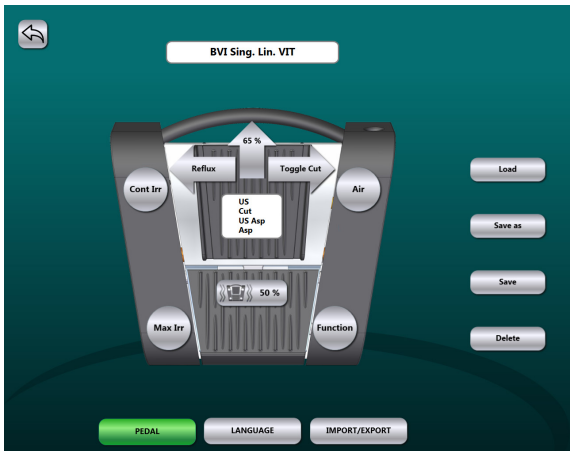
NEW INFORMATIVE ICON WITH
REMAINING IRRIGATING SOLUTION LEVEL



Foot Pedal and Graphic User Interface (GUI)

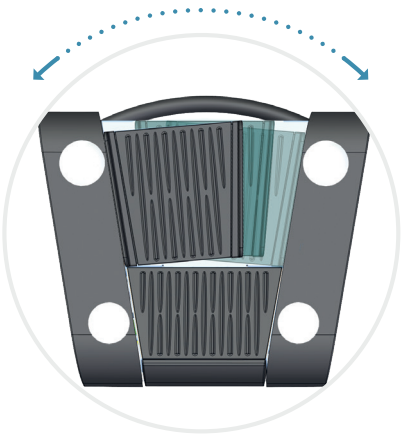
Wireless single linear or dual linear foot pedal with programmable functions.

- Easy-to-use touchscreen set-up and customised function assignment
- Dedicated programmability for both anterior and posterior segment surgeries
- Utmost flexibility with dual linear control
- 19" Display
- 3 sizes footplates with footrest or heel support design



SINGLE LINEAR

DUAL LINEAR

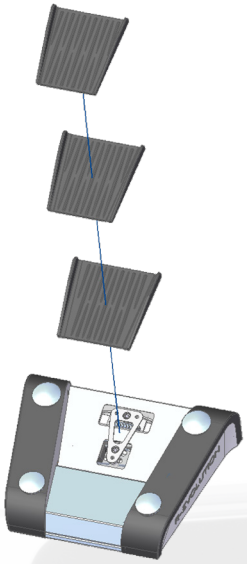


Intuitive User Interface

Improve Ergonomics and Control Both in Vitreoretinal and Cataract Surgery

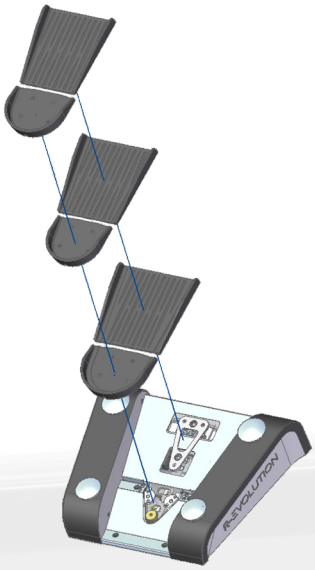
3 SIZES FOOTPLATE WITH FOOTREST DESIGN

Enhance comfort in VR procedures



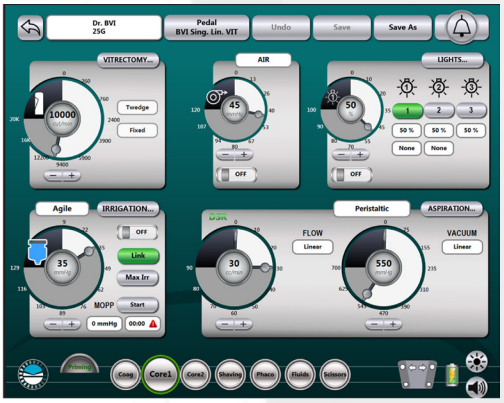
3 SIZES FOOTPLATE WITH HEEL SUPPORT DESIGN

