

optibike med 100

Exercise Ergometer

User Guide

201000274000 • Version 2016-03-15/Rev 02 • English



This manual was written with the utmost care. Should you still find details that do not correspond with the system, please let us know and we will correct the issue as soon as possible.

We reserve the right to modify the design and technical features of the device and are not bound by the information and illustrations provided in this manual.

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This manual is not subject to any change order service. Please contact the manufacturer for the latest document revision.

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CONTENTS

General Information	5
Safety Information	6
Intended Use	7
Symbols.	8
At a glance	9
optibike ergometer	9
Transport	10
Setup	11
Connecting the Power Cord.	11
Control Terminal - Overview	13
Training Modes	14
Configuring a Training Protocol.	15
Preparing a Training Session	19
Adjusting the Saddle Height	19
Adjusting the Handlebar	19
Applying the Chest Strap.	20
Performing a Training Session	21
Selecting the Training Mode	21
Training mode "Training"	21
Training screen	22
Ending the Training Session.	22
Training Mode "Manual"	23
Training screen "Manual"	23
"Manual" Training - Changing the Load	24
Ending the "Manual" Training.	24
Training with Chip Card.	25
Settings.	28
Configuring Training Programs	28
Load Adjustment	31
Cleaning, Maintenance, Disposal	35
Repairs	36
Replacing the Battery of the Chest Strap	36
Checks before each use.	37
Technical Safety Inspections, Inspections of the Measuring System	37
Disposal	37
Questions and Answers.	38
Technical Specifications	39
optibike Training Program (pulse controlled)	42
optibike Training Program (constant load).	43
optibike Training Program (interval training)	44
Electromagnetic Compatibility EN 60601-1-2.	45

GENERAL INFORMATION

- The product optibike bears the CE marking CE-0123 (Notified Body: TÜV), indicating its compliance with the provisions of the Council Directive 93/42/EEC about medical devices and fulfills the essential requirements of Annex I of this directive.
The ergometer is an MDD class IIa product.
- The device fulfills the requirements of standard EN 60601-1 "Medical Electrical Equipment, Part 1: General Requirements for Safety" as well as the interference protection requirements of standard EN 60601-1-2 "Electromagnetic Compatibility – Medical Electrical Devices".
The radio-interference emitted by this product is within the limits specified in EN 55011, class B.
- The symbol  means: protection class II
- This manual is an integral part of the equipment. It should be available to the equipment operator at all times. Close observance of the information given in the manual is a prerequisite for proper device performance and correct operation and ensures patient and operator safety. Please note that information pertinent to several chapters is given only once. Therefore, read the manual once carefully in its entirety.
- The symbols   mean:

Consult accompanying documents.
They indicate points which are of particular importance in the operation of the device.
- Observance of the safety information protects from injuries and prevents inappropriate use of the device. All equipment users and persons responsible for assembly, maintenance, inspection and repair of the device must read and understand the content of this manual, before using or work on it.
Paragraphs with special symbols are of particular importance.
- If unauthorized individuals open the control terminal, damaging the calibration sticker, any warranty claim shall become void.
- This manual reflects the equipment specifications and applicable safety standards valid at the time of printing. All rights are reserved for devices, circuits, techniques, software programs, and names appearing in this manual.
- On request ERGOLINE will provide a Service Manual.
- The ERGOLINE quality management system complies with the standards ISO 9001: 2008 and EN ISO 13485: 2003-AC2007.
- The safety information given in this manual is classified as follows:

Danger

indicates an imminent hazard. If not avoided, the hazard will result in death or serious injury.

Warning

indicates a hazard. If not avoided, the hazard may result in minor injury and/or product/property damage.

Caution

indicates a potential hazard. If not avoided, the hazard may result in minor injury and/or product/property damage.

- To ensure patient safety, the specified measuring accuracy, and interference-free operation, we recommend using only original ERGOLINE accessories. The user is responsible if non-ERGOLINE accessories are used.
- ERGOLINE is responsible for the safety, reliability, and performance of the equipment, only if
 - modifications and repair are carried out by ergoline GmbH or by an organization expressly authorized by ergoline GmbH
 - the equipment is used in accordance with the instructions given in this operator's manual.

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SAFETY INFORMATION

Danger

- Explosion Hazard •

The device is not designed for use in areas where an explosion hazard may occur.

Explosion hazards may result from the use of flammable anaesthetics, skin cleansing agents or disinfectants.

Warning

- Patient Hazard, Equipment Damage •

Do not expose the optibike to direct sunlight to prevent system components from reaching inadmissible high temperatures.

Do NOT use the optibike outdoors (medical device). Furthermore the device has no additional protection against the ingress of humidity. Humidity inside the device may cause equipment malfunctions and increases the risk of an electric shock.

Additionally, the device should not be operated in the vicinity of electric power plants, because they may impair equipment functions.

The optibike ergometer may only be used in combination with accessories approved by ergoline GmbH.

- Risk to Persons •

Before using the ergometer, the operator must ascertain that it is in correct working order and operating condition. The cables and connectors, in particular, must be checked for signs of damage. Damaged parts must be replaced immediately, before use.

- Equipment Malfunction •

Only the special shielded cables supplied by ERGOLINE may be used to connect the device to other pieces of equipment.

- Equipment Malfunction •

Cellular telephones may not be used in the immediate vicinity of the ergometer, because they might interfere with the proper functioning of the ergometer.

Electromagnetic interference most probably exists when the watt reading is unstable. If the displayed value changes frequently even though the speed is above 30 RPM, this may be due to electromagnetic interference.

Warning

- Shock Hazard •

When the ergometer is connected to other equipment or if a medical system is created, it must be ensured that the added leakage currents do not present a hazard.

In case of questions, please contact your ERGOLINE dealer or the ergoline GmbH Service Department.

For use, the ergometer must always be connected to electric installations that fulfill the local requirements.

- Patient Hazard •

The German Medical Device Operator Ordinance (MPBetreibV, § 5) demands that users

- *must be trained in the use of the ergometer*
- *must be familiar with the routines for handling and assembly of the ergometer*
- *must be familiar with and observe the safety rules and regulations for operation of this type of equipment*
- *must be informed about any other pertinent rules and regulations (e.g. safety features)*
- *must be informed about the potential hazards arising from the use of this type of equipment.*
- *make sure that no unauthorised changes are carried out.*

Hint

Removing the power cord results in complete disconnection from mains (all poles).

Caution

Additional equipment connected to medical electrical equipment must comply with the respective IEC or ISO standards (e.g. IEC 60950 for data processing equipment). Furthermore all configurations shall comply with the requirements for medical electrical systems (see IEC 60601-1-1 or clause 16 of the 3Ed. of IEC 60601-1, respectively).

Anybody connecting additional equipment to medical electrical equipment config ures a medical system and is therefore responsible that the system complies with the requirements for medical electrical systems. Attention is drawn to the fact that local laws take priority over the above mentioned requirements. If in doubt, consult your local representative or the technical service department.

- *IEC 60601-1+A1 +A2:1995: 6.8.2.c, 19.2.b, 19.2.c,*
- *IEC 60601-1:2005: 7.9.2.5, 8.1, 16.2.d,*
- *MDD 93/42/EEC: Annex I clause 13.6.c*

INTENDED USE

The optibike is a computer-controlled medical ergometer. At pedal speeds between 30 and 130 RPM and loads between 6 and 400 watt, the ergometer operates independent of the pedal speed.

The speed-independent range is shown in the Appendix (Technical Specifications).

The optibike ergometer may only be used in rehabilitation of cardiac and cardiovascular patients according to the instructions given in this manual. If the ergometer is used for other purposes, the manufacturer cannot be held liable for personal injuries or property damage resulting from the unintended use of the equipment.

BIOCOMPATIBILITY

The parts of the product described in this manual, including all accessories that come in contact with the patient during the intended use, fulfill the biocompatibility requirements of the applicable standards if applied as intended.

If you have questions in this matter, please contact ERGOLINE or a representative.

