

# SCHEINWORKS

Measuring and Analysis Systems by **schein**



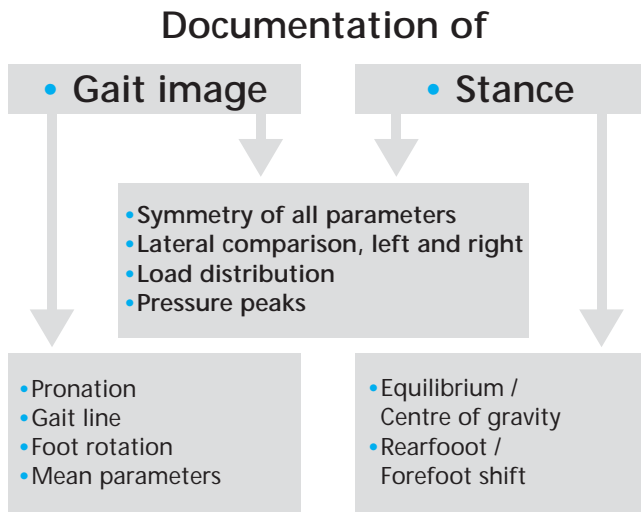
Pressure Measurement Systems  
for standing and walking analysis

schein

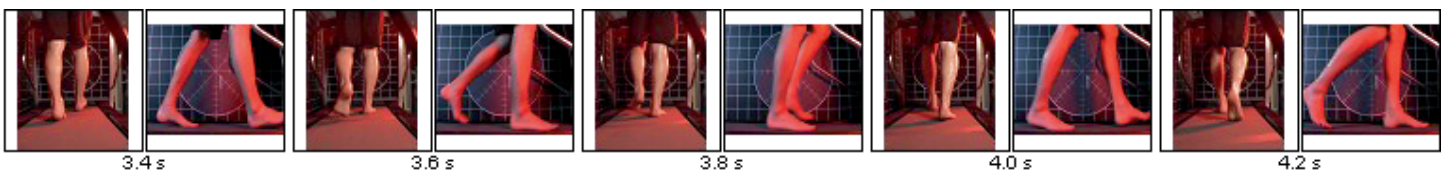
orthopädie  
service

Germany since 1879

## Pressure Measurement Systems for standing and walking analysis



The pressure measurement systems from Schein enable analysis of the dynamic force/pressure distribution while standing, walking and running. A sensor plate with high quality calibrated capacitive force sensors supplies the required data via a USB interface to the external computer for evaluation. Here, a number of different measurements which are required for a more accurate diagnosis can be called up. The measured value display is updated in real-time. Recording time can last for up to 300 seconds. The user can obtain addition support from the synchronised cameras which record the axial posture of the legs.



## Measurement on the treadmill

There are many reasons why we cannot run in a totally uniform way. For example, there may be structural problems to do with the skeleton and these may cause an uneven gait image. But also there may be a lack of muscular symmetry between the left and right sides recognisable in the movement patterns which are not synchronised with each other. Whether the cause is structural or muscular is irrelevant because, in the long term, it is not beneficial to stress the body unevenly and expose it to different levels of pressure.

Schein supplies four treadmill models enabling individual movement patterns to be recorded very quickly. A recording is made of a succession of several steps all forming part of single movement.

The software is easy to handle and so it is a simple matter to make a quick gait analysis and display the result clearly. A stance analysis can also be performed. Also, as well as the display of load distribution and the gait line, the step length, stance and swing phases, for example, can also be displayed in the form of a report. The software also provides the opportunity to compare two movement cycles under different conditions.

