original instructions for use

quasar®

treadmill h/p/cosmos® 170-190/65

models

quasar® sport	stellar® sport
quasar® med	stellar® med
pulsar® sport	stellar® sport 190/65
pulsar® med	stellar® med 190/65

incl. OEM Variants

IMPORTANT! READ CAREFULLY BEFORE USE!
KEEP FOR FUTURE REFERENCE!

date: 22.09.2021

revision: 1.05

article number: cos105000_170-190_65_en

MCU6 firmware version: cos101010fw_1.25.0053*
GUI version: cos101000-v1.4.0206*
Windows 10 Image: cos101000ap (WIN10 2016 INDEX01)*
Inverter Parameter: cos103791-01 (INDEX02)*

h/p/cosmos sports & medical gmbh

*subversions may be included. See screenshots.

ahead of time®

These instructions for use are only valid for the original configuration of the first delivery of the devices pictured below.
Please refer to the latest version of this document, available at: www.hpcosmos.com
These instructions for use are available on request as print version at service@hpcosmos.com

Product family: treadmill h/p/cosmos 170-190/65 (quasar, pulsar)

Manufacturing year: from 2020

Basic UDI-DI: 4050588004002

Models:

sport

med

quasar® lt
UDI-DI: 4050588003012
[cos30003-01va03]

pulsar® lt
UDI-DI: 4050588003135
[cos30004-01va03]

quasar® lt med
UDI-DI: 4050588003029
[cos30003-01va04]

pulsar® lt med
UDI-DI: 4050588003142
[cos30004-01va04]

sport

med

quasar® sport
UDI-DI: 4050588002947
[cos30003-01va01]

stellar® sport
UDI-DI: 4050588002992
[cos30003-01va05]

quasar® sport OEM
UDI-DI: 4050588002961
[cos30003-01va07]

pulsar® sport
UDI-DI: 4050588003074
[cos30004-01va01]

stellar® 190/65 sport
UDI-DI: 4050588003012
[cos30004-01va05]

pulsar® sport OEM
UDI-DI: 4050588003098
[cos30004-01va07]

quasar® med
UDI-DI: 4050588002954
[cos30003-01va02]

stellar® med
UDI-DI: 4050588003005
[cos30003-01va06]

quasar® med OEM
UDI-DI: 4050588002978
[cos30003-01va08]

pulsar® med
UDI-DI: 4050588003081
[cos30004-01va02]

stellar® 190/65 med
UDI-DI: 4050588003029
[cos30004-01va06]

pulsar® med OEM
UDI-DI: 4050588003104
[cos30004-01va08]

Franz Harrer
President & CEO
h/p/cosmos sports & medical gmbh

Dear customer,

Thank you for choosing this premium device.

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

During this time the company, based in Traunstein, Germany, has developed into THE German specialist for 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.

Your success with our devices is the primary goal of h/p/cosmos.

This is why we offer individual devices as well as comprehensive system solutions.

You will find a wide range of options and accessories in these instructions for use and at www.hpcosmos.com.

At h/p/cosmos, the quality and safety of our products is our highest priority.

These instructions for use include all of the information needed to operate the device correctly and safely.

Please read them carefully before use and keep them available at all times.

We hope you will have a lot of fun and success as you work with your h/p/cosmos device.

Franz Harrer
President & CEO
h/p/cosmos sports & medical gmbh

Content

1 Symbols and Labels

1.1 Symbols used (general)

Illustration	Description	Reference
CE 0123	CE sign, declaration that the essential requirements (here with number of notified body) were met	(acc. to medical device directive 93/42/EEC or medical device regulation EU 2017/745)
CE	CE sign, declaration that the essential requirements were met	(according to machinery directive 2006/42/EC)
	General warning (danger, warning or caution statements)	(DIN EN ISO 7010 W001)
	Warning of obstacles (stumbling)	(DIN EN ISO 7010 W007)
	Warning of electrical voltage	(DIN EN ISO 7010 W012)
	Warning of hot surface	(DIN EN ISO 7010 W017)
	Warning of counter rotating rollers (trapping zones)	(DIN EN ISO 7010 W025)
	Follow instructions for use	(DIN EN ISO 7010 M002)
	Potential equalization	(IEC 60445)
	Protection ground	(IEC 60417-5019)
	Chassis ground	(IEC 60417-5020)
	Alternating current (AC)	(IEC 60417-5032)
	Applied part of type B	(IEC 60417-5840)
	Manufacturer	(ISO 15223-1)
2018-10-01	Manufacturing date	(ISO 15223-1)
	Separate collection for electrical and electronic equipment	(2012/19/EU)

1.2 Symbols used (transport, packing & storage)

Illustration	Description	Reference
	Fragile, Handle with care	(ISO7000-0621)
	This way up	(ISO7000-0623)
	Keep dry	(ISO7000-0626)
	Centre of gravity	(ISO7000-0627)
	Temperature limitations	(ISO7000-0632)
	Do not stack	(ISO7000-2402)

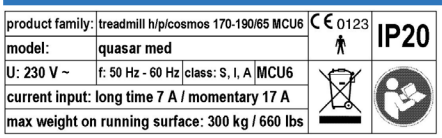
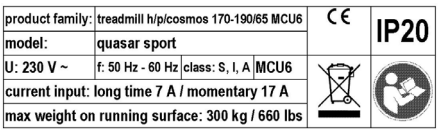
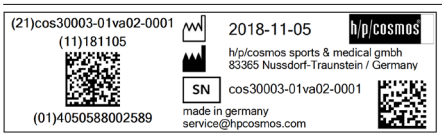
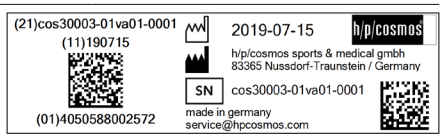
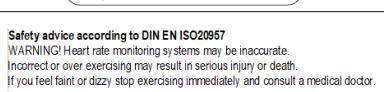
1.3 Structure

Illustration	Description
med	Pages marked with the following symbol are applicable for medical devices, only.
sport	Pages marked with the following symbol are applicable for sports devices, only.

All pages without special marking (med or sport) are applicable for both applications and devices.

1.4 Labels and marking on device

In case of any visible or assumed wear and tear (of the device, accessories, labels, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing. Do not change or remove any labels!

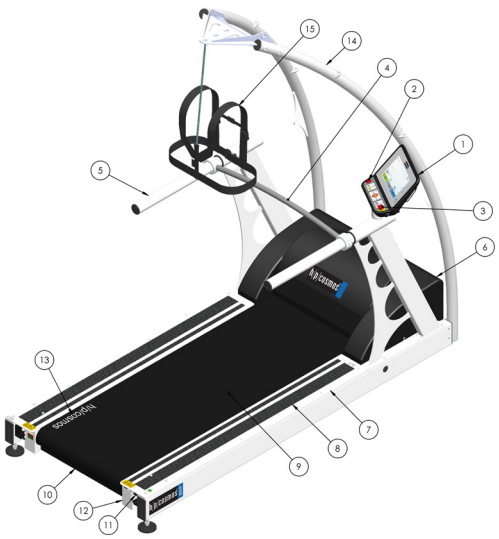
Illustration	Description	Order number
	name plate	
	UDI name plate with serial number, manufacturer and manufacturing date	
	label "caution danger zones"	cos10508-03
	label "before opening disconnect mains"	cos11880
	label "follow instructions"	cos101380
	label "potential equalization"	cos101594
	label “next inspection 20xx” + base label	cos14543-20xx + cos11787
	label "adjust running belt"	cos10512
	label "adjust running belt"	cos10512-01
	label" lubrication"	cos10510
	label "safety advice acc. to EN ISO 20957-1"	cos103963
	label "h/p/cosmos address"	cos10144-01
	label "NFC sensor"	-
	marking on running belt	-

2 Description

2.1 Illustration

No.	Description
1.	UserTerminal
2.	Pull cord safety stop (ripcord / safety lanyard)
3.	Emergency stop
4.	Crossbar-frontrail
5.	Side handrail
6.	Motor cover
7.	Foot rail
8.	Non slip surface
9.	Running deck
10.	Running belt
11.	Rear roller
12.	Rear roller protective cover
13.	Marking of running belt
14.	Safety arch
15.	Safety harness / Chest belt

Illustration



2.2 Function

The treadmill has two essential performance characteristics: Speed and elevation.
The rotation of the running belt represents the speed.
The raising of the whole treadmill frame incl. running deck enables the elevation.
Both parameters are manually adjustable on the UserTerminal.
Furthermore, operation is possible via pre- and self-defined modes.
Operation is also possible via external devices (PC, ECG, etc.).
The chapter “operation” gives a detailed description of all functions.
The chapter “technical data” shows technical details.

The treadmill is driven by powerful motors.
For that reason it is very important to follow the safety information, in order to avoid injury or death.

As previously described, the treadmill contains a number of standardized protocols.
Nevertheless, the treadmill does not provide recommendations for treatment.
The decision regarding the correct load is the responsibility of the medical doctor.
Depending on the application, the load includes speed, elevation, distance, heart rate, body weight or motion support, etc..

3 Intended Use (med)

3.1 Intended Use / Indications / Target Population

h/p/cosmos medical treadmills are intended for walking or running* in place for

Recreational fitness training (incl. athletes)

Gait training (with or without body weight support)

h/p/cosmos medical treadmills can be used in combination with external devices for walking or running* in place as

Stressing devices for neuromuscular and biomechanical measurements (e.g. EEG, EMG, motion analysis)

Stressing devices for cardiovascular measurements (e.g. ECG)

Stressing devices for cardiopulmonary measurements (e.g. ergospirometry)

* Devices marked with an “r” or "rs" like “h/p/cosmos saturn 250/75 r” are intended for applications with wheels as well.

Applications with wheels include cycling, roller skiing, wheelchair applications, etc...

Caution: In which ever mode, function, program, test or feature, the treadmill does not provide any kind of medical treatment proposal nor medical assessment with analysis. The treadmill is purely used as a stressing device and training equipment.

Prescribed fall prevention device for any application where falling might cause an unacceptable risk such as

while performing sprints, high speed training or max. endurance tests

while training on running surfaces wider than 65 cm

for children (<14 years)

for subjects with all kind of disabilities, impairments (visual, hearing, balance, etc.), activity limitations and participation restrictions

for subjects with recent hip replacement, intracorporal probes, osteoporosis, etc.

during reverse belt rotation at speeds higher than 5 km/h.

It is not allowed to run with the back to the crossbar or to the UserTerminal to prevent from collision.

during all use with wheels (cycling, wheelchair, inline-skating or roller-ski) for the “r” models

The subject of a medical application is not necessarily a patient.

Therefore these instructions for use will use the term “subject” for patients as well as for athletes under test.

h/p/cosmos medical treadmills may be operated with healthy subjects as well.

For applications with healthy subjects, please apply the instructions for use for sports devices, available at www.hpcosmos.com

It is impossible to list all indications, target population (age, gender, weight range, height range) and target user groups for treadmill training and treadmill testing, since the indications, target population and target user groups most likely correspond to recommendations for walking and/or running overground.

The treadmill does not provide recommendations for treatment and target population.

It is important to notice that the decision to use the devices with their potential risks and complications for diagnosis, rehabilitation or therapy of a particular patient is the essential responsibility of the medical operator.

The clinical user’s judgment, on the other hand, must be based on current knowledge in medical science and the specific situation of the patient.

The indications, target population and target user groups for treadmill testing and treatment have to be decided by the medical doctor and primarily have to be derived from international accepted guidelines.

Examples:

2020 ESC Guidelines on Sports Cardiology and Exercise in Patients with Cardiovascular Disease

ESC European Society of Cardiology Clinical Practice Guidelines

https://academic.oup.com/eurheartj/article/42/1/17/5898937

ACC/AHA Guidelines for Exercise Testing.

A Report of the American College of Cardiology/American Heart Association

Task Force on Practice Guidelines (Committee on Exercise Testing)

https://www.jacc.org/doi/pdf/10.1016/s0735-1097%2897%2900150-2

American Academy of Family Physicians Foundation

Physical Therapy and Rehabilitation Journal
Robotic-Assisted, Body-Weight–Supported Treadmill Training (BWSTT) in Individuals Following Motor Incomplete Spinal Cord Injury
https://academic.oup.com/ptj/article/85/1/52/2805006

The NEW ENGLAND JOURNAL of MEDICINE
Body-Weight–Supported Treadmill Rehabilitation after Stroke
https://www.ctsi.ucla.edu/education/files/view/training/docs/dobkin-NEJM-BWSTT-after-stroke.pdf

3.2 Intended operator

Medical staff only

that has been carefully trained according to these instructions for use

that is working according to the prescription of the medical doctor, where applicable and necessary

the subject is not the intended operator.

But the intended operator is authorized to allow the subject to control the device according to the instructions and under the permanent observation of the intended operator. This means the operation of the device remains the responsibility of the intended operator at all times, taking the physical and mental condition of the subject into account.

The intended operator has to be within permanently reach (patient area = 1.5m radius).

3.3 Intended location

Medical facilities only

no use at home or in home healthcare environments (acc. to IEC 60601-1-11)

no outdoor use

no direct sunlight

Sufficiently lighted for proper readability of warning, labels, displays and operation elements

Proper environmental conditions (see “Technical Data”)

Stationary training equipment: Not intended to be moved after installation by professional staff.

3.4 Intended duration / exercise stop criteria

Depending on the prescription of the medical doctor

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

Sources:
http://leitlinien.dgk.org (German Cardiac Society)
www.acc.org (American College of Cardiology Foundation)
www.americanheart.org (American Heart Association)
http://my.americanheart.org/idc/groups/ahaecc-internal/@wcm/@sop/documents/downloadable/ucm_423807.pdf

3.5 Contraindications

Absolute contraindications

(have to be excluded before the treadmill is used)

Acute myocardial infarction (within 2 days)

Instable angina pectoris

Cardiac arrhythmia pathology and/or limited hemodynamics

Symptomatic massive aortic stenosis

Uncompensated / uncontrolled heart insufficiency

Acute pulmonary embolism or pulmonary infarction

Acute endocarditis, myocarditis, pericarditis

Acute aortic dissection

Acute coronary syndrome

Acute phlebothrombosis of the lower extremities

Febrile infections

Pregnancy

Acute thrombosis

Fresh wounds e.g. after surgery

Acute fracture

Damaged disc or traumatic disease of the spine

Epilepsy

Inflammations

Acute migraine

uncontrolled heart failure

dissecting aneurysm

recent aortic surgery and ECG abnormalities, such as abnormal ST-segment response (horizontal, planar or downslopingdepression of >1 mm, T-wave elevation of > 1 mm in leads without Q-waves, and Twavechanges such as inversion and pseudo-normalization when an inverted T-wave becomes upright.

Relative contraindications

(The application may be started if the possible benefits exceed the risks.

The decision has to be made by the medical doctor before the treadmill is used)

Left main coronary stenosis

Main artery disease

Cardiac valve disease of moderate severity

Known electrolyte imbalance

Arterial hypertonia (RR > 200 mm Hg syst. > 110 mm Hg diast.)

Tachyarrhythmia or bradyarrhythmia

Hypertrophic cardiomyopathy and other forms of outflow tract obstruction

Higher degree atrioventricular AV-blocking

Anemia

Physical and/or mental disabilities leading to inability to exercise adequately

Partially invasive medical devices (probes, infusions, catheters, external fixators, etc.)

4 Intended Use (sport)

4.1 Intended use / Indications

h/p/cosmos sports treadmills are intended for walking or running* in place.

Do not use h/p/cosmos sports treadmills for medical applications.

* Devices marked with an “r” or "rs" like “h/p/cosmos saturn 250/75 r” are intended for applications with wheels as well.

Applications with wheels include cycling, roller skiing, wheelchair applications, etc...

Caution: In which ever mode, function, program, test or feature, the treadmill does not provide any kind of medical treatment proposal nor medical assessment with analysis. The treadmill is purely used as a stressing device and training equipment.

Prescribed fall prevention device for any application where falling might cause an unacceptable risk such as

- while performing sprints, high speed training or max. endurance tests
- while training on running surfaces wider than 65 cm
- for children (<14 years)
- for subjects with all kind of disabilities, impairments (visual, hearing, balance, etc.), activity limitations and participation restrictions
- for subjects with recent hip replacement, intracorporal probes, osteoporosis, etc.
- during reverse belt rotation at speeds higher than 5 km/h.
- during all use with wheels (cycling, wheelchair, inline-skating or roller-ski) for the “r” models

4.2 Intended operator

Adult persons carefully trained according to these instructions for use.

A professional supervisor has to be in the same room.

4.3 Intended location

No use at home or in home healthcare environments (acc. to IEC 60601-1-11)

No outdoor use

No direct sunlight

Sufficiently lighted for proper readability of warning, labels, displays and operation elements

Proper environmental conditions (see “Technical Data”)

Stationary training equipment: Not intended to be moved after installation by professional staff.

4.4 Intended duration / exercise stop criteria

Depending on the condition of the subject

Exclude overloading or overstressing of the subject.

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

4.5 Contraindications

(have to be excluded before the treadmill is used)

- Acute myocardial infarction (within 2 days)
- Instable angina pectoris
- Cardiac arrhythmia pathology and/or limited hemodynamics
- Symptomatic massive aortic stenosis
- Uncompensated / uncontrolled heart insufficiency
- Acute pulmonary embolism or pulmonary infarction
- Acute endocarditis, myocarditis, pericarditis
- Acute aortic dissection
- Acute coronary syndrome
- Acute phlebothrombosis of the lower extremities
- Febrile infections
- Pregnancy
- Acute thrombosis
- Fresh wounds e.g. after surgery
- Acute fracture
- Damaged disc or traumatic disease of the spine
- Epilepsy
- Inflammations
- Acute migraine
- Left main coronary stenosis
- Main artery disease
- Cardiac valve disease of moderate severity
- Known electrolyte imbalance
- Arterial hypertonia (RR > 200 mm Hg syst. > 110 mm Hg diast.)
- Tachyarrhythmia or bradyarrhythmia
- Hypertrophic cardiomyopathy and other forms of outflow tract obstruction
- Higher degree atrioventricular AV-blocking
- Anemia
- Physical and/or mental disabilities leading to inability to exercise adequately
- Partially invasive medical devices (probes, infusions, catheters, external fixators, etc.)
- Cardiac pacemaker
- Visual impairment (vision < 30% acc. to WHO)

Sources:

http://leitlinien.dgk.org	(German Cardiac Society)
www.acc.org	(American College of Cardiology Foundation)
www.americanheart.org	(American Heart Association)

http://my.americanheart.org/idc/groups/ahaecc-internal/@wcm/@sop/documents/downloadable/ucm_423807.pdf

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www.americanheart.org (American Heart Association)
http://my.americanheart.org/idc/groups/ahaecc-internal/@wcm/@sop/documents/downloadable/ucm_423807.pdf

5 Safety (med)

h/p/cosmos medical treadmills may be operated with healthy subjects as well.

The safety notes, warnings and precautions have to be pointed out to every user and operator and displayed within sight of the running machine.

Additional and latest safety notes and warnings see: https://www.hpcosmos.com/en/safety

Any serious incident in relation to the device has to be reported to the manufacturer and the competent authority of the EU Member State in which the user and/or patient is established as well as to EUDAMED database based on MDR.

