

3000 CE & 3600RC

Spinnaker Systems

Owner's Manual



StairMaster.
SPORTS/MEDICAL PRODUCTS, INC.





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WARRANTY

This is to certify that the StairMaster® Spinnaker™ systems cycle ergometer is warranted for a period of one year by StairMaster Sports/Medical Products Inc. to be free of all defects in materials and workmanship. This warranty does not apply to any defect caused by negligence, misuse, accident, alteration, improper maintenance, or an "act of God." This warranty is nontransferable from the original owner.

If, within one year from date of purchase, the StairMaster Spinnaker systems cycle ergometer should fail to operate properly, contact the Customer Service Department of StairMaster Sports/Medical Products, Inc. to report the problem. International customers may contact their local distributor. When calling, please be prepared to provide our customer service representative with the following information:

- Your name, shipping address, and telephone number;
- The model number of the inoperable unit;
- The serial number of the inoperable unit (located on the frame);
- The date(s) of purchase for the inoperable unit(s);
- Your billing address.

This information will enable StairMaster Sports/Medical Products, Inc. to ensure that you are the only one ordering parts under your warranty protection. If warranty replacement parts are shipped to you, StairMaster Sports/Medical Products, Inc. may require that the inoperable part be returned. To facilitate this process, the following policy has been established:

- Please call the Customer Service Department of StairMaster Sports/Medical Products, Inc. to receive a return goods authorization prior to shipment.
- StairMaster Sports/Medical Products, Inc. will incur all freight (i.e., shipping and handling) charges for warranty parts ordered for a product that is less than 45 days old. The parts will be shipped to you via an overnight courier.
- The customer is responsible for freight charges on warranty parts for products that are more than 45 days old. Customers will not be responsible for the return shipment of the inoperable parts (see below).
- Some inoperable warranty parts must be promptly returned to the Customer Service Department of StairMaster Sports/Medical Products, Inc. The freight charges for the return of inoperable warranty parts will be paid by StairMaster Sports/Medical Products, Inc.—detailed instructions are included with each warranty replacement part shipment.

StairMaster Sports/Medical Products, Inc. neither makes, assumes, nor authorizes any representative or other person to make or assume for us, any other warranties whatsoever, whether expressed or implied, in connection with the sale, service, or shipment of our products. We reserve the right to make changes and improvements in our products without incurring any obligation to similarly alter products previously purchased. In order to maintain your product warranty and to ensure the safe and efficient operation of your StairMaster Spinnaker systems cycle ergometer, only authorized replacement parts can be used. This warranty is void if any parts other than those provided by StairMaster Sports/Medical Products, Inc. are used.

* Note: Aerosol products cannot be transported via air.

The StairMaster® Spinnaker™ systems cycle ergometer is a highly effective tool for developing and improving lower extremity strength and aerobic capacity. It is also an integral part of a successful, well-balanced weight management program. The StairMaster Spinnaker systems cycle ergometer is designed for use by individuals of all ages and fitness levels. Your purchase of this machine is a positive affirmation of your commitment to use the best means available to develop a high degree of functional fitness.

The StairMaster Spinnaker systems cycle ergometers use the air pressure generated by crank-driven fans for resistance. Just like a road bicycle, the faster you pedal, the higher the resistance.

The Spinnaker 3000 CE™ is an upright cycle ergometer. The relationship between the position of the seat, the pedals, and the handlebars was designed to maximize the use of the major muscle groups of the lower body: the quadriceps, the hamstrings, the gluteals, and the calf muscles. The Spinnaker 3600 RC™ is a semi-recumbent cycle ergometer designed to minimize the stress on the knee while maintaining a comfortable seat position.

WHAT IS IN THIS MANUAL?

The information presented in this *Owner's Manual* has been divided into five sections: 1) safety guidelines; 2) set up and installation instructions; 3) operational instructions; 4) maintenance instructions; and 5) troubleshooting guidelines. In order to achieve the greatest results possible from your StairMaster Spinnaker systems cycle ergometer, you should read this *Manual* thoroughly and adhere closely to all instructions and guidelines.

Throughout this *Manual*, whenever you are required to enter information into the console, the console keypad keystrokes are enclosed in []. The names of the buttons and special console operational modes are shown in capital letters. For example, the StairMaster Spinnaker systems cycle ergometer is ready for use when the console is in the ATTRACT mode. You are then required to press the [SELF PACE] button to start the SELF PACE exercise program.

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IMPORTANT SAFETY INSTRUCTIONS**ELECTRICAL GUIDELINES FOR SAFELY OPERATING THE STAIRMASTER® SPINNAKER™ SYSTEMS CYCLE ERGOMETER**

When using any electrical equipment, several basic precautionary guidelines should always be strictly enforced. Among the safety precautions to which you should adhere when operating the Spinnaker systems cycle ergometer are the following:

1. Read all instructions thoroughly before using the StairMaster Spinnaker systems cycle ergometer.

DANGER

2. To reduce the risk of electric shock:
 - Always unplug the machine from the electrical outlet before cleaning, performing maintenance, or making repairs.

WARNING

3. To reduce the risk of burns, fire, electric shock, or injury to individuals:
 - Always unplug the power supply from the outlet before putting on or taking off parts. Never attempt any adjustments or repairs while someone is exercising on the machine.
 - Closely supervise the Spinnaker systems cycle ergometer whenever it is used by, or near children, invalids, or disabled persons. Keep children away from the pedal crank assembly (or other similar moving parts). A serious injury could result from an infant's or a small child's fascination with the moving components of the exercise machine.
 - Keep your hands away from all moving parts and keep your feet firmly planted on the pedals while exercising. Do not operate with the side panels removed.
 - Use the Spinnaker systems cycle ergometer only for its intended use as described in this *Manual*. Do not use attachments or accessories that are not genuine products provided by StairMaster Sports/Medical Products, Inc.
 - Never operate the Spinnaker systems cycle ergometer if it has a damaged cord or plug, if the power is not applied, if the console or machine does not appear to be operating properly, if it has been dropped or damaged, or if the power supply has been dropped into water. Call the Customer Service Department of StairMaster Sports/Medical Products, Inc. at (800) 331-3578 to arrange for damaged parts to be returned to our manufacturing facility for

SAFETY GUIDELINES

examination and repair. International customers may contact their local distributor. Do not attempt to use the equipment until all problems have been corrected.

- Connect the power supply to a properly grounded outlet only (refer to the grounding instructions section in this *Manual*).
- Keep the power supply cord and the DC cable away from heated surfaces.
- Never drop or insert any object into any opening on the machine (except when lubricating the chain).
- Do not use the machine outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect the machine, remove the wall-mounted power supply—or the AC power cord plug, if applicable—from the AC wall outlet.