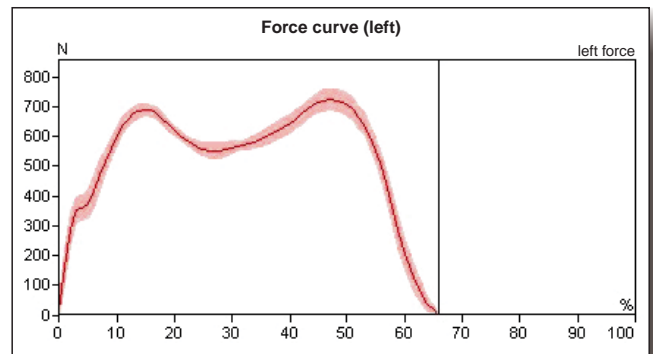
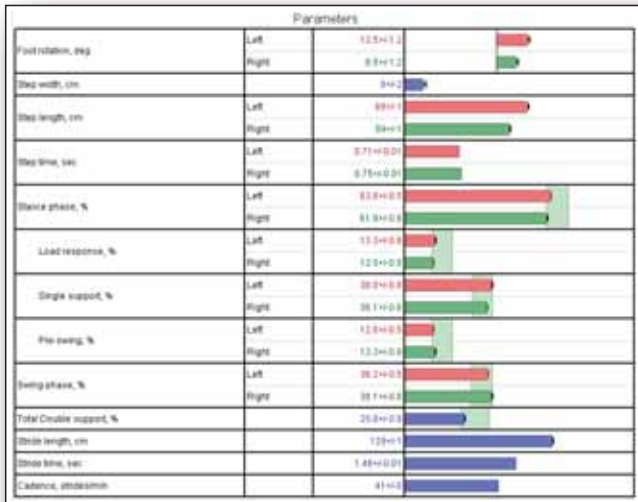
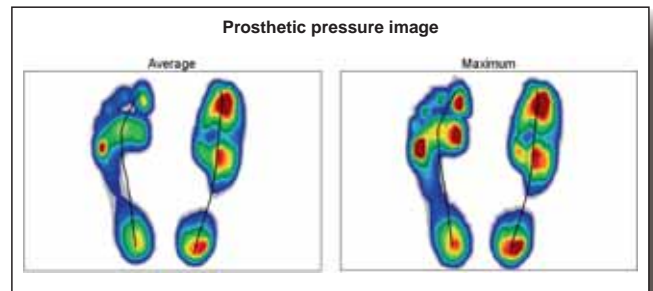
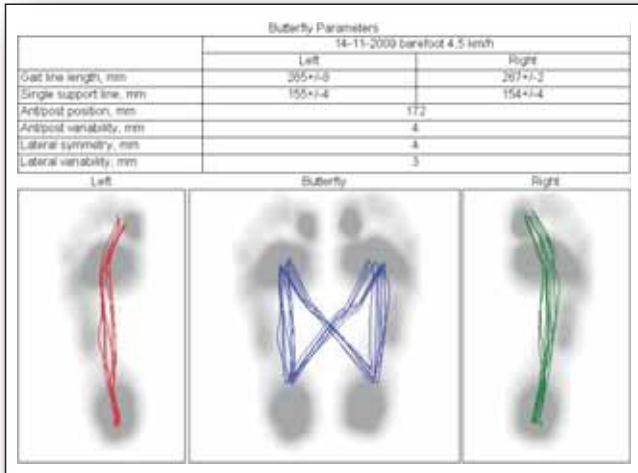
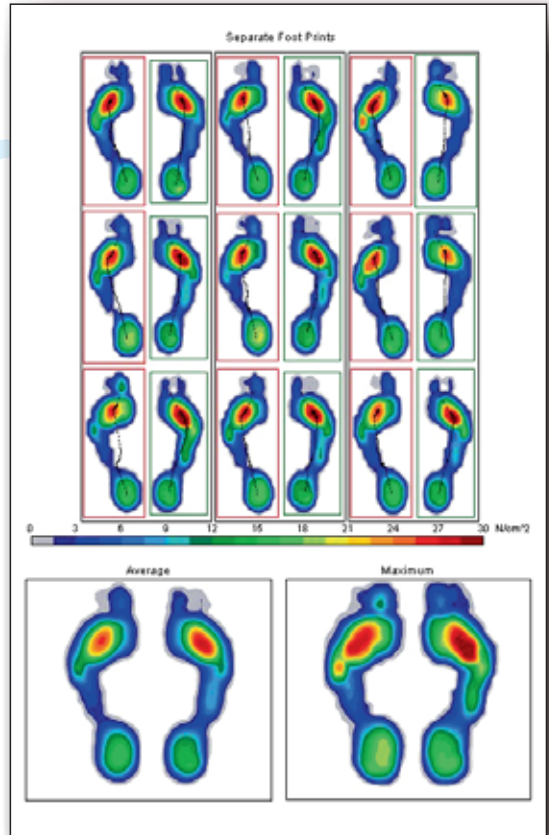
This makes it possible to display changes in movements caused by orthopaedic care. In **prosthetics**, it is possible to compare different prosthetic feet or different adjustments of the knee joint. Here, the stance and swing phases are important parameters in the dynamic profile. They must be set as symmetrically as possible during walking. With respect to sensomotoric shoes inserts, too, and in sport, the treadmill provides revealing parameters: inner and outer foot rotation, gait line and step length can all provide information on changes to the gait image. In general, all measures which have impacted on movement can be recorded. Pre-operation and post-operation, different sports shoes or even physiotherapeutic exercises can be revealed as causes, documented and filed.