Controlled foot lateral movements in cataract surgery



User Friendly Software Interface with Audio Feedback

HIGH-SENSITIVITY 19" TOUCH SCREEN

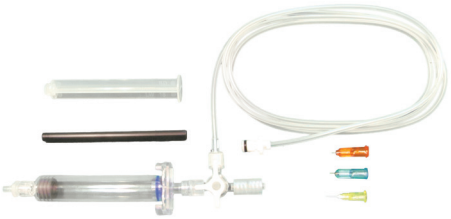


VITRECTOMY
USER INTERFACE

CATARACT
USER INTERFACE

Auxiliary Functions for Vitreoretinal Surgery

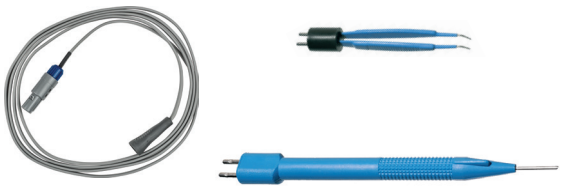
PHACOEMULSIFICATION VIA PARS PLANA



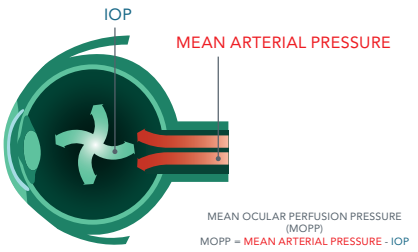
SILICONE OIL
· Silicone oil injection (also with simultaneous aspiration)
· Silicone oil removal
· Same kit

ACTIVE FLUID EXTRUSION

ENDO-DIATHERMY



ESO-DIATHERMY



INTEGRATED DIGITAL SPHYGMOMANOMETER
for measuring and monitoring the Mean Ocular Perfusion Pressure (MOPP)

Technical Specifications

FLUIDICS	R-EVOLUTION®	R-EVOLUTION® CR
Integrated IV Pole	●	●
AGILE Fluidics™	●	●
Gravity Fluidics	●	●
Reflux	●	●
Automatic Venting	●	●
One Disposable Cassette for all Procedures	●	●
Peristaltic Pump	●	●
Venturi Pump	-	●
Rotary Vane Pump	●	-
DSR (Dynamic Setting Regulation)	●	●
Linear / Fix Control	●	●
PHACOEMULSIFICATION		
Minimal Stress™ U/S Phaco	●	●
Slim 4 Handpiece	●	●
Six Crystal U/S Handpiece	●	●
U/S Emission Modes: Continuous, Burst, Pulsed with Selectable Duty Cycle Protocols	●	●
DDC (Dynamic Duty Cycle) in Occlusion Status	●	●
Autolimit (U/S Power Limit in Occlusion Status)	●	●
DSR (Dynamic Setting Regulation)	●	●
Straight, Flared, Flared Bent Tips (20G, 21G and 22G)	●	●
Linear / Fix Control	●	●
ANTERIOR VITRECTOMY		
Twedge™ Dual Blade Cutter 23G, 25G, 27G	●	●
Cutting Rate up to 8,000 cuts/min	●	-
Cutting Rate up to 20,000 cuts/min	-	●
Linear / Fix Control	●	●
POSTERIOR VITRECTOMY		
Twedge™ Dual Blade Cutter 23G, 25G, 27G	-	●
Cutting Rate up to 20,000 cuts/min	-	●
DSR (Dynamic Setting Regulation)	-	●
Endo Phaco	-	●
Linear / Fix Control	-	●
ILLUMINATION		
3 Independent LED Sources	-	●

	R-EVOLUTION®	R-EVOLUTION® CR
Phototoxicity Filters	-	●
Colour Enhancing Filters	-	●
Spot, Wide Angle Shielded and Wide Angle Fiber Optics 23G, 25G and 27G	-	●
Chandelier	-	●
AIR		
FAX / AFX	-	●
Display or Foot Pedal Switch	-	●
Dedicated Air Pump	-	●
Automatic Stopcock	-	●
SILICONE OIL		
Injection 0.4 - 5 bar	-	●
Removal up to 700 mmHg	-	●
Simultaneous Active Aspiration	-	●
Linear / Fix Control	●	●
DIATHERMY		
Eso Diathermy	●	●
Endo Diathermy	-	●
Eso Diathermy Instruments	●	●
Endo Diathermy Disposable Probes 23G, 25G, 27G	-	●
Linear / Fix Control	-	●
ENDO LASER		
Optional Integrated Green Laser Module 532 nm with Dedicated Footswitch	-	●
Laser Power up to 2,000 mW	-	●
Adjustable Pulse Interval	-	●
BVI Laser Portfolio 23G, 25G, 27G	-	●
FOOTPEDAL		
Programmable Dual/Single Linear Control	●	●
Wireless - Bluetooth	●	●
Programmable up to 20 Functions	●	●
Rechargeable	●	●

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bvimedical.com

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