MONARK
SPORTS & MEDICAL

MONARK
LC4

LC4 has now become a smart ergometer, that communicates both wireless or via cable. Covering all the needs the user might have. Choose to communicate with your ergometer trough BLE, ANT+ or USB. Regardless your LC4 will give you the accuracy and the reel bike feel, that the Monark ergometers are known for. The robust frame together with the heavy flywheel creates an unbelievable bike feel. Monark's unique pendulum system makes your LC4 easy to calibrate and makes sure that your values from this measurement are fully comparable to your next session. All together it makes LC4 the perfect ergometer for testing, traing and education.

NOTE!

Use of the product may involve considerable physical stress. It is therefore recommended that people who are not accustomed to cardiovascular exercise or who do not feel completely healthy, should consult a physician for advice.

When using a chest belt, keep in mind that electromagnetic waves can interfere with the pulse signal. Mobile phones and the like should therefore not be used near the bike when using a chest belt.

For service, maintenance and spare parts list, refer to our service manual. You can also contact your dealer.

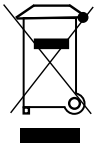
Max user weight 150 kg.

Before using your new bike, please read the start up-guide carefully and save it for future use.

NOTE!

If you wish to perform aerobic or anaerobic testing with this product you should have relevant knowledge in the matter.

We therefore refer to reading the relevant literature that describes the test procedure and analysis of measured results.



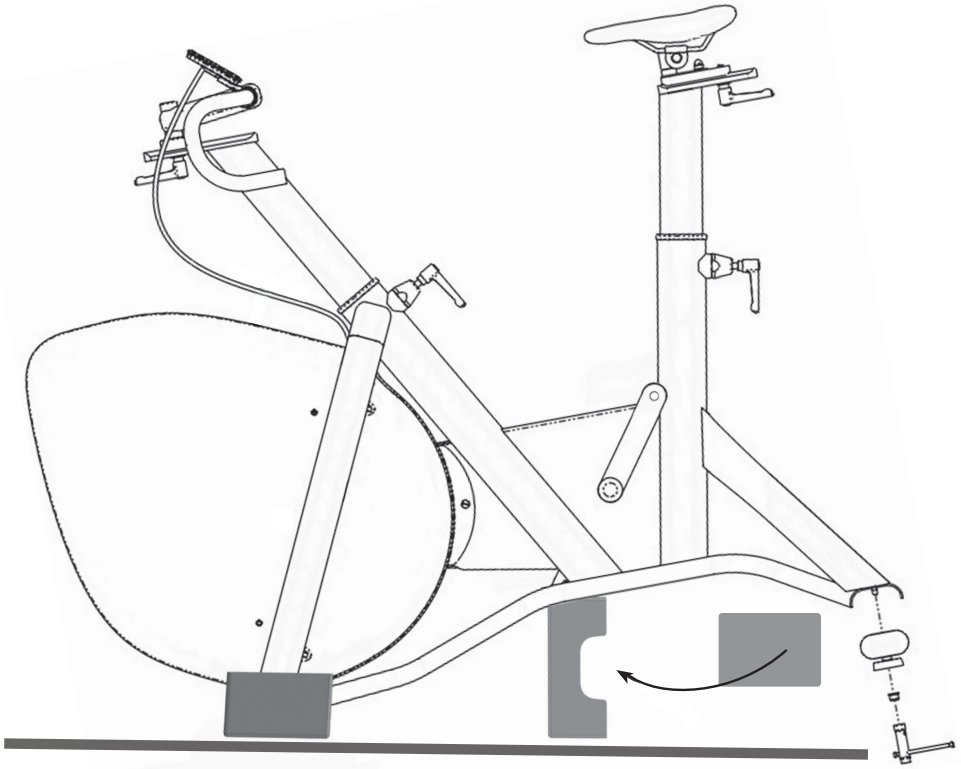
If the product or its packaging is marked with this symbol, it should not be handled as household waste. Instead, it shall be provided to a suitable collection point for the recycling of electrical and electronic equipment.

ASSEMBLY

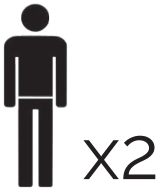
NOTE!
It is recommended that you are two people when the bike is assembled.