The fact that measurements are taken on a treadmill makes it possible to generate data that can really be compared. The runner can be taken into the same running situation again and again (same speed, same direction of vision, same running surface). This enables a genuine comparison of the characteristics under investigation (i.e. of the care).



## Standard Report

The sensor plate comes as standard in all treadmills. It analyses pressure, force, time and step parameters and also gait symmetry. The movement cycles can be recorded with users going barefoot, wearing shoes or a prosthetic.



# Treadmill with integrated measuring platform

## FDM-TLR

The quick and user-friendly system! The 5,376 high-quality pressure sensors are integrated beneath the running area. The ergometer can be folded together with a single hand movement. It is particularly suitable for mobile use with a tare weight of only 75 kg. The speed can be increased in 0.1 km/h steps up to 14 km/h.



### Technical Data Treadmill FDM-TLR


Code No. 032110-011

<b>Sensor</b>	Measuring range	1 - 120 N/cm <sup>2</sup>	
	Sampling frequency	100 Hz	
	Sensor surface	94,8 x 40,6 cm	
	Number of sensors	5376	
	Accuracy	+/- 5% (FS)	
	Hysteresis	+/- 3% (FS)	
	Interface	synchronization input / output video synchronization infrared synchronization (optional)	
	PC Interface	USB	
	<b>Treadmill</b>	Speed	0,8 - 14 km/h
		Power supply	230 V
Running surface		122 x 44 cm	
Drive motor		1,3 kW	
Weight		approx. 75 kg	
Frame size		L=160, W=80, H=131 cm	
Frame size fold it		L=160, W=80, H= 47 cm	
Track access height		19 cm	
Elevation		0 %, not adjustable	
Maximum user weight		130 kg	
Colour	white / grey		



### Video Module

Code No. 032112-000

<b>(optional)</b>	Digital camera	50Hz / 60Hz	
	Stand		
	Firewire and synchronization cable		
	Video software extension		



## FDM-TDL

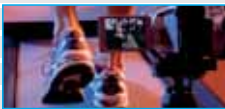
The mid-sized treadmill has a stronger motor and achieves a speed of up to 17 km/h; this is adjustable in 0.5 km/h increments. Thanks to the higher weight, bigger runners are also on the safe side in this case. Furthermore, a gradient of up to 12 % can also be set with this ergometer. It can be folded and thereby saves space when not in use. It has a pressure measuring plate with 5,376 integrated sensors.



### Technical Data Treadmill FDM-TDL Code No. 032110-015

<b>Sensor</b>	Measuring range	1 - 120 N/cm <sup>2</sup>	
	Sampling frequency	100 Hz	
	Sensor surface	94,8 x 40,6 cm	
	Number of sensors	5376	
	Accuracy	+/- 5% (FS)	
	Hysteresis	+/- 3% (FS)	
	Interface	synchronization input / output video synchronization infrared synchronization (optional)	
	PC Interface	USB	
	<b>Treadmill</b>	Speed	0,8 - 17 km/h
		Power supply	230 V
Running surface		150 x 50 cm	
Drive motor		1,9 kW	
Weight		approx. 180 kg	
Frame size		L=205, W=86, H=136 cm	
Frame size fold it		L=106, W=86, H=190 cm	
Track access height		19,5 cm	
Elevation		0 - 12%	
Maximum user weight		150 kg	
Colour		silver grey	