APPLICABLE LAWS, REGULATIONS AND DIRECTIVES

- 93/42/EEC (*Medical Device Directive of the EU*)
- 89/336/EEC (*Electromagnetic Compatibility Directive of the EU*)

Note - Applied Parts

- *Applied parts are components that are directly in contact with the human body (e.g., blood pressure measuring devices).*

Note - Stability

- *Ensure the stability of the ergometer. If the maximum permitted patient weight is exceeded by 10%, the stability of the ergometer can no longer be guaranteed. It may become unstable as a result.*

SYMBOLS

	<p>Symbol 'type B applied part'. Type B applied parts have no direct contact with patients and offer the lowest protection against electric shock.</p>		<p>Manufacturer's identification.</p>
	<p>Symbol 'type BF applied part'. Type BF applied parts are connected to the body of the patient and provide a higher degree of protection against electric shock. The applied parts are isolated.</p>		<p>Date of manufacture. The number found under this symbol is the date of manufacture in the YYYY-MM-DD format.</p>
	<p>Caution, consult accompanying documents.</p>		<p>PVC-free.</p>
	<p>Protection class II equipment.</p>		<p>Latex-free.</p>
	<p>This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Consult operating instructions.</p>		<p>Suitable for indicated arm circumference.</p>
	<p>Catalog number.</p>		<p>Small size.</p>
	<p>Serial number.</p>		<p>Standard size.</p>
	<p>Scheduled date of the next inspection (e.g., March 2017).</p>		<p>Large size.</p>
	<p>On/Off switch for pressure actuation</p>		<p>Transport and storage label: top.</p>
	<p>CE mark per the Medical Device Directive 93/42/EEC of the European Union. Notified body: TÜV SÜD Product Service GmbH, Ridlerstr. 65, 80339 München, Germany.</p>		<p>Transport and storage label: keep dry.</p>
	<p>Nationally Recognized Testing Laboratory NRTL label for the USA and Canada.</p>		<p>Transport and storage label: fragile.</p>
	<p>Do not lean against the ergometer: there is a risk of the ergometer tipping over.</p>		<p>Transport and storage label: approved temperature range.</p>
			<p>Transport and storage label: approved humidity, non-condensing.</p>
			<p>Transport and storage label: approved pressure range.</p>
			<p>Transport and storage label: do not stack.</p>

AT A GLANCE

OPTIBIKE ERGOMETER



OPTIBIKE ERGOMETER

- 1 Control unit
- 2 Handlebar (rotates 360°)
- 3 Adjustment of the handlebar angle
- 4 Clamping lever for saddle height adjustment
- 5 Power switch (green button)
- 6 Castors
- 7 Adjustable feet to compensate for uneven floor conditions
- 8 Chest strap for pulse measurement

TRANSPORT

For short distances, the optibike can be lifted at the saddle and rolled away on its castors.

To cover greater distances, however, we recommend the following method:

- Disconnect the power cord from the wall outlet.
- Rotate the handlebar towards the front. Tighten the clamping lever.



HANDLEBAR POSITION FOR TRANSPORT

- Stand in front of the optibike, grasp the handlebar and tilt the optibike towards you until it is standing on the castors only and is balanced.
- It is now possible to transport the optibike.
- When you have reached the new location, lower the optibike very carefully to avoid damage.



TRANSPORTING THE OPTIBIKE

Caution

- Equipment Damage •

Avoid strong vibrations of the optibike during transport.

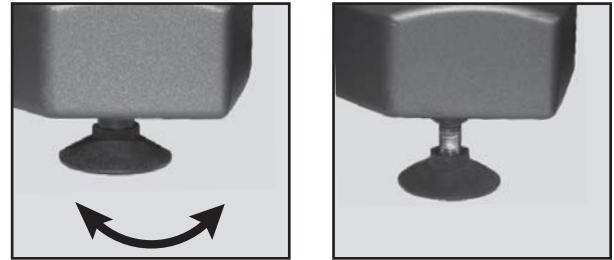
SETUP

Place the optibike on a horizontal level floor.

The optibike must be set up in a secure and stable position - the two levelling feet at the back make for easy adjustment to uneven floor surfaces. Extend the foot concerned until the optibike no longer wobbles.

In case of delicate flooring, it is recommended to place a mat under the ergometer to protect the flooring from damage by the feet.

The ergometer can be transported by means of the 2 front castors.



LEVELLING FEET OF THE OPTIBIKE ERGOMETER

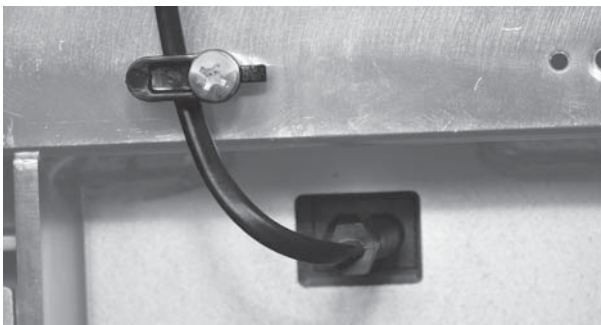
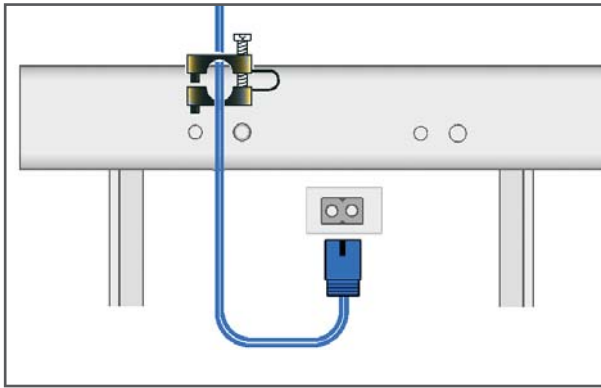
CONNECTING THE POWER CORD

Set the handlebar to the front upper position and secure. Tilt the *optibike* carefully towards you until it rests on the handlebar.



ASSEMBLY POSITION OF THE OPTIBIKE ERGOMETER

- Plug in the power cord on the underside of the optibike.
- Guide the power cord under the strain relief and screw the strain relief to the frame: the plastic pin must lock into place in the boring provided.



POWER CORD WITH INSTALLED STRAIN RELIEF

- Put the optibike back on its feet and set the handlebar to the correct position.
- Connect the power cord to a wall outlet.

Caution

- Equipment Damage •

Before connecting the ergometer to the power line, check that the line voltage corresponds to the ratings on the type plate. The type plate is located on the back of the ergometer, at the bottom.

Caution

- Disconnection from Power Supply •

Pressing the power switch or removing the power cord disconnects the device from the power supply.

Removing the power cord results in a complete disconnection from the power supply (all poles).

Ensure that the power plug is readily accessible at all times.

CONTROL TERMINA – OVERVIEW

The optibike ergometer is operated via the 7 keys of the membrane keypad. The functions of the keys varies with the operating mode:



The arrow keys are used to select an item in the displayed list.



During a training session (manual mode or constant load), the current load can be changed by 5 watts.



The START key is used to select the item highlighted with the arrow keys.

The key is also used to start the training session.



The STOP key is used to terminate a training session.

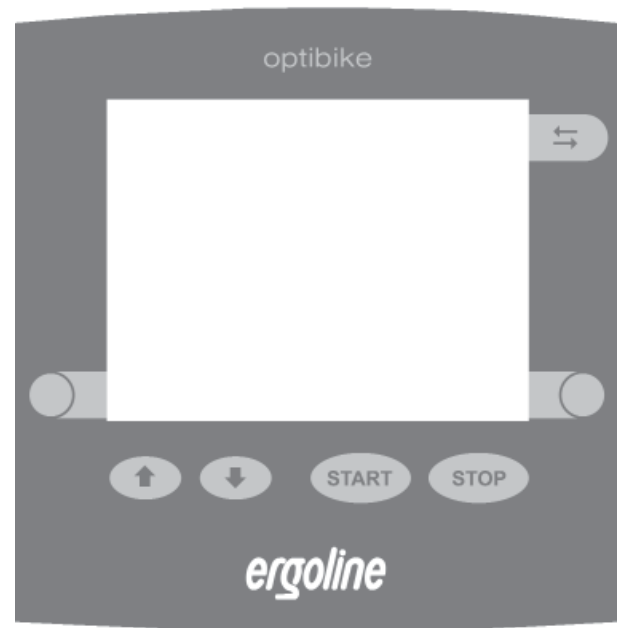


The current function of these keys is indicated on the display as it depends on the operating mode.



After switching on the optibike, this key is used to access the "Settings".

During a training session, this key is used to switch between the displayed values (e.g., km/h).



OPTIBIKE CONTROL TERMINAL

TRAINING MODES

INTRODUCTION

The optibike ergometer supports a number of different training types.

Up to 10 different protocols can be configured and saved in the ergometer.

For a training session, you can call up one of the protocols and start exercising.

Each protocol begins with a warmup phase. You can configure the duration of the warmup phase and the load (e.g., 3 minutes at 25 watts).

The next step is the exercise phase (see below) which is followed by the "recovery phase". For both phases, the duration and the load can be configured.

A distinction is made between the different training modes for the actual exercise phase:

Pulse-controlled training (mode: Pulse)

For this training mode, it is necessary to wear the supplied chest strap.

The strap measures the pulse rate and sends it to the optibike.

At the ergometer, you set your training pulse (please ask your doctor, coach, or therapist) and the duration of the exercise phase.

During the training session, the optibike permanently checks your current pulse rate and compares it with the set training pulse. If your pulse rate is below this value, the load will be increased; if your pulse is too high, the ergometer will automatically reduce the load.

Training at a constant load (mode: Constant)

In this mode, you will exercise for a defined period of time and with a fixed load.

The optibike maintains the watt reading at the set value - your pulse rate will be displayed, but the load will **NOT** be adapted to this value.

