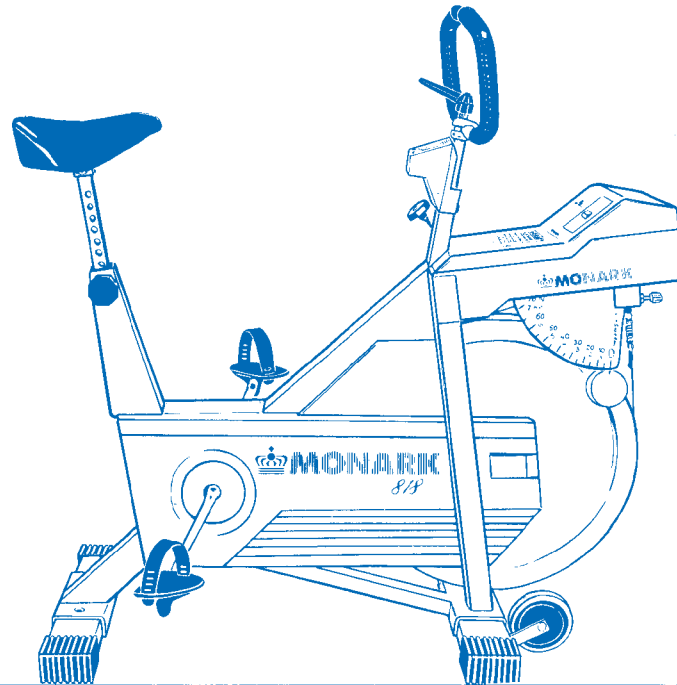


# INSTRUCTION MANUAL

*Monark Ergometer Model 818E*



 **MONARK**

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## CONGRATULATIONS !!

Congratulations on your decision to purchase a product manufactured by Monark AB in Varberg, Sweden. Monark has been the world's leading manufacturer of high quality ergometers and exercise cycles for more than 25 years.

## GENERAL

It is important that you keep your ergometer clean and properly lubricated. Periodically wipe the surface with a rust preventive, especially when it has been cleaned and the surface is dry. Most important is to protect the chromed and zinced parts but also painted parts benefit from the same protection.

When cleaning and lubricating be sure to check that all screws and nuts are properly tightened.

Please note: The production number of your ergometer is placed according to fig 2 page 5.

## WARRANTY

As on any quality product there may be an exceptional fault due to material or manufacture. If such a fault should arise on your ergometer, please return to the place of purchase for necessary repair.

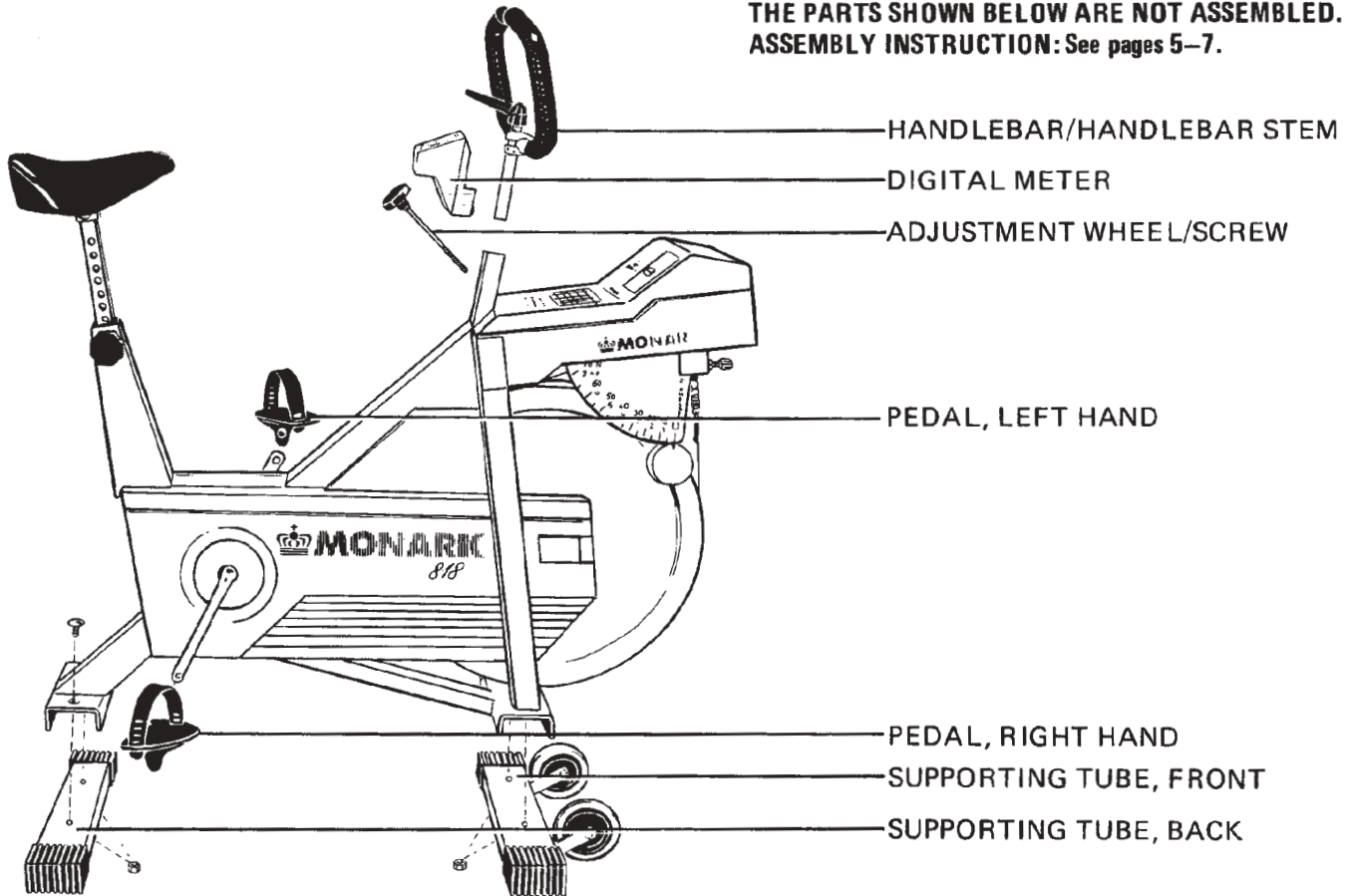
Monark products and parts are guaranteed against defects in materials and workmanship for a period of one year from the initial date of purchase of the unit.

Parts founds to need replacement due to normal wear and tear, such as brake belts, are not covered. This guarantee covers parts only, not labor costs associated with the repair.

