



functional training



fitness & healthcare



gait training & analysis



sports science & athletics



motion analysis & biomechanics



rehab & locomotion therapy

## catalogue

Dear customer!

We are working on the new h/p/cosmos catalogue. It will be available soon. Please check or new price list for current prices and available products.

Thank you very much.



Picture: New h/p/cosmos® system for athletic training, diagnostics and rehabilitation. treadmill pulsar® 3p with overspeed up to 45.0 km/h, speed handrail, extra wide footboards on both sides, robowalk®/roborun® front and back, integrated Microgate Optogait light barrier carpet for step length determination and measurement of biomechanical parameters, pneumatic un-weighting (BWS body weight support) system airwalk® ap with integrated fall stop. The subject is secured against falling and the running belt is stopped automatically in case of a fall.

© 07/2015 h/p/cosmos [cos01-en-01] subject to changes and amendments. E&OE; h/p/cosmos is certified in line with ISO 9001 and EN 13485 for medical treadmills, ergometers and body weight support systems. All technical specifications, descriptions, equipment options and images of devices, options and accessories are not binding and do not represent any guarantee of features and/or performance and may differ from the product and delivery.

Catalogue design: KUSE.DE



Franz Harrer  
CEO and President  
Co-Founder in the year 1988  
h/p/cosmos sports & medical gmbh

Dear valued customer,

It gives me great pleasure and honour to present the new h/p/cosmos® system solutions catalogue.

Through the goals, visions and wishes of our many customers and users worldwide I have been and am inspired, motivated and enthused. I have met many people, subjects, sportsmen, athletes, scientists, trainers, doctors, patients and users who work to reach their limits with tremendous engagement and enthusiasm.

It makes me very proud to help these people achieve their goals.

The pleasure in the face of an athlete who through years of sometimes painful training and performance tests at last reaches his goal is a wonderful reward for all those involved. To see the tears of pleasure in the eyes of someone who learns to walk again after an accident or illness is a unique and very touching experience.

... True emotions of immeasurable satisfaction.

Reflecting on the results of my 27 years work as President and owner of h/p/cosmos I can't see a better way to support people to reach their goals. I am delighted to have found my professional goal. When we look back at the success of the company we can be proud that we have lived up to our company motto "run ahead of time".

Let me take this opportunity to thank you, our customers, users, distributors, partners and friends. I am pleased to share the same values as you: engagement, trust, loyalty and positive openness within our community.

My particular thanks also to all of our employees, suppliers and cooperation partners who have continually supported our mission with professionalism and enthusiasm. Finally thank you to my family and friends for their understanding, support and motivation.

Thank you that you are taking the time to read our current catalogue. It contains the results of years of work and experience in the research, development, manufacturing, service and use of our systems. New methods and a wide range of exclusive system solutions help our customers, athletes, patients and many other individuals to achieve their goals.

We are determined to make a better future for us all through our anti corruption policy and strict guidelines which we implement nationally and internationally with distributors and customers. For more information please visit: [www.h-p-cosmos.com/en/company/index.htm](http://www.h-p-cosmos.com/en/company/index.htm)

Saddle up ... save the World.

This has been our guiding principle for many years representing the solid basis of our conviction, motivation and daily work.

We don't complain about politics .... we make it. We are all individuals and all politicians. So we don't wait until others "do it".

This also applies to our social commitment. We support "SOS Children's Villages International" every year with a proportion of our profits and seek to find others who will also lend their support. Communal projects influence many and can have incredible results.

We look forward to an interesting and exciting dialogue with you.

With cosmic regards

Franz Harrer





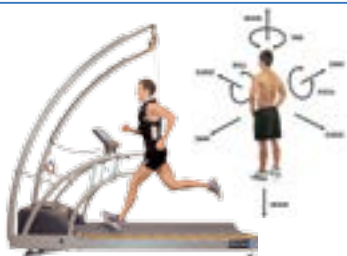
performance diagnostics running



performance diagnostics running, bike, wheelchair, ski &amp; skating



gait- and motion analysis, biomechanics, SIMI Aktisys para motion



speed-, agility- and functional training

sprint training / over-frequency (hyperspeed / overspeed) training,  
controlled tensile support / resistance

fitness, running and ladder ergometer, fire fighter

## external stress – internal demands

Almost all types of sport-specific applications, individual fitness assessments and exercise physiology testing are based on the same basic principle: there is a defined stress stimulus (external load) to which the individual response (internal demand) is measured.

A precise statement about the performance and individual development requires a measurable, repeatable and accurate variable load.

For more than 27 years h/p/cosmos® has been developing solutions including system solutions for sports medicine and high-performance sports, providing measurable, repeatable and variable load stimuli for walking, running, cycling, wheelchair sport, cross country skiing, inline skating and other sports.

In all solutions the safety of the athlete, the achievement of the goals, his motivation, the ergonomics and the data validity are paramount.

Safety is not only for the prevention of injuries from a fall. In many cases athletes, coaches and scientists want to determine the performance limits and can usually only do so when a fall prevention (fall-stop) system allows training to the 100% limit.

No responsible athlete, performance assessor or trainer would risk a dangerous fall, so training loads are usually broken off below the possible maximum for safety reasons. A fall stop system is also a part of the data collection system allowing data at maximum load to be measured. An athlete must have the assurance of not being injured from a fall. Only then he will have the incentive to „perform beyond himself.“ The same is also true in the treatment of neurological patients and similar applications.

The ergonomics of the systems plays an equally important role in the data validity as the precision and reliability of the overall system. The interface connection of a treadmill to measuring systems such as a CPET ergometry stress test system is today a basic requirement. The new standards such as EN 62304 (medical device software and the software life cycle processes), ISO 14971 (risk analysis and risk management for medical devices) and IEC 62366 (usability) have to be complied with.

The h/p/cosmos medical treadmills and unweighting devices also comply with the standard IEC 60601-1:2005+A1:2012 (3rd Edition, Medical Electrical Equipment Part 1: General requirements for basic safety and essential performance) and the relevant standards for EMC (electromagnetic compatibility). Many users know the good EMC shielding values and appreciate this for example in EMG applications.

More recently, specific solutions to achieve functional training, as well as sprint and speed training have become increasingly important.

One of the keys to success lies in specialisation. By focussing on the diverse applications for running machines, training and testing solutions, h/p/cosmos® has set standards of innovation, technology, ergonomics, performance, safety and support. Let us show you in this catalogue how our solutions can help to optimise your athletic management.

On our website you will find documentation, system solutions and videos for applications such as biomechanics, force measurement on treadmills, functional training, firefighter diagnostics and training and many other fields of applications. Download also the PDF catalogue from our website [www.h-p-cosmos.com](http://www.h-p-cosmos.com).



page 70



motion- & gait analysis: zebris® and Microgait Optogait / Optojump and WITTY timing systems

page 80



treadmill therapy with or without arm-support & BWS

page 96



treadmill therapy and locomotion therapy with un-weighting (BWS body weight support) system and seats for therapists

page 104



expander assisted locomotion therapy and gait correction with robowalk®

page 114



therapeutic bar training, gait training

## fitness with motivation and diversification

Your club members expect and deserve excellent services, facilities and equipment. Next to the quality and appearance of a fitness club the positioning and diversification is crucial for a successful and future oriented operation. If members cannot find any difference in equipment, services and programs, many will go for the lowest price, which is creating price wars and economic problems to part of the fitness club industry. Therefore it can be crucial to decide for special and unique equipment, services and motivation programs. h/p/cosmos incorporated the UKK 2km walk test for fitness index determination into many fitness treadmill models. This test procedure can be perfectly combined with motivating outdoor tests and events and creating attractive programs for the motivation of your members and your staff.

## those who want to learn to walk ... must walk!®

Your patients desire fast and full recovery. They want to enjoy a pain free and healthy life. The result of your work can help to achieve these goals. Of course, while your expertise and experience is essential, the right choice of tools and methodology is important for the success of the therapy. And it must meet the demands from both patients and therapists!

Physiologically correct walking is one of the most important therapeutic goals. And those who want to learn to walk ... must walk!

Functional gait training for those with a limited ability to walk is only possible with high commitment and involves problems both for therapists and patients.

Those who can not walk overground can not walk on a normal treadmill either. The right treadmill system with specially designed aids and accessories allows a more targeted and more effective therapy. Your patients can train earlier, longer and more frequently with a lower burden to the patient and the therapist. Their treatment is supported and may be safer, more effective and successful.

## h/p/cosmos supports the "3 pillars" of success in orthopedic and neurologic rehabilitation

### ■ pillar 1: motivating the patient

The robowalk® system uses a safety arch, arm support and un-weighting (body-weight support) help patients to feel safe and secure. robowalk® is giving them the confidence to actively support therapy without the fear of falling.

And also because patients and therapists trust this sophisticated methodology, they are highly motivated.

### ■ pillar 2: correct movement pattern / physiological gait

The robowalk® system assists the patients efforts to move. With the help and guidance of the therapist, the patients movement is easier and they are able to learn the correct physiological gait. It can be compared with the power steering of a vehicle.

robowalk® is an active gait correction (AGC) system.

With the help and guidance of the therapist, the patients movement is easier and they are able to learn the correct physiological gait.

### ■ pillar 3: repetition of movement

Patients with neurologic problems (stroke patients for example) often suffer from early fatigue and tire easily. This can create limitations in success of the therapy. For successful rehabilitation, the patient must repeat the correct movement many times in order to re-learn a physiological gait pattern based on neuroplasticity. For therapists, it is exhausting to guide the patient's legs in locomotion therapy, which limits the success dramatically.

The robowalk® system, used with the locomotion® treadmill with ergonomic therapist seats, is the ideal system to enable the important 3rd pillar "repetition of movement" and will help patients walk with better physiological gait pattern.

## satisfaction is not enough ... ... we want your enthusiasm!

Since its establishment in 1988, h/p/cosmos® has had a lot of influence in sports, athletics, ergometry, rehabilitation and science through the development and distribution of new products, software, system solutions and application methodologies.

During this time the Traunstein based company has developed into THE German specialists in manufacturing treadmill ergometers and systems for fitness, sports, sports science, sports medicine, athletics, biomechanics, medicine, rehabilitation, therapy, ergometry, performance diagnostics and scientific research.

Many developments and pioneering work from h/p/cosmos® have influenced not only product design and functionality but also their usage and methodologies.

Wireless heart rate measurement within the treadmill with load dependent speed and elevation, maintenance free and powerful drive systems with 3 phase motors and reverse belt rotation for downhill training, the patented arm supports with additional keyboard and the robowalk® expander are just some examples of the pioneering achievements of h/p/cosmos®.

A milestone for intelligent solutions was set by h/p/cosmos® in August 1992.

With the "h/p/cosmos® coscom®" protocol the stage was set and now many other manufacturers currently use this standard. Since then all h/p/cosmos® running machines and OEM treadmills from h/p/cosmos® can communicate with other equipment such as ECGs, VO2max ergospirometry CPET equipment, stress test systems, metabolic carts, motion analysis software, lactate diagnostic programs and PCs. The coscom® v3 protocol and the coscom.dll together with an impressive list of coscom compatible manufacturers and equipment are available for free download from: [www.coscom.org](http://www.coscom.org)

Additionally the "science port" and the pending patent for ergometric data "Vital Parameter-ID" are part of our innovative performance. In a straight forward system the vital parameters (i.e. heart rate, ergometric data, lactate values, etc.), the important product information, for example device type, serial number, software version and also the local temperature, humidity and other parameters are recorded and assigned. This can lead to an improvement of the data validity and traceability of the measured values. Currently this development is still in the early stages, but it will not take long before there will be very exciting results and findings. The benefit for the user is always in the foreground.

h/p/cosmos® has been working as a treadmill expert and industrial partner and additionally has been active on the standards committee for many years. This has lead to a positive input from h/p/cosmos® to the "treadmill norm" EN 957-6 and supporting safety and ergonomy for the user.



## nature, technology and science in fusion®

## Why do users choose h/p/cosmos® systems:

### 1. The right solution

h/p/cosmos® has the worldwide biggest portfolio by far of standard treadmill systems with options, supplies and also custom made solutions for fitness, sports, athletics, bio-mechanics, medicine, therapy and science. In this catalogue there are just a few examples presented.

For customers and users it means that they have always made the right choice in choosing h/p/cosmos® as their supplier even when the requirements of the machinery and system changed at a later stage or an additional application will be added.

With more than 100 standard treadmill models and an enormous program of options, supplies and configuration possibilities we are sure that we have the best solution for at least 99% of all customer applications. Many of our customers have several h/p/cosmos® machines with differing running areas, functions, speeds, handrail designs, safety equipment etc. for which they value the identical user terminal, coscom interface, software, visualisation & analysis and the reliable service from one source.

### 2. Flexible and future-safe

Many of the valuable options and supplies are unique and can also be retrofitted. With the possibility to extend the usage the initial investment and future usage can be easily planned.

### 3. Safety for high performance

The design and ergonomics of the safety arch with chest belt and fall prevention system motivate athletes and trainers and lead to unexpectedly high performance levels.

### 4. Running comfort

h/p/cosmos® first class running comfort through the studded rubber profile of the running belt. The shock absorption properties can be adjusted to customer requirements (also retro-fit) e.g. research projects, studies, special projects.

### 5. Transparent data access

h/p/cosmos® systems are open for all. Users can access nearly all of the raw data and parameters or even the formulas used for the calculations. An optional "science port" with raw speed data excluding the "smoothing algorithms" is available (also as retro-fit) for many models. Many parameters and measurements can be exported in standard format and used in spreadsheet programs.

### 6. Optimal compatibility through open interfaces

The very modern, very powerful and extremely safely built coscom® v3 interface protocol and the coscom.dll library together with the coscom® controls are excellent features that make system integration and compatibilities both transparent and quickly implemented. Descriptions, implementation assistance and the coscom.dll are available free of charge from: [www.coscom.org](http://www.coscom.org), are therefore very well spread worldwide and have become very popular. Today almost all major ECG devices and cardiopulmonary exercise testing systems are compatible with all medical h/p/cosmos running machines through the coscom® protocol. Many other software manufacturers for motion analysis, biomechanics applications, lactate and performance diagnostics, fitness diagnostics, entertainment and other applications also make use of the coscom® interface.

### 7. Automatic control

On-line self-diagnostics with error code displays of disturbances to heart rate monitoring, speed indicator, elevation angle, motor management, power supply stability and a number of other functions provide a high degree of reliability and support in monitoring, maintenance or repair. According to the customer's wishes remote access, remote diagnostics, remote maintenance and / or training is possible.

### 8. First class support

h/p/cosmos® offers customers superior support in the planning stage (e.g. when installed in a pit) and later during the installation, training and application use. Talk about your application and possible results expert to expert.

### 9. Unique equipment and systems

Many of the h/p/cosmos® devices and systems are unique and extremely valuable to operators and subjects at the same time, such as the SpeedLab®, robowalk® expander, roborun®, robomove®, arm support, airwalk® ap unweighting in combination with safety arch and fall stop, comet® sprint trainer, discovery® ladder ergometer, para control®, para graphics®, para analysis® and para motion® software packages and many other systems.

The performance, precision and accuracy of the devices can be found in this catalogue and on our website together with many other good reasons to choose an h/p/cosmos system.

P.S. : Motivating results, videos, and application solutions can be found on our website, YouTube, Twitter and Facebook.

The success of h/p/cosmos is largely based on the good cooperation and partnership with our customers. The fruitful exchange makes our clients, not only to customers but to partners that give us constant new ideas, critical feedback and inspirations.



Prof. Norimitsu Kinoshita

„We have been using our h/p/cosmos treadmill heavily. Indeed we are depending on it. Thanks for the stability and reliability. The quality of the treadmill is extraordinary and it is a very useful tool for my studies. I'm also fascinated about the variety of system-solutions h/p/cosmos offers. They build professional treadmills for various research fields. We are using it in combination with VO2 max testing for athletes and patients.

The installation of my very heavy oversize treadmill has been performed by h/p/cosmos in a very professional way.“

**Prof. Norimitsu Kinoshita, Faculty of Sports and Health Studies, Hosei University, Tokyo, Japan**

[www.hosei.ac.jp/english/faculty/health/](http://www.hosei.ac.jp/english/faculty/health/)



Nicole Gramsl

„We have been partners of h/p/cosmos for over 20 years because their treadmills are like our TRAUNMED philosophy: strong, reliable and innovative - and in important moments „distinctly different“ - whether in sports or in therapy.

We use the robowalk expander for core stabilization exercises in rehabilitation as well as for professional athletes. We can do a functional workout for e.g. soccer players on the treadmill. With this kind of training we can improve strength and coordination while the athlete is moving his body in a sport specific environment.“

**Nicole Gramsl, CEO Traunmed Sport- & Rehazentrum, Traunreut, Germany**

[www.traunmed.de](http://www.traunmed.de)



Richard Diaz

„I have been in the sports performance business for nearly 2 decades. From my experience, when I set out to make an investment for my business, my first concern is reliability, then service. My h/p/cosmos quasar treadmill is a workhorse! My entire business is built around its functionality. I perform video gait analysis, gait correction, over-speed training and VO2 max testing and without this wonderful machine I would be out of business. Even more, being on the West Coast of California and h/p/cosmos being a European manufacturer, you would think, where service is concerned I would be challenged. In the past 6 years of ownership, I have had only one small problem and the service people at h/p/cosmos bent over backwards to support my needs. I could not offer a more resounding recommendation. These people understand and serve the needs of sports performance professionals like myself.“

**Richard Diaz, Founder of Diaz Human Performance, Camarillo, CA, USA** [www.diazhumanperformance.com](http://www.diazhumanperformance.com)



Prof. Dr. Kuno Hottenrott

„We have been using the treadmill h/p/cosmos pulsar 3p in science and professional sports for more than 10 years. There has never been a breakdown of the treadmill all over the years. We could rely on the treadmill during our studies to 100%. We are convinced of the stability, reliability and durability. The drive engine is so powerful that very high strains for many hours are absolutely no problem.“

Professor Dr. Kuno Hottenrott is one of the German top-experts for scientific based training and author of several books.

**Prof. Dr. Kuno Hottenrott, Director of the Performance Diagnostics and Health Promotion Institute (ILUG®), Martin Luther University Halle-Wittenberg, Germany**

<http://www.sport.uni-halle.de/>





Dr. Christopher Powers

„The philosophy behind The Movement Performance Institute is human health and quality of life depends on the ability to move skillfully and efficiently. With the h/p/cosmos system solution for gait and motion analysis I can determine the cause(s) of any noted movement impairments in my clients. Because of this, I can help recreational runners as well as Olympic Gold Medalists to improve their running mechanics.”

**Dr. Christopher M. Powers, Founder of the Movement Performance Institute,**

**Los Angeles, USA**

[www.movementpi.com](http://www.movementpi.com)



Anja Wiese

„We’ve been working work with the h/p/cosmos mercury med with safety arch, fall stop and robowalk expander for over two years.

The focus of the applications is on patients with neurological deficits in gait, but we also treat patients on the unit with orthopedic diseases or other surgeries. And we have great successes! We can offer our patients through the integration of the h/p/cosmos mercury med in the treatment not only a multifaceted treatment, but we can also ensure a faster and more stable treatment success.

Through the use of the mercury med treadmill and robowalk we are now in a position to provide all patients with deficits in gait a time appropriate and individually adapted facilitation of human locomotion. And now we can guarantee the highest possible security for the patient with the h/p/cosmos treadmill with safety arch compared to our previous, long-term therapeutic experience. Also the handling by the therapist is easier and much more comfortable.

Thus, the h/p/cosmos mercury med has become an indispensable tool of our physiotherapy practice: those who want to learn to walk ... must walk!”

**Anja Wiese and Guido Bähr, Physiotherapists / Experts in locomotion therapy,**

**physio\_wiese, Göttingen, Germany**

[www.physiowiese.de](http://www.physiowiese.de)



Guido Bähr



Dr. Matthias Marquardt

„I am always on the safe side with h/p/cosmos treadmills because of their medical device registration. They guarantee 100% security for my patients. Moreover I need a secure and stable high-performance of the treadmill for the testing of professional athletes. This is guaranteed with h/p/cosmos treadmills.“

Dr. Matthias Marquardt is an expert for the treatment of running injuries, one of the leading German running coaches, an enthusiastic user of h/p/cosmos treadmills and author of several books. At the MARQUARDT RUNNING®-Institute he educates runners, coaches, sports scientists and physiotherapists in motion analysis, performance diagnostics and running technique.

**Dr. Matthias Marquardt, MARQUARDT RUNNING®-Institute, Hannover, Germany**

[www.marquardt-running.com](http://www.marquardt-running.com)



Lamar Lowery

„The h/p/cosmos pulsar 3p is an extremely powerful treadmill, which provides me with the safety arch with fallstop maximum safety when working with my clients. The wide running surface allows me to perform functional training exercises on the treadmill. In combination with the h/p/cosmos robowalk expander I have a big variety of training opportunities for interval training, coordination, and resistance training. My clients and I are delighted with the results of functional treadmill training.“

**Lamar Lowery, Personal Trainer, Book Writer and Founder of the Lamar Functional Training Academy, Frankfurt / Main, Germany**

[www.lamar-functional-training.de](http://www.lamar-functional-training.de)

## medicine & rehabilitation

The leading hospitals and rehab centres all over the world trust the competence of h/p/cosmos in the field of rehabilitation.

We have the right solution for nearly every requirement:

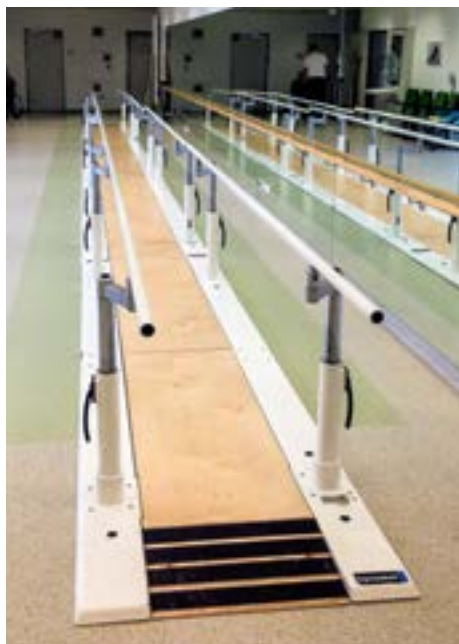
orthopaedic rehabilitation, neurorehab, cardiac rehabilitation, angiology, body weight supported treadmill therapy, gait correction, locomotion therapy



locomotion® with airwalk se for neurological rehabilitation  
in Finland



mercury® med with robowalk® expander for orthopedic and neurorehab at the „Traunmed“ in Traunreut



4 sets of para walk® with 4 meters length each, installed to a total  
of 16 meters walk way in a rehabilitation center in Austria



mercury® med with integrated visual stimulation, virtual training and Zebbris® FDM pressure distribution measurement



Grubeninstallation eines locomotion®



## special solutions

Standard is not enough - professionals need more. We find the right solution to satisfy the needs of our customers.

Customers often have special requirements for the installation of a treadmill and/or an unweighting device. We are the specialist to install the treadmill exactly where and how our customers want it to.

For example: pit installations, climate chambers, special solutions for heavy patients like the locomotion® 3p, ...



quasar® med installed in a pit



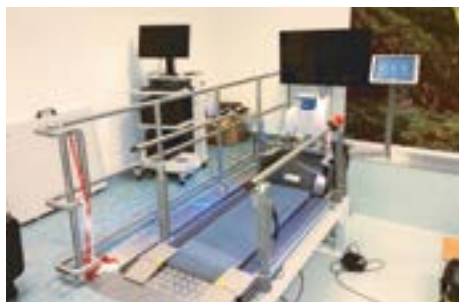
pit installation of a locomotion® treadmill with unweighting system mounted at the wall with ceiling mount deflection pulley



saturn® 300/100r with wheelchair ramp and wheelchair stabilizer



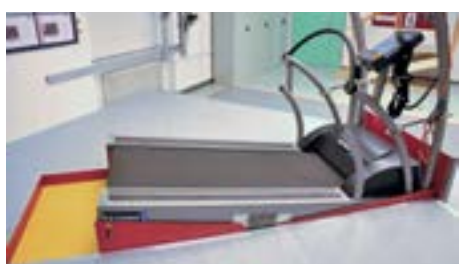
treadmill installation in an altitude simulation chamber for hypoxic training



special installation of 3 locomotion® treadmills in a pit



two h/p/cosmos climate-chamber treadmills with external control units outside the chamber for environmental conditions  
temperature range - 35 ... +50°C (-31 ... +155°F) and humidity up to 100%



quasar® med in a pit for downhill simulation

## sports science, Olympic training centres, performance testing

We are specialized in manufacturing treadmills for professional sports and sports science.

Customers like Olympic training centres, universities, professional sports clubs and performance institutes use our treadmills for scientific studies, performance testing and athletic training.



h/p/cosmos saturn®: installation in a German Olympic training centre



pulsar® 3p with ECG and Ergospirometry for performance testing



saturn® and pulsar® 3p

## speed training and functional training

Speed training on a h/p/cosmos treadmill with safety arch is a secure way to improve your speed.

Many professional coaches and athletic trainers work with elevated treadmills to put more intensity into the training of their athletes. Olympic athletes from many countries use the h/p/cosmos sprint trainer comet® to set a new stimulus to their nervous system.



teaching the right running technique on pulsar® 3p



functional training on pulsar® 3p with robowalk® expander with extra wide footboards and shortened handrail with additional grip help for jump ons and jump offs.

Photo and institute: Lamar Lowery



h/p/cosmos sprint trainer h/p/cosmos comet® with 160m rope for traction support and traction resistance training on the 100m track on the Tsinghua university in Beijing/China.



## gait & motion analysis, gait laboratory

Doctors, physiotherapists, running coaches, trainers and scientists use our system solutions for gait & motion analysis to analyse the gait and movement of their patients and athletes.

The main goal is the prevention of injuries and the improvement of running technique.



pulsar® 3p for performance diagnostics and motion analysis



h/p/cosmos quasar® med with safety arch and h/p/cosmos calibration charts in a gait analysis laboratory



pulsar® 3p at the SPÖRER AG, here in special implementation with short/divisible handrail on the left, long/divisible handrail on the right, security-hanger with stop-protection and wide step surface with signal mark on the left for quick and sure jump and landing as well as as a sure stand area for the therapist or trainer in the care of the patient or sportsman.



pulsar® 3p with special non reflecting black powder coating, external cables for fast disassembling of handrails for 3D motion analysis at biomechanics department, University of Salzburg, Austria.



## How to find the right treadmill from over 100 different models?

h/p/cosmos® offers a choice of over 100 models with different sized running surfaces from 150 x 50 cm to 450 x 300 cm, different specifications with speeds of up to 80 km/h (49.71 mph) and elevation ranges of -35 to +35%, options and accessories and of course different price levels. We offer treadmill models not only for normal gyms but also for athletic training, biomechanics, medicine and science. Even specialised equipment for environmental chambers for humidity up to 100% or treadmills for animals are included in our range.

### choose the basic treadmill

1

You can choose size, speed, elevation of the treadmill.



150/50



170/65



190/65



200-300/100-125

### choose the right handrail

2

We offer a big range of different handrails.



long handrail, detachable



handrail short 1 pillar  
detachable



adjustable handrail

### choose options

3

With the big number of additional options you can customize the treadmill exactly fitting to your field of application.



arm support and robowalk



additional emergency stop-  
button in the handgrip



fall prevention  
with chest belt

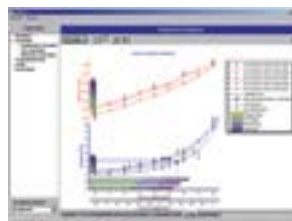
### choose accessories

4

With the accessories like motion analysis system, performance diagnostics software or visual stimulation, you can build a perfect system solution.



lactate meter



software



visual stimulation

### congratulations – your treadmill is ready

5

treadmill pulsar 3p | special colour: fire red | un-weighting system airwalk ap | robowalk expander | special speed 0 ... 45 km/h | speed plate | speed handrail | crossbar



size running surface (LxW) in cm	elevation/inclination	standard speed range	sport - med
150/50	0 %	0 ... 10 km/h (0 ... 6.21 mph)	CE
170/65	0 ... 20 %	0,5 ... 18 km/h (0.31 ... 11.18 mph)	CE 0123
190/65	0 ... 25 %	0 ... 22 km/h (0 ... 13.67 mph)	
200/75-100	0 ... 28 %	0 ... 25 km/h (0 ... 15.53 mph)	
250/75-125	-25 ... +25 %	0 ... 40 km/h (0 ... 24.85 mph)	
300/75-125	-35 ... +35 %		
450/300	-27 ... +27 %		
	-4 ... +25 %		

handrails
handrails both sides short 1 pillar
handrail extension long
handrails both sides long 2 pillars
hanrail motion analysis
handrail long/short/rolled sep. 1/3
hanrail left shortened
adjustable handrail

These are a few examples of the variety of our handrails. You can find a detailed list of available handrails in our current price list.

special speed	safety systems	other options
0 ... 10 km/h 150/50	safety arch with harness & chest belt / fall-stop prevention	robowalk expander
0 ... 25 km/h 190/65-3p	fall prevention system for ceiling mount with emergency stop	adjustable arm support
0 ... 40 km/h 170/65	footboard left and/or right extra wide	reverse belt rotation
0 ... 45 km/h 190/65-3p	additional emergency stop-button with magnet holder	wheelchair ramp
... speed ranges up to 50, 60 or 80 km/h available.		special colour
		zebris pressure distribution
		optogait biomechanics
		force measurement

motion analysis	Software
SIMI® Aktysis para motion® 2D package for motion analysis	SIMI® aktysis para motion® 2D
software h/p/cosmos para motion®	software h/p/cosmos para motion®
h/p/cosmos calibration board	software h/p/cosmos para analysis®
ceiling mounted light system	software h/p/cosmos para graphics®
high speed camera	software h/p/cosmos para control®
special colour powdercoated deep black	microgate optogait
	zebris virtual training
	zebris visual stimulation
	zebris biomechanics



RAL9010



RAL2009



RAL5017



RAL3002



RAL9005



RAL1016

## colour up your life .... with special colours

The standard colour of the h/p/cosmos treadmills is white. We can powder coat your treadmill in any RAL colour available. You can get the special coloured treadmill matching to your Corporate Design or interior design.

Main frame, elevation element, handrails, footboards, backplate, front terminal are powder coated in your chosen RAL colour. All other powder coated parts are in standard colour RAL 9010 pure white. Depending on the quantity ordered, there may be quantity discounts on free extra colour available.

order number	product description
cos100138va01	special colour treadmill - RAL1007 daffodil yellow
cos100138va02	special colour treadmill - RAL7016 anthracite
cos100138va03	special colour treadmill - RAL9016 traffic white
cos100138va04	special colour treadmill - RAL9010 pure white
cos100138va05	special colour treadmill - RAL1016 sulphur yellow
cos100138va06	special colour treadmill - RAL5017 traffic blue
cos100138va07	special colour treadmill - RAL3002 carmine red
cos100138va08	special colour treadmill - RAL9005 deep black
RAL XXXX - all standard RAL colours available on request. Free of charge for orders of 5 or more	



10 mercury® in a Korean Fitness Club



4 mercury® in a Japanese Fitness Club



4 mercury® and 1 quasar® 2.0 in a Japanese Therapy Center



## UserTerminal

All h/p/cosmos treadmills and ladder ergometers which are operated via keyboard and display are equipped with a uniform control panel the so called UserTerminal. It convinces through its clear and user friendly design. The emergency-stop-button and safety lanyard are accessible easily.

All h/p/cosmos devices can be controlled with PC-software h/p/cosmos para control and h/p/cosmos para graphics.

### Inputs

- Manual control
- 6 Training profiles - over 100 variations
- 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.)
- 8 User defined profiles - no limitation with the software h/p/cosmos para graphics
- Target heart rate - upper and lower level
- Age and Sex
- Weight and Height
- Intensities for acceleration and deceleration
- Load parameter

### Displays (LCD / LED)

- Mode
- Speed
- Distance
- Time
- Elevation
- Heart rate
- Program-No. / -Step
- Energy
- Power
- MET
- Fitness-Index

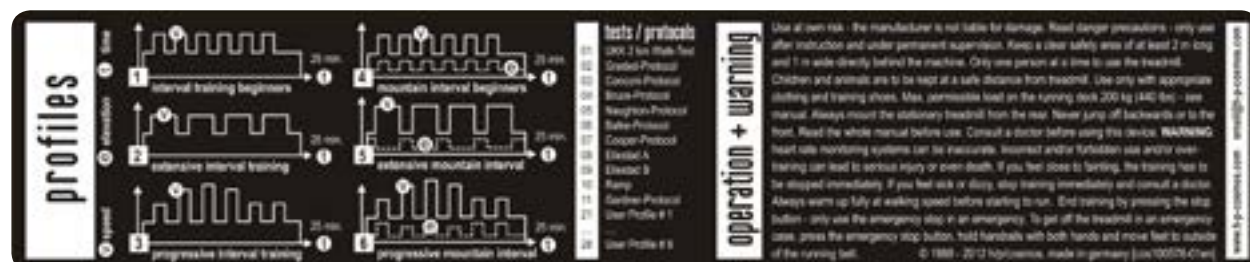
The profile mode offers 6 different programs, which, with the help of various speed and elevation combinations, simulates easy running training as well as a cross-country run. The maximum speed, maximum elevation and the duration of the 6 profiles can be selected („scaled“) in order to provide over 100 variations of profiles.