Caution Health Hazard

Before starting to exercise with the ergometer, please consult with your doctor whether you are fit for an ergometer training with optibike.

Discuss the training protocol best suitable for you with your doctor and ask for advice concerning your training pulse and maximum load (watts).

At the end of this manual, you will find form sheets where you can note down the recommended training settings. Take this sheet with you, when you go to your doctor's office.

If you feel dizzy or sick during the training, stop exercising immediately!

Inappropriate or excessive training may be dangerous for your health!

Note Health Hazard

- *No training protocols are configured in a new optibike. Select the MANUAL mode when testing the ergometer for the first time.*
- *The training protocols can be configured under "Settings" (see description on the following pages).*

Interval training (mode: Interval)

For this mode, you can configure two intervals with different durations and loads. The ergometer will then alternate between these two settings (e.g., 1 minute at 80 watts, followed by 2 minutes at 30 watts, alternating for a total of 20 minutes).

CONFIGURING A TRAINING PROTOCOL

The optibike ergometer can store a maximum of 10 different training protocols.

Upon delivery of a new optibike ergometer, no training protocols are configured.

Discuss your personal training data with your doctor, coach, or physiotherapist.

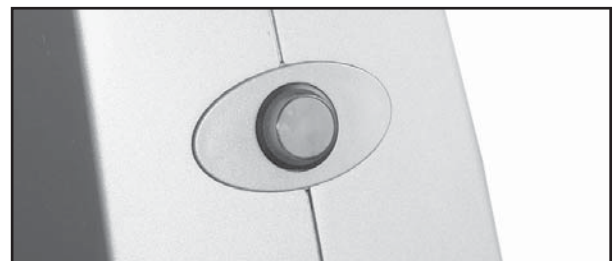
At the end of this manual, you will find form sheets where you can enter the training settings recommended for your sessions.

Follow these steps to configure your training protocol:

Switch on the ergometer.

The ON/OFF switch is situated on the rear of the unit.

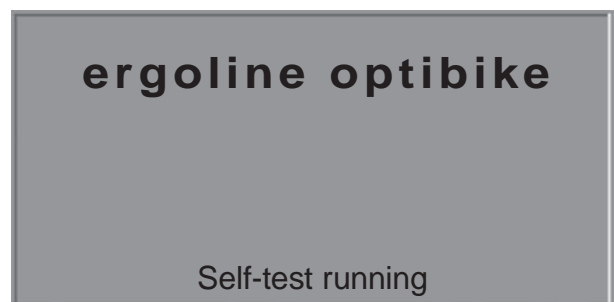
When switched on, the switch turns GREEN.



ON / OFF SWITCH

The optibike will then run an automatic self-test.

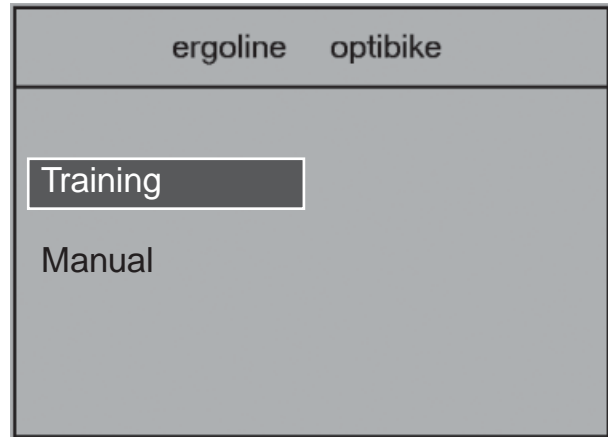
Do not pedal during the self-test!



SELF-TEST SCREEN

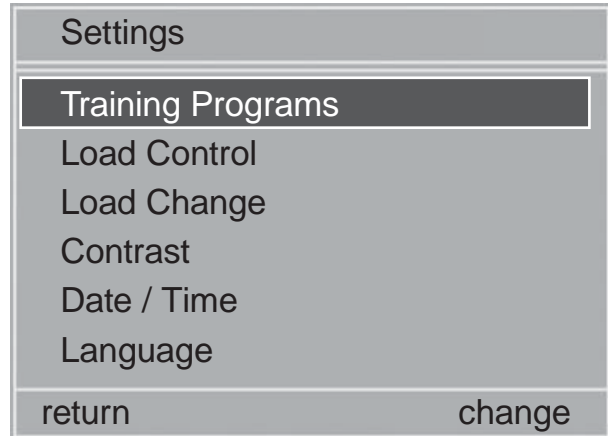
After a while, the startup screen will be displayed.

Now press the key (top right) to access the Settings menu.



STARTUP SCREEN

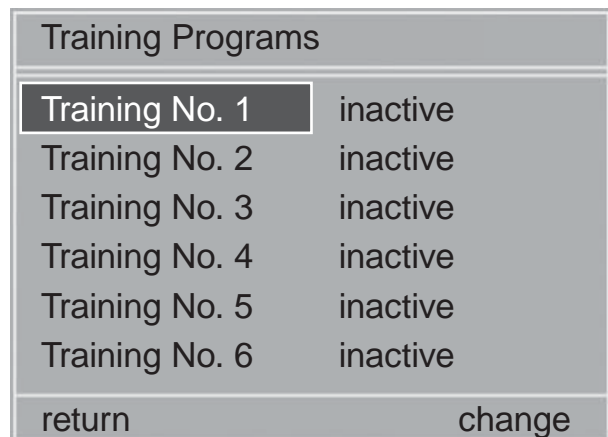
The menu item "Training Programs" is highlighted by default. Confirm the selection with the key next to [change].



SETTINGS MENU

A list comprising all available training programs will now be displayed - upon delivery of a new optibike ergometer, all 10 programs are "inactive", which means they have not been configured.

To activate and configure program no. 1, press the key next to [change].



SELECTING A TRAINING PROGRAM



Now you can use the arrow keys to select the training mode (pulse, constant or interval).

Confirm your selection with the key next to [store]:



Training: No. 1.	
Training mode:	inactive
return	store

DEFINING THE TRAINING MODE

The protocol parameters of the selected training mode ("Pulse" in this example) will be displayed and you can adapt them to your personal training values. Upon delivery, all values are set to 0.

Training: No. 1	
Training mode:	Pulse
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	change

EDITING THE PARAMETERS FOR THE PULSE MODE

The operating steps to change the values are always the same:

- To begin with, use the arrow keys to select the value to edit (e.g., "Duration").



Training: No. 1	
Training mode:	Pulse
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	change

EDITING THE "DURATION"

- Press the button next to [change]: the corresponding numeric value can now be changed.



Training: No. 1.	
Training mode: Pulse	
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	store

DURATION OF WARMUP PHASE CAN BE MODIFIED

- Use the arrow keys to set the correct value.



Training: No. 1.	
Training mode: Pulse	
Warmup:	
Duration	2 min
Load	0 Watt
Training:	
Duration	0 min
return	store

ENTERING DURATION OF WARMUP PHASE

- Then press the button next to [store] to return to the parameter selection mode.

- Choose the next parameter to edit with the arrow keys.

Training: No. 1	
Training mode: Pulse	
Warmup:	
Duration	2 min
Load	0 Watt
Training:	
Duration	0 min
return	change

NEW DURATION OF WARMUP PHASE HAS BEEN SAVED

Follow the same procedure to enter and save all parameter values.

Having configured and saved one or more training programs with your personal values, press the button to the left of [return] to return to the main screen.

PREPARING A TRAINING SESSION

ADJUSTING THE SADDLE HEIGHT

The saddle height of the optibike ergometer is set manually with a clamping lever, which permits continuous adjustment.

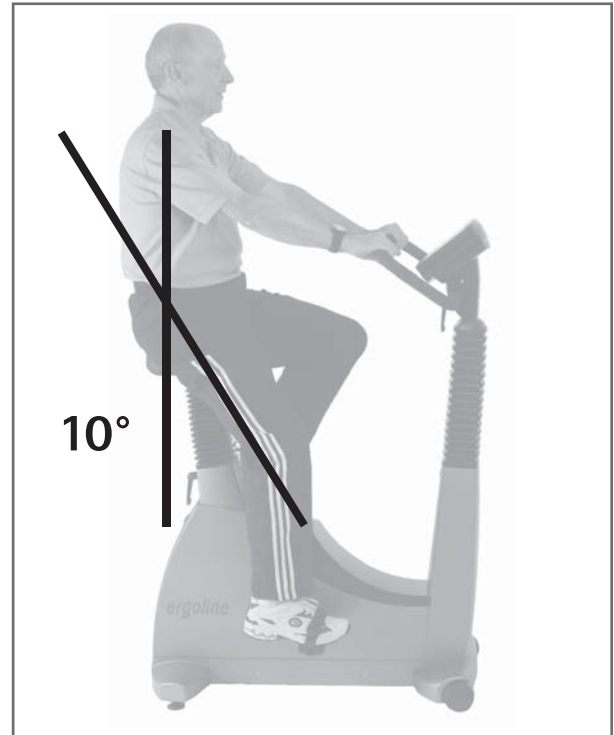
With the pedal in the bottom position, the angle between the axis formed by the upper body and the thigh should be approximately 10°.