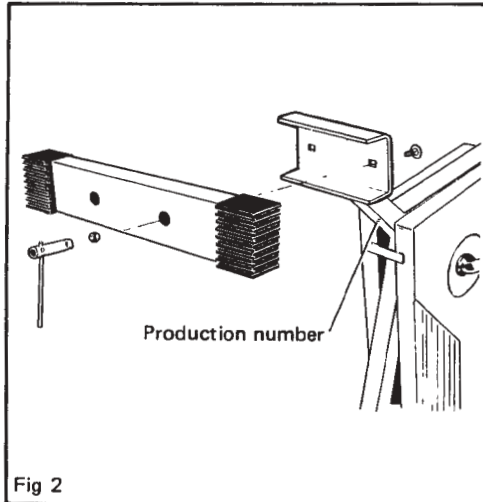
This guarantee does not apply to cases of abuse or vandalism, nor does it extend to any injury or loss to person or property caused directly or indirectly by any Monark products.

In the event of a defect in material or workmanship during the warranty period, Monark will repair or replace (at its option) the product. Monark will do so at its expense for the cost of materials but not for labor or shipping.

**THE PARTS SHOWN BELOW ARE NOT ASSEMBLED.  
ASSEMBLY INSTRUCTION: See pages 5-7.**

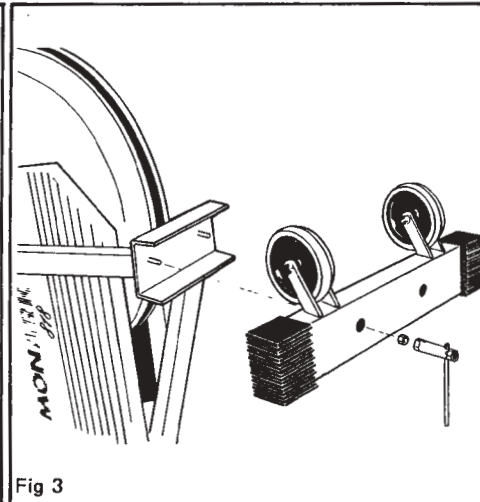


## ASSEMBLY INSTRUCTION



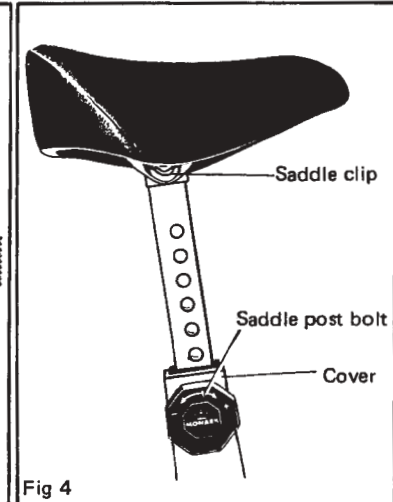
Tip the cycle forward and remove the transport block. Assemble the back supporting tube with two bolts and two nuts.

Note: Use the accompanying spanner. See fig 2.



Tip the cycle backwards and remove the transport block. Assemble the front supporting tube with two nuts onto the two fastened bolts.

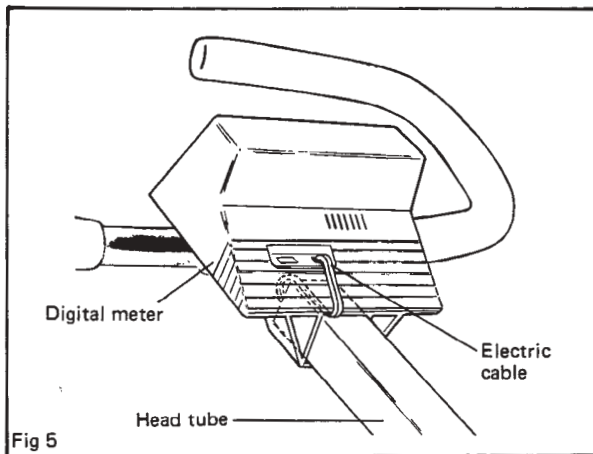
Note: Use the accompanying spanner. See fig 3.



Adjust to desired saddle height position by loosening the saddle post bolt.

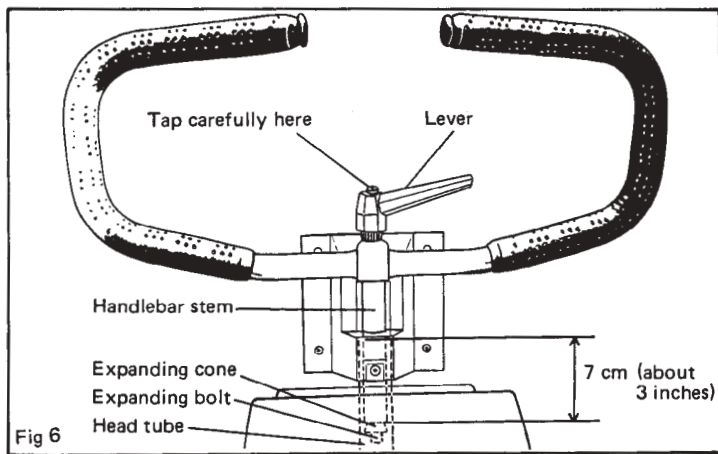
In order to change the inclination of the saddle, loosen the saddle clip.

Note: Tighten firmly. See fig 4.



Assemble the digital meter. It is very important that the electric cable is assembled in the groove on the meter. See fig 5.

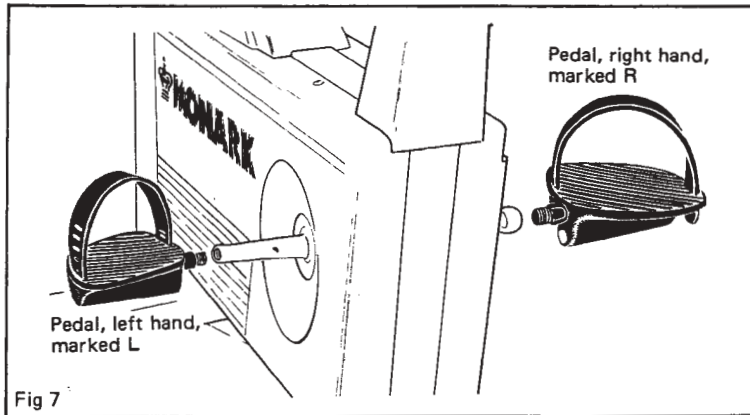
Connect the electric contact to the meter. See fig 5.



Before the handlebar stem is assembled, be sure the expanding cone is loose. Insert the handlebar stem into the head tube and tighten the expanding bolt firmly by means of the lever. The handlebar stem should be inserted into the fork tube at least 7 cm (about 3 inches). Usually this measure is marked out. See fig 6.

To change the height of the handlebar, loosen the expanding bolt about 5 mm. Tap the bolt to release the expanding cone. Adjust the handlebar to the desired position and tighten the expanding bolt by means of the lever.