Failure to follow all guidelines may compromise the effectiveness of the exercise experience, expose yourself (and possibly others) to injury, and reduce the longevity of the machine.

SAVE THESE INSTRUCTIONS

INSTALLATION INSTRUCTIONS

Before leaving the StairMaster manufacturing facility in Tulsa, Oklahoma, your StairMaster® Spinnaker™ systems cycle ergometer was thoroughly inspected and tested to ensure that it operates properly. To minimize damage while in transit, your machine was carefully prepared for shipment.

To transport your Spinnaker systems cycle ergometer into a building, a doorway width of at least 22 inches (56 cm) is required. Once inside, the machine should be placed on a solid, level surface near an AC wall outlet (120 volts are required for Spinnaker systems cycle ergometers in the United States, Canada and Japan).

Before your Spinnaker systems cycle ergometer is ready to use, it will require minor assembly.

1. The Spinnaker systems cycle ergometer has four leveling adjustment caps to compensate for uneven floors. Each face of the square cap is a different thickness (refer to Figure 5). If you need to level the bike, turn the appropriate adjusting cap(s). Then, check the stability of the bike and readjust the leveling caps if necessary.
2. The Spinnaker cycle ergometers which are intended for single-bike operation in the United States, Canada and Japan use a wall-mounted power supply that plugs directly into a 120-volt, three-prong AC wall outlet (refer to Figure 6). This power supply has a permanently attached DC power cord that connects to a single Spinnaker systems cycle ergometer.



WARNING

TO REDUCE RISK OF ELECTRICAL SHOCK AND FIRE, DO NOT CONNECT MORE THAN ONE SPINNAKER SYSTEMS CYCLE ERGOMETER TO THE WP-1 MODEL POWER SUPPLY. DO NOT ATTEMPT TO USE A STAIRMASTER PS-5 POWER SUPPLY.

Spinnaker systems cycle ergometers that are serially linked for the group racing and team race option as well as Spinnaker systems cycle ergometers that are sold for use outside of the United States, Canada or Japan (both single-use and serially-linked) use different power supplies (refer to Figure 6). These power supplies are small floor models with cables that must be connected to the power supply unit.



WARNING

TO ELIMINATE A POSSIBLE FIRE OR SHOCK HAZARD AND TO PREVENT SEVERE DAMAGE TO THE MACHINE, USE ONLY THE POWER SUPPLY APPROVED FOR USE WITH THIS EQUIPMENT. IN ADDITION, YOUR MACHINE MUST BE PROPERLY GROUNDED.

INSTALLATION INSTRUCTIONS

Refer to the "Grounding Instructions" section of this *Manual* if the wall outlet does not accept a three-prong plug. If you do not have the correct power supply, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc. at (800) 331-3578 to order the correct power supply before proceeding. International customers may contact their local distributor.

3. Single-use power supply configuration (United States, Canada, and Japan):

If you have a single Spinnaker systems cycle ergometer or if you have more than one Spinnaker systems cycle ergometer but do not want to connect your machines together for group racing, perform the following instructions to connect power to each Spinnaker systems cycle ergometer. If you have more than one Spinnaker systems cycle ergometer and want to use the group race and team race features, go to step 4. If you have a single Spinnaker systems cycle ergometer that will be operated outside the United States, Canada or Japan, go to step 5.

- Plug the power supply into the AC wall outlet.
- Connect the DC power cable from the power supply to the power connector located just inside the right or left side cover of your machine (refer to Figure 7 or 8). Ensure the power connector cap is installed on the power connector that is not in use.
- Observe the console. It should emit a tone, scroll a software revision level message across the text bar and display the ATTRACT mode on the console screen. If it does not do this, unplug the power supply and plug it back in. If the sound and/or the displays are still not present, call the Customer Service Department of StairMaster Sports/Medical Products, Inc. at (800) 331-3578. International customers may contact their local distributor.
- Go to step 6.

4. Group race power supply configuration

To connect multiple Spinnaker systems cycle ergometers (up to a maximum of five) to take advantage of the group race features, perform the following steps:

- Ensure that the input AC power rating marked on the power supply matches the available power and that you are not using the wall-mounted power supply. If you do not have the correct power supply, contact the Customer Service Department of StairMaster Sports/Medical Products, Inc. at (800) 331-3578 to order the correct power supply before proceeding. International customers may contact their local distributor.



WARNING

TO REDUCE RISK OF ELECTRICAL SHOCK AND FIRE, DO NOT CONNECT MORE THAN FIVE (5) SPINNAKER SYSTEMS CYCLE ERGOMETERS TO THE PS-6 MODEL POWER SUPPLY. USE ONLY THE POWER SUPPLY APPROVED FOR USE WITH THIS EQUIPMENT. IN ADDITION, YOUR MACHINE MUST BE PROPERLY GROUNDED.

- Line up the Spinnaker™ systems cycle ergometers in a row. Although other configurations may be used, for the sake of clarity, the following instructions will address a single row.
- Connect the DC power cable to either the machine on the far left- or the far right-hand end of the row. Use the connector located just inside the right side cover (if you are connecting the far right bike) or the left side cover (if you are connecting the far left bike). Connect the other end of the DC cable to the power supply.
- Place the PS-6 model power supply on the floor near the AC wall outlet closest to this bike.
- Plug the AC power cord into the AC wall outlet.
- Connect the other end of the AC power cord to the PS-6 model power supply.
- Switch on the power supply and observe the console. It should emit a tone, scroll a software revision level message across the text bar and display the ATTRACT mode on the console screen. If it does not, switch off the power supply and then turn it back on. If the sound and/or the displays are still not present, call the Customer Service Department at StairMaster® Sports/Medical Products, Inc.
- If the console is working properly, turn off the power supply and connect one end of the serial cable to the free power connector on this bike. Connect the other end of the serial cable to the power connector on the next bike in line. Continue linking the remaining bikes with serial cables.
- Turn on the power supply. If any console fails to power up, call the Customer Service Department at StairMaster Sports/Medical Products, Inc.
- Finally, set the console address numbers so that race information can be sent to all of the bikes during the group race. These address numbers range from #1 to #5. Each bike must have a unique number within this range. During the group race, the bike with the address #1 will be displayed in the top lane; the bike with the address #2 will be displayed in the next lane down and so on, with the #5 bike in the bottom lane. Press [UP ARROW], [1], [7], [4], [6], [ENTER] on the first bike's console. The console will prompt you to enter the bike number. Press [1], [ENTER]. Go to the next Spinnaker systems cycle ergometer in line. Press [UP ARROW], [1], [7], [4], [6], [ENTER] on this console. Press [2],

INSTALLATION INSTRUCTIONS

[ENTER], for this bike. Set up the remaining bikes until all bikes have a unique address from #1 to #5.