ADJUSTING THE HANDLEBAR

Set the handlebar to a position where it is comfortable to reach when you sit upright.

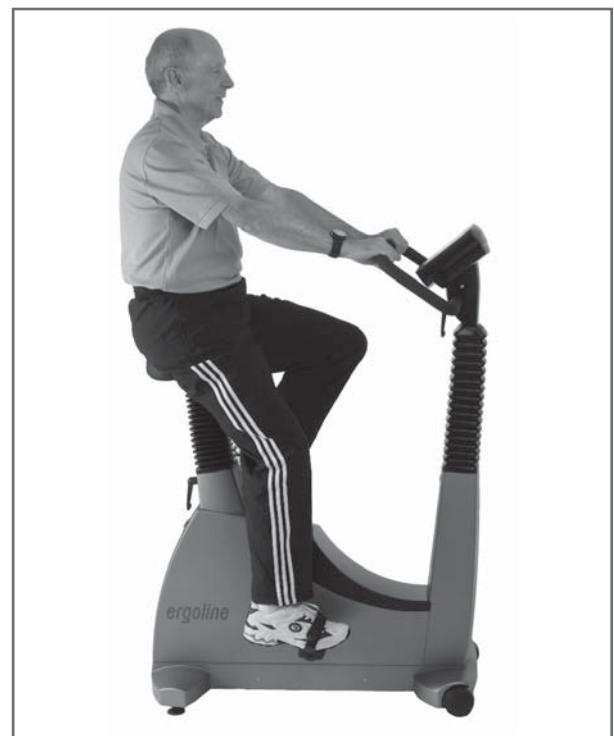
To do so, open clamping lever and set the handlebar to a suitable angle.

Then tighten the clamping lever.



Note

- Tighten the clamping levers only as much as necessary, NOT with maximum force.
- Lubricate the clamping lever threads occasionally using a suitable lubricant (e.g. OKS470).



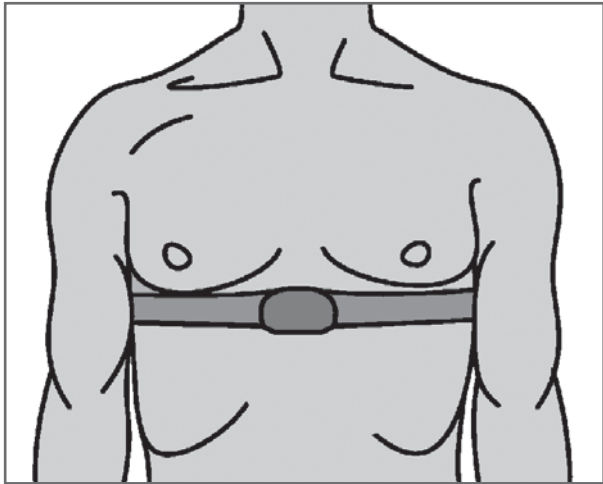
CORRECT SITTING POSITION

APPLYING THE CHEST STRAP

For optimal cardiovascular training, the heart rate must be monitored during the session.

For this reason, the optibike ergometer is supplied with a digital chest strap, which measures your pulse rate and continually sends it to the optibike.

- Attach the elastic strap to one end of the transmitter.
- Adjust the length of the strap so that it fits snugly around your chest, but is not too tight. Attach the strap to your chest (for men: directly below the pectorals, for women: below the breasts) and close the strap.
- Having applied the strap, lift the transmitter a little off your skin and moisten the two contact areas (ribbed) on the back of the transmitter and the skin below. The moistened electrodes should have full contact with the skin (with the transmitter logo on the outside).



CORRECT APPLICATION OF THE CHEST STRAP



ATTACHING THE ELASTIC STRAP TO THE TRANSMITTER

Note

If the chest strap is properly applied but the heart rate is not shown on the ergometer, check the battery and make sure the serial number of the strap has been correctly entered (see the "Maintenance" chapter in this manual).

Note

The optibike ergometer is only compatible with the supplied ergoline digital radio chest belt!

Other commercially available chest belts for heart rate monitoring (e.g., POLAR®) are NOT supported.

PERFORMING A TRAINING SESSION

SELECTING THE TRAINING MODE

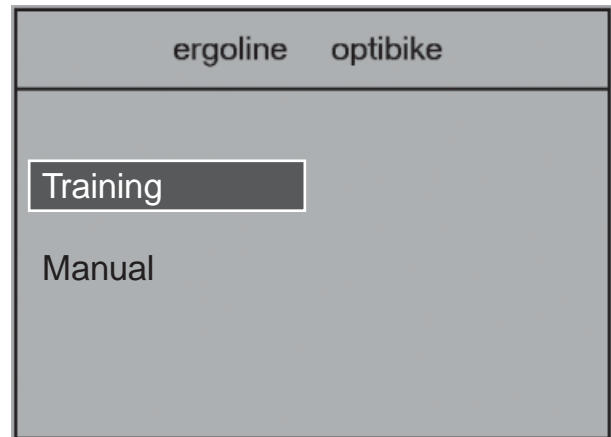
Training

The optibike controls the entire training session, including warmup, exercise and recovery phase.

You can configure and save up to 10 different protocols.

Manual

In manual mode, you select the load directly with the arrow keys.



STARTUP SCREEN

Using the arrow keys, choose the training mode, then confirm the selection with

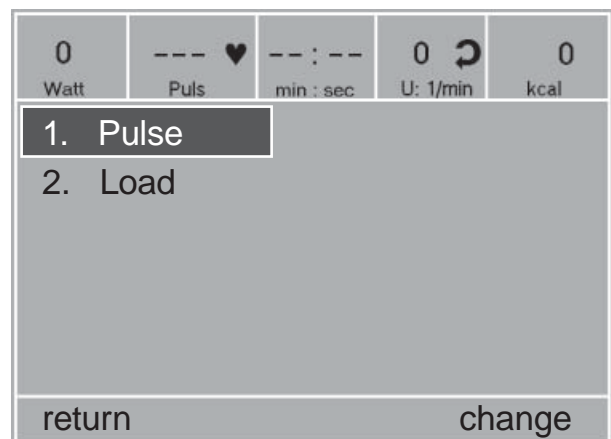


TRAINING MODE "TRAINING"

All training protocols stored in the optibike are shown in a list.

If you will wear the chest strap during the exercise, check that the pulse rate is indicated on the display.

Select the training protocol with the arrow keys.



SELECTING THE STORED TRAINING PROTOCOL

After depression of the [Start] key, this protocol will be loaded and the training screen will be displayed.

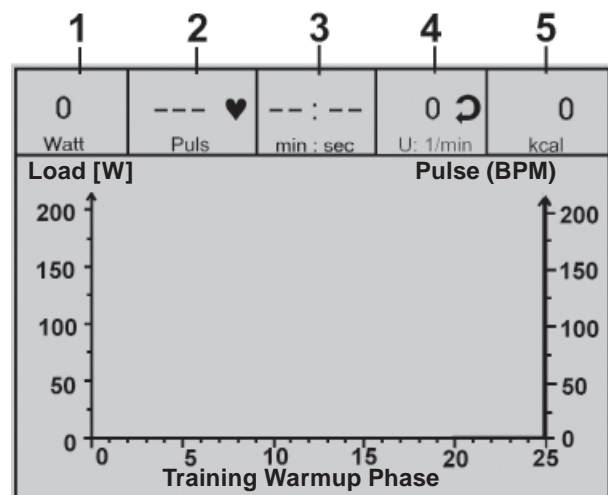
TRAINING SCREEN

During the training session, the most relevant values will be shown on the display in numeric form (see illustration on the right).

Additionally, the load and heart rate (from the chest strap) are represented in graphic form.

The heart rate curve is shown with a bolder trace to allow the two curves to be differentiated.

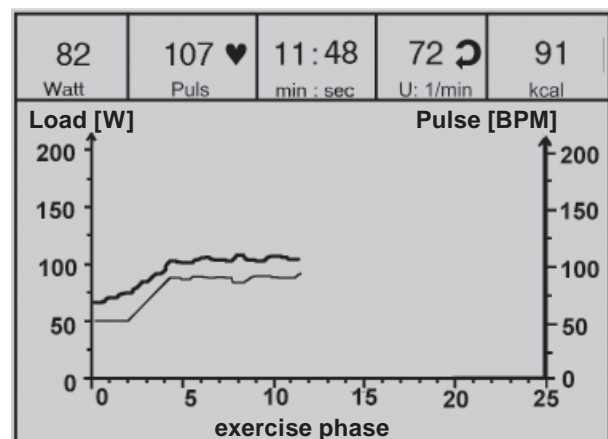
The load axis is the axis on the left, the heart rate axis, the axis on the right.