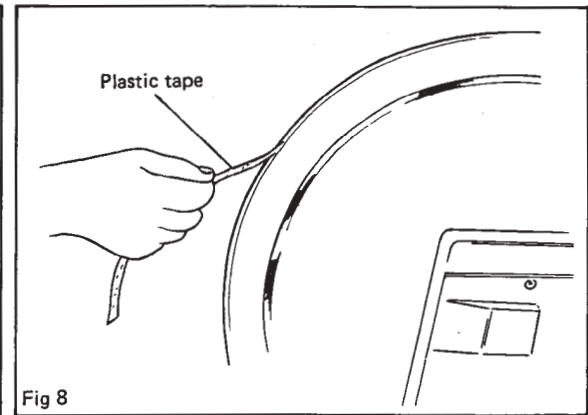
In order to change inclination of the handlebar, loosen the expanding bolt somewhat. Adjust to desired position and tighten the expanding bolt firmly again by means of the lever.



The pedal marked R (Right) to be assembled on the right hand side of the cycle (the chain wheel side). The pedal axle has a right hand thread and must be threaded onto the crank clockwise. Tighten firmly. See fig 7.

The pedal marked L (Left) to be assembled on the left hand side of the cycle. The pedal axle has a left hand thread and must be threaded onto the crank counter clockwise. Tighten firmly. See fig 7.

Remove the transport cord for the pendulum and check that the pendulum will hang in vertical position. See page 17.



Loosen the brake belt and remove the plastic tape from the flywheel. Assemble the brake belt as before. See fig 8.

Note: It is very important that all of the plastic tape is removed. Residue of the plastic tape may cause an uneven operation.

## OPERATION MANUAL

Monark Ergometer, Model 818E, is a test cycle provided with a brake, whose brake resistance can be read in Newton (N) or in Kilopond (Kp). The brake power can be read in watts at two different pedalling speeds, 50 and 60 pedal revolutions/minute respectively.

The energy that a person must develop during a certain amount of time in order to get over this brake power, can thus be calculated. The energy is usually expressed in kJ (kilo Joule) or kcal (kilocalories).

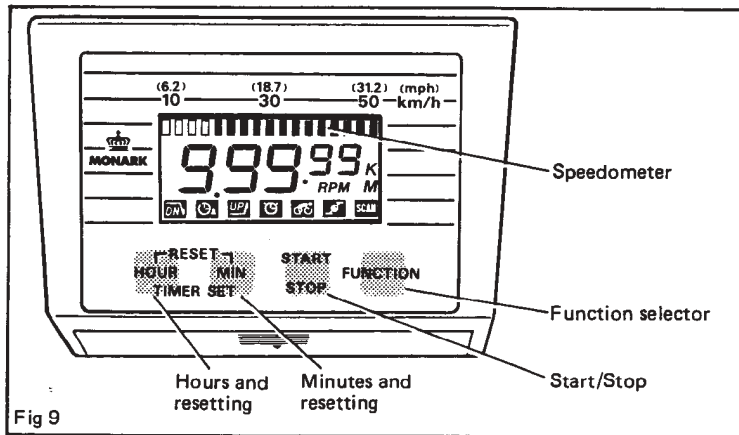
Model 818E is also equipped with an electronic meter showing an imagined cycling speed in km per hour, a covered distance in km, pedal revolutions per minute and time.

When pedalling the test person supplies the flywheel with a certain kinetic energy. This is braked by means of a brake belt which runs around the bigger part of the brake surface of the flywheel. The brake power is changed either by using another pedalling speed or by increasing or decreasing the tension of the brake belt against the flywheel by means of the load adjustment wheel.

The height of the saddle is adjusted so that, when you sit comfortably with your foot exactly above the pedal axle and with the pedal in its down position, your knee is only slightly bent.

The adjustment of the handlebar should give a comfortable ride. When cycling for a long time, it may be suitable some time during the exercise to change the adjustment of the handlebar.





## SPECIFICATION ELECTRONIC METER

Pedal revolutions	: 0.5–200 revolutions/minutes
Speed	: 10–50 km/hour or 6.2–31.2 mph alternatively
Trip	: 0.00–1999.99 km or miles alternatively
Time "count-up"	: 0.00.00–11.59.59
Time "count-down"	: 11.59.00–0.00.00
Buzzer	: Gives among other things repeated signals during 20 seconds after the end of the time set

**WARNING!** Do not expose the electronic meter to direct sunlight or extremely high temperatures.  
Do not use any dissolvents when cleaning but only a dry cloth.

**NOTE!** The batteries of the electronic meter are lying isolated at delivery. See page 10 regarding removal of isolation or replacement of batteries.

If the batteries have been stored for a long time, the battery effect can be too low to produce all functions of the meter. If so, batteries must be replaced. See page 10.

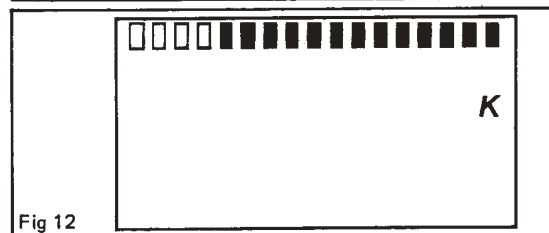
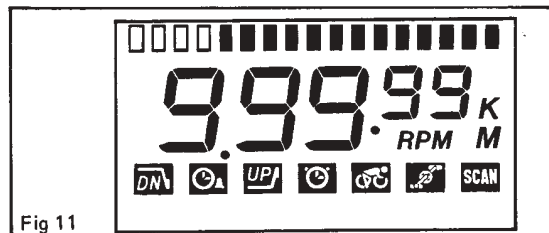
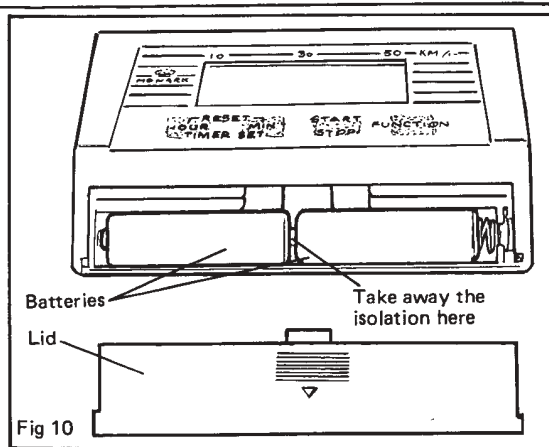
## REMOVAL OF ISOLATION OR REPLACEMENT OF BATTERIES

Remove the sliding lid on the meter according to fig 10 and take away the isolation or replace the batteries, 2 ea 1,5V,  $\varnothing$  14,5 x 50 mm (LR6), our article No 2142.

Direct after you have assembled the batteries or the isolation is removed, the display will in turn show all figures from 0 to 9 and at the same time all 17 lots are lighted with start from left hand. A continuous buzzer-signal is heard as long as the registration according to fig 11 is shown.

To choose distance in km (K) or miles (M), press first the button for "Function" and choose the "K" or "M" by pressing the "Start/Stop"-button. Fig 12 shows setting on "K".

After pressing the button for "Function" the meter is now ready for use.



Start by pressing the "Function"-button. Press as many times as is necessary to get the registration on the display according to fig 13.