1)

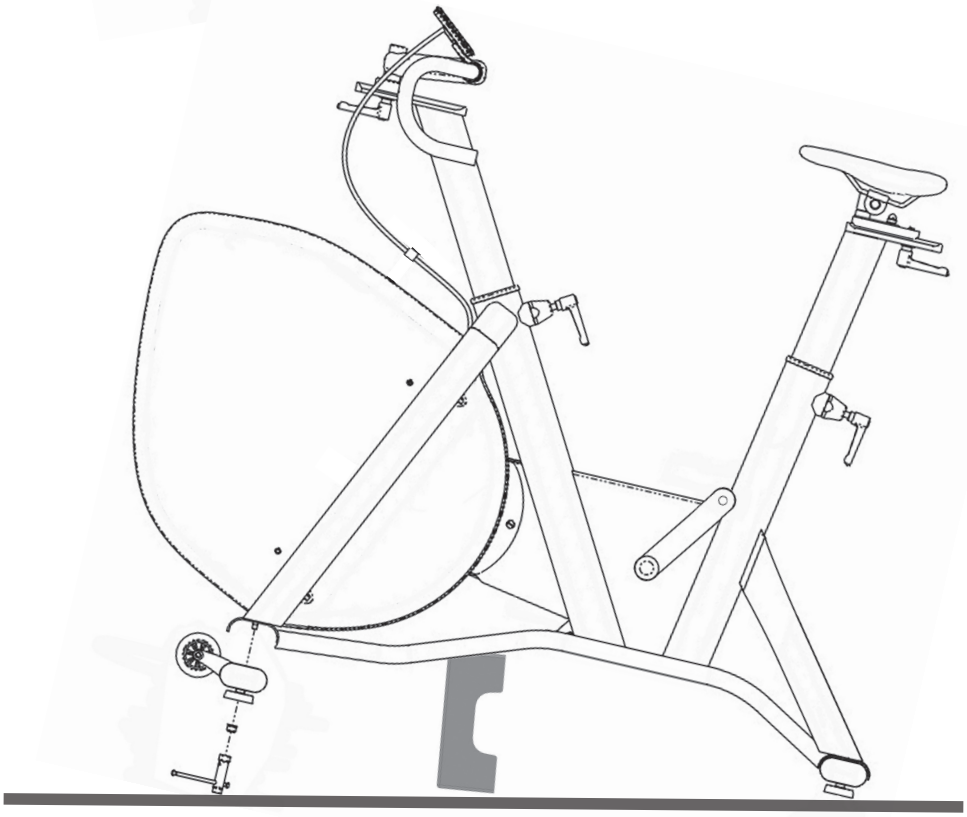
2X



2)

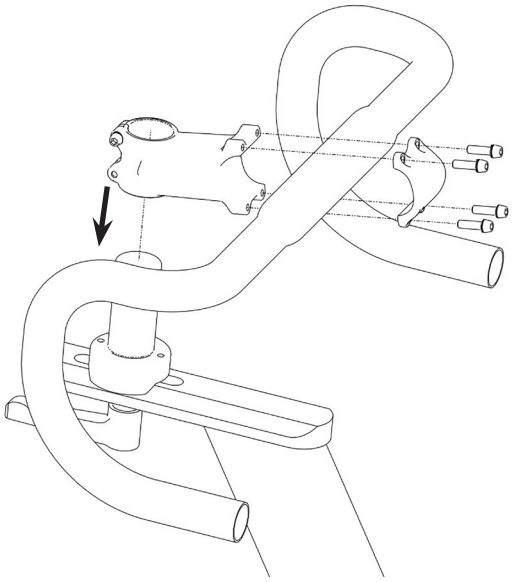


2X

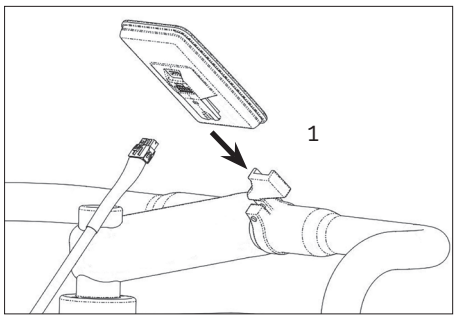


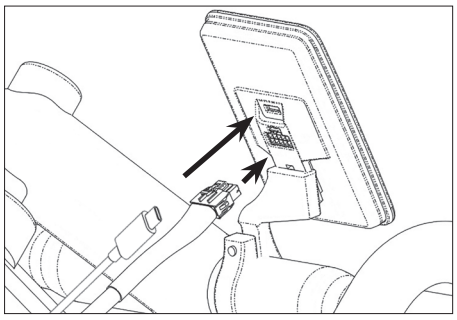
3)

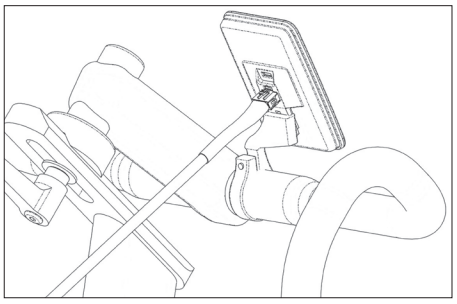
NOTE!
The stem must be inserted at least 10 cm in the frame.
This is marked with "MAX" on the stem.