5.1 Safety information – Forbidden use

Obey the following danger, warning and caution statements stricktly in order to prevent serious injury or death!

Prescribed fall prevention for any application where falling might cause an unacceptable risk (high speed or special applications, applications with subjects not able to jump off the running belt such as children, physically impaired, etc.)

The automatic modes must only be performed on the prescription of the medical doctor.

During stress tests a medical doctor has to be available at any time.

Do not use the device with children <12 months.

Exclude access of unsupervised children (< 14 years) onto or near any parts of the device (incl. accessories, packaging, lubrication and service material).

In case of application with children (> 1, < 14 years) permanent observation of the subject by medical staff is obligatory.

Animals must not be in the same room with the device.

Only carefully trained medical staff is allowed to use the device.

Do not use the safety harness on bare skin.

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

Exclude overloading or overstressing of the subject.

The subject has to be checked by a medical doctor before using the device.

A defibrillator must be present at any time.

The intended operator has to be in reach of at least one emergency stop/off at any time.

Obey all information given in these instructions for use.

Do not use the device against the intended use.

Do not use the device in case one or more of the listed contraindications prevail.

In case of relative contraindications permanent observation of the subject by medical staff is obligatory.

Neither subject nor operator must be under the influence of alcohol, drugs or anesthetics.

Start the use of the treadmill with slow walking, especially for beginners.

Make sure the space under the treadmill is free from persons, body parts or objects, especially when switching on (treadmill will lower during initialization) and when changing the elevation.

Do not enter the device when running belt is rotating.

Do not step on rear roller.

Do not stand on or enter the running deck when device is in elevation (running belt might slip through due to gravity).

Make sure no objects, sand, stones, liquids, towels, jewellery, cell phones, containers with liquid etc. can fall into the device or onto the running surface or underneath the running belt.

* Devices marked with an “r” or “rs” like “h/p/cosmos saturn 250/75 r” are intended for applications with wheels as well. Applications with wheels include cycling, roller skiing, wheelchair applications, etc.

** Devices supplied with the special “running belt for ski and spike applications” (see “Annex III (Accessories)”) are intended for application with spikes or studs as well.

Do not turn around, walk sideways or backwards; do not jump on or off the running belt while it is in motion.

Do not touch the running belt while it is in motion (besides contact with feet).

Do not lean on the UserTerminal - do not apply pressure to the displays - press keys softly.

Ensure assist mean, accessories, cables etc. do not extend into the running area.

Do not insert any object (especially no metal objects such as a pin or a wire) into any gap or any outlet on the device.

Do not touch the subject and external electrical devices at the same time.

Always the latest command will be executed, regardless of whether it came via interface or from the UserTerminal during one of the four modes. Only stop command has higher priority and cannot be overwritten.

Be aware that electromagnetic interferences may cause a fail-safe mode, the running belt will stop with a pre-defined deceleration ramp.

WARNING: To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING: Do not use portable high frequency communication devices in the subject environment (see “position of subject and user”). Disregard can cause loss of performance.

Free standing equipment has to be installed on a stable and levelled base.

Choose proper floor, shoes, clothing and humidity, in order to prevent electrostatic charge and discharge (also see technical data).

Do not use the device without instruction by authorized personnel acc. to the instruction protocol.

Regard safety area behind device of 2.0 m x width of treadmill.

Operator and subject have to be aware of automatic load changes during profile, cardio and test mode.

Unmeant trapping hazards: Take off ties, scarfs or other clothes that may be trapped. Secure long hair and ribbons during maintenance and training in order to prevent being captured in trapping zones.

Perform a daily visual inspection (see chapter “maintenance”).

Obey the maintenance intervals claimed in chapter “maintenance”.

Obey the competences claimed in chapter “maintenance”.

A second person has to be present during maintenance.

In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

In case of any visible or assumed wear and tear (of the device, accessories, labels, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing. Do not change or remove any labels!

In case of any fluid entering into the device, unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

Do not modify the device, configurations, accessories or software in any way.

Do not connect any devices, accessories or software, not listed in “accessories / compatible devices”.

Disinfect the device before and after every treatment.

Disconnect the device and all accessories from mains power supply before cleaning or disinfection.

Do not save personal data (names, address, etc.) or patient data (indications, etc.) on the UserTerminal, for example in file names or profile names.

6 Safety (sport)

h/p/cosmos sports treadmills are intended for walking or running* in place.
Do not use h/p/cosmos sports treadmills for medical applications.

The safety notes, warnings and precautions have to be pointed out to every user and operator and displayed within sight of the running machine.
Additional and latest safety notes and warnings see: https://www.hpcosmos.com/en/safety

Any serious incident in relation to the device has to be reported to the manufacturer and the competent authority of the EU Member State in which the user and/or subject is established.

6.1 Safety information – Forbidden use

Obey the following danger, warning and caution statements stricktly in order to prevent serious injury or death!

Prescribed fall prevention for any application where falling might cause an unacceptable risk (high speed or special applications, applications with subjects not able to jump off the running belt such as children, physically impaired, etc.)

Only carefully trained staff is allowed to use the device.

Do not use the device with children <14 years.

Exclude access of unsupervised children (< 14 years) onto or near any parts of the device (incl. accessories, packaging, lubrication and service material).

Do not use the safety harness on bare skin.

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

Exclude overloading or overstressing of the subject.

The subject has to be checked by a medical doctor before using the device.

A defibrillator must be present at any time.

The intended operator has to be in reach of at least one emergency stop/off at any time.

Obey all information given in these instructions for use.

Do not use the device against the intended use.

Do not use the device in case one or more of the listed contraindications prevail.

Neither subject nor operator must be under the influence of alcohol, drugs or anesthetics.

Start the use of the treadmill with slow walking, especially for beginners.

Make sure the space under the treadmill is free from persons, body parts or objects, especially when switching on (treadmill will lower during initialization) and when changing the elevation.

Do not enter the device when running belt is rotating.

Do not step on rear roller.

Do not stand on or enter the running deck when device is in elevation (running belt might slip through due to gravity).

Make sure no objects, sand, stones, liquids, towels, jewellery, cell phones, containers with liquid etc. can fall into the device or onto the running surface or underneath the running belt

Do not enter the device without athletic or other appropriate shoes. Do not use high heels, spikes, studs, sandals, etc. **

Do not use the device with wheels (bikes, wheelchairs, inline skates, etc.).

Do not turn around, walk sideways or backwards; do not jump on or off the running belt while it is in motion.

Do not touch the running belt while it is in motion (besides contact with feet).

Do not insert any object (especially no metal objects such as a pin or a wire) into any gap or any outlet on the device.

Do not touch the subject and external electrical devices at the same time.

Always the latest command will be executed, regardless of whether it came via interface or from the UserTerminal during one of the four modes. Only stop command has higher priority and cannot be overwritten.

Be aware that electromagnetic interferences may cause a fail-safe mode, the running belt will stop with a pre-defined deceleration ramp.

WARNING: To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING: Do not use portable high frequency communication devices in the subject environment (see “position of subject and user”). Disregard can cause loss of performance.

Free standing equipment has to be installed on a stable and levelled base.

Choose proper floor, shoes, clothing and humidity, in order to prevent electrostatic charge and discharge (also see technical data).

Do not use the device without instruction by authorized personnel acc. to the instruction protocol.

Regard safety area behind device of 2.0 m x width of treadmill.

Animals must not be in the same room with the device.

Operator and subject have to be aware of automatic load changes during profile, cardio and test mode.

Unmeant trapping hazards: Take off ties, scarfs or other clothes that may be trapped. Secure long hair and ribbons during maintenance and training in order to prevent being captured in trapping zones.

Perform a daily visual inspection (see chapter “maintenance”).

Obey the maintenance intervals claimed in chapter “maintenance”.

Obey the competences claimed in chapter “maintenance”.

A second person has to be present during maintenance.

In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

In case of any visible or assumed wear and tear (of the device, accessories, labels, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing. Do not change or remove any labels!

In case of any fluid entering into the device, unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

Do not modify the device, configurations, accessories or software in any way.

Do not connect any devices, accessories or software, not listed in “accessories / compatible devices”.

Disinfect the device before and after every treatment.

Disconnect the device and all accessories from mains power supply before cleaning or disinfection.

Do not save personal data (names, address, etc.) or patient data (indications, etc.) on the UserTerminal, for example in file names or profile names.

7.1 Fall prevention devices

A fall prevention device is the only effective way to protect the subject from falling.

Prescribed fall prevention for any application where falling might cause an unacceptable risk (details see chapter 4.1).

h/p/cosmos provides fall prevention devices in the form of a safety arch or a body weight support device (airwalk).

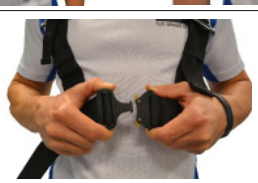
It is up to the operator to use any other certified device that prevents the subject from falling and complies with IEC 60601-1 and EN 957-6 in combination with this treadmill.

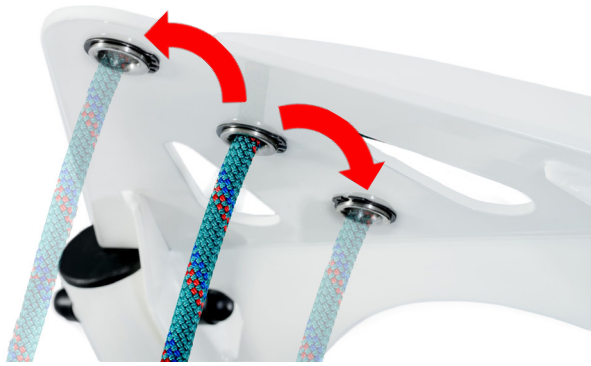
The pull-cord safety stop is not a fall prevention.

Do not use the safety harness on bare skin.

Treadmill with safety arch	Body weight support device airwalk®
	

Further information see “Annex III (accessories)”

Description	Illustration
Put on the safety harness so that the h/p/cosmos logo is facing outside. The h/p/cosmos logo has to be visible in the back as well.	
Close buckles.	
Tighten shoulder and chest straps.	
Use carabiner to connect safety harness with rope.	
select max. patient weight / triggering of STOP function 1.) rope not through upmost eyelet -> max. 250 kg / trigger at 15 kg 2.) rope through upmost eyelet -> max. 300 kg / trigger at 30 kg	

Description	Illustration
Press lever to release rope. Check rope, harness / chest belt and switch function daily. Renew the rope and harness every 24 months, or sooner if it shows any signs of wear or damage.	
Select the optimum user position (especially during downhill and / or reverse) on the treadmill using the safety arch.	
In order to re-open the buckle, press the fastener with thumb and index finger.	

7.2 Emergency dismount

Subject is conscious and aware of danger.

Subject grabs the handrails

Subject jumps off the running belt onto the foot rails

Operator / subject hits the emergency stop

Subject is conscious but not aware of danger.

Subject stumbles and falls into fall prevention device.

Treadmill stops

Operator / subject hits the emergency stop

Operator helps subject stand up again.

Operator helps subject exit the device.

Subject lost consciousness and is hanging in the fall prevention device.

Hit the emergency stop.

Call a medical doctor.

Call one or more persons, strong enough to carry the subject.

Inform the third person that you will open the buckle of the safety harness

Open the buckle of the safety harness.

Subject will slide into the other person’s arms.

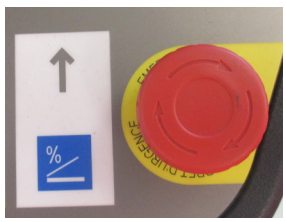
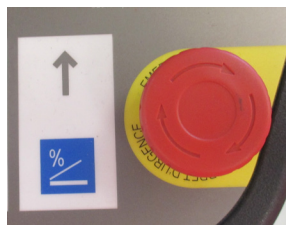
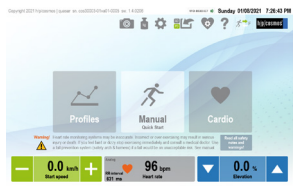
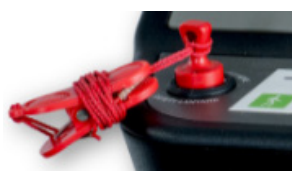
Render first aid.

7.3 Emergency stop / Safety stop

Do only use in case of emergency.

Do not use as normal stop button.

Do not stand on or enter the running deck when device is in elevation (running belt might slip through due to gravity).

	Operation	Result	Release	Restart
UserTerminal		Power supply to motion generating components interrupted Running belt spins out (until 0 km/h) with undefined deceleration Movement of elevation system stops		 Restart application.
	Push button	UserTerminal still on and displays:  Interface communication not interrupted	turn and pull button	
Pull cord safety stop				
	Pull cord with magnet from metal plate		Reconnect magnet with cord to metal plate	

The operator has to be in reach of the emergency stop at any time.

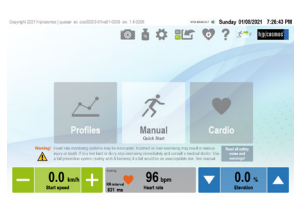
If the operator is not able to reach the emergency stop button at the UserTerminal (locomotion therapy, body height, obstacles, etc.), the operator must install an additional emergency stop within reach (see accessories).

7.4 Quick stop

Do only use in case of emergency.

Do not use as normal stop button.

Do not stand on or enter the running deck when device is in elevation (running belt might slip through due to gravity).

	Operation	Result	Release	Restart
Safety arch		Running belt stops with predefined deceleration Movement of elevation system stops UserTerminal displays “pull stop” 		 Restart application.
	Pulling force on rope	Mains connection and interface communication not interrupted	Release pulling force	

7.5 Unauthorized access

See Options 200 - 204 to lock the whole device or individual modes.

7.6 Residual risk / Side effects

After risk reduction most identified risks are "acceptable". Only a few risks remain "widely acceptable".

In case fall prevention device (safety arch with harness and chest belt or airwalk unweighting device) is not applied or not applied correctly, there are residual risks, such as falling of a person resulting in skin abrasions, bruises, fractures or in worst case even death.

These risks may occur during use as well as when entering or leaving the device and during stand-still in elevation.

Furthermore there is residual risk such as unintended overload of the subject caused by wrong operation, wrong assessment, or wrong application of the operator and also incorrect data transfer (e.g. electromagnetic interferences, software failure, etc.). Even the best software and hardware safety concepts can never completely rule out a failure of software or hardware and thereby a theoretically possible overloading of the subject.

Since the treadmill is an electrically operated device, an electric shock, which might result in death can never be ruled out. Although the design and verification is according to the relevant standards for electrical safety, an electric shock, which can result in death, can never be ruled out completely.

Due to their advanced technology the PC and the touch panel have an expected lifetime of 5 years. The thoroughly carried out risk management evaluates the risk emerging from a PC breakdown as acceptable.

The residual risk of strangulation and trapping of clothes / shoes / fingers / hair or other (body) parts in the elevation system, belt re-entry zones or other moving parts can not be excluded as well. These risks are reduced by safety information within the IFU.

It cannot be excluded that unintended or forbidden use might cause further not yet regarded risks and that already regarded risks might have been estimated incorrectly. It can also not be excluded that the daily use of the product might show further risks.

For medical applications such as ergometry, diagnostics and therapy there are alternatives to treadmill application such as bicycle ergometry (without natural gait movement) or overground gait therapy (secured only by the therapist), etc.. The benefits of treadmill training in contrast to these alternatives are clearly outweighing the residual risks of falling or overload with the known consequences.

In this risk analysis the "present state" of the device has been evaluated.

Having carried out the evaluation and validation of the product, the risk of appearance of a not acceptable risk is very low.

The device (it´s construction, it´s function as well as the intended application) does - under normal conditions - not represent any unjustifiable risk for the subject, the user, the operator or third persons.

However, the risk of injury or even death due to a malfunction of the treadmill is very low.

In over 33 years of history and with more than 10,000 h/p/cosmos treadmills on the worldwide market, there has never been a reported incident.

Thus, the h/p/cosmos products covered under this risk management file are considered to be very safe, in compliance with applicable standards and regulatory requirements and can be released for serial production to be placed on the market.

7.7 Cybersecurity

Limitation of unauthorized access through

- deactivation of
    - boot option from external devices
    - automatic Windows updates
- password protection of
    - whole device
    - Windows access
    - BIOS access
- possible exclusion / no essential need for
    - internet
    - WIFI
    - bluetooth

Limitation of data loss through

- internal energy storage
- backup option (USB) for training data

Further measures

- software design acc. to IEC 62304 (software life-cycle processes)
- re-confirmation of external control on the UserTerminal
- warnings concerning handling of patient data in instructions for use
- information / warnings for intergration by IT administrators in instructions for use
- no patient database

7.8 Fire- fighting

Apply all-pole disconnection from voltage power supply, preferrably through triggering respective FUSE circuit breaker.

Do not use liquid fire-fighting resources.

Use preferrably CO2 or powder fire extinguisher.

7.9 All-pole disconnection

The following options are available for all-pole disconnection from voltage power supply:

Unplug device from power socket.

Unplug cable from device (if possible).

Switch off device protection switch.

Trigger residual current circuit breaker / RCD of the building.

Maintain enough free space to ensure access to cables, power plugs and the circuit breaker (see “position of subject and operator”).

7.10 Summary of safety and clinical performance

See following link:

https://www.hpcosmos.com/en/contact-support/media-downloads/certificates

8 Preparation

Description	Illustration
Perform daily inspection as described in “daily inspection”.	
Explain device and application to subject. Explain emergency dismount to subject.	
Guide subject onto treadmill. Do not enter the device when running belt is rotating. Do not step on rear roller. Do not stand on or enter the running deck when device is in elevation (running belt might slip through due to gravity). If possible, the subject should hold both handrails for stability when entering the treadmill (running belt might slip through due to gravity). Holding handrails during use affects exercise results. (running belt might slip through due to gravity).	
Where applicable: Explain and apply fall prevention device as described in “fall prevention”.	

Description	Illustration
Apply pull-cord safety stop. (Attach clip to subject clothing.) Adjust the length of the cord so that the subject has to maintain the correct position (see “position of subject and operator”).	