If the display should be reset to zero, press the both buttons "Reset" at the same time.

The distance can be calculated in km, "K" on the display (see fig 13) or in miles, "M" on the display.

Choice of distance in km or miles can be done only in connection with that the circuit of the batteries is disconnected, for example at replacement of batteries.

Note! Accumulated distance will be reset at zero at the same time.

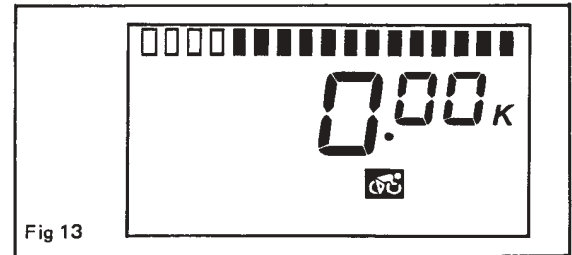


Fig 13

Press the "Function"-button as many times as is necessary to get the registration on "RPM" according to fig 14.

If you intend to exercise with a brake power of 50 watts and a pedalling speed of 50 revolutions/minute, you should start by making sure you achieve the correct pedalling speed, i. e. 50 RPM. See fig 15.

After that the load adjustment wheel should be turned so that 50 watts are shown on the scale for 50 RPM. See fig 16.

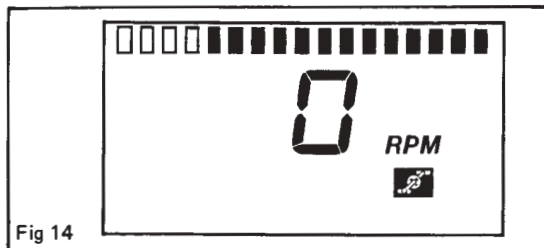


Fig 14

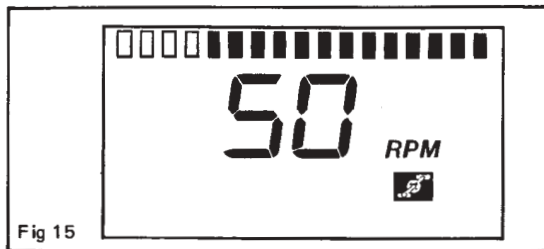


Fig 15

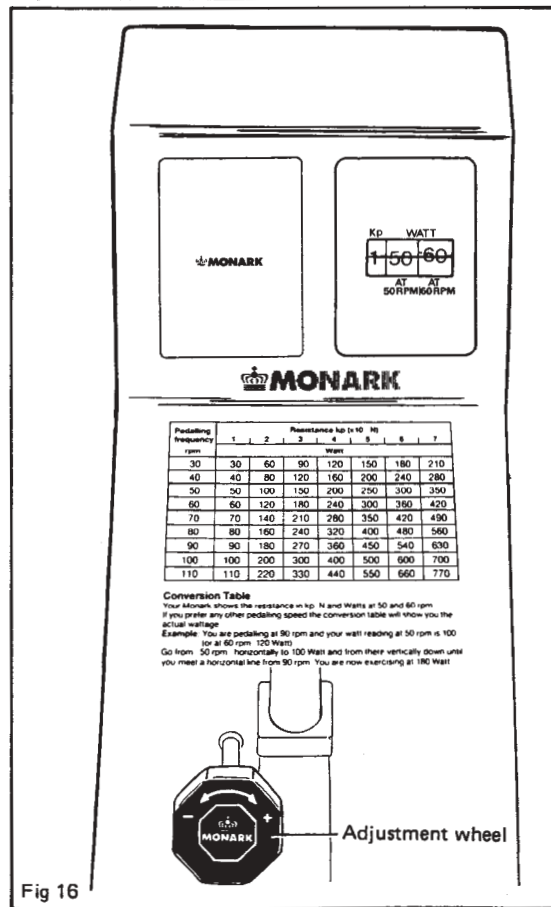


Fig 16

Press the button for "Function" as many times as is necessary to get the registration according to fig 17.

### COUNT-DOWN OF EXERCISE TIME

Press the buttons for hours and minutes – one button at a time – so that the preset time, for example according to fig 18, is shown.

By pressing the "Start/Stop"-button the count-down is starting with 1 second at a time, at the same time as the clock symbol is flashing. See fig 19.

After the end of the exercise time "UP" is shown on the display according to fig 20 and the buzzer is giving signals during 20 seconds.

To reset the display according to fig 17, press the both "Reset"-buttons at the same time.

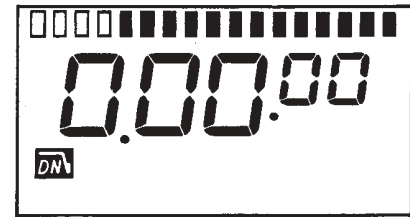


Fig 17



Fig 18

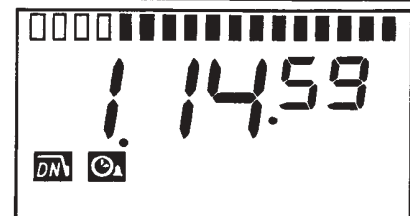


Fig 19



Fig 20

## COUNT-UP OF EXERCISE TIME

Press the "Function"-button to get the registration according to fig 21.

For reset to zero, press the two "Reset"-buttons at the same time.

By pressing the "Start/Stop"-button the count-up is starting with 1 second at a time at the same time as the clock symbol is flashing. See fig 22.

Press the "Start/Stop"-button after the end of the exercise time.

To reset the display according to fig 21, press the two "Reset"-buttons at the same time.

Press the "Function"-button as many times as is necessary to get the registration "Scan" furthest to the right on the display. There will now automatically be a change between the functions in the order shown in fig 23.

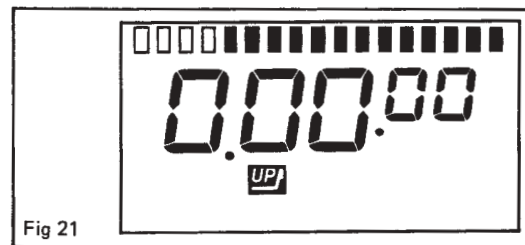


Fig 21

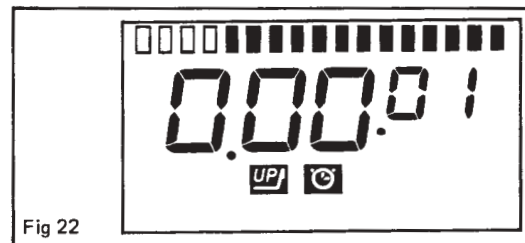


Fig 22

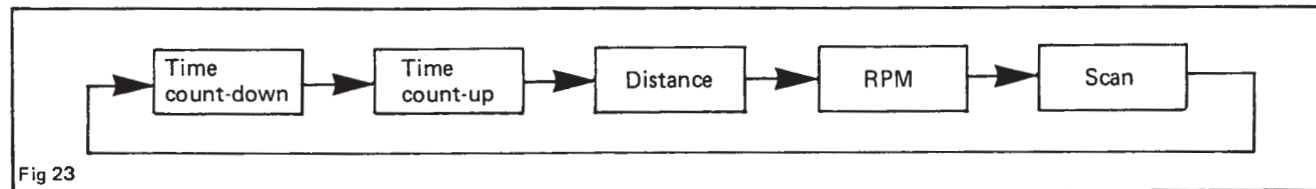


Fig 23

By means of the table below you can read the approximate energy consumption in Kcal. If the brake power has been 50 watts and the exercise has been going on for one hour and fifteen minutes, you read according to the arrows on the table. In this case an energy consumption of 375 Kcal is shown.