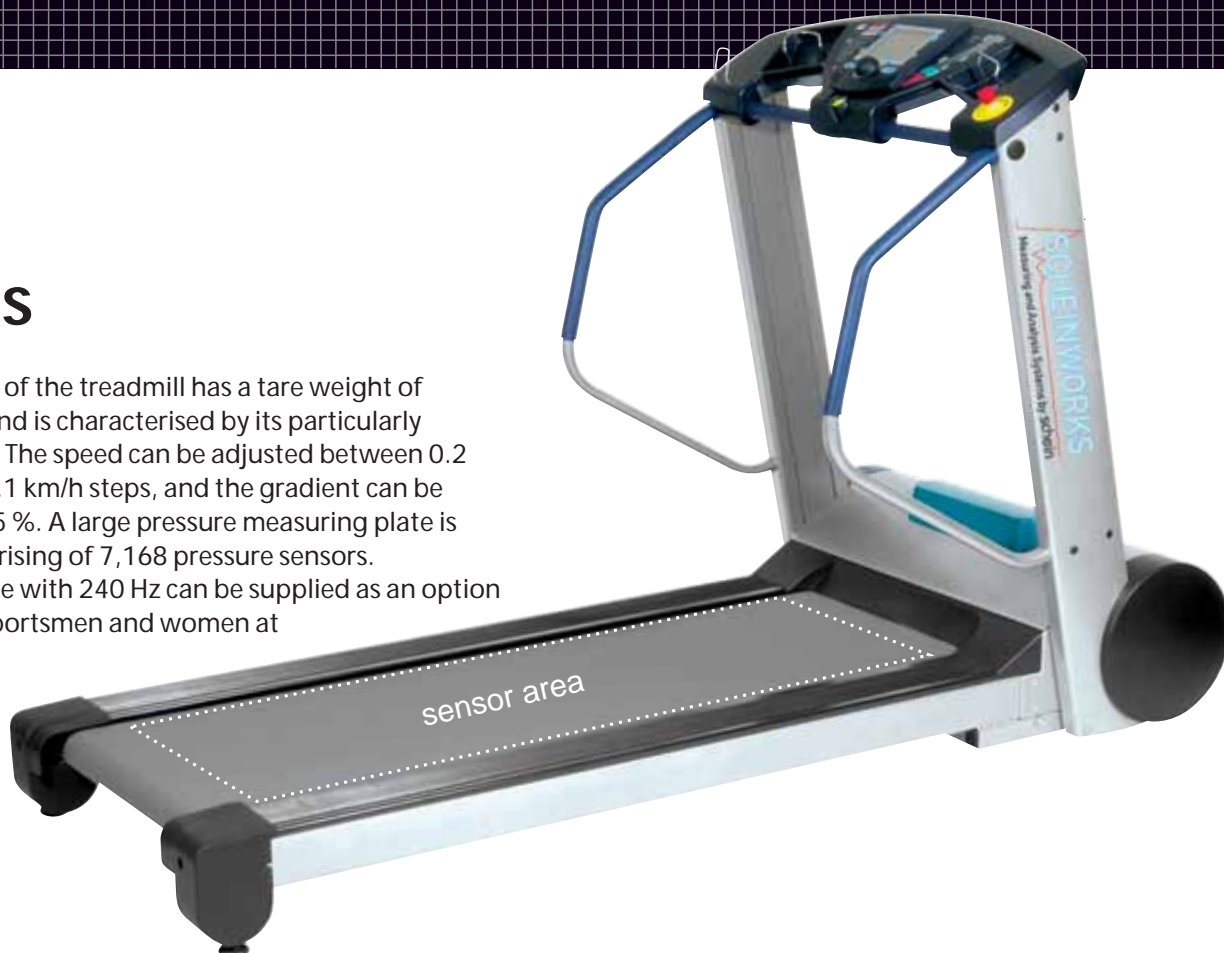
### Video Modul Code No. 032112-000

<b>(optional)</b>	Digital camera	50Hz / 60Hz	
	Stand		
	Firewire and synchronization cable		
	Video software extension		



## FDM-TDS

The large version of the treadmill has a tare weight of approx. 200 kg and is characterised by its particularly smooth running. The speed can be adjusted between 0.2 and 24 km/h in 0.1 km/h steps, and the gradient can be adjusted up to 15 %. A large pressure measuring plate is integrated comprising of 7,168 pressure sensors. A measuring plate with 240 Hz can be supplied as an option to also analyse sportsmen and women at higher speeds.