- Go to step 6.

5. The International power supply configuration (International 220-240 VAC)

To connect power to a single Spinnaker® systems cycle ergometer in countries other than the United States, Canada, or Japan, perform the following steps:

- Ensure that the input AC power rating marked on the power supply matches the available power. If you do not have the correct power supply, contact the local StairMaster® Sports/Medical Products, Inc. distributor to order the correct power supply before proceeding.



WARNING

TO REDUCE RISK OF ELECTRICAL SHOCK AND FIRE, DO NOT CONNECT MORE THAN FIVE (5) SPINNAKER SYSTEMS CYCLE ERGOMETERS TO THE IPS-3 MODEL POWER SUPPLY. USE ONLY THE POWER SUPPLY APPROVED FOR USE WITH THIS EQUIPMENT. IN ADDITION, YOUR MACHINE MUST BE PROPERLY GROUNDED.

- Connect the DC power cable to the connector located just inside the right or left side cover of the Spinnaker systems cycle ergometer (refer to Figure 7 or 8). Ensure the power connector cap is installed on the power connector not in use. Connect the other end of the DC cable to the power supply.
- Place the IPS-3 model power supply on the floor near the AC outlet closest to the bike.
- Plug the AC power cord into the AC wall outlet.
- Connect the other end of the AC power cord to the IPS-3 model power supply.
- Switch on the power supply and observe the console. It should emit a tone, scroll a software revision level message across the text bar and display the ATTRACT mode on the console screen. If the console does not do this, switch off the power supply and then turn it back on. If the sound and/or the displays are still not present, call the local StairMaster Sports/Medical Products, Inc. distributor.

6. The console is set at the manufacturing facility to English language prompts and English units. While the console is in the ATTRACT mode, you can set the console for foreign language prompts or metric units. To change the language of the prompts, press [UP ARROW], [7], [4], [2], [4], [ENTER]. Press the code number corresponding to the desired language according to Table 1 and then [ENTER]. If the software version does not have the desired language, contact the Customer Service Department at StairMaster Sports/Medical Products, Inc. to obtain the

correct software version.

To change the console to metric units, press [UP ARROW], [9], [7], [6], [0], [ENTER]. Press [1], [ENTER] when prompted. To change the console to back to English units, press [UP ARROW], [9], [7], [6], [0], [ENTER]. Press [0], [ENTER] when prompted.

Table 1. Language Codes

Language	Code Number		
	Version "A"	Version "B"	Version "C"
English	0	0	0
French	1		
German	2	1	
Italian		2	
Spanish			1
Swedish			2

12. Your StairMaster Spinnaker systems cycle ergometer is now ready for use.

PHYSICAL DIMENSIONS AND ELECTRICAL SPECIFICATIONS OF THE STAIRMASTER® SPINNAKER™ SYSTEMS CYCLE ERGOMETER

The dimensions and electrical specifications of the StairMaster Spinnaker systems cycle ergometer are listed in Table 2. To reduce the hazard of electrical shock, place the power supply in a location away from the machine and away from exposure to perspiration. Do not place the power supply on a carpet because the power supply may overheat.

W-wall-mount power supplies should be plugged directly into the AC wall outlet. Custom-length DC cables, brackets for multiple power supplies, and other accessories are available from StairMaster Sports/Medical Products, Inc. Refer to the Appendix "How to Order Parts" for the phone number of the office nearest you.

INSTALLATION INSTRUCTIONS

Table 2. Specifications of the Spinnaker™ Systems Cycle Ergometer

Dimensions	3000 CE™	3600 RC™
Length	46 inches (117 cm)	62 inches (157 cm)
Width at the:		
base	19 inches (48 cm)	19 inches (48 cm)
handlebars	22 inches (56 cm)	22 inches (56 cm)
Height at the handlebars	57 inches (145 cm)	42 inches (107 cm)
Weight	125 pounds (57 kg)	150 pounds (68 kg)
Power Supply Characteristics		
Wall-mount unit, WP-1		
input voltage	110-120 VAC, 50/60 Hz	110-120 VAC, 50/60 Hz
output voltage	9-15 VDC	9-15 VDC
maximum output current	.085 Amp	.085 Amp
input power consumption	15 Watts	15 Watts
Optional power supply, PS-6		
input voltage*	110-120 VAC, 50/60 Hz	110-120 VAC, 50/60 Hz
output voltage	10-16 vdc	10-16 vdc
maximum output current	2.5 Amps	2.5 Amps
input power consumption	60 Watts	60 Watts

* Optional power supplies intended for use outside the United States, Canada and Japan are available for 220-240 VAC, 50/60 Hz, power requirements. These power supplies have not been evaluated by Underwriters Laboratories, Inc.

ADJUSTMENTS

You should check two adjustments before using your StairMaster® Spinnaker systems cycle ergometer: the seat height and the pedal footstrap length.

Seat Height Adjustment on the Spinnaker™ 3000 CE™ Cycle Ergometer

Sit on the seat. Put both feet onto the pedals and into the footstraps. Pedal slowly and then stop when one leg is extended and your foot is as close to the floor as possible. The knee of the extended leg should be slightly bent when the sole of your foot is parallel to the floor. If you need to adjust the seat height, get off the bike and stand to one side. The seat adjustment knob is located on the frame tube just below the front part of the seat. Hold onto the seat with one hand and pull out on the seat adjustment knob with your other hand. Lower or raise the seat as necessary.

**WARNING**

TO ELIMINATE THE RISK OF INJURY, DO NOT ADJUST THE SEAT HEIGHT WHILE ON THE SPINNAKER 3000 CE CYCLE ERGOMETER. MAKE SURE THAT THE SEAT ADJUSTMENT PIN COMPLETELY ENGAGES THE HOLE IN THE SEAT POST BEFORE REMOUNTING THE BIKE.

Seat Height Adjustment on the Spinnaker 3600 RC™ Cycle Ergometer

Sit on the seat. Put both feet onto the pedals and into the footstraps. Pedal slowly and then stop when one leg is extended. The knee of the extended leg should be slightly bent. The seat adjustment lever is in front of the seat base. Remain seated and keep your feet on the pedals. Pull up on the lever and slide forward or backward as necessary. Release the lever and make sure the seat is locked in place by trying to move the seat forward and backward.