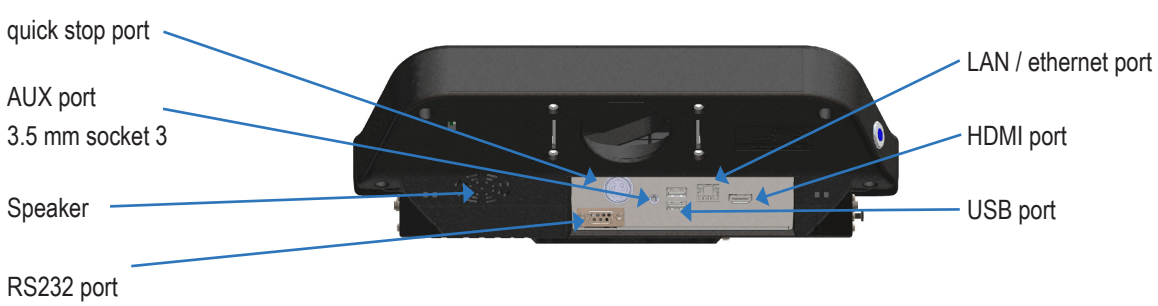
8.1 Preparation of optional adjustable handrails and therapist seats

Description	Illustration
Adjustment of handrails Pull lever Push button Adjust handrails Release button Push lever	
Adjustment of therapist seats Release fixation Adjust seat Tighten fixation	
Adjustment of foot rest Release fixation Adjust foot rest Tighten fixation	

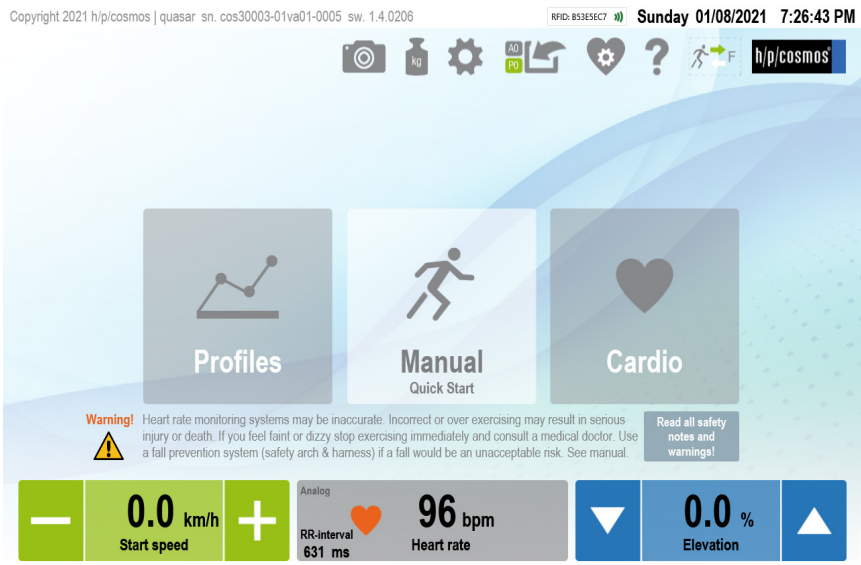
9 UserTerminal

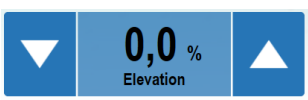
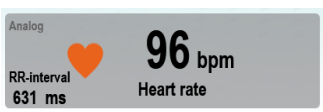
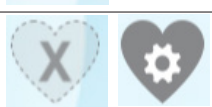
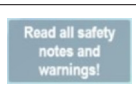
9.1 General Description

Overview UserTerminal



9.2 Touchscreen and displays

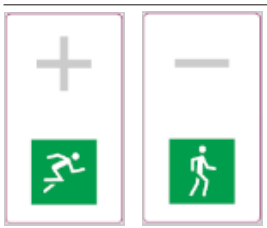
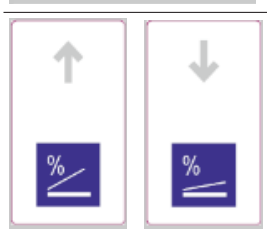


Overview of software buttons	
	Elevation adjustment in 0.1 % steps per tip. Pressing numeric display opens speed-dial window for direct entry of target value.
	Speed adjustment in steps of 0.1 km/h per tip. Pressing numeric display opens speed-dial window for direct entry of target value.
	Heart Rate and Heart Rate Variability HRV display. Pressing numeric display opens heart rate window for direct entry of target value with option for changing to operation mode into "Cardio"or just defining a max. hearth rate.
	Screenshot function Creates a screenshot and saves it to the previously inserted USB stick.
	Input body weight (for more accurate energy calculation = overwrite default setting).
	Settings: language, speed unit, distance unit, weight unit, elevation unit, energy consumption unit, brightness, backup and firmware updates.
	Select heart rate sensor / transmitter.
	Help button (Link to instructions for use).
	Extension of the ribbon bar to be able to set external control interface ().
	running belt direction (forward / reverse).
	Safety notes and warnings.

screenshot

9.3 Keys

Overview of hardware keys

	Speed adjustment in steps of 0.1 km/h per tip. By tipping several times and then holding the key the acceleration for increasing or decreasing of speed will be selected.
	Opens the main menu.
	Cool Down reduces current elevation to 0 and speed to cool-down speed of 5 km/h or 60% of the last speed in case it was lower than 5 km/h.
	Reduces belt speed to 0 and stops workout. Escape function
	Starts workout with pre-defined starting speed.
	Pauses the current workout. Treadmill reduces the speed with the set acceleration level to 0 km/h. Time does not stop.
	Elevation adjustment in 0.1 % steps per tip.

9.4 Connection of external devices / Interfaces

The back of the UserTerminal has RS232, USB, LAN ethernet and HDMI interfaces.

bluetooth and WiFi connnections are possible via optional USB dongles.

For USB-RS232 converter, see “accessories”.

The person combining a medical device with any other device for the first time is creating a Medical Electrical System.

Requirements for ME-Systems, see “creating systems”.

Compatible devices see chapter 9.1

10 Position of Subject and Operator

1) Position of subject (initial contact)

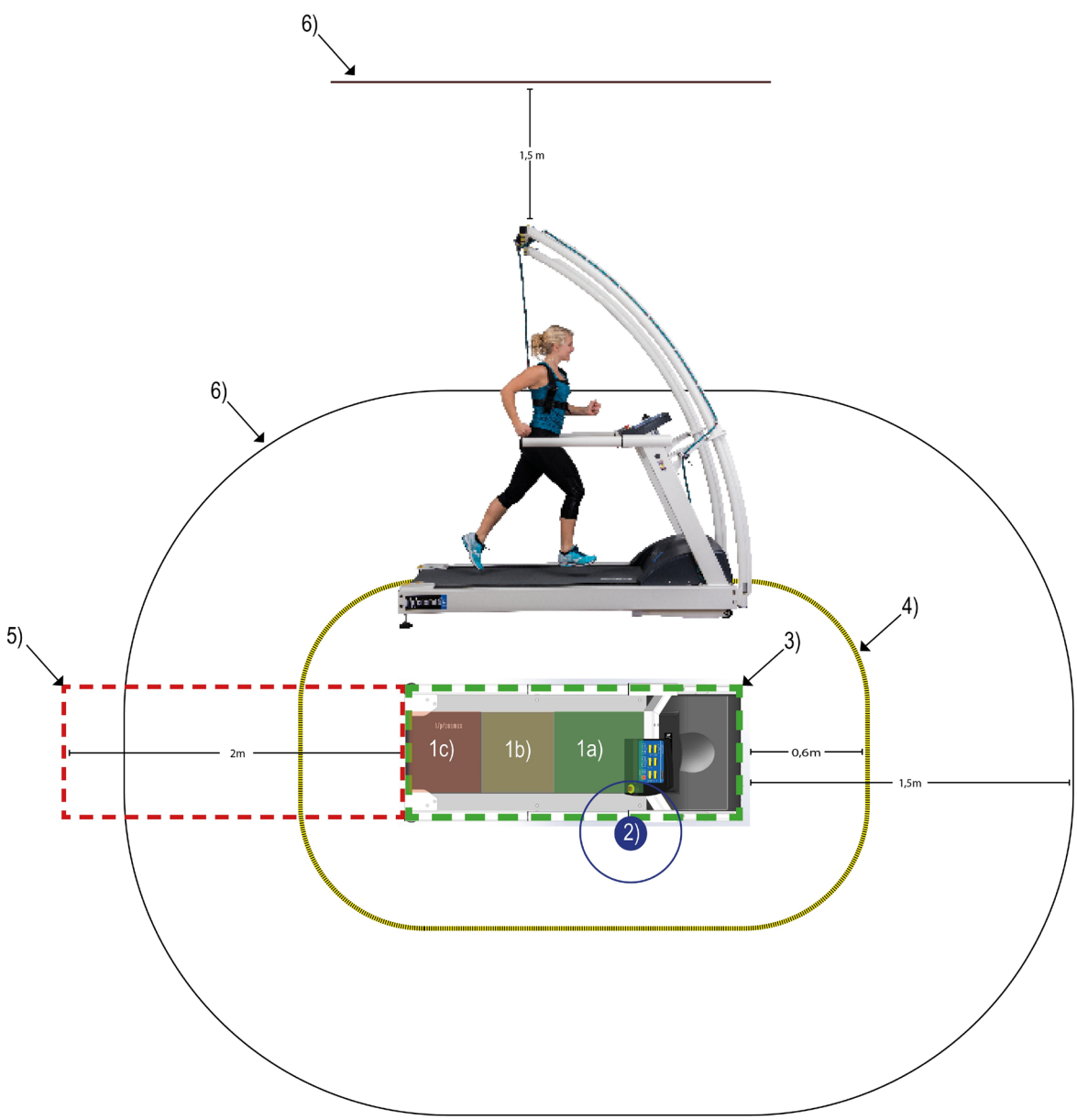
1a) Optimal position	40%, front	running area
1b) Tolerated position	30%, middle	
1c) Not tolerated position / buffer zone	30%, rear	

2) Intended position of operator

The operator must be within reach of the emergency stop at all times.
If the operator is not able to reach the emergency stop button at the UserTerminal (body height, obstacles, etc.), the operator must install an additional emergency stop within reach (see accessories).

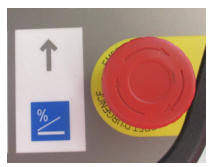
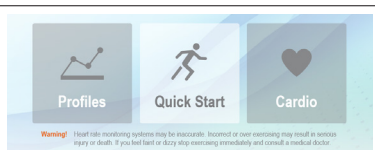
3)	Training area	acc. to ISO 20957-1	subject + device	
4)	Free area	acc. to ISO 20957-1	training area + 0.6 m	must be free at all times (except operator)
5)	Safety area	acc. to DIN EN 957-6	2.0 m behind device	must be free at all times (except operator)
6)	Patient environment	acc. to IEC 60601-1	device + 1.5 m to all sides and height	

There must be <u>no electrical devices within this area</u>, which are not part of an ME-System with the device.



11 Operation

11.1 General application procedure

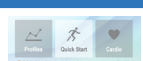
Description	Illustration
Disinfect the device (see “cleaning”). Disconnect the device and all accessories from mains power supply before cleaning or disinfection.	
Make sure… …the PE-cable is connected to electrical installation and device (if applicable), …the device is directly plugged into the dedicated wall socket, except if the treadmill is part of a ME system including satellite PC med, …the expulsion fuse on the front of the device is switched on, …all emergency stops are released.	   
Switch the running machine on with the on/off switch, light goes on, system starts up (approx. 1 min). Make sure the space under the treadmill is free from persons, body parts or objects, especially when switching on (treadmill will lower during initialization) and when changing the elevation. Normal condition: When starting, all displays show “0”-values.	
Select an operation mode. For a detailed description, see following chapters.	
Perform application.	-
Switch the running machine off with the on/off switch at the terminal by pushing the button for more than 2 sec (light goes off). By pushing the button under 2 sec., the system goes in stand by modus.	
Disinfect the device (see “cleaning”). Disconnect the device and all accessories from mains power supply before cleaning or disinfection.	

11.2 Overview of operation modes

For control, remote control and supervising purposes the free PC software para control is available on www.hpcosmos.com.

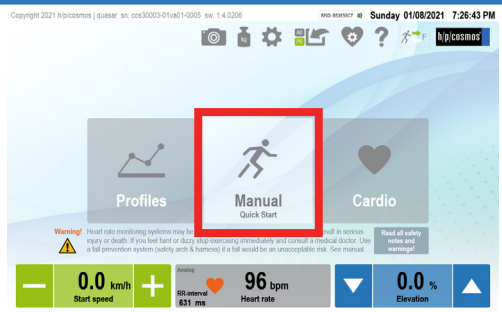
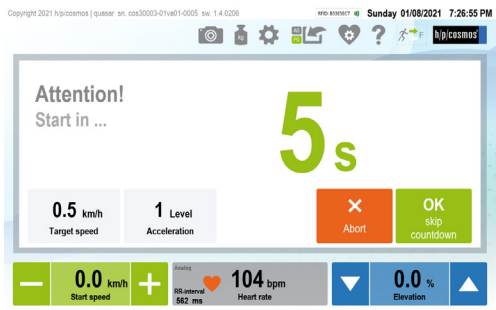
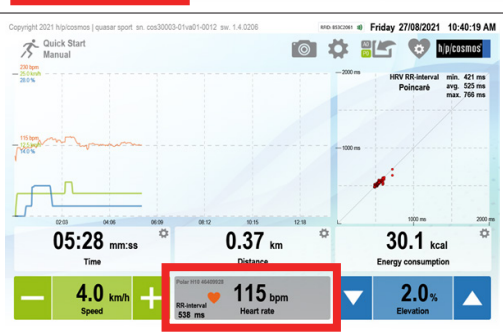
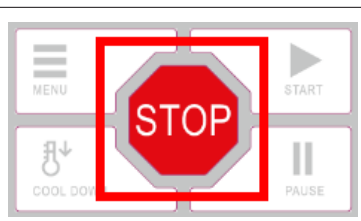
Manual mode	
Select mode quick start	
Select speed	
Select elevation	
Terminate application	

Profile mode	
Select mode profiles	
Select "profiles"	
Select a profile	
Confirm profile	
Terminate application	

Test mode	
Select mode profiles	
Select "tests"	
Select a test	
Confirm test	
Terminate application	

Cardio mode	
Select mode cardio	
Adjust parameters	
Start cardio training	
Terminate application	

11.3 Manual mode / Quick start

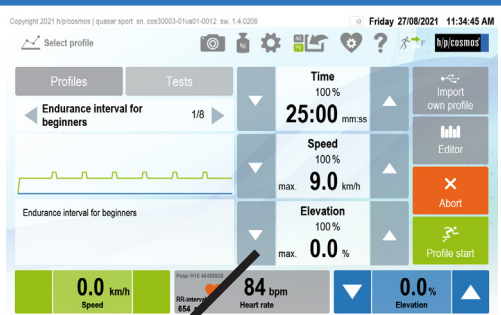
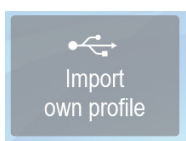
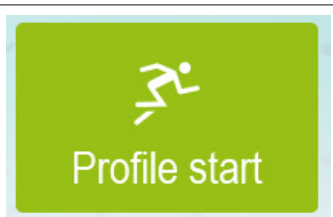
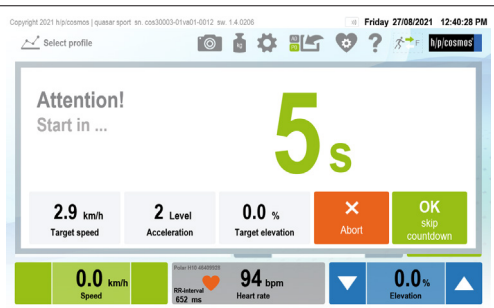
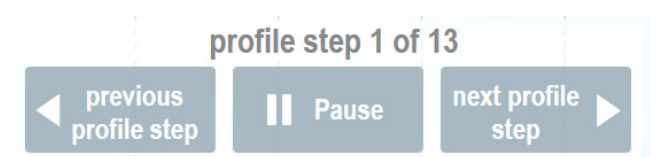
Basic functions	Buttons / displays	Further information
Select “Manual - Quick start”.		Device must be in “mode selection”. To get there, cancel all other activities by pressing the “stop”-button.
After the countdown the treadmill starts with the preset starting speed (default = 0.5 km/h).		With a click on "ok" the countdown can be skipped. A click on "abort" ends the manual mode. The treadmill does not start. Adjustment of countdown settings see "options".
Confirm with “OK” Running belt starts with predefined starting speed (default = 0.5 km/h).		The target speed and acceleration levels can be set by clicking the button in the middle of the Touch Terminal. Decelerate to 0 km/h to pause the operation (see “pause function”). Adjustment of starting speed / acceleration see "options"
This button always displays the current heart rate.		With a click on the button you can set a target heart rate. You can also switch directly to Cardio mode.
Adjust elevation: Press “up” ▲ or “down” ▼. Current elevation is displayed.		The target elevation can be set by clicking the button in the middle of the Touch Terminal.
Terminate the operation with “stop”		

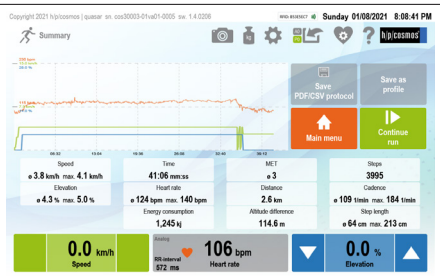
11.4 Profile mode

For medical application the automatic modes must only be performed on the prescription of the medical doctor.

Operator and subject have to be aware of automatic load changes during profile, cardio and test mode.

Start and load changes within the automatic modes are indicated by acoustic signals (beep).
Furthermore, the displays show the next load parameters (flashing).
The profile mode covers six load profiles, representing interval training sessions.
Scaled profiles cannot be stored. For self-defined tests see “test mode”.

Basic functions	Buttons / displays	Further information
Select “profile mode” with “<” or “>“ button. Selected mode flashes.		Device must be in “start selection”. To get there, cancel all other activities by pressing the “stop”-button.
Profile can be scaled in predefined time, maximum speed and maximum incline by pressing buttons up and down.		Import your own profile using these buttons and a USB stick. 
Confirm with “Profil Start”.		
Selected profile starts with the first profile step after countdown. Operation stops automatically after the last step.		
Choose between previous profile step or next profile step, next profile step or pause the profile.		

Basic functions	Buttons / displays	Further information
While the profile is running, you can see the elapsed time and distance as well as the burned kcal. With a click on the gear wheel it is possible to change the target settings at any time.		If you are in the menu to change the target settings, there is a button called "change display" in the upper right corner. The parameters to be displayed can be changed in this way.
After the profile has been completed, you will receive a summary of the training. Here you have several possibilities to save the profile.		Possible is an export of CSV files, a PDF file, it is possible to convert the profile to a time profile or to a distance profile.
Terminate the operation with “stop”.		

For possibilities to interfere with an automatic program, see “interfere with an automatic program”.

11.5 Cardio mode

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

Exclude overloading or overstressing of the subject.

For medical application the automatic modes must only be performed on the prescription of the medical doctor.

Operator and subject have to be aware of automatic load changes during profile, cardio and test mode.

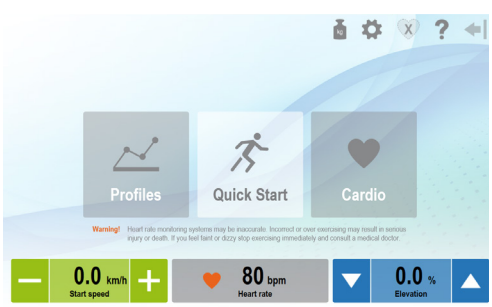
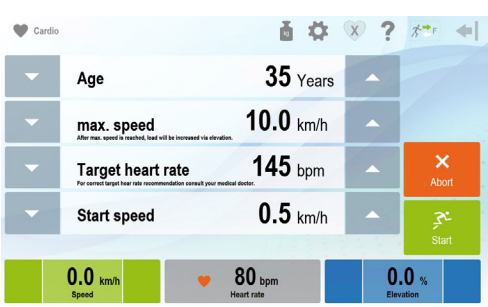
In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

Start and load changes within the automatic modes are indicated by acoustic signals (beeps).

Furthermore, the displays show the next load parameters (flashing).

The cardio mode allows training within pre-defined heart rate limits.

