



Seat ergometer Sana comfort 150/250/REHA

User Guide



CE Conformity Declaration


ergosana GmbH herein declare that the products of the ergometer system Sana comfort 150/250/REHA have been designed and manufactured in accordance with the relevant requirements of the EC directive 93/42/EEC.

This declaration loses its validity if the above devices are modified without ergosana's consent.

The medical products are checked by the notified body DEKRA and they bear the CE mark CE 0124.



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1 General

The *Sana comfort 15/ 250/REHA* seat ergometers are high-performance, state-of-the-art ergometers. *Sana comfort 250* is equipped with a blood pressure measurement module, located in the ergometer's control console.

The devices meet the highest quality standards for accurate physical exertion tests to conduct measurements in cardiovascular and pulmonary function diagnostics. Thanks to the comfortable seat and the special sitting position allowing comfortable pedalling, this ergometer is suitable for long-term training as well as adipose patients.

1.1 Intended use

Ergometer Sana bikes are bicycle ergometers that are intended for defined exercise ergometry during a patient's examination and therapy. These products are used in practices, clinics, therapy and rehabilitation centres. The ergometers are operated by physicians and medical personnel.

1.2 Contra-indication

In the event of the following contra-indications, **NO** exercise test must be performed: in the case of acute cardiac infarction or unstable angina pectoris, serious hypertonia at rest, carditis, insufficiency of the heart, serious valvular heart defect, serious cardiac arrhythmia at rest, aortic aneurysm or other manifest cardiovascular diseases.

1.3 Features

The following characteristics make the unit exceptional:

- Attractive design
- Comfortable mounting and dismounting
- Stable steel construction, compact drive unit
- Stable clamps on saddle and handle bars
- Impact- and scratch-resistant casing, easy to clean
- New, high-performance control electronics
- Graphic display featuring visual representation of ergometry data
- Easy operation via menu mode
- Remote operation – personalised programs – training programs
- Disturbance-free blood pressure measurement
- Performance range from 1 to 999 watts
- Guaranteed accuracy (error factor < 3% in the independent rpm range)
- Nearly noiseless drive unit
- Pleasant pedalling sensation due to large gyrating mass
- Galvanically isolated RS 232 interface, secure data transfer
- Reha version with USB bus
- Reha version with ECG amplifier and suction electrode system

1.4 Instruction

Before the initial operation, carefully read through this user guide, paying special attention to the warnings and safety instructions.

1.5 Maintenance

This is a low-maintenance device. You will find detailed maintenance instructions in section 8.

2 Product description

2.1 Unit Components

1. Handlebar
2. Control console
3. Locking lever to adjust the back rest
4. Handlebar on the seat
5. Arrow keys for horizontal seat adjustment
6. Back rest
7. Base adjuster for height adjustment
8. Mains connector, potential equalisation, RS-232 interface



2.2 Accessories

Every device comes with:

- Power cable with European plug
- Blood pressure cuff for 250
- User guide
- Inspection report

2.3 Potential equalisation

A standard potential equalisation stud is located on the rear panel, next to the power connection unit. It is marked with a green/yellow information sign. Using an earth cable, the ergometer can be connected with the potential equalisation of the examining room, which serves as a common earth point for all other mains-operated devices in the room to ensure that all devices have the same earth potential.

2.4 Technical data

Bicycle ergometer with blood pressure measurement in accordance with DIN 13405 /DIN VDE 0750-238.

| | |
|---|--|
| Braking principle | Computer-controlled brakes with permanent measurement of torque. Braking performance is independent of revolutions per minute. |
| Power range | 1 to 999 watts |
| Load range | independent rpm range 20 till 999 Watts |
| Range of revolutions | 30 to 130 rpm for pedals |
| Load precision | 3%, not less than 3 watts (in the independent rpm range) |
| Load parameters | <ol style="list-style-type: none"> 1. In keeping with set internal load program 2. Parameters from external master unit over interface, in 1 watt steps. 3. Manual in 5-watt and 25-watt steps |
| Load software | 5 freely programmable ergometry programs 1 automatically controlled pulse-steady-state program |
| Time intervals | 1 min to 99 min |
| Display | Graphic LCD with 320 x 240 pixels, CCFT background lighting |
| Blood pressure measurement for 250 | Indirectly, with a specific, modified measuring system based on R-R, and computer analysis including maximal suppression of artefacts during ergometry. Automatic deflation rate of 3 mmHg/pulse. Measuring range 40 - 300 mmHg. |
| Pulse measurement | With a blood pressure unit or an optional Polar pulse monitoring system; pulse rate 35 - 240 |
| Horizontal seat adjustment | Continuously variable on a slope, special seat for heights between 150 and 210 cm, electric drive. |
| Maximal permissible patient weight | 250 kg |
| Long-term accuracy | Torque equalisation at any time with weight |
| Power supply | 230 VAC 50–60 Hz, 115 VAC 50–60 Hz The unit is suitable for use in networks according to CISPR 11, group 1, class B. |
| Electric inputs/outputs | RS-232 (galvanically isolated) |
| Base dimensions | 40 x 130 cm |
| Weight | 74 kg |

2.5 Signs and symbols

In this section, the signs and symbols used in connection with this device are explained:



Mains operated, alternating current



Potential equalisation connection (earth)



BF classified component



Warning! Follow the instructions in the documentation.

CE 0124 93/42/EEC for medical products 0124 DEKRA

IPX0 Protection class of the casing: IPX0

2.6 Safety notes

Safety precautions when operating with other devices

Portable communication devices, HF radios and devices labelled with the symbol



(non-ionic electromagnetic radiation) can affect the operation of this device (see section 2.7).