TRAINING SCREEN

- 1 current load in Watts
- 2 heart rate (beats per minute)
- 3 duration of training session (minutes:seconds)
- 4 pedal speed (RPM)
- 5 consumed energy (kcal or kJ) or distance covered (km)

The displayed values and curves are continually updated. Additionally, the current training phase is indicated at the bottom of the display (warmup - training - recovery).



GRAPHIC REPRESENTATION OF THE TRAINING SESSION

ENDING THE TRAINING SESSION

When the set exercise phase is over, the optibike automatically advances to the recovery phase, i.e., the load is reduced to a value defined as the recovery load in the training protocol.

At the end of the recovery phase, the training session is over.

If you press the [Stop] key, you return to the main screen.

Note

If, during the training, the speed drops below 30 RPM, the watt readout on the display starts flashing.

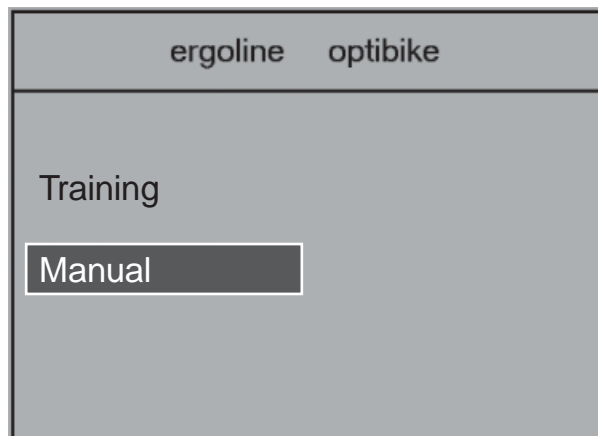
Note

You can advance to the recovery phase at any time by pressing the STOP key.

To end the training session, press the STOP key once more.

TRAINING MODE "MANUAL"

Using the arrow keys, select manual mode and confirm the selection with



SELECTING THE "MANUAL" TRAINING MODE

The training screen will be displayed

If you will wear the chest strap during the exercise, check that the pulse rate is indicated on the display.

Note

In the "Manual" training mode, your pulse rate is only displayed, the optibike will not adjust the load!!

If your pulse rate becomes too high, you will have to select a more moderate load yourself (arrow down key) or stop the training.

TRAINING SCREEN "MANUAL"

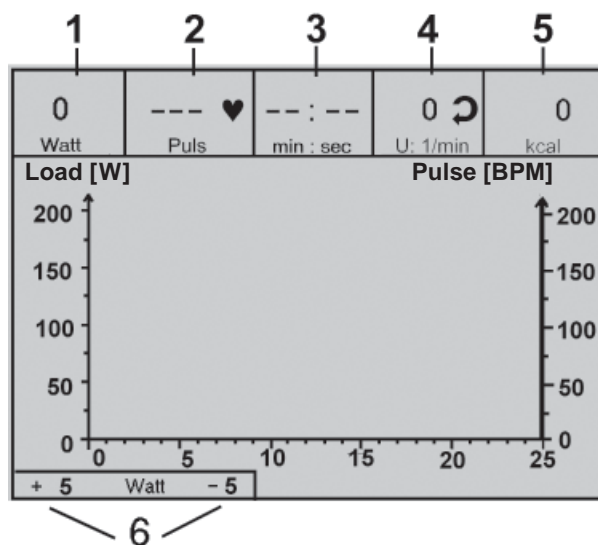
During the training session, the most relevant values will be shown on the display in numeric form (see illustration on the right).

Additionally, the load and heart rate (from the chest strap) are represented in graphic form.

The heart rate curve is shown with a bolder trace to allow the two curves to be differentiated.

The load axis is the axis on the left, the heart rate axis, the axis on the right.

The displayed values and curves are continually updated.



TRAINING SCREEN

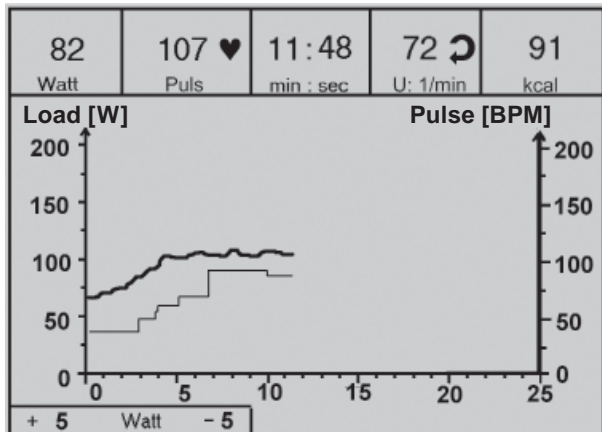
- 1 current load in Watts
- 2 heart rate (beats per minute)
- 3 duration of training session (minutes:seconds)
- 4 pedal speed (RPM)
- 5 consumed energy (kcal or kJ)
or distance covered (km)
- 6 load change (watts)
with arrow keys

"MANUAL" TRAINING – CHANGING THE LOAD

With the arrow keys, you can increase or decrease the load in steps of 5 watts.



The current value will always be displayed at the top left.



GRAPHIC REPRESENTATION OF THE TRAINING SESSION

Note

If, during the training, the speed drops below 30 RPM, the watt readout on the display starts flashing.

ENDING THE "MANUAL" TRAINING

If your exercise phase is over, you should proceed to the recovery phase, continuing to pedal at a considerably reduced load.

To end the training session, press the [Stop] key.

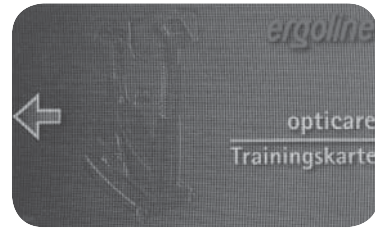
If you press [Stop] again, you return to the main screen.

TRAINING WITH CHIP CARD

As an alternative to the training programs stored in the optibike, it is possible to load training protocols from the chip card.

A PC software program called "ergoline opticare basic" is used to write training programs to the chip card.

Upon completion of the training session, the optibike saves the entire procedure (incl. load and heart rate waveforms) to the chip card - the data can be reviewed and analyzed at the PC later on.



ERGOLINE TRAINING CHIP CARD

STARTING THE CHIP CARD TRAINING SESSION

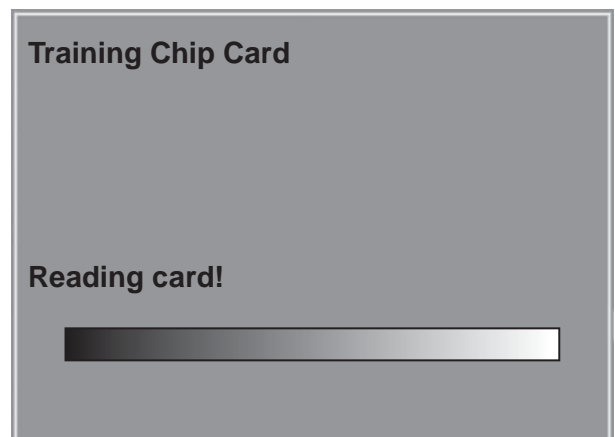
Insert the training card with the stored protocol into the chip card reader (on the right side of the control terminal) - the golden **chip** on the training card must point **downward**.



CHIP CARD READER IN THE OPTIBIKE

Select the "Training" mode and confirm with [START].

The optibike switches to the chip card mode and reads the data stored on the card.



READING THE CHIP CARD DATA

Your name and the weight stored on the card are displayed first.

You can use the two arrow keys to enter the current weight.

The screenshot shows a grey rectangular display with a black border. At the top, the words "ergoline" and "optibike" are displayed in a sans-serif font. Below this, the text "Name" is on the left and "John Doe" is on the right. Underneath "John Doe", the number "82" is enclosed in a white rectangular box, followed by the unit "kg". At the bottom left, there is a small control panel with a "+" sign, the unit "kg", and a "-" sign. At the bottom right, the word "Next" is displayed in a bold, sans-serif font.

ENTERING THE WEIGHT

Select "Next": the training protocols stored on the card will be displayed.

Select one of the protocols and confirm with [START].

Note

It is NOT possible to edit the training protocols stored on the chip card - the data is available for viewing only.

The chip card training session proceeds in the same way as the exercise tests stored in the ergometer.