In order to stay within the limits, the treadmill adjusts speed and elevation automatically, first speed, then elevation.

Basic functions	Buttons / displays	Further information
Select “cardio”.		Device must be in “mode selection”. To get there, cancel all other activities by pressing the “stop”-button.
Set − age, − max. speed, − target heart rate − start speed Confirm each parameter with “enter”. The running belt starts automatically.		To avoid high speed, set a low max. speed. The treadmill will adjust the load via elevation. In order to avoid elevation, set a high max. speed. The treadmill will adjust the load via speed.
Terminate the operation with “stop”.		

If the heart rate signal totally fails, an acoustic warning signal occurs and the heart rate display shows no value any more. Furthermore, the device reduces speed and elevation to 0 within one minute.

For possibilities to interfere with an automatic program, see “interfere with an automatic program”.

The treadmill adjusts speed and elevation according to following matrices.

Deviation from lower limit	Speed (km/h)	Elevation (%)	Reaction time (s)
< 5 heart beats	0.2	0.1	25
6 … 15	0.4	0.2	25
16 … 30	0.6	0.4	25
31 … 50	0.8	0.8	20
> 50 heart beats	1.0	1.0	20

Deviation from upper limit	Speed (km/h)	Elevation (%)	Reaction time (s)
< 5 heart beats	0.3	0.3	12
6 … 15	0.8	0.8	12
16 … 30	1.0	1.0	10
31 … 50	1.5	1.2	8
> 50 heart beats	2.0	1.6	7

The indicated exercise data do not remain through restart or in case of power failure.
It is possible to save the exercise data on an external USB stick.
The minimum resolution is 1/s.

11.6 Test mode

WARNING! Heart rate monitoring systems may be inaccurate.

Incorrect or over exercising may result in serious injury or death.

If you feel faint or dizzy stop exercising immediately and consult a medical doctor.

Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.

Exclude overloading or overstressing of the subject.

During stress tests a medical doctor has to be available at any time.

For medical application the automatic modes must only be performed on the prescription of the medical doctor.

Operator and subject have to be aware of automatic load changes during profile, cardio and test mode.

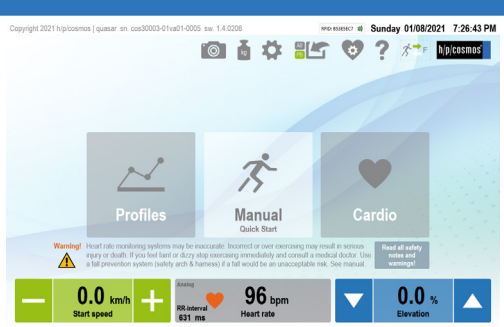
In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

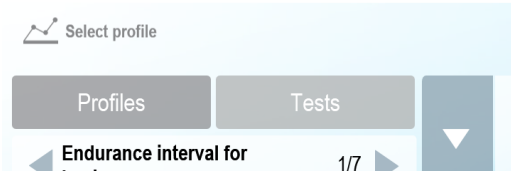
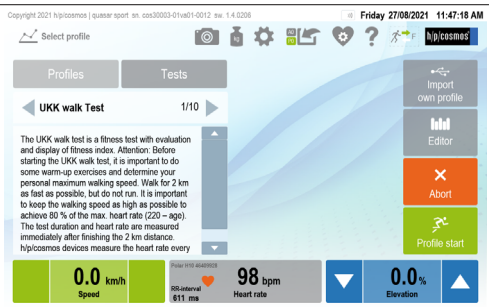
Start and load changes within the automatic modes are indicated by acoustic signals (beeps).
Furthermore, the displays show the next load parameters (flashing).
The h/p/cosmos treadmills are equipped with pre-defined tests.

As described before, the treadmill contains a number of standardized protocols.
Nevertheless, the treadmill does not give recommendations for treatment.
The decision about the correct load is the duty of the medical doctor.
Depending on the application the load includes speed, elevation, distance, heart rate, body weight or motion support etc..

The annex covers a detailed explanation of all pre-defined tests (see “Annex II”).
The annex also covers a detailed explanation how to create a self-defined test.

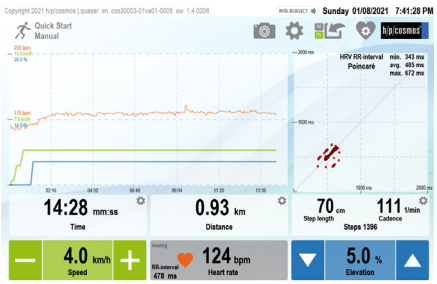
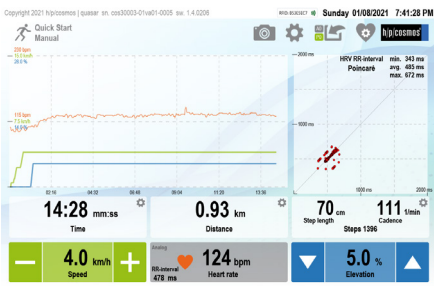
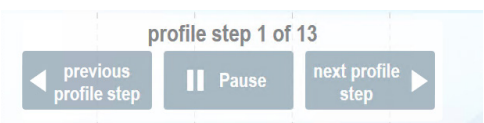
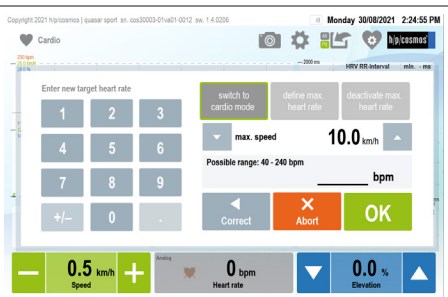
No.	Description	No.	Description
01	UKK 2km walk test	06	Ellestad A protocol
02	Conconi test	07	Ellestad B protocol
03	Graded test	08	Cooper protocol
04	Gardner test protocol	09	Balke protocol
05	Naughton protocol	10	Fitkids

Basic functions	Buttons / displays	Further information
Select “profiles”.		Device must be in “mode selection”. To get there, cancel all other activities by pressing the “stop”-button.

Basic functions	Buttons / displays	Further information
At the top left corner you can choose between profiles and tests. Select "tests".		
Select test with “<” or “>“ Confirm with “Start”. The running belt starts automatically after countdown.		
Terminate the operation with “stop”.		

For possibilities to interfere with an automatic program, see “interfere with an automatic program”.

11.7 Interfere with automatic program

Basic functions	Buttons / displays	Further information
Adjust speed Press “+” or “-“.		Profile / test mode: Only valid for current step. Cardio mode: Reduce the speed with “-“ or exceed the max. speed with “+”; This sets a new max. speed
Adjust elevation: Press “up” ▲ or “down” ▼.		Profile / test mode: Only valid for current step.
Profile or test mode: Switch between steps		
Cardio mode only: Change heart rate upper limit Press grey button "Heart rate".		Heart rate lower limit follows according to initial range.

11.8 Pause function

The “pause“ button on the keyboard, triggers the “pause” function.

Treadmill reduces the speed with the set acceleration level to 0 km/h.

The time does not stop.

The “pause“ button in the profile / test mode, pauses the current profile step.

The Treadmill will continue to run, but will not change speed or incline.

11.9 Acceleration levels

Start the use of the treadmill with slow walking, especially for beginners.

There are seven acceleration / deceleration levels for any kind of operation.

The acceleration levels are defined by the time it takes to accelerate from 0 km/h to maximum speed.

Example: With acceleration level 3, it takes 33 seconds from 0 km/h to maximum speed (see table below).

In order to access a certain acceleration level press the "+" or "-" button several times, then hold it.

The number of times the button is pressed before holding defines the acceleration level.

Example: Pressing "+" 3 times, then holding "+" results in an acceleration with acceleration level 3.

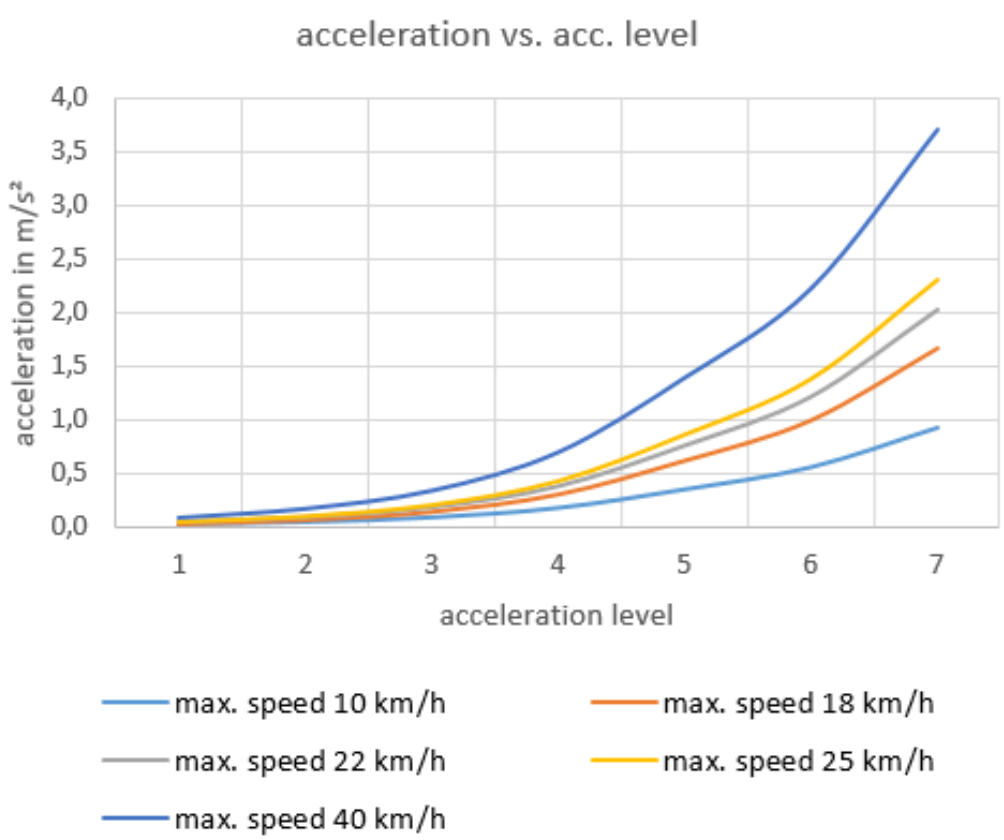
Acceleration levels 1 - 4 are freely accessible.

Acceleration levels 5 - 7 are locked by the administrator options. For access, please contact our service department.

The high acceleration of the levels 5 - 7 is dangerous for untrained subjects and must only be applied during sports medicine and athletic use.

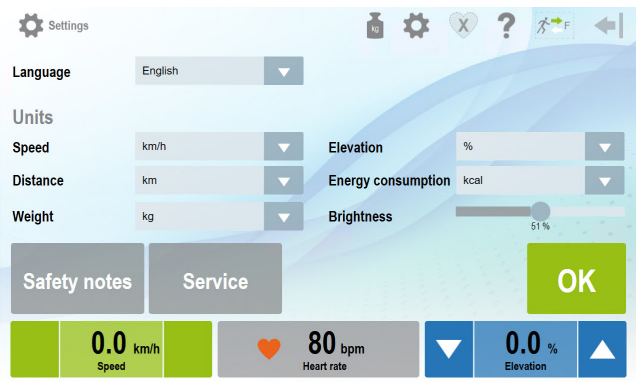
In order to limit the accessibility of the acceleration levels, see OP 27 - 29 of the "User Options".

Acc. level	0 to max in s	Acc. in m/s²				
		10 km/h	18 km/h	22 km/h	25 km/h	40 km/h
1	131	0.021	0.038	0.047	0.053	0.085
2	66	0.042	0.076	0.093	0.105	0.168
3	33	0.084	0.152	0.185	0.210	0.337
4	16	0.174	0.313	0.382	0.434	0.694
5	8	0.347	0.625	0.764	0.868	1.389
6	5	0.556	1.000	1.222	1.389	2.222
7	3	0.926	1.667	2.037	2.315	3.704

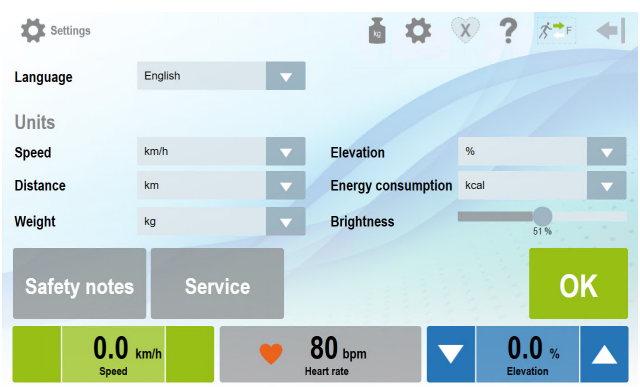


11.10 Options

User Options

Buttons / displays	Basic functions
	Click on the  to open the settings. In the quick selection the following things can be changed: - Language - Speed - Distance - Weight - Elevation - Energy consumption - Brightness

Owner Options

Buttons / displays	Basic functions
	Click on the  to open the settings. Click on the  button to see the overview of options. Click on the button to see all owner options.  With a click on the lock, the password can be entered. The password is: 2070 After successful decryption the owner options can be changed.

12 Accessories / compatible devices

Do not modify the device, configurations, accessories or software in any way.

Do not connect any devices, accessories or software, not listed in “accessories / compatible devices”.

Read and obey all instructions for use of all accessories and compatible devices.

The list of accessories / compatible devices may vary.

Therefore always refer to the most recent version of these instructions for use, available at www.hpcosmos.com.

12.1 Creating Systems

The person combining a medical device with any other device for the first time becomes manufacturer of a Medical Electrical System (ME-System acc. to IEC 60601-1, 16).

Depending on the combination, this system might even be a Programmable Electrical Medical System (PEMS acc. to IEC 60601-1, 14).

It is obligatory to perform a risk management when creating an ME-System / PEMS.

Risk management, safety, compliance, and maintenance are the responsibility of the manufacturer of the ME-system / PEMS, not the responsibility of h/p/cosmos.

Devices within an ME-Systems / PEMS have to be connected with PE (potential equalization) cable in star connection.

Connect PE cable before mains plug (reconnect after maintenance).

Furthermore, the person who puts devices bearing the CE marking together, must ensure that the devices and system meet the corresponding requirements, stated in the European Medical Device Directive (MDD 93/42/EEC, Article 12).

12.2 Overview of accessories

Following accessories are available for this device:

(For additional options, accessories, illustrations and detailed descriptions, see annex or www.hpcosmos.com and official price list)

Article number	Accessory	Purpose	Information
cos10079-01	Safety arch with chest belt harness	Fall prevention and safety stop	Optional
cos14425-01-rep	Safety arch 65 upgrade h=220 cm	Fall prevention and safety stop	Optional
cos15866-01	Fall prevention system for ceiling mount with emergency stop	Fall prevention and safety stop	Optional
cos15866-01ws	Fall prevention system for ceiling mount without emergency stop	Fall prevention and safety stop	Optional
cos101729-01	Rope 10m (replacement) for fall prevention for [cos15866-01] & [cos15866-01ws]	Fall prevention and safety stop	Optional
cos10670-02	rope for safety arch 4.3m D=11.9mm	Fall prevention and safety stop	Optional
cos14903-03-XXS	Harness/chest belt size XXS (45 … 65 cm)	Fall prevention and safety stop	Optional
cos14903-03-XS	Harness/chest belt size XS (55 … 75 cm)	Fall prevention and safety stop	Optional
cos14903-03-S	Harness/chest belt size S (65 … 95 cm)	Fall prevention and safety stop	Optional
cos14903-03-M	Harness/chest belt size M (85 … 115 cm)	Fall prevention and safety stop	Optional
cos14903-03-L	Harness/chest belt size L (105 … 135 cm)	Fall prevention and safety stop	Optional
cos14903-03-XL	Harness/chest belt size XL (125 … 155 cm)	Fall prevention and safety stop	Optional
cos101699-03	Magnet with ripcord & plastic clip for safety stop	Safety stop	Included
cos15933	Emergency stop-button with magnet holder + 5 m spiral cable	Safety stop	Optional
cos100548	Emergency stop-button with magnet holder + 10 m spiral cable	Safety stop	Optional
cos15258	Special speed 0 … 10 km/h	Special speed	Optional
cos103975	Special speed 0 … 30 km/h	Special speed	Optional
cos10158	Special speed 0 … 40 km/h	Special speed	Optional
cos10159va06	Special speed 0 … 45 km/h	Special speed	Optional

Article number	Accessory	Purpose	Information
cos30028	airwalk ap unweighting device	Body weight support	Optional
cos103876	Handrail, long 2 pillars 170	Body weight support	Optional
cos10167	Handrail, long 2 pillars 190	Body weight support	Optional
cos102550-01	Handrail, adjustable 170	Body weight support	Optional
cos102551-01	Handrail, adjustable 190	Body weight support	Optional
cos102899	Extension rods for adjustable handrail 150/50	Body weight support	Optional
cos103651	Handrail speed pluggable	Body weight support	Optional
cos100742_170-	Handrails detachable for 170/65 3D motion	Body weight support	Optional
cos15133-05-rep	Handrail crossbar for 170&190/65 (semi-high)	Body weight support	Optional
cos102560	Arm supports for handrails adjustable	Body weight support	Optional
cos12013-01	Arm support adjustable in height and width	Body weight support	Optional
cos10107	Optional quick stop button right for arm support	Quick stop	Optional
cos10108	Optional quick stop button left for arm support	Quick stop	Optional
cos100680	Additional keyboard with spiral cord	Operation	Optional
cos10111-01	Mount for additional keyboard on arm supports	Operation	Optional
cos14135	Holder for optional keyboard on handrail (Ø 60)	Operation	Optional
cos100815	Additional keyboard with magnet holder	Operation	Optional
cos100973	Utility tray on handrail for accessories	Storage	Optional
cos11020	Drink-bottle holder for handrail 60mm	Storage	Optional
cos30022	Robowalk® expander F	Motion support / resistance	Optional
cos101355va07	Mounting-bracket-set robowalk® expander front	Motion support / resistance	Optional
cos30022-02va04	Robowalk® expander front airwalk® ap	Motion support / resistance	Optional
cos30023	Robowalk® expander B	Motion support / resistance	Optional
cos101051-XS	Leg cuff shank XS, 1 pair	Motion support / resistance	Optional
cos101050-S	Leg cuff thigh S, 1 pair	Motion support / resistance	Optional
cos101050-M	Leg cuff thigh M, 1 pair	Motion support / resistance	Optional
cos101050-L	Leg cuff thigh L, 1 pair	Motion support / resistance	Optional
cos101748	Universal noose robowalk	Motion support / resistance	Optional
cos102288	Footboard, right, extra wide (speed) 170	Speed training	Optional
cos102289	Footboard, right, extra wide (speed) 190	Speed training	Optional
cos16586	Footboard, left, extra wide (speed) 170	Speed training	Optional
cos14764	Footboard, left, extra wide (speed) 190	Speed training	Optional
cos103852	Floor protection mat treadmill 40x30	Floor protection, stability	Optional
cos14664-03	Wheelchair ramp (L: 130 cm x W: 101 cm)	Wheelchair access	Optional
cos14553	Deck hard for 170/65 (less cushioning)	Biomechanics	Optional
cos14168va01	Running belt with middle marking 170/65	Motion Analysis	Optional
cos103815	Reverse belt rotation (downhill) 170/65	Downhill running / walking	Optional
cos10223	Potential equalization cable	Potential equalization	Optional
cos102488_iph_vesa	Smartphone holder for MCU6 UserTerminal	Connectivity	Optional
cos102488_vesa	Tablet holder MCU6 UserTerminal	Connectivity	Optional
cos102488_vesa_d	USB connection cable SmartPhones	Connectivity	Optional
cos00097010034	Interface connection cable RS 232 5m	Connectivity	Included
cos00097010035	Interface connection cable RS 232 10m	Connectivity	Optional
cos11889	Interface connection cable RS 232 15m	Connectivity	Optional
cos11889_20m	Interface connection cable RS 232 20m	Connectivity	Optional
cos11889_25m	Interface connection cable RS 232 25m	Connectivity	Optional