Technical Data Treadmill FDM-TDS		Code No. 032110-020
Sensor	Measuring range	1 - 120 N/cm <sup>2</sup>
	Sampling frequency	120 Hz (optional 240 Hz)
	Sensor surface	108,4 x 47,4 cm
	Number of sensors	7168
	Accuracy	+/- 5% (FS)
	Hysteresis	+/- 3% (FS)
	Interface	synchronizations input / output video synchronization
		infrared synchronization (optional)
	PC Interface	USB
	Treadmill	Speed
Power supply		230 V
Running surface		150 x 50 cm
Drive motor		2,2 kW
Weight		approx. 200 kg
Frame size		L=200, W=92, H=150 cm
Track access height		18 cm
Elevation		-2% - 15%
Maximum user weight		150 kg
Colour		silver grey
Video Module		Code No. 032112-000
(optional)	Digital camera	50Hz / 60Hz
	Stand	
	Firewire and synchronization cable	
	Video software extension	



## FDM-TDM medical version



FDM-TDM

Code No. 032110-030

The medical model has side holding grips attached over the entire length of the treadmill. In addition, the motor is especially protected for clinical use.

The long retaining bracket is also available for the treadmill FDM-TDS and can be installed retrospectively. Code No. long retaining bracket 032124-000

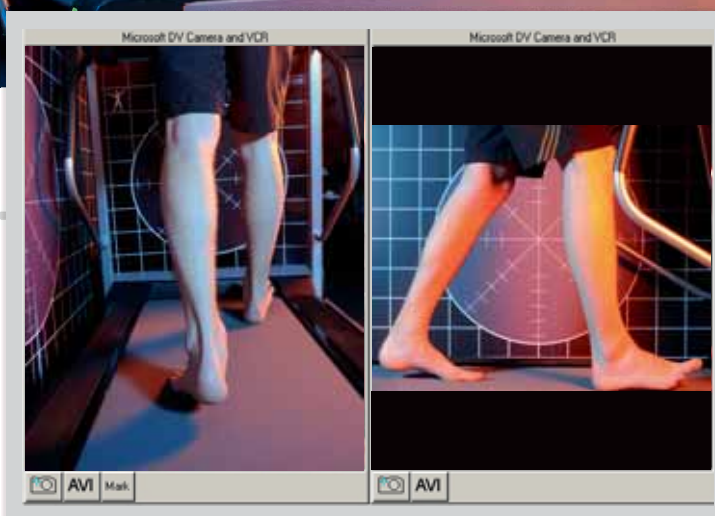
## Measurement Data with Video Module

All treadmills can be fitted optionally with one or several video modules. This additional facility provides measurement data beyond that of the Standard Report. Such data can be used to review body posture and muscle function and delivers 3D movement analysis in all gait ranges.

This is particularly helpful as care progresses and to assess long-term changes. There is no limit to the number of images that can be recorded using the video modules.