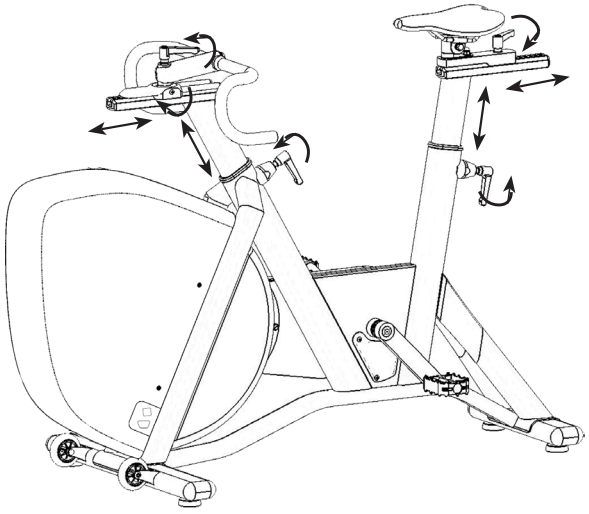
4)







5)

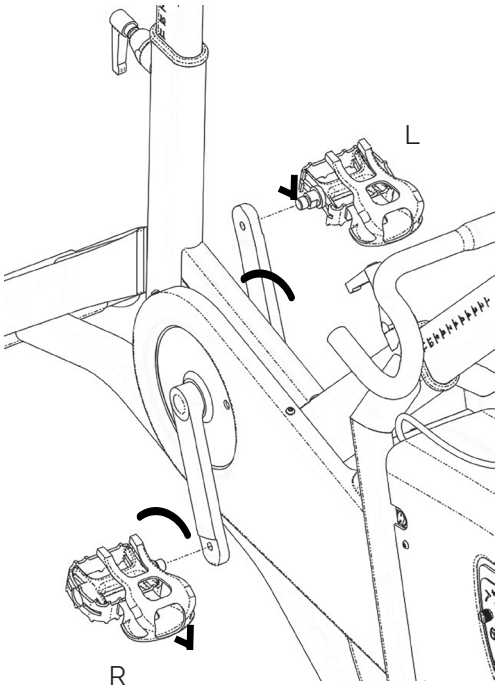


6)

1x R

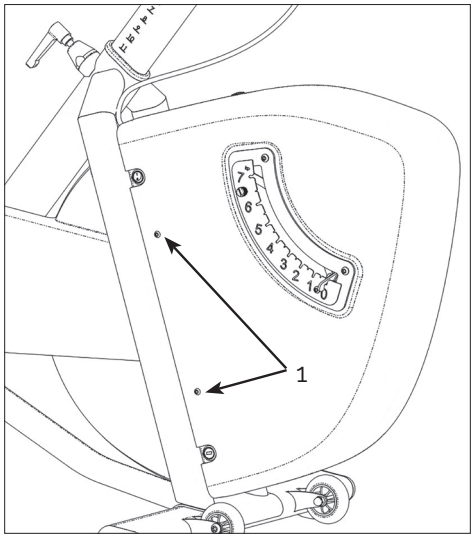
1x L

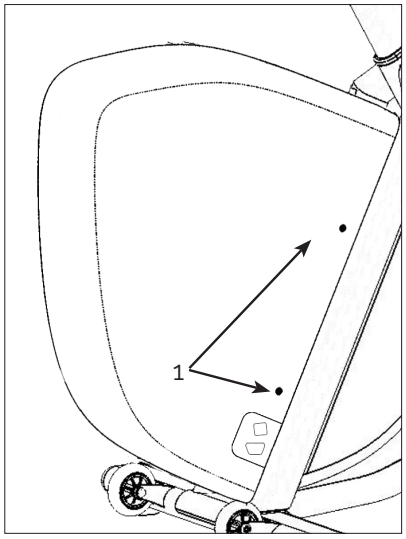
1x

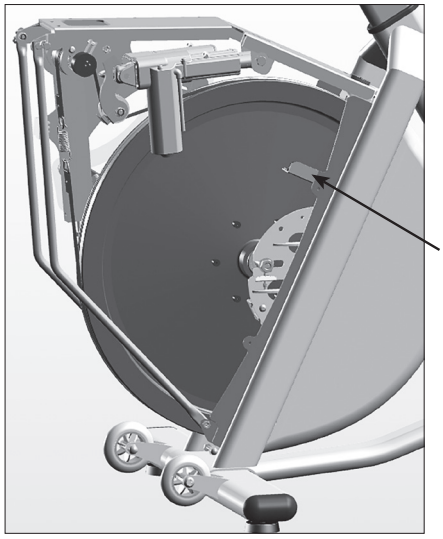


NOTE!
When the bike is new, or if you replace the pedals, they must be tightened after 5 hours of use.