2.7 Eliminating electromagnetic interferences

1. **The unit is only designed for operation in the following electromagnetic environment: Radio frequency emission according to CISPR 11, group 1, class B.**
2. Group 1 means that the ergometer exclusively uses HF energy for its internal function. The HF emission is therefore very low and unlikely to disturb electronic devices in the vicinity.
3. Class B means that the ergometer is suitable for use in any facilities including residential areas, even if it is directly connected to the public mains that also supplies residential buildings.
4. The general electromagnetic environment with regard to the device's electromagnetic immunity is defined as follows: the voltage corresponds to the typical business or hospital environment, and the humidity is at least 30%, especially if the floors are synthetic.
5. If disorders should nevertheless occur, especially in the vicinity of devices labelled with the symbol "non-ionic electromagnetic radiation", check the recommended minimal distance according to the following table. More information is given in the service manual.

| Recommended safety distances between portable and mobile HF telecommunication devices and the ergometer | | | |
|---|-------------------|--|---------------------|
| The ergometer is designed for operation in an electromagnetic environment with controlled HF disturbance. The user can help avoid electromagnetic interferences by keeping the minimum distance between portable and mobile HF telecommunication devices (senders) and the ergometer, depending on the output performance of the communication device as indicated below. | | | |
| HF source | Rate [MHz] | Rated power P of the sender [W] | Distance [m] |
| Microcellular phone CT1+, CT2, CT3 | 885–887 MHz | 0,01 | 0,23 |
| Cordless DECT telephone, WLAN, UMTS mobile phone | 1880-2500 | 0.25 | 1.17 |
| Mobile phone, USA | 850/1900 | 1,2 | 1.8 |
| Mobile phone, GSM850, NMT900, DCS 1800 | 850/900/1800 | 1 | 2.3 |
| Mobile phone, GSM 900 | 900 | 2 | 3.3 |
| Walkie-talkie (rescue services, police, fire brigade, maintenance services) | 81-470 | 5 | 2.6 |
| Mobile radio system (rescue services, police, fire brigade) | 81-470 | 100 | 11.7 |

3 Installation

3.1 Location

Install the device in a suitable position (refer to safety instructions in section 5).

The unit should not be stored or operated in wet, moist or dusty surroundings. Nor should the unit be exposed to direct sunlight or other sources of warmth.

The unit should not come into contact with acidic vapours or fluids.

The unit should not be placed near X-ray units, large transformers or electrical motors. There must be a distance of at least one meter between the unit and the mains network.

3.2 Assembly instructions

3.2.1 Unpacking and assembling

Install the control panel after unpacking the unit. In order to do so, insert the two tabs on the back of the control panel into the handle bar pipe and press them downward to their stop. The operator's side should usually face the front so that the display can be seen by the person operating the machine. Connect the potential equalisation cable to the flat plug at the back of the control panel.

Connect the main plug with the connecting socket. Fasten the rear cover with 4 screws.

Remove the seat's transport protection.

With the help of the base adjuster on the rear lower side of the ergometer, adjust the device so that it is flush with the floor. The ergometer is then fully stabilised.

3.2.2 Seat adjustment

Mechanical seat adjustment

The seat is infinitely variable horizontally in order to accurately adjust the distance to the pedals. The seat can be adjusted for persons between 150 cm and 210 cm in height. The handle next to the control console ensures safe grip while positioning the feet on the pedals.

A ball-grip lever is used to adjust the sitting position. This lever is located on the right hand side, underneath the seat, and is easily accessible. Press the ball handle downwards to unlock the seat break, and adjust the seat until the correct sitting position has been found. Pull the lever upwards as far as it will go to lock the seat.

The seat construction is designed for patients weighing up to 250 kg.

Motorised seat adjustment

Adjust the seat by use of the arrow buttons.

3.2.3 Connecting the blood pressure cuff

The interfaces for the air tube and the microphone are located underneath the seat's guiding rail. Connect the blood pressure cuff by screwing the hose connection onto the joining nipple and inserting the microphone plug in the socket next to it.

3.2.4 Mains connection

Establish potential equalisation (see section 2.3) and plug the supplied power cable into an earthed socket. As the device is preset to the local mains voltage (refer to section 8.4), you can switch it on using the main switch at the front.

4 Unit components

4.1 Control panel

The control panel is mounted on the upper side of the control panel carrier with two plug-in tabs. During normal operation, the display should be facing the examiner. It is possible to turn the console 180 degrees for special applications such as patient training, etc., so that the patient can reach the control elements and see the display.

All of the control electronics for ergometer operation and blood pressure measurement are located in the control panel.

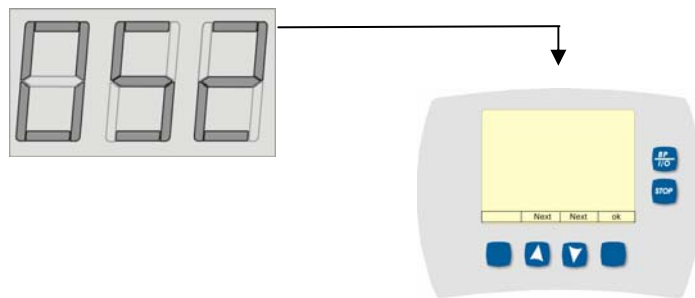
A backlit LCD featuring the complete range of information is located on the front side under a foil keyboard with a see-through window. The control elements for the adjustment and operation of the ergometer are located on the foil keyboard.

The connections for the blood pressure cuff are located on the underside of the Sana comfort 250. In couch ergometers, they contain an extension line. The cuff socket is located on the couch's upper edge. An LCD on which the patient can see the number of pedal rotations per minute is located on the panel's upper side.