Footstrap Adjustment

To ensure your feet are properly secured to the pedals, you need to check the position of the footstraps. Position your foot so that the ball of your foot is over the pedal spindle. The pedal footstraps should be tight enough to secure your feet to the pedals but not so tight so as to cut off the circulation. If you need to adjust the footstrap length, get off the bike and stand to one side. There are two adjusting holes on the inside footstrap mount and four holes on the outside footstrap mount. Most shoes can be accommodated by adjusting the outside mounting holes. To make the necessary adjustments, grasp the pedal with one hand and the outside end of the footstrap with your other hand. Carefully pull the outside end of the footstrap off the tab on the pedal. Insert the proper hole of the footstrap onto the pedal tab. If you need to make additional adjustments, repeat the process with the inside mounting holes of the footstrap.

BASIC OPERATING INSTRUCTIONS

THE ATTRACT MODE

The console is in the ATTRACT mode when the Spinnaker™ systems cycle ergometer is idle and ready for use. A graphic of a bicycle and a sailboat with a spinnaker scrolls across the display while the Spinnaker systems cycle ergometer is in the ATTRACT mode. You can program your own message to scroll across the text bar. Refer to the "Customizing the Text Bar Scrolling Message" section of this *Manual* for further instructions on programming your own messages for the ATTRACT mode.

THE BASIC EXERCISE PROGRAM

Once you have properly adjusted the seat and the footstraps, you are ready to use your Spinnaker systems cycle ergometer. To start the BASIC EXERCISE program, simply begin pedaling. The ATTRACT mode ends after you pedal 40 revolutions per minute for at least five seconds. Press [ENTER] when prompted. The BASIC EXERCISE program is a self-paced workout that calculates all metabolic feedback except MET Level. Two dots will light up at the bottom of the display (refer to Figure 1). As you pedal, the dots will advance around the perimeter of the display in a clockwise direction. Each lap around the display is equivalent to 1/4 of a mile. The faster you pedal, the faster the dots move. The elapsed time of your workout, in minutes:seconds, is shown in the middle of the display.

The left side of the text bar displays your current pedal rate in revolutions per minute. Press [2/CYCLING SPEED] to change the text bar feedback from pedal rate to cycling speed in miles per hour (or in kilometers per hour, if your console is set up for metric units). Press [WORKOUT STATS] and all of the performance feedback will continuously scroll across the text bar—with the exception of MET Level.

Press [CLEAR] to end the BASIC EXERCISE program. Your summary workout stats will scroll across the text bar. You can press any function keypad button during the scrolling summary and stop at that statistic. You have 10 seconds to press another function keypad button before the console goes into the ATTRACT mode. Your workout stats are stored in the console memory until the next exercise program is started. Press [WORKOUT STATS] to scroll the summary information across the text bar.

In addition to the BASIC EXERCISE program, there are nine other exercise programs on the Spinnaker systems cycle ergometer. Detailed descriptions of each of these programs are presented in the next section of this *Manual*.

SPINNAKER SYSTEMS CONSOLE

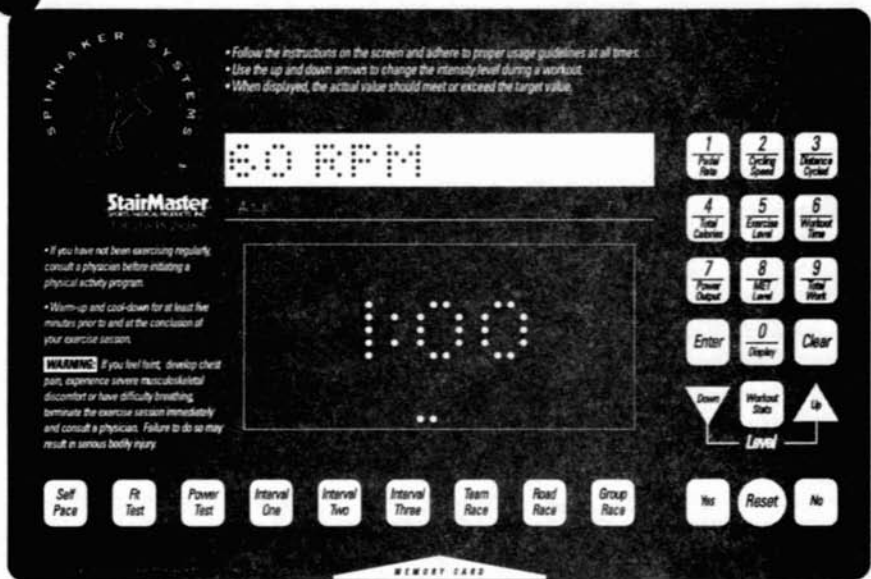


Figure 1: Spinnaker™ Systems Console, Basic Exercise Program

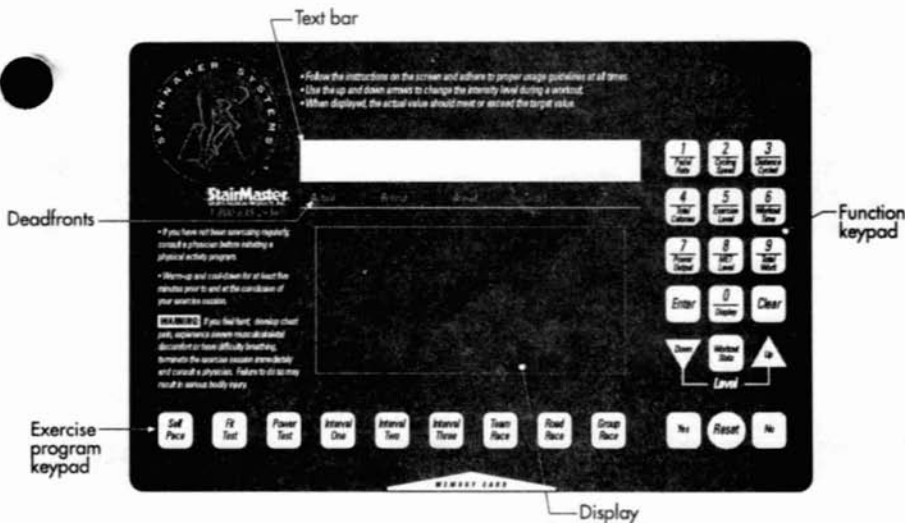


Figure 2: Spinnaker Systems Console

SPINNAKER SYSTEMS CONSOLE

The StairMaster® Spinnaker™ systems console is divided into four sections: the text bar, the display, the function keypad and the exercise program keypad (refer to Figure 2).

TEXT BAR

Information regarding workout statistics and data entry is displayed or scrolled across the text bar. There are five words under the text bar that are only visible when lit from behind—an arrangement which is called a deadfront. The deadfronts are used in conjunction with the text displayed in the text bar. Reading from left to right, the deadfronts are: ACTUAL, BEHIND, AHEAD, TARGET, and TIME.

