

MANUAL

874 E



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Important

Read the manual carefully before using the cycle and save it for future use.

Monark Exercise AB

Monark has 100 years' experience of bicycle production. The Monark tradition has yielded know-how, experience, and a real feel for the product and quality. Since the early 1900s, Monark's cycles have been living proof of precision, reliability, strength and service. Those are the reasons why we are now the world leader in cycle ergometers and the market leader in Scandinavia in transport cycles.

We manufacture, develop and market ergometers and exercise bikes, transport bikes and specialized bicycles. Our largest customer groups are within health care, sports medicine, public authorities, industry and postal services.

For more information: <http://www.monarkexercise.se>



Product Information

Congratulations on your new Ergometer!

Monark Ergometer model 874 E is a safe, easy-to-use bike for fitness testing and work tests. It has a brake system where the workload is determined by weights added in the weight basket. The patented weight basket system does not require calibration, the precision of the weights ensures that the workload is correct.

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.



Fig: Serial number (1)

Facts

- Large, well-balanced flywheel 20 kg (44 lbs)
- Adjustable saddle and handlebar
- Stable frame, solid steel tube
- Powder painted
- Wheels for easy transport
- Electronic meter with heart rate

Width

517 mm (20 1/3") at handlebar

640 mm (25") at support tubes

Length

1120 mm (44")

Height

945-1295 mm (37-51") at handlebar

780-1105 mm (31-43 1/2") at seat

Weight

57 kg / 125 2/3 lbs (without weights)

Max user weight 250 kg (551 lbs)

Included

- Chest belt
- Weight kit consisting of:
 - 4 pcs. 0.1 kg (0.2 lbs)
 - 1 pcs. 0.5 kg (1.1 lbs)
 - 4 pcs. 1.0 kg (2.2 lbs)

Serial number

The serial number is placed according to *Fig: Serial number*.

PC software

If you need a pc software to do exercise tests on the bike, our software is available for free download from our website: www.monarkexercise.se.

Operating Instructions

Workload adjustment

Through pedalling the test person supplies kinetic energy to the flywheel. The flywheel is then braked by means of a brake belt/cord which runs around the flywheel. The workload is changed either by using other pedaling speed or by increasing or decreasing the tension of the brake belt/cord against the flywheel by place weights in the weight basket. Weights are available in 1 kg / 2.2 lb, 0.5 kg / 1.1 lb and 0.1 kg / 0.2 lb. This makes it possible to vary the workload from 1 kp up to maximum 11 kp in steps of 0,1 kp. Braking power is expressed in kp where mass 1 kg / 2.2 lb gives the braking force 1 kp.

NOTE! 1 kg /2.2 lbs is the lowest work load that can be set as this is the weight of the basket itself. A weight basket that only weighs 0.5 kg /1.1lb is available as an option. See *Fig: Workload adjustment*.



Fig: Workload adjustment
1) Weight basket with weights

Power measurement

The cycle is designed to measure the power on the flywheel, because tests/protocols are made for it (for example Åstrand's and YMCA).

Cycle adjustments

Seat height should be adjusted to a comfortable position. The appropriate height is to have the knee slightly bent when the sole of the foot is centred over the pedal axle with the pedal in the bottom position. To adjust the seat height loosen the lever (1) on the seat tube. See *Fig: Adjustments*.

The handlebar setting should be in a comfortable position when cycling. During longer exercise sessions it is recommended to occasionally change handlebar position. To adjust the handlebar, loosen the quick release lever (2). See *Fig: Adjustments*.