CALORIE CONSUMPTION							
TIME MIN	WATT						
	50	100	150	200	250	300	350
5	25	40	55	70	85	100	115
10	50	80	110	140	170	200	230
15	75	120	165	210	255	300	345
20	100	160	220	280	340	400	460
25	125	200	275	350	425	500	575
30	150	240	330	420	510	600	690
35	175	280	385	490	595	700	805
40	200	320	440	560	680	800	920
45	225	360	495	630	765	900	1035
50	250	400	550	700	850	1000	1150
55	275	440	605	770	935	1100	1265
60	300	480	660	840	1020	1200	1380
65	325	520	715	910	1105	1300	1495
70	350	560	770	980	1190	1400	1610
75	375	600	825	1050	1275	1500	1725
80	400	640	880	1120	1360	1600	1840
85	425	680	935	1190	1445	1700	1955
90	450	720	990	1260	1530	1800	2070

As to workload tests, please see accompanying instruction.

The conversion table, which is placed on the cycle, shows the conversion into watts at other pedalling speeds than 50 and 60 rpm respectively. The result is achieved according to the following example:

Chose as braking power any of the watt numbers from 50 up to 350 on the scale for 50 rpm at the same time as you pedal with this number of revolutions.

Let us imagine that you have chosen 150 watts as braking power. If you now increase the pedalling speed to 100 rpm the table should be read as follows:

Start from the line 50 rpm and continue to 150 watts and further to the line for 100 rpm. You can then read that the braking power has been 300 watts. See the arrows in the table.

rpm	Kp						
	1	2	3	4	5	6	7
	Watt						
30	30	60	90	120	150	180	210
40	40	80	120	160	200	240	280
50	50	100	150	200	250	300	350
60	60	120	180	240	300	360	420
70	70	140	210	280	350	420	490
80	80	160	240	320	400	480	560
90	90	180	270	360	450	540	630
100	100	200	300	400	500	600	700
110	110	220	330	440	550	660	770

Chosen watt number on scale for 50 rpm →

Chosen number of revolutions →



## ZERO ADJUSTMENT OF METER PANEL

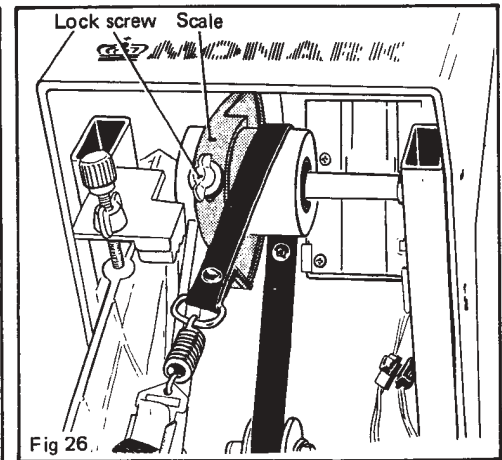
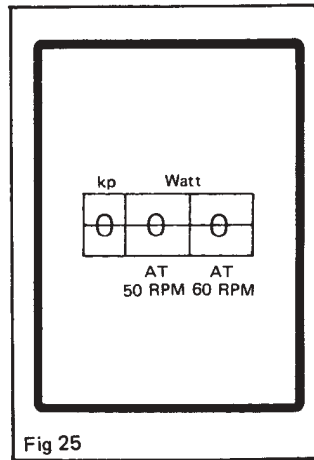
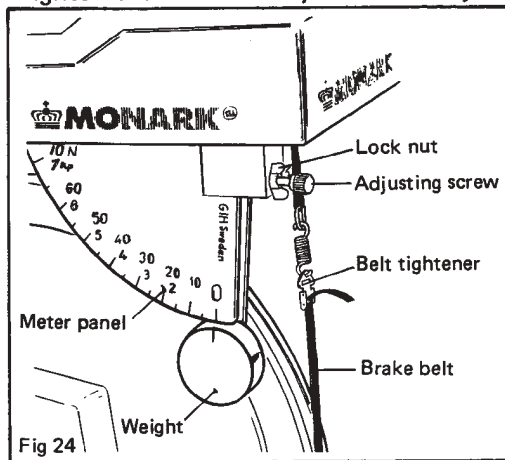
Remove the transport cord for the pendulum and check that the pendulum will hang in vertical position.

If adjustment is necessary, loosen first the lock nut and then change the position of the adjusting screw, so that the meter panel will have its 0-index in line with the index of the weight. Tighten the lock nut after the adjustment. See fig 24.

Check at the same time that the scale for watts and kiloponds will have its 0-index in line with the index in the display of the scale. See fig 25.

If needed the position of the scale can be adjusted after the adjusting screw has been loosened. See fig 26.

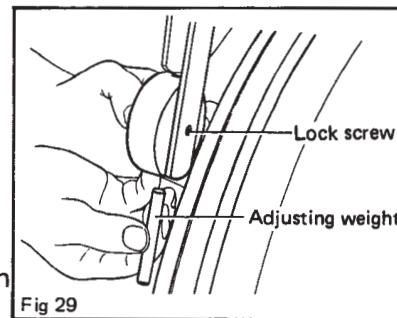
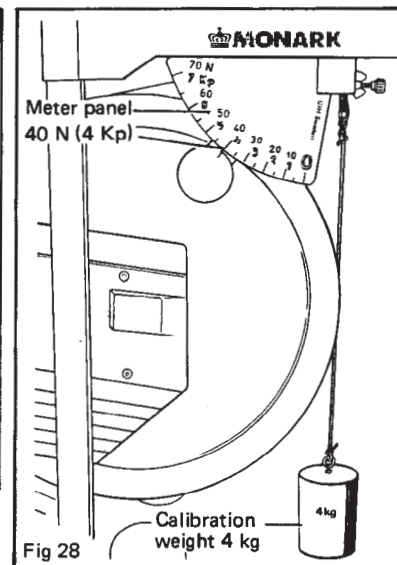
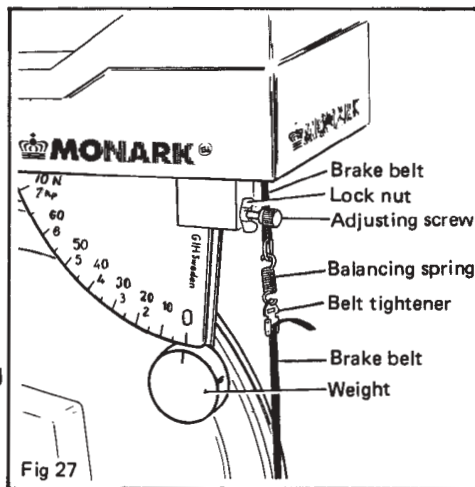
Tighten the screw firmly after the adjustment.