Some test profiles (e.g. Conconi test, Graded test, Cooper test etc.) are endurance tests (max. load and max. heart rate tests) and should only be performed after consultation of a medical doctor and under supervision of trained staff.

The UKK walk test (UKK are the initials for Urho Kaleka Kekkonen, founder of the UKK Institute in Tampere/Finland) makes it possible under certain assumptions to determine the approximately max. cardio respiratory efficiency (VO<sub>2</sub> max) and therefore the physical condition of the subject. The UKK-walk test is perfectly suitable as a fitness check for fitness clubs or for athletes at schools for example. On the basis of this result a Fitness-Index is calculated with the help of a complex formula taking age, height, weight, test duration and Heart-Rate into consideration, which tells us whether the physical condition of the subject is above or below average. The value of 100 as the average serves as the base. If somebody's index-value is 90 then his physical condition is slightly below average. An index-value of 110 on the other hand would be above average.

### Accuracy of displays / data validity

h/p/cosmos treadmills meet accuracy class A (high accuracy) of treadmill standard EN 957-6. Therefore the values displayed and transferred via interface are very reliable. In order to maintain this accuracy (velocity, inclination, distance, heart rate, etc.) we urgently recommend meeting the regular maintenance intervals. In addition, an online self-diagnosis monitors the system permanently and would show error code using variations of speed, pitch angle and undervoltage on the screen.



# performance

## targeted performance development



details & videos





## performance diagnostics

- safety for the subject through a long running surface and safety arch with fall stop
- safe usage through simple operation and numerous control options
- secure documentation through automation and the coscom® interface protocol
- validity of the data through a powerful drive system self-diagnostics and tremendous accuracy

# performance

measure. analyse. improve.



- safe on the treadmill – even when you fall?
- motivated to train to the limit – but how?
- perfect control and documentation – with just one person?

## without worries and with motivation to the limit

A formula 1 driver can only go to his limits when he knows that his car and the track are as safe as it can be. Without a safety cockpit, a special seat belt and helmet, he would hardly get the same performance or be able to push himself to his limits. It is similar in performance diagnostics in sport and in medical diagnostics: an athlete or patient who feels insecure and afraid of falling will not find it so easy to go to his limits. To get the complete picture from both the diagnosis and training, the maximum physical exertion is often a prerequisite for an accurate test result, respectively for a predictable increase in performance.

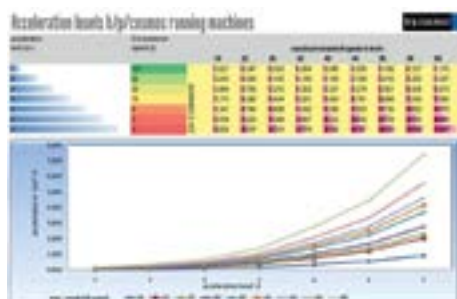
The h/p/cosmos® safety arch with chest belt prevents falling in case of tripping and by loss of coordination in the exhaustion phase. The fall-stop stops the treadmill immediately and automatically by use of a quick-stop system. With this feeling of safety it is possible to train right up to the limit which is important for precise diagnostics.

## because performance counts

Although diagnostic performance of marathon runners or triathletes only place moderate demands on a treadmill system due to the very economical running style the diagnosis of athletes from many other sports requires clearly increased performance. Also when sprint and speed tests are conducted with large and heavy athletes the treadmill system must provide, in these short-term peak loads, accurate repeatable results. Single phase power supplies with only 230 volts are often overwhelmed.

For that reason h/p/cosmos® offers three differing system solutions.





normal PVC running belt\*



special studded rubber running belt profile 5 mm\*\*



\* used at model mercury® or many other standard treadmills

\*\* used at model quasar® med and pulsar® 3p, with reinforced surface

### basic performance diagnostics

The h/p/cosmos quasar® med with a speed of up to 25 km/h (15.53 mph optional 30 or 40 km/h), 28 % elevation (15.64° gradient) and a running deck of 170 x 65 cm (66.93 x 25.59") covers many requirements of the classical endurance diagnostic performance analysis with step and elevation protocols. As an alternative, if purely for fitness or for patient diagnosis, there is the smaller entry-level h/p/cosmos mercury® med with a running deck of 150 x 50 cm (59.05 x 19.68") available. A single phase voltage power supply 230 V / 16 A is needed by both models. The natural performance limitations apply for single phase voltage power supply and therefore these models are not recommended for high performance applications.

### professional performance diagnostics

The h/p/cosmos pulsar® 3p features above all a 3-phase power connection with 3 x 400 volts AC in addition to the larger running surface of 190 x 65 cm (74.8 x 25.59") and the built-in reverse belt rotation for downhill training. Diagnostics for heavier athletes and many special applications are therefore possible. As part of sprint and speed tests speeds of up to 40 km/h (standard, optional 45 km/h ~ 28 mph ) are possible. Here it is all about the speed stability and not just the speed of the belt.

### scientific performance diagnostics

The h/p/cosmos venus® 200/75 offers a running surface of 200 x 75 cm (78.80 x 29.53") and elevation angles of -35 ... +35% (-19 ... +19°) and speeds up to 40 km/h as standard (optional 60 km/h) even more power, precision and capabilities. The drive motor with 11 kW and the heavy rollers provide exceptional dynamics, precision and smoothness. The accuracy of the speed is on average 0.1483% (average deviation of 0.0441 km/h, measured both with no load and under load with runners of 78 and 94 kg). It is especially suitable for scientific study and applications in athletic training and research. Alternatively there are even bigger treadmills, the h/p/cosmos saturn®, with running surface sizes of 250/75 cm up to 450/300 cm and custom models for specific applications.





## best possible compatibility with up to 4 communication ports

Especially in sports medicine, biomechanics, research and in professional sports there are often many different systems and devices that are connected to the treadmill: ECG, spirometry, blood pressure monitor, EMG, an external printer, h/p/cosmos para graphics® software for control, visualisation and documentation, h/p/cosmos para analysis® for lactate diagnostics and possibly other software solutions for motion analysis and biofeedback. h/p/cosmos para graphics® and h/p/cosmos para analysis® can serve the user as important tools to assist controlling, recording and documentation, although they are not medical software products according to EN 62304 and do not provide clinical data or treatment recommendations. For that reason all h/p/cosmos® treadmills provide for up to 4 optional PC-interfaces with different transmission speeds (e.g. 9600 or 115,200 bps) for high demands.

We achieve the best possible compatibility with the proven and reliable coscom® interface protocol, which is now supported by almost all major ergometry systems, ECG's, ergospirometry equipment and numerous software solutions. A „science-port“ is also optionally available to provide the raw data from the speed sensor as a digital signal without averaging („smoothing algorithm“). These signal taps are even possible for other parameters opening the path for other scientific applications both now and in the future.

## standards aren't always applicable – lots need more

Football, rugby, American football, basketball, handball, tennis, boxing, decathlon, biathlon, marathon, hurdles, sprinting, triathlon, cross country skiing - are sports where specific system solutions are mostly required. Team sports athletes are often large, heavy, and some have very specific requirements. Many train in intervals with high velocities and accelerations - and corresponding step length.

Standard 230 volt power supplies and standard treadmills (smaller 1-phase 230 V h/p/cosmos devices) do not have sufficient power under heavy loads and there may be major speed drops during the athletes landing phase. Often special running belts are required on which the tips from metal poles and running spikes are „tolerated“.

h/p/cosmos® running surfaces are available in various lengths, widths and combinations. Both for the acceleration of the treadmill speed and deceleration all h/p/cosmos® treadmill ergometers are equipped with several intensity levels. The individually selectable acceleration and deceleration levels range from extremely slow to extremely fast. In 3 ... 131 seconds from 0 to maximum speed. Depending on the speed and combination, acceleration values from 0.021 to 7.407 m/s<sup>2</sup> (as a digital value directly programmable) or custom designs are possible.

This allows the programming of professional true life tests and sport specific training to simulate specific situations. On the other hand a normal fitness treadmill only lets you run fitness applications.



### safety – whilst taking blood samples and measuring blood pressure

In many cases taking a blood sample from the ear or blood pressure measurement on the upper arm are both part of a performance test. This requires the treadmill to come to a stop quickly so the blood can be sampled quickly, easily and safely.

Also here different acceleration levels and programmable pause times are valuable features allowing optimum concentration to blood sampling or blood pressure measurement. The h/p/cosmos pulsar® 3p model provides acceleration and deceleration from 0.085 m/sec<sup>2</sup> (very slow) to 4.167 m/sec<sup>2</sup> (very fast; for optional 45 km/h model). For patients and insecure users the speed can be changed very slowly. For professionals and athletes it can be set to 3 seconds from 0 to 45 km/h if required. h/p/cosmos systems have both a visual and audible countdown so that both the subject and MTA (medical technical assistant) are warned in time for the next acceleration or change. Additionally there is a wide footboard with a non-slip surface for optimum stability and control for both subjects and supervising personnel.

### if no compromise with your running shoe ... why then compromise on the running surface and the machine?

Athletes are very demanding in the selection of their running shoes. You should also be so in the choice of running belt and the running machine. Depending on requirements and the application h/p/cosmos® offers not only smooth but grooved or notched profiles. Our running belts are not excluded from the 3 year full warranty and are often seen running after 8 to 15 years. h/p/cosmos® treadmill systems are often in use for very long periods, for many of our customers that's already 20 years. Requirements, needs and goals may change and expand over time.

The h/p/cosmos® system for performance analysis provides a variety of expansion options: for example almost all systems can be extended for motion analysis or functional coordination and running technique training with unweighting and/or used with the robowalk® expander system.

h/p/cosmos® also offers the corresponding solutions for rehabilitation, functional training or speed training and agility training/flexibility training. And thanks to the built in PC interface and the open coscom® v3 protocol they can be used with the widest variety of compatible software solutions.





## h/p/cosmos sirius®

The h/p/cosmos sirius® is a measuring device for fast and easy determination of the lactate concentration in the blood. The simple operation and high accuracy mean that it is well suited for use in the field and laboratory:

The very short measurement time of just 10 seconds allows for immediate feedback both during a test and in a training session.

The short measuring time to determine if a sufficient lactate value has been reached, means that the test can be immediately ended without the need to overexert the subject. The simple operation and menu navigation with the scroll wheel supports the user's concentration during the diagnostic performance of the athletes. Via an optional interface the values with date and time stamps in the software can be imported into h/p/cosmos para® analysis. To support reliably under different climatic conditions the h/p/cosmos sirius® is equipped with a temperature sensor. The serial measurement mode allows the implementation of time step test together with functions such as stopwatch and countdown. That makes the h/p/cosmos sirius® a handy sports computer.

measuring method:	enzymatic-amperometric
displayed results:	in 10 seconds
required quantity of blood:	0.5 µl capillary blood
fill stop signal:	automatic
memory:	250 measurements
accuracy:	3 ... 8 %, depending on concentration
temperature range:	+ 5° ... 45° Celsius
measurement range:	0.5 ... 25.0 mmol/l
humidity:	max. 85 %
display:	LC-Display with icons
dimensions of device:	91 x 55 x 24 mm
dimension of packaging:	205 x 145 x 80 mm
net weight:	80 g
gross weight:	386 g
battery powered:	2 x 1.5 Volt AAA/LR03

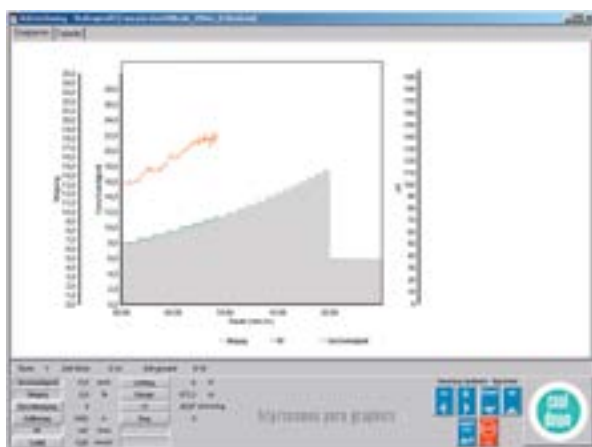




## h/p/cosmos para control®

h/p/cosmos para control® is a software solution that allows the user to control the treadmill from a computer. To make h/p/cosmos para control® as user-friendly as possible the input screen has been designed to be the same as the treadmill user terminal. Functions include direct switching of the running mode or units of measurement with just one mouse click, target parameter input for speed, acceleration and elevation, profile and program options. This means everybody can easily control the basic functions over h/p/cosmos para control®.

Furthermore h/p/cosmos para control® offers the user many additional functions such as cool down, quick stop, count down and a complete configuration tool for the option settings. All customers receive the software free of charge with the purchase of an h/p/cosmos® treadmill.



## h/p/cosmos para graphics®

Displaying and recording – the h/p/cosmos para graphics® software allows you simply and flexible control the treadmill, for example manually, via ramp profiles, graded tests, interval programs, heart rate target values, etc. The target values and recorded values are on-line visualised. It also allows comparison through overlay function with parameters from previous tests or training sessions.

Furthermore many important parameters (speed, elevation, time, distance, and pulse) are permanently recorded either graphically or in a spreadsheet as required.

Additional parameters such as lactate or BORG values for subjective feeling of exertion etc. and comments can be manually input even on-line during the test. A data export (.csv) allows many of the parameters to be analysed further in a spreadsheet. The software solution is ideal for both controlling the treadmill and managing the documentation for each training and exercise physiology fitness testing session.



## h/p/cosmos para analysis®

The software h/p/cosmos para analysis® professional is the ideal software for a professional and optimal test analysis and training management.

The speed and heart rate parameters recorded by the h/p/cosmos para graphics® software on-line on the h/p/cosmos treadmill can be simply imported into para analysis®. The load profile and lactate values can also be manually input so that the software can also be used for field tests without the need for a treadmill. h/p/cosmos para analysis isn't just for runners but also for cyclists and swimmers for example. Up to 13 threshold calculation models for anaerobic threshold, lactate and heart rate calculation, fitness assessment and training zones are included. Features include detailed info when moving thresholds, comparison of data when selecting various threshold models, PDF and report generator with comments and many more. Also included is a trainings planner with calendar and marathon time prediction. A data bank allows long term, cross and comparative analysis.

These important features are necessary in the sports and fitness areas for a valuable and high performance software. The h/p/cosmos para analysis® It ("light version") for ambitious home users also includes the documenting and evaluation of the UKK 2 km walk test.

The above software programmes are not medical products according to EN 62304 and do not provide clinical data or therapeutic recommendation, however they are a valuable tool to assist in control, recording and documentation.



## recommended configuration performance diagnostics professional h/p/cosmos pulsar® med 3p

pos.	qty.	order number	product description
1.	1	cos30004va04	<b>running machine h/p/cosmos pulsar® med 3p</b> running surface 190 x 65 cm, speed 0 ... 40 km/h, elevation -25 ... +25 %, drive motor 4.3 kW with high-performance 3-phase power supply, 2 interface ports com1/ com2 for PC-, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para graphics® for device control and visualisation
2.	1	cos101277va02	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos102187	footboard „speed“ right for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
4.	1	cos14764	footboard „speed“ left for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
5.	1	cos10170va01	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
6.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
7.	1	cos10670-01	spare rope for safety arch
8.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
9.	1	cos14827-01	h/p/cosmos sirius lactate test strips, box with 72 test strips
10.	1	cos11657	start set consumables „lactate“ - incl. latex gloves, size M, box with 100 pieces [cos11351], kidney dish, plastic [cos11355], disinfectant spray, 250 ml [cos11352], disposable lancets, sterile, box 200 pieces [cos11652], plaster, box 420 pieces [cos11356], swabs, 1000 pieces [cos11353], MEDI-box (lancets collector) [cos11930]
11.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostic and training control
12.	1	cos14970-01	h/p/cosmos satellite PC med - with potential isolation transformer according to IEC 60601-1, potential equalization pin, Windows® OS incl. 19" LCD monitor, keyboard, mouse, DVD-ROM writer, colour laser printer and PC-trolley with 4 casters
13.	2	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
14.	2	cos00097010035	interface cable RS 232, 10 m (32 ft 9.70")
15.	2	cos12769-01	interface adapter / converter USB / RS 232
16.	1	cos16487	3rd interface RS 232 com3 with coscom v3, baudrate 115.200 bps
17.	3	cos60098010004	pre installation and configuration of satellite PC incl. software solutions at h/p/cosmos factory
18.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 190 x 65 cm (safety arch)
19.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
20.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
21.	1	cos14316	1 full day workshop treadmill applications in performance testing and training  total price net, excluding VAT, excluding custom duties  VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)  system price h/p/cosmos solution for performance diagnostics pro: please ask your dealer for a quotation

Please refer to the information about product specifications which can be found on pages 138 ... 149.



## recommended configuration performance diagnostics basic h/p/cosmos quasas® med

pos.	qty.	order number	product description
1.	1	cos30003va20	<b>running machine h/p/cosmos quasas® med</b> running surface 170 x 65 cm, speed range 0 ... 25 km/h, elevation 0 ... 28 %, com1 interface, para control® software
2.	1	cos102288	footboard „speed“ right for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
3.	1	cos16586	footboard „speed“ left for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
4.	1	cos10170va01	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
5.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
6.	1	cos10670-01	spare rope for safety arch
7.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 15 seconds, storage of 250 values, interface for the PC (optional)
8.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
9.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, size M, box with 100 pieces [cos11351], kidney dish, plastic [cos11355], disinfectant spray, 250 ml [cos11352], disposable lancets, sterile, box 200 pieces [cos11652], plaster, box 420 pieces [cos11356], swabs, 1000 pieces [cos11353], MEDI-box (lancets collector) [cos11930]
10.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
11.	1	cos14970-01	h/p/cosmos satellite PC med - with potential isolation transformer according to IEC 60601-1, potential equalization pin, Windows® OS incl. 19" LCD monitor, keyboard, mouse, DVD-ROM writer, colour laser printer and PC-trolley with 4 casters
12.	2	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
13.	2	cos00097010035	interface cable RS 232, 10 m (32 ft 9.70")
14.	1	cos00098010025	2nd interface RS 232 com2 with coscom v3
15.	1	cos16487	3rd interface RS 232 com3 with coscom v3, baudrate 115.200 bps
16.	3	cos60098010004	pre installation and configuration of satellite PC incl. software solutions at h/p/cosmos factory
17.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 170 x 65 cm (safety arch)
18.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
19.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
20.	1	cos14316	1 full day workshop treadmill applications in performance testing and training
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			system price h/p/cosmos solution for performance diagnostics basic: please ask your dealer for a quotation

Please refer to the information about product specifications which can be found on pages 138 ... 149.



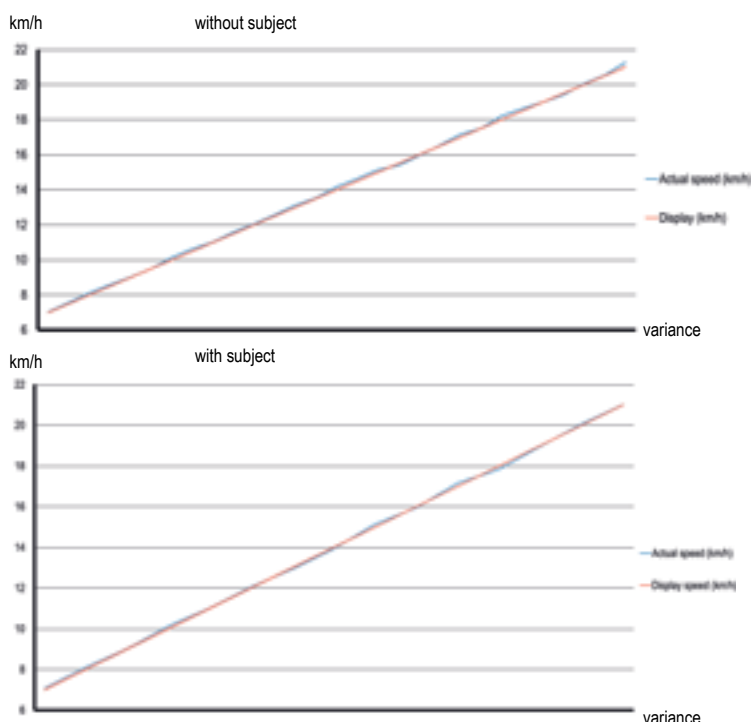
## recommended configuration performance diagnostics science h/p/cosmos venus® med

pos.	qty.	order number	product description
1.	1	cos30005-01va05	<b>running machine h/p/cosmos venus® med 200/75</b> running surface 200 x 75 cm, speed 0 ... 40 km/h, elevation -35 ... +35 %, drive motor 11 kW with high-performance 3-phase power supply, 2 interface ports com1/ com2 for PC-, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para graphics® for device control and visualisation
2.	1	cos101277va02	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos100923	variable elevation speed (switch for changing the velocity of elevation amendment from slower to faster)
4.	1	cos14190va02	handrails 2/3 detachable long / short / rolled - for perfect sagittal view during video analysis
5.	1	cos10171	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
6.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
7.	1	cos10670-01	spare rope for safety arch
8.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
9.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
10.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, kidney dish, disinfectant spray, disposable lancets, MEDI-box, etc.
11.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
12.	1	cos14970-01	h/p/cosmos satellite PC med - with potential isolation transformer according to IEC 60601-1, potential equalization pin, Windows® OS incl. 19" LCD monitor, keyboard, mouse, DVD-ROM writer, colour laser printer and PC-trolley with 4 casters
13.	2	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
14.	1	cos00097010035	interface cable RS 232, 10 m (32 ft 9.70")
15.	2	cos12769-01	interface adapter / converter USB / RS 232
16.	3	cos60098010004	pre installation and configuration of satellite PC incl. software solutions at h/p/cosmos factory
17.	1	cos14091	packing in wooden crate, treadmill partially assembled, running surface 200 x 75 cm (safety arch)
18.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
19.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
20.	1	cos14316	1 full day workshop treadmill applications in performance testing and training total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries) system price h/p/cosmos solution for performance diagnostics science: please ask your dealer for a quotation

Please refer to the information about product specifications which can be found on pages 138 ... 149.



## speed accuracy test



In this chart the speed accuracy of the h/p/cosmos pulsar 3p is measured. In the first column you see the speed of the treadmill which is shown on the display without a subject running on the treadmill. Second column shows the actual speed, the h/p/cosmos pulsar 3p is running. Depending on this the difference and the percentage of the difference is shown in the next to column. This data is compared to the actual speed of the treadmill with a subject running on it.

weight of the subject: 70 kg

measurement methodology: using 60 frame/sec high speed camera they calculated its speed by measuring time from the frame of number for one rotation of the belt.

date of the measurement: December 12, 2012

treadmill model: h/p/cosmos pulsar 3p with special speed 0 ... 25 km/h, treadmill serial number: cos30004va04-0060

### speed measurement without subject

display (km/h)	actual speed (km/h)	difference (km/h)	difference %
7.0	7.03	0.03	0.41 %
7.5	7.57	0.07	0.90 %
8.0	8.12	0.12	1.45 %
8.5	8.58	0.08	0.99 %
9.0	9.02	0.02	0.23 %
9.5	9.50	0.00	- 0.02 %
10.0	10.14	0.14	1.38 %
10.5	10.63	0.13	1.24 %
11.0	11.02	0.02	0.14 %
11.5	11.59	0.09	0.78 %
12.0	12.06	0.06	0.49 %
12.5	12.57	0.07	0.54 %
13.0	13.12	0.12	0.94 %
13.5	13.53	0.03	0.20 %
14.0	14.17	0.17	1.22 %
14.5	14.63	0.13	0.90 %
15.0	15.14	0.14	0.90 %
15.5	15.39	- 0.11	- 0.74 %
16.0	15.95	- 0.05	- 0.34 %
16.5	16.53	0.03	0.18 %
17.0	17.16	0.16	0.93 %
17.5	17.50	0.00	0.00 %
18.0	18.21	0.21	1.15 %
18.5	18.62	0.12	0.63 %
19.0	19.00	0.00	- 0.02 %
19.5	19.42	- 0.08	- 0.42 %
20.0	20.06	0.06	0.29 %
20.5	20.53	0.03	0.14 %
21.0	21.26	0.26	1.24 %
average deviation:		0.07 km/h	0.54 %

### speed measurement with subject 70kg

display (km/h)	actual speed (km/h)	difference (km/h)	difference %
7.0	7.09	0.09	1.22 %
7.5			
8.0	8.12	0.12	1.45 %
8.5			
9.0	9.02	0.02	
9.5			
10.0	10.14	0.14	1.38 %
10.5			
11.0	11.02	0.02	0.14 %
11.5			
12.0	12.06	0.06	0.49 %
12.5			
13.0	12.94	- 0.06	- 0.47 %
13.5			
14.0	13.94	0.14	0.90 %
14.5			
15.0	15.14	0.14	0.90 %
15.5			
16.0	15.95	- 0.05	- 0.34 %
16.5			
17.0	17.16	0.16	0.93 %
17.5			
18.0	17.84	- 0.16	- 0.91 %
18.5			
19.0	18.97	- 0.03	- 0.15 %
19.5			
20.0	20.06	0.06	0.29 %
20.5			
21.0	21.01	0.01	0.03 %
average deviation:		0.04 km/h	0.42 %

The treadmill standard ISO 20957-6 / EN957-6 requires an accuracy of at least 5% for professional or medical treadmills. This chart shows that the speed accuracy of the h/p/cosmos treadmills is above the required standards.

# cycling wheelchair

## sport-specific testing and optimisation



cycling  
details & videos



wheelchair sport  
details & videos



inline skating  
details & videos



# hail & Skiing

running, cycling, wheelchair & skiing

## running, cycling, wheelchair & skiing

- safety for the subject – through a safety arch with fall stop and wheelchair stabiliser
- safety during use – through simple inputs and numerous control possibilities
- secure documentation – through the coscom port and automatic documentation



# cycling

## sport-specific testing and optimisation



- performance analysis of wheelchair athletes on a treadmill?
- ride safely on a bike on a treadmill – even if you fall?
- perfect documentation – but how?

### the correct choice

The choice of the right treadmill ergometer for cycling, wheelchairs, hand-bikes and ski rollers is a very demanding one. Not only performance diagnostics but also sport-specific training needs to be conducted safely. With a view to the capital costs and the often limited space in a sports laboratory a multifunctional treadmill that can also be used by runners should be selected.

Based on the h/p/cosmos saturn® there are several hundred treadmill solutions worldwide for running, cycling, wheelchairs, hand-bikes and skiing in use. The customers for such systems are many well-known universities, Olympic training centres, biomechanics and performance diagnostic institutes, training centres, football clubs, clinics as well as sport, rehabilitation and research centres. Based on this experience most of these treadmill solutions are medically approved and are tailored to their specific requirements.



### cycling

Whoever has had the privilege to train on a treadmill designed for cycling will know the vast difference to a normal ergometer and will not want to miss the possibility for training and testing.

Cyclists achieve some of the highest speeds of all sports, 80 km/h (~ 50 mph) and more in the top class. A treadmill that is to be used in this environment needs to offer enough space and have extremely fast acceleration – also allowing quick riding out-of saddle. It is crucial that the running belt has a very low rolling resistance for the wheels. The h/p/cosmos saturn® 300/100r with a special speed of 80 km/h allows both physiological performance and biomechanical analysis – under optimal and repeatable conditions. The running belt has a very low rolling resistance for the wheels.



### wheelchairs and hand-bikes

There are many different types and widths of wheelchairs: the classic wheelchair, hand-bike and racing wheelchair or specially built chairs for wheelchair rugby or basketball. Top athletes can achieve very high speeds. A treadmill for this application must offer enough width – at least 100 cm, 125 cm is better. In addition it needs to accommodate various different tyre and wheelchair frame designs and must also run fast enough.

The h/p/cosmos saturn® 300/125r with its deck length of 300 cm and 125 cm width fulfills nearly all requirements. The safety arch with chest harness and fall stop together with the wheelchair stabiliser with integrated „range limiter“ ensure the safety and motivation of the athlete as well as ensuring correct tracking. The special speed of 60 km/h (37.28 mph) ensures that even top athletes can test themselves to the limit.



### cross country skiing

For classical style cross-country skiing not only the length and width of the running belt but also the use ski poles is important. Therefore the running belt needs both optimum roll characteristics (low rolling resistance) and must be resistant to piercing by the sharp ski pole tips.

The h/p/cosmos saturn® 300/125rs meets these requirements enabling a standardised and repeatable diagnostics and first-class training possibility.

The h/p/cosmos saturn® 450/300rs offers the ideal system solution for in-line skating and cross-country skiing, particularly using the skating technique. With a running surface of 450 cm x 300 cm and a re-inforced very thick running belt it provides optimal diagnostics and perfect training opportunities in every season of the year.





## motivation and safety – for bikes and wheelchairs

A formula 1 driver can only go to his limits when he knows that his car and the track are as safe as can be. Without a safety cockpit, a special seat belt and helmet, he would hardly get the same performance or be able to push himself to his limits. It is similar for cross country skiers, wheelchair users and cyclists if they feel unsafe and are afraid of falling.

Training or testing at speeds of 40, 60 or even up to 80 km/h (49.71 mph) on a treadmill demand a healthy respect. An increased adrenalin level for the athlete and operating personnel is necessary for testing to the limits but nothing must go wrong.

The h/p/cosmos® safety arch prevents a fall in case of a mistake, loss of coordination or stumbling. The fall stop safety system stops the treadmill immediately and automatically by means of a quick-stop device. The strong safety rope prevents the subject from falling down onto the running belt. The wheelchair stabiliser keeps the wheelchair in the correct position and on track. With this sense of safety it's possible to test to the important and sometimes decisive level of exertion necessary for a precise diagnostics.

## compatible and future-safe

Particularly in the field of sports medicine, research and professional sports there is often the need to connect an number of systems to the treadmill such as an EMG, ECG, spirometer, blood pressure monitor, external printer, h/p/cosmos para graphics® for documentation, h/p/cosmos para analysis® for lactate diagnostics or possibly other software solutions such as h/p/cosmos para motion® for motion analysis or bio feedback.

Therefore most h/p/cosmos® treadmills offer an option of up to 4 PC interfaces. For the best level of compatibility and safety the coscom® v3 protocol is fully supported.

Under [www.coscom.org](http://www.coscom.org) you will find an impressive list of manufacturers and coscom® compatible devices, the free of charge coscom.dll v3 program library and the protocol description together with tips for implementation and download. A free treadmill simulator is temporarily provided for partners in order to support programmers during the implementation and testing of coscom®.





### with optimal movement to success

A treadmill is particularly suitable for bio-mechanical analysis. Which wheelchair drive ring gives the best acceleration? At what cadence does the athlete have the lowest energy consumption? How can the movements be optimised?

The design of the h/p/cosmos saturn® allows good visual access from all 4 sides. You can remove temporarily the rear 2/3 of the side handrails (optional extra) and the hand rail crossbar at the front for a completely unrestricted view during movement analysis.

### the future acknowledged – possibilities for future retrofitting

h/p/cosmos® treadmill systems are often in use for many years – for a large number of customers that's already over 20 years. Desires, needs and goals may change and develop over time.

The h/p/cosmos saturn® offers you a wide variety of options and expansion possibilities. For example many systems are multi use for movement analysis or coordination and technique training with unweighting which of course can also be retrofitted. Also for rehabilitation, functional training or speed training h/p/cosmos® offers you the ideal solution. Thanks to the integrated PC interfaces and the open coscom protocol standard there is a tremendous range of compatible software solutions available.





## recommended configuration performance diagnostics bike h/p/cosmos saturn® med 300/100r

pos.	qty.	order number	product description
1.	1	cos30011-01va06	<b>running machine h/p/cosmos saturn® med 300/100r</b> running surface 300 x 100 cm, speed range 0 ... 40 km/h, elevation - 27 ... + 27%, motor system 11 kW (15 HP), special running surface for cycling, wheelchair and handbike applications, external UserTerminal with TouchScreen, 2 interfaces COM 1 / COM 2 for PC, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® and h/p/cosmos para graphics® for control and visualisation
2.	1	cos101277	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos100923	variable elevation speed, to change the gradient angle slowly or fast
4.	1	cos00096110030va02	special speed 0 ... 80 km/h (49.71 mph / 22.22 m/sec)
5.	1	cos14192ral9007	handrails 2/3 detachable long / short / rolled - for perfect sagittal view during video analysis
6.	1	cos10172	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
7.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
8.	1	cos10670-01	spare rope for safety arch
9.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
10.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
11.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, kidney dish, disinfectant spray, disposable lancets, MEDI-box, etc.
12.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
13.	1	cos13476-01va02	DELL® laptop computer (specifications & details on request)
14.	1	cos13320-01	notebook holder for PC-monitor or laptop - mounted on external UserTerminal
15.	1	cos15580-01	h/p/cosmos satellite print 4 CO - printer rack including colour laser printer
16.	2	cos12769-01	interface adapter / converter USB / RS 232
17.	1	cos00097010035	interface connection cable RS 232, 10 m (32 ft 9.70")
18.	1	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
19.	1	cos14097	packing in wooden crate, treadmill partially assembled, running surface 300 x 100 cm (safety arch)
20.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
21.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
22.	1	cos14316	1 full day workshop treadmill applications in performance testing and training  total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries) system price h/p/cosmos solution for performance diagnostics basic: please ask your dealer for a quotation

Please refer to the information about product specifications which can be found on pages 138 ... 149.