TERMINATING THE TRAINING SESSION

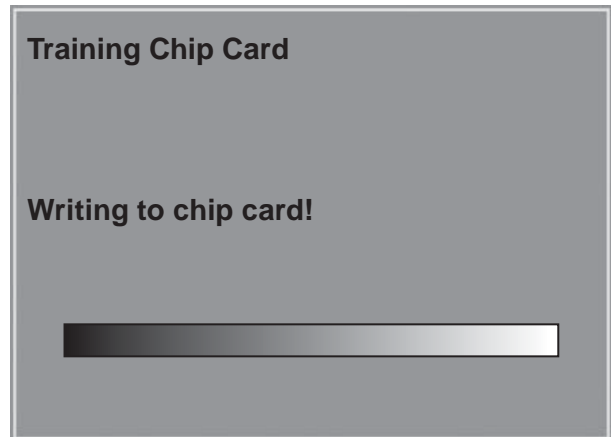
After termination of the training session (automatic termination when the programmed recovery phase has been completed, or manual termination with the [STOP] key), you can state how you perceived the test. With the arrow keys, you can select ratings from "very very easy" to "very very heavy".

Confirm your entry by pressing the key to the right of [Next].

The screenshot shows a grey rectangular display with a black border. At the top, the words "ergoline" and "optibike" are displayed in a sans-serif font. Below this, the text "Name" is on the left and "John Doe" is on the right. Underneath "John Doe", the text "Stress" is on the left and the word "heavy" is enclosed in a white rectangular box. At the bottom left, there is a small control panel with a "+" sign and a "-" sign. At the bottom right, the word "Next" is displayed in a bold, sans-serif font.

ENTERING THE PERCEIVED EXERTION

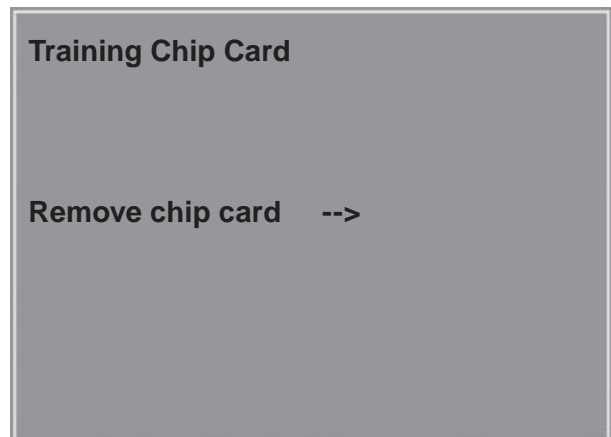
Subsequently the data of your training session are written to the chip card after which they are available for analysis with a special program (e.g., opticare basic).



WRITING TO THE CHIP CARD

When the data has been written to the card, you will be prompted to remove the chip card.

Remove the chip card from the optibike control unit.



REMOVING THE CHIP CARD

After removing the card, you are automatically back in the main menu.

SETTINGS

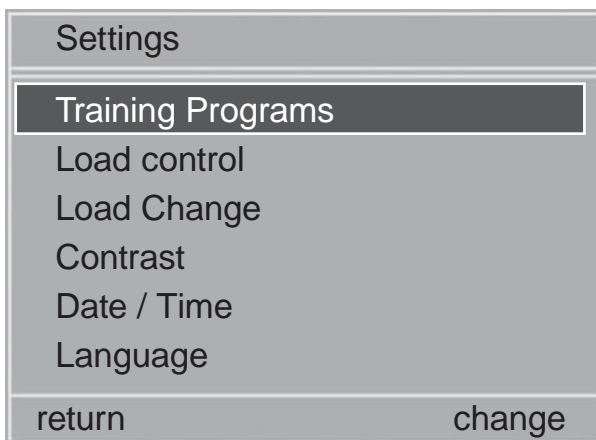
Some of the device settings are configurable to meet specific requirements. The settings will be saved and remain stored even when the optibike is switched off.

To reach the settings, access the main menu and press the button at the top right:



The menu with all possible settings will be displayed.

Using the arrow keys, select the appropriate menu item and confirm your selection with the button to the right of [change]

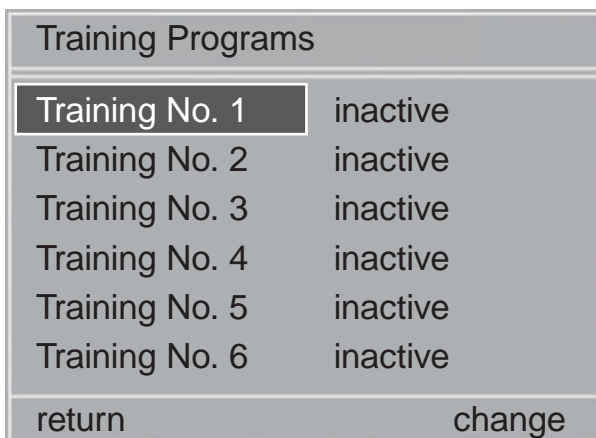


SETTINGS MENU

CONFIGURING TRAINING PROGRAMS

A list comprising all training programs stored in the device will now be displayed - upon delivery of a new optibike ergometer, all 10 programs are "inactive", which means they have not been configured.

To activate and configure a program, select one of the protocols with the arrow keys and press the button to the right of [change].



SELECTING A TRAINING PROGRAM



Now you can use the arrow keys to select the training mode (pulse, constant or interval).

Confirm your selection with the key to the right of [store]:



Training: No. 1.	
Training mode:	inactive
return	store

DEFINING THE TRAINING MODE

The protocol parameters of the selected training mode ("Pulse" in this example) will be displayed and you can adapt them to your personal training values. Upon delivery, all values are set to 0.

Training: No. 1	
Training mode:	Pulse
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	change

EDITING THE PARAMETERS FOR THE PULSE MODE

The operating steps to change the values are always the same:

- To begin with, use the arrow keys to select the value to edit (e.g., "Duration").



Training: No. 1	
Training mode:	Pulse
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	change

EDITING THE "DURATION"

- Press the key next to [change]: the corresponding numeric value can now be changed.



Training: No. 1	
Training mode: Pulse	
Warmup:	
Duration	0 min
Load	0 Watt
Training:	
Duration	0 min
return	store

DURATION OF WARMUP PHASE CAN BE MODIFIED

- Use the arrow keys to set the correct value.



Training: No. 1	
Training mode: Pulse	
Warmup:	
Duration	2 min
Load	0 Watt
Training:	
Duration	0 min
return	store

ENTERING DURATION OF WARMUP PHASE

- Then press the key next to [store] to return to the parameter selection mode.

- Choose the next parameter to edit with the arrow keys.

Training: No. 1	
Training mode: Pulse	
Warmup:	
Duration	2 min
Load	0 Watt
Training:	
Duration	0 min
return	change

NEW DURATION OF WARMUP PHASE HAS BEEN SAVED

Follow the same procedure to enter and save all parameter values.

Having configured and saved one or more training programs with your personal values, press the key to the left of [return] to return to the Settings menu.

LOAD ADJUSTMENT

LOAD CONTROL

This setting is only used for the "Pulse" training protocols, i.e., for heart-rate controlled protocols.

Here you determine the rate at which the load is adapted in response to a change of your pulse rate.

gradual:

The load changes very slowly.

Choose this setting if your heart rate rises very quickly in response to a load increase.

normal (default):

The load changes at a moderate rate.

steep:

The load changes very quickly.

Choose this setting if your heart rate rises very slowly in response to a load increase.

DURATION: LOAD +

With this setting you determine the interval after which the exercise time determined in the training protocol will start (default: 3 minutes)

Upon completion of the warmup phase, the exercise phase will begin, either

- after the set training pulse has been reached
or
- after the maximum load has been reached
or
- after the set period for "Duration: load +" has elapsed.

DURATION: LOAD -

With this setting you determine the interval after which the ergometer will change to the recovery load after the last stage of the exercise phase has been completed (default: 3 minutes)

Load Control	
Load Control:	normal
Duration: load +	3 min
Duration: load -	3 min
return	change

LOAD CONTROL SETTINGS

LOAD CHANGE

The load increments for each key press (manual control) can be selected from +/- 1, 5, 10 and 25 watts.

Use the arrow keys to select the increment and confirm your selection with the key to the right of [store].

With the key to the left of [return] you return to the Settings menu.

Load Change

+ / - 1 Watt

+ / - 5 Watt

+ / - 10 Watt

+ / - 25 Watt

return store

LOAD CHANGE SETTINGS

CONTRAST

With the arrow keys, the display contrast can be adjusted in the range from 0 to 100%.

Contrast

50 %

return store

DATE / TIME

Using the arrow keys, first choose the parameter to adjust (date or time) and confirm with the button to the right of [change].

Then you can change each value (day/month/year) with the arrow keys. With [change] you move to the next field. Once you have entered the year, the function of the key changes to [store].

The time is entered in the same way.

Date / Time

Date

12 . 03 . 2009

Time

15 : 20 : 00

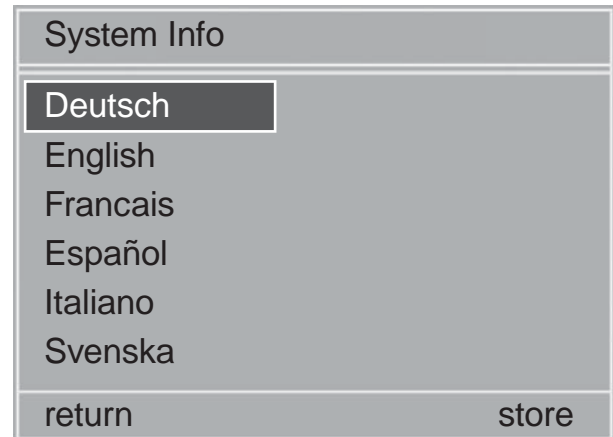
return change

LANGUAGE

The texts can be displayed in different languages.