Article number	Accessory	Purpose	Information
cos12769-01	USB-RS232 converter	Connectivity	Optional
cos101277	Science port speed output TTL	Measurement	Optional
cos16320	Network cable RJ45, Cat.6 grey 1m	Connectivity	Optional
cos15605	Network cable RJ45, Cat.5 grey 2m	Connectivity	Optional
cos15607	Network cable RJ45, Cat.5 grey 5m	Connectivity	Optional
cos15608	Network cable RJ45, Cat.5 grey 10m	Connectivity	Optional
cos15609	Network cable RJ45, Cat.5 grey 20m	Connectivity	Optional
cos14970-03	h/p/cosmos satellite PC med	Measurement, external control	Optional
cos15686-01	h/p/cosmos satellite Notebook	Measurement, external control	Optional
cos13476-01	DELL Laptop Computer	Measurement, external control	Optional
cos104188	WiFi Adapter for MCU6 UserTerminal	Measurement	Optional
cos103625	Bluetooth Adapter for MCU6 UserTerminal	Measurement	Optional
cos101787-01a	POLAR Heart RateSensor H10 (chest belt)	Measurement	Included
cos101787_OH1	POLAR Heart RateSensor OH1 (arm belt)	Measurement	Optional
cos15178	POLAR Sender T34 Set (extended Range)	Measurement	Optional
cos102999_170-65va02	gaitway 3d biomechanics upgrade 3 components force and torque measurement (Fx, Fy, Fz)	Measurement	Optional
cos102999_190-65	gaitway 3d biomechanics upgrade 3 components force and torque measurement (Fx, Fy, Fz)	Measurement	Optional
cos102999_XXX-65elevva02	Elevation 0% to +20% for gaitway® 3D 170/65	Measurement	Optional
cos102999_XXX-65elevva01	Elevation 0% to +20% for gaitway® 3D 190/65	Measurement	Optional
cos103752va02	Portable baseplate gaitway 3d with wheels for gaitway 170/65	Measurement	Optional
cos103752va03	Portable baseplate gaitway 3d with wheels for gaitway 190/65	Measurement	Optional
cos103971	Wheels for gaitway incline module for gaitway	Measurement	Optional
cos102999ip	Noraxon Package 3D Force and Pressure	Measurement	Optional
cos102999ds	Digital data streaming interface module	Measurement	Optional
cos102292	zebris® FDM pressure measuring platform 2i	Measurement	Optional
cos102293	zebris® FDM pressure measuring platform 3i	Measurement	Optional
cos101734	zebris® modular extension with 180 Hz for running deck 170/65	Measurement	Optional
cos103308	zebris® modular extension with 100 Hz for running deck 190/65	Measurement	Optional
cos102999e	zebris FDM flat cable gaitway3D	Measurement	Optional
cos100385d	zebris® HS SyncCam (camera without stand)	Measurement	Optional
cos100385a	zebris® SyncLightCam (camera and LED light	Measurement	Optional
cos100385b	zebris® stand for SyncCam or SyncLightCam	Measurement	Optional
cos100384	zebris® FDM-Stance Module	Measurement	Optional
cos101291	zebris® visual stimulation upgrade (Rehawalk®)	Measurement	Optional
cos101062	zebris® software-module virtual training (without	Measurement	Optional
cos102521	zebris® module editor virtual training "forest walk"	Measurement	Optional

Article number	Accessory	Purpose	Information
cos103312	USB 3.0 glass fiber cable A/A 20 m	Measurement	Optional
cos102397	LCD monitor TV 50" (with small monitor stand)	Measurement	Optional
cos101624	Monitor stand mobile for LCD TV 32-60'	Measurement	Optional
cos101627	Wall mount for LCD monitor TV 32-65"	Measurement	Optional
cos101664-01va01	Optogait LED motion/gait analysis system for	Measurement	Optional
cos102065	Optogait Kit 1m single meter	Measurement	Optional
cos103386	Optofix	Mounting of Optojump / Optogait	Optional
cos10071-v6	para control 6	Software	Optional
cos100699_LED	SpeedControl	Software	Optional

12.3 Compatible devices

All h/p/cosmos treadmills can be combined with the h/p/cosmos airwalk ap [cos30028] or airwalk lt [cos30028-lt] unweighting devices.

Furthermore a number of devices as well as software products are compatible with h/p/cosmos MCU6 treadmills via coscom v4 interface protocol.

h/p/cosmos treadmills can communicate with a lot of high-end medical devices produced by manufacturers such as Vyaire, COSMED, SCHILLER, CUSTO, CORTEX, etc. via coscom v4.

Please contact service@hpcosmos.com for the latest list of compatible devices.

coscom v4 protocol description, coscom_v4.dll and further details with implementation notes see www.coscom.org

The risk management of this device covers the influence of the compatible devices on this device.

The risk management of this device does not cover the influence of this device on the compatible devices.

Make sure, this device is listed as compatible device in the instructions for use of the compatible device.

Additional and latest safety notes and warnings see: https://www.hpcosmos.com/en/safety

CAUTION / WARNING!
Do not connect and/or combine devices, options and/or accessories which are not explicitly listed and declared as compatible.
For medical applications use only IEC 60601-1 approved medical devices and IEC 60601-1 approved system configurations!

13 Disinfection / Cleaning

Disinfect the device before and after every treatment.

Disconnect the device and all accessories from mains power supply before cleaning or disinfection.

Description	Illustration
Disinfection − Unplug the device. − Apply some disinfectant to a cloth. − Wipe all surfaces the subject might have touched. − Wipe all surfaces that may have come into contact with body fluids. − Wipe the safety harness. h/p/cosmos recommends Bacillol, order number [cos12179].	
Clean the device regularly − Unplug the device. − Use a damp cloth (not wet). − Wipe all surfaces. − Wash safety harness acc. to label.	

The h/p/cosmos devices are neither sterile nor can they be sterilized.

14 Maintenance

Obey the maintenance intervals claimed in chapter “maintenance”.

Obey the competences claimed in chapter “maintenance”.

A second person has to be present during maintenance.

In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

In case of any visible or assumed wear and tear (of the device, accessories, labels, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing. Do not change or remove any labels!

In case of any fluid entering into the device, unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

Do not perform maintenance during use.

Proper maintenance is an important pre-condition for safety, reliability, function and accuracy of the device.

Support h/p/cosmos service personnel with the documents needed.

14.1 Intervals and competences

Maintenance	Interval	Competence
Daily inspection	Daily	Operator
Lubrication	When OIL message occurs	Operator
Adjustment of running belt	If due	Operator
Safety and Service inspection	12 months	h/p/cosmos service personnel only
Change of safety arch rope	24 months	h/p/cosmos service personnel only
Tightening of the running belt	If due	h/p/cosmos service personnel only
Adjustment of levelling sockets	If due	h/p/cosmos service personnel only
Installation and repair work	If due	h/p/cosmos service personnel only

h/p/cosmos recommends entering into a service contract with an authorized h/p/cosmos service technician.

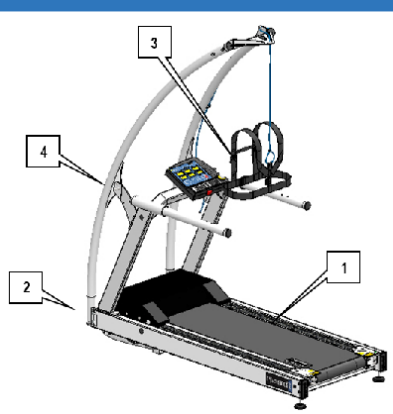
A service contract provides the best preventive maintenance and care for the device and include annual safety and accuracy checks..

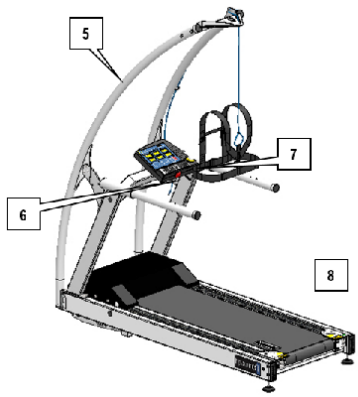
The service contract is available at service@hpcosmos.com.

To receive information on becoming h/p/cosmos service personnel, please contact service@hpcosmos.com.

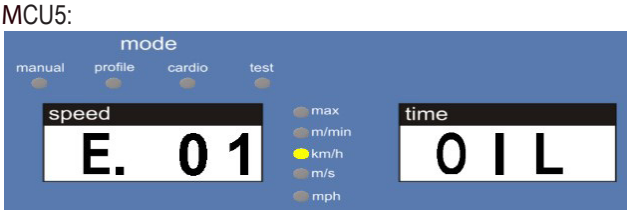
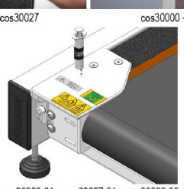
14.2 Daily inspection

Perform a daily visual inspection (see chapter “maintenance”).

Description	Illustration
Pay special attention to components with high probability of wear and tear: 1. Running belt and non-slip surfaces 2. External cabling 3. All textile parts 4. Fall prevention incl. safety harness, buckle, carabiner, rope and rope arrest If there is any visible or assumed wear and tear, unplug device, exclude reconnection and call h/p/cosmos service personnel.	

Description	Illustration
Perform a functional check of all safety equipment: 5. Fall prevention 6. Pull cord safety stop 7. Emergency stop button on UserTerminal 8. Further safety equipment If there is any visible or assumed defects or malfunctions, unplug device, exclude reconnection and call h/p/cosmos service personnel.	

14.3 Lubrication

Description	Illustration
When OIL message occurs, check the oil film on the running belt. Do the same if there are dry grinding noises during operation. The OIL messages occurs every 1000 km by default. The oil interval may be varied, depending on environmental conditions and use.	MCU5:  MCU6: 
Unplug the treadmill.	
Move one hand / tissue for 1 m through the center between running belt and running deck. A slight film of oil must remain on the hand. If the running belt is too dry, it must be lubricated. For further and precise analysis a detailed instruction regarding the tissue lubrication test is available at service@hpcosmos.com.	
Fill the syringe with 10 ml of the lubricant (h/p/cosmos special oil, only).	 cos30026 + cos30027 cos30000 + cos30001
Pump the lubricant under the running belt very slowly and remove the syringe.	 cos30026-01 + cos30027-01 + cos30000-02

14.4 Adjustment of running belt

Unmeant trapping hazards: Take off ties, scarfs or other clothes that may be trapped. Secure long hair and ribbons during maintenance and training in order to prevent being captured in trapping zones.

Do not touch the running belt while it is in motion.

A second person has to be present during maintenance.

Description	Illustration
The maximum allowed lateral position of the running belt is marked with this label.	
Operate the device at 10 km/h. Turn the LEFT trimming screw very slowly (¼ rotation – observe – ¼ rotation – observe…). Turn clockwise to adjust belt to the right. Turn counter-clockwise to adjust belt to the left.	
After adjustment, observe the running belt at 10 km/h for at least 2 min. Belt must maintain the position. Remove Allen key from screw.	

14.5 Issues for qualified service personnel

All maintenance work that is not explained in detail, must not be performed by the operator.
Safety inspections, installation and repair work, must also not be performed by the operator.
This kind of work must be performed by h/p/cosmos service personnel according to the “h/p/cosmos service instructions”.
The “h/p/cosmos service instructions” are available at service@hpcosmos.com.

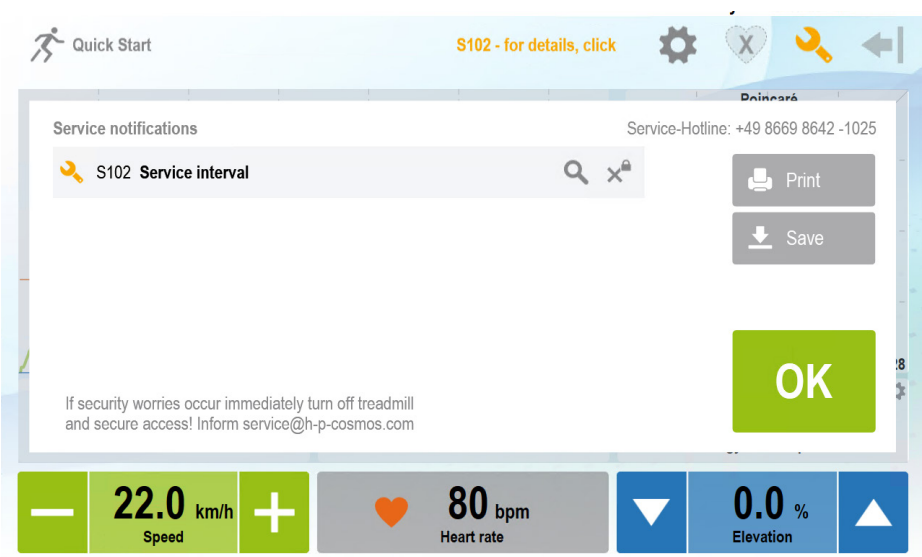
14.6 Safety inspection

In order to maintain the safety of the device, h/p/cosmos prescribes performance of an annual safety inspection.
Refer to the date on the inspection sticker on your device for the next inspection date.

h/p/cosmos bases the annual safety inspection on German laws and regulations.
It is the operator’s responsibility to comply with national laws and regulations.

Inspection intervals for optional equipment and accessories may deviate.

After 12 months or 5000 km there will be a safety inspection reminder (see below).



The error message will be reset by the h/p/cosmos service personnel performing the safety inspection.

A maintenance work and/or safety check cannot guarantee the safety of a device. It is only a statement of the visible and measurable parameters and conditions at the moment of the measurement.

14.7 Spare parts and consumables

Spare parts must only be replaced by qualified h/p/cosmos service personnel.
Information about spare parts is available at service@hpcosmos.com.
A list of consumables is included in the accompanying documents.
Further information on consumables and spare parts: https://www.hpcosmos.com/en/products/service

15 Troubleshooting

15.1 General troubleshooting

In case of any visible or assumed defects or malfunctions (of the device, accessories, software, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

In case of any visible or assumed wear and tear (of the device, accessories, labels, etc.), unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing. Do not change or remove any labels!

Use also the error report form at: https://www.hpcosmos.com/en/products/service

Problem	Solution
Device cannot be switched on	Release emergency stop (see “emergency stop”) Check power supply connection Check device protection switch Check power socket (test with another device)
Speed does not work	Release all emergency stops (see “emergency stop”) In case there is no improvement, contact service@hpcosmos.com.
Elevation does not work	Switch off Wait 10 min (in order to cool down) Switch on again In case error still appears, unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.
Oil leakage	Remove excess oil besides running belt Remove excess oil under running belt Check the next days and repeat if necessary. In case there is no improvement, contact service@hpcosmos.com.
Electrostatic discharge	Choose proper floor, clothing and humidity
Grinding noises	Contact service@hpcosmos.com
Running belt outside of lateral limits	See “adjustment of running belt”
Problems with heart rate measurement	See “Annex III (Accessories)” In case there is no improvement, contact service@hpcosmos.com.
Any other problem	Unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

15.2 Interface troubleshooting

Problem	Solution
No connection via RS232, USB (wrong cable)	For connection to PC with h/p/cosmos software and most external devices use the included RS 232 interface connection cable [cos00097010034].
No connection via RS232, USB (cable defect)	Check cable and plugs for defects. Replace defective cable.
No connection via RS232 (wrong settings)	Choose correct interface protocol on device. Choose correct interface protocol on periphery. Check installation of peripheral software.
No connection via RS232 (blocked COM port)	Restart peripheral software. Restart peripheral device.
No connection via RS232 (RS232 connection off)	Switch on RS232 connection 
Any other problem	unplug device, exclude reconnection, mark clearly and inform h/p/cosmos service personnel via telephone and writing.

15.3 Error messages

Following error messages may be displayed on the UserTerminal:

Error code	Error message	Action
S101	Oil Help	See “lubrication”
S102	Service Help	See “safety inspection”
S131	Speed tolerance measurement outside the limit (above)	Unplug device, exclude reconnection and contact service@hpcosmos.com
S132	Speed tolerance measurement outside the limit (below)	
S165	Communication interruption to external / failsafe	
E121	elevation error increments	
E130	speed error increments	
E151	FU error response	
E152	FU communication timeout	
E153	internal communication error	
E155	internal communication error response	
E156	internal communication error general	
E160	no connection (para control)	

16 Technical data

16.1 UserTerminal

Description	Data
Displays	User Terminal capacitive 10.1" touch surface
Keyboard	9-key keyboard film

16.2 Dimensions

Description	Data	
	quasar med / stellar med 170/65	pulsar med / stellar med 190/65
Device dimensions	L: 230 x W: 105 x H: 149 cm (incl. UserTerminal)	L: 250 x W: 105 x H: 149 cm (incl. UserTerminal)
Running surface dimensions	L: 170 x W: 65 cm	L: 190 x W: 65 cm
Track access height	23 cm	
Handrail dimensions	Handrail dimensions siderails Ø: 6 cm frontrails Ø: 3 cm	

Data may be influenced by accessories.

16.3 Loads

Description	Data	
	quasar med / stellar med 170/65	pulsar med / stellar med 190/65
Max. subject weight *	300 kg	
Device weight	329 kg	345 kg
Substitutional load to floor (EN 1991)	3.2 kN / m² (3.3 kN / m²)	3.0 kN / m² (3.1 kN / m²)
Load on each support (wheels + feet)	1.9 kN	1.9 kN

Data may be influenced by accessories.

16.4 Emissions

Description	Data
Heat emission	approx. 63°C (on/off and stand-by button, contact < 1 min) Heat load: approx. 22 Watt
A-weighted emission sound pressure level at the trainer's ear (EN 957-6)	LpA <70 dB A (50 dB) (Noise emission under load is higher than without load.)

16.5 Essential performance characteristics

Description	Data	
	quasar med / stellar med 170/65	pulsar med / stellar med 190/65
Speed	0.0 … 25.0 km/h	0.0 … 40.0 km/h
Optional speed	0.0 ... 10.0 / 25.0 / 30.0 / 40.0 km/h	
Min. speed increment	0.1 km/h	
Speed accuracy *	± 5 % (above 2 km/h), ± 0.1 km/h (up to 2 km/h)	
Elevation **	0.0 ... 28.0 % (stellar 0%)	0.0 ... 25.0 % (stellar 0%)
Min. elevation increment	0.1 %	
Elevation accuracy *	± 5 % (above 2 % elevation)	

* Overload or weak power supply may lead to reduced speed accuracy or tripping the fuse.