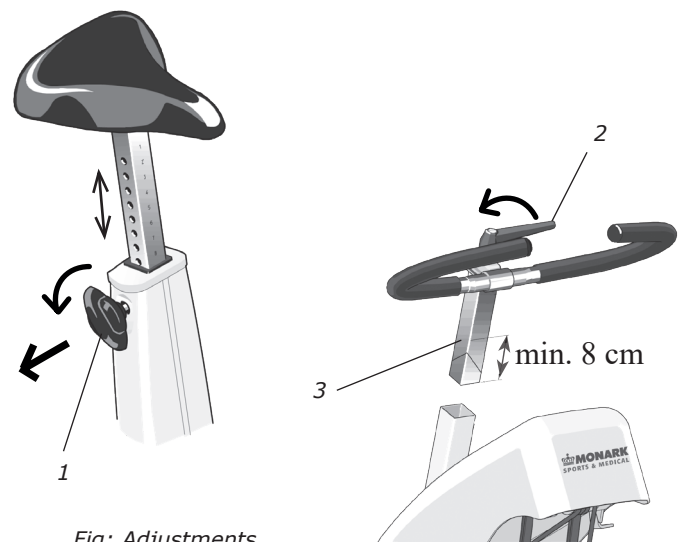


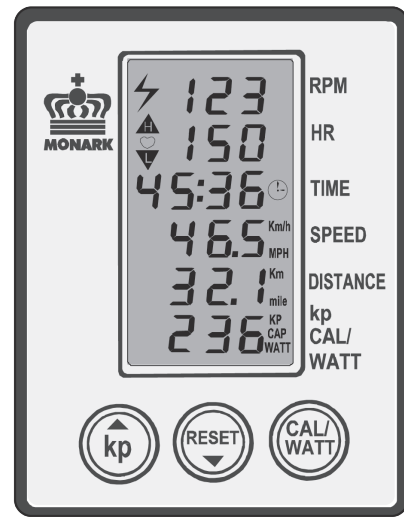
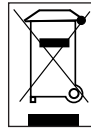
Fig: Adjustments
1) Locking knob, saddle
2) Locking handle, handlebar
3) Inserted min. 3"

NOTE! The handlebar stem should be inserted into the frame tube at least 3 inches (about 8 cm). This measure is marked with "MAX" on the stem (3).

Meter instructions

Display		
Pedal revolution (RPM)	0-250	rev./min.
HR	50-240	bpm
TIME	0:00-99:59	min:sec
SPEED	0-99	km/h
DISTANCE	0.0-99.9	km
FORCE	0.0-7.0	kp
Calories (CAL)	0-999	kcal
WATT	0 - 7 x rpm	watt

Batteries: 1.5 V x 2, R6 (AA)
 Storing temperature: -10° C - +60° C
 Operating temperature: 0° C - +50° C



The ergometer is equipped with a Fitness computer showing pedal revolutions per minute (RPM), heart rate in bpm (HR), exercise time in minutes and seconds (TIME), cycling speed in km per hour or miles per hour (SPEED), covered distance in km or mile (DISTANCE). Furthermore the workload (kp = weight basket + weights in kg) can be set which gives a reading of burned calories (CAL) as well as power (WATT) on the computer display. The energy is usually expressed in kJ (kilojoule) or cal (kilocalories, kcal). One kcal is approx. 4,2 kJ. The power is depending on the pedalling speed which makes it possible to adjust the workload/power by increasing or decreasing the pedalling speed.

Press any key or move the pedal gives a signal to the meter that activates all functions.

At the display for heart rate (HR) a heart symbol is lit which means that the meter is trying to find a pulse signal from an external source, chestbelt with electrodes, If the meter cannot find such a signal the HR function is automatically turned off after 30 seconds. When the function is turned off the heart symbol is not lit any more. The heart rate function can be turned on again by pressing a key.

The timer starts automatically when pedals are moved. Meter values for Time, Distance and Calories can be set to zero by pressing the RESET button for more than two seconds.

To get correct readings for calories and watts the kp value on the electronic meter has to be set to the same value as the workload that is the weight of the basket including the weights in it. The rubber plates are included in the calibrated weight of the 1 kg weight basket.

Example: The workload is 3 kg (weight basket 0,1 kg + 2 x 1kg weight). Press the kp key to the left on the meter. The lower display window is now flashing and showing figures in kp. Increase or decrease in steps of 0.1 kp by pressing the kp button (arrow up) or the RESET button (arrow down) until the reading is corresponding with the actual or desired kp values (workload) from the weight basket. After that press the CAL/WATT button to either show the CAL or WATT figures. After that press the CAL/WATT button to either show the CAL or WATT figures. The watt reading in the display is depending on the pedalling speed. The watts can accordingly be adjusted by increasing or decreasing the pedalling speed. Calories are calculated all the time.

Do not expose the meter to direct sunlight or extremely high temperature. Do not use any dissolvents when cleaning. Use only dry cloth.

Calories

There have been different theories on how to calculate this, since it depends on several factors and this means that it can only be seen as an estimate.

We have chosen the following formula that we think complies with the results given for a standard cycle position.

As a standard calculation when we display calories on our calibrated bikes we use: 1 minute with 100W gives 7 kcal.