The ACTUAL, TARGET, and TIME deadfronts are lit at certain times during the course of most exercise programs. The feedback in the text bar is lined up above the deadfronts. The ACTUAL and TARGET deadfronts are used to compare your pedal rate (ACTUAL) to the pedal rate you need to maintain to keep pace with the program (TARGET). For example, the default display for the INTERVAL ONE program is pedal rate. Reading from left to right, the text bar would show the pedal rate of the user at that particular instant (ACTUAL); the units—in this case, RPM; the pedal rate you need to maintain to keep pace with the program (TARGET); and the time, in seconds, remaining in the current interval (TIME).

DISPLAY

The display provides a graphical depiction of your actual pedal rate compared to the target pedaling rate set by the pacer. The display graphics are slightly different for each program; refer to the program descriptions in the "Exercise Program Keypad" section of this *Manual* for more details.

FUNCTION KEYPAD

The function keypad is located on the right side of the console. Ten of the keys on the keypad have two pieces of information on them—a number and a workout statistic. Before the exercise program begins, the numbers are used to enter data in response to the console prompts. During or immediately after the exercise program, the function keypad keys are used to recall workout statistics which are then displayed on the text bar.

1. PEDAL RATE is the number of pedal revolutions per minute, also referred to as cycling cadence. During an exercise program, this button displays the cycling cadence at that particular moment in time. After you have completed your exercise program, the average cadence for the duration of the exercise bout is displayed.
2. CYCLING SPEED is the equivalent speed, in miles per hour (or kilometers per hour if your console is set to metric units), you would be traveling on a bicycle outdoors while riding at the same relative intensity. During an exercise program, this

SPINNAKER SYSTEMS CONSOLE

button displays the current speed. After you have completed your exercise program, the average speed for the duration of the exercise bout is displayed.

3. **DISTANCE CYCLED** provides a cumulative total of the equivalent distance, in miles (or kilometers if your console is set to metric units), you would have traveled while riding a bicycle outdoors at the same relative intensity.
4. **TOTAL CALORIES** provides a cumulative total of the Calories expended during a particular workout. Calories expended is probably the most common way to measure the energy cost of exercise. Since the energy content of food is expressed in Calories, a convenient way exists to control or manage your body weight. When your total energy intake is less than your total energy output, you lose weight and vice versa. Technically, a Calorie is a measure of heat. One Calorie is the amount of heat needed to raise the temperature of one liter (or one kilogram) of water one degree Celsius.
5. **EXERCISE LEVEL** provides different information depending on the exercise program you select:
 - **INTERVAL** programs — the intensity level during the workout; the recommended training level during the workout summary.
 - **GROUP RACE** — your placing during the race; your placing and elapsed time during the workout summary.
 - **ROAD RACE** — the pacer speed during the race; the average pacer speed during the workout summary.
6. **WORKOUT TIME** displays the total time, in minutes and seconds, that you have been exercising.
7. **POWER OUTPUT** provides a measure of how hard you are exercising. In order to better understand this measure, it is important to appreciate the differences between work, power, and energy. Work is the product of an applied force multiplied by the distance over which the force is applied. Power is the rate of doing work, or work divided by time. Energy, on the other hand, is the capacity to do work. Power output is measured in units known as watts (746 watts = 1 horsepower). Since power is a rate, power output does not accumulate over time and will not change during your workout unless you change your pedal rate.

During your exercise program, this button displays your current power output. After you have completed your exercise program, the average power output during your workout is displayed.

8. **MET LEVEL** is the relative energy cost of exercise. One MET is equivalent to the resting oxygen consumption of about 3.5 milliliters of oxygen per kilogram of body mass per minute ($\text{ml O}_2 \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$). For example, exercising at 10 METs requires ten times the resting metabolic rate or about $35 \text{ ml O}_2 \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$.

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During the exercise program, this button displays the MET level at which you are currently exercising. After you have completed your exercise program, the average MET level during your workout is displayed.

9. TOTAL WORK provides a cumulative total of the amount of work performed during a workout. Work is expressed in kilogram-meters. A kilogram-meter (kgm) is the amount of force necessary to move a one kilogram mass (2.2 pounds) one vertical meter (3.3 feet). Since work is a quantity, the total amount of work increases with time.
10. The DISPLAY button allows you to return the text bar graphics to the default display for that program. On most exercise programs, the default display is PEDAL RATE.
11. The WORKOUT STATS button continuously scrolls the information on all nine performance feedback buttons across the text bar. This information can be displayed at any time during a workout. It is also stored in the console memory until the next exercise program is started. You can press any function keypad button during the scrolling summary and stop at that statistic. You have 10 seconds to press another function keypad button before the summary ends.
12. The UP and DOWN ARROWS increase or decrease, respectively, the exercise intensity level of the INTERVAL programs. The exercise intensity level ranges from #1 (the easiest) to #20 (the most difficult). The UP and DOWN ARROWS also change the computer pacer speed during the ROAD RACE.
13. The ENTER button confirms selections and stores the information used to calculate the performance feedback into the console memory.
14. The CLEAR button erases data from the console before [ENTER] is pressed. Pressing the CLEAR button once during a workout ends the exercise program and begins the workout summary. Press the CLEAR button twice to return to the ATTRACT mode.
15. The YES and NO buttons are used to respond to data entry prompts.
16. The RESET button always returns the console to the ATTRACT mode.

EXERCISE PROGRAM KEYPAD

The exercise program keypad is located below the display and to the left of the function keypad. While the console is in the ATTRACT mode, press one of the exercise program keys to select the desired workout.

1. SELF PACE is similar to the BASIC EXERCISE program described earlier, with the exception that your MET level can be calculated during the SELF PACE program.

You need to enter your body weight and the program duration (from 5-45 minutes) before starting the program. Once you have entered the required information, two dots will light up at the bottom of the display. As you pedal, the dots will move around the display in a clockwise direction. Each lap around the display is equivalent to 1/4 of a mile. The faster you pedal, the faster the dots move. The elapsed time of your workout, in minutes:seconds, is shown in the middle of the display.

2. The FIT TEST is a program that estimates your maximal aerobic capacity based on your heart rate response to submaximal exercise. You will be prompted to enter your body weight, your age and your gender.

Once you have entered the required information, two dots will light up at the bottom of the display. As you pedal, the dots will move around the display in a clockwise direction. The target pedaling rate is shown in the middle of the display. Your actual pedaling rate, as well as the target pedaling rate, is shown in the text bar. The goal is to match your pedaling rate to the target pedaling rate. The timer will count down in seconds.