4.2 Rotational speed display on the control panel

n = crank rotations per min

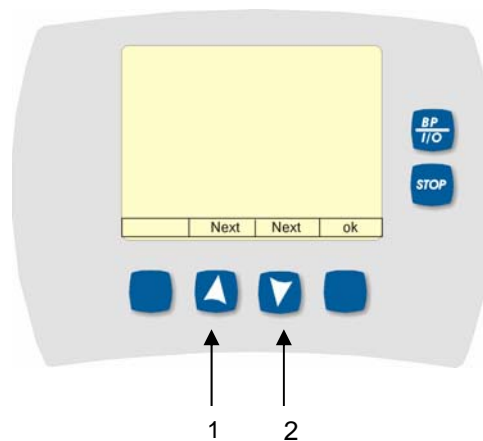
$U \text{ min}^{-1}$



4.2.1 Panel interfaces for 250

The extension line for the blood pressure cuff is connected at the bottom of the control panel.

1. Cuff connection
2. Microphone connection



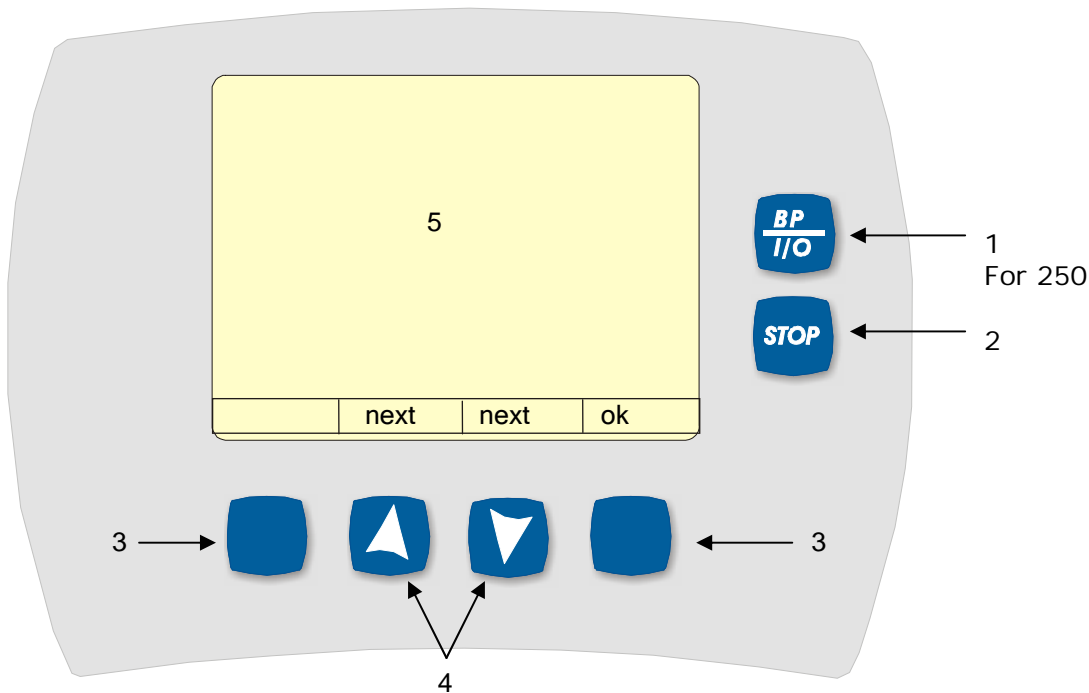
4.2.2 Keys and display

The LCD with graphics capability, 320 x 240 pixels and a surface of 100 mm x 75 mm is located on the front of the control panel. It is covered by a foil keyboard with a see-through window.

The display shows all configuration and operating procedures. During the exercise testing, all current measurement data is shown in the display in alphanumeric and graphic forms. It is thus especially easy to monitor exercise testing.

The cursor can be moved through the selection menu in the display with the up and down arrow keys.

The right and left buttons on the control panel have been arranged so that the function executed by the corresponding key is shown directly above the key on the lower side of the display.



- 1 = Blood pressure measurement key
- 2 = Stop/quick pressure release key
- 3 = Confirmation key
- 4 = "Up" and "down" cursor keys
- 5 = LCD display

4.2.3 Setting the language

The preset menu language is "deutsch".

To change the language, highlight the "Einstellungen" menu option using the "ab" arrow, and confirm with "OK".

In the "Einstellungen" menu, select the "Sprache" option and confirm with "OK". Then select the desired language using the "auf" or "ab" arrow, and confirm with "OK".

The menu is now displayed in the selected language.

4.3 Blood pressure cuff for 250

The standard blood pressure cuff (order no. 24-10-301) has Velcro fixing. It can be used for arms up to 45 cm in diameter. A larger cuff (order no. 24-10-321) is available for larger arm diameters.

A microphone is installed in a microphone pocket on the inside of the cuff. It serves the transmission of the blood pressure sound.

The connection cable with an air and a microphone connection is 110 cm long. This is a sufficient length. It ensures that the cable does not dash against the ergometer during pedalling. This is to prevent unnecessary artefacts that might result in inaccurate blood pressure measurement. Longer cables (200 cm) are available but it is imperative to make sure that artefacts are prevented.

Cleaning:

The cuff should only be washed with soapy water and immediately dried off again. The surface of the microphone pocket is waterproof. Make sure that no moisture penetrates the opening of the microphone pocket. If this occurs repeatedly, it may result in damage to the microphone.

5 Safety notes

5.1 Precautions during operation

Before using the unit, make sure that the medical product consultant has conducted an introduction in regard to function and safety precautions.

The unit should not be used if there are any doubts as to its being isolated from earth or the suitability of the power cable.

The supplied power cable meets valid regulations for medical applications.

The unit is not intended for use in wet rooms, outdoors or in areas where there is danger of explosion.

Before its initial operation, the device must be adjusted using the base adjusters at the back to provide absolute stability.

When the saddle is exchanged, make sure that the screws at the saddle are tightened hard enough so that the saddle cannot be moved on the saddle pipe.

To move the handle bars and saddle, loosen the clamps and retighten them well afterwards. It is recommended to position the clamps with the levers positioned vertically downward. Secure clamping is ensured when the handles are then again turned to this position during the adjustment procedure after every movement.

