

load monitoring device



The patented loadsol® force sensor accurately measures the normal plantar force detected inside the shoe during all static and dynamic activities using a thin insole which does not disturb the proprioception of the foot.

The flexible sensor technology covers the entire plantar foot in up to three sensor regions.

A miniature electronics transfers the data over Bluetooth to a smartphone.

Additionally, loadsol® is the first system of this size and capability which can accurately measure the plantar force between the foot and the shoe without estimation from other variables such as body weight, acceleration, etc.

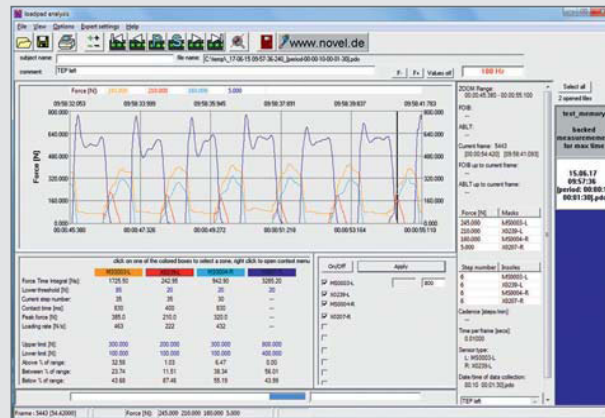


loadsol® insole in the shoe

Technical data of the loadsol® insole	
sizes	all sizes and custom made
number of sensors	1, 2, or 3 full plantar area
force range (N)	20 - 2,500* (standard)
frequency (Hz)	max. 200 Hz
transmission	Bluetooth LE
operating device	iPhone, iPad, iPod, Android
battery	3V coin cell / 14 hours or rechargeable cell

*other ranges possible on request

loadsol®



Evaluation of loadsol® measurement on a Windows PC

Features of the loadsol®

- Measures the plantar force in static and dynamic activities
- Utilizes patented, capacitive sensors
- Covers the complete plantar surface of the foot
- Can capture forefoot, midfoot, and hindfoot separately
- Works with small, lightweight electronics
- Provides biofeedback for two adjustable force levels
- Runs with various apps for rehabilitation and orthopaedics
- Connects to smartphones via Bluetooth
- Allows ASCII output
- Works with iOS and Android
- Allows long-term measurements

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All systems from novel operate with high quality, calibrated sensors and provide reliable and reproducible long term measurements. loadsol®, loadpad®, pedar®, artiscience®, and the novel logo (colored foot) are the registered trademarks of novel gmbh © 1992-2018

loadsol®

rehab



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The loadsol® insole monitors the normal force between the plantar side of the foot and the shoe.

The loadsol® system measures the normal ground reaction force of the patient while standing or walking. Utilizing one flexible, flat sensor which covers the entire plantar surface of the foot, loadsol® measures the force between the foot and the shoe, regardless of which part of the foot is in contact with the insole. The loadsol® sensor is based on patented technology and due to its linear properties it also measures partial loads accurately. The loadsol® is used for applications where the capture of the total force on the foot is needed. The loadsol® does not capture the local pressure distribution under the foot. For this application novel's pedar® system is the gold standard.

loadsol® technology has matchbox-sized electronics and communicates wirelessly via Bluetooth with a smartphone. The force values are displayed on the smartphone in real time.

The patient can also receive immediate biofeedback regarding the load on the foot via an auditory, visual, or vibratory signal. The measured data can be stored on the smartphone and to a clinic server, and additionally transferred to a computer for a more detailed analysis.

Long-term measurements allow the assessment of variability and compliance with prescribed load limits after surgery. The loadsol® insole conforms well to surfaces and therefore it is possible to wear an orthotic in addition to the loadsol® measuring insoles. The electronics were intentionally not integrated into the thin loadsol® sensor not to affect the proprioception of the plantar surface of the foot, the biomechanics of the gait, as well as the function of a corrective orthotic. The miniature electronics can be attached to the upper part of the shoe, i.e. the laces.



loadsol® with miniature electronics in a therapy shoe



The loadsol® is available in all shoe sizes and in four versions with different sensor area layouts. The load on the foot can also be captured separately in up to three subareas.

For specific applications there are additional customizable divisions and sizes available.

The loadsol® rehabilitation app was developed in coordination with large rehabilitation centers. It is easy to operate and at the same time allows for extensive display and evaluation of various parameters.

This includes load monitoring with biofeedback, bipedal symmetry, balance and gait stability as well as assessment of walking and running. The progress of rehabilitation can be documented using the measured values.

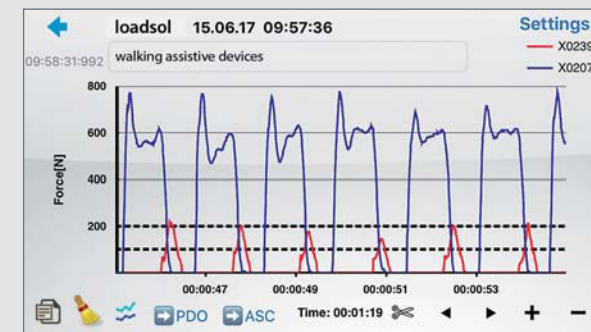
The loadsol® sensor technology is also available as a dorsal pad for measurement on the dorsum of the foot. The dorsal pad can be used to examine the comfort of the shoe.

To further evaluate the acquired data for other applications, the data can be exported to an ASCII file. Additionally, the Windows loadpad® analysis software offers an extensive evaluation of the loadsol® data on the computer.

The measurement results can also be sent encrypted via Internet to a clinical practice server.

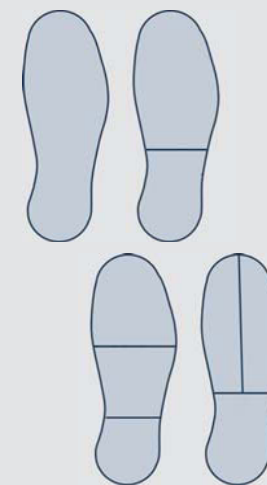


Walking with assistive devices after surgery:

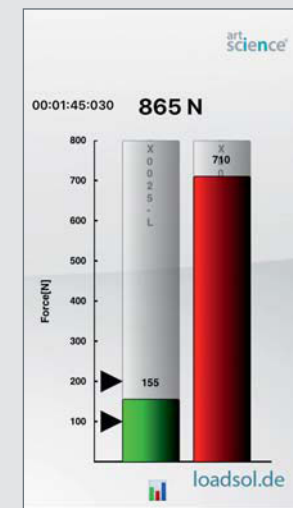


Measurement screen

Settings



Division of the sensor surface in four layouts



Force display left and right with biofeedback area