

Excalibur sport with Pedal Force Measurement



The standard in sports Medical testing with Pedal Force Measurement



Highlights

Extreme workload range of 8 - 2500 watt

The extraordinary workload range of 8-2500 watt is unique in the world! It makes this ergometer extremely suitable for sports medicine and testing the strongest athletes in the world on their anaerobic power or isokinetic capacity.

Left and right independent measurements

The PFM is not only the summation of left and right, but real left and right independent measurements. Differences between the left and right pedal movement, before and after surgery or at different workload can be detected. A real diagnostic tool!

Special Analysis and Polar Graphs

Analysis and Polar graphs are specifically designed for pedal force measurement

LEM PFM included

The LEM software with PFM module is standard included

Measurement every 2 degrees

The accuracy of the PFM during the total revolution is obtained by the placement of highly specific strain gauges in the crank axis making it possible to measure the pedal force every 2 degrees during each revolution during the exercise test.



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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 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! This Excalibur sport has built-in modified strain gauge technology that measures forces exerted on the pedals during exercise and is supplied with angle detection. Independent measurements of forces in both left and right crank are possible. Wireless transmission of the measured forces to the PC by blue tooth. Note: this setting is supplied with LEM and LEM PFM software (various other modules are available), a computer (we recommend to use this PC only for the LEM software) and an interface cable.

Features

**7
watt**

Extreme low start up load

The extreme low start-up load of 7 watts and the adjustability in small steps of 1 watt make this ergometer perfectly suitable for many different applications. The standard control unit shows multiple ergometry parameters and you can determine your specific default setting and start-up menu.



Compatible with click pedals

The bicycle ergometer is compatible with most available clickpedals to allow for maximum user flexibility



Adjustable handlebar Excalibur Sport

The position of the handlebar of Excalibur Sport is completely adjustable in height and length



Adjustable saddle Excalibur Sport

The position of the saddle of the excalibur sport can be adjusted in height, length and angle to suit all users



Instant maximum load

By selecting P-slope max the ergometer immediately reaches maximum power



Compatible with ECG and pulmonary devices

The Lode ergometers have digital interfaces and can be controlled easily by all known stress ECG and pulmonary devices available in the world. This is one of the reasons why the Lode ergometers are very popular worldwide.



LEM compatible

This product can be used with Lode Ergometry Manager (LEM) software to manage data and to apply specific protocols when a Communication card or Network card is present



Accurate over a long period of time

The Lode ergometers are supplied with an electro-magnetic braking mechanism of Lanooy (eddy current). The biggest advantage of this braking system compared to a friction braking system is the absolute accuracy and the accuracy over time. Moreover, friction braking systems have more wearing parts.

**1
watt**

Small adjustment steps

The workload of the Lode ergometers is adjustable in steps of only 1 watt. Depending on your wishes, the test operator or the test subject can adjust the workload. The steps of 1 watt are possible in the manual mode as well as within protocols.



Designed to be sweat-proof

The housing of the ergometer is designed in such way that sweat does not have the chance to drip into the mechanical parts. This ensures a long lifetime and makes the ergometer insensitive for malfunction.



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Lode Ergometry Manager - Pedal Force Measurement software module

Lode ergometers with Pedal Force Measurement come standard with the Lode Ergometry Manager - Pedal Force Measurement software module. The combination of software and ergometer results in a unique application for sport-medical stress testing, rehabilitation and research.

The Pedal Force Measurement module adds the following features to the Lode Ergometry Manager:

- Continuous registration of the forces exerted on the left and right crank;
- Specific Pedal Force Measurement visualisations;
- Specific Pedal Force Measurement reports and analysis: numeric data such as peak values, averages, absolute maximum, angle, total efficiency, rpm and left/right ratio are registered and saved. Export to statistical programs is possible with the optional LEM Expansion Module Export;
- Protocols for pedal force measurement can be programmed based on time intervals (with a maximum of 60 minutes), enabling a continuous registration of the pedal force;
- On-line visualizations of the forces and Torque on the left and/or right crank during the test;

The software offers the possibility to define "area's of interest" (AOI) and to analyze these separately.