Video module 1

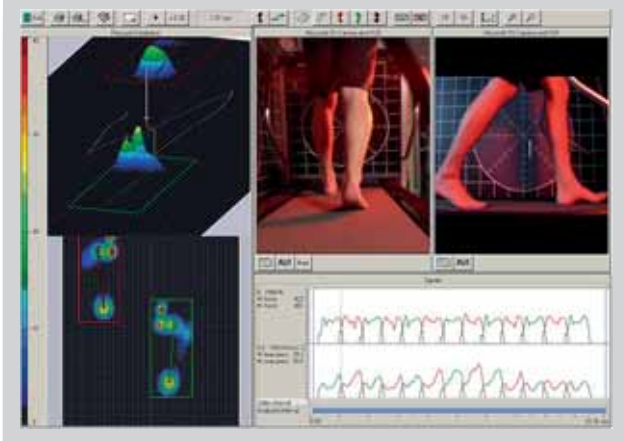


Video module 2

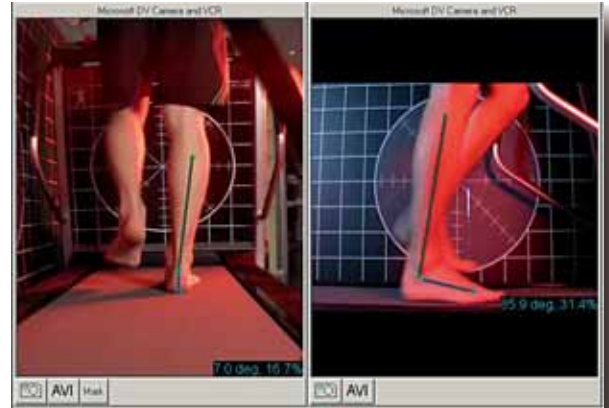
Additional camera code N° 03212-015

# Different views of pressure distribution and video recording

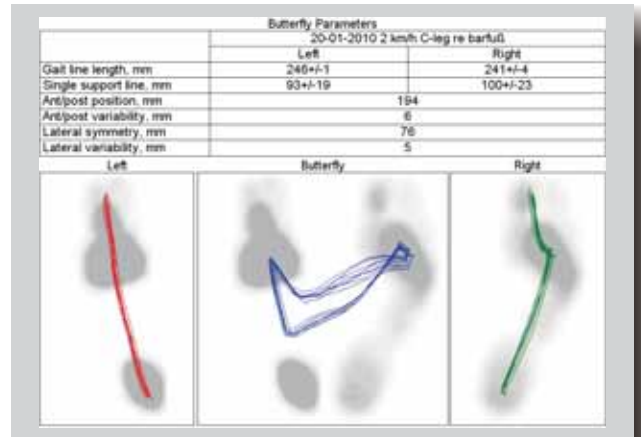
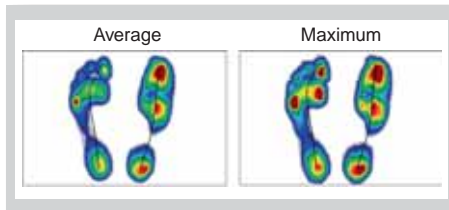
3D with gait line / 2D maximum pressure



Angle view



# Report on Pressure Distribution in Prosthetics Wearers



## System accessories

### Contrast panels

Using a grey colour, the contrast is increased for lighter skin - fitted markers can be recognised better. Furthermore, disturbing objects in the background are not recorded by the video camera.

The **contrast panel** can be positioned at the side and at the front. They cover the entire running area and can be used for all treadmill models. A panel for direct attachment to the wall is offered.

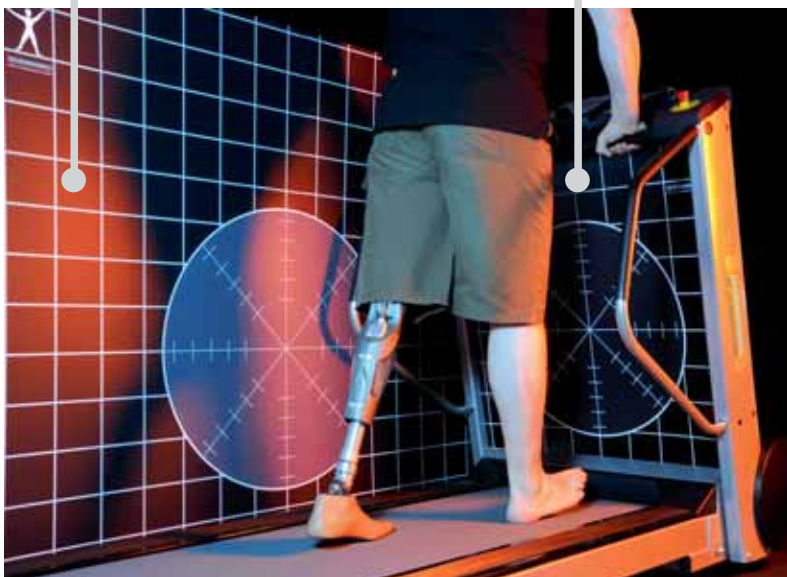
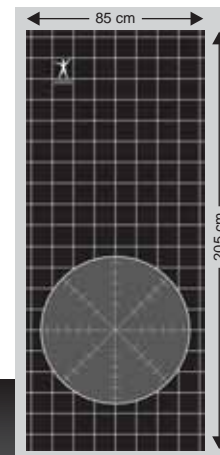
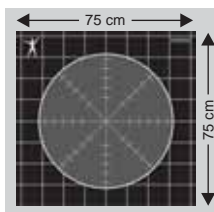
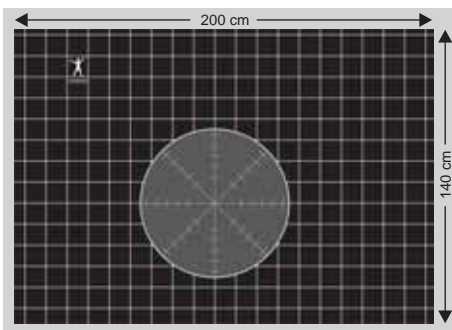
The **contrast plate** (only dorsal camera alignment) is obtainable for versions -020 and -030. It can also be fitted later. The advantage of the plate compared with the rollup is that it enables direct adjustment between the side parts. This gives the runner unrestricted forward vision when the camera is positioned dorsally and the plate is positioned correspondingly to the front.