## recommended configuration performance diagnostics wheelchair&handbike h/p/cosmos saturn® med 300/125r

pos.	qty.	order number	product description
1.	1	cos30012-01va03	<b>running machine h/p/cosmos saturn® med 300/125r</b> running surface 300 x 125 cm, speed range 0 ... 40 km/h, elevation - 27 ... + 27%, motor system 11 kW (15 HP), special running surface for cycling, wheelchair and handbike applications, external UserTerminal with TouchScreen, 2 interfaces COM 1 / COM 2 for PC, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® and h/p/cosmos para graphics® for control and visualisation
2.	1	cos101277	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos100923	variable elevation speed, to change the gradient angle slowly or fast
4.	1	cos00096110029va02	special speed 0 ... 60 km/h (37.28 mph / 16.67 m/sec)
5.	1	cos00096110031	wheelchair stabiliser for treadmill L: 3.0m
6.	1	cos14192ral9007	handrails 2/3 detachable long / short / rolled - for perfect sagittal view during video analysis
7.	1	cos10173	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
8.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
9.	1	cos10670-01	spare rope for safety arch
10.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
11.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
12.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, kidney dish, disinfectant spray, disposable lancets, MEDI-box, etc.
13.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
14.	1	cos13476-01	DELL® laptop computer (specifications & details on request)
15.	1	cos13320-01	notebook holder - mounted on external UserTerminal
16.	1	cos15580-01	h/p/cosmos satellite print 4 CO - printer rack including colour laser printer
17.	2	cos12769-01	interface adapter / converter USB / RS 232
18.	1	cos00097010035	interface connection cable RS 232, 10 m (32 ft 9.70")
19.	1	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
20.	1	cos12575	packing in wooden crate, treadmill partially assembled, running surface 300 x 125 cm (safety arch)
21.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
22.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
23.	1	cos14316	1 full day workshop treadmill applications in performance testing and training  total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries) system price h/p/cosmos solution for performance diagnostics basic: please ask your dealer for a quotation

Please refer to the information about product specifications which can be found on pages 138 ... 149.





## recommended configuration performance diagnostics cross country ski classic h/p/cosmos saturn® med 300/125r

pos.	qty.	order number	product description
1.	1	cos30012-01va03	<b>unning machine h/p/cosmos saturn® med 300/125r</b> running surface 300 x 125 cm, speed range 0 ... 40 km/h, elevation - 27 ... + 27%, motor system 11 kW (15 HP), special running surface for cycling, wheelchair and handbike applications, external UserTerminal with TouchScreen, 2 interfaces COM 1 / COM 2 for PC, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® and h/p/cosmos para graphics® for control and visualisation
2.	1	cos101277	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos100923	variable elevation speed, to change the gradient angle slowly or fast
4.	1	cos00096110029va02	special speed 0 ... 60 km/h (37.28 mph / 16.67 m/sec)
5.	1	cos12473	re-inforced running belt made of thick rubber approx. 5mm thick, green, for ski-poles, spikes, bikes, with low rolling resistance
6.	1	cos14192ral9007	handrails 2/3 detachable long / short / rolled - for perfect sagittal view during video analysis
7.	1	cos10172	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
8.	3	cos14903-03-S/ML	chest belt system for safety arch harness Small/Medium/Large
9.	1	cos10670-01	spare rope for safety arch
10.	1	cos13476-01va02	DELL® laptop computer (specifications & details on request)
11.	1	cos13320-01	notebook holder - mounted on external UserTerminal
12.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
13.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
14.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, kidney dish, disinfectant spray, disposable lancets, MEDI-box, etc.
15.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
16.	1	cos15580-01	h/p/cosmos® satellite print 4 CO h/p/cosmos printer rack incl. laser printer
17.	2	cos12769-01	interface adapter / converter USB / RS 232
18.	1	cos00097010035	interface connection cable RS 232, 10 m (32 ft 9.70")
19.	1	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
20.	1	cos12575	packing in wooden crate, treadmill partially assembled, running surface 300 x 125 cm (safety arch)
21.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
22.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
23.	1	cos14316	1 full day workshop treadmill applications in performance testing and training  total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)

**system price solution for performance diagnostics cross country ski classic: please ask your dealer for a quotation**

Please refer to the information about product specifications which can be found on pages 138 ... 149.



## recommended configuration performance diagnostics cross country ski skating h/p/cosmos saturn® med 450/300rs

pos.	qty.	order number	product description
1.	1	cos30013-01va03	<b>running machine h/p/cosmos saturn® med 450/300 rs</b> running surface 450 x 300 cm, speed range 0 ... 40 km/h, elevation -5...25 % (-2.8...14.0°), motor system 30 kW (40.8 HP), re-inforced very thick rubber running belt also for use with ski rollers, ski poles, spike shoes, cycles. external UserTerminal with TouchScreen, 2 interfaces COM 1 / COM 2 for PC, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® for control and visualisation
2.	1	cos101277va02	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos100600	electric access ramp, allows almost even access from the floor onto the belt of the running deck (running surface).
4.	1	cos00097010033	stage floor / walkway (up to 80 m²) around the treadmill, required if treadmill will be placed in a pit
5.	1	cos14192ral9007	handrails 2/3 detachable long / short / rolled - for perfect sagittal view during video analysis
6.	1	cos14071	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
7.	2	cos14903-03-L	chest belt system, size L (colour code yellow, for chest measurement approx. 105 ... 135 cm) for safety arch harness
8.	2	cos14903-03-M	chest belt system, size M (colour code blue, for chest measurement approx. 85 ... 115 cm) for safety arch harness
9.	2	cos14903-03-S	chest belt system, size S (colour code red, for chest measurement approx. 65 ... 95 cm) for safety arch harness
10.	1	cos10670-01	spare rope for safety arch
11.	1	cos13476-01va02	DELL® laptop computer (specifications & details on request)
12.	1	cos13320-01	notebook holder - mounted on external UserTerminal
13.	1	cos14825-01	h/p/cosmos sirius® lactate test meter measurement within 10 seconds, storage of 250 values, interface for the PC (optional)
14.	1	cos14827-01	h/p/cosmos sirius® lactate test strips, box with 72 test strips
15.	1	cos11657	startset consumables „lactate“ - incl. latex gloves, kidney dish, disinfectant spray, disposable lancets, MEDI-box, etc.
16.	1	cos100668v4pro	software h/p/cosmos para analysis® „professional“ evaluation software for performance diagnostics and training control
17.	1	cos14970-01	h/p/cosmos satellite PC med - with potential isolation transformer according to IEC 60601-1, potential equalization pin, Windows® OS incl. 19" LCD monitor, keyboard, mouse, DVD-ROM writer, colour laser printer and PC-trolley with 4 casters
18.	3	cos60098010004	pre installation and configuration of satellite PC incl. software solutions at h/p/cosmos factory
19.	3	cos12769-01	interface adapter / converter USB / RS 232
20.	1	cos00097010035	interface connection cable RS 232, 10 m (32 ft 9.70")
21.	2	cos10223	potential equalisation cable 5 meters / 16 ft 4.85" (necessary in medical used rooms and patient environment)
22.	1	on request	packing in wooden crates / containers, treadmill partially assembled, running surface 450 x 300 cm (safety arch)
23.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
24.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
25.	1	cos14316	1 full day workshop treadmill applications in performance testing and training
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)

system price solution for performance diagnostics cross country ski skating: please ask h/p/cosmos and your dealer for a quotation

# gait and moti

identify, analyse and document movement problems



motion analysis  
details & videos





## gait- and motion analysis

- unrestricted view with the right handrail design
- complete analysis with 2 cameras through reverse belt rotation
- optimised process through camera stands with integrated lighting, calibration boards and middle marking of the running belt



- movement analysis for optimisation of training?
- the ideal equipment – for complete motion analysis?
- handrail always in the way – what can I do?

#### good results – well documented

A static analysis in standing, sitting or lying down is one thing. An analysis of the dynamics is something else. The analysis of the movement is ideally suited to detect motion related problems and solve them. Of course training results, therapeutic or other interventions need to be documented. Here motion analysis places many demands on a treadmill system.

h/p/cosmos® offers an ideal solution for all applications with its diverse range of treadmill models, different handrails, middle marking, reverse belt rotation, safety arch with fall stop, various measurement possibilities, hardware and software.



#### an ideal solution for everybody

The application of motion analysis is very diverse – from running shoe advice, insoles in orthopaedic technology to therapy and progress control in rehabilitation up to optimisation of performance orientated running techniques, scientific and industrial research.

nt problems



h/p/cosmos mercury® med



h/p/cosmos quasar® med

Therefore h/p/cosmos® offers a wide range of system solutions:

### standard motion analysis

The h/p/cosmos mercury® med, approved for medical use, with 2 cameras, safety arch and reverse belt rotation is the perfect system solution for therapeutic, rehabilitative or orthopaedic applications.

### motion analysis professional

h/p/cosmos quasar® treadmill offers larger more comfortable running surface on which taller subjects can also run using their full stride length.

As an alternative the larger h/p/cosmos pulsar® 3p, h/p/cosmos venus® and h/p/cosmos saturn® models can also be used in combination with additional options and software for motion analysis. For high performance applications a 3-phased powered treadmill like the h/p/cosmos pulsar 3p or bigger is highly recommended.

In addition we also offer the h/p/cosmos gaitway® treadmill solution with integrated force plates (force sensors) for measuring ground reaction forces and a number of time and force related parameters particularly for professional sports, rehabilitation, clinical and biomechanical research.

Another advanced and sophisticated system for biomechanic applications is the zebris® FDM-system based on various h/p/cosmos treadmill models with integrated capacitive sensors. This allows measurement of pressure and/or force distribution and provides comprehensive gait analysis data in possible combination with video and optional EMG. For 3D movement analysis we offer individually tailored solutions with an unrestricted view of the runner on request.





Synchronisation and comparison of videos running barefoot or with different running shoes. The treadmill parameters are recorded and automatically correlated in the para motion® database through the coscom® protocol.

## detachable handrails – the right choice

When choosing the handrails we are confronted by two conflicting needs: for the best analysis in the sagittal plane it is better when there is no handrail in front of the camera - because this is usually at the level of the hip and complicates the analysis. On the other hand limited ambulatory users want the support and security of long handrails at least to get started.

Particularly for this requirement in rehabilitative motion analysis we offer detachable handrails.

These can be used as long handrails for therapeutic applications. At the same time you can remove the rear part of the handrails for an unrestricted sagittal view of the runner during a motion analysis assessment.

## h/p/cosmos para motion® – the quick and easy solution for documented analysis

A software solution for motion analysis must offer the option of multiple measurements, analysis and documentation but it also needs to be user friendly at the same time.

The h/p/cosmos para motion® software solution offers you full support to help you with quick and meaningful analysis, discussions with users and athletes and control over the agreed follow-up actions. You can store your own results in user definable reports that allow quick and easy analysis of the therapeutic results. In addition the integrated control of the treadmill gives you access at all times to many of the relevant parameters.

h/p/cosmos para motion® is not medical software according to EN 62304 and doesn't provide any clinical data or therapeutic recommendations, however it can be a very useful tool to support the control, recording and documentation. Particularly valuable is the automatic correlation of patient data and video recordings in the database together with the integrated documentation of speed and elevation in the video image.





### identify crossover – thanks to middle marking

During shots in frontal plane it is important to determine how far apart the feet are and their relation to the centre of gravity. An orientation line is useful for the objective measurements. However the line must not be too conspicuous or the runner may be irritated or influenced to “walk the line”.

The narrow and inconspicuous milled centre marking in the running belt serves a simple guide during frontal shots allowing an objective evaluation of “crossover”.

### combined lighting and height adjustment: the camera stands

Optimal lighting is essential for an accurate analysis. It is particularly important that as much light as possible comes from the direction of the camera and that the camera is always at the same height as the joint that is to be analysed – in order to prevent perspective distortion. Analysis of the ankle needs to be conducted just above the running surface and that of the hip at the corresponding height.

The h/p/cosmos® camera stand combines important needs. Lighting is provided by the lighting system which is included in the camera stand set. So the positions of the light source and the camera are almost identical.

The height adjustable camera mount allows simple and quick height changes without the need of re-calibration. So this system combination has a number of clear advantages compared to conventional tripod camera stands.

An additional special ceiling lighting set provides for enough lighting from above which is of particular value for precise movement analysis.





## clearly marked – with ruler and pen

The analysis of certain problems is easier if the skin is marked with the corresponding points and guidelines. Not all marker pens are usable as they may cause skin irritation. If you want to mark lines on the skin you will need a flexible ruler that adjusts to the contours of the body surface. It is these details that often determine the quality, accuracy and success or failure of the motion analysis.

The skin marker is especially suited and approved for marking human skin. With the flexible ruler it is even possible to mark bulging muscles quickly and clearly – for ideal analytical results.

## movement analysis without boundaries: foot pressure measurements, integrated force plates and automatic marker tracking

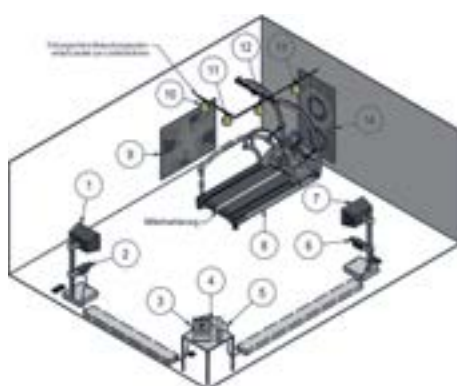
Next to video based movement analysis there are further possibilities to identify biomechanical problems and document therapeutic progress.

In cooperation with Zebris medical GmbH h/p/cosmos® offers a treadmill with an integrated pressure distribution sensor running deck. Furthermore the h/p/cosmos gaitway® treadmill, with integrated force plates, allows the measurement of the vertical ground reaction forces. Both systems can of course be combined with a video analysis system.

If you work with 3D marker based movement analysis with automatic tracking we are pleased to offer the ideal treadmill with an uninterrupted view of the runner.







### comprehensive analysis with 2 cameras

Normally two cameras are used for movement analysis. One from the rear for the dorsal plane and one from the side of the treadmill for the sagittal plane. However it is also desirable for views from the front as well as from the opposite side.

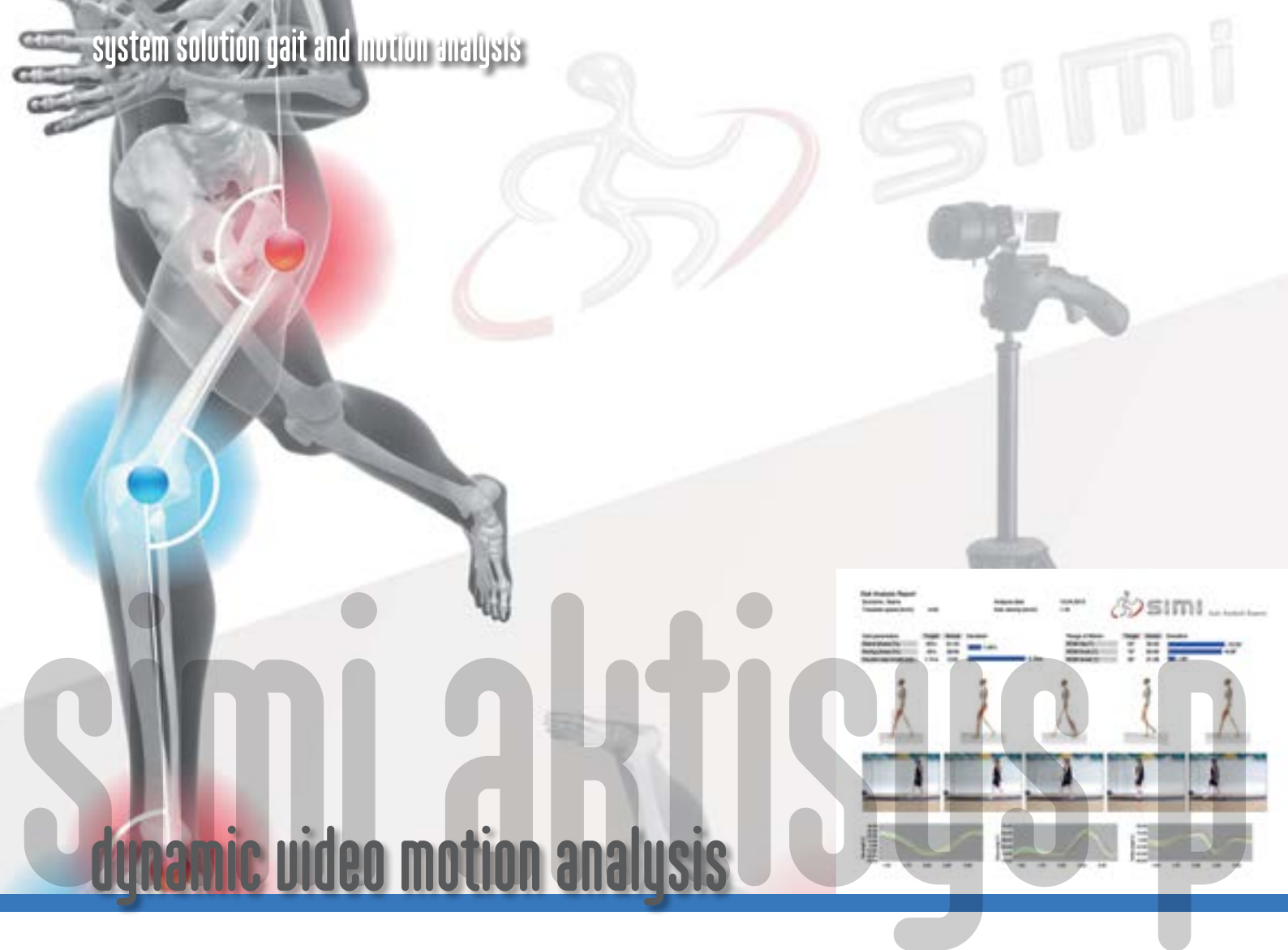
This is exactly what reverse belt rotation allows. The subject turns round on the treadmill and runs in the opposite direction. The safety arch with fall-stop means that runner is always safe despite the lack of an unrestricted safety area behind the running surface and they can run without fear. Through this feature you can use a 2 camera set up in a restricted space to carry out a full analysis from all 4 sides. If required and if both, space and budget allow, the h/p/cosmos para motion® software offers an alternative with up to 4 cameras running concurrently so that videos from all 4 sides can be made at the same time.



### technology, knowledge and experience from a single source

For the successful introduction and implementation of motion analysis in a therapeutic situation it's not just the ideal treadmill solution that is important but the knowledge of the use of the system in the daily routine.

To this end we offer not only the hard- and software but also the installation and instruction in the operation of the system in cooperation with external specialists with whom we also offer seminars and courses. This means you can work successfully from the start. Dates and details can be found on our website at [www.h-p-cosmos.com](http://www.h-p-cosmos.com). For individually tailored courses on your premises quotations are available on request.



# simi aktisys para motion

## dynamic video motion analysis



### what is simi® aktisys para motion® ?

Simi® Aktisys para motion® is the fastest and easiest way for dynamic video motion analysis. Only 3 clicks are necessary for your movement analysis. Beside fast and easy analysis our system offers direct biofeedback based on colored LED-markers.

#### Benefits

- display and documentation of heart rate, treadmill speed & treadmill elevation
- recognise and identify markers in real-time on video recordings
- real-time angle display
- fast and easy dynamic motion analysis
- biofeedback and live monitoring
- easy, efficient and economic analysis
- optimized for clinical applications
- immediate results

#### Applications

- gait and running analysis
- jump analysis
- bike-fitting
- adjustment of prosthetics
- and many more...

#### Features

- software automatically identifies colored LED-markers on video and live stream
- use our predefined templates or create your own measurement protocols
- measure angels, rotations and distances
- instant data output on live- stream for biofeedback
- use high- speed cameras
- automatic reports





## easy, fast and efficient biofeedback

### Enhance self-awareness

Simi® Aktisys para motion® offers trainers, physical therapists or orthopedic doctors quick and precise analysis. Athletes or patients take benefits from the integrated real-time biofeedback which increases self-awareness and success.

### Specific therapy

Specific treatment requires biomechanical information and feedback. This allows a successful therapy. Let the patients see their progress. Create your unique methodology and optimize your treatment with technology.

Simi® Aktisys para motion® is developed for the needs of health and sports professionals. It offers full automatic movement analysis for practical requirements of therapists, personal trainers, strength and conditioning specialists, or orthopedic doctors. The user-friendly and automatic design saves time and is highly efficient.

## mobile motion

Simi® Aktisys para motion® is a compact and portable system, created for different settings and flexible applications of practitioners.

## biofeedback

### For trainers or therapists

- illustration of a functional motion analysis
- motion monitoring with software

### For athletes or patients

- optimized functional training system
- real-time motion feedback
- enhanced learning

## fields of application

- physical therapy
- orthopedics
- personal training
- sport performance analysis
- strength and conditioning
- protocol for gait and running analysis





## recommended configuration gait and motion analysis professional h/p/cosmos quasar® med

pos.	qty.	order number	product description
1.	1	cos30003va20	<b>running machine h/p/cosmos quasar® med</b> running surface 170 x 65 cm, speed range 0 ... 25 km/h, elevation 0 ... 28%, motor system 3.3 kW, interface port com1 for PC, ECG, EMG, incl. PC software h/p/cosmos para control for device control and monitoring. important: for high performance applications please use the 3-phase powered h/p/cosmos pulsar 3p running machine!
2.	1	cos100138va08	special colour: deep black anti-reflective coating
3.	1	cos101277va01	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
4.	1	cos15351-01	handrail short „motion analysis“ left hand side 170/65 - for good sagittal view during video analysis / motion capturing
5.	1	cos10181-01	reverse belt rotation (downhill) - for video recording from all sides and simulating downhill
6.	1	cos14168va01	centre mark of running belt
7.	1	cos10170va01	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
8.	3	cos14903-03-S/ML	chest belt system for safety arch harness Small/Medium/Large
9.	1	cos10670-01	spare rope for safety arch
10.	1	cos00097010035	interface connection cable RS 232 10 m
11.	1	cos14151	h/p/cosmos calibration chart „frontal“ for camera adjustment
12.	1	cos14152	h/p/cosmos calibration chart „sagittal“ for camera adjustment
13.	2	cos14239	camera- / spotlight-post „frontal“, 150 cm, adjustable with scaling, incl. spotlight
14.	1	cos100743	ceiling light system for motion analysis incl. conducting rail and 4 pieces 150 W CDM-TD
15.	2	cos101949	High speed camera 36 p/s LAN
16.	2	cos101951	Objective 8mm for high speed camera
17.	1	cos15508v6sta	software h/p/cosmos para motion® „standard“ for analysis and evaluation of the videos with up to 2 cameras, incl. treadmill control-software, analysis schemata, individual report functions, etc. ALTERNATIVE: cos15508v5pro para motion® professional (up to 4 HDV camcorders)
18.	1	cos14970-01	h/p/cosmos satellite PC med - with potential isolation transformer according to IEC 60601-1, potential equalization pin, Windows® OS incl. 19" LCD Monitor, keyboard, mouse, DVD-ROM writer, colour laser printer and PC-trolley with 4 casters
19.	3	cos60098010004	pre installation and configuration of satellite PC incl. software solutions at h/p/cosmos factory
20.	1	cos16425	steel ruler, flexible, for contour-accurate marking on the skin
21.	1	cos14771	skin marker, water resistant, especially suited for eudermic marking
22.	1	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
23.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 170 x 65 cm (safety arch)
24.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
25.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
26.	1	cos14318	1 full day workshop treadmill applications in gait and motion analysis total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)

**system price h/p/cosmos solution for gait and motion analysis: please ask your dealer for a quotation**

Various treadmill models and software solutions can be combined. Please refer to the information about product specifications which can be found on pages 138 ... 149.



## recommended configuration gait and motion analysis standard h/p/cosmos mercury® med

pos.	qty.	order number	product description
1.	1	cos30000va08	<b>running machine h/p/cosmos mercury® med</b> running surface 150 x 50 cm, speed 0 ... 22 km/h, elevation 0 ... 25 %, drive motor 3.3 kW interface port com1 for PC, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® for device control and monitoring. important: for high performance applications please use a 3-phase powered h/p/cosmos running machine, for example pulsar® 3p!
2.	1	cos100138	special colour: deep black anti-reflective coating
3.	1	cos101294	handrail rolled short 1 pillar 150/50 - for good sagittal view during video analysis / motion capturing
4.	1	cos00098100045-01	reverse belt rotation (downhill) - for video recording from all sides and simulating downhill
5.	1	cos14288va01	centre mark of running belt
6.	1	cos10079va01	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
7.	3	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
8.	1	cos10670-01	spare rope for safety arch
9.	1	cos00097010035	interface connection cable RS 232 10 m
10.	1	cos14151	h/p/cosmos calibration chart „frontal“ for camera adjustment
11.	1	cos14152	h/p/cosmos calibration chart „sagittal“ for camera adjustment
12.		cos102079	SIMI® Aktisys 2D para motion® package solution package solution for dynamic motion analysis with colour LED markers, incl. LAN camera, hard & software, notebook
13.	1	cos10223	potential equalisation cable 5 meters / 16ft 4.85" (necessary in medical used rooms and patient environment)
14.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 170 x 65 cm (safety arch)
15.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
16.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
17.	1	cos14318	1 full day workshop treadmill applications in gait and motion analysis  total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos solution for gait and motion analysis standard: please ask your dealer for a quotation</b>

Please refer to the information about product specifications which can be found on pages 138 ... 149.

The SIMI® Aktisys 2D para motion® software with notebook, LED markers and accessories is combineable with all h/p/cosmos treadmill models.

Optionally a 3D motion capture system is available on request.

# speed & spri

faster through specific training



speed training  
details & videos





## speed-, functional & sprint training

- supraliminal stimulation with optimal acceleration and speed of up to 45 km/h (~ 28 mph)
- safe training thanks to the safety arch, wide running surface and short handrails
- ideal knee lift thanks to the special crossbar handrail and 25% inclination

# speed training

## faster through specific training

- speed training on a treadmill?
- improved knee lift and better tensile behaviour?
- safer sprints and over-speed training on a treadmill – but how?

### performance for more speed

In nearly all performance sports speed, agility and elasticity have become more important in recent years. The faster athletes have a definite advantage. A treadmill system can make a crucial improvement to speed training – subject to certain essential requirements and the application of the latest methodology.

For sports such as American football, rugby, football or handball speeds of up to 40 km/h and more are necessary. These speeds need to be reached on a treadmill with athletes who sometimes weigh more than 100 kg (220 lbs). For that a treadmill needs power apart from anything else. Comparable with industrial machinery or electric ovens and many other types of equipment the standard 230 Volt / 16 Amp power supply doesn't provide enough power and a 3 phase supply with 3 x 400 Volt is necessary. This avoids unwanted speed reduction or even automatic shut downs due to overload.

Speeds of 40 km/h (optionally 45 km/h / ~ 28 mph) and programmable acceleration levels together with many other functions and design details make the h/p/cosmos pulsar® 3p with its 3 phase power supply unique, particularly for speed training. The drive system allows even heavy subjects to reach speeds of over 40 km/h within a few seconds and thus creates the ideal conditions for effective speed training. But this has to be approached carefully. Firstly the 100% performance limit needs to be established so that the training stimulus can be set to between 101 and 105%. Additionally unweighting through a body weight support and vest system or holding on to the handrails may be used.

Overloading can cause negative training results or even injury and must be avoided at all costs. Know how of the correct systematic and meticulous documentation is essential. h/p/cosmos® offers various expandable configurations of a SpeedLab®. We support you not just in the selection of the hardware but also in the methodology, analysis and documentation with the support from experts from the fields of speed training, flexibility training and functional training.



### only safe training can be effective!

A formula 1 driver can only drive on the limit when he knows that both his car and the track are as safe as possible. Without the safety cockpit and helmet it is unlikely that he would reach the same level of performance. It's similar for speed training. A subject who feels insecure and is worried that he may fall will not train to the limit and certainly won't train over the threshold. It would also be irresponsible for the trainers and diagnosticians to expose an athlete to the dangers of a fall at high speeds since under maximum demand on the 100% performance limit lack of coordination or even stumbling may occur.

Therefore h/p/cosmos® offers a complete package of safety measures for speed training. The safety arch with chest belt and harness not only prevents from falling in case of stumbling or fatigue, but at the same time also brings the running belt automatically to a complete stop through the quick-stop system. The solid steel foot board on the left hand side has been widened for speed training and has both an anti-slip surface and clear hazard markings. This allows the subject to jump on and off from the treadmill safely, if necessary. In addition the left hand handrail has been shortened to prevent impact injuries to the hip and a hand grip has been added "just where you need it". Often the treadmill will be jumped on to first when it is running at 36 km/h then accelerated within a few seconds to 40 km/h or more. The right ergonomic design and methodology is necessary to achieve the best results. The athletes can therefore train safely up to their individual limits. The shortened handrail also serves for unrestricted visual access during motion capturing and therefore makes up for a very ergonomic solution in this field of application.

### over-frequency training for more speed

Particularly during the introduction to higher speeds over-frequency training with unweighting is a good, new and high intensity training stimulus.

For effective over-frequency training h/p/cosmos® offers a range of possibilities. The special crossbar developed for speed training is the quickest and easiest form of unweighting and allows full concentration on the footwork for example during knee-lift exercise. In case that arms also need to be used during over-frequency training the h/p/cosmos airwalk® offers the ideal solution with its single point dynamic suspension giving total freedom of movement, even for side stepping, 360s and backwards running.





## improved knee lift through 25% elevation and the special removable crossbar handrail

A common training goal in speed training is the improved knee lift. To facilitate this, the treadmill must have sufficient elevation while allowing over-frequency training through unweighting. The specially developed speed training crossbar allows quick and easy unweighting. At the same time the curved design allows the subject ample leg room. Because of the elevation of up to 25% the subject is forced to actively bring his foot forwards and upwards. Thus the knee lift is enhanced and optimised. The 3 x 400 Volt 3 phase power supply is also necessary in this situation, many treadmills that only have a 230 Volt single phase power supply would shut down due to overload or be subject to unacceptable speed variations.

## the future included

The speed training treadmill solution based on the h/p/cosmos pulsar® 3p allows you many additional future possibilities. You want to run performance diagnostics as well? With up to 3 communication interface ports the pulsar® 3p will fulfill all your needs. In addition to diverse software solutions for performance diagnostics, spiroergometry or ergometry there are many other compatible hardware and software solutions. Have a look at the compatibility list at:

[www.coscom.org](http://www.coscom.org). pulsar® 3p, the right choice for now and the future.



## functional training with the new robowalk® expander

In daily training we often need to do one dimensional, one directional movements. But if we keep doing these only in our training, we would have deficits in other directions and dimensions. Rotational movements are dominant especially in all ball sports and other Olympic sports. We need to incorporate these in our training to fill up these gaps in our strength. For good results we need to move fast and safe in six degrees of freedom: forward/back, up/down, left/right, pitch, yaw and roll. Expander training is a very well established methodology to achieve this goal. For functional training combined with walking or running, gait correction, eccentric training and sports rehabilitation the pulsar® 3p can be retrofitted with the robowalk® expander-system.





In cooperation with the functional training expert **Lamar Lowery** a number of special training programs have been developed not only for athletes, but also for fitness sportsmen and for rehabilitation purpose. It has become an important element of the SpeedLab® methodology. Videos can be found on [www.youtube.com/hpcosmos](http://www.youtube.com/hpcosmos).

### documented success motivates!

Success motivates. Particularly when it is well documented. As soon as the training session has been completed the laser printer connected to the treadmill prints an informative report. This allows quick and simple documentation of the training results. When a digital record is necessary the h/p/cosmos para graphics® software allows storage of the training results on a PC. In addition the load and step profiles can be controlled from the PC and displayed or even exported in other data formats for further processing in a spread sheet.

### improved tensile behaviour

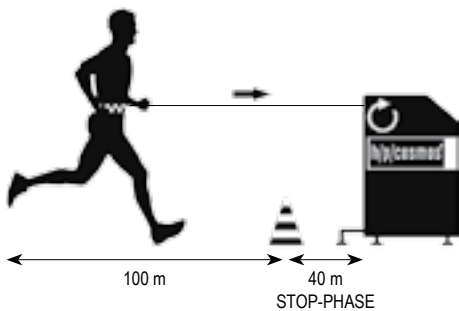
In addition to strengthening the knee lift, the treadmill is also well suited to improving the tensile behaviour. Results from the field indicate that this may offer significant improvements particularly for team sports. Since the treadmill belt pulls the foot back during over-frequency training, the subject must bring his foot quickly and actively forwards. Thus the tensile relations during functional movements are trained and improved. A current series of tests are being run to determine what role the new robowalk® expander system, originally developed for locomotion therapy for neurological patients, may also play for application in speed training and flexibility training for improved tensile behaviour. A number of applications in gait correction, eccentric training and sports rehabilitation are possible with the new robowalk® due to variably adjustable traction force, resistance force, vertical and horizontal angle of force. Not infrequently the methods and equipment used in athletic training and in neurological rehabilitation of stroke patients are the same, it's only the speeds and loads which are dramatically different.







# quicker through over-frequency training and tensile resi



- over-frequency training on a tartan track or grass – but how?
- tensile resistance and tensile support training with constant load over 100 meters?
- controlled and variable loads during sprints?
- constant loads under variable speeds?