The holding straps on the pedals must fit perfectly across the upper side of the shoe and be fastened with a Velcro strap.

5.2 Safety precautions when operating with other devices

When several devices are coupled, there is a risk that the leakage currents may add up.

Interface RS 232, which can be used for communication with other devices, is isolated to ensure the patient's safety.

External devices may only be connected with the interface cables supplied by ergosana.

5.3 Maintenance safety precautions

The device must be turned off and the power plug disconnected before cleaning with liquid cleaning agents.

Use only standard cleaning agents for plastic surfaces.

The unit may only be opened, repaired and serviced by authorised and trained personnel.

5.4 Interference

The unit meets EMC regulations for medical products to ensure protection against emission and radiation. Special caution should be taken when using this unit in combination with high-frequency devices.

6 Start-up and initial preparation

6.1 Blood pressure recorder for 250

In order to conduct exercise testing correctly, it is of utmost importance to measure physical performance data and data from the ECG measurement as well as simultaneously measuring and recording blood pressure data to determine the reaction of the circulatory system to increased exertion.

For this purpose, ergosana has developed an extremely accurate blood pressure measuring system that is not susceptible to interference. It has been integrated into this ergometer and uses a so-called indirect method of blood pressure measurement. The Korotkoff sound, which is created by the air being forced out of the cuff as blood flows through the area of compression, is recorded along with several other important parameters of critical importance to attain accurate measurement. These measurements are evaluated in milliseconds by an internal digital evaluation system and shown in the ergometer's display as systole and diastole. The pulse rate is also determined during measurement and likewise shown in the display. At the same time as they are shown in the display, the measurements can also be transferred to a peripheral device such as an ECG or pulmonary function unit for evaluation and recording over an RS 232 interface.

The blood pressure cuff is the measurement sensor for blood pressure. Despite the perfectly functioning measuring system, it remains critically important that the cuff is placed on the arm correctly and carefully.

According to international agreement, the blood pressure should be measured on the left arm, which is near the heart, as the flow impedance level is lowest there. An exception to this rule is formed by approx. 1 to 2 per cent of test persons on whom the Korotkoff sound cannot be measured due to vascular phenomena. The cuff is placed on the right arm of such patients.

- + Please note that the cuff's air tube must be fixed in a way that prevents it from dashing against the ergometer. This is to prevent unnecessary artefacts that might affect the measurement's accuracy.

6.2 Applying the cuff for 250

The microphone is positioned so that it lies on the brachial artery, the largest arm artery. The location of the microphone in the cuff is marked with a red fabric tag.

The ideal location for the microphone is approx. 2 centimetres above the elbow joint on the inside of the arm, below the biceps. The cuff must be put on so it is tight and cannot shift out of position during the movement created during the stress test.

The cuff is inflated rapidly at the start of the measurement. The blood pressure and pulse rate are already roughly measured during pumping and the inflation pressure is determined.

After the systolic pressure value has been attained, the air is released from the cuff at a rate of 3 mmHg per heartbeat.

This procedure guarantees approximately equal measuring times despite the rising pulse rate during exertion.

The blood pressure measurement should not exceed a maximum total length of 45 seconds. One minute is indicated as the shortest measurement interval. A measurement interval of 2 or 3 minutes is preferable in most cases.

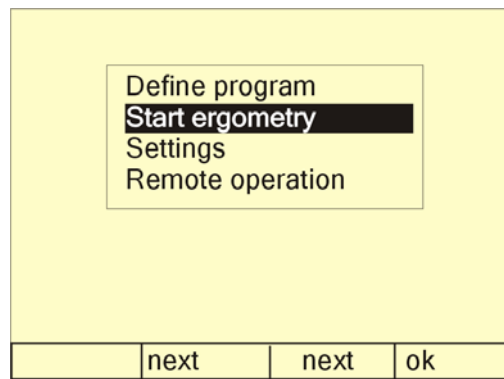
The blood pressure values are shown in the ergometer's graphic display together with the load and pulse rate graphs.

7 Ergometry

This section describes ergometry with the internal ergometer software.



7.1 Defining the automatic load programs

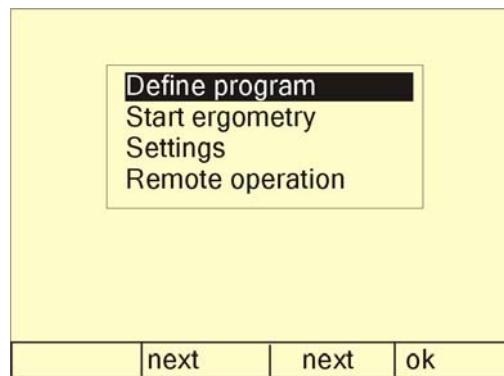
The following text field appears in the ergometer after it is switched on:



The menu item "Start ergometry" is highlighted with a black bar. This means the item is activated. It is possible to select an exercise program directly from here and begin ergometry.

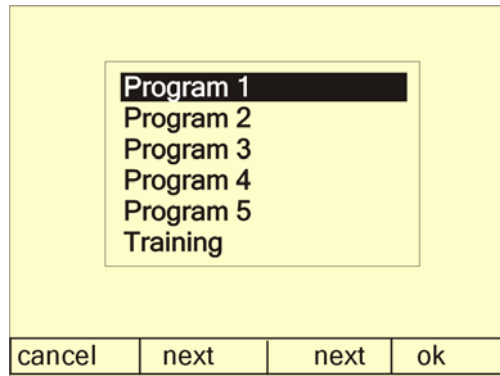
Beforehand, however, the five varying exercise programs must be defined according to the examiner's needs and wishes. On delivery of the unit, each program is set with normal values which cannot harm the patient in case they are accidentally activated.

Activate "Define program" with the help of the arrow key  .