It is easy to convert watts to calories if it was on the flywheel (the formula is $1W=0,2388 \times 10^{-3}$ kcal/s with four decimals), but when you normally show calories you want to show the total amount of calories your body has used during your training, not only the calories "burnt" on the flywheel.

Adjusting the brake cord/belt tension

Check at first that the brake belt is lying correctly on the flywheel brake surface. See *Fig: Brake cord* and *Brake device*. Put 4 kg in the weight basket (4), see *Fig: Brake device*. Rotate the flywheel by hand. The basket shall now lift up so the distance to the flywheel is at least 40 mm and maximum 60 mm. If this is not the case the brake belt has to be loosened or tightened a little at the tension center. If this is not the case the brake belt has to be loosened or tightened a little at the tension centre.

Loosen the cord bracket (2) somewhat so that the cord length can be adjusted. If the basket is too low, shorten the belt somewhat. If the basket is too high, lengthen the cord somewhat. Turn the tension center (3) approximately 45 degrees and after that tighten the bracket again. Tighten the bracket again and check that the distance between the weight basket and flywheel is between 40 and 60 mm when the flywheel is rotated by hand.

To give the correct workload, the basket in principle can hang anywhere between the flywheel and the tension center frame bracket. Note however that the tension center's stops must not go against its upper or lower stop position with any part. If so, the self-adjustment system is not working and correct workload can not be obtained.

NOTE!

To receive correct workload it is important to place the weight basket according to the description above. If the basket hangs too low it may touch the flywheel. If the basket is too high, wrong workload may obtain.

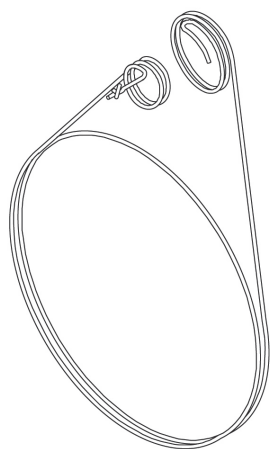


Fig: Brake cord

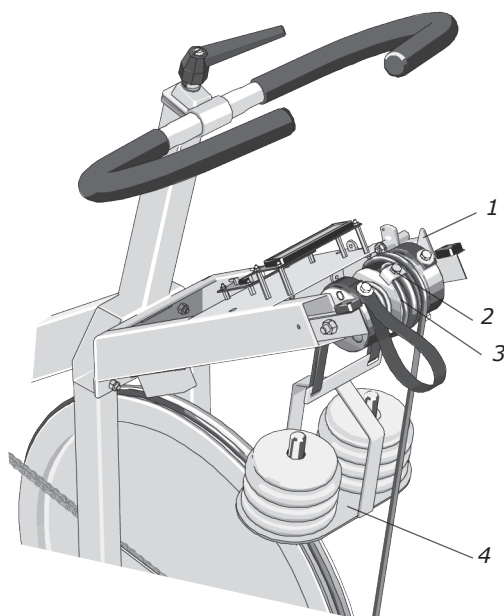


Fig: Brake device
1) Stop
2) Cord bracket
3) Tension center
4) Weight basket

Heart rate

A person's heart rate can be measured with a chest belt that senses the electronic output of the heart. The chest belt is standard equipment.

Fuss-free HR measurement requires that the belt is correctly placed. When it is correctly fitted the logo on the belt will be central and readable, outward and upright, by another person. Before putting on the belt, clean the skin where the belt is to be placed. The chest belt should be secured at a comfortable tension around the mid section, just below the breast muscle, see *Fig: Placement of the chest belt*. Moisten the electrodes before use, see *Fig: Electrodes on the back of the chest belt (1)*. To make contact with the HR receiver on the bike, the distance should not be more than 100 cm. It is especially important when first used to identify the chest belt with the sensor, by standing close to get the HR (maximum 60 cm).

NOTE! Electromagnetic waves can interfere with the telemetry system. Cellular phones are not allowed to be used near the bike during test.