## quicker through over-frequency (hyperspeed / overspeed) training

If you want to be fast you must train your speed. And if you want to sprint faster you need to train at higher speeds. Although that sounds simple it is difficult to implement in practice. Downhill running can't achieve these goals due to the changed biomechanics and is of course not portable and not variably adjustable. Pulling ropes and bungees have been used for many years but they cannot offer measurable and constant tensile support over distances of up to 100 meters.

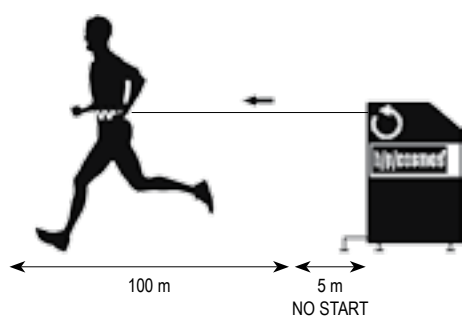
Exactly this problem is solved by the h/p/cosmos comet® 3p.

It has been developed specifically for sprint training with over-frequency. The special feature is the constant, accurate and electronically adjustable tensile support given to the athlete no matter how fast or far away he is. During the start phase especially with lower tensile support, an elastic rope connection is necessary and helps to keep the 100 m long and thin rope tight in the acceleration phase.

As a result the tensile support can be correctly adjusted for every athlete in every training phase by means of the potentiometer. The level of tensile support can be adjusted by the coach during the sprint with the potentiometer so that different phases can be accentuated. The 160 m long rope allows 100 m sprints with enough safety margin for the slow down phase at the end of the sprint. An integrated logic control prevents accidental shut down at full load and is an additional safety feature together with the emergency shut down switch. The h/p/cosmos comet® 3p is a must have for every SpeedLab®.



# stance training



## more explosive through tensile resistance training

For tensile resistance training there are a variety of training resources: dragging car tyres, weight plated or even small parachutes. However, as with tensile support, there is also a problem here: the tensile resistance is not constant and cannot be adjusted and many times the resistance can also result in an unpleasant jerk.

## improvement of the individual maximum speed

One of the major advantages of the h/p/cosmos comet® sprint trainer is, that the tensile resistance and or support is independent from the speed or running direction and can be adjusted easily with the electronic potentiometer.

This is possible due to a very dynamic and powerful servo drive. Even the very fast changing and „pulsating“ load situation during running movement require a fast and automatic adaption of the load during the ground contact due to the electronic regulation.

In contrast to a sledge which is pulled over the ground, the comet® does not know any kind of „jerking“ of the load.

The runner determines the speed and direction, not the equipment.

With up to 30 kg (294 Newton) tensile resistance the equipment can also be used effectively for top athletes. Higher levels of tensile resistance are available on request of up to 100 kg (980 N). The rope itself is approved for loads up to max. 100 kg.

Additionally changes to the tensile support (rope pulling the runner) and tensile resistance (runner pulls the rope) can be made manually.

The comet® combines well established training methodologies with sophisticated electronic equipment which is easily adjustable and offers reproducible results.

It opens the door to new methods and dimensions in the development of neuromuscular coordinative training in combination with power enhancement training.





## recommended configuration speed- & functional training h/p/cosmos pulsar® 3p

pos.	qty.	order number	product description
1.	1	cos30004va04	<b>running machine h/p/cosmos pulsar® 3p</b> running surface 190 x 65 cm, speed 0 ... 40 km/h, elevation -25 ... +25 %, drive motor 4.3 kW with high-performance 3-phase power supply, 2 interface ports com1/ com2 for PC-, ECG, ergospirometry-, blood pressure monitor system or printer - compatible to many systems worldwide, incl. PC software h/p/cosmos para control® and para graphics® for device control and visualisation
2.	1	cos101277va02	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos10159va01-va06	special speed 0 ... 45 km/h / 0 ... 28 mph / 0 ... 12.5 m/s
4.	1	cos15133-03	handrail crossbar „speed“, in front
5.	1	cos14763-01	handrail „speed“ shortened including additional ergonomic handhold, left hand side (surcharge)
6.	1	cos102187	footboard „speed“ right for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
7.	1	cos14764	footboard „speed“ left for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
8.	1	cos10170va01	safety arch with harness, fall stop, chest belt + autom. running belt stop. CE mark for 200 kg (440 lbs)
9.	5	cos14903-03-L	chest belt system, size L (colour code yellow, for chest measurement approx. 105 ... 135 cm) for safety arch harness
10.	5	cos14903-03-M	chest belt system, size M (colour code blue, for chest measurement approx. 85 ... 115 cm) for safety arch harness
11.	5	cos14903-03-S	chest belt system, size S (colour code red, for chest measurement approx. 65 ... 95 cm) for safety arch harness
12.	1	cos10670-01	spare rope for safety arch
13.	1	cos13476-01va02	DELL® laptop computer
14.	1	cos00097010035	interface connection cable RS 232 10 m (32 ft 9.70")
15.	2	cos12769-01	interface adapter / converter USB / RS 232
16.	1	cos16487	3rd interface RS 232 com3 with coscom v3, baudrate 115.200 bps
17.	1	cos30022-01va02	<b>h/p/cosmos robowalk® expander F (front)</b> , including 4 ropes, forces and angles of forces are adjustable vertically & horizontally
18.	1	cos30023-01va02	<b>h/p/cosmos robowalk® expander B (back)</b> , including 4 ropes, forces and angles of forces are adjustable vertically & horizontally
19.	5	cos101050-S	leg cuff thigh, size S (colour code red, for thigh circumference 250 ... 390 mm / 9.8" ... 15.4") for robowalk expander
20.	5	cos101050-M	leg cuff thigh, size M (colour code blue, for thigh circumference 360 ... 510 mm / 14.2" ... 20.1") for robowalk expander
21.	5	cos101050-L	leg cuff thigh, size L (colour code yellow, for thigh circumference 490 ... 750 mm / 19.3" ... 29.5") for robowalk expander
22.	5	cos101051-XS	leg cuff shank, size XS (for ankle circumference 140 ... 270 mm / 5.5" ... 10.6") for robowalk expander
23.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 190 x 65 cm (safety arch)
24.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
25.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
26.	1	cos101341	1 full day workshop treadmill applications in speed & agility
27.	2	cos101094	1 full day practical workshop robowalk & functional training, details in handling equipment & software
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos treadmill solution for speed training: please ask your dealer for a quotation</b>

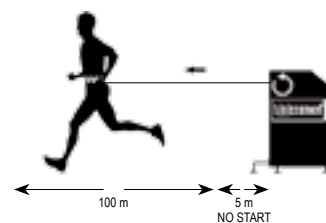
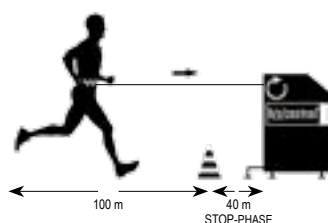
Please refer to the information about product specifications which can be found on pages 130 ... 140.



### recommended configuration sprint training h/p/cosmos comet® 3p

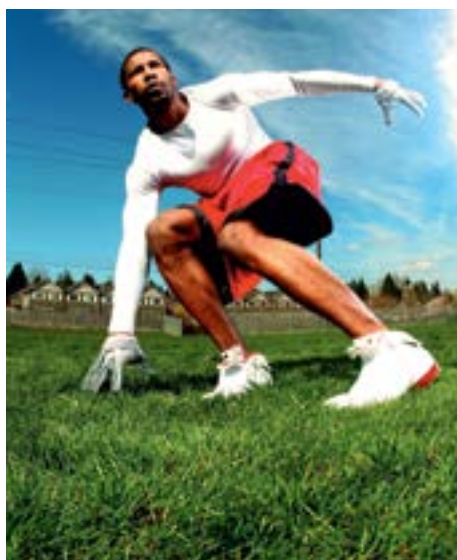
pos.	qty.	order number	product description
1.	1	cos30015va02	<b>sprint trainer h/p/cosmos comet® 3p</b>
2.	5	cos14665-01	waist belt, size S (colour code red, for waist circumference 650 ... 950 mm) for h/p/cosmos comet
3.	5	cos12571-01	waist belt, size M (colour code blue, for waist circumference 850 ... 1050 mm) for h/p/cosmos comet
4.	5	cos14666-01	waist belt, size L (colour code yellow, for waist circumference 1000 ... 1300 mm) for h/p/cosmos comet
5.	5	cos14903-03-L	chest belt system, size L (colour code yellow, for chest measurement approx. 105 ... 135 cm) for safety arch harness and comet
6.	5	cos14903-03-M	chest belt system, size M (colour code blue, for chest measurement approx. 85 ... 115 cm) for safety arch harness and comet
7.	5	cos14903-03-S	chest belt system, size S (colour code red, for chest measurement approx. 65 ... 95 cm) for safety arch harness and comet
8.	2	cos12518	spare rope 180m for sprint trainer h/p/cosmos comet®
9.	1	cos11376	packing comet on pallet + bubble wrap, device fully assembled
10.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
11.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
12.	1	cos101341	1 full day workshop treadmill applications in speed & agility
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos solution for sprint training: please ask your dealer for a quotation</b>

Please refer to the information about product specifications which can be found on page 137.



# dms

## dynamic movement skills



### what is dms?

Dynamic Movement Skills (DMS) is the cutting edge training methodology for children and adults that develops, refines and improves gross motor skills, coordination, agility and quickness.

Dynamic Movement Skills is a training and rehabilitation methodology that stimulates the Central Nervous System (CNS) and Peripheral Nervous System (PNS) which in turn helps to refine and develop neuromuscular efficiency and motor patterns.

The fully developed session plans improve gross motor skills, balance, rhythm, coordination speed and agility. These skills ultimately help to increase movement competence of core skills needed for running, functional movement and speed in sport, whilst increasing confidence in functional movement during movement re-patterning and neuromuscular rehabilitation after injury or surgery.

### there are three dms-training concepts

- Kids Movement
- Movement Re-patterning & Rehabilitation
- Speed & Plyometric Training System

### dms speed

DMS training improves neuromuscular efficiency and the range of speeds set by the Central Nervous System (CNS), this gives optimum reactive performance of any activity as it improves the speed of the muscle and the motor unit.

DMS improvements are made in:

- Increased explosiveness
- Injury Prevention
- Dynamic core
- Agility
- Ability to turn faster
- Dynamic Balance
- Movement-pattern efficiency
- Quickness - quick feet in all directions





### dms rehabilitation & movement re-patterning

With Dynamic Movement Skills we try to re-educate the movement patterns interrupted after injury or surgery. We do this by stimulating the neuromuscular pathways.

We have used the Movement Re-patterning Module with Adults with:

- Movement Dysfunction
- Neurological Issues
- Seniors – Fall Prevention

For:

- Movement & Motor Re-education after injury or surgery
- Muscle Activation & Recruitment
- Delay of onset of neuromuscular fatigue
- Neuromuscular Stimulation



### dms kids

We don't believe that every child develops movement in the same way, but we do believe that every child can develop to be the best they can be, if they are taught how. The Dynamic Movement Skills™ System prepares kids for competitive sport by providing the ability to develop their motor skills through the DMS programme irrespective of their level.

DMS Improvements are made in:

- Develops gross motor skills
- Improves Balance
- Improves co-ordination
- Better body control
- Improves concentration
- Functional Movement Re-Education

# fitness

intelligent training

---



## fitness

- cardio training - less often means more
- stable and low-maintenance
- train high performance to get to the top
- firefighter respiratory protection track





### cardio training – less often means more

Not achieving the targeted goals is one of the main reasons for losing motivation to exercise. Sportsmen most often put these goals too high.

This is the reason why beginners often stop training within the first 4 to 6 weeks – mostly forever. Many athletes never control their heart rate or pay attention to training guidelines. „I know my body“ is an often used phrase. But so many subjects do not even know, that they overexert themselves constantly.

But intelligent training starts with heart rate control. h/p/cosmos running machines go one step further. They control the exertion in accordance to the current heart rate. This can be performed through either speed or elevation, as desired. The target heart rate can be set individually. Over-exertion is avoided.

### stable and low-maintenance

The pluto® treadmill is virtually indestructible with its sturdy frame. It is very low maintenance and provides the runner or patient a comfortable run with its advanced construction. The pluto® running machine is distinguished by its smooth running, various functions, strong drive-engine and the timeless design.

### numerous additional options

You can customize the pluto® treadmill to your field of application – whether rehabilitation, cardiopulmonary diagnostics for patients or fitness – with the numerous additional options such as heart rate monitor, pediatric handrail, safety arch with fall stop, arm support, robowalk expander, etc.

### pluto .... the h/p/cosmos standard at a low entry-level price

The new pluto treadmill starts at a very attractive and fair price.



### train high performance to get to the top

The discovery® ladder ergometer, also called endless-ladder, has been developed to serve as a full body ergometer.

Climbing up a ladder is a familiar movement pattern to many people and involves many muscle groups, such as arms, shoulders, back and upper body muscles as well as leg muscles. Thus, the intensity of the training can be very high if wanted

Since the year 1994 the discovery® is a successful ergometer in the h/p/cosmos range of products and it has been sold to customers in many countries worldwide

The discovery® can serve as a fitness training device for endurance training but also can be used a high load ergometer for competitive sports and special applications such as fire fighters. The discovery® has even been used in a special design by special army research centers in environmental chambers under special controlled climate conditions. By using special grip techniques and grip positions different groups of muscles are activated. Due to the upright posture the muscles of the back and upper body are trained simultaneously. At the same time one has a stamina training for buttocks and legs as well as the coordination of the locomotor system which takes care of the joints. The impact is individually adjustable.

### firefighter respiratory protection track

Performance diagnostics is the basis for optimal training not only in sports. Firemen as well have to train hard to be able to save lives in the case of emergency.

The better the preparation, the more successful the fire brigade's mission will be. Likewise this applies to the training. The more a test and its evaluation is performed on individual basis, the more precisely the training intensities can be determined. Efficient training leads to success – physically and mentally. The h/p/cosmos ladder-ergometer discovery® has also been developed for realistic stress-tests and fitness training in the fire brigade's training-courses world wide.





## recommended fitness h/p/cosmos pluto® sport

Pos.	Stck.	Bestellnummer	Produktbeschreibung
1.	1	cos30026va01	<b>treadmill ergometer h/p/cosmos pluto®</b> running surface 150 x 50 cm, speed 0.5 ... 18 km/h, elevation 0 ... 20 %, drive-engine 2.2 kW
2.	1	cos100106	wireless heart rate receiver set POLAR WIND, coded
3.	1	cos12410	bottle holder
4.	1	cos10087	packing
5.	1	cos15729	transport / shipping charge
6.	1	cos15732	installation, commissioning and instruction through authorised and trained personnel
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			system price h/p/cosmos solution for fitness running: please ask your dealer for a quotation





### recommended configuration fitness h/p/cosmos discovery®

pos.	qty.	order number	product description
1.	1	cos30014va04	<b>ladder ergometer h/p/cosmos discovery®</b>
2.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
3.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
total price net, excluding VAT, excluding custom duties			
VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)			
system price h/p/cosmos solution for fitness climbing: please ask your dealer for a quotation			

### Dynamic Movement Skills DMS®

order number	product description
cos101622	<b>DMS® TEAM System PRO</b> Dynamic Movement Skills 10 DMS® Mats with DVD and manual
cos101754	<b>DMS® TEAM System YOUTH</b> Dynamic Movement Skills 10 DMS® Mats with DVD and manual
cos101755	<b>DMS® TEAM System JUNIOR</b> Dynamic Movement Skills 10 DMS® Mats with DVD and manual
cos102549	<b>DMS® TEAM System REHAB</b> Dynamic Movement Skills 10 DMS® Mats with DVD and manual
cos101622i	<b>DMS® Individual System PRO</b> Dynamic Movement Skills 1 DMS® Mat 140x140x0.5 cm, 4.35 kg with DVD + pdf manual
cos101754i	<b>DMS® Individual System YOUTH</b> Dynamic Movement Skills 1 DMS® Mat 120x120x0.5 cm, 3.35 kg with DVD + pdf manual
cos101755i	<b>DMS® Individual System JUNIOR</b> Dynamic Movement Skills 1 DMS® Mat 100x100x0.5 cm, 4.25 kg with DVD + pdf manual
cos102549i	<b>DMS® Rehabilitation System</b> 1 DMS Mat with DVD and manual
cos101759	<b>DMS® Certification Course</b> for up to 5 coaches



### DMS® can be very well combined with robomove®

The combination of using the robomove® with the DMS® Dynamic Movement Skills mat training system, helps to identify the compensation weaknesses and to develop the movement patterns under resistance. Because we are able to measure where and how the individual uses their legs in conjunction with the upper body, we can train correct movement biomechanics under resistance. This way we can correct the inefficient movement patterns and develop mobility, stability and strength at the same time.



#### treatment of gait disorders on the treadmill with zebris Rehawalk®

The zebris Rehawalk® system is designed for the analysis and treatment of gait disorders in neurologic, orthopaedic or geriatric rehabilitation. In addition to a treadmill, Rehawalk® includes a unit for adaptive visual cueing through the projection of gait patterns on the treading surface. Virtual feedback training happens simultaneously with the help of a large monitor mounted in front of the treadmill.

#### integrated pressure sensor matrix

The system is based on the proven h/p/cosmos treadmill systems that are available in different sizes and feature variations. The treadmills can, for example, be equipped with arm support and a safety arch. Underneath the belt, a pressure sensor matrix is installed featuring several thousand calibrated, capacitive pressure sensors. The belt movement is compensated such that stable gait and roll-off parameters can be analyzed.

By using an integrated un-weighting system, it is possible to commence the locomotion therapy at an early stage. As a complete system, the h/p/cosmos locomotion 150/50 DE med additionally offers adjustable handrails, a wheelchair ramp and therapist seats.

#### balance analysis, balance training, visual stimulation

A module for stance and balance analysis as well as balance training is optionally available. Therapy with Rehawalk® assists patients in reaching a safe and effective gait through functional and cognitive challenges that can be individually adapted to the patient's capability. Due to the high number of step repetitions, an automation of motion sequences is achieved providing complete protection against falling and additional weight unloading at the same time. The system automatically documents the course of treatment through the easy-to-operate software and in-depth evaluation reports. For recording kinematic parameters and video documentation, an integrated lighting and camera unit is optionally available.





### gait training using adaptive visual cueing

The initial gait analysis is carried out without any measuring preparations to be done on the patient. The measuring process can be observed on the screen in real-time. The report is automatically generated.

In order to prepare the gait training using adaptive visual cueing, the parameters from the gait analysis (step length, step width and foot rotation) are automatically populated and can be individually adjusted according to the training objectives. The values remain constant or gradually approach the target settings during the course of the training.

During training the steps are projected onto the treadmill belt in the shape of the actual footprints, or alternatively as rectangles. Throughout the gait training the patient is instructed to position his or her feet as accurately as possible within the projected surface area. Training is possible when using an un-weighting system and thus also allows for patients who are suffering from severe functional limitations to commence therapy even at an early stage.

The success report documents the adherence to the target settings. On that basis, the target parameters can be adjusted to the patient's capability. For an optimal training control, two gait analyses are compared, e.g. before and after a training period.



### gait and coordination training using virtual feedback

Physical and cognitive abilities are simultaneously demanded during dual-task-training in the virtual walking environment. The patient solves simple perceptual and memory tasks as well as arithmetic problems while walking and observing his or her footprints. Thus, reaction time and attentiveness are improved while simultaneously supporting automated walking. The various modules allow the training to be individually adapted to each patient.





# motion analysis & bio-feedback

## OPTOGAIT

### Optogait

Optogait is an innovative system for movement analysis and functional assessment of patients with normal or pathological conditions.

The system is equipped with optical sensors working at a frequency of 1000 Hz and having an accuracy of 1 cm, detecting the relevant space and time parameters for gait, running or other test types.

The objective measurement of such data, combined with an integrated video acquisition, allows monitoring of a patient's condition on a constant basis, detecting problem areas, assessing mechanical inefficiencies and rapidly verifying the existence of asymmetries between the two legs.

The software platform allows easy storage of all tests carried out and the ability to recall them instantly if necessary. This allows the development of a customized patient recovery plan. It is also possible to compare very quickly and easily data of tests carried out at different times, in order to assess the validity and the efficiency of the methodology applied.



### integration into the h/p/cosmos treadmill

The optical LED gait- and motion analysis system is integrated with the footboards of the h/p/cosmos treadmill model series stellar med, quasar med or pulsar 3p. Because of this installation, the system is invisible to the patient and there is no danger to the patient because of stumbling or slipping on the measuring system and twisting the ankle. In addition, the treadmill standard EN 957-6 is also adhered based to the prescribed footboards with slip resistance and emergency descent on the treadmill.

#### Advantages of the integration into the treadmill:

- proband/patient moves quickly into a natural gait pattern
- The system saves space; very long distances can be measured and analyzed
- proband/patient is secured against falling by the safety arch and emergency stop
- with the robowalk gait training and therapy can be performed at the same time
- patient may experience part release with the airwalk un-weighting- system and is simultaneously secured with the safety arch and prevents with the emergency stop, whereby a much earlier rehabilitation can be provided

Optogait	order number
OptoGait Kit 1m single meter	cos102065
OptoGait Kit 1m for extension	cos102067
OptoGait Kit 1m additional meter	cos102066
OptoGait Kit 5m	cos102068
OptoGait Kit 10m	cos102069
OptoGait Kit 2D reinforced beams	cos102070
OptoGait Kit 2D reinforced beams+meter	cos102071
OptoGait LED motion/gait analysis system for treadmill series 170/65	cos101664va01
OptoGait LED motion/gait analysis system for treadmill series 190/65	cos101664va02

Light beams are invisible and at a distance of only 1 cm.



## date table

Besides the below listed data, in each test average value, standard deviation, and variability coefficient are stated for each leg, where available. In this case, a difference between the two legs is shown in percentage.

	Gait/Run Test	Gait Test on Treadmill	Run Test on Treadmill	Jump Test	Tapping Test	Reaction Test
Stance Time	x	x				
Swing Time	x	x				
Step Time	x	x	x			
Gait Cycle	x	x				
Single Support	x	x				
Double Support	x	x	x			
Loading Response	x	x				
Pre-Swing	x	x				
Step Length	x	x	x			
Stride Length ( or Double Step)	x	x	x			
3 Foot Phases (Contact, Flat, Propulsive)	x	x	x			
Cadence/Rhythm/ Pace	x	x	x	x	x	
Speed	x					
Acceleration	x					
Flight Time	x		x	x	x	x
Contact Time	x		x	x	x	
Height	x		x	x		x
Stride Angle	x		x			
Imbalance	x		x			
Specific Power				x		
Jumping Point				x		
Jumping Point Gap				x		
Used Area				x	x	
Cycle Time (Flight + Contact)					x	
Reaction Time						x

PC, computer, laptop or Tablet are not included in the scope of supply and price of the system and must be ordered separately. We recommend the computer with h/p/cosmos to order and to let deliver the system preloaded and preconfigured. For self-installation no responsibility or liability can be assumed. Support services are billed at cost.

OptoGait has the Ce sign for medicine products and is admitted as a sports device for the areas of Fitness, sport and athletics as well as science of sport and also as a first-class I medicine product for diagnostics. All data and information under reservation of mistake and changes.





measure. analyse. improve.

## OPTOJUMP next

### a new unit of measurement

Optojump Next revolutionizes training and athletic preparation methodology in sport.

It is an innovative system of analysis and measurement that brings a new philosophy of assessment and optimisation of performance to the world of competitive sport: it is designed for the development of a specific and customized training programme for the athlete, based exclusively on precise objective data.

By acquiring the fundamental parameters that characterise the level of an individual's performance and physical condition, Optojump Next allows coaches, trainers and researchers to constantly test and monitor their athletes. This makes it possible to ascertain the abilities or physical fitness of an athlete in a simple and immediate way, creating over time a real database that makes it possible to compare values for that athlete or different athletes (even at a distance of months or years).

### Optojump makes it possible

- to assess an athlete's performance and physical condition
- to rapidly identify any muscular deficiencies and measure tolerance to various work loads
- to develop customized and diversified training based on the test results
- to periodically check the results of training
- to create a database of athletes in order to compare them with each other or to compare the results of a particular athlete in different periods of time in order to objectively determine the results of training
- to examine the physical condition of an athlete after an injury, to develop specific actions for rehabilitation and check its progress
- to motivate athletes by giving them tangible proof of the progress made, thus stimulating fruitful competition inside the group
- to significantly reduce the trainer's workload, at the same time allowing him/her to retrieve at any time the results of tests performed even months before
- to make use of an objective "judgement" when talent-scouting or choosing athletes
- and much more...



Optojump	order number
Optojump Next Kit 1m single meter	cos102054
Optojump Next Kit 1m for extension	cos102056
Optojump Next Kit 1m additional meter	cos102055
Optojump Next Kit 5m	cos102060
Optojump Next Kit 10m	cos102062
Optojump Upgrade Kit Software and Webcam	cos102064





### The single meter

In this configuration OptoJump Next makes it possible to perform jump tests, reaction tests and running tests (if mounted on a treadmill). The data that can be obtained are:

- contact times
- flight times
- reaction time to a sound / visual impulse
- elevation of centre of gravity
- specific power ( W/Kg)
- frequency
- energy expended (J)



### The modular system

In its modular configuration, Optojump Next makes it possible to analyze a walk, a run or particular specific movements. The CPU works in real time, making it possible to assess complex exercises like shuttle tests.

As well as the data of the "single meter" configuration, the modular configuration makes it possible to measure:

- step length
- exact and average acceleration
- exact and average speed
- stride angle (the angle between the theoretical arc traced by the centre of gravity during the step and the line of the ground)
- the imbalance index (calculated on the basis of the difference between real contact time and ideal contact time)
- the time taken (calculable also with the help of external sensors such as photocells)
- treading mode (heel or toe)



### The two-dimensional system

This is one of the main strong points of Optojump Next. The two-dimensional acquisition mode makes it possible:

- to acquire all the data typical of Optojump Next, leaving the athlete free to move in any direction
- to create exercises and reaction tests in which the athlete must move along predefined courses inside the measurement surface, exploiting his/her reactivity and concentration
- to perform complex tests that involve the combination of two or more tests or the combination of jump tests with movement tests
- to faithfully reproduce posture and the treading mode of the foot (heel, toe, angle, etc.)
- to calculate the position on the coordinates xy in real time (for example, to detect the tendency of an athlete to move from a predefined position during a series of jumps)

The area of measurement can reach a maximum surface of 36 square metres (6m x 6m) and is delimited by the normal bars which can therefore be used also in „single meter“ or „modular“ mode.



# wireless training timer

## Olympic Games 2012, London

### Athletics 100 m sprint, Men

Position	Athlete	Time (s)	Difference (s)	%
1	Usain Bolt	9,63		
2	Yohan Blake	9,75	+ 0,12	1,25 %
3	Justin Gatlin	9,79	+ 0,16	1,66 %
4	Tyson Gay	9,80	+ 0,17	1,77 %
5	Ryan Bailey	9,88	+ 0,25	2,60 %
6	Churandy Martina	9,94	+ 0,31	3,22 %
7	Richard Thompson	9,98	+ 0,35	3,63 %
8	Asafa Powell	11,99	+ 2,36	24,51 %

### Swimming 100 m butterfly, Men

Position	Athlete	Time (s)	Difference (s)	%
1	Michael Phelps	51,21		
2	Chad Le Clos	51,44	+0,23	0,45 %
2	Evgeny Korotyshekin	51,44	+ 0,23	0,45 %
4	Milorad Cavic	51,81	+ 0,60	1,17 %
4	Steffen Deibler	51,81	+ 0,60	1,17 %
6	Joeri Verlinden	51,82	+ 0,61	1,19 %
7	Tyler McGill	51,88	+ 0,67	1,31 %
8	Konrad Czerniak	52,05	+ 0,84	1,64 %

## How much is 1%? How important is 1%?

Fractions of seconds decide between winning and losing. The scores of the Olympic Games 2012 show this fact clearly. Accurate time measurement, strong drive systems and high accuracies for treadmills and other measuring instruments are prerequisites and an integral part of a successful training control - no matter if you are a competitive or a recreational athlete. For sport-specific training methods and athletic preparation tests (e.g. shuttle run, T-test, sprints etc.) time measurement is very important. The easy use and the precise results make it very simple to integrate systematic time measurement into the training routine and training planning.

## The right tool for every trainer

The compact size and anatomical form make the Witty timer practical and easy to use in the field. The Witty's wireless transmission allows coaches to move around the training pitch and can provide immediate feedback to athletes.

## Multi Sport

Witty has been developed to satisfy timing requirements for all forms of training and testing. The timer comes with a variety of preconfigured tests, used in athletic preparation (including sprint, shuttle, endurance, course), it also allows the trainer to define and set sport specific customized tests.

## „You can only improve, what you can measure!“

The compact size, ergonomic shape, and innovative design make the Witty timer practical and easy to use. Graphical icons and on screen instructions on its color display ensure user-friendliness and ease of use. With 8 different radio frequencies to choose from, it is possible to work simultaneously with several Witty timing systems (timer and photocells) in the same training area. Various preconfigured test types are available (single tests, group tests, in-line tests, go & return, counter, etc.), plus the user can also create customized test protocols directly on the timer. Witty stores and displays all times which can then be downloaded into the Witty Manager software.



**PRACTICAL AND PRECISE:** The new WITTY has been designed to fully satisfy timing requirements connected to the new training methods.

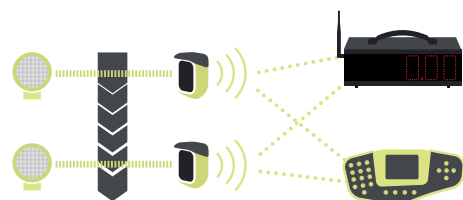
**The Witty Kit includes all the accessories necessary to immediately start a training session:**

- 1 Witty timer
- 2 wireless photocells
- 2 reflektors
- 4 telescopic tripods
- 1 battery charger (charges the two photocells and timer simultaneously)
- 4 USB cables
- 1 backpack for transport with safety padding (contains all the components of the Kit, including accessories)
- 1 Witty Manager software

## WITTY TAB

**WITTY TAB** is the ideal choice for anyone seeking a multi-capable, lightweight, easily transportable and user-friendly display board. Measuring 13x41.5x6 cm, the board is equipped with a Led dot matrix displaying 6 numeric digits of 7 segments each (10 x 5 Leds), and a sensor allowing automatic adjustment of the brightness level to suit the ambient light conditions. Brightness can also be controlled manually. The 2 lead storage batteries guarantee stand-alone operation for at least 10 hours without the need for a connection to the a.c. mains supply.

The **WITTY TAB** display board has an internal timer and comes complete with a radio transceiver able to communicate with Witty photocells: as the athlete passes, the photocell transmits the pertinent signal (start/lap/stop) to the board by radio. The transmission range is 150 metres under standard conditions.



The **WITTY TAB** display can be used in 2 different modes:

- on its own, in combination with Witty photocells only; in this mode, times are simply displayed, without being saved for subsequent computer analysis
- in combination with the Witty timer; pulses transmitted by the photocells are received by the board and by the timer independently, but in this case, with the timer function, data can be saved and stored for analysis subsequently on a computer using the WittyManager software package

## Programs

The **WITTY TAB** is equipped with a library of internal programs, designed to meet the many and various timing requirements connected with athlete assessment and performance monitoring.

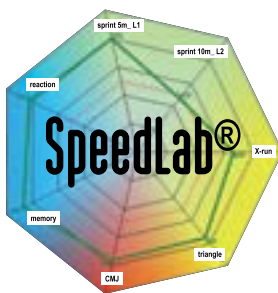
No.	Name	Description
■ P0	Start, Stop	Basic timing with auto reset after 5 seconds
■ P1	Start, Lap1, Stop	Basic timing with 1 intermediate time
■ P2	Start, Lap1, Lap2, Stop	Basic timing with 2 intermediate times
■ P3	Speed	Speed measurement based upon any length between two photocells
■ P4	Lap Speed	Lap speed measurement with one photocell
■ P5	Start, LapN, Stop	Basic timing with intermediate times and configurable display time
■ P6	Continuous Timing	Continuous timing, configurable „dead time“
■ P7	Starting System	Start and Stop with reaction time at start





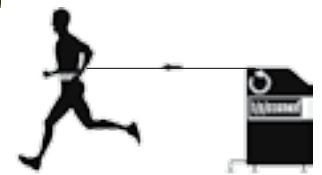
### Advantages of Witty

- new, intuitive, easy to use graphical interface
- simple and quick learning process
- color display
- perform all the tests typical of modern athletic preparation (such as sprint, shuttle, resistance, courses) or customized ones
- single or double photocells available
- unlimited extra photocells for unlimited intermediate times
- acquire results with an accuracy higher than one thousandth of a second
- easy and fast repositioning of the photocells when passing from one exercise to another, thanks to a reliable wireless transmission (range 150 m)
- calculate speed (km/h, m/s, mph)
- battery powered (10 hour autonomy)
- very quick Witty to PC data transfer (for rankings, data assessment and export), thanks to the USB interface
- self-configuring photocells
- several transmission frequencies available
- water resistant
- great portability is insured by the included backpack
- compatibility with Optojump Next system
- the system is largely expandable with the possibility to add (single or double) photocells for lap times, accessories such as starting pads, time displaying LED boards, direction indicators, etc.



