

EXCALIBUR SPORT

High performance ergometer 8-2500 watt

Multi adjustability for professional athletes

High stability at extreme workloads

Digital display of seating position



Lode
the standard in Ergometry

EXCALIBUR SPORT

Sports Medicine

Olympic Test Centres

Research

Occupational Health

The Gold Standard in Ergometry

With proven accuracy and reliability, the Excalibur Sport is renowned worldwide as “the Gold Standard in Ergometry”. The newly designed and improved Excalibur Sport ergometer meets the latest requirements of modern sports medicine and research. Since athletes are becoming more and more powerful and testing more advanced than

• Lode *the* standard in Ergometry

Ever since Mr Fré Lode manufactured the first electro-magnetic cycle ergometer in 1952, accuracy, reliability and durability have been fundamental for further developments. Having started years ago in the small market of cardiology and pulmonary function, Lode BV has become a specialist in the complete spectrum of medical ergometry. Lode is world renowned as a manufacturer of high quality ergometers and the Lode brand stands for accuracy, durability and ergonomic design. The Lode product range varies from bicycle ergometers and treadmills to recumbent, arm and supine ergometers and ergometry software.

Long-term experience in manufacturing medical equipment and continuous development to meet the changing requirements of the market, make Lode a flexible and reliable partner. Together we can transform your specific ideas and wishes into custom-made products.

Before leaving the factory all Lode ergometers are dynamically calibrated and, of course, all units are produced under the strictest quality control conditions. Lode is ISO 9001:2000, ISO 13485:2003 and FDA certified and fulfils the EU Medical Device Directive MDD 93/42/EEC. Over years of use, service costs are almost negligible. In other words: Lode, *the* standard in Ergometry.



Excalibur Sport, the Gold Standard in Ergometry

ever, this ergometer has been developed for extreme workloads up to 2500 watt! The new design ensures maximum stability at these high workloads. Thanks to the increased adjustability, versatile positioning of the test subject has never been better!

Workload control

The workload of this latest Lode ergometer is adjustable in a range of 8-2500 watt. The peak load of 1500- 2500 watt can be maintained for a maximum duration of 6 minutes. With the standard external control unit, the workload can be controlled in the following modes: isokinetic, hyperbolic, linear, torque and heart rate (optional).

Adjustability

The handlebar can be adjusted both horizontally and vertically. Moreover, the saddle has horizontal, vertical and angle adjustment. The height of both the handlebar and saddle can be positioned by Lode's unique one-touch adjustment handle. In addition, it is now possible to read out the most important parameters of the seating position of the test subject on the display of the control unit.

Control & Interface

The Excalibur Sport can be controlled by a PC (with the optional LEM software) as well as by external equipment. During the test, the parameters of workload, rpm, time, distance and torque are displayed on the external control unit. The additional handlebar display indicates rpm and/or workload.

Options

The Excalibur Sport can be extended with the following options:

- *Programmable control unit.* Next to the features of the standard control unit, the programmable control unit has an additional display which can show the energy and target heart rate (combined with the heart rate option). Up to 50 user-defined protocols can be programmed using: step, ramp, isokinetic, linear, heart rate, torque and repeat modes in any combination. A programmable control unit that can display the oxygen saturation (SpO₂) is optional available.
- *Blood pressure module.* Using this option you can extend the Excalibur Sport with an accurate stress testing blood pressure monitor with 3-Dimensional K-sound Analysis (DKA), triggered by a TTL pulse from an ECG system or by the optional heart rate receiver. The robust microphone has a double-sided pick up element for increased sensitivity and noise reduction.
- *Heart rate option.* This option allows heart rate controlled stress testing. It consists of a Polar belt and receiver. The heart rate is displayed on the control unit. In combination with the programmable control unit, it offers the possibility to programme heart rate controlled protocols.
- *Lode Ergometry Manager (LEM).* With the LEM software, the ergometer can be controlled by a PC. LEM is the generic term for various software modules that enable e.g. read-out, printing, monitoring, saving and analysing the measured data of the ergometer. LEM enables you to programme protocols, control the ergometer, use special pre-programmed tests and make analyses.
- *Pedal Force Measurement.* This option measures the force exerted on the left and right pedal. It is supplied with angle detection (each 2 degree). The forces are measured by strain gauges. An accurate and interference free method of measuring has been established. With this option, the LEM software is included as standard.
- *Wingate Software.* With the optional Wingate software module (with correction of the moment of inertia) it is possible to perform a Wingate sprint test in the "constant torque mode". The Wingate test is a 30 seconds sprint test during which the torque is kept constant at a rate depending on the body weight. With this option, on-line information about anaerobic capacity and power is obtained.
- *Pediatric option.* This option makes the Excalibur Sport the perfect solution for testing young children. It consists of a small saddle and adjustable cranks suitable for subjects with a minimum leg length of 640 mm with a minimum saddle height of 560 mm.
- *Adjustable cranks.* Available in 2 models: paediatric (80-170 mm, 10 mm steps) and sports (135-185 mm, step-less with indication click each 2.5 mm).
- *0-watt start up system.* This option drives the ergometer without load (0 watt) up to any preset velocity between 30-80 rpm.
- *Comfort set.* More suitable for elderly subjects and non cyclists, the Excalibur Sport can be supplied with Lode's standard handlebar and saddle, ensuring a more comfortable seating position for these test subjects.