Subject to technical alterations without prior notice. E & OE (errors and omissions excepted).

** Elevation

16.6 Environmental conditions

Make sure no objects, sand, stones, liquids, towels, jewellery, cell phones, containers with liquid etc. can fall into the device or onto the running surface or underneath the running belt.

Operation

Operation	Data
Temperature	+10 … +40° C (min.: -30°C max.: +50°C with optional special climate chamber design, article: cos14893-B65_1P-01)
Humidity	20 … 85%, without condensation (max. 95%, without condensation, with optional special climate chamber design, article: cos14893-B65_1P-01)
Pressure	700 … 1060 hPa
Altitude	max. 3000 m, without pressurization (altitudes >1000m can cause minor loss of performance)
Oxygen saturation	<= 25%
Central lubrication system	manual

Exclude presence of explosive, inflammable, acid and corrosive gases.
Exclude high voltage lines and strong magnetic fields / devices in near vicinity.

Transport & Storage

Transport & Storage	Data
Temperature	-30 … 50° C
Humidity	0 … 95%, without condensation
Pressure	700 … 1060 hPa
Altitude	max. 3000 m, without pressurization

When storing for more than 6 months without power connection, the batteries of the MCU may discharge.

Please contact service@hpcosmos.com in case of re-installation after storage.

16.7 Technical and legal requirements

Description	Data
Stationary training equipment	ISO 20957-1, EN 957-6
Medical electrical equipment	IEC 60601-1
Electromagnetic compatibility	IEC 60601-1-2
Usability	IEC 60601-1-6, IEC 62366-1
Software	IEC 62304
Risk management	ISO 14971
Medical device regulation	MDR (EU) 2017/745
Machinery directive	2006/42/EC
Legal requirements	German Medical Device Law Implementation Act (MPDG – Medizinprodukterecht-Durchführungsgesetz)

16.8 EMC tests

Description	Data
Electrostatic discharge immunity test	EN 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3
Electrical fast transient immunity test	EN 61000-4-4
Surge immunity test	EN 61000-4-5
Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6
Power frequency magnetic field immunity test	EN 61000-4-8
Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11
Testing of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems	EN 61000-3-3
Variation of mains frequency	DIN EN 60601-1

16.9 Classification

Description		Data
MDD 93/42/EEC MDR (EU) 2017/745	Notified body	CE 0123
MDD 93/42/EEC MDR (EU) 2017/745	Risk class	IIb active therapeutic device and active diagnostic device
IEC 60601-1	Protection against electric shock	Class I, ⏚
IEC 60601-1	Protection against harmful ingress of water or particulate matter	IP20
IEC 60601-1	Mode of operation	Continuous operation with intermittent loading
IEC 60601-1	Overvoltage category	II (2500 Vpeak mains transient voltage)
IEC 60601-1	Applied part	Type B 🚶 (whole device)
IEC 60601-1	Pollution degree	Degree 2
ISO 20957-1	Usage class	S (Studio): professional and/or commercial use I (Inclusive): professional and/or commercial use provided for inclusive use for people with special needs
EN 957-6	Accuracy class	A
IEC 62304	Risk class	B

16.10 Certificates

Description	Data
Medical Device Regulation MDR (EU) 2017/745	EU declaration of conformity
Medical Device Directive MDD 93/42/EEC	EC certificate, quality assurance
Medical Device Regulation MDR (EU) 2017/745	Free sales certificate
EN ISO 13485	Certificate, quality management medical devices
IEC 60601-1	CB certificate (in progress)

Certificates see accompanying documents and
https://www.hpcosmos.com/en/contact-support/media-downloads/certificates

16.11 Interfaces

Description	Data
1x serial RS232 (D-SUB 9-pin, male)	coscom v4, standard, Baudrate 19200 bps, Encoding UTF-8 (see www.coscom.org)
4x USB interface (Typ A)	standard (2x USB 2.0 and 2x USB 3.0)

16.12 Voltage, Current, Performance

Description	Data
Input voltage *	230 V ~ (f: 50 / 60 Hz)
Current input (long time) *	7.0 A
Current input (momentary) *	17.0 A
Energy consumption (long time)	≤ 1610 VA
Energy consumption (momentary)	≤ 3910 VA
Energy efficiency	N/A
Device protection switch (circuit breaker)	16 A
Drive motor capacity	3300 W
Elevation motor capacity	500 W
Device leakage current	≤ 0.2 mA
Isolation transformer	2000 VA
Power supply cord	detachable, 3 m

Note: In case of special voltage versions, the data on the name plate apply.
Connect mains only if data on nameplate and local power supply are identical.

16.13 Software, Programs

Description	Detail
para control (medical)	optional - external treadmill control
gaitway (non medical)	optional - force measurement
Noraxon (non medical)	optional - motion analysis
Microgate Optogait	optional - optical measurement of gait parameters
zebris Rehawalk	optional - pressure distribution measurement
Number of stored programmes	8 training profiles, 10 test profiles, more than 100 user definable profiles

For other coscom compatible software see website www.coscom.org

16.14 All-pole disconnection

The following options are available for all-pole disconnection from voltage power supply:

Unplug device from power socket.

Unplug cable from device (if possible).

Switch off device protection switch.

Trigger residual current circuit breaker / RCD of the building.

Maintain enough free space to ensure access to cables, power plugs and the circuit breaker (see “position of subject and operator”).

For some RCDs type B (measuring also direct current) an additional leakage current limiter cos103344_170-65nf has to be installed in treadmills, which do not have a potential isolation transformer.

17 Technical data

17.1 UserTerminal

Description	Data
Displays	capacitive 10.1" touch surface
Keyboard	9-key keyboard film

17.2 Dimensions

Description	Data	
	quasar sport / stellar sport 170/65	pulsar sport / stellar sport 190/65
Device dimensions	L: 230 x W: 105 x H: 149 cm (incl. UserTerminal)	L: 250 x W: 105 x H: 149 cm (incl. UserTerminal)
Running surface dimensions	L: 170 x W: 65 cm	L: 190 x W: 65 cm
Track access height	23 cm	
Handrail dimensions	Handrail dimensions siderails Ø: 6 cm frontrails Ø: 3 cm	

Data may be influenced by accessories. Lower profile versions or custom made devices on request.

17.3 Loads

Description	Data	
	quasar sport / stellar sport 170/65	pulsar sport / stellar sport 190/65
Max. subject weight *	300 kg	
Device weight	311 kg	345 kg
Substitutional load to floor (EN 1991)	3.2 kN / m²	3.0 kN / m²
Load on each support (wheels + feet)	1.9 kN	1.9 kN

Data may be influenced by accessories. Lower profile versions or custom made devices on request.

17.4 Emissions

Description	Data
Heat emission	approx. 63°C Heat load: approx. 22 Watt (on/off and stand-by button, contact < 1 min)
A-weighted emission sound pressure level at the trainer's ear (EN 957-6)	LpA <70 dB A (50 dB) (Noise emission under load is higher than without load.)

17.5 Essential performance characteristics

Description	Data	
	quasar sport / stellar sport 170/65	pulsar sport / stellar sport 190/65
Speed	0.0 … 25.0 km/h	0.0 … 40.0 km/h
Optional speed	0.0 ... 10.0 / 25.0 / 30.0 / 40.0 km/h	
Min. speed increment	0.1 km/h	
Speed accuracy *	± 5 % (above 2 km/h), ± 0.1 km/h (up to 2 km/h)	
Elevation	0.0 ... 28.0 % (stellar 0%)	0.0 ... 25.0 % (stellar 0%)
Min. elevation increment	0.1 %	
Elevation accuracy *	± 5 % (above 2 % elevation)	

17.6 Environmental conditions

Make sure no objects, sand, stones, liquids, towels, jewellery, cell phones, containers with liquid etc. can fall into the device or onto the running surface or underneath the running belt.

Operation

Operation	Data
Temperature	+10 … +40° C (min.: -30°C max.: +50°C with optional special climate chamber design, article: cos14893-B65_1P-01)
Humidity	20 … 85%, without condensation (max. 95%, without condensation, with optional special climate chamber design, article: cos14893-B65_1P-01)
Pressure	700 … 1060 hPa
Altitude	max. 3000 m, without pressurization (altitudes >1000m can cause minor loss of performance)
Oxygen saturation	<= 25%
Central lubrication system	manual

Exclude presence of explosive, infammable, acid and corrosive gases.
Exclude high voltage lines / devices in near vicinity.

Transport & Storage

Transport & Storage	Data
Temperature	-30 … 50° C
Humidity	0 … 95%, without condensation
Pressure	700 … 1060 hPa
Altitude	max. 3000 m, without pressurization

When storing for more than 6 months without power connection, the batteries of the MCU may discharge. Please contact service@hpcosmos.com in case of re-installation after storage.

17.7 Technical and legal requirements

Description	Data
Stationary training equipment	ISO 20957-1, EN 957-6
Safety of electrical appliances for household & similar ...	IEC 60335-1
Electromagnetic compatibility	IEC 60601-1-2
Usability	IEC 60601-1-6, IEC 62366-1
Risk management	ISO 14971
Software	IEC 62304
Machinery directive	2006/42/EC
Legal requirements	German Product Safety Act (Produktsicherheitsgesetz - ProdSG)

17.8 EMC tests

Description	Data
Measurement of conducted emission	EN 55011, Group 1, Class B
Measurement of radiated emission	EN 55011, Group 1, Class B
Electrostatic discharge immunity test	EN 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3
Electrical fast transient immunity test	EN 61000-4-4
Surge immunity test	EN 61000-4-5
Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6
Power frequency magnetic field immunity test	EN 61000-4-8
Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11
Testing of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems	EN 61000-3-3
Variation of mains frequency	DIN EN 60601-1

17.9 Classification

Description		Data
Machinery Directive 2006/42/EC		CE
	Protection against electric shock	Class I, ⏚
	Protection against harmful ingress of water or particulate matter	IP20
	Mode of operation	Continuous operation with intermittent loading
	Overvoltage category	Life-Earth < 300 V (1500 Vpeak mains transient voltage)
	Pollution degree	Degree 2
ISO 20957-1	Usage class	S (Studio): professional and/or commercial use I (inclusive): professional and/or commercial use provided for inclusive use for people with special needs
EN 957-6	Accuracy class	A

17.10 Certificates

Description	Data
Machinery Directive 2006/42/EC	EU declaration of conformity
EMC directive 2014/30/EU	EU declaration of conformity
Low Voltage Directive 2014/35/EU	EU declaration of conformity
EC Directive 2011/65/EC (RoHS II) and EC Regulation 1907/2006 (REACH)	Declaration of Conformity

Certificates see accompanying documents and
https://www.hpcosmos.com/en/contact-support/media-downloads/certificates

17.11 Interfaces

Description	Data
1x serial RS232 (D-SUB 9-pin, male)	coscom v4, standard, Baudrate 19200 bps, Encoding UTF-8 (see www.coscom.org)
4x USB interface (Typ A)	standard (2x USB 2.0 and 2x USB 3.0)

17.12 Voltage, Current, Performance

Description	Data
Input voltage *	230 V ~ (f: 50 / 60 Hz)
Current input (long time) *	7.0 A
Current input (momentary) *	17 A
Energy consumption (long time)	≤ 1610 VA
Energy consumption (momentary)	≤ 3510 VA
Energy efficiency	N/A
Drive motor capacity	3300 W
Elevation motor capacity	500 W
Device leakage current	≤ 3.5 mA
Isolation transformer	N/A
Power supply cord	detachable, 3 m

* Overload or weak power supply may lead to reduced speed accuracy or tripping the fuse.
Subject to technical alterations without prior notice. E & OE (errors and omissions excepted).

Note: In case of special voltage versions, the data on the name plate apply.
Connect mains only if data on nameplate and local power supply are identical.

17.13 Software, Programs

Description	Data
para control	optional - external treadmill control
gaitway	optional - force measurement
Noraxon	optional - motion analysis
Microgate Optogait	optional - optical measurement of gait parameters
zebris Rehawalk	optional - pressure distribution measurement
Number of stored programmes	8 training profiles, 10 test profiles, more than 100 user definable profiles

For other coscom v4 compatible software see website www.coscom.org

17.14 All-pole disconnection

The following options are available for all-pole disconnection from voltage power supply:

Unplug device from power socket.

Unplug cable from device (if possible).

Switch off device protection switch.

Trigger residual current circuit breaker / RCD of the building.

Maintain enough free space to ensure access to cables, power plugs and the circuit breaker (see “position of subject and operator”).

For some RCDs type B (measuring also direct current) an additional leakage current limiter cos103344_170-65nf has to be installed in treadmills, which do not have a potential isolation transformer.

18 Liability and Warranty

Following will cause loss of liability and warranty and may result in serious injury or death or damage to the device:

Use other than explicitly mentioned as intended use

Unauthorized maintenance or lack of maintenance, safety checks or repairs

Unauthorized modifications or extensions

Unauthorized installation, commissioning or instruction

Use of any unauthorized or non-original h/p/cosmos parts, spare parts, consumables, sensors or detectors

Disregard of safety information (danger, warning and caution statements)

Any unauthorized modifications to the device, software, configurations and accessories

Connection of accessories, software or devices, not listed in “accessories / compatible devices”

The “safety information – forbidden use” list does not claim to be exhaustive and may be extended during market phase (post market surveillance). The latest version of these instructions for use is always available at: www.hpcosmos.com

Limited liabilities apply:

If h/p/cosmos or h/p/cosmos organizational bodies, senior management or agents can be held accountable for the payment of damages pertaining to slight negligence (breach of material contractual obligations), the damages shall be limited to damages that could typically have been foreseen. Liability pertaining to slight negligence excludes liability as a result of loss of production, interruption of business and loss of profits.

Further details see website: www.hpcosmos.com/en/gtcb.

19 Expected Lifetime

Obey the maintenance intervals claimed in chapter “maintenance”.

Obey the competences claimed in chapter “maintenance”.

The expected lifetime of the entire device (except the PC, computer hardware and software) is 10 years, provided, that all maintenance intervals are maintained.

wear and tear parts are replaced by h/p/cosmos service personnel during applicable maintenance intervals and/or earlier at the first sign of wear and tear.

The expected lifetime of the device may be significantly reduced in case of harsh environmental conditions (e.g. climate chamber applications) and/or in case of excessive use.
Perform annual maintenance and safety checks through h/p/cosmos authorized and trained personnel for continuous monitoring of the safety and condition of the device.

The expected lifetime of the PC incl. touch panel, computer hardware and software is 5 years.

By replacing all electric and electronic components after 10 years, the lifetime of the treadmill (except the PC, computer hardware and software) may be extended by another 10 years (=total 20 years from date of manufacturing).

Devices with electric power supply should be replaced at the latest after 20 years of age or earlier in case of visible damages, wear and tear due to possible hidden isolation risks, electric shock, etc..

See also expert statement regarding Lifetime of a medical device – end of life:

https://www.hpcosmos.com/en/news/lifetime-medical-device-end-life

https://www.hpcosmos.com/sites/default/files/20210219_mp-recht_luecker_hpcosmos_lifetime_of_a_medical_device_lr.pdf

20 Disposal

Dispose the device according to European directive 2012/19/EU and the corresponding local disposal law.

Dispose the lubrication material according to the corresponding local disposal law.

Contact service@hpcosmos.com to receive further information or an offer regarding correct disposal by the manufacturer.

21 Annex I

21.1 Installation

This device must only be unpacked, transported, installed, commissioned, instructed, maintanined and repaired by h/p/cosmos service personnel (see maintenance).

If the packaging has been damaged, please contact service@hpcosmos.com immediately.

Make sure no objects, sand, stones, liquids, towels, jewellery, cell phones, containers with liquid etc. can fall into the device or onto the running surface or underneath the running belt.

It is the customer's responsibility to ensure the following conditions before the installation:

There must be a separate power circuit for the device (dedicated line and fuse).

There must be a separate wall socket for the device (electrically interlocked with circuit breaker 16A, type C).

The wall socket has to be marked with the serial number of the device to ensure it is connected to this socket only.

Use ground wire plugs with tested ground wires only.

The intended location must provide a suitable potential equalization condition (e.g. PE-bolt).

If in compliance with local / national standards, use type B RCDs (residual current operated protective device).

Type B RCDs are used in cases where the application may create smooth DC residual current or contain frequencies higher than 50 Hz. For example, three- phase devices containing a motor controlled by a three-phase variable speed drive (frequency inverter drive)

For some type B RCDs (measuring also DC direct current) an additional leakage current limiter may have to be installed.

The intended location must provide the requirements for electrical installation acc. to "technical data".

The intended location must maintain the local requirements for electrical installation.

The wall socket has to be accessible at all times for maintenance and emergency disconnection situations.

The intended location must meet the environmental conditions (see "technical data").

The intended location must be capable of bearing the load of the device (see "technical data").

The intended location must provide the safety area and free area as stated in "position of subject and operator".

The intended location must provide a ceiling height, high enough for device + accessories (fall prevention).

The intended location must provide a stable, levelled and non-slippery base/floor to prevent noise, bouncing or malfunction.

The manufacturer does not assume liability for any damage, complaints or missing parts that are not reported immediately upon delivery on the packing list/delivery note.

Disconnect power plug when device ist not used for long periods.

21.2 Commissioning and instruction protocol

When installing the device, the h/p/cosmos service personnel instructs the intended operator according to the instructions for use, following this instruction protocol.

With the name and signature on the commissioning and instruction protocol, the customer confirm that the installation, commissioning and instruction has been performed correctly and instructed persons fully know how to operate the device safely. The instructed persons confirm they are able to instruct further operators according to this protocol.

No.	Information	Chapter	Check
1.	These instructions for use are available on request as print version at service@hpcosmos.com Please refer to the latest version of this document, available at: www.hpcosmos.com	-	
2.	The instructions for use are to be read in full before starting with the operation.	-	
3.	The safety information is explained and understood in detail.	Safety	
4.	The safety information must be displayed within sight of the device.	Safety	
5.	The function of all safety equipment is explained in detail.	Safety	
6.	The necessity and the use of a fall prevention system is explained in detail.	Safety	
7.	Exclude access of unsupervised children (< 14 years) onto or near any parts of the device has been explained.	Position of S+O	
8.	The residual risk of strangulation and trapping of clothes / shoes / fingers / hair or other (body) parts in the elevation system, belt re-entry-zones or other moving parts can not be excluded has been explained.	Position of S+O	
9.	The functions of the UserTerminal with keys, displays, programs, software and connectors are explained in detail.	UserTerminal	
10.	The general use is explained (incl. manual, profile, cardio and test mode).	Operation	
11.	The competences and intervals for maintenance are explained.	Maintenance	
12.	The adjustment of the running belt is explained in detail.	Maintenance	
13.	The lubrication of the device and owner's observation duties are explained in detail.	Maintenance	
14.	The accompanying documents are explained and handed over.	-	

21.3 Commissioning and instruction protocol, signatures

By signing this protocol, the authorized h/p/cosmos service personnel and the customer confirm the receipt and understanding of all safety information, the performed instruction and commissioning according to the instruction protocol [cos15228-03]. The customer confirms the receipt of the listed devices including all accessories and options according to the h/p/cosmos delivery note. Disregard of safety information, intended or forbidden use, as well as unauthorized maintenance or lack of maintenance and regular safety checks may lead to injury or even death and can damage the device. Furthermore, this will result in loss of liability and warranty. Please fill out the instruction protocol and send it back to h/p/cosmos by fax (+49 18 05 16 76 69), email (sales@hpcosmos.com) or mail.

h/p/cosmos sports & medical gmbh Am Sportplatz 8 DE-83365 Nussdorf-Traunstein Germany	customer´s stamp / address:

h/p/cosmos device, model name	device UDI-PI including serial number

	name in clear block letters	h/p/cosmos dealer / technician	date and signature
instructor			

	name in clear block letters	h/p/cosmos dealer / technician	date and signature
instructed persons (customer, operator, etc.)			