### SpeedLab®

You can combine Witty with the comet® 3p sprint trainer. Witty measures the time and documents the changes in the sprint performance due to the traction support (over-frequency training) and traction resistance. Witty is an ideal system-component of the SpeedLab concept.



## Witty Timer

<b>Weight</b>	337 g, battery included
<b>Dimensions</b>	214 x 100 x 36 mm
<b>Operating temperature</b>	0° C ...+45° C
<b>Unit of time measurement</b>	Selectable: 1 s – 1/10 s – 1/100 s – 1/1000 s Selectable speed: m/s – km/h – mph – knots
<b>Measurement resolution</b>	4 x 10 <sup>-5</sup> s (1/25000 s)
<b>Display</b>	Graphic color TFT display, visible Area 59x44 mm, 320x 240 pixel
<b>Radio Module</b>	Multi-Frequency transmission 433 - 434MHz
<b>Radio transmission</b>	Digital FSK transmission; redundant code with information correctness verification and auto-correction
<b>Radio frequencies</b>	433.1125 MHz to 434.7375 MHz
<b>Radio transmission power</b>	10 mW
<b>Processing unit</b>	Two 32-bit microprocessors
<b>Time base</b>	12 quartz 8 MHz, stability ±10ppm between 0°C+45°C
<b>Power supply</b>	International polymer lithium battery, external power supply 5VDC
<b>Battery charging</b>	Integrated intelligent charging device
<b>Battery life</b>	> 10 hours
<b>Keypad</b>	<ul style="list-style-type: none"> <li>• 23-key membrane keyboard</li> <li>• Start-Stop keys</li> <li>• Numerical keypad</li> <li>• 4 function keys</li> <li>• 4 arrow keys and selection keys</li> <li>• Home key</li> <li>• Key for line blocking</li> </ul>
<b>Connections</b>	<ul style="list-style-type: none"> <li>• MICRO USB type B connector for charging and connecting to a PC</li> <li>• Jack connector for external input</li> </ul>

## Photocell

<b>Weight</b>	169 g, battery included
<b>Dimensions</b>	75 x 103 x 48 mm
<b>Operating temperature</b>	0° C ...+45° C
<b>Minimum resolution</b>	0.125 ms
<b>Delay with respect to the event</b>	1 ms
<b>Optical range</b>	12 m
<b>Radio module</b>	Multi-Frequency Transceiver 433-434MHz
<b>Radio transmission</b>	Digital FSK transmission; redundant code with information correctness verification and auto-correction
<b>Radio frequencies</b>	433.1125 MHz to 434.7375 MHz
<b>Radio transmission power</b>	10 mW
<b>Impulse transm. accuracy</b>	± 0.4 ms
<b>Radio transmission range</b>	Approx. 150 meters
<b>Processing unit</b>	16-bit microprocessor
<b>Time base</b>	8 MHz quartz, stability ±30ppm between 0°C and +45°C
<b>Power supply</b>	Internal lithium ion battery, external power supply 5VDC
<b>Battery charging</b>	Integrated intelligent charging device
<b>Battery life</b>	> 10 hours
<b>Connections</b>	<ul style="list-style-type: none"> <li>• MICRO USB type B connector for charging and connecting to a PC</li> <li>• Jack connector for external input connection or double photocells.</li> </ul>

## Witty Tab

<b>Weight</b>	2,9 kg, batteries included
<b>Dimensions</b>	13 x 41,5 x 6 cm (H x W x D)
<b>Operating temperature</b>	0 °C ... +45 °C
<b>Unit of time measurement</b>	1/100 s Selectable speed: m/s – km/h – mph
<b>Measurement resolution</b>	4 x 10 <sup>-5</sup> s (1/25000 s)
<b>LED matrix</b>	Numerical: 6 digits x 7 segments (10 x 5 LEDs) with 4 punctuation marks (full stop or colon) with manual / automatic brightness adjustment
<b>Radio module</b>	433-434MHz multi-frequency transceiver
<b>Radio transmission</b>	Digital FSK transmission; redundant code with information correctness verification and auto-correction
<b>Radio frequencies</b>	433.125 MHz to 434.7375 MHz
<b>Radio transmission power</b>	10 mW
<b>Radio transmission range</b>	Approx. 150 meters
<b>Processing unit</b>	16-bit microcontroller
<b>Time base</b>	12. quartz 8 MHz, stability ±10ppm 0 °C between +45 °C
<b>Power supply</b>	Two internal Pb batteries
<b>Battery charging</b>	Intelligent external Pb battery charger device
<b>Battery life</b>	> 10 hours
<b>Buttons</b>	<ul style="list-style-type: none"> <li>• Start / Stop button</li> <li>• LAP / Reset button</li> </ul>
<b>Connections</b>	<ul style="list-style-type: none"> <li>• Type B MICRO USB connector to connect to a PC</li> <li>• Jack connector for external input / output</li> <li>• SMA connector for connection to an external aerial</li> </ul>

## Software Witty Manager

	Minimum	Recommended
<b>Operating System</b>	Microsoft XP SP3	Vista/7/8 (32 or 64 bit)
<b>CPU</b>	Atom/Centrino	i3/i5/i7
<b>RAM</b>	2 GB	4 GB
<b>Hard Disk</b>	40 GB	160 GB
<b>Graphics Card</b>	Integrated	Dedicated (512 MB or above)
<b>Graphic Display Resolution</b>	1024x600	1600x900 or higher
<b>USB ports</b>	1	2 (Witty + Webcam)

PC, computer, laptop or Tablet are not included in the scope of supply and price of the system and must be ordered separately. We recommend the computer with h/p/cosmos to order and to let deliver the system preloaded and preconfigured. For self-installation no responsibility or liability can be assumed. Support services are billed at cost.



Witty, Witty-Tab, Photocell and the software Witty Manager has the Ce sign and are admitted as sports devices for the areas of Fitness, sport and athletics as well as science of sport. It does not concern a medicine product to MPG and EU directive 93 / 42 / EEC.

# treadmill the

## physiological gait training - safe and realistic



rapy



## treadmill therapy

- physiological gait training - safe and realistic
- early initiation of therapy with body weight support
- therapeutic freedom by controlling the treadmill from a variety of positions
- traceable results of treatment by simple documentation

# treadmill the

## physiological gait training - safe and realistic



- realistic exercises with fall prevention?
- safe access onto the treadmill from wheelchair?
- early start to walking exercises - but how?
- physiological gait training - even with obese patients?

### secure access even with crutches and out of a wheelchair

You know the situation: Some of your patients come on crutches or in wheelchairs to their therapy. The first difficulty will follow immediately when your patients access the treadmill their grip is transferred from the walking aids to the handrail. Wheelchair users need a way to support themselves on the handrail when getting from the wheelchair.

The h/p/cosmos system for rehabilitation has a low entry height and long handrails that extend to the end of the walking surface. Patients with an impaired ability to walk can mount the treadmill more safely. A professional wheelchair ramp is optionally available as an accessory which allows comfortable access onto the running surface for most types of wheelchairs. See picture on page 22.

The h/p/cosmos mercury® med treadmill system comes with a running surface of L: 150cm (59.05") x W: 50cm (19.68") which meets the standards for many applications. For special demands larger deck size models like the h/p/cosmos quasar® med, the high performance h/p/cosmos pulsar® 3p or the oversize range h/p/cosmos venus® and h/p/cosmos saturn® with a deck size of up to L: 450cm x W: 300cm are available.

Custom-made models designed for higher body weights and for special applications are manufactured by h/p/cosmos.





### early start of therapy with body weight support

The course of therapy should start as early as possible and should be enjoyable for both the patient and the therapist. Therefore, body weight support of the patient is necessary in many cases.

The patented and individually adjustable h/p/cosmos arm supports allow for this type of weight support and give both stability and safety.

Supporting the elbows on the firm but cushioned and U-shaped arm support and additionally holding the two ergonomic hand grips has tremendous positive impact on the comfort of the patient. It psychologically boosts the motivation to walk with fewer worries of stumbling or fear of failure and pain. Thus, the results of therapy can be improved significantly! The arm support is also frequently used for stroke patients or seniors without the need of un-weighting.

The additional keyboard and additional stop button give both therapist and patient control at all times. Even if the therapist moves the additional keyboard down to the running deck to assist the patient, the patient still has access to the additional stop button in the hand grip and can stop the treadmill without leaving the safety of the arm support.

As soon as the progress of therapy allows, you can simply fold away the arm support and continue to use the system as a „normal“ treadmill without restriction.





## physiological gait training even with obese patients

The correct therapy treadmill must be able to start at very low speeds for obese patients as they can often only walk very slowly. Likewise patients with limited walking ability also need a slow and smooth start without any juddering.

The h/p/cosmos mercury® med treadmill is approved for patients weighing up to 200 kg (440 lbs, higher weight possible on request) and the powerful 3.3 kW (4.5 HP) drive motor allows a slow, patient-friendly start at speeds from 0.1 km/h. So all your patients can start their therapy slowly and more safely. Max. weight load on arm support is 140 kg (280 lbs).

## simple operation and control for both patient and therapist

Adjusting the speed and elevation or an immediate stop: both the therapist and patient need access to these functions at all times. The operation of the h/p/cosmos mercury® med is simple: it begins with start and with stop the treadmill stops, two buttons for speed (+ and -) and two more for elevation. This operation is clear for the therapist and the patient. The necessary safety for successful and stressless therapy.

## more freedom of therapy by flexible control options

During therapy the therapist often needs to guide the patient's legs to optimise their movement. In doing so there is no access to the UserTerminal (control panel with keyboard and display) on the handrail. The additional keyboard can be mounted on the arm support for the patient, or either on the left or right of the motor hood.

Even when the therapist is working with the patient's legs in an ergonomic position, he can control the treadmill start, stop, speed and elevation functions. An additional stop button is incorporated in the hand grip for the patient.







### downhill to success: optimal fall prevention through eccentric training

Walking downhill is often a difficult exercise for many patients and is frequently avoided. This can lead to accidents later on through lack of practice. Therefore practicing walking downhill in a safer therapeutic environment and utilizing modern accessories is a useful tool for fall prevention. The reverse belt rotation function allows your patients to practice their downhill walking in a convenient and supervised environment. Eccentric training causes an intense training stimulus. At the same time the demands on the cardiovascular system are not so high compared to walking uphill.

For those patients who have a weakness of the dorsiflexors, steep downhill training allows smoother walking and therefore effective training because the forefoot doesn't need to be lifted. Downhill walking widens the scope of applications and therapies for various other indications and goals.

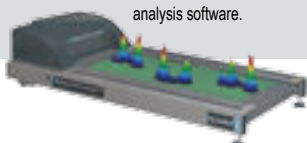
### traceable results of treatment through fast documentation

The results of the treatment course should be well documented. This is not just important for patients and families, but also for the participating doctors and insurance companies. Good documentation must be readily available and easy to interpret.

As soon as the therapy session has finished and the stop button is pressed the h/p/cosmos satellite print, which is connected directly to the treadmill, prints the complete documentation. This allows easy and quick to understand documentation of treatment progress without significant expenditure of time. All relevant exercise results and data such as duration, speed, elevation, distance, heart rate, fitness index, date, time and even treadmill serial number for traceability are included in the printout, even without using any PC or software. Just write the patient's name and remarks by hand.

#### optionally: biomechanical-module

Optionally the h/p/cosmos mercury® med treadmill can be equipped with sophisticated force plates and additional gait analysis software.





## recommended configuration treadmill therapy h/p/cosmos mercury® med

pos.	qty.	order number	product description
1.	1	cos30000va08	<b>running machine h/p/cosmos mercury® med</b> running surface 150 x 50 cm, speed 0 ... 22 km/h, elevation 0 ... 25 %, drive motor 3.3 kW, interface port com1 for PC, ECG, ergospirometry-, blood-pressure monitor system or printer - compatible to most of the systems worldwide, incl. PC software h/p/cosmos para control® for device control and monitoring
2.	1	cos10145	handrails long, 2 pillars (surcharge) as shown on picture above
3.	1	cos00098100045-01	reverse belt rotation for downhill simulation
4.	1	cos00098010025	2nd interface port COM2 for PC, ECG-, ergospirometry-, blood-pressure-monitor system or printer
5.	1	cos00097010035	interface cable RS232, 10 m
6.	1	cos12013	<b>h/p/cosmos arm support with 3 joints, adjustable in height and width</b> (patent no.: DE19916508A1)
7.	1	cos10107	h/p/cosmos additional stop-button for arm support, right
8.	1	cos100680	h/p/cosmos additional keyboard for arm support and for remote control, 6 keys, 2 m cable
9.	1	cos10111-01	mounting for additional keyboard on arm support
10.	1	cos11750	mounting for additional keyboard at the motor hood, right
11.	1	cos14327	mounting for additional keyboard at the motor hood, left
12.	1	cos14954	h/p/cosmos satellite print - printer-set for direct documentation without PC, incl. laser printer, RS232 interface converter with cable, printer rack/stand made of steel
13.	1	cos10223	potential equalization cable, 5 m (required for medical systems)
14.	1	cos10085	packing pallet & cardboard hood
15.	1	cos60098010021	shipping costs door to door within Europe, confirmed price on request
16.	1	cos15732-os/-eu	installation & instruction treadmill total price net, excluding VAT, excluding custom duties VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
<b>system price h/p/cosmos solution for treadmill therapy: please ask your dealer for a quotation</b>			

Please refer to the information about product specifications which can be found on pages 138 ... 149.





Sebastian suffers from a spasticity of all limbs which resulted to spastic deficits in movement execution and control of movement in all extremities.

Sebastian gets physiotherapy treatment on regular base. He wears on his legs orthoses, free running is not possible. Sebastian has to rely largely on a wheelchair. From 2001, Sebastian visited an inclusive kindergarten, since 2004, a special school for motor and physical development.

Since 2011, Sebastian is treated in our institution. Sebastian gets gait training on a medical treadmill since 2012. In the treadmill therapy, Sebastian was initially conducted entirely on the legs with expanders. In addition, it was necessary that one therapist on each side sets his foot one step forward. There were very strong contractions in the legs. This got weaker only after four weeks treadmill therapy. Successive could expanders be „mined“ on the thighs. The duration of walking increased from initially three minutes to currently 25 minutes at 0.2 km/h. The guide through expander can now be completely removed, Sebastian runs on the treadmill at smaller assistance (setting the right foot) alone.



On the results obtained by the treadmill therapy progress Sebastian achieved also at his hobby, wheelchair basketball, great success. So he was invited to the country cadre of Niedersachsen in wheelchair basketball in the spring of 2012 and is now member of the U19 wheelchair basketball national team. His gait has improved greatly: Sebastian could walk 30 metres before the beginning of the treadmill therapy and he is now able to walk 200 m with a 4-point crutch until the first break. His body posture has improved greatly in stance and gait, his hyperlordosis has declined significantly. Likewise, his standing ability has improved. All these successes have naturally a very positive influence on his social activities. Sebastian's „range of motion“ has expanded, he can participate better in activities with family and friends (eg. play miniature golf).

Sebastian's quality of life has improved significantly in principle through a few month long continuous physiotherapy in conjunction with gait training on the treadmill. This development was made possible by the use of the treadmill and by the personal dedication of Sebastian and his parents. So he can go on to his big target – to walk alone without aid.

Behind all of these medical history reports is the story of a boy whose perspective was a life mostly in wheelchairs - and now his dream of walking became realistic and his world has now opened wide.

**Guido Bähr, physio\_wiese**

„I am very proud of the fact that we could support Sebastian with our treadmill system as well as financially. We will do this also furthermore. We are anxious a lot that Sebastian can realise his plans and aims also further.“

Gratitude also to Anja Wiese and Guido Bähr and their team for the trust and the application with our treadmill and the robowalk gait training and gait correction system as well as all together for the great work and the motivating and very touching successful history with Sebastian.“

**Franz Harrer, president & CEO h/p/cosmos**



# un-weighting

success through adjustable un-weighting



## treadmill therapy with un-weighting

- earlier start of treatment in an ergonomic environment
- optimal therapy through adjustable un-weighting (BWS body weight support)
- safety and support - also for children and/or seniors
- traceable results of treatment by simple documentation



## un-weighting

### success through adjustable un-weighting



- physiological gait training - even with children?
- natural gait even with body weight support?
- safe access onto the treadmill out of a wheelchair?
- early start to walking exercises - but how?

#### easy access and stable for large and small

Every patient is different: bigger or smaller, different body shapes and of course individual incapacities. Some use wheelchairs, others need crutches and if your patients are children you need a highly flexible and especially motivating treadmill solution.

The h/p/cosmos therapy system is equipped with adjustable handrails that improve safety to both tall and short patients both whilst entering the treadmill and during the therapy.

#### best results through individual and physiological support

The course of therapy should start as early as possible and be enjoyable for the therapist and patient. This treatment must always be adjusted to the skills and progress of the patient - and ensure natural walking. The adjustable un-weighting level of the h/p/cosmos airwalk® allows individual optimization of your therapy sessions. Adjustment is made with an air control valve and a pressure meter gives the reading of the un-weighting. The dynamics of the central one-point suspension supports natural up and down movement of the upper body during walking. 360° rotations in both directions for sidesteps and reverse walking under safe conditions are also possible.







Through this, natural walking is possible even during un-weighting. The h/p/cosmos airwalk® system vests were designed for best possible unrestricted movement, are easy to clean and are available in almost all sizes - even for children.

The central one-point suspension allows the patient to turn on the treadmill and train walking sideways and backwards. Velcro straps for quick attachment to the vest and the leg cuffs give the therapist the possibility to correct the trained movements, for example by supporting rotation force of the legs to inner or outer direction through stretchable straps for gait corrections. With some additional equipment there is a very broad spectrum of treatment options available. Ideas, examples and suggestions can be found in the h/p/cosmos airwalk® user manual and the specially developed "h/p/cosmos airwalk® application manual" which is available on request from h/p/cosmos.

### physiological gait training even with obese patients

The correct therapy treadmill must be able to start at very low speeds for obese patients as they can often only walk very slowly. Likewise patients with limited walking ability also need a slow start without any juddering.

The h/p/cosmos mercury® med treadmill is approved for patients up to 200 kg (440 lbs) body weight and the very powerful 3.3 kW (4.5 HP) drive motor allows a slow, patient-friendly start at speeds from 0.1 km/h.

In addition a special version of the h/p/cosmos airwalk® for un-weighting of up to 160 kg (350 lbs) and also a specially designed arch version for free access to the patient from the side is possible. So you can respond to almost any patient's and therapist's needs. A great variety of applications is ensured through various modes like balance mode, static and dynamic un-weighting. An optional and almost noiseless air compressor supplies the required power for the h/p/cosmos airwalk® 70 and 160 models.







## simple operation and control for both patient and therapist

Adjusting the speed and elevation or an immediate stop: both the therapist and patient need access to these functions at all times.

The operation of the h/p/cosmos mercury® med is simple: it begins with start and with stop the treadmill stops, two buttons for speed (+ and -) and two more (up and down) for elevation. This operation is clear for the therapist and the patient.

The LCD displays with excellent contrast give clear readings of all data even under bright sunlight conditions close to windows of the therapy room. An emergency magnetic stop with lanyard connected to the patient also can be utilized. However, thin lanyards may stop the running machine but never can prevent the subject from falling.

The h/p/cosmos airwalk or the h/p/cosmos safety arch system can do so by catching the patient's full body weight in emergency case automatically. The necessary safety for successful and stressless therapy must be on top of the priority list of all of us.

## more freedom of therapy by flexible control options

During therapy the therapist often needs to guide the patient's legs to optimise their movement. In doing so there is no access to the UserTerminal (control panel with keyboard and display) on the handrail. The additional keyboard can be mounted either on the left or right of the motor hood. Even when the therapist is working with the patient's legs in an ergonomic position, he can control the treadmill start, stop, speed and elevation functions.

With an optionally extension cord for the additional keyboard or with the free h/p/cosmos para control software the treadmill can fully be controlled also from the therapist standing in distance behind the treadmill.



un-weighting system airwalk ap with pulsar 3p and robowalk





### downhill to success. optimal fall prevention through eccentric training

Walking downhill is often a difficult exercise for many patients and is frequently avoided. This can lead later on to accidents through lack of practice. Therefore practicing walking downhill in a safer therapeutic environment and utilizing modern accessories is a useful tool for fall prevention. The reverse belt rotation function allows your patients to practice their downhill walking in a convenient and supervised environment. Eccentric training causes an intense training stimulus. At the same time the demands on the cardiovascular system are not so high compared to walking uphill.

For those patients who have a weakness of the dorsiflexors, steep downhill training allows smoother walking and therefore effective training because the forefoot doesn't need to be lifted. Also different muscle groups are engaged during eccentric training. Downhill walking widens the scope of applications and therapies for various other indications and goals.

### traceable results of treatment through fast documentation

The results of the treatment course should be well documented. This is not just important for patients and families, but also for the participating doctors and insurance companies. Good documentation must be readily available and easy to interpret. However, time limits in daily work makes it difficult to cope up with good documentation for all daily therapy results. As soon as the therapy session has finished and the stop button is pressed the h/p/cosmos satellite print, which is connected directly to the treadmill, prints the comprehensive documentation. This allows easy and quick to understand documentation of treatment progress without significant expenditure of time. Alternatively, for computer based and stored documentation the optionally available h/p/cosmos para graphics PC software is also an excellent tool. It allows remote control and graphical documentation and comparison of graphs through overlay at the same time.



# system solution treadmill therapy with un-weighting



## recommended configuration treadmill therapy with un-weighting system

pos.	qty.	order number	product description
1.	1	cos30000va08	<b>running machine h/p/cosmos mercury® med</b> running surface 150 x 50 cm, speed 0 ... 22 km/h, elevation 0 ... 25 %, drive motor 3.3 kW, interface port com1 for PC, ECG, ergospirometry-, blood-pressure monitor system or printer - compatible to most of the systems worldwide, incl. PC software h/p/cosmos para control® for device control and monitoring
2.	0	cos10145	handrails long, 2 pillars (alternatively to pos. 3)
3.	1	cos102010va01	optionally (alternatively to pos. 2) as shown on picture above (surcharge): handrails adjustable (for therapy with children and persons of short stature)
4.	1	cos00098100045-01	reverse belt rotation for downhill simulation
5.	1	cos00098010025	2nd interface port COM2 for PC, ECG-, ergospirometry-, blood-pressure-monitor system or printer
6.	1	cos00097010035	interface cable RS232, 10 m
7.	1	cos100680	h/p/cosmos additional keyboard for remote control, 6 keys, 2 m cable
8.	1	cos11750	mounting for additional keyboard at the motor hood, right
9.	1	cos14327	mounting for additional keyboard at the motor hood, left
10.	1	cos10092	<b>h/p/cosmos airwalk 50</b> , pneumatic unweighting-system, incl. 1 vest size M
11.	1	cos10112	vest <b>XSmall</b> for h/p/cosmos airwalk, light blue for waist size for children
12.	1	cos10095	vest <b>Small</b> for h/p/cosmos airwalk, red for waist size 55...80 cm (22...32")
13.	1	cos10096-01	vest <b>Medium</b> for h/p/cosmos airwalk, blue for waist size 81...112 cm (32...44")
14.	1	cos10097-01	vest <b>Large</b> for h/p/cosmos airwalk, yellow for waist size 112...145 cm (44...57")
15.	1	cos13752-01	replacement cable assembly for h/p/cosmos airwalk® 35, 50 and 90
16.	1	cos10094	compressor for h/p/cosmos airwalk 50 or 90 (not required if suitable compressed air supply available)
17.	1	cos12607-00	base plate 150/50 for h/p/cosmos airwalk (not required for floor fitting)
18.	1	cos14954	h/p/cosmos satellite print - printer-set for direct documentation without PC, incl. laser printer, RS232 interface converter with cable, printer rack/stand made of steel
19.	3	cos10223	potential equalization cable, 5 m (required for medical systems)
20.	1	cos10085	packing pallet & cardboard hood
21.	1	cos60098010021	shipping costs door to door within Europe, confirmed price on request
22.	1	cos15732-os/-eu	installation & instruction treadmill
23.	1	cos14320	presenter / workshop for 1 day practical work with unweighting and treadmills
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos solution for treadmill therapy with un-weighting:</b>
			<b>please ask your dealer for a quotation</b>

\*The 1-day-workshop is recommended for beginners for these applications. In case you are already experienced in this application utilizing this type of equipment, then you do not need this workshop and it can be deleted from the configuration and the total offered package price.

Please refer to the information about product specifications which can be found on pages 138 ... 149.



## recommended configuration treadmill therapy with un-weighting system

pos.	qty.	order number	product description
1.	1	cos30001va02	<b>running machine h/p/cosmos locomotion 150/50 de med</b> running surface 150 x 50 cm, speed 0...10.0 km/h, elevation -15...+15%, reverse belt rotation; adjustable therapist seats with ergonomic lumbar support and corresponding foot rests, adjustable handrails in height and width with gas spring support, extra emergency stop, extra keyboard, drive motor 3.3 kW, interface port com1 and com2, electronic motor brake, movable user terminal; h/p/cosmos para control PC software for remote control
2.	1	cos14663	wheelchair ramp for easy access to the running surface; suitable for wheelchairs with a width of up to 78 cm (30.71"); footprint of wheelchair ramp: (L x W): 120 x 80 cm (47.24" x 31.50")
3.	1	cos14954	h/p/cosmos satellite print - printer-set for direct documentation without PC, incl. laser printer, RS232 interface converter with cable, printer rack/stand made of steel
4.	3	cos10223	potential equalization cable, 5 m (required for medical systems)
5.	1	cos00097010035	interface cable RS232, 10 m
6.	1	cos10084	packing pallet & cardboard hood for treadmill
7.	1	cos100075-01	<b>unweighting system h/p/cosmos airwalk ap</b> pneumatic dynamic unweighting system; patient un-weighting up to 80 kg (optionally up to 160 kg), max. body weight: 200 kg (440 lbs)
8.	1	cos10094	air compressor for h/p/cosmos airwalk 50/90/ap, up to 8 bar, very silent with 3 m air connection hose, (operation: 230V / 10A fuse)
9.	1	cos102342	Option fall-stop prevention (with chest belt) for fall prevention and automatic stop of the running belt in fall
10.	1	cos102489	Option air spring mode (allows progressive bodyweight support and a reduction of air consumption)
11.	1	cos10112	vest <b>XSmall</b> for h/p/cosmos airwalk, light blue for waist size for children
12.	1	cos10095	vest <b>Small</b> for h/p/cosmos airwalk, red for waist size 55...80 cm (22...32")
13.	1	cos10096-01	vest <b>Medium</b> for h/p/cosmos airwalk, blue for waist size 81...112 cm (32...44")
14.	1	cos10097-01	vest <b>Large</b> for h/p/cosmos airwalk, yellow for waist size 112...145 cm (44...57")
15.	1	cos102317	replacement un-weighting rope for h/p/cosmos airwalk® ap
16.	1	cos10177	pallet and cardboard hood for transport h/p/cosmos airwalk® ap
17.	1	cos60098010021	shipping costs door to door within Europe (confirmed price on request)
18.	1	cos15732-os/eu	installation & instruction treadmill and unweighting
19.	1	cos14320	presenter / workshop* for 1 day practical work with unweighting and treadmills total price net, excluding VAT, excluding custom duties VAT(19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos solution for locomotion therapy:</b> <b>please ask your dealer for a quotation</b>

\*The 1-day-workshop is recommended for beginners for these applications. In case you are already experienced in this application utilizing this type of equipment, then you do not need this workshop and it can be deleted from the configuration and the total offered package price.

Please refer to the information about product specifications which can be found on pages 138 ... 149



# locomotion th

optimized for both patient and therapist



## locomotion therapy

- locomotion training – optimized for patient and physiotherapist
- earlier initiation of therapy with the wheelchair access ramp, adjustable handrails and un-weighting
- healthier work for therapists through therapy seats and footrests
- traceable results of treatment through simple documentation

# locomotion th

optimized for both patient and therapist



- an early start into locomotion therapy – but how?
- getting up safely from a wheelchair?
- manual locomotion without back pain for the physiotherapist?
- locomotion therapy ergonomic and motivating for therapist?

## safer start to the therapy – also from a wheelchair

Those who want to learn to walk ... must walk! Therefore, functional training on a treadmill is a key component of a neurological treatment facility. At the same time locomotion in practice is not always easy to implement. It starts when a wheelchair patient begins their therapy.

Getting onto the treadmill deck can be a challenge already. Therefore h/p/cosmos has equipped the system with an ergonomic wheelchair ramp. Furthermore the handrails contain telescopic extensions which can be pulled out 55 cm (21.65") to give additional support to the patients. They can assist and hold the handrails in many cases even during entering the treadmill on the ramp. And most patients are happy to help if we give them such tools.

Then they can stand up directly out of the wheelchair with support from the h/p/cosmos airwalk® vest and un-weighting system holding on to the individually adjusted handrails. Thus, the therapy can start successfully without much effort.







### early start of therapy with body weight support

In neurological rehabilitation it is important for the patient to start exercising as early as possible. Therefore an individual and optimal un-weighting system is crucial for the patient. The h/p/cosmos airwalk un-weighting system supports a natural gait pattern. The single-point suspension allows dynamic up and down movement when walking and at the same time allows freedom in movement and body rotations where wanted. Additional fixation straps for further stabilization may be utilized if desired and if recommended for the patient. The un-weighting, depending on the progress of therapy, can be adjusted electronically between 1 kg and 75 kg (2.2 and 165 lbs). The treadmill itself starts at 0.1 km/h speed and is driven by a very powerful 3.3 kW (4.5 HP) drive motor. Even heavy patients at low speeds can exercise smoothly without juddering.

The remote control for electronically re-adjustment of un-weighting has magnet holder and can be positioned on either side for the seated therapists. This is really important during therapy! With the h/p/cosmos system therapists can perform frequently required re-adjustments of parameters from seating position.



### improved ergonomics for healthier therapist

Due to an un-ergonomic working position and the difficulty of manipulating the patient's legs the therapist may find it difficult or even impossible to work with normal treadmills in manual locomotion therapy. Especially after several consequential sessions the therapists experience fatigue and often pain in shoulders and in the back. These problems can get worse when working with spastic patients. It may even lead to an early termination of the therapy. Therefore h/p/cosmos has developed a very sophisticated and ergonomic solution, which cares for the therapist first. We understand that only motivated and healthy therapists can serve the patient's needs best.





The simple to adjust rotating therapist seats – with excellent lumbar support – and corresponding foot supports on both sides of the treadmill allow the therapist to sit comfortably and firmly positioning themselves optimally.

For locomotion therapy the specially designed seats are positioned very close to the center of the deck, so the posture of the therapist is optimized. Very wide running surfaces would lead to further problems, therefore h/p/cosmos recommends the 50 cm (19.68") wide deck for this application and not the 65 cm deck of the h/p/cosmos quasar® med. No obstructive bars from un-weighting frames or other obstacles give the therapist un-interrupted access to the patient's legs. The arch design of the h/p/cosmos airwalk se 135 perfectly supports that. This is also important for lateral motion analysis.

## simple operation and control for therapist and patient

Altering the speed, changing the elevation and stopping - the therapist must always have access to these functions. Frequently standing up of the therapists during locomotion therapy for re-adjustment of un-weighting, speed and elevation parameter would interrupt the manual motion support to the patient's legs. It would mean confusion and burden to patient and therapist and would make the therapy much less attractive and effective. Therefore this shall be avoided.

To simplify this, the additional keyboard and the additional stop can be placed by therapist quickly and easily in the desired position. Both controls come with a flexible magnetic attachment and additional velcro strap for secure mounting and fast changing of positions either on the handrails (facing up or down) or on the vertical telescope pillars or even on the nearby tubes of the arch shaped unweighting system frame.



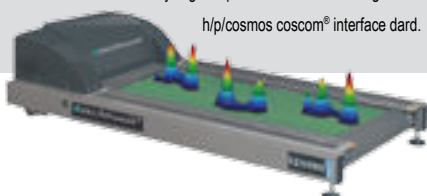




#### optionally: biomechanical-module

Optionally the h/p/cosmos locomotion 150/50 DE med treadmill can be equipped with sophisticated force plates and additional gait analysis software. This allows measuring and visualization of vertical ground reaction forces, force distribution, centre of pressure, step length and stride length and a variety of time based and other valuable biomechanical parameters. This leads to a state of the art biomechanical gait analysing system for therapy, research and sports and can be even combined with motion

analysing components and EMG through the h/p/cosmos coscom® interface card.



#### downhill for optimal therapeutic results

Among other potential uses in therapy, especially for patients with weakness of the dorsiflexors, the possibility of walking downhill with a sufficient gradient is a big help. By using the reverse belt rotation the incline of the treadmill can be used as a downhill gradient up to 15% in this system. With the single point suspension un-weighting system the patient just turns round on the treadmill in no time. By simply turning a key switch, the running belt moves in the opposite direction. The automatic belt centring aligns the running belt during reverse and downhill operation on the h/p/cosmos locomotion® treadmill.

#### traceable results of treatment through fast documentation

The results of the treatment course should be well documented. This is not just important for patients and families, but also for the participating doctors and insurance companies. Good documentation must be readily available and easy to interpret.