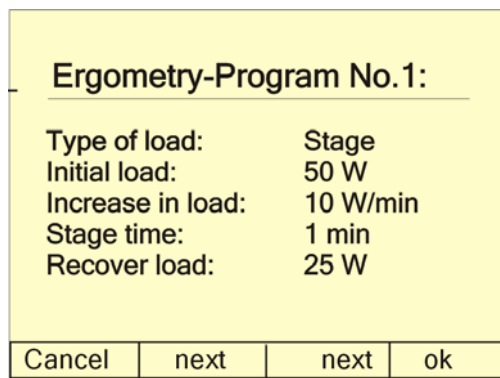
Confirm with the right "ok" button.

The program selection menu appears.



The exercise programs 1–5 are set according to the parameters of standardised ergometry or according to individual parameters in such a manner that the correct programs for the different patient groups can be called up at the touch of a button.

Confirm program 1 with the right button “ok”, and the window containing the settings menu for ergometry program no. 1 appears.



Check the existing settings for:

- Type of load (Stage or Ramp)
- Initial load
- Increase in load
- Stage time
- Blood pressure measurement interval (for 250)
- Recovery load
- RR interval 2 min
- RR interval on

Push the “change” button if the settings need to be altered.

The individual parameters then appear one after the other. Select the desired values with the arrow buttons and confirm by pressing the “ok” button. The next parameter then appears. The settings menu can be exited at any time by pressing the “cancel” button.

7.2 Recommended settings

An unlimited number of values can be saved in the programs 1 to 5, as shown in the examples below:

| Program number | Initial load [watts] | Increase in load [watts] | Stage time [min] | BP interval [min] | Recovery load [watts] |
|----------------|----------------------|--------------------------|------------------|-------------------|-----------------------|
| 1 | 30 | 10 | 1 | 2 | 20 |
| 2 | 25 | 25 | 2 | 2 | 25 |
| 3 | 50 | 25 | 2 | 2 | 25 |
| 4 | 50 | 50 | 3 | 3 | 50 |
| 5 | 75 | 50 | 3 | 3 | 50 |

The program always returns to the initial configuration after the individual programs have been set.

“Start ergometry” is highlighted black on the LCD display. An ergometry exercise can be started immediately by pressing the “ok” button.

7.3 Remote operation

7.3.1 Explanation

Remote operation means that the ergometer is externally controlled via the digital RS 232 interface or USB connector, i.e. all commands for the load and blood pressure measurement intervals are transmitted from a separate "master unit".

This type of operation is used primarily when the ECG device has its own ergometry-control program and when the ergometer and ECG – and possibly other devices such as pulmonary function measuring devices – can be combined to form an ergometry or pulmonary function measuring station.

+ In combination with third party units, remote operation is the only approved operation method.

7.3.2 Prerequisites

When the remote operation mode is selected, the unit used (an ECG device or a PC) must be connected with the ergometer via an interface cable. For our ergometers, this is a type RS 232 interface, which is isolated to ensure the patient's safety.

The appropriate baud rate must be selected in the program "Setting" under "Interface". The appropriate transmission protocol must then be selected in the same menu under "Instruction Set". The so-called "ergoline operating mode" is stored under the setting P 10. Our own transmission protocol is located under "ergosana".

Information on interface and instruction set can be obtained from the operating data of the master unit.

When the settings have been correctly defined, the ergometer automatically switches to "remote operation" when the first command comes through over the interface. The ergometry screen is opened in the display, showing the current load, blood pressure and pulse rate data in both alphanumeric and graphic forms. The execution of the internal programs is disabled in this operating mode.

Remote operating mode is ended by either pressing the command button "End" or by switching the device off.

7.4 Training program (option)

The use of the training program requires a pulse signal receiver (Polar system), which is integrated in the control panel. The receiver can be ordered together with the device or added later on.

The patient wears a transmitter belt, which is positioned on the skin below the chest. The effective radius of the signals transmitted by the belt and received in the control panel is approx. 70 cm. Please note that if the skin is dry, contact problems may occur between the belt and the skin at the beginning of the training. Therefore, if the pulse transmission is unsteady or disturbed, moisten the contact surfaces of the transmitter belt with contact spray or water.

7.4.1 Training with constant heart rate (Pulse-Steady-State)

A bicycle ergometer training with constant heart rate (pulse-steady-state method) in the individual training range is a highly efficient and risk-free training method for the cardiopulmonary system. Ask your physician which is the suitable training heart rate for you. He or she will determine it for you using an exercise test.

7.4.2 Configuring a training program on the ergometer

To define a training program, select the menu option **Define program**. Then select the menu option **Training** using the arrow keys.

The below settings panel is displayed.

To set or change the parameters in order, press **modify**.

The first setting defines the *Initial load*, 50 watts.
 The setting *Duration A1* controls the duration of warming-up phase 1, e.g. 1min.
 The setting *Increase in load* controls by how many watts per minute the load is increased.
 This is the warming-up phase 2.
 In special cases, this phase can be limited in time using the next setting *Duration*.
 By default, the warming-up phase 2 is finished when the target HR is reached.
 When the target HR is reached, the load applied is automatically reduced by 10%.
 This measure is to prevent a too great heart rate increase during the training phase (TP), which now begins.