Use the arrow keys to select a language and confirm your selection with the key to the right of [store].

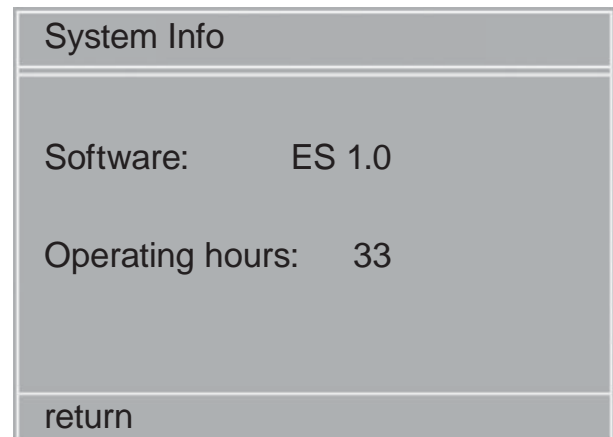
With the key to the left of [return] you return to the Settings menu.



LANGUAGE MENU

SYSTEM INFO

This screen indicates the optibike software version and the operating hours.



DISPLAY OF SYSTEM INFORMATION

HR BELT NUMBER

The optibike uses a chest strap with digital radio transmission to ensure interference-free transmission of your heart rate.

Each chest strap has a unique ID number embossed on the back of the strap.

The optibike needs to know this number to be able to receive data from this strap.

Upon delivery, the number of the chest strap supplied with the ergometer is already set.

If, after a service intervention or repair, the strap needs to be replaced, the new number must be entered via this screen.

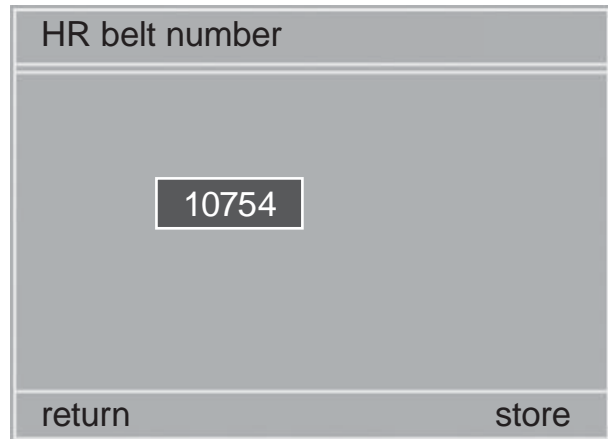


CHEST STRAP NUMBER

Use the arrow keys to enter the number of the chest strap - when you hold the key depressed, the numbers will increase or decrease automatically.

Press the key to the right of [store] to save the new number.

With the key to the left of [return] you return to the Settings menu.



CHANGING THE HR BELT NUMBER

CLEANING, MAINTENANCE, DISPOSAL

GENERAL CLEANING

Wipe the device surface down with a cloth moistened with soap water or a disinfectant. The cloth should not be dripping wet; do not allow liquids to enter the device.

CLEANING THE SADDLE

Clean the saddle with a soft and dry or moist cloth (**Disinfectants used should not contain any alcohol**).

CLEANING THE UPHOLSTERY (E.G. COUCH ERGOMETER)

Wipe the upholstery down with a soft cloth moistened with soap water. The cloth should only be moist and not dripping wet. If the cleaning agents and disinfectants used are caustic or contain alcohol, they may damage and/or discolor the upholstery.

DISINFECTION

Only the following disinfectants are approved for disinfection:

Schülke & Mayr GmbH:

- Antifect® AF, FF, FD 10
- Terralin® (0,5 %)
- Quartamon Med®

B. Braun Melsungen AG:

- Hexaquart plus® (0,5 % / 5,0 %)
- Hexaquart S® (1,5 % / 5,0 %)
- Meliseptol®
- Melsept SF® (0,5 % / 5,0 %)

ECOLAB:

- Incidin Foam®

CLEANING THE MEMBRANE KEYPAD

Simply use a soft cloth to wipe the membrane keypad clean - liquids must not be allowed to enter the control terminal!

CLEANING THE CHEST STRAP

After each training session, clean the chest strap with running water. Then dry the strap with a cloth.

Warning

- Shock Hazard •

- *Disconnect the device from the power line before cleaning.*

- Equipment Damage •

- *Do not allow liquids to enter the equipment. Devices into which liquids have entered must be immediately cleaned and checked by a service technician, before they can be reused.*
- *Do not use acids, alkaline solutions (household cleaners) or caustic disinfectants.*

Note

- *The use of cleaning agents and disinfectants containing alcohol is not permitted!*

Hint

- *Strictly observe the manufacturer's instructions for use.*

REPAIRS

Only service technicians authorized by ergoline are allowed to repair the equipment.

REPLACING THE BATTERY OF THE CHEST STRAP

The digital chest transmitter is powered from a battery. If, after some time, the heart rate is not indicated any longer, the battery may have to be replaced.

This is done as follows:

- (1) Place the transmitter on an even surface with the bottom facing up.
- (2) To open the battery compartment, insert a coin (e.g., a 50-cent piece) in the notch and turn the cover clockwise.
- (3) Remove the old battery.
- (4) Insert the new battery with the PLUS symbol facing up.
- (5) Close the battery compartment by turning the cover counterclockwise.

Battery type: Button cell type CR 2032



OPENING THE BATTERY COMPARTMENT OF THE CHEST STRAP

Warning

- Equipment Damage •
- *Only use the specified battery type.*
- *Observe the battery polarity - the PLUS symbol on the battery must face up!*

CHECKS BEFORE EACH USE

Before each use, visually inspect the device for signs of damage.

If you detect damages or impaired functions which may result in a hazard to the patient or the operator, the device must be repaired before it can be used again.

TECHNICAL SAFETY INSPECTIONS, INSPECTIONS OF THE MEASURING SYSTEM

The technical safety inspections and the inspections of the measuring system must be completed every two years according to the rules of the art by a Service Engineer authorized by ergoline.

The date of the next inspection is indicated on the inspection sticker attached next to the type plate on the ergometer.

DISPOSAL

Do not dispose the product described in this Operator Manual as unsorted municipal waste. It must be collected separately.



Please contact the authorized manufacturer ergoline GmbH to obtain information concerning the decommissioning of your equipment. There is no proper waste management, proper disposal is documented by ergoline GmbH. Consult operating instructions

QUESTIONS AND ANSWERS

The green POWER indicator does not light up – the optibike display remains dark.

Check the power cord. It must be firmly plugged into the socket on the underside of the optibike.

When selecting "Training", the following message appears:

No training defined!
(see Op. Manual)

Upon delivery, no training programs are configured in the optibike – You must configure training programs with your own training data.
(See section "Settings – Configuring Training Programs".)

The Watt readout flashes during the training.

The minimum pedal speed required is 30 RPM. At slower speeds, the optibike is not able to set the exact load.

The chest strap is correctly applied. Still the optibike display does not show the heart rate.

Moisten the skin below the two contact points of the strap.

Select [Settings] [HR belt no.] to check that the correct chest strap number has been set.

The chest strap battery is depleted (after approx. 2 years, depending on usage) and must be replaced.

Where can I obtain the chip card software (opticare basic home) ?

Please ask your dealer or contact us:

Tel.: +49 7431 – 98 94 0

Fax: +49 7431 – 98 94 128

email: optibike@ergoline.com

Which is the recommended training pulse rate?


Please ask your doctor or therapist for the ergometer data suitable for your training sessions.

At the end of this manual, you will find form sheets for the different optibike training programs.