As soon as the therapy session has finished and the stop button is pressed the h/p/cosmos satellite printer, which is connected directly to the treadmill, prints the comprehensive documentation. This allows an easy and quick understanding regarding documentation of treatment progress without significant expenditure of time. All relevant exercise results and data such as duration, speed, elevation, distance, heart rate, fitness index, date, time and even treadmill serial number for traceability are included in the printout, even without using any PC or software. Just write the patient's name and remarks by hand.





## recommended configuration gait therapy and athletic training h/p/cosmos pulsar® med 3p

pos.	qty.	order number	product description
1.	1	cos30004va04	<b>running machine h/p/cosmos pulsar® 3p</b> running surface 190 x 65 cm, speed 0 ... 40 km/h, elevation -25 ... +25 %, drive motor 4.3 kW with high-performance 3-phase power supply
2.	1	cos101277va02	„science port“ speed output with raw speed data excluding the „smoothing algorithms“
3.	1	cos10159va01-v06	special speed 0 ... 45 km/h / 0 ... 28 mph / 0 ... 12.5 m/s
4.	1	cos15133-03	handrail crossbar „speed“, in front
5.	1	cos14763-01	handrail „speed“ shortened including additional ergonomic handhold, left hand side (surcharge)
6.	1	cos102187	footboard „speed“ right for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
7.	1	cos14764	footboard „speed“ left for safe jumping on and off the moving running belt, extra width and yellow/black safety marking
8.	1	cos101626	LCD Monitor TV 46" (with a small monitor stand for table)
9.	1	cos101624	Monitor stand mobile for LCD TV 46" (max. load: 30 kg; height: 180 cm))
10.	1	cos13476-01va02	DELL® laptop computer
11.	1	cos00097010035	interface connection cable RS 232 10 m (32 ft 9.70")
12.	2	cos12769-01	interface adapter / converter USB / RS 232
13.	1	cos16487	3rd interface RS 232 com3 with coscom v3, baudrate 115.200 bps
14.	1	cos30022-01va02	<b>h/p/cosmos robowalk® expander F (front)</b> , including 4 ropes, forces and angles of forces are adjustable vertically & horizontally
15.	1	cos30023-01va02	<b>h/p/cosmos robowalk® expander B (back)</b> , including 4 ropes, forces and angles of forces are adjustable vertically & horizontally
16.	2	cos101050-S	leg cuff thigh, size S (colour code red, for thigh circumference 250 ... 390 mm / 9.8" ... 15.4") for robowalk expander
17.	2	cos101050-M	leg cuff thigh, size M (colour code blue, for thigh circumference 360 ... 510 mm / 14.2" ... 20.1") for robowalk expander
18.	2	cos101050-L	leg cuff thigh, size L (colour code yellow, for thigh circumference 490 ... 750 mm / 19.3" ... 29.5") for robowalk expander
19.	2	cos101051-XS	leg cuff shank, size XS (for ankle circumference 140 ... 270 mm / 5.5" ... 10.6") for robowalk expander
20.	1	cos30028	<b>h/p/cosmos airwalk® ap</b> (max. 200 kg / 440 lbs body weight) unweighting system dynamic up to ca. 120 kg with fall-stop-prevention & automatic running-belt-stop
21.	1	cos102342	emergency stop for airwalk® ap
22.	1	cos102342	Option fall-stop prevention (with chest belt) for fall prevention and automatic stop of the running belt in fall
23.	1	cos102489	Option air spring mode (allows progressive bodyweight support and a reduction of air consumption
24.	6	cos14903-03-S/M/L	chest belt system for safety arch harness Small/Medium/Large
25.	1	cos10094	air compressor for h/p/cosmos airwalk 50/90/ap, up to 8 bar, very silent with 3 m air connection hose, (operation: 230V / 10A fuse)
26.	1	cos101664va02	<b>Optogait® LED motion/gait analysis system</b> for treadmills 190/65; incorporated optical LED gait analysis system for treadmills 190/65 (incl. trigger function)
27.	1	cos10177	packing on pallet + cardboard hood, airwalk ap disassembled
28.	1	cos10177	packing on pallet + cardboard hood, treadmill partially assembled, running surface 190 x 65 cm (safety arch)
29.	1	cos60098010021	transport / shipping charge (please specify if truck, sea or air freight; for overseas sea shipment is recommended)
30.	1	cos10194	installation, commissioning and instruction through authorised and trained personnel
31.	1	cos101341	1 full day workshop treadmill applications in speed & agility
32.	2	cos101094	1 full day practical workshop robowalk & functional training, details in handling equipment & software

**system price h/p/cosmos treadmill solution for gait therapy and athletic training: please ask your dealer for a quotation**

\*The 1-day-workshop is recommended for beginners for these applications. In case you are already experienced in this application utilizing this type of equipment, then you do not need this workshop and it can be deleted from the configuration and the total offered package price.  
Please refer to the information about product specifications which can be found on pages 138 ... 149.

# robomwalk exp

innovative therapy methodology - active gait correction







## rehabilitation system robowalk<sup>®</sup> expander

- gait training and active gait correction (AGC) for orthopaedic or neurological patients
- gait improvement combined with strength and coordination training
- motion support and mobilization of spastic patients
- supports therapists in manual locomotion therapy
- supports the “3 pillars” of success in neurologic rehabilitation:  
1<sup>st</sup> motivation of the patient, 2<sup>nd</sup> correct movement pattern / physiological gait and 3<sup>rd</sup> repetition of movement

# robowalk®

## innovative therapy methodology



- an early start into locomotion therapy – but how?
- getting up safely from a wheelchair?
- manual locomotion without back pain for the physiotherapist?
- locomotion therapy ergonomic and motivating for therapist?

### how does the h/p/cosmos robowalk® expander work?

First, elastic cables are attached to patient's legs with comfortable leg cuffs. As the patient walks, the cables at the front assist the movement of the legs with support. The cables at the rear can be used also as resistance and for gait correction training. Both the front and back system can be utilized together for even greater training effects. By adjusting the angle of the support/resistance cables either vertically or horizontally, movement correction is possible. The patented tension adjustment module involves readable scales on each cable for tension monitoring.

### a complete sophisticated rehabilitation system

Patients in physical therapy often suffer from restricted mobility. For some patients, even stepping onto the treadmill is difficult. The h/p/cosmos® rehabilitation system features a treadmill with a low access step height and extra long handrails that extend the full length of the treadmill. This is the safest way a patient with impaired ability to walk can use a treadmill. A professional wheelchair ramp is available as an accessory, allowing comfortable access onto the running surface for most types of wheelchairs.





The h/p/cosmos mercury® med treadmill system comes with a running surface of L: 150 cm (59.05") x W: 50 cm (19.68") which meets the standards for many applications. For special demands larger deck size models like the h/p/cosmos quasar® med, the high performance h/p/cosmos pulsar® 3p or special h/p/cosmos locomotion 150/50 de med treadmill with incorporated therapist seats and adjustable handrails are available. Custom-made models designed for higher body weights and for special applications are manufactured by h/p/cosmos®.

### therapy in the early stages of recovery

The course of therapy should start as early as possible and should be enjoyable for both, the patient and the therapist. For this to be possible, added support is often needed. The h/p/cosmos robowalk® expander rehabilitation-system provides support for the patients in several ways.



### supporting movement with the expander

The expander technology benefits the patient and the therapist during treatment by supporting the forward force of movement. In addition, it assists the therapists in moving the patient's limbs rather than moving them manually. This leads to reduced fatigue in both patient and therapist and will enable extended treatment time leading to successful therapy. The robowalk® expander is a great help for especially challenging work with disabled patients.





### robowalk ... the „power steering“ for locomotion therapy

In manual locomotion therapy the front robowalk® expander system with its traction force support on the thighs and / or also simultaneously on the shanks can be compared to a power steering system of a vehicle. The power consuming work and motion is supported by the system but not fully replacing the human effort.

### individual and reproduceable settings

The h/p/cosmos robowalk® expander is easy to use and therapists will appreciate the simple settings. Forces and angles of tension cables can be set individually via raster holes to match the skills of the patient or the requirements of the therapist. Due to the flexibility of the expander cables, the movement can be set from almost any point in front of or behind the patient. The rear expanders have very different functions and benefits compared to the front expanders. The rear cables do not create traction support like the front cables, but work as a resistance system for muscle training and gait correction. The rear expander cables can even be set outside the width of the treadmill so that adjustments from the side can be made to the patient's leg positioning.

Since in many cases it is not required that the therapist works permanently hands on 'contact' with the patient, it allows the therapist to observe the movement of the patient and to observe the treatment progress by viewing the patient from different angles.

Once you have found the perfect setting for a patient you will want to use this at the next visit straight away. Each setting is numbered so that the therapists can easily record each patient's specific setup for future therapy and training sessions.



### relief through body weight support

The patented and individually adjustable h/p/cosmos® arm support gives users the stability and safety that they need. The manual un-weighting arm support has cushioned U-shaped pads for patient's forearms and ergonomic handgrips to provide them with the comfort and additional support they need. Additionally the patient can hold the two ergonomic hand grips giving tremendous positive impact on the comfort of the patient. The arm supports also have a positive mental impact on patients empowering them to walk without worrying about the fear of falling. If required, the optional h/p/cosmos® airwalk unweighting systems can unweight up to 160 kg (352 lbs) body weight with the help of a body vest.

The additional keyboard and additional stop button give both therapist and patient control at all times. Even if the therapist moves the additional keyboard down to the running deck to assist the patient's movement of the legs, the patient still has access to the additional stop button in the hand grip and can stop the treadmill without leaving the safety of the arm support.

### patient safety leads to positive results

An important accessory when working with the robowalk expander technology is the h/p/cosmos safety arch with fall stop and chest harness. In case of a fall, the patient will be secured and the treadmill will stop automatically. The comfortable chest harness secures the patient and prevents them from falling forwards without restricting or pinching them. In gait therapy or exercise with children, the safety arch is crucial because only patients who feel secure will be able to perform with the required movement and intensity.

The max. body weight for the safety arch is 200 kg / 441 lbs; the length of the harness is individually adjustable. Custom made systems are available.



# system solution active gait correction: robowalk



## recommended configuration active gait correction robowalk®

pos.	qty.	order number	product description
1.	1	cos30000va08	<b>running machine h/p/cosmos mercury® med</b> running surface 150 x 50 cm, speed 0 ... 22 km/h, elevation 0 ... 25 %, drive motor 3.3 kW, interface port com1 for PC, ECG, ergospirometry-, blood-pressure-monitor system or printer - compatible to most of the systems worldwide
2.	1	cos10145	handrail long, 60mm tube diameter, 2 pillars (surcharge)
3.	1	cos10079va01	<b>safety arch with chest-belt (size M, blue), harness and emergency switch (fall-stop)</b>
4.	1	cos14903-03-S	chest belt size <b>S</b> (red) for h/p/cosmos safety arch
5.	1	cos14903-03-L	chest belt size <b>L</b> (yellow) for h/p/cosmos safety arch
6.	1	cos00098100045-01	reverse belt rotation for downhill simulation
7.	1	cos12013	<b>h/p/cosmos arm support with 3 joints, adjustable in height and width</b>
8.	1	cos10107	h/p/cosmos additional stop-button for arm support, right
9.	1	cos100680	h/p/cosmos additional keyboard with 6 keys (START, STOP, +, -, up, down)
10.	1	cos10111-01	mounting for additional keyboard at the arm support
11.	1	cos11750	mounting for additional keyboard at the motor hood, right
12.	1	cos14327	mounting for additional keyboard at the motor hood, left
13.	1	cos30022-01va01	<b>h/p/cosmos robowalk® expander F front 150/50 incl.</b> 1 pair leg cuff thigh size: M and 1 pair leg cuff shank size: XS
14.	1	cos30023-01va01	<b>h/p/cosmos robowalk® expander B back 150/50 without leg cuffs</b>
15.	1	cos101050-L	1 pair leg cuffs thigh for robowalk expander, size: L, yellow (thigh circumference 50...75 cm / 19.5...29.3 inches)
16.	2	cos101052	foot straps including cuff to lift forefoot
17.	1	cos10071-v4.1.0	h/p/cosmos para control® 4.1 PC software for remote control and monitoring
18.	1	cos10223	potential equalization cable, 5 m (required for medical systems)
19.	1	cos14795	pallet and cardboard hood packing 50
20.	1	cos60098010021	shipping costs* door to door within Europe, approx, confirmed price on request
21.	1	cos15732-os/-eu	installation & instruction treadmill
22.	1	cos101094	1 day workshop for h/p/cosmos robowalk expander applications (recommended for beginners)
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			<b>system price h/p/cosmos robowalk® expander solution: please ask your dealer for a quotation</b>

robowalk® is also available for the h/p/cosmos models locomotion®, gaitway®, quasar® med and pulsar® 3p. Retrofitting is possible for many h/p/cosmos models.

Please refer to the information about product specifications which can be found on pages 138 ... 149.





### h/p/cosmos robomove® expander

pos.	qty.	order number	product description
1.	1	cos101659va01	h/p/cosmos robomove® expander vh elastic cable system for vertical or horizontal wall mount measurement device: 100x200x2000 mm including: 2 nooses for hand or leg, 8 screws and dowels for wall mount
2.	1	cos101659va02	h/p/cosmos robomove® expander vh elastic cable system for vertical or horizontal wall mount measurement device: 100x120x2000 mm including: 2 nooses for hand or leg, 8 screws and dowels for wall mount



### robomove® can be very well combined with DMS®

The combination of using the robomove® with the DMS® Dynamic Movement Skills mat training system, helps to identify the compensation weaknesses and to develop the movement patterns under resistance. Because we are able to measure where and how the individual uses their legs in conjunction with the upper body, we can train correct movement biomechanics under resistance. This way we can correct the inefficient movement patterns and develop mobility, stability and strength at the same time.



## robomove®-technology for wall mounting



### what is robomove®?

The robomove® expander is an extraction of the successful robowalk® technology, which has been developed especially for h/p/cosmos® treadmills. robomove® is an elastic cable exercise device for wall mount and therewith independent from treadmills. robomove® is used for scores of training and therapy methodologies similar to the utilization of conventional cable exercise devices.

The subject's arms and/or legs are attached to the elastic cables with nooses or cuffs. The elastic cables generate movement support during eccentric exercise or resistance during concentric exercise.

By adjusting the angle of support/resistance and the force vectors through guide pulleys also movement correction is possible. Adjustments of force angles are very fast and simple. Readable scales offer fast reproduction of settings.

The patented tension adjustment module which is known from the Bodyspider® consists of continuously variable rubber cable pulls with scales for load display.





### benefits of robomove®?

- robomove® is based on the robowalk® expander technology by h/p/cosmos
- applicable for fitness as well as for orthopaedic and neurological problems
- space-saving resistance trainer, light weight, without weight stack plates
- vertically or horizontally mountable and adjustable
- the resistance is much more constant and has less progressive force curves over the entire range of motion compared to most other expander systems
- very quiet & low maintenance, because there are no weight plates
- no force changes at the top and bottom dead center (reversal point) because no kinetic energy compared to cable exercise devices with weight stack plates
- up to 4 cables with up to maximum 50 Newton (ca. 5 kg) each

### applications

- exercise therapy
- applicable for fitness as well as for orthopaedic and neurological problems
- co-ordination and functional training
- strength and endurance training, even for very fast movements





# therapeutic b

## easily adjustable handrail bars

---



# bar training

## therapeutic bar training

### therapeutic bar training

- easily adjustable handrail bars to complement your current treatment offer
- simple, continuous height adjustment with gas spring support
- reproducible settings through integrated reading scale
- best results through independent width adjustment of the handrails



# therapeutic

## easily adjustable handrail bars



- easily adjustable handrail bars
- walking bars effortlessly adjustable with one hand?
- handrails in v-form for optimal results?
- optimal setting for hemiparesis patients?

### easy and continuous adjustment with gas spring support

Whether in the gym, in the corridor or as a separate training system – walking bars are the ideal complement to the available treatments. The individual settings for height, width and angle of the handrails are crucial for best results, and they have to be quickly and easily adjusted during a busy working day.

### push the button

The h/p/cosmos parawalk® has integrated gas piston height adjustment. Adjusting the height is child's play – even with just one hand. The width and angle of the hand rails can be adjusted quickly by lifting the locking lever, pushing the adjustment button for setting the height and after adjustment locking the lever again – that's it.

### reproducible settings with integrated scale

Once you have found the perfect setting for a patient you will want use this at the next visit straight away. Therefore, the pillars of the h/p/cosmos parawalk® have an integrated reading scale. With the help of the scale you can exactly determine the current position and reproduce simply at the next training session.



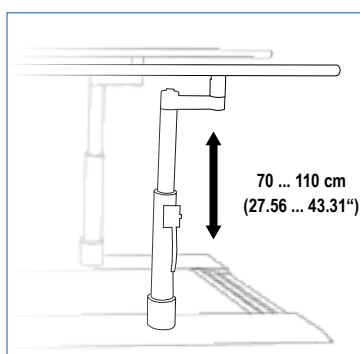




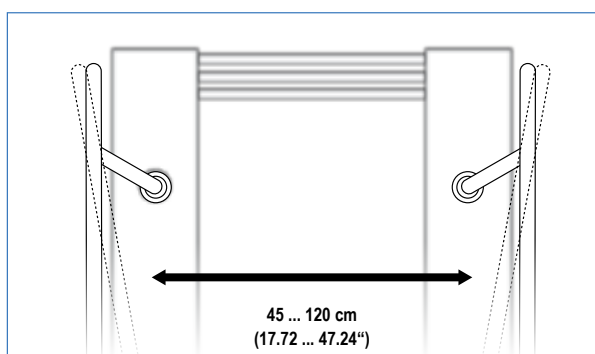
### the optimum length

Depending on the space available, the positioning, the patients and therapy target, you will need the optimal walking rail design.

To meet these different needs and requirements the h/p/cosmos parawalk is available with bar lengths of 3, 4 and 5 meters (118.11, 157.48 and 196.95").



The h/p/cosmos parawalk has integrated gas pistons allowing easy height adjustment from 70 cm to 110 cm with safe locking levers.





## recommended configuration therapeutic bar training 4 meter h/p/cosmos parawalk®

pos.	qty.	order number	product description
1.	1	cos30019va01	<b>h/p/cosmos parawalk 4 m parallel bars with wooden plate</b> gas-spring support; very smooth operation; adjustable areas: in width 45...120 cm (17.7...47.2") approx., in height 70...110 cm (27.6 ... 43.3") approx., readable scales (marks) on all 4 pillars, height and width adjustable independently, locking options through levers, minor access wood plate, multi bonded wood plate birch, can be mounted on even floor without cross base plate (including mounting material)
2.	1	cos100917	packing h/p/cosmos parawalk 4 m (13' 1.48") in wooden crate
3.	1	cos60098010021	shipping costs door to door within Europe, confirmed price on request
total price net, excluding VAT, excluding custom duties			
VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)			
<b>system price h/p/cosmos therapeutic bar training 4 meter:</b>			
please ask your dealer for a quotation			

## alternative 1: configuration therapeutic bar training 3 meter h/p/cosmos parawalk®

pos.	qty.	order number	product description
1.	1	cos30018va01	<b>h/p/cosmos parawalk 3m parallel bars with wooden plate</b> (description see above)
2.	1	cos100916	packing h/p/cosmos parawalk 3m (9' 10.11") in wooden crate
3.	1	cos60098010021	shipping costs door to door within Europe, confirmed price on request
total price net, excluding VAT, excluding custom duties			
VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)			
<b>system price h/p/cosmos therapeutic bar training 3 meter:</b>			
please ask your dealer for a quotation			

## alternative 2: configuration therapeutic bar training 5 meter h/p/cosmos parawalk®

pos.	qty.	order number	product description
1.	1	cos30020va01	<b>h/p/cosmos parawalk 5m parallel bars with wooden plate</b> (description see above)
2.	1	cos100918	packing h/p/cosmos parawalk 5 m (16' 4.85") in wooden crate
3.	1	cos60098010021	shipping costs door to door within Europe, confirmed price on request
total price net, excluding VAT, excluding custom duties			
VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)			
<b>system price h/p/cosmos therapeutic bar training 5 meter:</b>			
please ask your dealer for a quotation			

Please refer to the information about product specifications which can be found on page 120.

## specifications parallel bars h/p/cosmos parawalk® 4 meter

parallel bars:	h/p/cosmos parawalk 4 m with wooden plate*
order number:	cos30019va01
applications:	medical parallel-bar-system for rehabilitation and mobility training
walking surface (length):	400 cm (157.50")
walking surface (width):	variable handrail width independently adjustable from 45 ... 120 cm (17.70 ... 47.20")
handrails:	material both sides steel tube 40 mm (1.57") ø
handrail height:	variable handrail height independently adjustable from 70 ... 110 cm (27.56 ... 43.30"), readable scales (marks) on all 4 pillars
maximum user weight:	400 kg (880 lbs)
classification:	class I (MDD), non-active therapeutic device
colour:	white colour RAL9010 (special colour on request)
weight:	net: 300 kg (660 lbs); gross: 480 kg (1058.2 lbs)

## specifications parallel bars h/p/cosmos parawalk® 3 meter

parallel bars:	h/p/cosmos parawalk 3 m with wooden plate*
order number:	cos30018va01
applications:	medical parallel-bar-system for rehabilitation and mobility training
walking surface (length):	300 cm (118.10")
walking surface (width):	variable handrail width independently adjustable from 45 ... 120 cm (17.70 ... 47.20")
handrails:	material both sides steel tube 40 mm (1.57") ø
handrail height:	variable handrail height independently adjustable from 70 ... 110 cm (27.56 ... 43.30"), readable scales (marks) on all 4 pillars
maximum user weight:	400 kg (880 lbs)
classification:	class I (MDD), non-active therapeutic device
colour:	white colour RAL9010 (special colour on request)
weight:	net: 291 kg (640 lbs); gross: 451 kg (994.3 lbs)

## specifications parallel bars h/p/cosmos parawalk® 5 meter

parallel bars:	h/p/cosmos parawalk 5 m with wooden plate*
order number:	cos30020va01
applications:	medical parallel-bar-system for rehabilitation and mobility training
walking surface (length):	500 cm (196.85")
walking surface (width):	variable handrail width independently adjustable from 45 ... 120 cm (17.70 ... 47.20")
handrails:	material both sides steel tube 40 mm (1.57") ø
handrail height:	variable handrail height independently adjustable from 70 ... 110 cm (27.56 ... 43.30"), readable scales (marks) on all 4 pillars
maximum user weight:	400 kg (880 lbs)
classification:	class I (MDD), non-active therapeutic device
colour:	white colour RAL9010 (special colour on request)
weight:	net: 350 kg (770 lbs); gross: 550 kg (1212.5 lbs)

\* The wooden plate is made of birch ply and has ramps on both ends. The parallel bars can be installed without the wooden plate and without cross members for unobstructed walking directly on the floor, but need to be bolted on the floor. Mounting material is included. When using the cross members and wooden plate, no bolting is required and the system is free standing. The ramp is 35 mm (1.38") high.

### Warning!

Installation, commissioning, instruction and maintenance only to be conducted by h/p/cosmos trained and authorised personnel.



4 sets of para walk® with 4 meters length each, installed to a total of 16 meters walk way



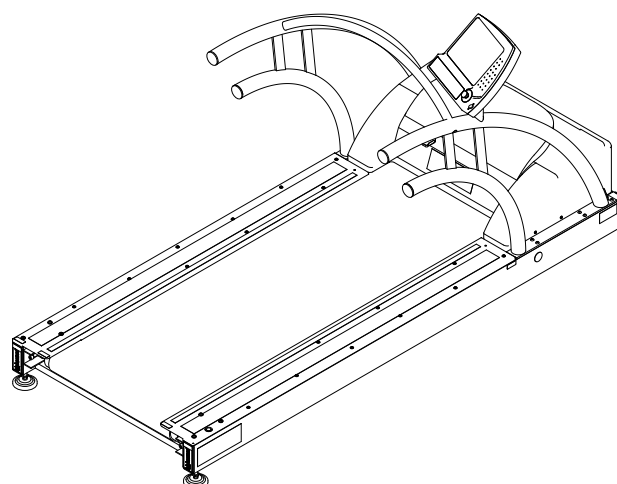
## specifications h/p/cosmos pulsar® med 3p

running machine:	<b>pulsar® med 3p</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30004va04
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 190 cm (6ft 2.8") B: 65 cm (2ft 1.6") special sizes available at extra charge access height: 23 cm (9.06") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with profiled surface, 5 mm thick - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed available at extra charge: 0...10 km/h (0...6.2 mph) 0...45 km/h (0...27.8 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.084 ... 3.70 m/s² programmable via para control PC software
elevation:	-25.0 %...+25.0 % (-14.0°...14.0°) motorized adjustment, (up to -25 % when using reverse belt rotation)
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	4.3 kW (5.8 PS) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip); potential equalization bolt; transformer for potential-isolation from the mains.
degree of protection:	appliance class I (⊕) / type B (B) / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,2 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions)	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)
heart rate monitoring:	POLAR W.I.N.D. coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	2 x RS 232 com1 & com2 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com3 with 115200 bps;



programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC software (incl.):	h/p/cosmos para control® for display & remote control; h/p/cosmos para graphics® for recording & visualization; including 2 x RS232 interface cable (1 x 5 m (16 ft 4.85")), 1 x 10 m (32 ft 9.70")).
PC software: (extra charge)	h/p/cosmos para analysis® & para motion®. PC software for monitoring, recording & motion analysis
accessory (incl.):	user manual, drinking bottle holder with 2 h/p/cosmos 0.5 l bottles, service box, special oil, 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over 1/3 of treadmill length with front-handrail crossbar other handrail designs at extra charge
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection;
size of frame:	L: 250 cm (8ft 2.4") W: 105 cm (3ft 5.3") H: 145 cm (4ft 9.1")
net. weight:	device approx. 384 kg (847 lbs)
gross weight:	device approx. 590..640 kg (1300..1410 lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



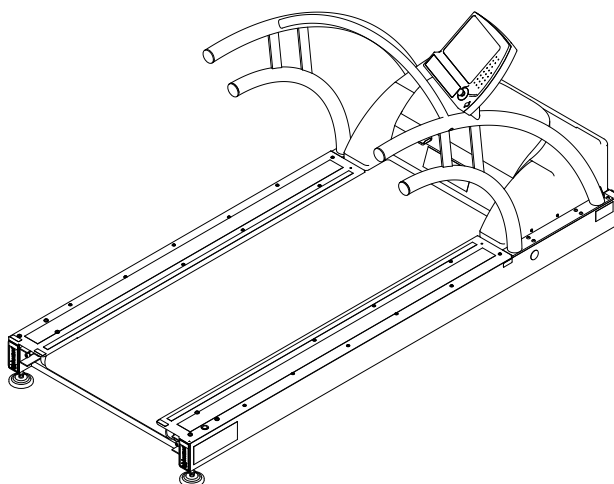
## specifications h/p/cosmos quasar® med

running machine:	quasar® med
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30003va20
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 170 cm (5ft 6.9") B: 65 cm (2ft 1.6") special sizes available at extra charge access height: 23 cm (9.06") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with profiled surface, 5 mm thick - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...25.0 km/h (0...6.9 m/s) (0...15.5 mph) special speed available at extra charge: 0...10 km/h (0...6.2 mph) 0...30 km/h (0...18.6 mph) 0...40 km/h (0...24.8 mph) 0...45 km/h (0...27.8 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.053... 2.31 m/s <sup>2</sup> programmable via para control PC software
elevation:	0...28 % (0...15.6°) motorized adjustment (-28 %...+28 % when using optional reverse belt rotation)
running direction:	switch for reversing running belt direction at extra charge. max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	3.3 kW (4.5 HP) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor. For high-performance applications we recommend models with a 3-phase 3x400 volt power supply and a running surface min. 190/65 cm.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip); potential equalization bolt; transformer for potential-isolation from the mains.
degree of protection:	appliance class I  / type B  / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,2 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions):	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)

heart rate monitoring:	POLAR wireless transmitter, 1 channel receiver; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85").
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, drinking bottle holder with 2 h/p/cosmos 0.5 l bottles, service box, special oil, 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over 1/3 of treadmill length with front-handrail crossbar other handrail designs at extra charge
voltage supply:	230 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection;
size of frame:	L: 230 cm (7ft 6.6") B: 105 cm (3ft 5.3") H: 145 cm (4ft 9.1")
net. weight:	device approx. 332 kg (732 lbs)
gross weight:	device approx. 530...580 kg (1166...1276 lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



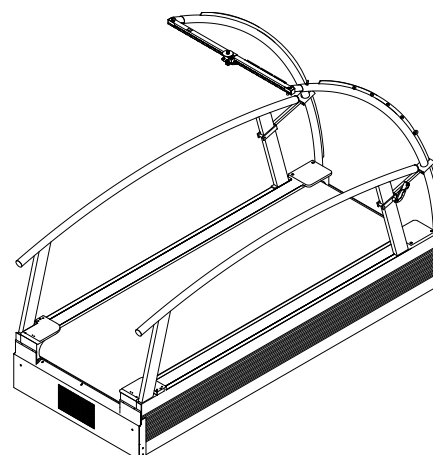
## specifications h/p/cosmos venus® med 200/75

running machine:	<b>venus® med 200/75</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30005-01va05
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via extern UserTerminal (TouchPanel display), MCU5, integrated interface or via optional remote control; control unit external and running machine pluggable connected with 3 cables.
running surface:	L: 200 cm (6ft 6.7") B: 75 cm (2ft 5.5") special sizes available at extra charge access height: 48 cm (1ft 6.9") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with profiled surface, 5 mm thick - max. permissible load: 210 kg (463 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed available at extra charge: 0...30 km/h (0...18.6 mph) 0...50 km/h (0...31.06 mph) 0...60 km/h (0...37.28 mph) 0...80 km/h (0...49.71 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.084 ... 3.70 m/s² programmable via para control PC software
elevation:	-35.0%...+35.0 % (-19.0°...+19.0°) motorized adjustment, (up to -35% when using reverse belt rotation)
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	11 kW (15 PS) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); sensitive protection (light barriers with stop function) at belt re-entry zones; potential equalization bolt; sensitive protection (light barriers with control light) for belt alignment; transformer for potential-isolation from the mains; power supply monitoring with control light, integrated motor brake
degree of protection:	appliance class I (⚡) / type B (⚡) / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,25 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions)	TouchScreen display with operation mode, display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)

heart rate monitoring:	POLAR W.I.N.D: coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode")
digital interface:	2x USB 2.0, 1x Ethernet RJ45 (100MBit/sec), 2 x RS 232 com1 & com2 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter;
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each.
PC software (incl.):	h/p/cosmos para control® for display & remote control; h/p/cosmos para graphics® for recording & visualization; including 2 x RS232 interface cable (1 x 5 m (16 ft 4.85"), 1 x 10 m (32 ft 9.70"))
PC software: (extra charge)	h/p/cosmos para analysis® & para motion®. PC software for monitoring, recording & motion analysis.
accessory (incl.):	user manual, drinking bottle holder with 10 h/p/cosmos 0.5 l bottles, service box, special oil, 3x5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over the whole treadmill surface with front-handrail crossbar; other handrail designs at extra charge
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 32 A fuse; dedicated circuit, line and protection;
size of frame:	L: 240 cm (7ft 10.5") W: 115 cm (3ft 9.2") H: 138 cm (4ft 6.3")
size control unit:	depth: 48 cm (1ft 6.9") B: 80 cm (2ft 7.4") H: 106 cm (3ft 5.7")
net. weight:	device approx. 854 kg (1883 lbs)
gross weight:	device approx. 990...1190 kg (2182...2624 lbs)



Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.