For all treadmill types, the **roll up** can be placed in front of (dorsal camera alignment), behind (camera frontal) or beside (camera sagittal) the treadmill.

Contrast panel Code No. 032131-000

Contrast panel (only for model FDM-TDS and FDM-TDM) Code No. 032130-001 with frame

Contrast roll up Code No. 099989-097



# Measuring Platforms with multifunction pressure

The measurement plates make it possible to analyse the static and dynamic pressure distribution under the feet or shoes during one step. The equipment can be used for the easy and rapid performance of dynamic pronation analyses and static load distributions. This can be used to determine pronation of the foot.

During these analyses the data interpretation occur directly after the measurement. The results are then immediately available in the form of a report. As the system is linked to a PC via a USB interface it does not require any additional electronic systems in order to process the data.

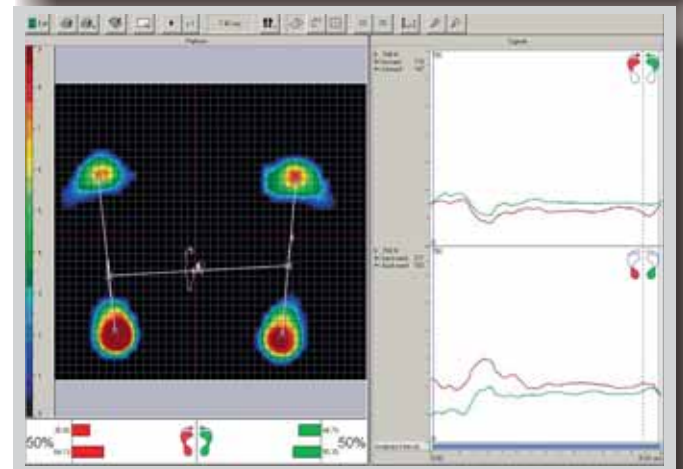
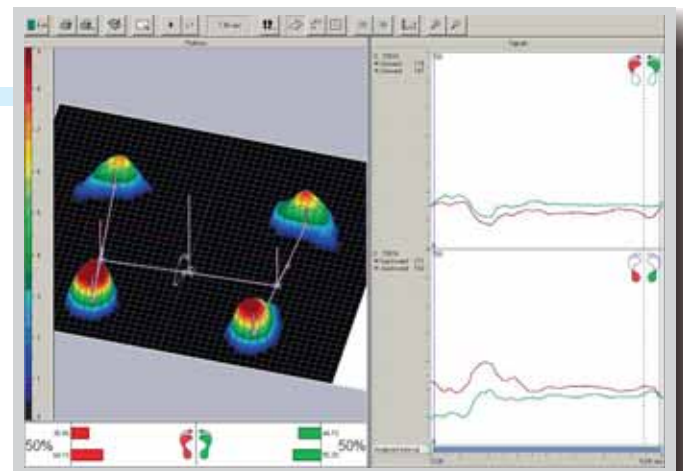