22 Annex II (Pre- & self-defined tests)

22.1 UKK walk test

Caution!

The UKK test is a pure fitness test and must not be used for any kind of medical application and /or assessment.

UKK stands for Urho Kaleka Kekkonen, founder of the UKK Institute in Tampere, Finland.
The UKK walk test is a fitness test, calculating the UKK Fitness Index based on the measured heart rate within a 2 km walk at max. walking speed. The test requires POLAR heart rate measurement.

A UKK Fitness Index of 100 represents an average fitness.
A UKK Fitness Index <100 represents below average fitness, a UKK Fitness Index >100 represents above agerage fitness.

The UKK Fitness Index is calculated as follows (according to gender):

Men: Fitness Index = 420 + A x 0.2 – (T x 0.19338 + HR x 0.56 + [W : (H x H) x 2.6])

Women: Fitness Index = 304 + A x 0.4 – (T x 0.1417 + HR x 0.32 + [W : (H x H) x 1.1])

A (age) = Age in years, HR (heart rate) = average heart rate during test in bpm, T (time) = walking time for 2 km in s,
W (weight) = subject weight in kg, H (height) = subject height in m

Before performing the UKK walk test, the subject must warm up and determine the max. walking speed.
During the test, the subject must walk as fast as possible for 2 km (heart rate approx. 80% of max). The subject must not run.
The treadmill measures the heart rate (via polar heart rate measurement) every 500 m.
Affter performing the test, the UKK Fitness Index is displayed.

The UKK walk test is suitable for subjects between 20 and 65 years old.
For subjects older than 65 years or overweight subject the results will be less accurate.
Athletes usually do not reach the required heart rate.

Refer to “test mode” for safety information and adjustment.

22.2 Graded test

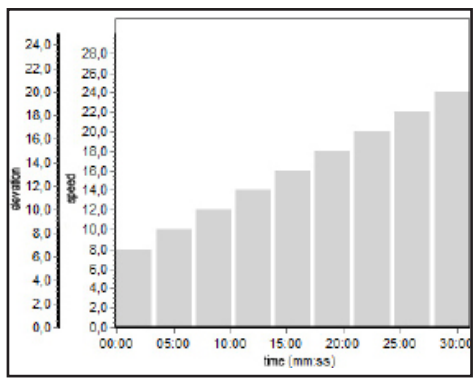
Description	Illustration

(e.g. for performance diagnostics based on lactate measurement)
Refer to “test mode” for safety information and adjustment.

Parameter	Default value
Starting speed	8.0 km/h
Increment	2.0 km/h
Acceleration level	4
Step length	3:00 min
Break time	0:30 min

Each parameter is adjustable.

STOP must be activated manually by the medical doctor.



Skip remaining break time:
Press “start” once restart after countdown
Press “start” twice restart immediately

Prolong break:
Press “-“ within break “pause” is indicated
Press “start” to continue

22.3 Conconi test

Description	Illustration

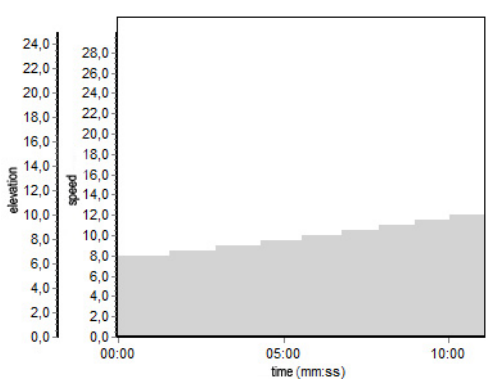
(e.g. for performance diagnostics based on heart rate measurement)
Refer to “test mode” for safety information and adjustment.

Endurance test (max. heart rate test)
Standard load profile:
Starting speed: 8.0 km/h, must be changed according to the condition of the subject

Circuit (lap length): 200 m (can be changed)

Increment: 0.5 km/h (can be changed)

STOP must be activated manually by the medical doctor

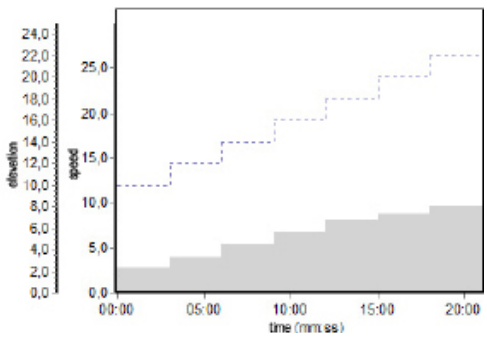


22.4 Bruce protocol

Description	Illustration

e.g. for ECG stress test
Refer to “test mode” for safety information and adjustment.

Step	Duration (min)	Speed (km/h)	Elevation (%)
1		2.7	10
2		4.0	12
3		5.4	14
4	3:00	6.7	16
5		8.0	18
6		8.8	20
7		9.6	22

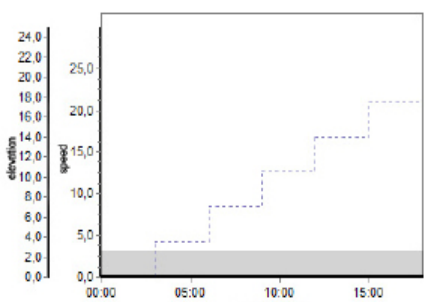


22.5 Naughton protocol

Description	Illustration

e.g. for ECG stress test
Regard chapter “test mode” for safety information and adjustment.

Step	Duration (min)	Speed (km/h)	Elevation (%)
1			0.0
2			3.5
3	3:00	3.0	7.0
4			10.5
5			14.0
6			17.5

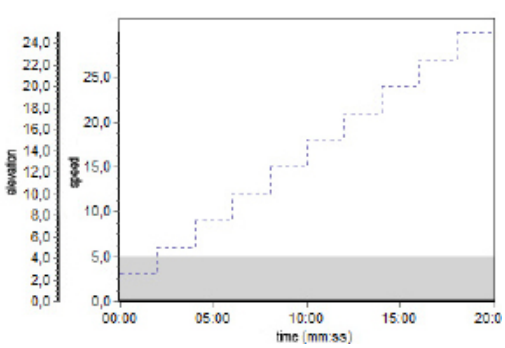


22.6 Balke protocol

Description	Illustration

e.g. for ECG stress test
Refer to “test mode” for safety information and adjustment.

Step	Duration (min)	Speed (km/h)	Elevation (%)
1			2.5
2			5.0
3			7.5
4			10.0
5	2:00	5.0	12.5
6			15.0
7			17.5
8			20.0
9			22.5
10			25.0



22.7 Cooper protocol

Description	Illustration

e.g. for ECG stress test
Refer to “test mode” for safety information and adjustment.

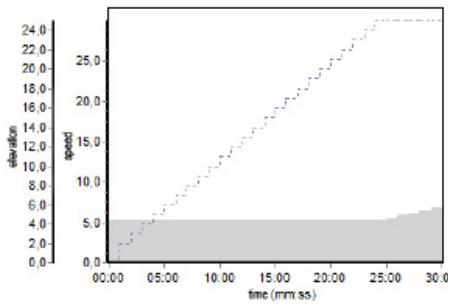
Start at 5.3 km/h and 0% elevation

After 1 minute elevation increases to 2 %

After another minute, the elevation is increased by 1% every minute

When elevation is 25 % elevation stays constant and the speed is increased by 0.32 km/h every minute

STOP must be activated manually by the medical doctor.

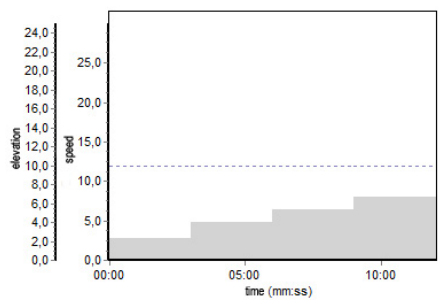


22.8 Ellestad A protocol

Description	Illustration

e.g. for ECG stress test
Regard chapter “test mode” for safety information and adjustment.

Step	Duration (min)	Speed (km/h)	Elevation (%)
1	3:00	2.7	10.0
2		4.8	
3		6.4	
4		8.0	

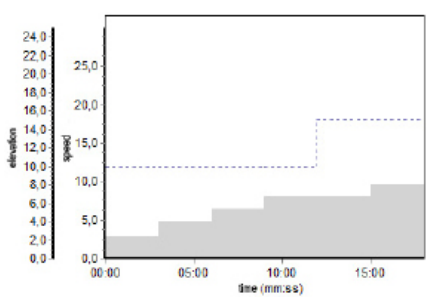


22.9 Ellestad B protocol

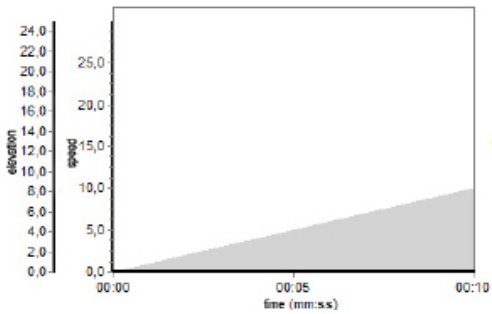
Description	Illustration

e.g. for ECG stress test
Refer to “test mode” for safety information and adjustment.

Step	Duration (min)	Speed (km/h)	Elevation (%)
1	3:00	2.7	10.0
2		4.8	10.0
3		6.4	10.0
4		8.0	10.0
5		8.0	15.0
6		9.6	15.0



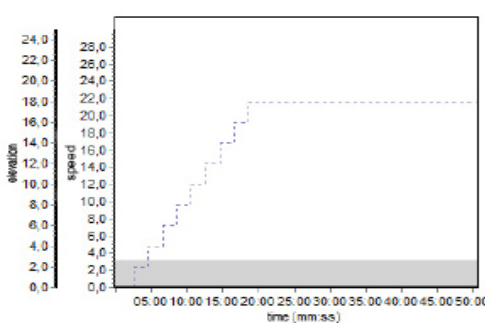
22.10 Ramp profile

Description	Illustration
(not available for every model) Refer to “test mode” for safety information and adjustment. Ramp profile with 2 parameters: Target speed standard: 10.0 km/h; adjustable from 0 to maximum speed of the treadmill. Time for reaching target speed in seconds: standard: 10 seconds; adjustable from 0 to 99 seconds	

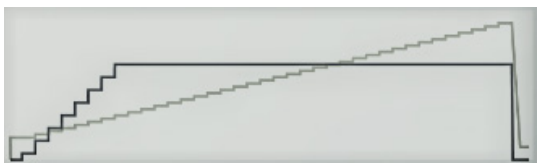
22.11 Gardner test protocol

Description	Illustration
For application in angiology Refer to “test mode” for safety information and adjustment. Pre-test phase: Subject stands on the footboards, not on the belt.	The Gardner test protocol serves to evaluate the maximum walking distance of peripheral arterial disease subjects with intermittent claudication. The test is to be performed under constant supervision of a medical doctor. The subject first stands on the side footboards of the running machine and not on the belt. Start test profile 11 and the belt speeds up to 3.2 km/h. As the subject steps onto the running belt, the doctor presses the START key again. By pressing the START key the second time, the displays will be reset to zero.

Step	Duration (min:sec)	Speed (km/h)	Elevation (%)	Total time (min:sec)
0	until START is pressed	3.2	0	until START is pressed
Test phase: Subject steps onto the running belt.				
1	02:00	3.2	0	2:00
2	02:00	3.2	2	4:00
3	02:00	3.2	4	6:00
4	02:00	3.2	6	8:00
5	02:00	3.2	8	10:00
6	02:00	3.2	10	12:00
7	02:00	3.2	12	14:00
8	02:00	3.2	14	16:00
9	02:00	3.2	16	18:00
10	02:00	3.2	18	20:00
11	30:00	3.2	18	50:00



22.12 Fitkids test

Description	Illustration
Fitkids increases speed and elevation. The target is to measure the duration a proband can achieve. Test is only available while running direction is forward.	

23 Annex III (Accessories)

Emergency stop retrofitting [cos15933, cos100548, cos15294]

Title	Description			
Short description	Additional emergency stop buttons			
	cos15933	Emergency stop button with magnet holder 5m		
	cos100548	Emergency stop button with magnet holder 10m		
	cos15294	Emergency stop ext. without attachement 5m		
	cos15294 L10m	Emergency stop ext. without attachement 10m		
	cos15294 L15m	Emergency stop ext. without attachement 15m		
Illustration	 with magnet holder		 without attachement	
Application	Operation	Result	Release	Restart
	 Push button	Running belt stops with predefined deceleration Movement of elevation system stops UserTerminal displays “pull stop” Mains connection and interface communication not interrupted	 Release (pull) button	Restart application
Additional safety information	N/A			
Technical data	N/A			
Additional accessories	N/A			
Installation	By operator			
Further information	https://www.hpcosmos.com/en/products/individual-products/emergency-stop-button-magnet-holder-5-m-spiral-cable			

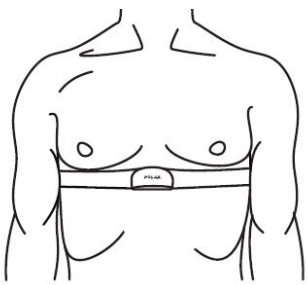
Arm support, optional stop button [cos10107, cos10108]

Title	Description			
Short description	Additional stop button, integrated into arm support			
Illustration				
Application	Operation	Result	Release	Restart
	 Push button	Running belt stops with predefined deceleration Movement of elevation system stops UserTerminal displays “pull stop” Mains connection and interface communication not interrupted	 Release button	 Restart application
Additional safety information	N/A			
Technical data	N/A			
Additional accessories	N/A			
Installation	By h/p/cosmos service personnel, only			
Further information	https://www.hpcosmos.com/en/products/individual-products/additional-stop-button-right			

Special speed 0 to 10 km/h / 25 km/h / 30 km/h / 40 km/h

Title	Description	
Short description	Extends max. speed to 10 km/h / 25 km/h / 30 km/h / 40 km/h	
Illustration	N/A	
Application	N/A	
Additional safety information	N/A	
Technical data	cos15258 cos12995 cos11995 cos10158	max. 10 km/h max. 25 km/h max. 30 km/h max. 40 km/h
Additional accessories	N/A	
Installation	By h/p/cosmos service personnel, only	
Further information	N/A	

Heart rate measurement POLAR H10 [cos101787-01]

Title	Description
Short description	Heart rate measurement, coded, 2 Bluetooth channels + 5 KHz analogue
Illustration	
Application	Apply chest belt as shown: 
Additional safety information and exercise test stop criteria	WARNING! Heart rate monitoring systems may be inaccurate. Incorrect or over exercising may result in serious injury or death. If you feel faint or dizzy stop exercising immediately and consult a medical doctor. Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.
Trouble-shooting	In case the heart rate is not displayed or not displayed correctly: The heart rate transmitter might not yet be paired (click on heart symbol) The heart rate transmitter might not be compatible (see print on transmitter) The heart rate transmitter might be applied incorrectly (see above) or skin is too dry The battery of the heart rate transmitter might be low There might be interferences with electric devices such as Screens, computers, printers, mobile phones and any radio engineering systems, electric motors, transformers, high-voltage transmission lines, also from trains, strong fluorescent tubes, central heating radiators, etc. In order to prevent interference avoid the vicinity of such devices. Do not rely on the indicated values if you suspect interference.
Additional accessories	cos100420b-01 POLAR H10 transmitter cos100420c-01: POLAR Strap Soft M-XXL W
Installation	By operator
Further information	https://www.hpcosmos.com/en/polar-heart-rate-sensor-h10

Heart rate measurement POLAR OH1 [cos101787_OH1]

Title	Description
Short description	Polar OH1 is a compact optical heart rate sensor (coded with Bluetooth transmission) that measures heart rate from your arm or temple.
Illustration	
Application	Apply sensor and belt as shown: 
Additional safety information and exercise test stop criteria	WARNING! Heart rate monitoring systems may be inaccurate. Incorrect or over exercising may result in serious injury or death. If you feel faint or dizzy stop exercising immediately and consult a medical doctor. Further exercise test stop criteria see guidelines for various treadmill exercise and treadmill tests.
Trouble-shooting	In case the heart rate is not displayed or not displayed correctly: The heart rate transmitter might not yet be paired (click on heart symbol) The heart rate transmitter might not be compatible (see print on transmitter) The heart rate transmitter might be applied incorrectly (see above) or skin is too dry The battery of the heart rate transmitter might be low There might be interferences with electric devices such as Screens, computers, printers, mobile phones and any radio engineering systems, electric motors, transformers, high-voltage transmission lines, also from trains, strong fluorescent tubes, central heating radiators, etc. In order to prevent interference avoid the vicinity of such devices. Do not rely on the indicated values if you suspect interference.
Additional accessories	N/A
Installation	By operator
Further information	N/A

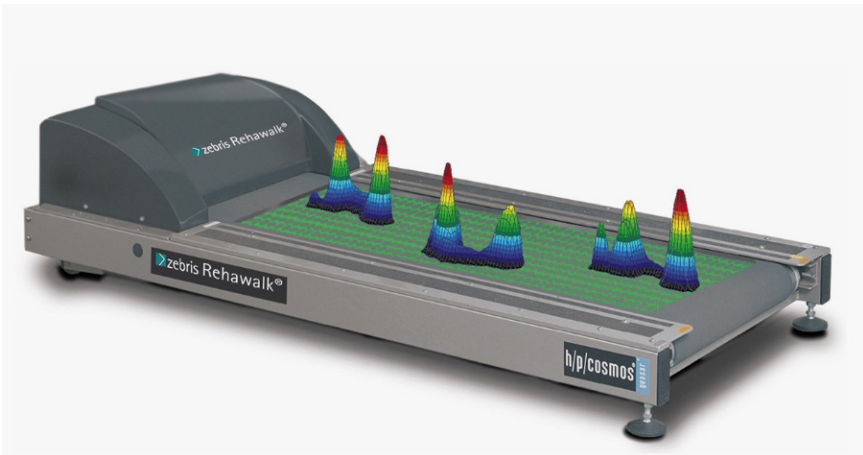
Arm support, adjustable [cos12013]