7)

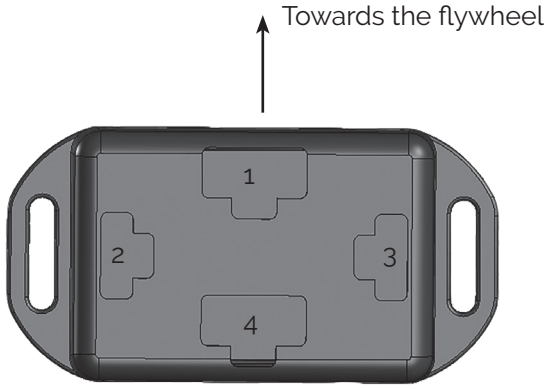






Remove the the four screws (1) that holds the front cover in place.
Lift the cover so that you can access the electric unit (2) that is located on the left side of the bike.

Cables from the shifters and display are pulled trough the hole on the frames top left side,
In towards the electric unit. Cables are mounted accordingly to the picture below.



Electric unit
1. Cable from display
2. Right shifter (accessory)
3. Left shifter (accessory)
4. Other functions (sensor etc.)

POWER SUPPLY

The bike is powered by a power adapter that you connect to the connection located on the right side of the bike, see fig: Connection.

Technical data power adaptor

Input 100-240V AC 1.4-0.7A, 50-60Hz
Output 12V DC 5.0A
Polarity + in the middle

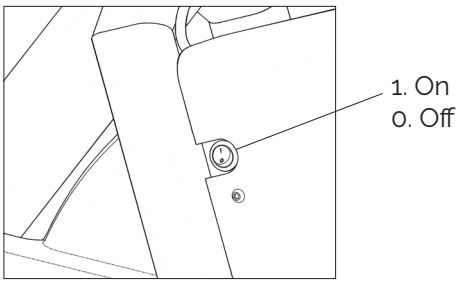


Fig:
On / off

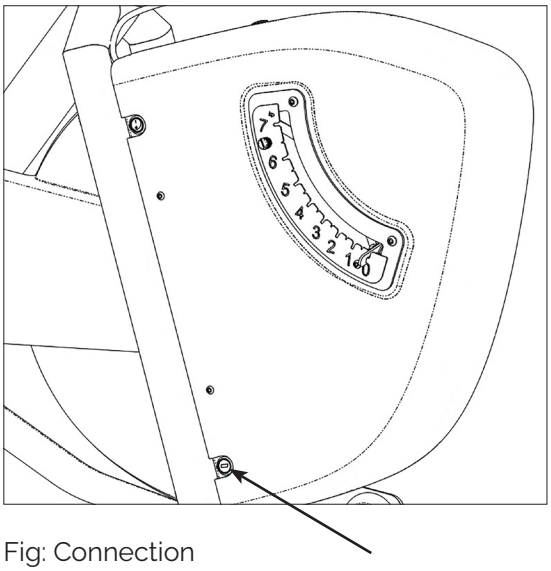


Fig: Connection

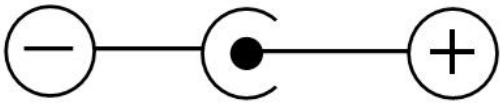


Fig: Polarity

DISPLAY

To start the display, press the on / off button on the right side of the bike, see *fig: On / off.*

Start workout by pressing "play"

Pause the measurement by pressing "pause"

Reset the device by pressing "stop"

START

STOP

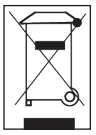
PAUSE

SETTINGS

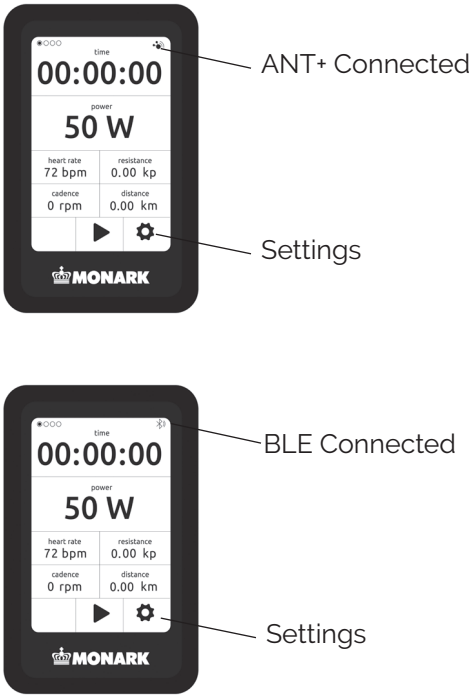
BACK

CONNECTED EXTERNAL DEVICE VIA ANT+

CONNECTED EXTERNAL DEVICE VIA BLUETOOTH (NO SUPPORT FOR HEARTRATE)