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Excalibur sport with Pedal Force Measurement can a.o be extended with the following options:

<p>Programmable Control Unit</p> <p>Programming protocols in advance</p>  <p>Partnumber: 928811</p>	<p>Programmable Control Unit with SpO2 & Heart rate</p> <p>Measurement of oxygen saturation</p>  <p>Partnumber: 928841</p>	<p>Blood Pressure Module</p> <p>Accurate measurement without trigger</p>  <p>Partnumber: 928818 -</p>	<p>Heart rate</p> <p>Heart rate controlled cycling</p>  <p>Partnumber: 928826</p>	<p>0-Watt start-up system</p> <p>Lowest possible startup power</p>  <p>Partnumber: 925805</p>
<p>Adjustable sports cranks incl. pediatric range</p> <p>Optimal force application</p>  <p>Partnumber: 925808</p>	<p>Mounting Bracket Control Unit</p> <p>More controls at hand</p>  <p>Partnumber: 928849</p>	<p>Mounting Bracket Control Unit & RPM meter</p> <p>All controls at hand</p>  <p>Partnumber: 928848</p>	<p>Saddle for children</p> <p>Versatile ergometry</p>  <p>Partnumber: 401068</p>	<p>Easy saddle exchange option</p> <p>Fast change of saddle to suit all users</p>  <p>Partnumber: 925807</p>
<p>USB to Serial converter</p> <p>Easy connection</p>  <p>Partnumber: 226012</p>	<p>RS232 cable</p> <p>Easy connection</p>  <p>Partnumber: 930911</p>			

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Specifications

Workload

Minimum load	8 W	
Maximum peak load	2500 W	
Isokinetic workload control	✓	
Minimum load increments	1 W	
Maximum continuous load	1500 W	
Hyperbolic workload control	✓	
Linear workload control	✓	
Fixed torque workload control	✓	
Maximum rpm independent constant load	180 rpm	
Minimum rpm independent constant load	25 rpm	
Optional heart rate controlled workload	✓	
Electromagnetic "eddy current" braking system	✓	
Dynamic calibration	✓	

Accuracy

Workload accuracy below 100 W	2 W	
Workload accuracy from 100 to 1500 W	2 %	
Workload accuracy over 1500 W	5 %	

Comfort

Toeclips on pedals	✓	
Q-factor	147 mm	
Minimum leg length user (incl. adjustable pedals)	650 mm	25.6 inch
Vertical seat adjustment maximum	938 mm	36.9 inch
Vertical seat adjustment minimum	550 mm	21.7 inch
Horizontal seat adjustment minimum	72 mm	2.8 inch
Horizontal seat adjustment maximum	324 mm	12.8 inch
Seat angle adjustment maximum	10 °	
Allowed user weight	180 kg	396.8 lbs
Horizontal handlebar adjustment minimum	229 mm	9 inch
Horizontal handlebar adjustment maximum	600 mm	23.6 inch
Vertical handlebar adjustment minimum	465 mm	18.3 inch
Vertical handlebar adjustment maximum	855 mm	33.7 inch
Handlebar adjustment angle	360 °	
Minimum leg length user	725 mm	28.5 inch

User Interface

Readout Distance	✓
Readout RPM	✓
Readout Heartrate	✓
Readout target HR	✓
Readout Energy	✓
Readout Torque	✓
Readout Time	✓
Readout Power	✓
Set Display	✓
Set Resistance	✓
Set P-Slope	✓
Set Mode	✓
Manual operation mode	✓
Preset protocol operation mode	✓
Analog operation mode	✓
External control unit	✓
Selfdesigned protocol operation mode	✓

Connectivity

Analog connector	✓
RS232 in connector	✓
RS232 out connector	✓

Dimensions

Product length (cm)	130 cm	51.2 inch
Product width (cm)	70 cm	27.6 inch
Product height	89 cm	35 inch
Product weight	101 kg	222.7 lbs

Power requirements

Power cord IEC 60320 C13 with CEE 7/7 plug	✓
Power cord NEMA	✗
115 V AC 50/60 Hz (130 VA)	✓
230 V AC 50/60 Hz (130 VA)	✓

Standards & Safety

ISO 13485:2003 compliant	✓
ISO 9001:2008 compliant	✓
IEC 60601-1:2005	✓

Certification

CE class Im according to MDD93/42/EEC	✓
CTÜVus according to NRTL	✓
CB according to IECCE CB	✓

Pedal Force Measurement

Rotational measurement resolution	2 °
Pedal Force accuracy	0.5 N

Order info

Partnumber: 925909

*Specifications are subject to change without notice.



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