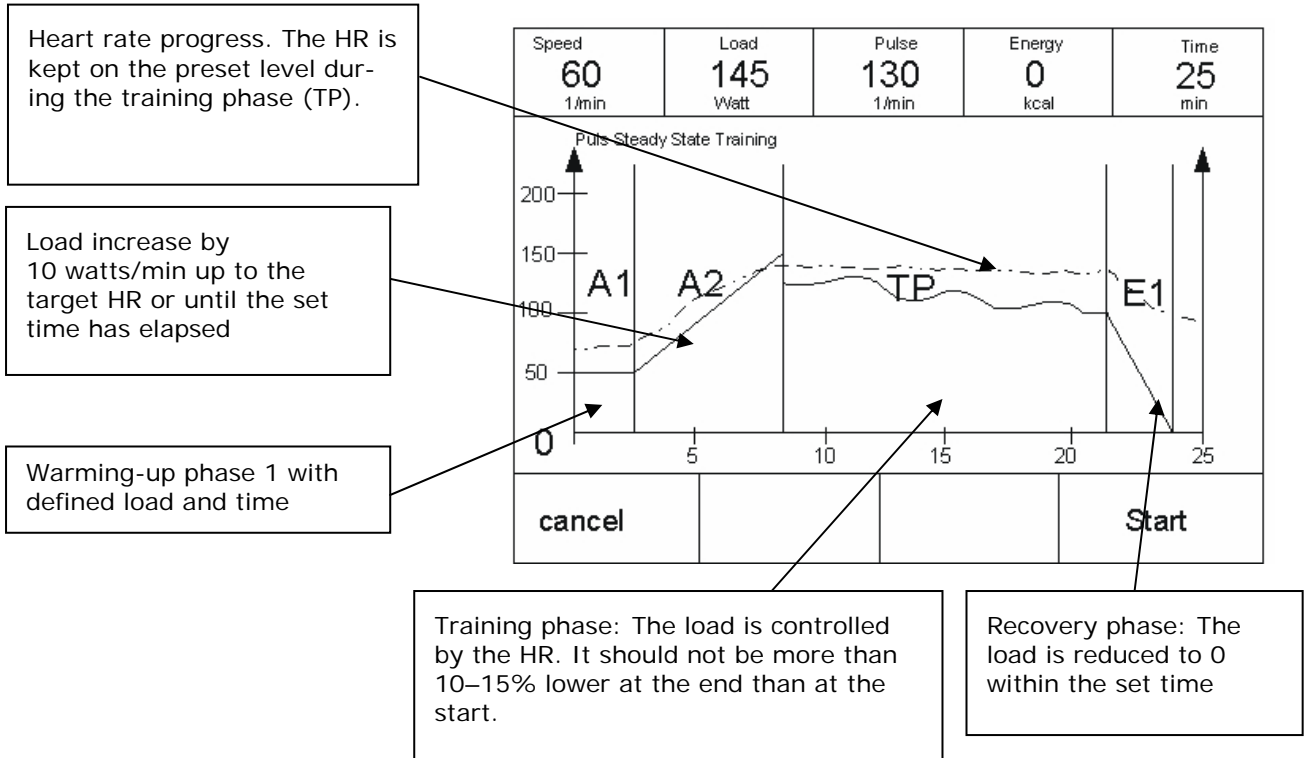
| Training-Program | | | |
|-------------------------------|--|--|--------|
| Initial load: 50 Watt | | | |
| Duration A1: 1min | | | |
| Increase of load: 10 Watt/min | | | |
| Duration A2: 5 min | | | |
| Training HR: 130 bpm | | | |
| Duration training: 10 min | | | |
| Duration recovery: 2 min | | | |
| Ask for Po: aus | | | |
| Ask for HR: ein | | | |
| Ask for weight: aus | | | |
| cancel | | | modify |

e.g.

ited
A2.

The *Target HR* is set by the next parameter. The setting *Duration of training* controls the duration of the training phase (TP). The setting *Cool down* controls the period of time in which the load is reduced to 0 watts after termination of the training phase. The following settings *Ask for Po – no/yes*, *Ask for HR – no/yes* and *Ask for weight – no/yes* can be viewed when a new training is started and edited. Editing these parameters can be required when different persons want to use the training program.

Starting the Training Program in the Menu **Start program** > **Training**.



Please note:

Warming-up Phase 2:

The training heart rate (target HR) should be reached during warming-up phase 2. However, A1 and A2 should together not exceed 5 to 8 minutes. This time is mainly determined by the *Po* value and the *increase in load*. From a physiological point of view, an *increase in load* by 10 watts per minute is recommended for a healthy person but it should not exceed 15 watts/minute even for well trained individuals. If the period of 5 to 8 minutes is not reached with the settings selected for the first training, the initial load (*Po*) should be adjusted.

Training phase:

The effective training is in the training phase. It is important that the body, heart and circulation are trained but no overload is exerted. The pulse-steady-state program is a very easy means to achieve this. If the performance decreases by more than 15% within 20 minutes from the start of the training, the load is too high. In this case, reduce the target HR until an acceptable value is reached. If the performance decrease is less than 10%, the target HR can be increased.

Adjustment:

During the warming-up phase A1, the *Po* load can be adjusted in 5-watt steps using the + and - arrow keys.

During the training phase (TP), the target heart rate (target HR) can be adjusted using the arrow keys.