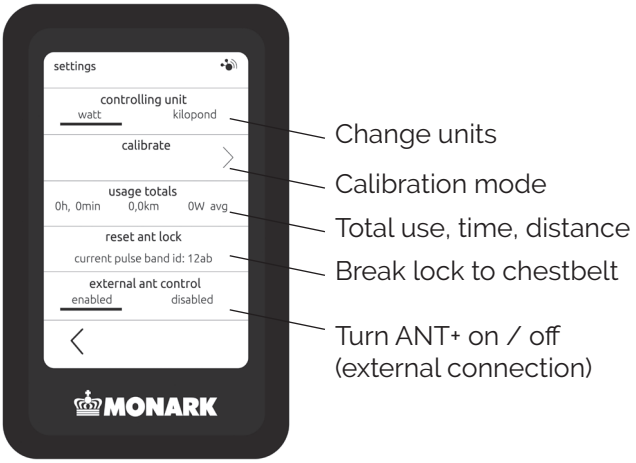


NOTE!
Do not expose the electronic display to direct sunlight or extremely high temperatures. Do not use solvents when cleaning, only a dry cloth.



ANT+/BLE

When the display is connected to an external device, the ANT+ / BLE symbol is displayed in the upper right corner.



Change units

It is possible to switch between kP and watt. You do this by going to "Settings" and selecting Kilopond or Watt as "primary unit". NOTE! With external controll the resistance will be in Kp (speed dependent)

Sleep mode

After ten minutes of inactivity, the display goes into sleep mode. To restart the display, press on the screen or start pedalling.

Display view

To change the display of data in the display, swipe your finger either to the right or to the left.

Fig: View 1

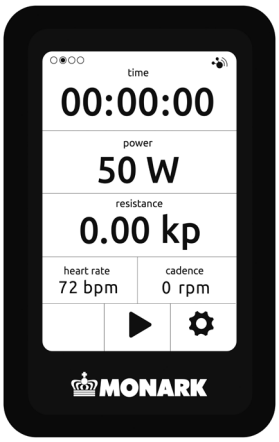


Fig: View 2

Fig: View 3

Fig: View 4

CHANGE THE WORKLOAD IN THE DISPLAY

To change the workload on the bike, press + or - on the display.

Fig: Workload in kilopond

Fig: Load in watt

ELECTRONIC SHIFTERS / SPRINT BUTTONS

Accessory art.nr 9307-44

The workload can be regulated with two different settings, single or "press and hold".

Shifters and sprint buttons configuration can be changed accordingly to the user's wishes with the configuration software for novo mini. (Download on our website (www.sport-medical.monarkexercise.se/software)

The shifters on the right side increases and the left side decreases
The workload
Preset workload adjustment

- Single click - default increase/decrease i steps of 25 W/0,25 kp
- Press and hold - First one single increase/decrease after that continous increase/decrease with 50 W/0,5 kp until the button is released

Sprintbutton

Sprintbutton on the right side increases and the left side decreases the workload.

1. Function where there is only clicks (no press and hold) and the user set the steps as they choose. (Sprint buttons can then gear up or down 2 kp / 200watt, regardless of what work load is used, 7 kp is always maximum.
2. Functions where the buttons sends you directly to the preset value (sprint button can for example gear up directly to 7kp, or directly down to 3 kp, and the function always takes the profile of the track into account, won't brake the simulation from Zwift.
3. Function where sprint buttons are used as shifters. Both with single clicks OR press and hold.

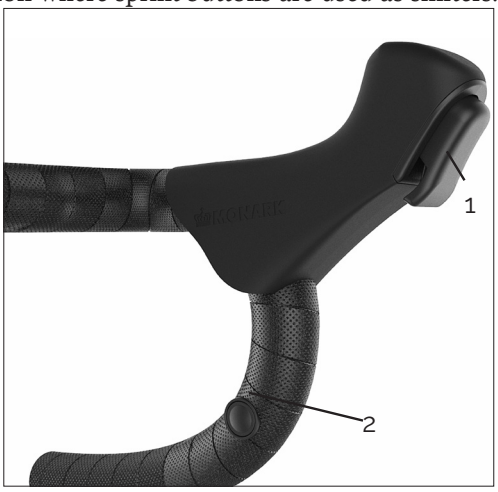


Fig: Shifters left side
1) shifters
2) Sprint button

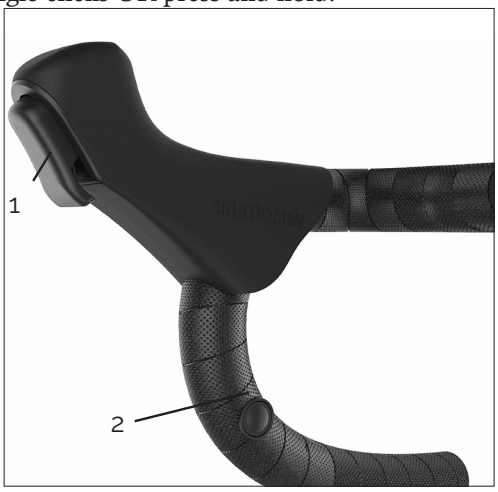


Fig: Shifters right side
1) shifters
2) Sprint button

DISPLAY ANT+ AND BLE-CONNECTION

The Novo mini offers a connection trough BLE and ANT+ (trough FTMS and FE-C protocol) and creates new opportunities to connect to 3rd hand applications. With the motor controlling the workload it makes it possible for a third party applications to control the workload on LC4.