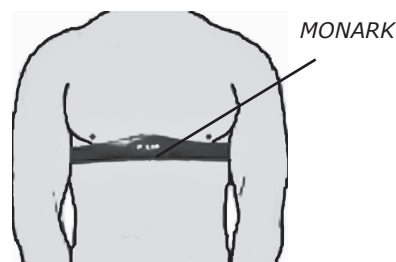
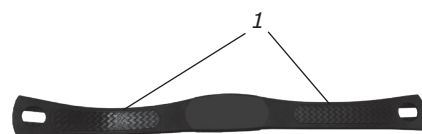


Fig: Placement of the chest belt

Fig: Electrodes on the back of the chest belt (1)



Troubleshooting guide

Symptoms	Probable Cause / Corrective Action
The display is not working	<ul style="list-style-type: none"> • Check that the batteries are OK.
No heart rate	<ul style="list-style-type: none"> • Wet the thumbs and place them on the electrodes. A low clicking sound will appear near battery lid while you click on the electrodes with one thumb. • Check that the chest belt is positioned correctly on test person and tight enough. Check that the electrodes are wet, in difficult cases it is necessary to use a contact gel or a mixture of water with a few drops of washing-up liquid. The level for HR signal can vary from person to person. Put chest belt on another known person who has a good pulse rendering.
Uneven heart rate	<ul style="list-style-type: none"> • Use an external unit, for example a HR watch, to check if it also indicates an irregular pulse. If this is the case, there is probably disturbance in the room. Magnetic fields from high voltage cables, elevators, fluorescent tube etc. can cause the disturbance. Other electronic equipment could be placed too close. Move the bike to a different location in the room or change rooms. If an irregular HR remains it should be checked manually. If the HR remains irregular at work the person's health should be examined.
There is a click noise when pedalling (increases with the weight)	<ul style="list-style-type: none"> • The pedals are not tight. Tighten them or change pedals. • The crank is loose. Check, tighten. • The base bearing is loose. Contact your dealer for service.
Scratching sound is heard when pedalling	<ul style="list-style-type: none"> • Check that the carriage block is taken off and that none of the covers is scratching.
There is a click noise and a squeak noise when pedalling	<ul style="list-style-type: none"> • Loosen the chain.
Any problems with the computer software	<ul style="list-style-type: none"> • Send an email to the software developer HUR labs support: software@hur.fi

Service

Note that the text about service and maintenance is universal and that all parts may not be relevant to your bike.

NOTE!

Make sure the voltage indicated on the appliance corresponds to the local mains voltage before making connections.

Warranty

EU countries - Private use

If you are a consumer living in the EU you will have a minimum level of protection against defects in accordance with EC Directive 1999/44/EC. In short, the directive states that your Monark dealer will be liable for any defects, which existed at the time of delivery. In case of defects, you will be entitled to have the defect remedied within a reasonable time, free of charge, by repair or replacement.

EU countries - Professional use

Monark Exercise products and parts are guaranteed against defects in materials and workmanship for a period of one year from the initial date of purchase of the unit. In the event of a defect in material or workmanship during that period, Monark Exercise will repair or replace the product. Monark Exercise will not, however, refund costs for labour or shipping.

Other countries

Monark Exercise products and parts are guaranteed against defects in materials and workmanship for a period of one year from the initial date of purchase of the unit. In the event of a defect in material or workmanship during that period above, Monark Exercise will repair or replace (at its option) the product. Monark Exercise will not, however, refund costs for labour or shipping.

Service check and Maintenance

It is important to carry out a regular service on your ergometer, to ensure it is kept in good condition.

Service action:

- We recommend isopropyl alcohol to disinfect the surface of the bike. Use a damp but not wet cloth to clean the surface you wish to disinfect.
- Always keep the bike clean and well lubricated (once a week).
- Periodically wipe the surface with a rust preventative, especially when it has been cleaned and the surface is dry. This is done to protect the chrome and zinc parts as well as the painted parts (4 times per year).
- Check now and then that both pedals are firmly tightened. If not the threading in the pedal arms will be damaged. Also check that pedal arms are firmly tightened on the crank axle, tighten if necessary. When the Ergometer is new it is important to tighten the pedals after 5 hours of pedalling (4 times per year).
- Check that the pedal crank is secure to the crank axle (4 times per year).
- Be sure that the pedals are moving smoothly, and that the pedal axle is clear of dirt and fibres (4 times per year).
- When cleaning and lubricating be sure to check that all screws and nuts are properly tightened (twice a year).
- Check that the chain is snug and there is no play in the pedal crank (twice a year).
- Check that pedals, chain and freewheel sprocket are lubricated (twice a year).
- Be sure that the brake belt does not show significant signs of wear (twice a year).
- Check that the handlebars and seat adjustment screws are lubricated (2 times per year).
- Be sure that all moving parts, crank and flywheel are working normally and that no abnormal play or sound exists. Play in bearings causes fast wearing and with that follows a highly reduced lifetime.
- Check that the flywheel is placed in the center and with plane rotation.