Read-out of seating position



Suitable for almost all available clip systems







Adjustable handlebar with rpm/watt meter for test subject



Topple angle $\pm 10^\circ$

- Notes:
- Minimum leg length is measured from the middle of the saddle to the centre of the pedal (in lowest position)
 - Minimum saddle height is measured from the middle of the saddle to the middle of the crank axis

LODE ERGOMETERS
**EXCALIBUR
SPORT**
CORIVAL
**CORIVAL
RECUMBENT**
ANGIO

				
Work output range - continuous - peak load (max. 6 minutes) - increments	8 - 1500 watt 2500 watt 1 watt	7 - 750 watt 1000 watt 1 watt	7 - 750 watt 1000 watt 1 watt	7 - 750 watt 1000 watt 1 watt
Workload control - hyperbolic - linear - fixed torque - isokinetic - heartrate controlled	yes yes yes yes optional	yes yes yes optional	yes yes yes optional	yes yes yes optional
Braking system, electro-magnetic	eddy current	eddy current	eddy current	eddy current
Constant load - rpm independent	yes 25 - 180 rpm	yes 30 - 150 rpm	yes 30 - 150 rpm	yes 30 - 150 rpm
Control unit - workload accuracy - functions - display (type) <i>Display settings</i> - workload - rpm - heartrate - timer - distance - torque - target HR - energy - SpO ₂	external < 100W ±2W, 100 - 1500W ≤2% >1500W ≤5% Manual, Analog, Terminal, Protocols (optional: HRC, 50 free) LCD 2x16 char. custom selectable 0 - 2500 W 0 - 255 digital 0 - 180 bargraph & on ergometer optional yes yes yes yes optional optional optional	internal 7 - 100W ±3W, 100 - 500W ≤3% 500 - 1000 W ≤5% Manual, Analog, Terminal, Protocols (optional: HRC, 50 free) LCD 2x16 char. custom selectable 7 - 1000 W 0 - 255 digital 0 - 180 bargraph optional yes yes yes yes optional optional optional	internal 7 - 100W ±3W, 100 - 500W ≤3% 500 - 1000 W ≤5% Manual, Analog, Terminal, Protocols (optional: HRC, 50 free) LCD 2x16 char. custom selectable 7 - 1000 W 0 - 255 digital 0 - 180 bargraph optional yes yes yes yes optional optional optional	external 7 - 100W ±3W, 100 - 500W ≤3% 500 - 1000 W ≤5% Manual, Analog, Terminal, Protocols (optional: HRC, 50 free) LCD 2x16 char. custom selectable 7 - 1000 W 0 - 255 digital 0 - 180 bargraph optional yes yes yes yes optional optional optional
Calibration	dynamic	dynamic	dynamic	dynamic
Interface	analog + digital	analog + digital	analog + digital	analog + digital
Seat & handlebars - stepless adjustable seat - adjustable handlebars	vertical: 550 - 938 mm ¹ horizontal: 72 - 324 mm ² angle adjustment: ± 10° vertical: 465 - 855 mm ³ horizontal: 229 - 600 mm ⁴	520 - 820 mm 360°	height: 535 - 650 cm ⁵ length: 615 - 990 cm ⁶	
Maximum patient weight	180 kg	160 kg	250 kg	
Toeclips on pedals	yes	yes	yes	yes
L x W x H in cm (inch)	130x70x89 (51,2x27,6x35)	115x60x114 (45,3x23,6x45)	177x76x112 (69,7x30x44)	73x42x54 (28,8x16,5x21,3)
Weight	100 kg	56 kg	80 kg	33 kg
Power requirements	115/230 VAC 50/60 Hz (130 VA)	115/230 VAC 50/60 Hz (130 VA)	115/230 VAC 50/60 Hz (130 VA)	115/230 VAC 50/60 Hz (130 VA)
Environmental conditions <i>Operational:</i> - temperature °C (°F) - humidity % non-condensing - air pressure kPa <i>Storage:</i> - temperature °C (°F) - humidity % non-condensing - air pressure kPa	14 - 40 (57 - 104) 30 - 90 70 - 106 -25 - 70 (13 - 167) 10 - 95 50 - 106	14 - 40 (57 - 104) 30 - 90 70 - 106 -25 - 70 (13 - 167) 10 - 95 50 - 106	14 - 40 (57 - 104) 30 - 90 70 - 106 -25 - 70 (13 - 167) 10 - 95 50 - 106	14 - 40 (57 - 104F) 30 - 90 70 - 106 -25 - 70 (13 - 167) 10 - 95 50 - 106
Standard & safety norms	ISO 9001 / ISO 13485 / FDA 510K DIN 13405 / IEC 601-1	ISO 9001 / ISO 13485 / FDA 510K DIN 13405 / IEC 601-1	ISO 9001 / ISO 13485 / FDA 510K DIN 13405 / IEC 601-1	ISO 9001 / ISO 13485 / FDA 510K DIN 13405 / IEC 601-1
Available extension modules - Blood Pressure Measurement - Programmable Control Unit - Programmable Control Unit + SpO ₂ - Heart rate, including HRC - 0-watt start up system - Pedal Force Measurement - Lode Ergometry Manager Software - Calibrator	yes yes yes yes yes yes yes yes	yes yes yes yes yes yes yes yes	yes yes yes yes yes yes yes yes	yes yes yes yes yes yes yes yes

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Notes

rpm = revolutions per minute

HRC = Heart Rate Controlled

¹ crank axis - seat top

² crank axis - seat midpoint

³ crank axis - centre of handlebar mounting point

⁴ crank axis - centre of handlebar mounting point

⁵ floor - seat top

⁶ crank axis - seat top

Changes without prior notice

ISO 9001:2000 and ISO 13485:2003 certified

e-mail: ask@lode.nl

http://www.lode.nl