Novo mini can also set both the Inertia effect and cycling constant. The setting of the Inertia effect means that the ergometer takes into account the acceleration of the flywheel and the effect that the resistance generates. This generates a realistic cycling experience at e.g Zwift. The bicycle constant allows Monark to measure the effect either at the flywheel (Monark Standard for science) or at the crank section. This to be able to race against other Trainers or smartbikes who measure the effect at the pedals, as well as at races where double power sources are required.

Settings of the shifters and sprint buttons, as well as the Inertia effect and the cycle constant are set via our small PC app that can be downloaded from our website.

CONNECTION

The Novo mini display communicates smart via Blutooth and ANT+, this via standardised communication protocols Fitness Machine Service and Fitness Equipment Controls This means that there is support for applications on Android (Samsung, Sony, Huawei and more), IOS (Apple) and
also Windows and Mac.

Monark LC4 novo mini has four different connection modes (depending on the choice of application).

Simulation mode

Here, an application sends information about a simulated environment that determines the resistance of the ergometer. The resistance (a certain kilopond) at e.g. Zwift means the slope of the road in combination with "virtual gears".

ERG-mode

Here, the application sends information about the effect of the ergometer regulate against. This can be called "Workout mode" in some applications.

Resistance mode

An application sends information about which resistance level the bike should hold. Resistance level is 0-100% where Monark translates it to 0-7 kilopond (kp).

Manual mode

No application controls the bike, but applications can still listen to the ergometer power and cadence, to e.g. display a certain speed on the screen.

Applications such as Zwift works with both BLE and ANT + in both ERG-mode and simulation mode.

HEART RATE (ANT+)

The user's heart rate can be measured with a chestbelt that detects the pulse of the heart. For the heart rate to show in the display you need to use a heart rate sensor with ANT+.

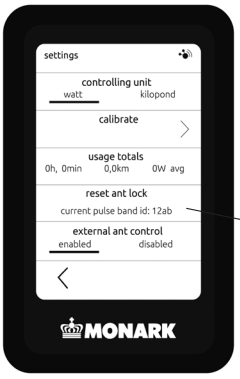
For a correct measurement of the heart rate you need to position the sensor correctly and that the skin is clean.

NOTE!
Electromagnetic waves may disturb heart rate function. Cellular phones are not allowed to be used near the bike during test.

Settings

Break lock to chestbelt

The display saves the last used chestbelt. This means that you do not need to connect to a chestbelt every time you ride the same bike. To break this go into "Settings" and press "reset ant lock" and the text changes to "no pulse….” Then the display can search for and lock to a new chestbelt.



Break lock to chestbelt

SCALE - ZERO ADJUSTMENT

Check that 0-index (3) on the scale (2) is in line with the pendulum pointer when the bike is at a stand still and the brake belt is loose. Loosen the brake belt by lifting the pendulum over 6kp, the motor will release the workload. If the pendulum is not aligned with the 0-index, the scale musst be adjusted. Loosen the pole screw and adjust the scale. Tighten the pole screw (1) after adjustment. See Fig: Scale adjustment.

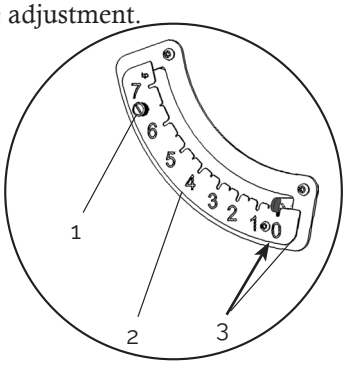


Fig: Scale adjustment
1) Screw
2) Kp-scale
3) 0-index

CALIBRATION PENDULUM

All test- and exercise cycles are calibrated in the factory, but a calibration of the pendulum can still be done to verify this.

Please control the calibration of the pendulum when necessary. This varies on how much and how the bike is used.

NOTE!
When calibrating the pendulum you need a 4 kg calibration weight. The flywheel must be completely still before the weight is hung on!