Batteries

If the meter is battery-operated, the batteries are in a separate package at delivery. If the storing time has been long the battery power can be too low to make the computer act correctly. Batteries must then be changed.

Flywheel bearing

The flywheel bearing is long-term greased and requires no supplementary lubrication. If a problem arises, please contact your Monark dealer.

Crank bearing

The crank bearing is greased and normally requires no supplementary lubrication. If a problem arises, please contact your Monark dealer.

Transportation

During transport the brake cord should be tightened to prevent it from falling off the flywheel.

Replacement of brake belt

To replace the brake belt remove covers if necessary. Make sure that the belt is loose.

Alt. 1: To loosen the brake belt on pendulum bikes with engine, connect power to the unit and raise the pendulum to 4 kp. Hold it there until brake belt is loose. Please note how the belt is assembled. Remove it from the bike. Attach the new brake belt and assemble the bike in reverse order.

Alt. 2: To loosen the brake cord on cycles with a weight basket set the basket to its upper position. Loosen the lock washer that is holding the cord and remove it from the tension center. Loosen or cut off the knot on the other end of the cord and then remove the whole cord from the bike. When assembling a new brake cord, first enter one end into the hole in the tension center, and tie a knot and let the knot fall into the bigger part of the hole. Lock the end of the cord with the lock washer.

Alt. 3: To loosen the brake belt on the bike remove all tension. Please note how the belt is assembled. Remove it from the bike. Attach the new brake belt and assemble the bike in reverse order.

NOTE!

When replacing the brake belt it is recommended to clean the brake surface. See "Brake belt contact surface".

Brake belt contact surface

Deposits of dirt on the brake belt and on the contact surface may cause the unit to operate unevenly and will also wear down the brake belt. The contact surface of the flywheel should be smoothed with fine sandpaper and any dust removed with a clean dry cloth.

Remove any potential covers and all workload on the brake belt and then remove it. Grind with a fine sand paper. Grinding is easier to perform if a second individual cautiously and carefully pedals the cycle.

Irregularities on the brake belt contact surface are removed by means of a fine sand paper or an abrasive cloth. Otherwise unnecessary wear on the brake belt may occur and the unit can become noisy.

Always keep the brake belt contact surface clean and dry. No lubricant should be used. We recommend replacing the brake belt when cleaning the contact surface. In regard to assembly and adjustment of the brake belt, see "Replacement of brake belt".

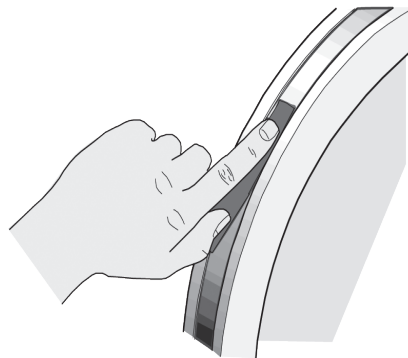


Fig: Brake belt contact surface

Chain 1/2" x 1/8"

Check the lubrication and tension of the chain at regular intervals. In the middle of its free length the chain should have a minimum play (3) of 10 mm (1/4 inch). See *Fig: Chain adjustments*. When the play in the chain is about 20 mm (3/4 inch) the chain must be tightened. Otherwise it will cause abnormal wear of the chain and sprockets. Therefore it is always recommended to keep the chain play as small as possible. Loosen the hub nut (2) on both sides and tense the chain with the chain adjuster (1) when needed.

When the chain has become so long that it can no longer be tightened with the chain adjusters it is worn out and shall be replaced with a new one.

To adjust or replace the chain, remove covers if required.

To adjust the chain the hub nuts (2) should be loosened. Loosening or tightening the nuts on the chain adjusters (1) will then move the hub and axle forward or backward. Then tighten the nuts on the hub axle again. See *Fig: Chain adjustments*.

To replace the chain, loosen the chain adjusters as much as possible. Dismantle the chain lock (6) and remove the chain. Use a pair of tongs for dismantling spring. Put on a new chain and assemble the chain lock. The spring of the chain lock should be assembled with the closed end in the movement direction (5) of the chain. Use a pair of tongs for dismantling and assembling the spring (4). See *Fig: Chain replacement*.

NOTE! At assembly the flywheel has to be parallel with the centerline of the frame. Otherwise the chain and sprockets make a lot of noise and wear out rapidly.