7.5 Rehabilitation version

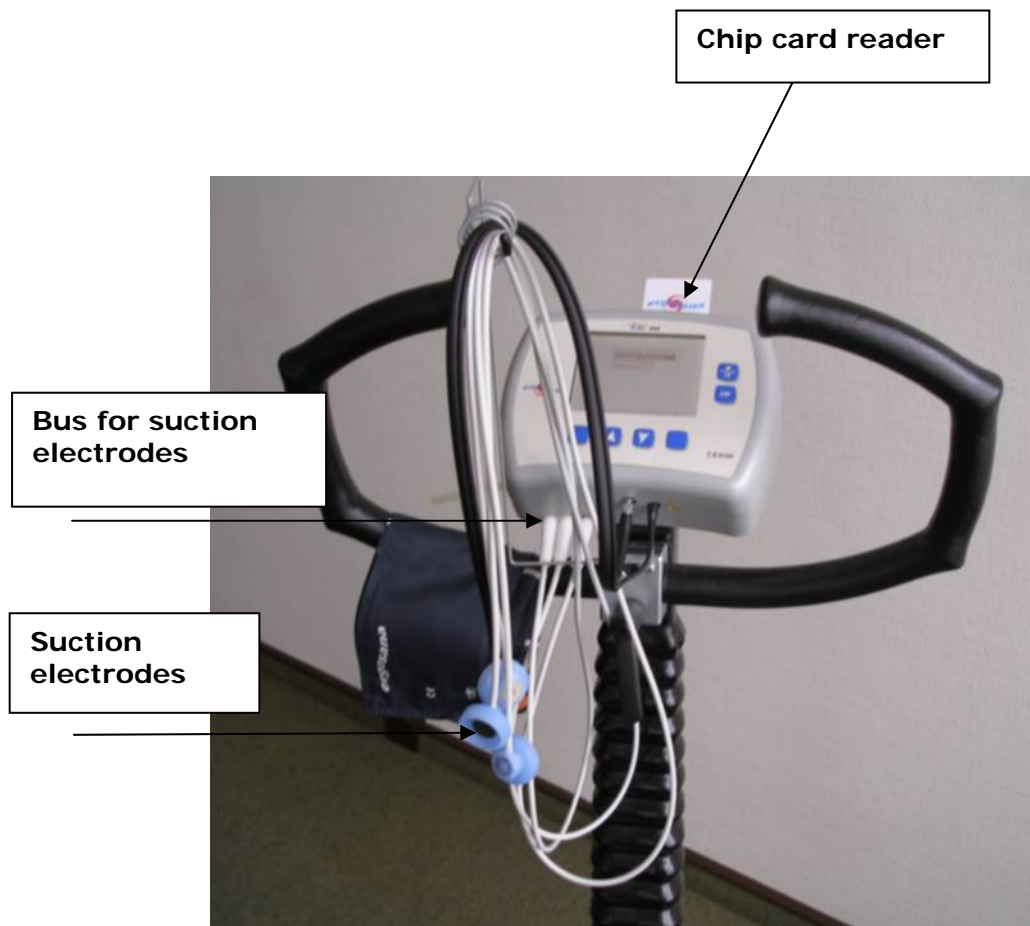
Ergometer systems Sana comfort 150 and 250 can be upgraded under the following type designation:

Sana comfort 150 (without blood pressure measurement device) or Sana comfort 250 (including blood pressure measurement device)

in order to be used in combination with a number of rehabilitation systems. To be able to implement this upgrade, the ergometer has the following additional functions or aggregates:

- a. ECG amplifier incl. USB converter
- b. Chip card reader, integrated in the control console
- c. Suction electrodes or patient cable for adhesive electrodes

7.5.1 Additional control elements



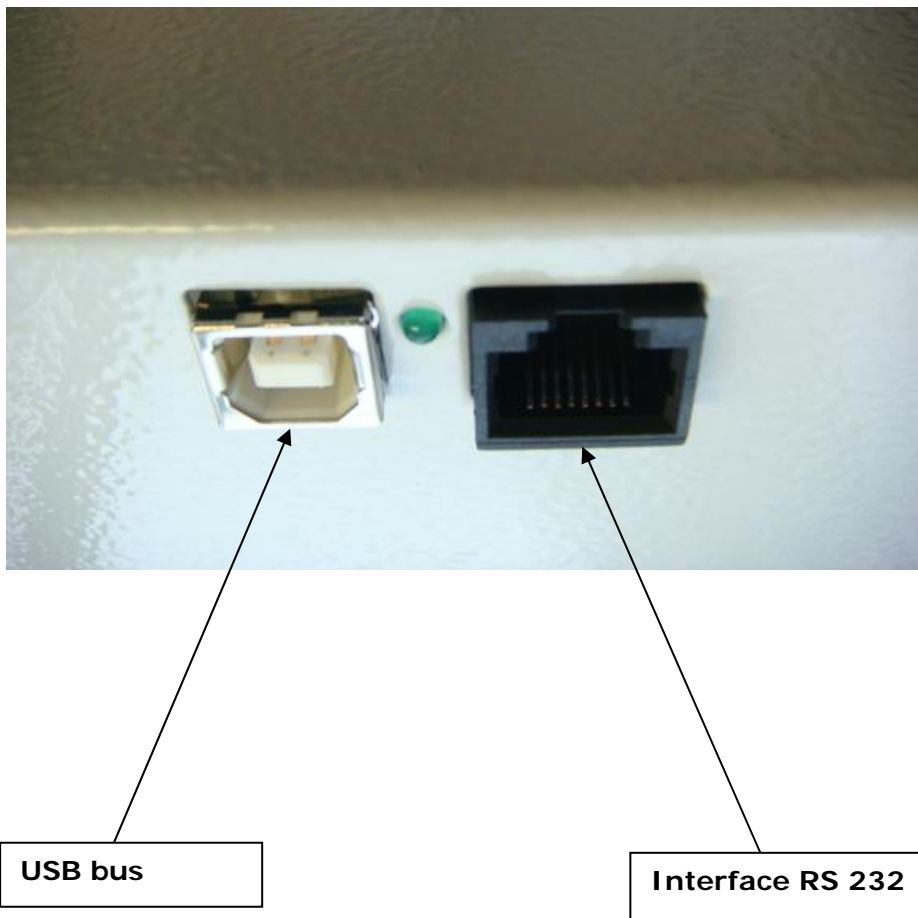
The use of the chip card and suction electrodes is described in the instruction manual for the rehabilitation program.

7.5.2 Options for the data transfer

In contrast to the standard version, the rehabilitation ergometer is equipped with a USB bus. If several ergometers are in use, the data transfer for the rehabilitation control program "Sana Sprint" (remote operation) is performed **via the USB bus only**.

Please note:

The RS 232 interface is used for service purposes.



The interfaces for the digital data transfer are located on the underside of the ergometer.

Attention:

Only one digital interface may be used at a time.