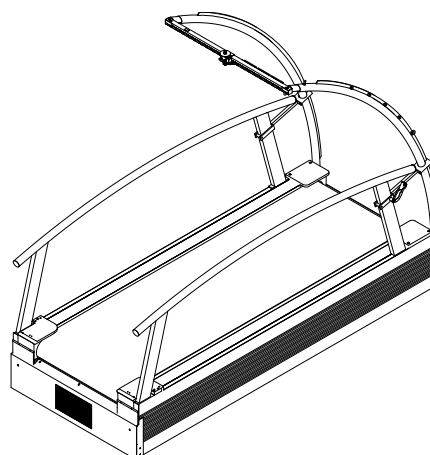
# specifications h/p/cosmos saturn® med 300/100r

running machine:	saturn® med 300/100
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30011-01va05
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via extern UserTerminal (TouchPanel display), MCU5, integrated interface or via optional remote control; control unit external and running machine pluggable connected with 3 cables.
running surface:	L: 300 cm (9ft 10.1") B: 100 cm (3ft 3.4") special sizes available at extra charge access height: 48 cm (1ft 6.9") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with profiled surface, 5 mm thick - max. permissible load: 210 kg (463 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed available at extra charge: 0...30 km/h (0...18.6 mph) 0...50 km/h (0...31.06 mph) 0...60 km/h (0...37.28 mph) 0...80 km/h (0...49.71 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.084... 3.70 m/s² programmable via para control PC software
elevation:	-27,0%...+27,0 % (-15,1° ...+15,1°) motorized adjustment, (up to -27% when using reverse belt rotation)
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	11 kW (15 PS) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); sensitive protection (light barriers with stop function) at belt re-entry zones; potential equalization bolt; sensitive protection (light barriers with control light) for belt alignment; transformer for potential-isolation from the mains; power supply monitoring with control light, integrated motor brake
degree of protection:	appliance class I  / type B  / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,25 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions):	TouchScreen display with operation mode, display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)



heart rate monitoring:	POLAR W.I.N.D.: coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	2x USB 2.0, 1x Ethernet RJ45 (100MBit/sec), 2 x RS 232 com1 & com2 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter;
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC software (incl.):	h/p/cosmos para control® for display & remote control; h/p/cosmos para graphics® for recording & visualization; including 2 x RS232 interface cable (1 x 5 m (16 ft 4.85"), 1 x 10 m (32 ft 9.70"))
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, drinking bottle holder with 10 h/p/cosmos 0.5 l bottles, service box, special oil, 3x 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over the whole treadmill surface with front-handrail crossbar other handrail designs at extra charge
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 32 A fuse; dedicated circuit, line and protection;
size of frame:	L: 340 cm (11ft 1.8") W: 140 cm (4ft 7.1") H: 138 cm (4ft 6.3")
size control unit:	depth: 48 cm (1ft 6.9") W: 80 cm (2ft 7.4") H: 106 cm (3ft 5.7")
net. weight:	device approx. 1200 kg (2646 lbs)
gross weight:	device approx. 1350...1550 kg (2976...3417 lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



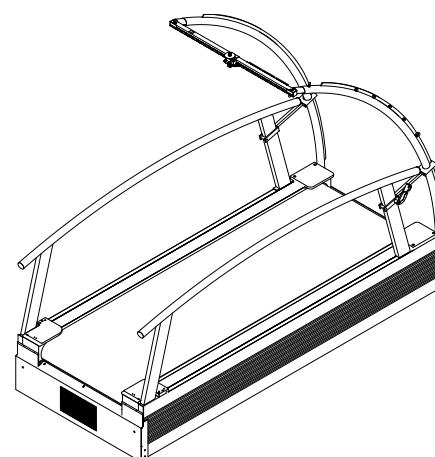
## specifications h/p/cosmos saturn® med 300/125r

running machine:	<b>saturn® med 300/125r</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30012-01va03
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via extern UserTerminal (TouchPanel display), MCU5, integrated interface or via optional remote control; control unit external and running machine pluggable connected with 3 cables.
running surface:	L: 300 cm (9ft 10.1") B: 125 cm (4ft 1.2") special sizes available at extra charge access height: 48 cm (1ft 6.9") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with low roll resistance - oil pump and tank for lubrication support - max. permissible load: 210 kg (463 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed available at extra charge: 0...30 km/h (0...18.6 mph) 0...50 km/h (0...31.06 mph) 0...60 km/h (0...37.28 mph) 0...80 km/h (0...49.71 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.084 ... 3.70 m/s² programmable via para control PC software
elevation:	-27.0%...+27.0 % (-15.1° ... +15.1°) motorized adjustment, (up to -27% when using reverse belt rotation)
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	11 kW (15 PS) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); sensitive protection (light barriers with stop function) at belt re-entry zones; potential equalization bolt; sensitive protection (light barriers with control light) for belt alignment; transformer for potential-isolation from the mains; power supply monitoring with control light, integrated motor brake
degree of protection:	appliance class I  / type B  / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,25 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions)	TouchScreen display with operation mode, display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)

heart rate monitoring:	POLAR W.I.N.D: coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode")
digital interface:	2x USB 2.0, 1x Ethernet RJ45 (100MBit/sec), 2 x RS 232 com1 & com2 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter;
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each.
PC software (incl.):	h/p/cosmos para control® for display & remote control; h/p/cosmos para graphics® for recording & visualization; including 2 x RS232 interface cable (1 x 5 m (16 ft 4.85"), 1 x 10 m (32 ft 9.70"))
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. (extra charge) PC software for monitoring, recording & motion analysis.
accessory (incl.):	user manual, drinking bottle holder with 10 h/p/cosmos 0.5 l bottles, service box, special oil, 3x5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over the whole treadmill surface with front-handrail crossbar; other handrail designs at extra charge
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 32 A fuse; dedicated circuit, line and protection;
size of frame:	L: 340 cm (11ft 1.8") W: 165 cm (5ft 5.5") H: 138 cm (4ft 6.3")
size control unit:	depth: 48 cm (1ft 6.9") B: 80 cm (2ft 7.4") H: 106 cm (3ft 5.7");
net. weight:	device approx. 1250 kg (2756 lbs)
gross weight:	device approx. 1400...1600 kg (3086...3527 lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



## specifications h/p/cosmos saturn® med 450/300rs



running machine:	<b>saturn® med 450/300rs</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30013-01va01
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via extern UserTerminal (TouchPanel display), MCU5, integrated interface or via optional remote control; control unit external and running machine pluggable connected with 3 cables.
running surface:	L: 450 cm (14ft 9.1") B: 300 cm (9ft 10.1") special sizes available at extra charge deck access height: dependent on depth of installation pit. Elevated staging (or installation pit) and automatic entry Ramp for ground level mounting/dismounting: 130 cm (4ft 3.1") or pit install for even access. Access height without installation pit approx. 130 cm (4ft 3.1") - max. permissible load: 210 kg (463 lbs) - optional 300 kg (660 lbs) at extra charge
running belt:	- reinforced running belt with low roll resistance - automatic belt centering and belt tensioning control - cushioned surface for joint protection - surface of running belt is an adhesive rubber coating - improved anti slip characteristics - total overall thickness ca. 9.5 mm - temperature resistant: permissible constant temperature range -30...+100°C - water and saltwater resistant, particularly human perspiration - 3 year warranty on the running belt by use with ski sticks with a minimum ski tip diameter of 5.0 mm (excluding shipping, travel and installation)
lubrication:	Automatic lubrication system between running deck and running belt (running deck)
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed available at extra charge: 0...30 km/h (0...18.6 mph) 0...50 km/h (0...31.06 mph) 0...60 km/h (0...37.28 mph) 0...80 km/h (0...49.71 mph)
speed control:	automatic speed control depending on the position of the subject on the running deck; option at extra charge.
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.084... 3.70 m/s² programmable via para control PC software
elevation:	-4.0%...+25.0 % (-2.3°...+14.0°) motorized adjustment, special elevation on request at extra charge.
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	30 kW (40.8 PS) 3-phase AC motor, elevation drive motor for hydraulic: 18.5 kW (25 PS). maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, timing-belt drive (very dynamic operation)
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); sensitive protection (light barriers with stop function) at belt re-entry zones; potential equalization bolt; sensitive protection (light barriers with control light) for belt alignment; transformer for potential-isolation from the mains; power supply monitoring with control light, integrated motor brake
degree of protection:	appliance class I (⚡) / type B ⚡ / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device

usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0.25 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions):	TouchScreen display with operation mode, display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)
heart rate monitoring:	POLAR W.I.N.D.: coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	2x USB 2.0, 1x Ethernet RJ45 (100MBit/sec), 2 x RS 232 com1 & com2 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter;
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each - up to 1000 free definable programs with up to 200 program steps each via para control 5 software
PC software (incl.):	h/p/cosmos para control® for display & remote control; h/p/cosmos para graphics® for recording & visualization; including 2 x RS232 interface cable (1 x 5 m (16 ft 4.85"), 1 x 10 m (32 ft 9.70"))
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, drinking bottle holder with 10 h/p/cosmos 0.5 l bottles, service box, special oil, 3x 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, over the whole treadmill surface with front-handrail crossbar other handrail designs at extra charge
gantry at the front:	approx. 75 cm (2ft 5.5") along the width of the running deck; for applications lactate analysis, ergospirometry, motion analysis, support for subjects through trainer, etc.
gantry at the side:	right and left approx. 50 cm (1ft 7.7") along the width of the running deck.
access ramp:	automatic ramp for ground-level access to the running surface on request at an extra charge. The exact specification depends on the treadmill equipment and the building.
stage floor:	safety cover for the machine and level entrance to the treadmill at extra charge.
voltage supply:	1 x 400 Volt AC 3~N/PE 50/60 Hz 63 A 1 x 400 Volt AC 3~N/PE 50/60 Hz 35 A 2 x 230 Volt AC 1~N/PE 50/60 Hz 15-16 A Each with a separate dedicated circuit, line and separate protection; LAN DSL internet connection for remote access / maintenance
power cabinet:	W: 120 cm (3ft 11.2") D: 50 cm (1ft 7.7") H: 120 cm (3ft 11") for accommodation of electric components for inverter drive and elevation control and high power components
size of frame:	L: 645 cm (21ft 1.9") W: 500 cm (16ft 4.9") H: 477 cm (15ft 7.8") depending on options and accessories, type of installation and additional options (e.g. gantries) the measurements may deviate.
size control unit:	depth: 48 cm (1ft 6.9") W: 80 cm (2ft 7.4") H: 106 cm (3ft 5.7")
net. weight:	device approx. 12000 kg (26455 lbs)
gross weight:	device approx. 14000...15000 kg (30864...33069 lbs)

The building and power supplies have to be prepared by the customer at the customer's ex-  
penses based on the manufacturer's drawings and specifications. E&OE. Subject to alterations.



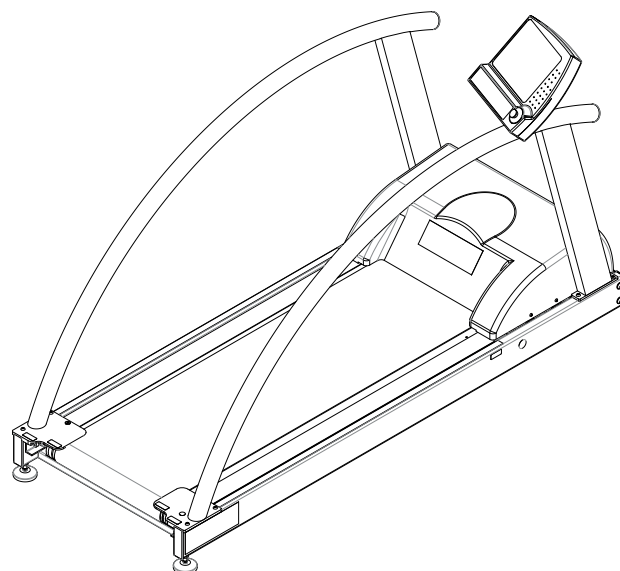
## specifications h/p/cosmos® mercury med

running machine:	<b>mercury® med</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30000va08
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 150 cm (4ft 11.06") W: 50 cm (1ft 7.69") special sizes available at extra charge access height: 18 cm (7.09") - shock load reduction for the joints - running belt with slip resistant surface - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...22.0 km/h (0...6.1 m/s) (0...13.6 mph) special speed available at extra charge: 0...10 km/h (0...6.21 mph) 0...30 km/h (0...18.64 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.047...2.037 m/s² programmable via para control PC software
elevation:	0...25.0 % (0...14.0°) motorized adjustment (-25 %...+25 % when using optional reverse belt rotation)
running direction:	switch for reversing running belt direction at extra charge. max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	3.3 kW (4.5 HP) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor. For high-performance applications we recommend models with a 3-phase 3x400 volt power supply and a running surface min. 190/65 cm.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip); potential equalization bolt; transformer for potential-isolation from the mains.
degree of protection:	appliance class I  / type B  / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0,2 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions)	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)
heart rate monitoring:	POLAR wireless transmitter, 1 channel receiver; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)

digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4.
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85").
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, drinking bottle holder with 2 h/p/cosmos 0.5 l bottles, service box, special oil, 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails Ø 60 mm on both sides, other handrail designs & front-crossbar at extra charge
voltage supply:	230 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection
size of frame:	L: 210 cm (6ft 10.68") B: 82 cm (2ft 8.28") H: 136 cm (4ft 5.54")
net. weight:	device approx. 220 kg (484 lbs)
gross weight:	device approx. 320...350 kg (704...770 lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



## specifications h/p/cosmos robowalk® expander

### h/p/cosmos robowalk® expander F 150/50

order number: cos30022va01

The h/p/cosmos robowalk® expander F is an elastic cable system for an h/p/cosmos running machine mounted at the front for providing traction support.

### h/p/cosmos robowalk® expander B 150/50

order number: cos30023va01

The h/p/cosmos robowalk® expander B is an elastic cable system for an h/p/cosmos running machine mounted at the rear for providing traction resistance.

classification:	Im; non-active therapeutic device / S, I, C (EN 957)
number of expander cables:	4 cables at front (2 black, 2 grey) 4 cables at rear (2 black, 2 grey)
max. traction support:	approx. 3 kg (6.6 lbs) for black cables approx. 5 kg (11.0 lbs) for grey cables
max. force for cables:	10 kg (22.0 lbs)
cable diameters:	6 mm
extension range front:	black: 0 ... 160 cm (0 ... 63.0 inch) grey: 0 ... 150 cm (0 ... 59.1 inch)
extension range rear:	black: 0 ... 105 cm (0 ... 41.3 inch) grey: 0 ... 95 cm (0 ... 37.4 inch)
adjustment range front:	11 ... 51 cm (4.3 ... 20.1 inch) in width 60 ... 150 cm (23.6 ... 59.1 inch) in height
adjustment range rear:	24 ... 135 cm (9.4 ... 53.1 inch) in width 20 ... 75 cm (7.9 ... 29.5 inch) in height

examples of use include:

motion support, mobilization, locomotion, gait training and gait correction for orthopaedic or neurological problems, coordination and functional training, strength and endurance training.

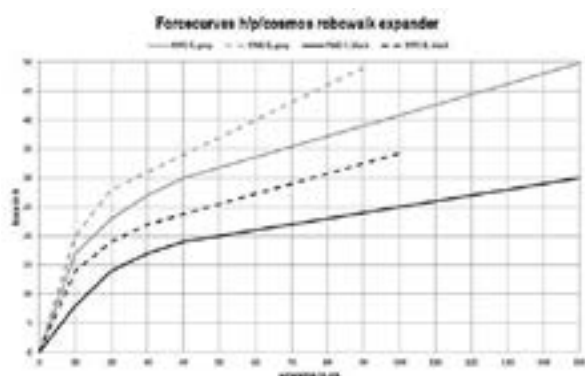
Special sizes on request. Additional cuffs please order separately.

Caution! The cuffs are not included in the delivery of h/p/cosmos robowalk expander B (back system)! They have to be ordered separately.

Compatibility with other h/p/cosmos treadmill models on request. When ordering please specify the serial number of the treadmill. The system is not compatible with treadmills from other manufacturers.

The traction device is based on the patented Bodyspider Technology.  
See patents EP1221331 and WO9823334. Further patents are pending.  
robwalk® is a registered and protected trade mark of Franz Harrer.

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.



## specifications h/p/cosmos® comet 3p

sprint trainer:	comet 3p
order number:	cos30015va02
applications:	electronic machine for sprint training with traction resistance or traction support (overspeed). The athlete is running on the 100 meter track, is either resisted or pulled
speed range:	0 ... 53 km/h (0 ... 14.72 m/s) (0 ... 32.93 mph) adjustable from 0 ... 100% scale on the potentiometer
traction force / traction resistance:	0 ... 294 Newton (0 ... 30 kg), adjustable from 0 ... 100% analogue adjustment by means of the potentiometer (special versions with more traction force available on request)
drive and break system:	2.0 kW AC servo-motor
length of rope:	approx. 160 m (525 ft)
diameter of rope:	1.5 mm (0.06") load-carrying capacity of the rope (not the drive motor): max. 70 kg (686 N)
safety features:	- emergency-STOP switch on the control panel of the motor - switch on logic, the speed regulator can only be activated at zero power (0%) and if the stabiliser is pulled out. - switch off if the rope breaks - switch off by reaching the close danger area 5m in front of the device.
product on request:	- digital adjustment - higher traction resistance
accessories:	- 1 waist belt size (M) - 3 x cones for marking distance - adapter rope (rubber) for max. 10 kg (98.07 N) traction force
leakage current:	0.4 mA
colour of frame:	grey aluminium RAL 9007 (powder coated)
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 16 A fuse breaker, dedicated line, special voltage supply available on request
dimensions:	L: 75 cm (29.53") B: 108 cm (42.52") H: 84 cm (33.07")
size of packing:	L: 80 cm (31.50") B: 120 cm (47.24") H: 115 cm (45.28")
net weight:	approx. 184 kg (404 lbs)
gross weight:	approx. 284 ... 300 kg (625 ... 660 lbs)

The „traction rope“ is an expendable item and can be easily damaged by inappropriate use. There is no warranty on the traction rope.

Further details & optional equipment on request. E & OE. Subject to technical alterations without prior notice. Weight and package specifications can deviate according to options, accessories and packing.

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system. No children connected or near to sprint trainers.

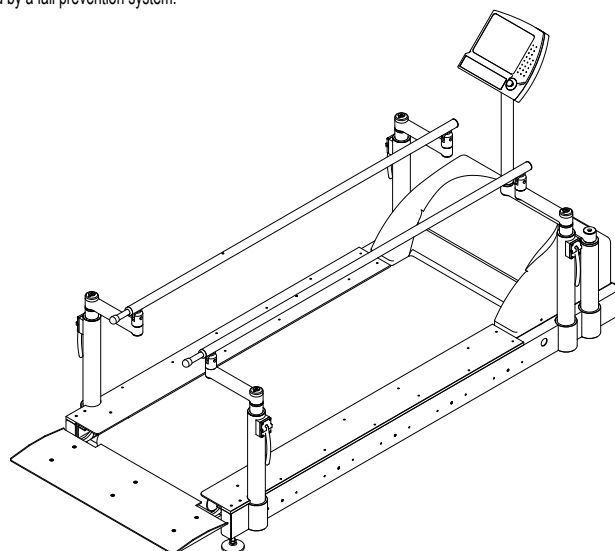
## specifications h/p/cosmos® locomotion 150/50 DE med

running machine:	<b>locomotion® 150/50 DE med</b> with therapist seats, foot rests and adjustable handrails optional wheelchair ramp available at extra charge
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30001va02
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via rotatable UserTerminal (TouchPanel display), MCU5, integrated interface or via remote control
running surface:	L: 150 cm (4ft 11.06") W: 50 cm (1ft 7.69") special sizes available at extra charge access height: 18 cm (7.09") - shock load reduction for the joints - running belt with slip resistant surface - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0...10.0 km/h (0...2.8 m/s) (0...6.2 mph) special speed available at extra charge: 0...22.0 km/h (0...13.6 mph) 0...30.0 km/h (0...18.64 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.021...0.926 m/s² programmable via para control PC software
elevation:	-25.0 %...+25.0 % (-14.0°...+14.0°) motorized adjustment, (up to -25 % when using reverse belt rotation)
running direction:	switch for reversing running belt direction as standard, max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor systems:	3.3 kW (4.5 HP) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor. For high-performance applications we recommend models with a 3-phase 3x400 volt power supply and a running surface min. 190/65 cm.
electr. motor brake:	Prevents almost all movement of running belt when speed is set to 0 km/h caused by elevation/gravity or when mounting or dismounting the treadmill.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip); potential equalization bolt; transformer for potential-isolation from the mains.
degree of protection:	appliance class I ( ) / type B ( ) / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0.2 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa; 3,000 m (~10,000 ft) max. altitude without pressurization
display (resolutions)	TouchScreen display with operation mode, display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)

heart rate monitoring:	POLAR W.I.N.D: coded, wireless transmitter; ECG-accurate measurement; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4.
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85")
PC software: (extra charge)	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	external emergency stop & remote control keyboard magnetic, user manual, service box, special oil, 5 m (16ft 4.85") PE potential equalization cable
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	L: 218 cm (7ft 1.83") B: 100 cm (3ft 3.37") H: 144 cm (4ft 8.69") max. B: 128 cm (4ft 2.39") incl. 2 therapist seats max. L: 338 cm (11ft 1.07") incl. optional wheelchair ramp
voltage supply:	230 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection
size of frame:	L: 218 cm (7ft 1.83") B: 100 cm (3ft 3.37") H: 144 cm (4ft 8.69") max. B: 128 cm (4ft 2.39") incl. 2 therapist seats max. L: 338 cm (11ft 1.07") incl. optional wheelchair ramp
net. weight:	device approx. 346 kg (763 lbs)
gross weight:	device approx. 460...510 kg (1014...1124lbs)

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.





## specifications h/p/cosmos airwalk® se

unweighting system:	<b>airwalk® se</b>
order number:	cos30017-01
applications:	patient-lift for static and dynamic body weight support, for locomotion therapy, neurology, rehabilitation, coordination training, balance training, sports performance and speed training for fitness and competitive sport.
patient weight:	max. user weight load 135 kg (297 lbs)
subject scale:	electronic weight display with an accuracy of approx. $\pm 2$ kg (4.4 lbs), due to rope elasticity and friction of the rope pulleys (indirect measurement via pulleys) the weight measurement system is of limited use as a user scale.
weight support:	static: approx. 1...135 kg (2.2...297 lbs) continuously adjustable lifting/lowering/carrying of the patient (e.g. wheelchair transfer or balance exercise mode); dynamic: approx. 1...75 kg (2.2...165 lbs) continuously adjustable vertical speed of patient lifter approx 30...50 mm/s (1.18...1.97"/sec) during dynamic exercise mode
subject size / system height:	max. user height 200 cm (78.7"); standard system height 267 cm (105.11"); at an elevation of more than 10% use may be limited by the running-machine model, the height of the user and the kind of (sportive) exercise being conducted. a higher traverse is available at extra cost for users of up to 220 cm (86.61"). system height with higher traverse is 298 cm (117.32")
useable range:	vertically approx. 18 cm (7.09") for dynamic un-weighting. limitations - see patient size. optional high traverse for patients of up to 220 cm (86.61") available
rope:	polyester rope with 8 mm (0.32") $\varnothing$ (to change annually or earlier in case of first signs of wear)
operation:	- electrical remote control with magnetic attachment (cable length approx. 250 cm (98.43") with 4 buttons for: - patient lift (up/down or raising/lowering of the patient, setting of the dynamic work range) - unweighting (increase/decrease of the unweighting)
safety systems:	CE0123; directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; EN 60601-1; ISO EN 10535 (patient lifters), potential equalisation bolt; mechanical quick release (for safety in case of failure of the electrical control)
degree of protection:	appliance class I (⚡) / type B (⚡) / IP 20
classification:	IIa medical device (MDD) active therapeutic device & active diagnostic device
leakage current:	0.2 mA
ambient condition:	+10...+40 °C 30...70 % humidity 700...1060 hPa barometric pressure 3,000 m (~10,000 ft) max. altitude without pressurization
data (resolutions):	1 LCD digital display for weight in kg 1 mechanical display for position in working range 1 mechanical display for position in pre-set unweighting
free accessories:	user operation and service manual, h/p/cosmos airwalk application manual, 1 unweighting vest cos10096 (size M, waist 81...112 cm / 31.89" ... 44.09") other sizes XS, S, L and XL on request
compatible running machines:	(NOT included in price of h/p/cosmos airwalk®) h/p/cosmos mercury®, h/p/cosmos locomotion®, h/p/cosmos quasar® range, h/p/cosmos pulsar® range in differing specifications, h/p/cosmos venus® 200/75 if mounted in a pit. treadmills from other manufacturers: only if authorized by relevant agency!
colour of frame:	grey-aluminium RAL 9007 (powder coated)
voltage supply:	230 Volt AC 1~/N/PE 50/60 Hz 10A fuse, dedicated line, max. current consumption: 3 Ampere
size of frame:	L: 223...263 cm (87.67...103.54") depending on treadmill L: 195 (76.8") for non h/p/cosmos treadmills W: 207 cm (81.5") H: 267 respectively 296 cm (105.11" or 117.32" depending on traverse normal or high.
net weight un-weighting:	approx. 390 kg (858 lbs) without treadmill
gross weight un-weighting:	device approx. 510...580 kg (1122...1276 lbs) without treadmill

## specifications airwalk® ap

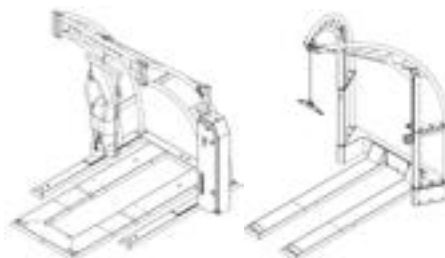
unweighting device:	<b>airwalk® ap</b>
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30028
applications:	body weight support (during treadmill therapy/training) fall protection (during treadmill therapy/training) unweighted and/or secured balance training unweighted and/or secured functional and gait training overspeed/hyperspeed and excess frequency training
control:	pneumatic valve with rotary knob
max. body weight:	250 kg (551 lbs)
max. body height:	200 cm (6.5 ft.) (standard) 225 cm (7.4 ft.) (optionally at extra charge) possible restrictions with treadmill inclination >10%
body weight support:	dynamic, continuously adjustable approx. 0.5 ... 80 kg (1 ... 176 lbs) (standard) approx. 0.5 ... 120 kg (1 ... 264 lbs) (optionally at extra charge) vertical amplitude approx. 70 cm (2.3 ft.) max. rotation 1 x 360°
safety systems:	CE; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; ISO 20957-1; EN 14971; ISO 9001; EN ISO 13485
classification:	medical device risk class I according to MDD, active therapeutic medical device
usage class:	S, I according to ISO 20957-1
ambient condition:	temperature: +10...+40 °C humidity: 30...70 % air pressure: 700...1060 hPa
display:	analog manometer on device (standard) portable with 1.5 m (4.9 ft.) cable and magnet (optionally at extra charge)
resolution:	approx. 2.5 kg (5 lbs)
accessories (incl.):	instructions for use, 1 unweighting vest cos10096-01 (size M, hip circumference 81...112 cm (2.7 ... 3.7 ft.)) further sizes XS ... XL at extra charge
compatibility:	h/p/cosmos treadmills: pluto, mercury, locomotion, quasar, pulsar, external devices only with written confirmation by h/p/cosmos treadmill not within scope of delivery
frame color:	pure white RAL 9010 (powder coated)
comp. air supply:	coupling acc. to ISO4414
size of frame:	L: 236 ... 276 cm (7.7 ... 9.1 ft.) (depending on treadmill) W: 177 cm (5.8 ft.) H: 273 cm (9.0 ft.) (standard) individual height (e.g. 248 cm or 298 cm) optionally at extra charge
net weight:	approx. 310 kg (683 lbs)
gross weight:	see separate position

Optionally available at extra charge: compressor (cos10094)



Alternative: connection to existing compressed air system with 8...10 bar

Furthermore optionally available at extra charge: emergency stop for running belt of an h/p/cosmos treadmill, pneumatic spring mode, portable control unit with magnet, robowalk expander, max. body weight support 160 / 240 kg (353 / 529 lbs), special frame colours, other options and accessories. Weight and package specifications can deviate according to options, accessories, packing and way of transport. E&OE. Subject to alteration without notice.

**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. Inspect the rope (cos 102317) at least once a month visually for wear or damage. Rope has to be replaced annually or even earlier at first sign of wear or damage. For more information see the instructions for use.



## specifications h/p/cosmos pluto® med

running machine	pluto® med
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30026va02
applications:	endurance training walking and running, stress device for performance testing, gait analysis and gait training
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 150 cm (4 ft 11.06") B: 50 cm (1 ft 7.69") special sizes available at extra charge access height ca. 23 cm (9.06") - running belt with slip resistant surface - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0.5 ... 18.0 km/h (0.1 ... 5.0 m/s) (0.3 ... 11.2 mph)
acceleration:	7 acceleration / deceleration levels between 131 s and 3 s from 0 to max. or from max. to 0; equals 0.038 ... 1.66 m/s² programmable via para control PC software
elevation:	0 ... 20 % (0 ... 11.31°) motorized adjustment
motor system:	2.2 kW (3 HP) 3-phase AC motor, maintenance free and brushless; For high-performance applications we recommend models with a 3-phase 3x400 volt power supply and a running surface min. 190/65 cm.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE0123; medical device directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; IEC 60601-1; EN 60601-1-2 (EMC approved); EN 60601-1-6; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip); potential equalization bolt; transformer for potential-isolation from the mains.
degree of protection:	appliance class I  / type B  / IP 20
classification:	medical device risk class IIb according to MDD, active therapeutic medical device and active diagnostic medical device
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 0.2 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa 2.000 m (~6.561 ft) max. altitude without pressurization
display (resolutions):	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute) optional
heart rate monitoring:	optional, POLAR chest belt with wireless transmitter, 1 channel receiver with chest belt
digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded Test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC Software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85").
PC Software (extra charge):	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, 125 ml special oil, service box, 5 m (16ft 4.85") PE potential equalization cable

colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails $\varnothing$ 60 mm on both sides; length: 620 mm; square crosstube between pillars; UserTerminal between pillars. steel tube handrails are easy removable and can be replaced by paediatric handrails. front-crossbar $\varnothing$ 30 mm at extra charge.
voltage supply:	200 ... 240 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection;
size of frame:	L: 210 cm (6ft 10.68") W: 85 cm (2ft 8.28") H: 119 cm (46.85")
net weight:	device approx 230 kg (500 lbs)
packing dimensions:	L: 230 (90.55") cm W: 110 (43.31") m H: 98 cm (38.58")
gross weight:	device approx 320 ... 350 kg (704 ... 770 lbs)
warranty:	12 months

The treadmill-ergometer pluto® is available as a sports treadmill as well as a medical device, with or without User-Terminal. Differences between sports and medical device (modell pluto, art. no: cos30026va01): safety systems, classification; no medical device; no classification as a medical device.

Optionally available at extra charge are special frame colours, other handrail designs, special voltage supply and other options and accessories. Weight and package specifications can deviate according to options, accessories packing and way of transport. E&OE. Subject to alterations without prior notice. Please consider the natural and physical performance limitations of the single phase 230 volt power supply. The single phase 230 volt power supply is sufficient up to normal fitness or therapy applications. For all special high performance applications (speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed, extreme elevations, etc.), we recommended models with a 3-phase, 3x400 volt power supply (for example model h/p/cosmos quasar med 3p, pulsar 3p, venus or saturn).


**Warning!** Installation, commissioning, instruction, maintenance and repair work only to be conducted by h/p/cosmos trained and authorized personnel. For treadmills with oversized deck (width >65cm), for children, special applications, without sufficient safety space behind the treadmill, for subjects and / or patients with health or other limitations (e.g. visual impairment, etc.), for running at high speed and / or for all individuals, where a fall triggers a dangerous risk of injury or death (e.g. newly operated hip patients, invasive probes, etc.), a fall prevention system is obligatory (e.g. safety arch with chest belt and harness or a weight support system). For more information see the instructions for use. Safety space behind the treadmill: min. L: 2 m (6ft 6.74") x treadmill width. Children are only allowed to be on the treadmill, if under permanent supervision and secured by a fall prevention system.

The treadmill-ergometers are available as sports treadmills as well as a medical devices, with or without User-Terminals. Main differences between sports and medical devices: CE-marking, safety systems, standards and norms; no medical devices; no classifications as a medical devices.


Ask service@h-p-cosmos.com for detailed specifications of all h/p/cosmos treadmill models.