Then assemble the removed parts as above but in reverse order.

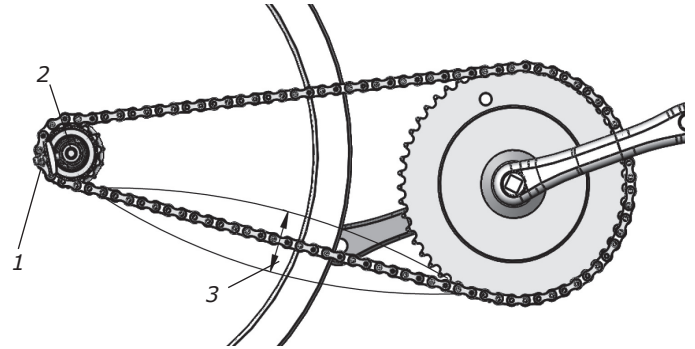


Fig: Chain adjustments
1) Chain adjuster
2) Axle nut
3) Chain play

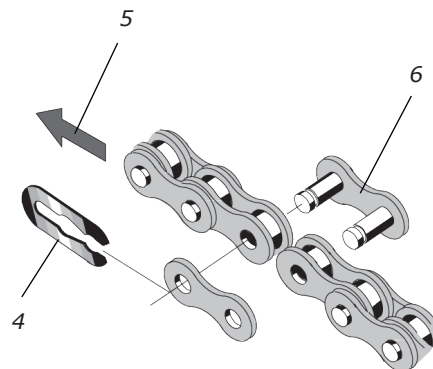


Fig: Chain replacement
4) Lock spring
5) Movement direction
6) Chain lock

Freewheel sprocket

When replacing the freewheel sprocket remove frame covers if necessary. Remove the chain according to section "Chain 1/2" x 1/8".

Loosen the axle nuts and lift off the flywheel. Remove the axle nut, washer, chain adjuster and spacer on the freewheel side. Replace sprocket-adaptor and assemble the new parts in reverse order according to the above.

NOTE! Do not tighten the axle nut completely. It must be possible to loosen the sprocket-adaptor half a turn.

The sprocket should be lubricated with a few drops of oil once a year. Tilt the cycle to make it easier for the oil to reach the bearing. See *Fig: Lubrication*.



Fig: Lubrication

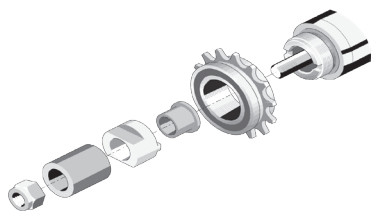
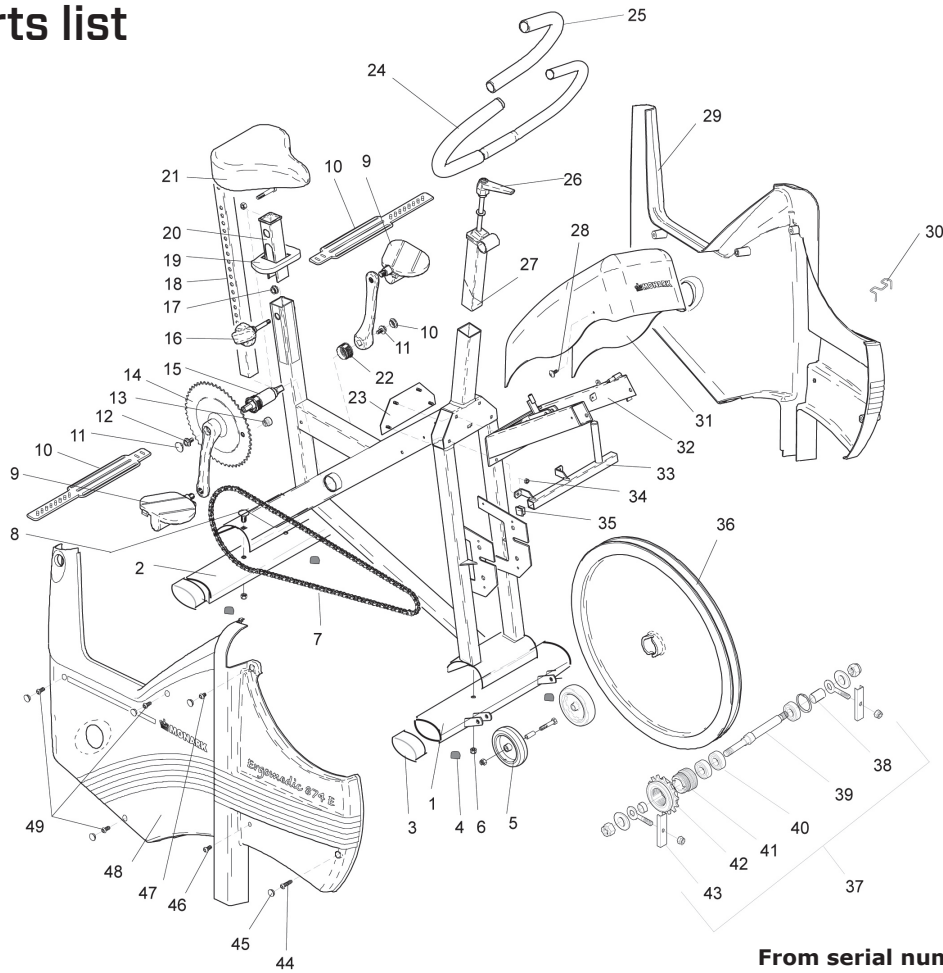