Title	Description
Short description	The h/p/cosmos arm supports are a simple solution for unweighting of the subject. Height and width adjustability offers a wide field of application.
Illustration	
Application	Adjust the arm support by pulling the locking element and turning the segments. Hold free segments with other hand. Scales on each joint allow reproducibility. 
Additional safety information	Do not adjust under load. Use caution at squeeze and shear points. Make sure the hand grips are in upright position during use. Do not use for running. Position arm supports outside of training area when running. Do not use on bare skin. Do not leave the arm support in a position that projects into running area Before loading, make sure the adjustment elements are correctly locked. Do not use the arm supports with reverse belt rotation.
Technical data	Adjustability: Height and width via 3 joints Measurements: 48 x 42.5 x 26 cm each (packed) Weight: 10.7 kg each Max. subject weight: 140 kg Max. subject weight of treadmill is reduced when combined with arm support.
Additional accessories	cos100680 additional keyboard for arm support cos14135 keyboard holder for arm support cos10107 additional stop button in right arm support cos10108 additional stop button in left arm support
Installation	By h/p/cosmos service personnel, only
Further information	https://www.hpcosmos.com/en/products/individual-products/adjustable-arm-supports-scale-0deg-handrail-shape

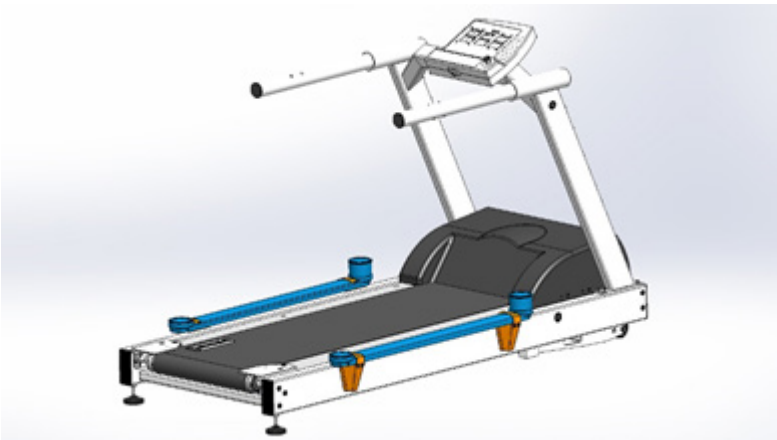
robowalk expander [cos30022, cos30023]

Title	Description		
Short description	The h/p/cosmos robowalk expander supports gait training. Expander ropes, attached to the limbs, support or load the subject.		
Illustration			
Application	See separate instructions for use.		
Additional safety information	See separate instructions for use.		
Technical data robowalk front [cos30022]	Height: Weight: Max. pulling force:	approx. 110 cm approx. 15 kg 50 N per rope	(depending on treadmill) (depending on treadmill)
Technical data robowalk back [cos30023]	Height: Weight: Max. pulling force:	approx. 80 cm approx. 25 kg 50 N per rope	(depending on treadmill) (depending on treadmill)
Additional accessories	cos101051-XS cos101050-S cos101050-M cos101050-L	leg cuff XS shank leg cuff S thigh leg cuff M leg cuff L	(for circumference 14 … 27 cm) (for circumference 25 … 39 cm) (for circumference 36 … 51 cm) (for circumference 49 … 75 cm)
Installation	By h/p/cosmos service personnel, only		
Further information	https://www.hpcosmos.com/en/products/individual-products/robowalk-expander-f-15050		

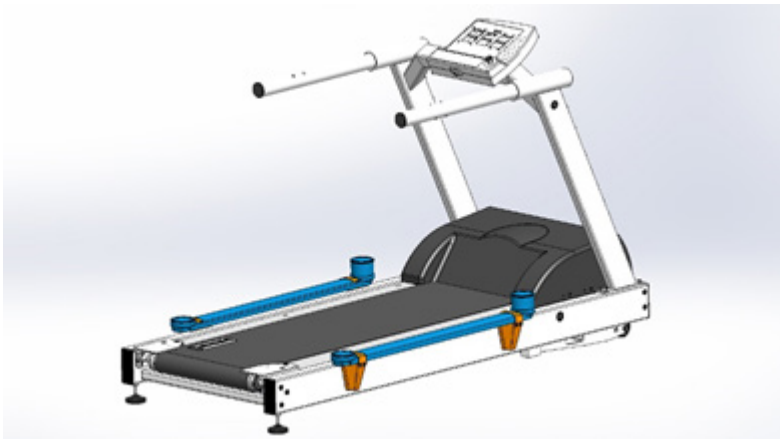
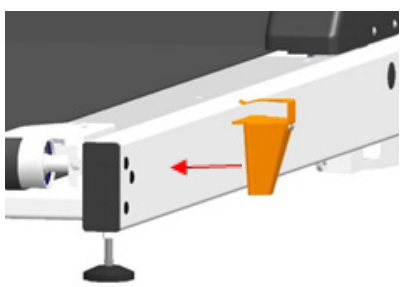
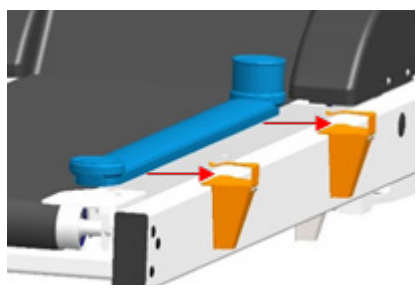
zebris® FDM platform 2i running deck 170/65, without treadmill [cos102292]

Title	Description
Short description	Integrated measurement system, to measure the pressure under human feet for analysis of static and dynamic strains.
Illustration	
Application	gait analyses for walking and running Balance analysis and balance training (at extra charge) Gait training in combination with dynamic visual stimulation (at extra charge)
Additional safety information	N/A
Technical data	technical data: sensor area: 135.5 x 54.1 cm sample rate: 120 Hz sensor area: 4.576 sensors operation conditions: temperature: min. 10° max. 40° air humidity: min. 30% max. 70% air pressure: min. 700 hPa max. 1.060 hPa
Installation	By h/p/cosmos service personnel, only
Additional accessories	zebris® visual stimulation 170&190/65 [cos101657]  https://www.hpcosmos.com/en/products/software-measuring-technology
Further information	https://www.hpcosmos.com/en/products/software-measuring-technology/zebris-fdm-platform-2i-running-deck-17065-without-treadmill

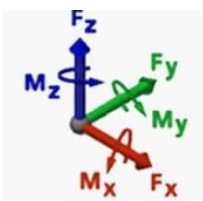
OptoGait, OptoJump [cos102065, cos102054]

Title	Description
Short description	Optical measurement of gait parameters
Illustration	
Application	Clip Optogait / Optojump into optofix profiles. The fastening profiles can be fixed without tools, only by magnetic force. The option is independent of the frame height. Analysis via external PC (software included).
Additional safety information	Do not step on the fixed bars or fastening profiles!
Technical data	Length: 120 cm Width: 10 cm Height: 15 cm
Additional accessories	cos103386 optofix cos100699_LED speedcontrol software
Installation	By operator
Further information	https://www.hpcosmos.com/en/products/medicine-therapy/motion-analysis-optogait

optofix [cos103386]

Title	Description
Short description	Option for fixing optogait / optojump on treadmill
Illustration	
Application	 Attach optopfix to readmill (magnet)  Attach optopgait/optojump to optofix (clamp) This option makes it easy to fix optogait / optojump bars on the treadmill. The fastening profiles can be fixed without tools, only by magnetic force. The option is independent of the frame height. Do not step on optofix™! 
Additional safety information	Do not step on the fixed bars or fastening profiles. In case there is no optogait / optojump, the optofix has to be removed. not usable with mounted footboard.
Technical data	Length: 12 cm Width: 8.6 cm Height: 14.9 cm
Additional accessories	cos102065 optogait kit 1m cos102054 optojump kit 1m
Installation	By operator
Further information	https://www.hpcosmos.com/en/optofix

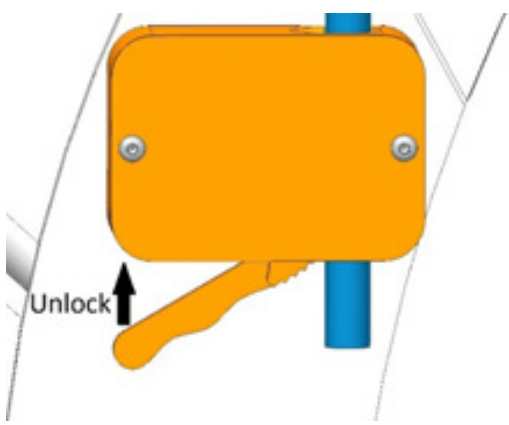
Biomechanics - gaitway 3D [cos102999_170-65, cos102999_190-65]

Title	Description
Short description	The new gaitway 3d is a joint design by h/p/cosmos and Arsalis. It measures the ground reaction forces and torques in three directions and comes in three different deck sizes: 150/50cm, 170/65 and 190/65cm. each size is optimized for a range of speeds.
Illustration	  
Application	The gaitway 3D offers a rigid construction to record optimal quality signals. The functionalities include a patient weighing scale, a recording of the ground reaction forces at rates up to 10 kHz, left and right force measurement for the vertical force during walking and an extensive list of biomechanical parameters of normal and pathological gaits.
Measurement specifications:	Load range max.: Fx, Fy, Fz 10 kN each Resolution: adjustable (12-375 mN/bit) Measurement range: adjustable (375-12000 N) Sampling rate: adjustable (100-1000 Hz) Digital signals: Trigger input: 5V TTL (BNC) Sync output: 5V CMOS (BNC) Zero input : 5V TTL (BNC) AUX digital input: 5V TTL (BNC) Alalog signals: Fx, Fy, Fz 0…10V (Sub-D 9) Communication: Ethernet interface 10/100 Mbit/s (RJ45)
Additional accessories	cos103752_xxx wooden baseplate cos102999_xxx-xxelev gaitway elevation element cos103971 transport wheels for gaitway elevation element
Further information	https://www.hpcosmos.com/en/products/software-measuring-technology/biomechanics-gaitway-3d

Satellite PC med [cos14970-03]

Title	Description
Short description	PC unit certified as medical electrical system with h/p/cosmos treadmills
Illustration	
Application	External treadmill control as well as data analysis. Use of software such as para control, gaitway 3D, zebris, noraxon, etc.
Additional safety information	Do not step on the fixed bars or fastening profiles!
Technical data	measurements: 150 x 60 x 100 cm mass: 80 kg
Additional accessories	N/A
Installation	By h/p/cosmos service personnel, only Regard wiring diagram, provided on following website.
Further information	https://www.hpcosmos.com/en/products/supplies-options/hpcosmos-satellite-pc-med

Safety arch [cos10079-01]

Title	Description
Short description	The h/p/cosmos safety arch prevents the subject from falling. Furthermore, it stops the treadmill in case of falling.
Illustration	
Application	1. Put on the safety harness (h/p/cosmos logo at front). 2. Use the carabine to connect the safety harness with the rope. 3. Adjust the length of the rope in a way the subject has to maintain the correct positon (see chapter “positon of subject and operator”). 4. See chapter “fall prevention devices” 
Additional safety information	See safety information for the treadmill.
Technical data	Max. subject weight: 300 kg Max. subject height: 200 cm Min. triggering force: 30 kg Min. room height: 250 cm (treadmill at 0% elevation) 275 cm (treadmill at 25% elevation)
Additional accessories	cos14903-03-XXS harness/chest belt XXS (chest circumference 45 … 65 cm) cos14903-03-XS harness/chest belt XS (chest circumference 55 … 75 cm) cos14903-03-S harness/chest belt S (chest circumference 65 … 95 cm) cos14903-03-M harness/chest belt M (chest circumference 85 … 115 cm) cos14903-03-L harness/chest belt L (chest circumference 105 … 135 cm) cos14903-03-XL harness/chest belt XL (chest circumference 125 … 155 cm)
Installation	By h/p/cosmos service personnel, only
Further information	N/A

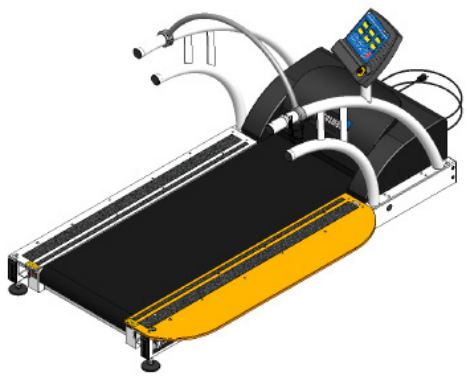
Reverse treadmill belt rotation [cos103330], [cos00098100045-02], [cos10181-03]

Title	Description
Short description	Reverse belt rotation for downhill running / walking
Illustration	
Application	Aktivate reverse belt rotation and start device without subject. Observe running belt position and adjust if due. Stop operation and guide subject onto device. Explain and start operation. Repeat procedure for switching to forward direction.
Additional safety information	Do not use without supervisory staff. Do not switch during motion. Max. speed for reverse belt rotation is reduced by default
Technical data	speed range: 0 … 5.0 km/h (3.1 mph) in reverse mode no limitation in regular mode speed limit for reverse mode can be undone in case a fall prevention is used and in case there is no handrail crossbar or UserTerminal behind the subject. Modification of basic device: standard belt is replaced by reinforced belt with profiled surface and 5 mm thickness; belt guide rollers for running
Installation	By h/p/cosmos service personnel, only
Further information	https://www.hpcosmos.com/en/products/individual-products/reverse-belt-rotation-downhill-15050 https://www.hpcosmos.com/en/products/individual-products/reverse-belt-rotation-downhill-17065

Horizontal bar, semi-high [cos15133-05]

Title	Description
Short description	Crossbar for additional balance control
Illustration	
Application	applications with tall persons, running with highly lifted knees
Additional safety	It is not allowed to run with the back to the crossbar or to the UserTerminal to prevent from collision.
Technical data	Compatible devices: treadmill 170-190/65 Diameter: 30 mm Height: highest point approx. 200 mm above handrails Weight: 2,65 kg material: powder coated steel
Installation	By user
Further information	https://www.hpcosmos.com/en/products/individual-products/handrail-crossbar-5036-arched-grip-cover

Footboard extra wide 170 / 190 [cos10228, cos102289, cos16586, cos14764]

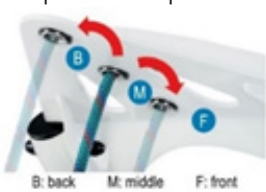
Title	Description		
Short description	footboard extra wide for speed applications		
Illustration			
Application	N/A		
Additional safety information	N/A		
Technical data		170 (stellar / quasar)	190 (pulsar)
	Lenght:	167 cm	187 cm
	Width:	40 cm	40 cm
	Weight:	22 kg (each)	25 kg (each)
Additional accessories	Separable handrails [cos14233-02] are necessary!		
Installation	By h/p/cosmos service personnel, only		
Further information	https://www.hpcosmos.com/en/products/supplies-options/footboard-right-extra-wide-speed-17065 https://www.hpcosmos.com/en/products/supplies-options/footboard-left-extra-wide-speed-17065 https://www.hpcosmos.com/en/products/supplies-options/footboard-left-extrawide-speed-19065		

Tablet holder for MCU6 [cos102488_vesa]

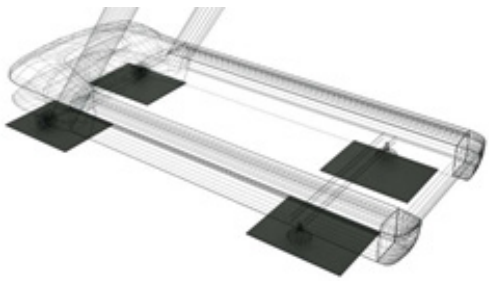
Title	Description
Short description	fixation of tablet computer on VESA mount adapter of MCU6 UserTerminal
Illustration	
Application	any application
Additional safety information	- Depending on the safety and application of the subject while walking and running, the tablet or smartphone should only be used as long as the safety of the subject is not influenced. - Regard reduced rotation of terminal in combination with safety arch.
Technical data	Dimensions: 315 x 117 x 127 mm Weight 0.42 kg material: powder-coated steel, plastic
Additional accessories	N/A
Installation	By user
Further information	https://www.hpcosmos.com/de/tablet-halter-fuer-mcu6-userterminal

Safety arch retrofit / replacement kit h=220cm

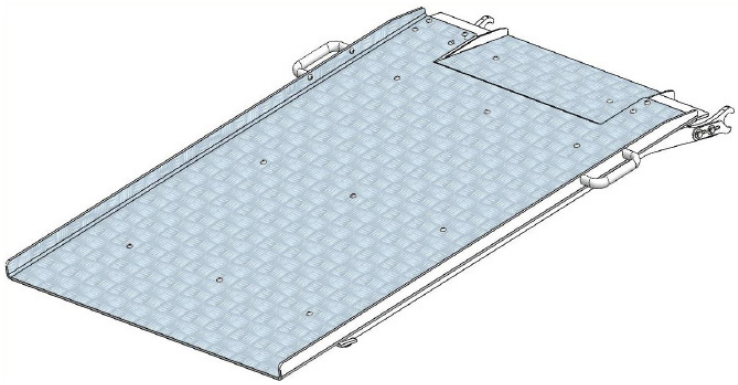
(cos14424-01; cos14424-01ret; cos14425-01; cos14425-01ret)

Title	Description
Short description	retrofit kit is necessary to ensure the safe use of a treadmill for test persons with a body height of 220cm
Illustration	
Application	Choose position of rope outlet  Choose approx. triggering force  
Additional safety information	Putting on the safety vest properly
Technical data	Compatible devices: treadmills 150/50 & 170-190/65 Dimensions: 2600 x 1415 mm (each in assembled condition) Weight: 11,5 kg (only safety arch retrofit kit) 42,13 kg (complete system safety arch included retrofit kit)) Treadmill height: cos14424-01 ; cos14424-01ret
Installation	Service technician

Floor protection mat [cos103852]

Title	Description
Short description	retrofit kit is necessary to ensure the safe use of a treadmill for test persons with a body height of 220cm
Illustration	
Application	Remove foil from self-adhesive surface. Place mats at the position of the rollers. Place mats at the position of the adjustable feet (if needed).
Technical data	Measurements: 300 x 400 x 5 mm Weight: 250 g (each)
Installation	By customer

Wheelchair ramp [cos16186-02], [cos102931], [cos14664-03]

Title	Description
Short description	Wheelchair ramp supports entering the device with wheelchair subjects.
Illustration	
Application	Push subject with wheelchair onto treadmill. Connect subject to fall prevention device. Support subject so they can stand upright. Remove wheelchair. Start application.
Additional safety information	Do not use the device with wheels (bikes, wheelchairs, inline skates, etc.). Unmeant trapping hazards: Take off ties, scarfs or other clothes that may be trapped. Secure long hair and ribbons during maintenance and training in order to prevent being captured in trapping zones. The ramp must not touch the running belt. Make sure the ramp cannot slip. Always enter from the back, not from the side. Do not install the ramp when running belt is in motion. 

Technical data		150/50	170-190/65
	Length:	124 cm	130 cm
	Width:	82 cm	91 cm
	Height:	13 cm	13 cm
	Weight:	22 kg	27 kg

Additional accessories	N/A
Installation	By operator
Further information	https://www.hpcosmos.com/en/products/supplies-options/wheelchair-ramp-treadmill-15050 https://www.hpcosmos.com/en/wheelchair-ramp-treadmill-15050-lc https://www.hpcosmos.com/en/products/supplies-options/wheelchair-ramp-treadmill-170-19065

24 Contact

For any service or sales enquiries, please have the model type and serial number of your device ready.
For service support, we recommend using Skype with webcam.

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