## CALIBRATION OF PENDULUM WEIGHT

1. Loosen the balancing spring from the brake belt. See fig 27.
2. Check that the 0-index of the meter panel and of the scale are in line with the index of the weight and of the scale display respectively.
3. Adjustment, if any. See figures 24, 25 and 26, page 17.
4. Fasten a known weight, e.g. 4 kg (our ref No 9000-211) where the balancing spring was placed. See fig 28. Note: The weight should not be lighter than 3 kg, due to the possibility of inferior accuracy.
5. When correctly set, it should be possible to read this weight from the corresponding place on the meter panel. See fig 28.
6. Should there be a deviation, adjust the pendulum to the correct weight on the scale by means of the adjusting weight. In order to change the position of the adjusting weight, loosen the lock screw of the weight. See fig 29.
7. Should the index of the pendulum weight be too low, move the adjusting weight upwards into the weight. Should the index be too high the adjusting weight is moved somewhat downwards and locked in the new position. This procedure is repeated until the correct reading is achieved.

Check the calibration of the pendulum weight once or twice a year or when needed.



## BRAKE BELT CONTACT SURFACE AND BRAKE BELT

Deposits of dirt on the brake belt and on the contact surface may cause the unit to operate unevenly. The brake belt contact of the flywheel surface should then be ground off with a fine abrasive cloth, see fig 30, and any dust be removed with a clean dry cloth.

Remove the brake belt at the belt tensioner (see fig 31 page 20) before the grinding. Grinding off any build up of dust etc is easier if a second individual cautiously pedals the cycle.

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

We recommend you to replace the brake belt when cleaning the contact surface. See page 20.

Always keep the brake belt contact surface clean and dry. No lubricant other than teflon spray Non Friction (our part No 9000-220) should be used.

**Note:** Deposits of dirt on the contact surface and wear of the brake belt affect the friction between the flywheel and the brake belt but do not affect the force shown on the pendulum scale.

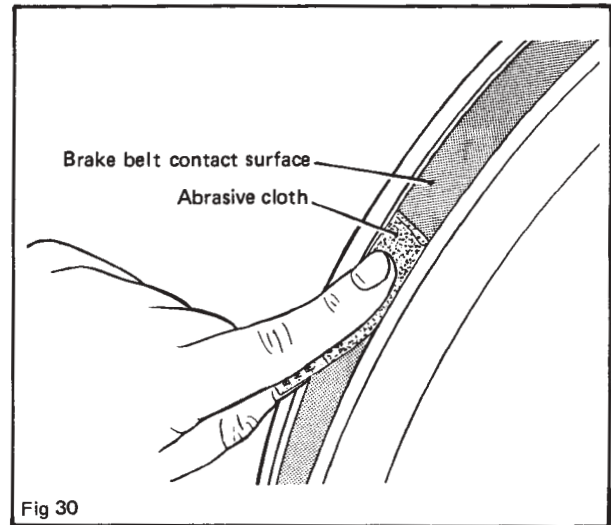


Fig 30

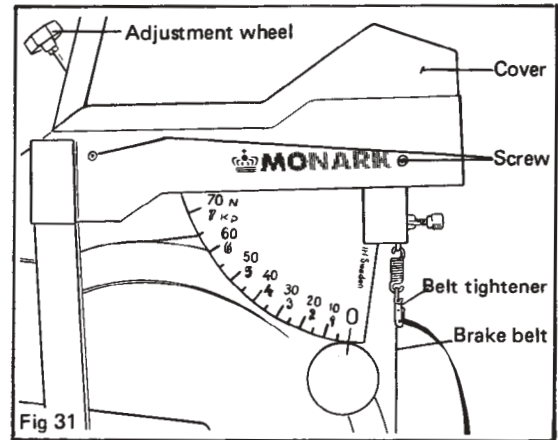
## REPLACEMENT OF BRAKE BELT

Loosen the brake belt at the belt tightener. See fig 31.  
Remove the adjustment wheel by screwing this counter clock-wise. See fig 31.

Loosen the screws (4 pcs) for the cover. See fig 31.

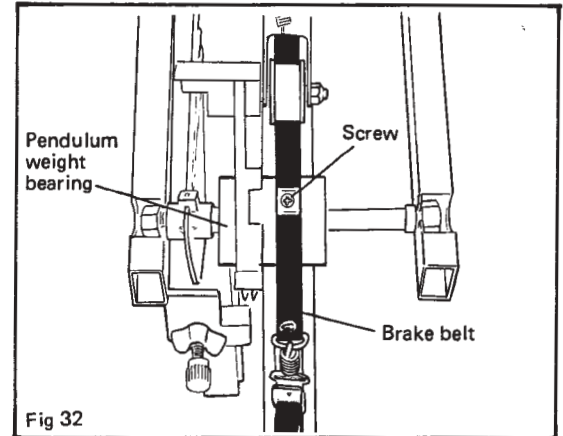
Remove the cover, so the screws for the fastening of the brake band can be loosened. See fig 32.

Replace the brake belt and assemble the other parts in the reversed order according to the above.



## PENDULUM WEIGHT BEARING

The bearings in the pendulum weight are lifetime greased and require normally no maintenance. If a problem arises, please contact your Monark dealer.



## CHAIN 1/2" x 1/8"

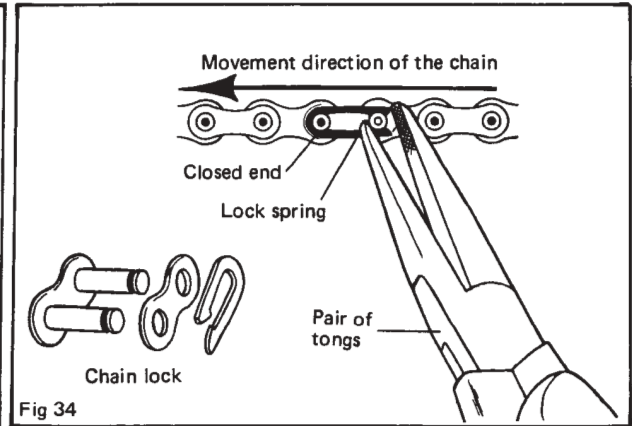
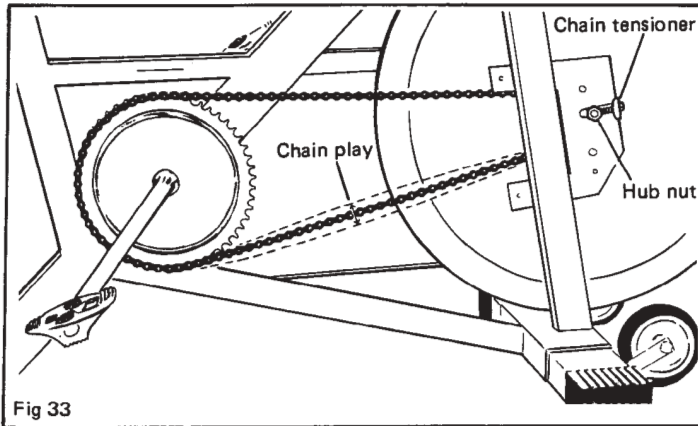
Check the lubrication and tension of the chain at regular intervals. In the middle of its free length the chain should have a minimum of 10 mm and a maximum of 25 mm (1 inch) of play. See fig 33. When the play in the chain is 25 mm (1 inch) or greater it should be tightened. When the chain has become so long that it can no longer be tightened with the chain tensioners it is worn out and should be replaced with a new one.