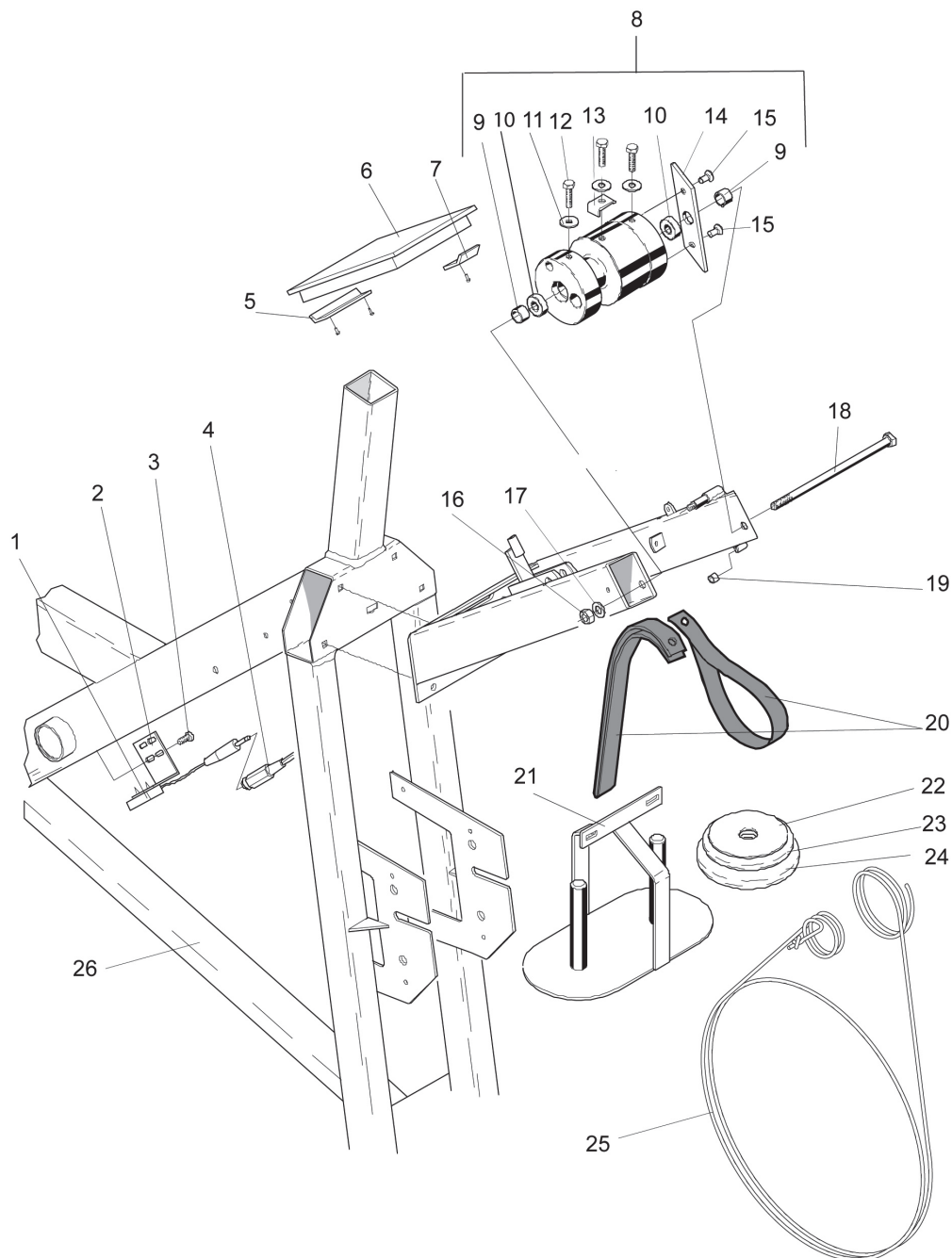
Fig: Hub assembly

Spare parts list



From serial number: WBK 285390 H

Pos.	Qty.	Art. No.	Description	Pos.	Qty.	Art. No.	Description
1	1	9301-15	Support tube, front	25	1	9126-72	-Handgrip (pair)
2	1	9301-16	Support tube, rear	26	1	9100-180	-Screw
3	4	9328-51	Plastic cap, blue	27	1	9300-291	-Expander wedge
4	4	9328-26	Rubber foot	28	2	5675-9	Screw
5	1	9328-37	Transport wheel, (pair) compl.	29	1	9394-71	Frame cover, left
6	4	5845	Locking nut M8	30	1	9384-45	Belt control
7	1	9300-55	Chain 1/2 x 1/8", 116 l	31	1	9374-41	Instrument cover
8	2	9300-12	Screw MVBF M8x16 mm	32	1	9374-9	Frame for equipment
9	1	9300-220	Pedal (pair)	33	1	9374-29	Weight holder
10	1	9300-207	Pedal strap, (pair)	34	1	5843-9	Nut M6
11	2	8523-2	Dust cover	35	1	9302-28	Plastic plug
12	2	8523-115	Screw M6S 8.8 M8 x 20 FZB	36	1	9300-3	Flywheel
13	1	9326-164	Magnet	37	1	9300-24	Wheel suspension complete set
14	1	9300-430	Steel crank set, complete	38	1	9300-17	-Bush, 23 mm
15	1	8966-175	BB cartridge bearing	39	1	9300-18	-Axle
	1	9300-133	Locking knob, complete	40	3	19001-6	-Bearing 6001-2z
16	1	9300-122	-Locking knob	41	1	9106-14	-Connection
17	1	9300-134	-Pressure washer	42	1	9106-13	-Sprocket
18	1	9300-138	Saddle post	43	1	9000-12	-Chain adjuster (pair)