The FIT TEST is a modified YMCA protocol. You will warm-up for three minutes (180 seconds) at a steady pace and then be prompted to enter your heart rate. You have five seconds to find your pulse and 10 seconds to count your pulse. Enter the 10-second count when you are prompted. If you are using a heart- or pulse-rate monitor, enter your heart rate at the end of the ten-second period. You will then continue to exercise for three-minute bouts of increasing intensity until you reach a point where you have entered two heart rate responses between 19 and 25 counts (115-150 beats per minute). This test typically lasts from 9 to 15 minutes.

At the end of the FIT TEST, your results will be scrolled across the text bar. Your estimated maximal aerobic capacity, expressed in METs, will be the first statistic shown. Next, your test results will be compared to normative values for others of your age and gender. These normative values are based on values developed by the world renowned exercise physiologist, Dr. Per Olaf Åstrand, and are shown in Table 3. Your results are stored in the console until the next exercise program is started. To review your test results, press [WORKOUT STATS].

3. The POWER TEST is a modified Wingate anaerobic power test. This test requires you to enter your body weight, age, and gender. You start the test with a three-minute warm-up and then are required to perform an all-out sprint for 30 seconds. The graphic display and text bar feedback for the warm-up is the same as described in the FIT TEST above. Messages describing the test scroll across the text bar during the warm-up. With 5 seconds left in the warm-up, the console will count down to the start of the test.

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Table 3. Fitness Rating Norms for Spinnaker™ Systems Cycle Ergometer Aerobic Fitness Test (METs)

Gender/Age	Low	Fair	Average	Above Average	Superior
Men					
20-29	<10.8	11.1-12.3	12.6-16.0	16.3-19.7	20.0+
30-39	<9.7	10.0-11.1	11.4-14.6	14.8-18.3	18.6+
40-49	<8.6	8.8-10.0	10.3-13.4	13.7-17.1	17.4+
50-59	<7.1	7.4-8.8	9.1-12.3	12.6-15.7	16.0+
60-69	<6.0	6.3-7.4	7.7-11.1	11.4-14.0	14.3+
Women					
20-29	<8.0	8.3-9.7	10.0-13.7	14.0-16.8	17.1+
30-39	<7.7	8.0-9.4	9.7-13.4	13.7-16.6	16.8+
40-49	<7.1	7.4-8.8	9.1-12.8	13.1-16.0	16.3+
50-59	<6.0	6.3-7.7	8.0-11.7	12.0-14.0	14.3+
60-69	<4.8	5.1-6.3	6.6-10.3	10.6-12.6	12.8+



WARNING

THIS TEST IS VERY STRENUOUS AND REQUIRES A GREAT DEAL OF EFFORT. TO AVOID BODILY INJURY, CONSULT A PHYSICIAN BEFORE TAKING THIS TEST IF YOU ARE CONCERNED ABOUT YOUR ABILITY TO PERFORM THIS TEST.

The message "GO" will appear in the text bar to prompt you to begin the test. On sighting the prompt, pedal as fast as you can for the entire 30-second period. During the test, your power output will be shown in two ways on the display screen—numerically in watts and graphically as a power curve (refer to Figure 3). The dots under the power curve light up as you pedal faster. During the test, the objective is to pedal as fast as you can for as long as you can. The text bar shows the time left in the test.

Your test results are displayed during the 90-second cool-down phase. Your power output over the 30-second test period are shown in the display as a graph and in the text bar in three ways: peak power, peak power per kilogram of body mass, and average power. Your average power per kilogram of body mass is compared to normative values for others of your age and gender. Your results are then stored in the console until the next exercise program is started. To review the results of your test, press [WORKOUT STATS].

4. The INTERVAL programs vary the ratio of easy pedaling and fast pedaling based on a 15-second interval continuously throughout the duration of the program. INTERVAL ONE uses three periods of easy pedaling and one period of fast

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pedaling. In this program, you are required to pedal slowly for 45 seconds and then pedal fast for 15 seconds before the cycle is repeated. INTERVAL TWO alternates two slow interval periods (a total of 30 seconds) with two fast interval periods (a total of 30 seconds). INTERVAL THREE alternates 15 seconds of slow pedaling with 45 seconds of fast pedaling.

Press the desired INTERVAL program button. You are also required to enter your body weight, the intensity level from #1 (the easiest) to #20 (the most difficult), and the duration from 5 to 45 minutes.

The display is equivalent to a 1/10-mile race track. Your bike is represented as two dots in the outer lane. The computer pacer is the single dot in the inner lane. The computer pacer will advance in a clockwise direction around the perimeter of the display as soon as the program starts. Your objective is to pedal to keep up with the pacer. The faster you pedal, the faster your dots move and vice versa. The target pedaling rate is shown in the middle of the display.

As a default, the text bar displays pedal rate. Your pedal rate is shown above the ACTUAL deadfront. The units are displayed to the right of the numbers—in this case, the feedback units are pedal revolutions per minute (RPM). The computer pacer pedal rate is shown above the TARGET deadfront. The number of intervals left in the program are shown above the TIME deadfront. You can change the text bar feedback by pressing the appropriate function keypad button during the workout.

As your dots travel around the display perimeter, the finish line for that interval will light up with one lap to go. The finish line may be anywhere around the perimeter but when it shows up, it always signifies that there is one lap to go. The goal is to tie or beat the pacer to the finish line. The AHEAD deadfront will briefly flash if you beat or tie the pacer to the finish line. The BEHIND deadfront will flash if the pacer beat you to the finish line.

You should cool down at the slow pedaling rate for one minute at the end of the exercise program. The pacer dot will disappear, signifying the cool-down period. Your workout stats are scrolled across the text bar after the cool-down period. A recommended intensity level for your next workout, based on the number of times you at least tied the pacer to the finish line, will also be shown in the text bar. Your results are stored in the console until the next exercise program is started. To review the results of your performance, you can press [WORKOUT STATS].