Loosen the lower chain guard bracket. See fig 35, page 22. Remove the screw for the right chain guard, back. To take away the chain guard, push it backwards. See fig 37, page 22. Take off the front chain guard, right and left side. See fig 37, page 22.

To adjust the chain the hub nuts should be loosened. The hub and axle is then moved forward or backward by loosening or tightening the nuts of the chain tensioners. Tighten the nuts on the hub axle and the chain should be at the proper tension (see fig 33).

The spring of the chain lock should be assembled as illustrated in figure 34 with the closed end in the movement direction of the chain. Use a pair of tongs for dismantling and assembling the spring.

Note: If the wheel is not parallel to the center line of the frame, the chain will get caught on the top of the sprocket and cause noise.



## CRANK BEARING

The crank bearing is long-term greased and normally needs no supplementary lubrication.

The crank bearing should be checked at regular intervals to see that there is no play in the bearing. If play exists in the crank bearing it must be adjusted, otherwise bearing races and other parts will be damaged.

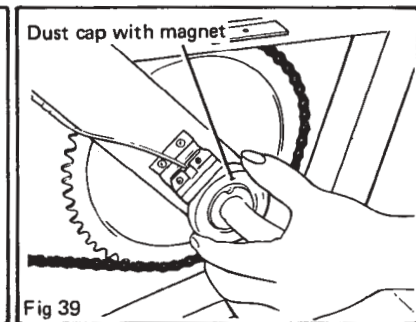
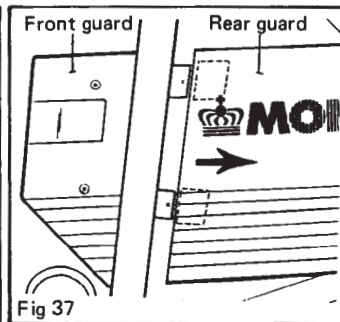
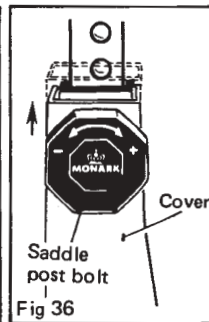
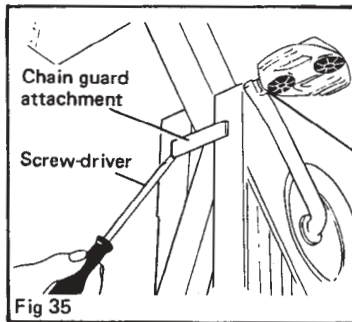
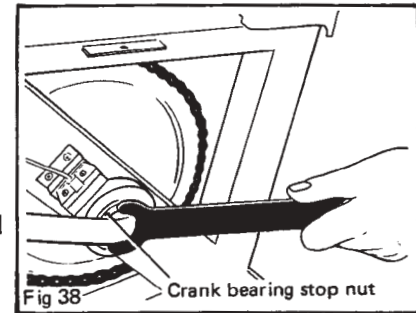
A play in the crank bearing should be adjusted as follows:

Remove the left pedal as described on fig 7, page 7. Loosen the lower chain guard attachment. See fig 35. Take away the screw for the left chain guard, back. Loosen the saddle post screw some turns so the cover can be lifted up about 10 mm. See fig 36. To loosen the chain guard, push it backwards. See fig 37.

Loosen the crank bearing stop nut on the left side of the unit using a special tool (part No 7099). See fig 38. Note: The stop nut has a left hand thread. Loosen the stop nut so that by turning the dust cap with magnet, the cone can be adjusted into a "play-free" position. See fig 39. Then tighten the stop nut properly again.

Note: Do not adjust the crank bearing too hard. The crank bearing should move play-free but still very easily after the adjustment.

Assemble the left chain guard and pedal.



## REPLACEMENT OF THE FREEWHEELING SPROCKET

Loosen the brake belt at the belt tightener according to fig 31 page 20. Loosen the lower chain guard attachment. See fig 35 page 22.

Take away the screws for the two chain guards on right side and the front cover on left side. Loosen the saddle post screw some turns so the cover can be lifted up about 10 mm. See fig 36 page 22. To loosen the back chain guard, push it backwards. See fig 37 page 22.

Dismantle the chain as described on page 21.

Loosen the axle nuts and lift off the wheel. Remove the axle nut, washer, chain tensioner and spacer on the freewheel side. Place the remover (part No 9100-14) in the adapter and place the spacer and axle nut outside. See fig 40 and 41.

Note: Do not tighten the axle nut completely. It must be possible to loosen the adapter—sprocket half a turn.

Replace sprocket—adapter and assemble the other parts in reverse order according to above points.

## LUBRICATION SPROCKET

The sprocket should be lubricated with a few drops of oil once or twice a year. Incline the cycle somewhat to make it easier for the oil to reach the bearing. See fig 42.

## FLYWHEEL BEARING

The bearings in the flywheel are lifetime greased and require normally no maintenance. If a problem arises, please contact your Monark dealer.