TECHNICAL SPECIFICATIONS

ERGOMETER

Model	Exercise ergometer optibike 100 med
Operating mode	continuous operation
Power	100 – 240 V / 50 – 60 Hz (100 VA max.) specification power cord US: SPT 2x18AWG 125 V / 10 A „hospital“ or „hospital grade“ specification internal backup battery: IEC: CR 2032 /3V 230 mAh
Braking principle	computer-controlled eddy current brake with torque measurement; speed-independent to DIN VDE 0750-0238
Load range	6 . . . 400 Watt, speed (RPM)-independent
Speed range	30 . . . 130 RPM
Deviation of measured load	to DIN VDE 0750-0238
Load levels	user programmable
Training modes	Manual: <ul style="list-style-type: none">• Load change in steps of +/- 1 Watt up to +/- 25 Watt (adjustable) Pulse controlled: <ul style="list-style-type: none">• Warm-up phase• Ergometer controls the load to maintain the set training pulse• Recovery phase Constant load: <ul style="list-style-type: none">• Warm-up phase• Training for a specified period of time with a constant load (adjustable)• Recovery phase Interval training: <ul style="list-style-type: none">• Warm-up phase• 2 alternating training intervals, multiple repetitions• Recovery phase
Maximum user weight	160 kg
Saddle height adjustment	manual continuous, for patient height between 120 cm and 210 cm
Handlebar adjustment	continuous, 360° handlebar adjustment

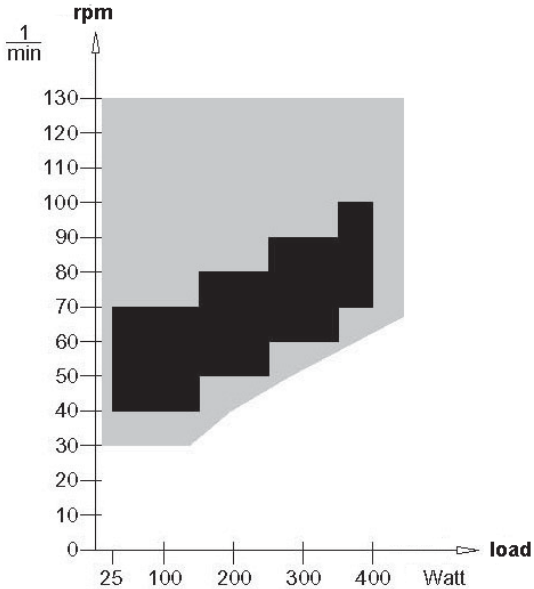
Crank length	170 mm (adjustable length cranks available as optional accessories)
Displays	LCD: 115 x 88 mm / 320 x 240 pixel
Chip card unit	integrated, reading and writing of ergoline training cards
Dimensions, weight	length: 900 mm width: 460 mm (width of handlebar: approx. 575 mm) height: 900 mm to 1350 mm weight: approx. 64 kg
Safety standards	DIN EN 60601-1, DIN EN 60601-1-2, DIN VDE 0750-238
Protection class / degree of protection	II  / B (ergometer)
RF emission	class B to DIN EN 55011 / 5.0 DIN EN 60601-1-2
Environmental conditions	Operation: temperature: +10 to +40 °C rel. humidity: 30 to 75%, no condensation atmospheric pressure: 800 to 1060 hPa Transport and storage: temperature: -20 to +70 °C (-4 to +158 °F) rel. humidity: 10 to 95%, no condensation atmospheric pressure: 500 to 1060 hPa

HR CHEST STRAP

Data transfer	<i>BlueRobin™</i> , digital 868 MHz ISM band
Output power	below -1 dBm
Range	20 m minimum air (depending on environment)
Heart rate measuring range	30 – 240 beats/min measurement of the mean heart rate
Measurement accuracy	+/- 1 bpm
Power	lithium battery CR2032
Environmental conditions	Operation: temperature: +20 to +40 °C Transport and storage: temperature: -20 to +80 °C

OPERATING RANGE OF THE EDDY-CURRENT BRAKE (BRAKING TORQUE CONTROL)

black: speed-independent range to DIN VDE 0750-0238
black + grey: speed-independent range of the optibike ergometer



OPTIBIKE TRAINING PROGRAM (PULSE CONTROLLED)

Last Name		First Name	
Age		Date of Birth	
Height		Weight	

Training mode: PULSE	<i>After the warm-up phase, the optibike will adjust the load to a level that maintains the set training pulse.</i>
Warm-up	
Duration (minutes)	Duration of the warm-up phase
Load (Watts)	Load during the warm-up phase
Training	
Duration (minutes)	Duration of the exercise phase (without warm-up / recovery)
Tr. pulse (beats/min)	Heart rate maintained by the optibike
Max. load (Watts)	Maximum load allowed until the training pulse is reached
Recovery	
Duration (minutes)	Duration of the recovery phase
Load (Watts)	Load during the recovery phase

Date	
------	--

OPTIBIKE TRAINING PROGRAM (CONSTANT LOAD)

Last Name		First Name	
Age		Date of Birth	
Height		Weight	
Training pulse (beats/min)		Maximum pulse rate (bpm)	

Training mode: CONSTANT	<i>After the warm-up phase, the optibike increases the load until the target load is reached within approx. 3 minutes. The load is held constant for the duration of the training session.</i>
Warm-up	
Duration (minutes)	Duration of the warm-up phase
Load (Watts)	Load during the warm-up phase
Training	
Duration (minutes)	Duration of the exercise phase (without warm-up / recovery)
Tr. Load (Watts)	Load set by the optibike after the warm-up phase
Recovery	
Duration (minutes)	Duration of the recovery phase
Load (Watts)	Load during the recovery phase

Date	
------	--

OPTIBIKE TRAINING PROGRAM (INTERVAL TRAINING)

Last Name		First Name	
Age		Date of Birth	
Height		Weight	
Training pulse (beats/min)		Maximum pulse rate (bpm)	

Training mode: INTERVAL	<i>After the warm-up phase, the optibike regularly switches between intervals 1 and 2.</i>
Warm-up	
Duration (minutes)	Duration of the warm-up phase
Load (Watts)	Load during the warm-up phase
Training	
Duration (minutes)	Duration of the exercise phase (without warm-up / recovery)
Duration-1 (seconds)	Duration of exercise interval 1
Load-1 (Watts)	Load during interval 1
Duration-2 (seconds)	Duration of recovery interval 2
Load-2 (Watts)	Load during interval 2
Recovery	
Duration (minutes)	Duration of the recovery phase
Load (Watts)	Load during the recovery phase

Date	
------	--

ELECTROMAGNETIC COMPATIBILITY

EN 60601-1-2

Changes or modifications to this system not expressly approved by ergoline could cause EMC issues with this or other equipment.

This system is designed to comply with applicable regulations regarding EMC.

Its compliance with these requirements has been verified. It needs to be installed and put into service according to the EMC information stated as follows.

Warning

- RF INTERFERENCE •

- *Use of portable telephones or other radio frequency (RF) emitting equipment near the system may cause unexpected or adverse operation.*

Caution

- Equipment Malfunction •

- *The equipment or system should not be used adjacent to, or stacked with, other equipment. If adjacent or stacked use is necessary, the equipment or system should be tested to verify normal operation in the configuration in which it is being used.*

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS		
The optibike ergometer is intended for use in the electromagnetic environment specified below. It is the responsibility of the customer or user to ensure that the optibike ergometer is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment – Guidance
RF emissions to EN 55011	Group 1	The optibike ergometer is suitable for use in all establishments, including domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions to EN 55011	Class B	
Harmonic emissions to EN 61000-3-2	Class A	
Voltage fluctuations/flicker emissions to EN 61000-3-3	Complies	

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY


The optibike ergometer is intended for use in the electromagnetic environment specified below. It is the responsibility of the customer or user to ensure that the optibike ergometer is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Electrostatic discharge (ESD) to EN 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV ± 8 kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst to EN 61000-4-4	± 2 kV for power supply lines ± 1 kV for input and output lines	± 2 kV passed	Mains power should be that of a typical commercial or hospital environment.
Surge to EN 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV N/A	Mains power should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines to EN 61000-4-11	< 5 % UT (> 95 % dip in UT) for 0.5 cycles 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles < 5 % UT (> 95 % dip in UT) for 5 s	< 5 % UT 40 % UT 70 % UT < 5 % UT	Mains power should be that of a typical commercial or hospital environment. If the user of the optibike ergometer requires continued operation during power mains interruptions, it is recommended that the optibike ergometer be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field to EN 61000-4-8	3 A/m	passed	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. The optibike ergometer has no components susceptible to magnetic fields.

NOTE: UT is the a.c. mains voltage prior to application of the test level.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY

The optibike ergometer is intended for use in the electromagnetic environment specified below. It is the responsibility of the customer or user to ensure that the optibike ergometer is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
<p>Conducted RF to EN 61000-4-6</p> <p>Radiated RF to EN 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2.5 GHz</p>	<p>3 V</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the optibike ergometer, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance: $d = 1.2 \sqrt{P}$ $d = 1.2 \sqrt{P}$ for 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ for 800 MHz to 2.5 GHz</p> <p>where P is the rated output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey (a), should be less than the compliance level in each frequency range (b).</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol</p> <div style="text-align: center;">  </div>

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

(a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the optibike ergometer is used exceeds the applicable RF compliance level above, the optibike ergometer should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the optibike ergometer.

(b) Over the frequency range from 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

**RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND
MOBILE RF COMMUNICATIONS EQUIPMENT AND THE OPTIBIKE ERGOMETER**

The optibike ergometer is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the optibike ergometer can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the optibike ergometer as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter [W]	Separation Distance According to Frequency of Transmitter [m]		
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.7	3.7	7.37
100	11.7	11.7	23.3

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

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