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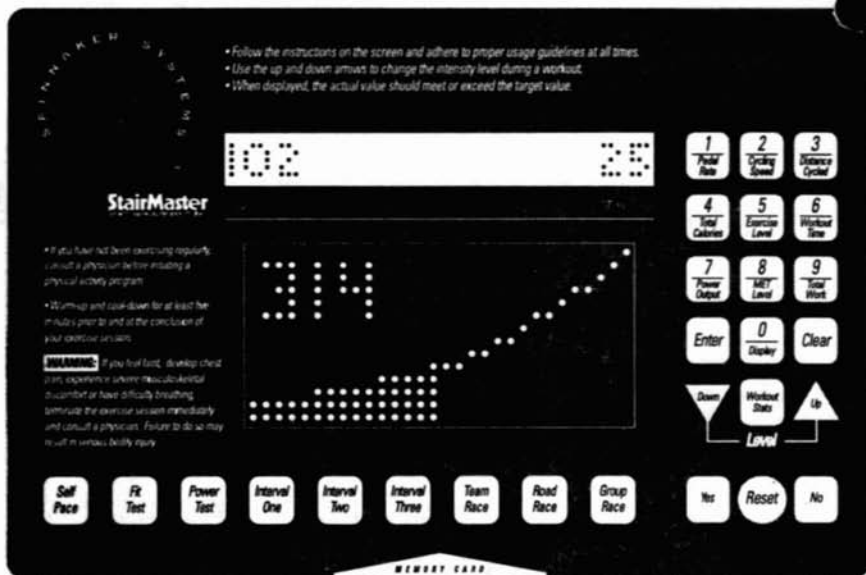


Figure 3: Spinnaker Systems Console, Power Test

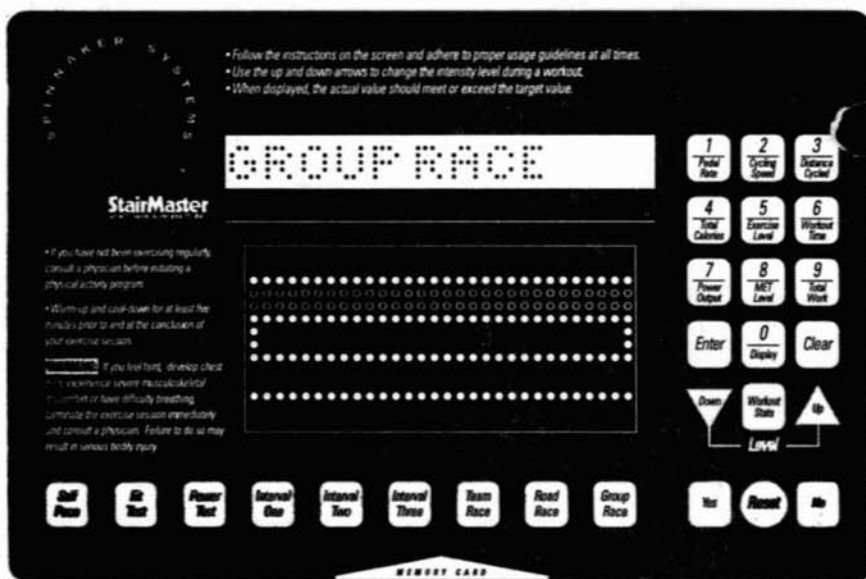


Figure 4: Spinnaker Systems Console, Group Race

The TEAM RACE (TIME TRIAL) is a four-bike race with two bikes per team. During the race, teammates can draft each other. While drafting, the lead bike must overcome a certain amount of wind resistance and the trailing bike has an advantage while riding in the lead bike's slipstream. The trailing bike must stay within two dots of the lead bike to remain in the draft. If the teammates work together, dividing the drafting time, they will be able to attain a higher average speed than if one bike is left behind.

The four people in the race press [TEAM RACE] to start the race. The first person to press [TEAM RACE] will set up the race. Say, for example, the riders on bikes #1 and #3 are on one team and the riders on bikes #2 and #4 are on the other team. The person in charge of the race set up will press [1], [3], [ENTER], [2], [4], [ENTER] when prompted to enter the teams. Bikes #1 and #3 are on the first team. Bikes #2 and #4 are on the second team. Refer to the "Group Race Power Supply Configuration" section of the Installation Instructions in this *Manual* for additional information about setting the bike numbers.

Select the race distance by pressing a number key and then [ENTER]. A five-mile race requires all participants to complete five one-mile laps. After the race is set up, the person in charge must press [ENTER]. All bike's text bars will then show a five-second countdown to the start of the race.

The display for the TEAM RACE is a series of five two-lap lanes, very similar to the GROUP RACE display (refer to Figure 4), with the middle lane empty. Each lane is separated by a row of lighted dots. The two ends of your bike's lane are enclosed by two lit dots. The two bikes on team #1 are shown in the top two lanes. The two bikes on team #2 are in the bottom two lanes. Using the example race set up in the preceding paragraph, bike #1 is in the top lane; bike #3 is in the next lane down; the middle lane is empty; bike #2 is in the fourth lane; and bike #4 is in the bottom lane. The enclosure dots at the right end of your lane will disappear once the race starts. A single enclosure dot remains lit at the left end to indicate your lane.

On the first lap of the race, your bike is shown as a single dot traveling from left-to-right across the display. When your bike gets to the far right side of the display, the dot will drop down a row and move back toward the starting line from right-to-left. One dot is added to your bike at the start of each lap. For example, your bike is shown as one dot on the first lap and as five dots on the fifth and final lap. Remember, you have to complete one lap as a 5-dot bike before a 5-mile race is over.

The default statistic in the text bar is your pedal rate expressed in RPMs. The number of laps remaining are counted down at the right side of the text bar. The performance feedback can be changed from the default pedal rate by pressing the desired button on the function keypad. The number of the bike on your team that is drafting is shown in parentheses between the performance feedback and the lap counter.

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Your team's elapsed time for the race is the finishing time of your team's second place rider. In other words, your team is only as fast as the slowest rider. Your team's standing in the race and your elapsed time are shown in the text bar after you have completed the race. You also have access to all other workout stats except MET Level. The race results are stored in the console until the next exercise program is started. You can press [WORKOUT STATS] to review the results of your performance.

6. The ROAD RACE is a race against a computer opponent. You will be prompted to enter your body weight and the desired pace of the race. You have the choice between a variable pace or a steady pace race. If you choose the variable pace, the race is subdivided into three basic sections. The computer starts with a short warm-up; the middle section is a slowly changing series of fast and slow intervals; and the end of the race finishes with a fast sprint. If you selected the steady pace race, the pace does not change over the course of the race. The average speed of either race mode is still controlled by the pace you select. Finally, you are required to enter the distance of the race. Once you enter the distance, your five-second countdown to the start will appear in the text bar.

The display is equivalent to 1/4 mile race track. You are represented as two dots in the outer lane. The computer pacer is the single dot in the inner lane. The computer pacer advances in a clockwise direction around the perimeter of the display as soon as the program starts. In this race, you are required to pedal to keep up with the pacer. The faster you pedal, the faster your dots move and vice versa. The total number of laps is counted down to one in the middle of the display.

As your dots travel around the display perimeter, a finish line arrow will light up with one lap to go. The goal is to tie or beat the pacer to the finish line. If you picked the variable pace race, start sprinting on the last lap! The AHEAD deadfront will briefly flash if you beat or tied the pacer to the line. The BEHIND deadfront will flash if the pacer beat you to the line.