19	1	9300-123	Top cover	44	1	5683	Screw M5x5 mm
20	1	9300-115	Bushing f. saddle post	45	10	9306-12	Plastic plug
21	1	4994-5	Saddle	46	2	5673-9	Screw M5 x 12 mm
	1	9300-114	-Saddle bracket	47	1	5681	Screw M5
22	1	8966-176	Support casing for BB-bracket	48	1	9374-70	Frame cover, right
23	1	9374-60	Bracket for frame	49	3	5671-19	Screw M5x2 mm
24	1	9300-280	Handlebar complete				



From serial number: WBK 285390 H

Pos.	Qty.	Art. No.	Description	Pos.	Qty.	Art. No.	Description
1	1	9326-162	Sensor	1	1	5878	-Washer
2	1	9326-166	Holder for sensor	16	1	5844	Nut M8
3	2	9326-59	Screw	17	1	5864	Washer M8
4	1	9326-263	Extension cable	18	1	14374	Screw M8 x 160 mm
5	1	9374-172	Bracket	19	1	9374-12	Damper
6	1	9374-170	Digital meter	20	1	9324-26	Suspension belt
7	1	9374-171	Holder	21	1	9324-25	Weight basket, 1 kg
8	1	9374-20	Tension device, complete	22	4	9102-30	Weight, 0.1 kg
9	2	9127-37	-Spacer	23	1	9102-27	Weight, 0.5 kg
10	2	19088-6	-Bearing 608-2z	24	4	9102-26	Weight, 1kg
11	2	5862	-Washer	25	1	9384-47	Brake cord, complete
12	3	14323-9	-Screw M6 x 16 mm	26	1	9301-5	Frame
13	1	9324-70	-Lock spring	1	1	9328-190	Chest belt
14	1	9374-21	-Stop				
15	2	14379	-Screw M6 x 16 mm				

PRODUCTS FOR LIFE AND PERFORMANCE



CE 0402

Version 1709
Art. No.: 7950-306