## specifications h/p/cosmos pluto®

running machine	pluto®
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30026va01
applications:	sports and fitness endurance training, walking and running
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 150 cm (4 ft 11.06") B: 50 cm (1 ft 7.69") special sizes available at extra charge access height ca. 23 cm (9.06") - running belt with slip resistant surface - max. permissible load: 200 kg (440 lbs) - optional 300 kg (660 lbs) at extra charge
speed range:	0.5 ... 18.0 km/h (0.1 ... 5.0 m/s) (0.3 ... 11.2 mph)
acceleration:	7 acceleration / deceleration levels; between 131 s and 3 s from 0 to max.; or from max. to 0; equals 0.038 ... 1.66 m/s <sup>2</sup> programmable via para control PC software
elevation:	0 ... 20 % (0 ... 11.31°) motorized adjustment
motor system:	2.2 kW (3 HP) 3-phase AC motor, maintenance free and brushless; For high-performance applications we recommend models with a 3-phase 3x400 volt power supply and a running surface min. 190/65 cm.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE; machinery directive 2006/42/EC; EN 62366; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip)
degree of protection:	appliance class I  / IP 20
classification:	sports and fitness device; not for medical, not for therapeutic applications
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 1,5 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa 2.000 m (~6.561 ft) max. altitude without pressurization
display (resolutions):	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees) distance (1 m...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute) optional
heart rate monitoring:	optional wireless with chest belt
digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded Test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC Software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85").
PC Software (extra charge):	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	instruction for use, 125 ml special oil, allen-key
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails: 60 mm on both sides; length: 620 mm; square cross tube between pillars; UserTerminal between pillars. steel tube handrails are easy removable and can be replaced by paediatric handrails. front-crossbar: 30 mm at extra charge.
voltage supply:	200 ... 240 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection;
size of frame:	L: 210 cm (6ft 10.68") W: 85 cm (2ft 8.28") H: 119 cm (46.85")
net weight:	device approx 230 kg (500 lbs)
packing dimensions:	L: 230 (90.55") cm W: 110 (43.31") m H: 98 cm (38.58")
gross weight:	device approx 320 ... 350 kg (704 ... 770 lbs)
warranty:	12 months

## specifications h/p/cosmos quasar®

running machine	quasar®
manufacturer:	h/p/cosmos sports & medical gmbh / Germany
order number:	cos30003va16
applications:	sports and fitness endurance training, walking and running
control:	via UserTerminal MCU5 with keyboard and display, integrated interface or via optional remote control
running surface:	L: 170 cm (5ft 6.9") B: 65 cm (2ft 1.6") special sizes available at extra charge access height: 23 cm (9.06") - shock load reduction for the joints - running belt with slip resistant surface - reinforced running belt with profiled surface, 5 mm thick - max. permissible load: 200 kg (440 lbs) / optional 300 kg (660 lbs)
speed range:	0...25.0 km/h (0...6.9 m/s) (0...15.5 mph); special speed available at extra charge: 0...45 km/h (0...27.8 mph) and others
acceleration:	7 acceleration / deceleration levels; between 131 s and 3 s from 0 to max.; or from max. to 0; equals 0.053... 2.31 m/s <sup>2</sup> programmable via para control PC software
elevation:	0...28 % (0...15.6°) motorized adjustment (-28 %...+28 % when using optional reverse belt rotation)
running direction:	switch for reversing running belt direction at extra charge. max. permissible reverse speed 5 km/h (3.1 mph) if no safety-harness with fall-stop prevention system is used.
motor system:	3.3 kW (4.5 HP) 3-phase AC motor, maintenance free and brushless; 20 years warranty on main drive motor.
power transmission:	frequency inverter, poly-V-belt, very quiet operation
safety systems:	CE; machinery directive 2006/42/EC; EN 62366; EN 62304; EN 62353; ISO 20957-1; EN 957-6; EN 14971; ISO 9001; EN ISO 13485; emergency-off safety stop switch (mushroom push button for drive system power-off); emergency stop switch (safety lanyard with actuator, pull cord and clip)
degree of protection:	appliance class I  / IP 20
classification:	sports and fitness device; not for medical, not for therapeutic applications
usage class:	S, I according to ISO 20957-1
accuracy class:	A (high accuracy) according to EN 957-6
earth leakage current:	< 1,0 mA
ambient condition:	temperature: +10...+40 °C (-30...+50 °C on request) humidity: 30...70 % (up to 100 % on request) air pressure: 700...1060 hPa 2.000 m (~6.561 ft) max. altitude without pressurization
display (resolutions):	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/s or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1 % or degrees); distance (1 m...999.9 km or miles), METS (1 MET); program step/number, energy (1 kJ/kcal), fitness index (1); power (1 Watt), heart rate (1 bpm / beat per minute) optional
heart rate monitoring:	POLAR wireless transmitter, 1 channel receiver; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	1 x RS 232 com1 with 9600 bps: incl. PC-protocol, h/p/cosmos coscom® & printer protocol serial. option extra charge: USB-RS232-converter; com2; com3 with 115200 bps; com4
programs:	42 programs / profiles - 6 exercise profiles (scalable, more than 100 variations) - 28 test profiles (UKK 2 km Walktest, Bruce, Graded Test, Naughton, Ellestad, Gardner, Conconi, Ramp, etc.) - 8 free definable programs with 40 program steps each
PC Software (incl.):	h/p/cosmos para control® for display & remote control including 1 x RS232 interface cable 5 m (16ft 4.85").
PC Software (extra charge):	h/p/cosmos para graphics®, para analysis® & para motion®. PC software for control, monitoring, recording & analysis.
accessory (incl.):	user manual, drinking bottle holder with 2 h/p/cosmos 0.5 l bottles, service box, special oil
colour of frame:	pure white RAL 9010 (powder coated)
handrails:	steel tube handrails: 60 mm on both sides; other designs at extra charge
voltage supply:	200 ... 240 volt AC 1~/N/PE 50/60 Hz 15-16A fuse; dedicated circuit, line and protection;
size of frame:	L: 230 cm (7ft 6.6") B: 105 cm (3ft 5.3") H: 145 cm (4ft 9.1")
net weight:	device approx 312 kg (688 lbs)
gross weight:	device approx device approx. 530...580 kg (1166...1276 lbs)



**h/p/cosmos® is your specialist!**

### installation in difficult circumstances - we make it possible!

h/p/cosmos® is also specialised in the installation in difficult circumstances for example with a crane or as a dismantled unit through a narrow stairwell.

Moreover even pit installations and platforms around the treadmill are available on request. The h/p/cosmos service team or our trained and authorised partners provide our customers with preventive maintenance, service and repair services. Through more that 25 years of experience we guarantee a first class service. This is particularly valuable as most h/p/cosmos treadmills have a usable life of up to 20 years.



h/p/cosmos saturn® 300/125r pit installation



delivery of a h/p/cosmos saturn® 300/100r with a crane



saturn® 300/100r at TU Munich

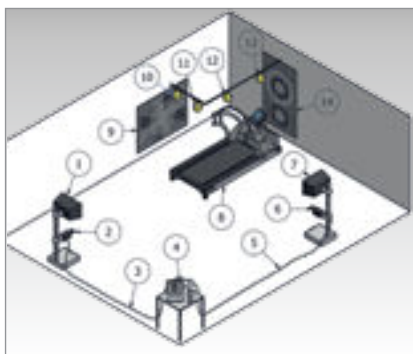
### We support you with your individual system configuration, installation support and facility design

We support our customers with their requirements for design, usability, safety, accuracy, reliability and durability.

Even before the decision to purchase, our trained staff are available to configure the system to help you achieve the best results of your defined goal. Our team consists of experts, some of whom have worked for 10 to 15 years (or even longer) for h/p/cosmos and will competently answer your questions about installation, regulatory requirements, compatibility of the interfaces, etc. and provide other important information.



cardiology training center in a hospital



suggested schematic of a gait laboratory



enviromental chamber installation with remote control

### quality and safety through clear and structured documentation of the installation

The documentation of the installation and commissioning is clearly structured based on a check-list with pictures. Based on this protocol you can also introduce new employees to the system and therefore ensure constant quality and safety.



instruction form [cos15227-03]



members of the h/p/cosmos technical team



safety tester for technical safety and preventative maintenance

## run ahead of time!®

Since its foundation in 1988 in Nussdorf-Traunstein (southern Germany) h/p/cosmos® has stood for convincing technology, design and safety in the production of treadmill systems, ladder ergometers, sprint trainers (sprint ergometers) athletic training systems, diagnostic systems and rehabilitation equipment. During this time h/p/cosmos® has become the specialist for treadmill systems for sports, medical and scientific use. The functions, precision and safety of the systems are the deciding factors for athletes, trainers, patients and doctors alike.

## satisfaction is not enough – we want our customers to be enthused

All h/p/cosmos® treadmills are standard with one PC interface and the h/p/cosmos para control® software for remote control and monitoring.

h/p/cosmos® sets standards for reliability and durability.

## warranty of h/p/cosmos treadmills\*

- 20 years on the main drive motor and against frame breakage
- 3 years on all parts
- pluto treadmills 1 year

Wireless pulse measurement with cardio-control included in the treadmill, a maintenance free and powerful drive system with a 3 phase AC motor and reverse belt direction for downhill training, the safety arch with fall-stop together with the patented arm supports with integrated scaling and the additional keypad are just a few examples of the pioneering developments from h/p/cosmos®. The benefit for the user is always in the foreground.

A milestone for intelligent solutions was set by h/p/cosmos® in August 1992. With the "h/p/cosmos coscom®" protocol the stage was set and now many other manufacturers currently use this standard. Since then all h/p/cosmos® treadmills and OEM treadmills from h/p/cosmos® communicate with other equipment such as ECGs, ergo-spirometers and PCs. The coscom® v3 protocol and the coscom.dll v3 are available for free download from:

[www.coscom.org](http://www.coscom.org)

One of the keys to success has been specialisation. Through concentration on the different possible use of treadmill ergometers, testing and training solutions, h/p/cosmos® has set benchmarks for innovation, technology, design, ergonomics, performance, safety and support.

As treadmill specialists we are ideally positioned to react quickly and flexibly to our customer's needs. Innovative ideas are implemented in the shortest possible time frames developed into intelligent solutions.

Individually manufactured treadmills with extra length or width or very high speeds of up to 80 km/h (49.71 mph / for cycling) are used worldwide today.

We can rely on many years of experience in the supply of special solutions for wheelchair users, skiers or cyclists. In order to manufacture such sophisticated running machines the highest level of technological knowledge and compliance to the strictest safety regulations are a matter of course.

Our QM system, certified to ISO 9001 and EN ISO 13485, monitors the development and release to the market of our systems as well as the clinical evaluation for medical devices and the monitoring of the market. In addition a comprehensive vigilance system and PMS (post market surveillance) for medical devices completes the fulfilment of the legal requirements and the regulatory affairs issues.



sales and service building



production building

The meticulous documentation of all production steps for all h/p/cosmos® treadmills and other systems extends to service reports from the customers premises. All of the product data (entire history) is available to customers and service partners for at least 20 years.

The close cooperation between our specialists from the research & development, regulatory affairs, purchasing, production, marketing, sales and service departments allows us to achieve our goal of precision and perfection.

h/p/cosmos® is certified to ISO 9001 since 1998 followed by the EN ISO 13485 certification that represents the requirements for a comprehensive management system for the design and manufacture of medical devices.

Further information can be found on our website at: [www.h-p-cosmos.com](http://www.h-p-cosmos.com)

\* For warranty details see last page





## how can one find the right treadmill from over 100 different models?

Can normal fitness treadmills be used in sports science, medical establishments or rehabilitation centres? Can a fitness treadmill be used for performance testing and training or for other therapeutic, medical or sports scientific applications?

## the purchase of a treadmill is similar to that of a vehicle.

Vehicles are subject to various demands. Therefore there is an enormous variety of types of vehicle (bicycle, motorcycle, small car, limousine, minibus, coach, F1 racing car, truck, train, aircraft, spacecraft, etc.). To find the right vehicle for the intended application a perfect balance between the requirements and the available types of vehicles is necessary. There is a wide range of different specifications and different price levels of vehicles. It is impossible for one vehicle to fulfil the requirements of all applications.

## it is the same for treadmills!

Therefore h/p/cosmos® offers a choice of over 100 models with different sized running surfaces from 150 x 50 cm to 450 x 300 cm, different specifications with speeds of up to 80 km/h (49.71 mph) and elevation ranges of -35 to +35%, options and accessories and of course different price levels.

We offer treadmill models not only for normal gyms but also for athletic training, biomechanics, medicine and science. Even specialised equipment for environmental chambers for humidity up to 100% or treadmills for animals are included in our range.

## how do you choose the right treadmill?

Define precisely the requirements of your application and we will find the right system for it. This is consistent with our philosophy, image and above all, our position in the market (for private home use, professional, institutional, industrial research, medicine and rehabilitation, etc.). For example, home, health clubs, medical facilities and athletic training centres pursue very different goals and therefore require very different equipment.

For this reason, many professional and institutional facilities after long evaluation processes have chosen from the following systems:

- the h/p/cosmos saturn® 300/100r with safety arch, wheelchair stabiliser and 60 km/h speed for athletic training and physiological sports training not just for runners but also cycling and wheelchair applications.
- the h/p/cosmos pulsar 3p® with safety arch and downhill option, 45 km/h speed - also for athletic training and physiological sport training, speed training, performance diagnostics tests and functional training.
- the h/p/cosmos locomotion® system with the unweighting system h/p/cosmos airwalk® 135se for manual locomotion therapy in neurology and rehabilitation.
- the h/p/cosmos mercury med with arm rests and additional keyboard is a very widely used system in many rehab centres.

The list can be continued indefinitely ....

With this selection procedure you can be sure that your requirements and defined objective are fulfilled for almost all applications and situations.

Options and accessories can have a very critical impact and should not be excluded. It is unlikely that an athlete will train up to his performance limit if safety and fall protection cannot be guaranteed. It's the same for a formula 1 driver or an astronaut who would not start without putting their helmets on. They have to be sure that there is a high level of safety so that they can concentrate on giving a 100% effort without any latent fear.

The correct equipment can only be found when enough time is invested to compare all the available methods and technology.

It may be tempting to reduce the recommended configuration for budgetary reasons. Budgets are naturally never open ended. But this not only a question of the safety or quality.

There is a risk that by reducing the configuration or choosing another equipment model that the goal may not be achieved – based upon the defined results of your application.

The aircraft used by well-known airlines have first class quality, are very safe, comfortable and efficient. But they will never carry a satellite into space and never bring people to other planets. It would be the wrong vehicle for the defined requirements in these applications.

You can find our recommended system configurations for different treadmill applications on our internet site under:

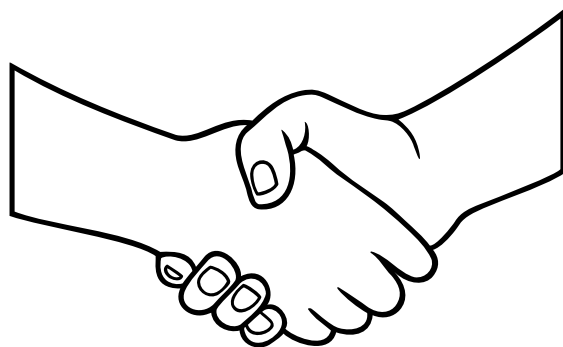
[www.h-cosmos.com/en/applications/index.htm](http://www.h-cosmos.com/en/applications/index.htm)

Here are nearly all applications and situations presented with which we have gathered worldwide experience over many years. We hope that these descriptions can contribute to helping you reaching the goals that you need and deserve.

To answer the first question:

Medical, therapeutic and scientific institutions should not just choose a special treadmill because of the significant difference in safety between fitness treadmills and medical treadmills (differing electrics, other certification, other CE Mark, isolation, etc.) but because a sports treadmill can never satisfy the demands of medicine, therapy and research based on its design, ergonomics and system compatibility.

Our customers can be sure that h/p/cosmos® doesn't just support them with supply of treadmills and technology. We support them with our knowledge and experience gathered during the past 27 years over the methodology and achievement of results in diverse applications of use.





**WARRANTY:** If an h/p/cosmos product does not operate properly, h/p/cosmos will repair or replace it at no charge, for up to one year from shipment date. Furthermore registration and a documented maintenance record (for example through maintenance contract or through authorised technicians) will extend the warranty for treadmill parts only to 3 years and 20 years on treadmill drive motor and main treadmill frame breakage. In the course of replacement or repair, h/p/cosmos may send you written recommendations of how to prevent re-occurrence of a problem. h/p/cosmos reserves the right to withdraw the warranty if the recommendations are not followed. The customer is responsible for transport charges both to and from h/p/cosmos in all cases, local service may be available for which labour may be charged. This warranty is exclusive and in lieu of all other warranties whether written, oral or implied, including the warranty of fitness for any particular purpose. h/p/cosmos' liability is, in all cases, limited to the replacement price of its product. h/p/cosmos shall not be liable for any other damages, whether indirect, consequential or incidental arising from the sale or use of its product. h/p/cosmos may modify this warranty by signing a specific written description of any modifications. A maintenance contract including annual preventive maintenance and regular safety inspection is highly recommended for all h/p/cosmos running machines and devices.

**SAFETY:** Please make sure that you read the user manual before operating any item of h/p/cosmos equipment, it contains both operating instruction and service requirements. Clinical staff should instruct their patients, and fitness staff or other professional staff should instruct their members and users in the use, safety and warnings of the equipment before use. Make sure that you have read and understood the safety requirements before using the equipment. For running surfaces with L:200 x W:75cm or bigger, special applications, at higher speeds, for subjects with higher risk of falling or where a fall would lead to unacceptable risks (e.g. invasive probes during exercise or recent hip replacement, etc.), or if there is not enough safety space behind the treadmill, a fall prevention system (e.g. safety arch with harness & chest belt) is obligatory. Keep min. L: 2 m (78.74") x W: 1 m (39.37") safety space behind treadmills!

**LIABILITY:** Failure to comply with the conditions listed above and below and in the operation and service manual of the respective devices, failure of performing recommended maintenance and safety inspection intervals, unauthorized maintenance or amendments of the design and/or performance and/or specifications and/or labelling of the devices and/or use of not original h/p/cosmos accessories and/or parts shall absolve h/p/cosmos sports & medical gmbh from any responsibility for the safety, reliability and performance of this equipment. Each operator must read and understand the user manual before using the equipment for the first time. Each user must be instructed in the proper use of the equipment and its accessories. The electrical and mechanical installation of the equipment must comply with the local or national requirements and all installation guides from all respective manuals delivered with the equipment. The equipment must be used in accordance with the instructions for use and operation manual. Operators of h/p/cosmos equipment and accessories are to be trained and certified by h/p/cosmos or their appointed agents before use of the equipment. Please contact h/p/cosmos for further details. All h/p/cosmos running machines are manufactured by h/p/cosmos in Nussdorf-Traunstein/Germany. Accessories and/or options may be imported goods.

**ABBREVIATIONS:** It = without terminal (no display and no keyboard), r = for bicycle and wheelchair use, rs = for bicycle and wheelchair + ski & spikes use. **UMDNS-Code:** 14-141 running machines / customs tariff no. sports running machines: 9506 9110 / customs tariff no. medical running machines: 9018 1910 \* Use dedicated power supply with dedicated fuse for each running machine (treadmill). 230 volts 16 A types may also be operated at 220 or 240 volts 15 A. Special voltages available. We recommend a dedicated line 3 phase 400 volt connection and 3-phase treadmill for high speed, fast acceleration and for heavier subjects due to higher performance.

**EU, MDD & REGULATORY AFFAIRS INFORMATION:** Devices of the sports category must not be used for medical applications. When linking medical treadmills with other devices (ECG, PC, etc.) then only potential isolated interfaces with 4 kV insulation test voltage are allowed. Accessory equipment connected to the analogue and digital interfaces must be certified according to the respective IEC standards, e.g. IEC 60950-1 for information technology equipment and IEC 60601-1-1 for medical equipment. Furthermore all configurations shall comply with the valid version of the system standard IEC 60601-1-1 and EN 62304. Everybody who connects additional equipment to the signal input port or signal output port or via any other linkage possibility, configures a medical system and is therefore responsible that the system complies with the requirements of the valid version of the system standard IEC 60601-1-1, IEC 60601-1, MDD, directive 93/43/EEC and performs risk analysis and risk management based on ISO 14971. All equipment within a medical system and with metal housing must be linked with potential equalisation cables in star form and then connected to the potential equalisation bar of the medical used room. All standards listed in this brochure refer to validity date (year/month) as it was standard at the time/date when this brochure/document was printed. In case of a transitional period in which 2 standard editions were valid please ask h/p/cosmos or refer to the details as stipulated on the CE declaration of conformity or original test reports of the product for the precisely validity/issue date of the standard.

**DISCLAIMER:** All system configurations in this brochure are non binding and may not necessarily meet all demands of the user's and/or patient's and/or subject's application and needs. h/p/cosmos is not liable for any mismatch and/or deviation. For a more precisely system configuration recommendation please send precisely demands to h/p/cosmos in writing. All technical specifications, descriptions, equipment options and images of devices, options and accessories are not binding, and do not represent any guarantee of features and may differ from the product and delivery. All pictures and configurations shown in this brochure are not binding and may deviate from standard version of the delivered equipment and/or may be available only at extra charge and/or may have been replaced by modified version and/or supply may have been stopped meanwhile. All h/p/cosmos product names and model names in this brochure are registered trademarks of Franz Harrer and/or h/p/cosmos sports & medical gmbh. All rights reserved. For software and all other intellectual property rights disclaimers as written in the respective manuals apply. All rights reserved for intellectual property, design, technology, software, pictures, videos and other media.

**DELIVERY:** The delivery (manufacturing) time for h/p/cosmos running machines up to deck size 190/65cm is 2 to 3 weeks in general, except for custom made machines, special colours and for environmental climate chamber design machines. Other models and devices on request. Shipment time 2 to 7 days in Europe and 3 to 8 weeks via sea freight for overseas. Shipment time 2 to 7 days approx. for air freight.

**PRICES:** All prices net, EXW (ex works) h/p/cosmos factory Germany, in EURO. Valid according to current price list 01.01.2015 - 31.12.2015 only for Germany. Prices in other countries can vary significantly. Transport, packing, VAT, import taxes, custom duties, L/C and bank fees, installation and instruction are not included. Possession of this price list or brochure does not constitute an offer to sell; it is for information only. Property and ownership of goods shall remain with the seller and shall not pass to the buyer until full payment of the price has been received. Full terms of trading available on request. E & OE, errors & omissions excepted. Subject to alteration without prior notice. General terms and conditions of business are available at:

[www.h-p-cosmos.com/en/company/terms\\_of\\_business.htm](http://www.h-p-cosmos.com/en/company/terms_of_business.htm) or in printed form on request.

**COPYRIGHT:** Copyright 1988 - 2015, h/p/cosmos sports & medical gmbh / Germany · All trademarks, images, signs and graphs in this catalogue are protected intellectual property. Reprint - also in extracts - is subject to authorisation in writing. Subject to literal errors, misprint and technical amendments! Source of pictures: h/p/cosmos, photographer Aichhorn / KUSE pictures with Lamar Lowery (Functional Training): photographer Chris Kettnerer, Running School by Mike Antoniadis, Frank Eppelmann / Globalspeed GmbH.

running machines	order number	running surface	speed	elevation	power supply *	display	CE
stratos® lt med	cos30000va05	150 / 50 cm	0 ... 22 km/h	0 %	230 V AC 1~ 15 A	no	CE 0123
stratos® med	cos30000va06	150 / 50 cm	0 ... 22 km/h	0 %	230 V AC 1~ 15 A	yes	CE 0123
pluto® lt med	cos30027va02	150 / 50 cm	0.5 ... 18 km/h	0 ... 20 %	200 V - 240 V AC 1~ 15 A	no	CE 0123
pluto® med	cos30026va02	150 / 50 cm	0.5 ... 18 km/h	0 ... 20 %	200 V - 240 V AC 1~ 15 A	yes	CE 0123
mercury® lt med	cos30000va07	150 / 50 cm	0 ... 22 km/h	0 ... 25 %	230 V AC 1~ 15 A	no	CE 0123
mercury® med	cos30000va08	150 / 50 cm	0 ... 22 km/h	0 ... 25 %	230 V AC 1~ 15 A	yes	CE 0123
stellar® lt med	cos30003va17	170 / 65 cm	0 ... 25 km/h	0 %	230 V AC 1~ 15 A	no	CE 0123
stellar® med	cos30003va18	170 / 65 cm	0 ... 25 km/h	0 %	230 V AC 1~ 15 A	yes	CE 0123
quasar® lt med	cos30003va19	170 / 65 cm	0 ... 25 km/h	0 ... 28 %	230 V AC 1~ 15 A	no	CE 0123
quasar® med	cos30003va20	170 / 65 cm	0 ... 25 km/h	0 ... 28 %	230 V AC 1~ 15 A	yes	CE 0123
quasar® med 3p	cos30003va26	170 / 65 cm	0 ... 40 km/h	0 ... 28 %	400 V AC 3~ 15 A	yes	CE 0123
pulsar® lt	cos30004va01	190 / 65 cm	0 ... 40 km/h	-25 ... +25 %	230 V AC 1~ 15 A	no	CE 0123
pulsar® lt 3p	cos30004va02	190 / 65 cm	0 ... 40 km/h	-25 ... +25 %	400 V AC 3~ 15 A	no	CE 0123
pulsar®	cos30004va03	190 / 65 cm	0 ... 40 km/h	-25 ... +25 %	230 V AC 1~ 15 A	yes	CE 0123
pulsar® 3p	cos30004va04	190 / 65 cm	0 ... 40 km/h	-25 ... +25 %	400 V AC 3~ 15 A	yes	CE 0123

Running machines for climatic chambers: on request (available for all sizes as an option at extra charge for the following climatic conditions -35°C ... +55°C and 20% ... 100% humidity), with external UserTerminal

running machines neurological rehabilitation	with adjustable handrails, therapists seats on both sides and foot rest					display	CE
h/p/cosmos locomotion® 150/50 E med	cos30001va01	150 / 50 cm	0 ... 10 km/h	-25 ... +25 %	230 V AC 1~ 15 A	no	CE 0123
h/p/cosmos locomotion® 150/50 DE med	cos30001-01va02	150 / 50 cm	0 ... 10 km/h	-25 ... +25 %	230 V AC 1~ 15 A	touch	CE 0123
h/p/cosmos locomotion® 190/65 E med	cos30024va01	190 / 65 cm	0 ... 25 km/h	-25 ... +25 %	230 V AC 1~ 15 A	no	CE 0123
h/p/cosmos locomotion® 190/65-3p E med	cos30024va02	190 / 65 cm	0 ... 25 km/h	-25 ... +25 %	400 V AC 3~ 15 A	no	CE 0123
h/p/cosmos locomotion® 190/65 DE med	cos30024va03	190 / 65 cm	0 ... 25 km/h	-25 ... +25 %	230 V AC 1~ 15 A	touch	CE 0123
h/p/cosmos locomotion® 190/65-3p DE med	cos30024va04	190 / 65 cm	0 ... 25 km/h	-25 ... +25 %	400 V AC 3~ 15 A	touch	CE 0123

running machines biomechanics	with pressure measurement plates & KISTLER gait analysis software (medical PC & printer not incl)					display	CE
h/p/cosmos gateway® II F	cos30002va01	150 / 50 cm	0 ... 22 km/h	0 %	230 V AC 1~ 15 A	yes	CE 0123
h/p/cosmos gateway® II S	cos30002va02	150 / 50 cm	0 ... 22 km/h	0 ... +25 %	230 V AC 1~ 15 A	yes	CE 0123
h/p/cosmos locomotion® force 150/50 E med	cos30016va01	150 / 50 cm	0 ... 10 km/h	-25 ... +25 %	230 V AC 1~ 16 A	no	CE 0123
h/p/cosmos locomotion® force 150/50 DE med	cos30016va02	150 / 50 cm	0 ... 10 km/h	-25 ... +25 %	230 V AC 1~ 16 A	touch	CE 0123

Further biomechanic upgrades for example with pressure distribution sensor plates, see page 8 "zebris". Running machines with ARSALIS 3-component force measurement on request.

oversize running machines	order number	running surface	speed	elevation	power supply *	display	CE
venus® 200/75	cos30005-01va05	200 / 75 cm	0 ... 40 km/h	-35 ... +35 %	400 V AC 3~ 32 A	touch	CE 0123
venus® 200/75 r	cos30005-01va06	200 / 75 cm	0 ... 40 km/h	-35 ... +35 %	400 V AC 3~ 32 A	touch	CE 0123
venus® 200/100	cos30006-01va05	200 / 100 cm	0 ... 40 km/h	-35 ... +35 %	400 V AC 3~ 32 A	touch	CE 0123
venus® 200/100 r	cos30006-01va06	200 / 100 cm	0 ... 40 km/h	-35 ... +35 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 250/75	cos30007-01va05	250 / 75 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 250/75 r	cos30007-01va06	250 / 75 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 250/100	cos30008-01va05	250 / 100 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 250/100 r	cos30008-01va06	250 / 100 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 250/125 r	cos30009-01va03	250 / 125 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 300/75	cos30010-01va05	300 / 75 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 300/75 r	cos30010-01va06	300 / 75 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 300/100	cos30011-01va05	300 / 100 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 300/100 r	cos30011-01va06	300 / 100 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 300/125 r	cos30012-01va03	300 / 125 cm	0 ... 40 km/h	-27 ... +27 %	400 V AC 3~ 32 A	touch	CE 0123
saturn® 450/300 rs	cos30013-01va01	450 / 300 cm	0 ... 40 km/h	-4 ... +25 %	400 V AC 3~ 64 A	touch	CE 0123

Further oversize running machines and specialised running machines with custom dimensions and specifications available on request.

Running machines for climatic chambers: on request (available for all sizes as an option at extra charge for the following climatic conditions -35°C ... +55°C and 20% ... 100% humidity), with external UserTerminal

parallel bars / walkway	order number						CE
parawalk® 3 m	cos30018va01	Medical parallel-bar-system (walkway) for rehabilitation and mobility training; bar length 3 m, 4 m or 5 m. Variable in width and height with support from gas struts. With or without wooden platform (please indicate on the purchase order). Without wooden platform the price is reduced by 500,00 €.					CE
parawalk® 4 m	cos30019va01						CE
parawalk® 5 m	cos30020va01						CE

\* We recommend a dedicated line 3 phase power connection (400 Volt AC3~N/PE 50/60 Hz 16 to 32A fuse) and 3-phase device for high speed, fast acceleration, special applications and for heavier subjects due to higher performance. For all single phase powered treadmills the natural performance limitations of single phase voltage supply apply due to the law of physics. For professional performance diagnostics, athletic training and high performance applications we strongly recommend running machines with 3-phase voltage power supply from model size min. pulsar 3p, venus or saturn.

running machines	order number	running surface	speed	elevation	power supply *	display	CE
stratos® lt	cos30000va01	150 / 50 cm	0 ... 22 km/h	0 %	230 V AC 1~ 15 A	no	CE
stratos®	cos30000va02	150 / 50 cm	0 ... 22 km/h	0 %	230 V AC 1~ 15 A	yes	CE
pluto® lt	cos30027va01	150 / 50 cm	0.5 ... 18 km/h	0 ... 20 %	200 V - 240 V AC 1~ 15 A	no	CE
pluto®	cos30026va01	150 / 50 cm	0.5 ... 18 km/h	0 ... 20 %	200 V - 240 V AC 1~ 15 A	yes	CE
mercury® lt	cos30000va03	150 / 50 cm	0 ... 22 km/h	0 ... 25 %	230 V AC 1~ 15 A	no	CE
mercury®	cos30000va04	150 / 50 cm	0 ... 22 km/h	0 ... 25 %	230 V AC 1~ 15 A	yes	CE
stellar® lt	cos30003va13	170 / 65 cm	0 ... 25 km/h	0 %	230 V AC 1~ 15 A	no	CE
stellar®	cos30003va14	170 / 65 cm	0 ... 25 km/h	0 %	230 V AC 1~ 15 A	yes	CE
quasar® lt	cos30003va15	170 / 65 cm	0 ... 25 km/h	0 ... 28 %	230 V AC 1~ 15 A	no	CE
quasar®	cos30003va16	170 / 65 cm	0 ... 25 km/h	0 ... 28 %	230 V AC 1~ 15 A	yes	CE

ladder ergometer	order number		power supply	display	CE
discovery® lt	cos30014va01	ladder ergometer for climbing	230 V AC 1~ 10 A	no	CE
discovery®	cos30014va02	ladder ergometer for climbing	230 V AC 1~ 10 A	yes	CE

sprint trainer	order number		power supply *	display	CE
comet®	cos30015va01	sprint trainer with 180 meter rope, 1-phase	230 V AC 1~ 15 A	yes	CE
comet® 3p	cos30015va02	sprint trainer with 180 meter rope, 3-phase	400 V AC 3~ 16 A	yes	CE

\* We recommend a dedicated line 3 phase power connection (400 Volt AC3~N/PE 50/60 Hz 16 to 32A fuse) and 3-phase device for high speed, fast acceleration, special applications and for heavier subjects due to higher performance. For all single phase powered treadmills the natural performance limitations of single phase voltage supply apply due to the law of physics. For professional performance diagnostics, athletic training and high performance applications we strongly recommend running machines with 3-phase voltage power supply from model size min. pulsar 3p, venus or saturn.

The treadmill-ergometers are available as sports treadmills as well as a medical devices, with or without User-Terminals. Main differences between sports and medical devices: CE-marking, safety systems, standards and norms; no medical devices; no classifications as a medical devices



mercury® med with arm support and additional keyboard



mercury® med with robowalk®, safety arch and arm support



saturn® 300/100r with safety arch



h/p/cosmos locomotion® 150/50 DE med with h/p/cosmos airwalk® se



pulsar® 3p with safety arch





**sports**  
quasar®



**cycling & athletics**  
saturn® med 300/100r



**performance diagnostics**  
pulsar® med 3p



**inline skating**  
saturn® med 300/125r



**functional training**  
pulsar® med 3p + robowalk®



**cross country skiing  
skating / biathlon**  
saturn® med 450/300rs



**wheelchair**  
saturn® med 300/100r



**speed training / speedlab®**  
pulsar® med 3p



**fitness**  
mercury® / pluto®



**motion analysis**  
quasar® med



**expander training**  
robomove®



**dynamic movement skills**  
dms®



**biomechanics  
gait parameters**  
optogait

## rehab



**active gait correction**  
robowalk® expander / mercury® med



**senior fitness**  
mercury®



**locomotion therapy**  
locomotion® med 150/50



**cardiac rehabilitation**  
mercury® med



**body weight supported  
treadmill therapy**  
airwalk® / mercury® med



**angiology**  
mercury® med



**gait analysis / biomechanic**  
gaitway® with force measurement



**cardiovascular stress  
testing / CPET**  
mercury® lt med



**orthopaedic rehabilitation**  
mercury® med



**therapeutic bar training**  
parawalk®

## special applications



**environmental climate  
chambers**  
pulsar® 3p with external user terminal



**speed training**  
sprint trainer comet®



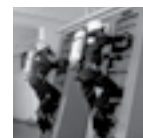
**military / army**  
mercury® special version



**hypoxi altitude  
simulation**  
mercury® med



**SpeedLab®**  
methodology, education,  
equipment, database



**fire fighter ladder  
training & fitness**  
discovery®

h/p/cosmos dealer contact:

manufacturer

h/p/cosmos sports & medical gmbh  
Am Sportplatz 8  
83365 Nussdorf-Traunstein  
Germany

phone: +49 86 69 86 42 0  
fax: +49 86 69 86 42 49

sales@h-p-cosmos.com  
www.h-p-cosmos.com

skype: @h-p-cosmos.com (search & select name)  
youtube: youtube.com/hpcosmos  
twitter: twitter.com/hpcosmos  
facebook: facebook.com/hpcosmos