## Technical Data

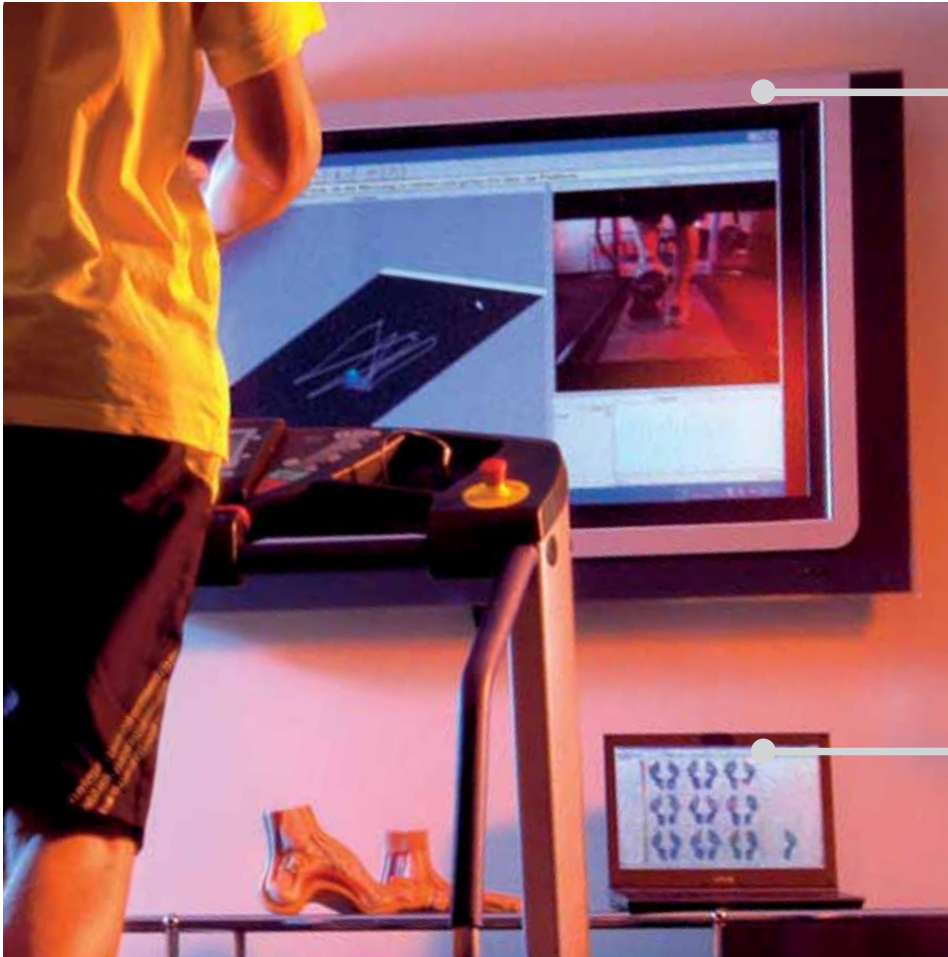
<b>FDMS 01</b>	Code No. 032115-192
L x W x H	550 x 400 x 21 mm
Weight	5,0 kg
Sensor area	340 x 410 mm
Number of sensors	1920
Measuring rate	120 Hz
Accuracy	+/- 5%
Measuring range	1 - 120 N/cm <sup>2</sup>
Measuring principle	capacitive
PC interface	USB

<b>FDMS 02</b>	Code No. 032115-256
L x W x H	700 x 400 x 21 mm
Weight	6,5 kg
Sensor area	340 x 540 mm
Number of sensors	2560
Measuring rate	120 Hz
Accuracy	+/- 5%
Measuring range	1 - 120 N/cm <sup>2</sup>
Measuring principle	capacitive
PC interface	USB

<b>Video Modul</b>	for both platforms
(optional)	synchronization input/output
	infrared (optional)



## System accessories



### Extra large screen

The installation of a large screen is a particularly patient-friendly investment. With the aid of the large screen the motion sequence can be followed with ease and allows a far more effective consultation session to take place. On request Schein can supply the extra large screen at favourable conditions.

### Laptop with software installation

Schein also offers a special laptop on which the software needed to acquire and archive data is pre-installed. This laptop can also be upgraded with the video software.

### Computer specifications:

- Operating system
  - XP
  - Vista business 32bit (not more)
  - Windows 7 business 32bit (not more)
- Graphics card with 1024 x 768 resolution, colour depth of 24Bit True color
- an available USB interface
- Firewire interfaces with a separat controller (one per camera)
- min. 1 GB main memory
- 250 GB free memory (recommended)

### Exclusive sales:



— Germany since 1879 —

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