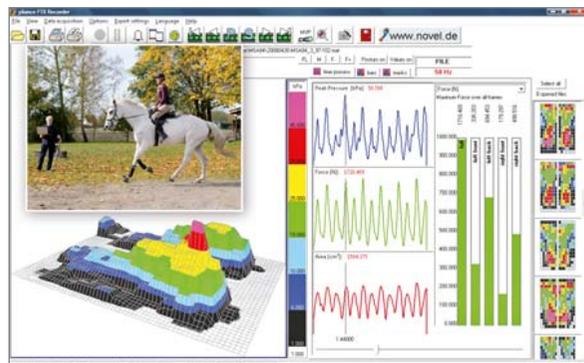


The pliance® software operates with Windows and enables a comprehensive analysis of the collected data. It is user-friendly, offers many different views, and allows an analysis of various parameters. The user can print the load distribution pictures in original size to, for example, relate the pressure points precisely to the anatomical landmarks of the horse or to the saddle. All data is fully compatible with novel scientific software packages and can also be exported in ASCII format for user programmed analysis.



PC display

novel also offers the loadpad® sensor system which enables the measurement of the total force, as opposed to the pliance® system which measures dynamic pressure distribution, acting on the sensor in the normal direction. Both the pliance® and the loadpad® sensor families can be configured according to customer-specific requirements in terms of shape, size, sensitivity, and surface coating.

All novel systems work with capacitive sensor technology and provide accurate, reproducible, and reliable pressure and force data.

Features of the pliance® horse sensor system

- Adapts perfectly to the shape of the horse
- Stores data on SD card, with or without PC
- Measures in static and dynamic mode
- Includes Bluetooth® telemetry
- Allows ASCII output (Expert software and above) and comprehensive Windows data analysis

| Technical data of the pliance® system/analyser | |
|--|-----------------------------|
| dimensions (mm) | 150 x 100 x 40 |
| weight (g) | 400 |
| number of sensors (max) | 256 (1,024*) |
| measurement frequency (sensors/second) | 20,000 |
| storage type | 2 GB SD card |
| computer interface | fiber optic/USB, Bluetooth® |
| operating system | current Windows OS |
| sync option | fiber optic/TTL, in and out |
| power supply | NiMH battery, 4.5 hours |