8 Maintenance and fault clearing

8.1 Checking the measuring technology

The unit's measuring technology should be checked every 24 months. The following checks should be performed in the process:

1. Check of the ergometer's overall mechanical condition
2. Display check (contrast, lighting, etc.)
3. Check of correct ergometer rotational speed display
4. Check of the measurement sensor for brake performance
5. Check of mechanical power loss of the ergometer's drive system
6. Electrical safety check
7. Check of the blood pressure recorder's pressure measuring unit
8. Check for tightness of the pneumatic system
9. Check of the safety symbols and markings on the casing
10. Writing of an inspection report

+ These checks and any recalibrating work necessary should only be performed by authorised and trained personnel with the special tools required for this purpose.

8.2 Cleaning the device

The surface of the casing can be cleaned with a soft cloth that is dry or moist. Commercially available cleaning agents for household appliances can be used. The saddle should be cleaned with a leatherette cleaner.

+ It is imperative to make sure that no water penetrates the device.

+ The keyboard foil should never be cleaned with petrol, nitro cleaner or acetone.

8.3 Cleaning the blood pressure cuff for 250

The blood pressure cuff consists of a waterproof plastic foil. It can be cleaned with soapy water and a cloth. The water temperature must not exceed 30 °C. The cuff should not be plunged into suds to clean, as the Velcro straps might mat. If it should nevertheless be required to wash the cuff in water, the microphone must first be removed and the air admission pipe must be closed.

8.4 Checking and setting the supply voltage

On delivery, the unit is set for the local supply voltage (110/115 ~ or 230/240 V ~). The current voltage setting is recorded on the mains module. The power unit covering lid on the bottom of the unit must be opened to convert the voltage. The voltage can then be changed on the power unit on-board with a special voltage selector switch.

+ Voltage conversion should only be performed by authorised and trained personnel.

8.5 Changing a mains fuse

The fuse switch is located in the centre of the mains module. The lid can be prised out of its lock-in position with the help of a small screwdriver. It can then be pulled out of the fuse well. Two fuses are located in the fuse switch. After a continuity check, change the fuses if necessary. Return the fuse switch to the well and press it into the lock-in position.

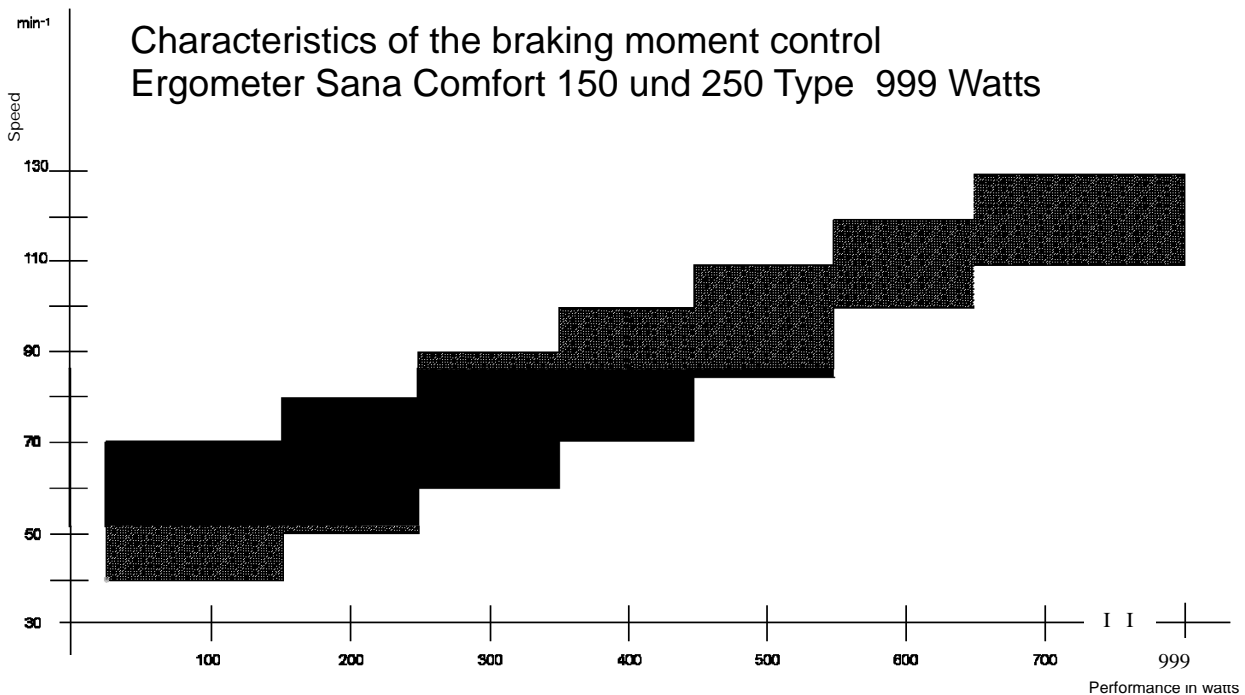
- + Replace fuses only with other fuses of the same type with the same specification: 2 x 1.25 AT for 230 V, or 2 x 2.5 AT for 110 V.

8.6 Disposal information

Devices that are no longer usable can be returned to ergosana for disposal. Alternatively, the device can be taken to an approved disposal location.

- + The control panel of the device contains a buffer battery, which must be disposed of separately.

9 Appendix



9.1 Technical Customer Service and Sales Locations

ergosana products are also sold as OEM products with other brand names. These devices are exclusively sold by authorised agents. The agents are trained in the service of our devices. Please contact one of these specialist dealers if your unit requires servicing.

If this is not possible please contact the company's central service department:

Service department
ergosana GmbH
Truchtefing Str. 17
D-72475 Bitz

Phone: +49 74 31 9 89 75 13

Fax: +49 74 31 9 89 75 15

<http://www.ergosana.de/>