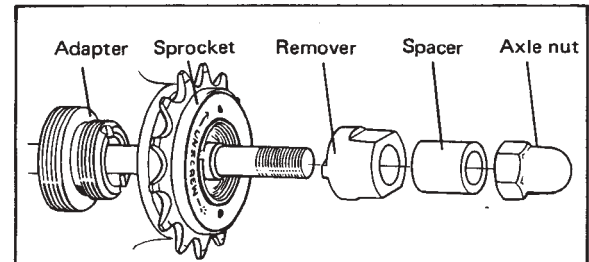


Fig 40

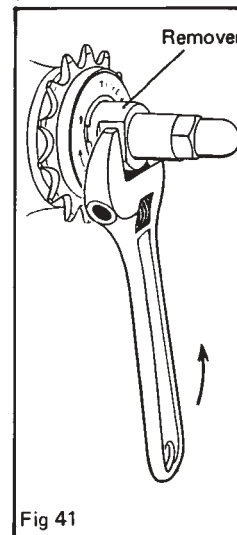


Fig 41

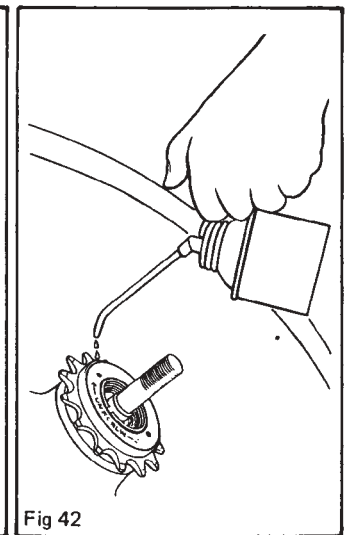


Fig 42

## REPLACEMENT OF CRANK SENSOR OR DUST CAP WITH MAGNET

Remove left pedal. See fig 7 page 7.  
Loosen the lower chain guard attachment. See fig 35 page 22.  
Take away the screw for left guard, back.

Note: To loosen the guard, push it backwards. See fig 37 page 22.

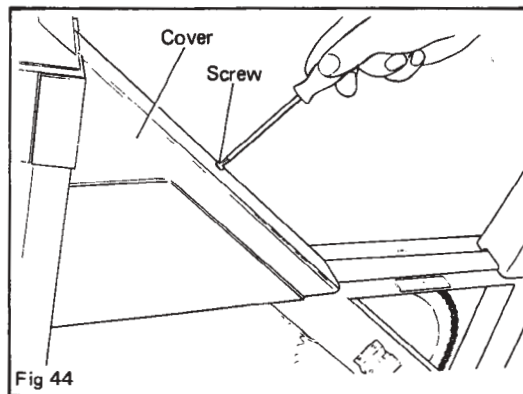
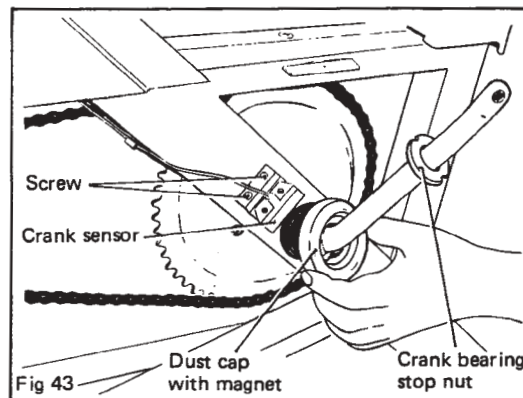
Loosen the crank bearing stop nut on the left side of the ergometer using a special tool (part No 7099). See fig 38 page 22.

Note: The stop nut has a left hand thread.

Loosen the stop nut completely and replace dust cap with magnet. See fig 43.  
Assemble the crank bearing stop nut and adjust the bearing as described on page 22.

To replace the crank sensor loosen the screw so the cover can be disassembled according to fig 44.

Loosen the screws for the crank sensor — see fig 43 — and replace the crank sensor with cable. After that, assemble the disassembled parts as above but in reverse order.





## THE IMPORTANCE OF REGULAR EXERCISE

The human body is built for action – not for rest. Once upon a time this was a necessity: the struggle for survival demanded good physical condition. But optimal function can only be achieved by regularly exposing the heart, circulation, muscles, tendons, skeleton and nervous system to some loading, i.e. training.

In the old days the body got its exercise both in work and at leisure. In our modern society, however, machines have taken over an ever increasing share of the tasks which were formerly accomplished with muscular power alone. Our life has at an accelerated tempo been dominated by sitting, riding and lying. Thus, the natural and vital stimulation that tissues and internal organs receive through physical exercise has largely disappeared. Certain tissues such as muscles, bone and blood and also a number of bodily functions can adapt to inactivity – and to stress. Studies have proved that if you use 30 minutes for exercise like brisk walking, running, bicycling, swimming or skiing 2-3 times a week, your condition has been improved by some 15 per cent after a few months. The efficiency of the heart muscle will increase and joints and muscles grow in strength. The capillary density increases in the trained muscle and their enzymatic activities are enhanced. The body adapts to the new demands. The perceived exertion at a given rate of exercise becomes reduced.

With increased physical activity fitness is counteracted, the appetite functions “safer”, you can eat more without risk for overweight and thereby the risk of lack of important essential food nutrients decreases. For many individuals the effect of habitual physical activity also improves the wellbeing and it is a good feeling to have a potential to cope with straining situations.

What kind of exercise to choose?

1. You should have fun when exercising. Choose something you find pleasure in doing regularly.
2. To get a good effect out of the training you should choose a form of exercise that engages large muscle groups. Then the demand of increased blood flow and oxygen transport will be so great that heart will increase its pump capacity. Jogging, calisthenics, aerobic dancing, bicycling, swimming, skiing and walking are excellent examples of exercises meeting this requirement.

## IN A FEW MONTHS YOU CAN GET 10-15 YEARS YOUNGER

If you cycle 30 minutes a few times a week you can lower your condition age with 10-15 years! Scientifically this is described as a reduction of the biological age. Externally, you are your usual self. Internally, however, you feel much younger. In other words: You can work harder. You feel more alert and healthy. Your ability to handle stress and problems increases. There are few better ways to improve your physical condition than to cycle. It does not over-tax your joints. It builds up your condition progressively and at your own pace and – you can make your training fit weather conditions.

### DO I LOSE WEIGHT WHEN I CYCLE?

Yes! You do use calories. A few miles on your bike every day over one year, you will have lost the equivalent of 20 pounds of body fat. You will achieve best results if you combine exercise with healthier eating. A little less sugar, less butter on your bread or less fat in your frying pan. And a few miles on your bike every day. In a year you will have lost 20 pounds.

### DO I GET STRONGER?

Cycling strengthens the muscles of the back, abdomen and legs. Daily chores become easier. Cycling also makes your heart stronger. Your pulse rate gets lower even when you exert yourself a little extra. Regular exercise also has a favourable influence on high blood pressures.

### HOW DO I TRAIN?

Condition training:

1. Warm up 3-5 minutes with a low pedal resistance. Pedal at about 12 mph (20 km/h).
2. Increase the resistance until you feel the training "somewhat hard". Keep the speed for 2-5 minutes. Get off the Ergometer and rest a few minutes. Cycle again and then rest. Train at your own pace and with a comfortable pedal resistance. After a few weeks you can increase the resistance.
3. Before ending, pedal a few minutes with a light resistance, in order to step down your training.

Total time about 30 minutes.

Strength training:

1. Give yourself a thorough warm-up.
2. Pedal with a heavy resistance for 5-10 seconds, then rest 45-60 seconds. Repeat this 5-10 times.

It is a good idea to combine your cycle training with gymnastics for 5 minutes, as this will give you a physiologically well-balanced form of training.

(Elderly people and physically weak persons should consult a doctor before starting their training.)

Company:

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