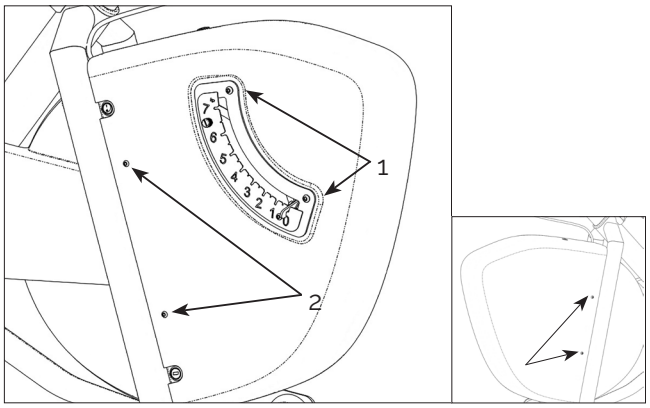


Fig 1:
1. Remove the scale
2. Remove the screws that holds
The coved on both sides.

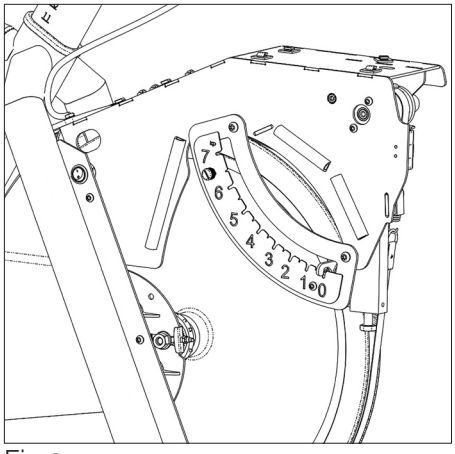
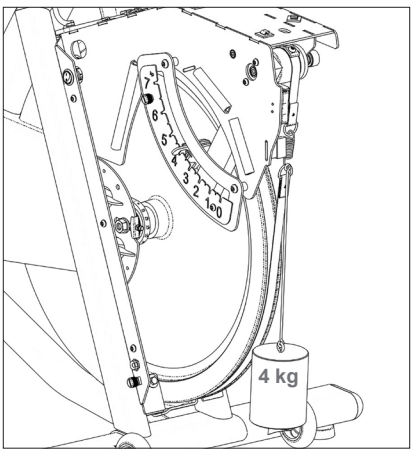


Fig 2:
After removing the front cover, you must screw back the scale again.
Check again that the pendulum is at 0, If not you must of scale-, see "Scale adjustment".



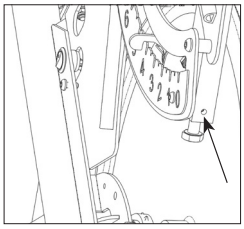


Fig:
Screw for adjusting Weight in pendulum.

Fig 3:
Hang 4 kg calibration weight in the spring.
Then the pendulum pointer should stay at 4 kp on the scale. If is not,
the adjustment weight in the pendulum must be adjusted, see fig: Screw for adjustment weight in the pendulum.

If the pendulum goes too high, the adjustment weight must be moved outwards, if the pendulum goes too low, the weight must be moved inwards.
Repeat until the pendulum stops at 4 kp.

When finished, remove the weight and replace the brake belt in the spring. Make sure that the brake band is on the surface of the brake wheel and has not ended up next to it. Unscrew the scale and reattach the cover and the scale.

After calibrating the pendulum, you must do an electronic calibration, see section.

CALIBRATION ELECTRONICS

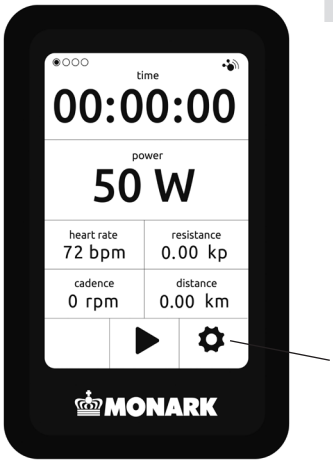
Calibration can only be done from the display!
Calibration should be done after service, replacement of electronics part, if you have moved the bike or if you have adjusted the scale.

Start by adjusting the scale, see section, and release the brake band tension.

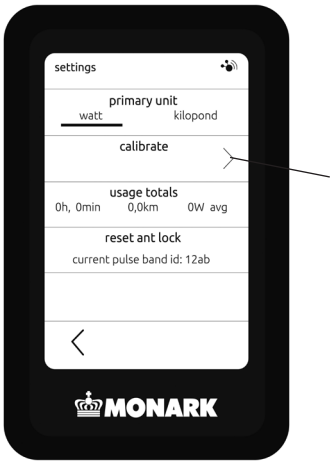
1. Press “Settings” on the display. Then you select "calibrate".
2. Then “0 kp” is shown in the display. let the pendulum hang free over 0 and then press the screen.
3. Then “2 kp” is shown in the display. Hold the pendulum to 2 and then press the screen.
4. Then “4 kp” is shown in the display. Hold the pendulum to 4 and then press the screen.
5. Then “6 kp” is shown in the display. Hold the pendulum to 6 and then press the screen.

