

MR Ergometer Push/Pull

Unique imaging possibilities with patient in stress



Highlights

Unique ergometer for MRI

With this unique ergometer it is possible to perform an exercise test in an MRI. An ergometer on the tabletop of an MRI ensures minimal time stress induction and imaging without coursing artifacts on the imaging.

High standards

Lode is a socially and environmentally responsible company. All Lode products are RoHS/WEE compliant and Lode is ISO 9001:2003, ISO and 13485:2008 certified. All medical products comply to MDD 93/42/EEC, incl. IEC 60601-1.

Tesla independent

The choice of materials and the special design makes that the Lode MRI ergometer is useable for various Tesla MRIs without giving artifacts on the imaging.

Exercise instead of medicine

When a test subject is able to do exercise, it is always recommended above pharmacologic stress. It allows objective measurement in either level of cardiac conditioning and/or level of cardiac work. It is safe and perfectly reproducible.

Compatible with various MRIs at 1.5 and 3 Tesla

Compatible with

- Philips
- Siemens
- GE



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This MR ergometer is suitable for cardiology in scanners where it is impossible to make a real pedal movement. The workload is adjustable up to 100 watt. The zero load is <math>< 5\text{ watt}</math> at 25 rpm. The MR ergometer is an ergometer for use during MR studies. The MR ergometers workload is controlled with an electronical braking principle especially designed for use in an MR environment. The moment of inertia is 8,4 kgm². The MR ergometer is standard supplied with a control unit and power unit. The standard control unit offers the possibility to read out various parameters like workload, rpm, torque, timer and distance. The power unit is completed with a safety cable for wallfixation. The MR ergometer can be used for MR scanners up to 3 Tesla

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Features



GE MRI compatible

The Lode MR Ergometer is compatible with the GE Signa Artist, Signa Explorer 1.5T, Optima MR450w, Optima MR 450w GEM Suite and Optima MR750w. Also a combination with the Signa Premier will be possible.

Furthermore, the ergometer is compatible with former GE MRI devices like Horizon and Twin Speed.



Siemens MRI compatibility

The MRI Ergometer can be used in combination with the following Siemens MRI scanners Magnetom Harmony, Symphony, Sonata, Espree, Avanto.



Philips MRI compatible

The ergometer is compatible with various Philips MRI devices like Philips Intera CV, Achieva 1.5 Tesla & 3.0 Tesla

Versatile controls

Additional features with PCU

Besides the possibility to program 24 protocols easily, this control unit offers the following features:

- better monitoring because of the additional and larger display
- a perfect combination with BPM
- possibility to measure SpO2

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.



Low noise

Due to accurate manufacturing and the careful choice of materials the product has an extremely low noise level.



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.

Service friendly

Service friendly ergometer

Lode ergometers are very service friendly. In general, total costs for spare parts are so low that they are negligible. Furthermore, most options are so easy to install and firmware is so easy to update that labor costs are minimal. Moreover, the ergometer can be cleaned easily.

3 Tesla

Up till 3 Tesla

Virtually no interference up till 3 Tesla through smart constructions and material use

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A unique ergometer

The Lode MRI ergometers are designed to produce physical stress within an MRI device. The MRI ergometer can be used for cardiac examinations, cardiac research, spectroscopy and other examinations and research.

For cardiac MRI examinations, the MRI ergometer can be produced with a pedal (circular) or push/pull exercise movement.

For spectroscopy MR examinations there is an ergometer available with up/down movement for the upper leg and an ankle MRI ergometer for the calf muscles.

The MRI ergometers are compatible for the most types of MRI scanners of Siemens, Philips and GE. The choice of materials and the special design makes that the Lode MRI ergometer can be used for 1,5 and a 3 Tesla MRI without giving artifacts on the imaging.

Our MRI ergometer with its low start-up load enables exercise. When a test subject is able to do exercise, this is always recommended above pharmacologic stress. It allows objective measurement of improvement in either level of cardiac conditioning and/or level of cardiac work. It is safe and what is very important is perfectly reproducible.

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MR Ergometer Push/Pull can a.o be extended with the following options:

Optical Interface Cable

Connection with a PC
outside the MRI room



Partnumber: 918825



FOR LIFE | UNDERSTANDING
MOVEMENT & PERFORMANCE

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Specifications

Workload

Minimum load	5 W
Maximum peak load	100 W
Minimum load increments	1 W
Hyperbolic workload control	✓
Linear workload control	✓
Fixed torque workload control	✓
Maximum rpm independent constant load	60 rpm
Minimum rpm independent constant load	5 rpm
Optional heart rate controlled workload	✓
Electromagnetic "eddy current" braking system	✓
Dynamic calibration	✓

Accuracy

Workload accuracy below 100 W	3 W
Workload accuracy from 100 to 500 W	3 %

User Interface

Manual operation mode	✓
Preset protocol operation mode	✓
Analog operation mode	✓
Terminal operation mode	✓
External control unit	✓
Selfdesigned protocol operation mode	✓

Connectivity

Analog connector	✓
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Dimensions

Product length (cm)	135 cm	53.1 inch
Product width (cm)	50 cm	19.7 inch
Product height	50 cm	19.7 inch
Product weight	47 kg	103.6 lbs

Power requirements

115 V AC 50/60 Hz (130 VA)	✓
230 V AC 50/60 Hz (130 VA)	✓

Standards & Safety

IEC 60601-1:2005	✓
ISO 13485:2016 compliant	✓
ISO 9001:2015 compliant	✓

Certification

CE class Im according to MDD93/42/EEC	✓
CB according to IEC60950-1	✓

Order info

Partnumber: 937902

**Specifications are subject to change without notice.*