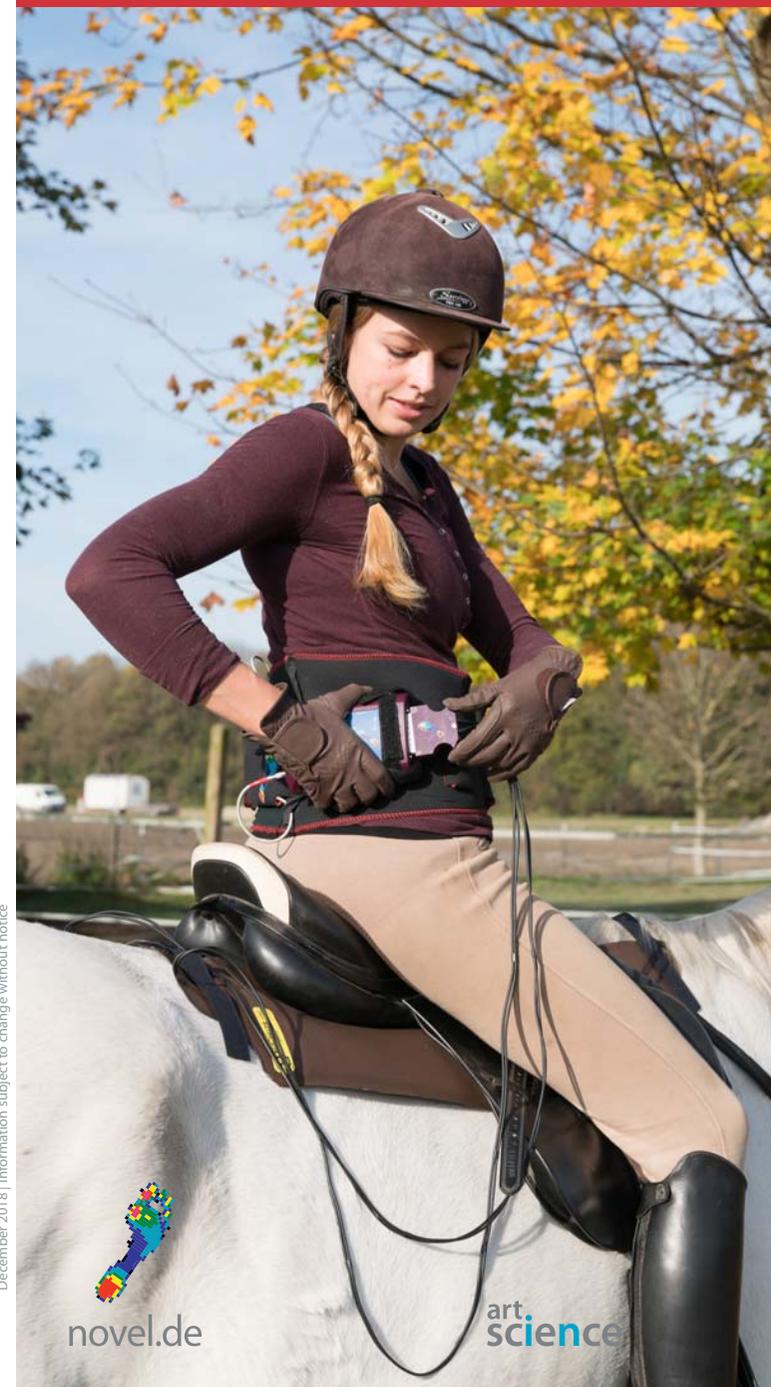
*required for pliance girth mat

| Technical data | pliance® saddle mat | pliance® girth mat |
|----------------------|---------------------|--------------------|
| dimensions (mm) | 200 x 600 (2x) | 113 x 424 |
| number of sensors | 128 (2x) | 8 x 30 |
| scanning rate (fps) | 60 up to 78 | 60 up to 83 |
| pressure range (kPa) | 2 – 60 (standard) | 2 – 240 |
| thickness (mm) | 4.8 | 4.8 |

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



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pressure distribution measurement

How does the rider sit?

How does the saddle fit?

What does the horse feel?

Physical tensions, back problems, and uneven gait during riding can be avoided using an optimal fitting horse saddle and girth. While the assessment of the fit of different saddles and saddle girths on a standing horse can only be assessed subjectively, a dynamic measurement allows an objective evaluation by representing the pressure distribution during movement and therefore a better understanding of the dynamic interaction between horse, saddle, and rider. Sensor systems used to measure the dynamic load experienced by horses during riding have been developed by novel to meet the needs of both equine researchers and saddle manufacturers.

The pliance® horse saddle system measures the dynamic load distribution between the saddle and the horse. The system consists of a thin elastic sensor mat, an analyser for data sampling and transmission to the PC, and software for an immediate evaluation of the load data.



pliance® horse saddle system in use

pliance® horse saddle system

The pliance® sensor mat consists of 2 x 128 calibrated, accurate, and reliable capacitive sensors which are scanned with a measurement frequency of up to 78 frames/second. The individual sensor elements are elastic and arranged in a matrix which conforms well to the three-dimensional shape of the horseback and can be used for English and most western saddles.



Fixation of pliance® sensor mat

The pressure data is collected and stored with the pliance® analyser that also instantaneously transfers the data to the PC via Bluetooth®. With the pliance® Recorder software, the distribution of load under dynamic conditions can be assessed while taking the movement of horse and rider into account, recorded synchronously on video. Dynamic measurements can be made for all paces, from the walk to the gallop. During movement substantially higher loads occur on the back and the shoulders of the horse as compared to standing. With the pliance® horse saddle system harmful pressure points that arise from poor saddle fit can be recognized and corrected. Gait asymmetry of the horse, possibly associated with physiological back problems or poor saddle fit, can be quantitatively analysed.

pliance® saddle girth sensor

In addition to measuring the pressure under the horse saddle, the measurement under the saddle girth is important. The girth also needs to adapt well to the shape of the horse's belly in order to avoid local high pressure points.

By measuring the dynamic pressure distribution under the girth, peak pressure points can be detected which might lead to relieving incorrect posture and asymmetric movement. A saddle girth that has been optimally adapted significantly improves the symmetry and freedom of the horse and ultimately helps to ensure good health and a higher willingness to perform. The pliance® saddle girth sensor can be offered in different sizes.



Application of pliance® girth mat

With the help of the pliance® horse saddle system and its powerful software one can quantitatively assess the quality and the fit of a saddle under practical conditions and objectively check an improvement of the fit. The system enables a complete biomechanical analysis of the loads acting on the horse during riding.