The calibration is complete!

NOTE!
The potentiometer values shown in the pictures are only examples. The value varies depending on the value of the potentiometer at 0 kp.



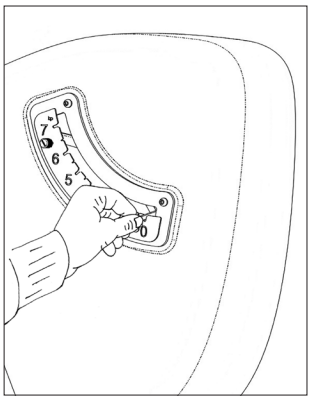
Settings



Calibrate

NOTE!
The pendulum must be kept still at the different positions. This is done by pressing down the pointer into the groove on the scale at each kp value.

Fig: 0 kp



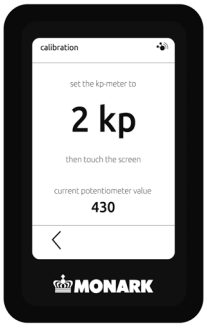
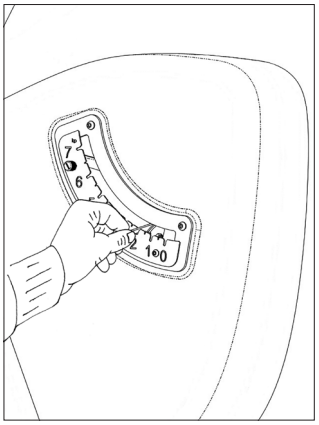


Fig: 2 kp



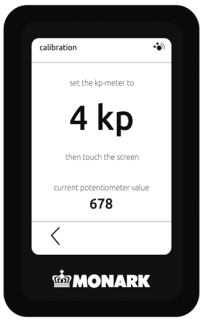
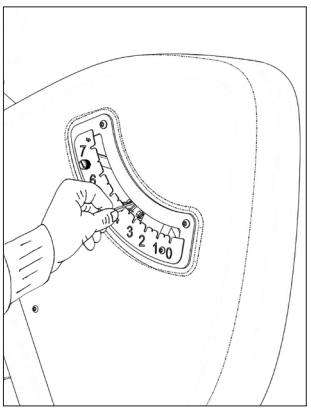


Fig: 4 kp



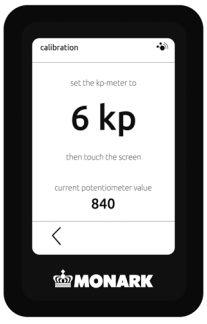
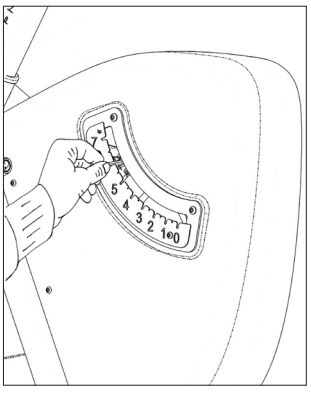


Fig: 6 kp



Then move the pendulum down to 0 again and the calibration is complete.

CONNECT EXTERNAL

Connect external device via Cable

To be able to do tests on LC4 you must connect it to a computer and use specific software. A suitable one is available to download from our website: www.monarkexercise.se.

The bike do not need to be switched off when connecting external components, but it is recommended, to prevent transmission of incorrect data.

Be careful when connecting different types of external devices to prevent flash-over and subsequent injury. The user must be certain that the instrument connector and the cable are designed for the intended purpose. Serious injury to the user and / or device may result if inappropriate connections are attempted.

Connect external device via USB

Make sure the power adaptor is connected to the bike Turn off the power switch on the bike.

The USB-B port on Monark LC4 are located on the left side front cover.

Connect the USB first to the Monark bike, and then to the external device. Set the bike power switch to "on" and then start the external device.

Fig: Connections
1) RS232 port (only LC6)
2) USB-Bport

Communication protocol MEC.

Standard command set or "PC-mode"

Command type (MEC) is default set up on all Monark bikes. As default the baud is 4800, but can be changed by external control to 115200. The protocol is used by Monark Exercise's softwares and some external controllers that are prepared to fully benefit from the advanced capabilities of the bike.

MONARK
SPORTS & MEDICAL

Version 2211
Art. Nr: 7950-372EN

KROONS VÄG 1, SE-786 33 VANSBRO, SWEDEN | MONARKEXERCISE.SE | TEL: +46(0)281 59 49 40 | FAX: +46(0)281 719 81