After the race is completed, the program lets you cool down for one-minute. The pacer dot disappears to signify the start of the cool-down period. Your workout stats are scrolled across the text bar after the cool-down period. Your results are stored in the console until the next exercise program is started. You can press [WORKOUT STATS] to review your results.

7. The GROUP RACE is a race involving from two to five bikes. To start the GROUP RACE, every participant needs to press [GROUP RACE]. The first person to press [GROUP RACE] is required to respond to the race setup prompts. The participants can choose to race with or without the drafting function activated. The person in charge of the race setup must press [YES] to activate the draft mode or [NO] to deactivate the draft mode. When the drafting mode is on, the leading bike must overcome a certain amount of wind resistance, while the bikes following the lead

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bike have the advantage of riding in the lead bike's slipstream. The trailing bikes must stay within two dots of the bike ahead of them to stay in the draft. The drafting mode is much like handicapping the strongest rider while introducing realistic bicycle racing strategy. When the drafting mode is on, sometimes it is the smartest, rather than the strongest, rider who wins the race. When the drafting mode is off, all participants are on an even, competitive footing.

Select the race distance by pressing a number key and then [ENTER]. A five-mile race requires all participants to complete five one-mile laps. After the race is set up, the person in charge must press [ENTER]. All bike's text bars will then show a five-second countdown to the start of the race.

The display for the GROUP RACE is a series of five two-lap lanes (refer to Figure 4). Each lane is separated by a row of lighted dots. The two ends of your bike's lane are enclosed by two lit dots. The enclosure dots at the right end of your lane will disappear once the race starts. A single enclosure dot remains lit at the left end to indicate your lane.

On the first lap of the race, your bike is shown as a single dot traveling from left-to-right across the display. When your bike gets to the far right side of the display, the dot will drop down a row and move back toward the starting line from right-to-left. One dot is added to your bike at the start of each lap. For example, your bike is shown as one dot on the first lap and as five dots on the fifth and final lap. Remember, you have to complete one lap as a five-dot bike before a five-mile race is over.

The default statistic in the text bar is your pedal rate expressed in RPMs. The number of laps remaining are counted down at the right side of the text bar. The performance feedback can be changed from the default pedal rate by pressing the desired button on the function keypad. If the drafting mode is activated, the number of the bike(s) drafting is shown in parentheses on the text bar between the performance feedback and the lap counter.

The race does not end until the last bike finishes or quits the race. Pressing [CLEAR] allows you to drop out of the race. Pressing [CLEAR] will also end the race if only one other person remains in the race who has not finished.

Both your standing in the race and your total time are shown in the text bar after you have completed the race. You also have access to all other workout stats except MET Level. The race results are stored in the console until the next exercise program is started. You can press [WORKOUT STATS] to review the results of your performance.

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CUSTOMIZING THE TEXT BAR SCROLLING MESSAGE

The message that scrolls across the text bar during the ATTRACT mode can be replaced with a message of your choice. The console accepts messages up to 128 characters in length, including spaces. To program your message:

1. Encode your message using the character codes listed in Table 4.
2. While the console is in the ATTRACT mode, press [UP ARROW], [7], [6], [0], [7], [ENTER].
3. Enter the two-digit code for each letter of your message. The letter will appear in the text bar as you press the second digit of each code. Do not press [ENTER] between the code numbers.
4. For example, to program the message "EXERCISE IS FUN", press [UP ARROW], [7], [6], [0], [7], [ENTER]. Then press [1], [5], [3], [4], [1], [5], [2], [8], [1], [3], [1], [9], [2], [9], [1], [5], [1], [0], [1], [9], [2], [9], [1], [0], [1], [6], [3], [1], [2], [4], [ENTER]. At that point, your message will begin scrolling. The console is again in the ATTRACT mode.
5. If you make a mistake while entering the codes, press [CLEAR] to erase the last character entered.

EDITING THE SCROLLING MESSAGE

1. While the console is in the ATTRACT mode, press [UP ARROW], [7], [6], [0], [7], [ENTER] to display the first character of the message onto the text bar.
2. Press the [UP ARROW] and [DOWN ARROW] to scroll through the message character-by-character.
3. Press [CLEAR] to delete the last character displayed on the text bar. Press [ENTER] to end the editing process.
4. To edit multiple characters at one time, press [9], [9], [ENTER] to erase all of the characters to the right of the last character displayed on the text bar.
5. To erase the entire message, press [UP ARROW], [1], [0], [5], [ENTER] while in the ATTRACT mode.
6. The edited message will scroll across the text bar. If you have erased the entire message, the text bar area will be blank when you press [ENTER].
7. Press the [UP ARROW], [2], [1], [2], [3], [ENTER] to display the default scrolling message on the text bar.

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Press [UP ARROW], [2], [1], [2], [1], [ENTER] to display your custom scrolling message on the text bar.

Table 4. Character Codes for the Scrolling Message

Character	Code	Character	Code	Character	Code
0	00	M	23	!	46
1	01	N	24	À	47
2	02	O	25	¡	48
3	03	P	26	È	49
4	04	Q	27	À	50
5	05	R	28	Ç	51
6	06	S	29	È	52
7	07	T	30	¿	53
8	08	U	31	+	54
9	09	V	32	\$	55
SPACE	10	W	33	.	56
A	11	X	34	,	57
B	12	Y	35	%	58
C	13	Z	36	?	59
D	14	À	37	'	60
E	15	Ü	38	!	61
F	16	Ö	39	-	62
G	17	ß	40	#	63
H	18	À	41	:	64
I	19	À	42	:	65
J	20	Ö	43)	66
K	21	È	44	(67
L	22	N	45	/	68

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CODES FOR THE SPINNAKER™ SYSTEMS CONSOLE

There are several console functions that can be accessed by entering a numerical code. A list of the codes and the corresponding functions is presented in Table 5.

Table 5. Console Codes

Code	Function
UP ARROW, 105, ENTER	Clears the custom programmed scrolling message
UP ARROW, 107, ENTER	Activates the Diagnostic mode
0	Display test
1	Speaker test
2	Keypad test
3	Tach test
4	Software revision level test
UP ARROW, 1746, ENTER	Set the address numbers for the GROUP RACE setup
UP ARROW, 2121, ENTER	Turns on the custom scrolling message
UP ARROW, 2123, ENTER	Turns off the custom scrolling message
UP ARROW, 7424, ENTER	Changes the language of the console prompts; refer to the Installation Instructions for the language code numbers
UP ARROW, 7607, ENTER	Allows you to program a scrolling message for the ATTRACT mode
99, ENTER	Text bar scrolling message editing function
UP ARROW, 7703, ENTER	Displays machine usage information
UP ARROW, 9760, ENTER	Allows you to change the units displayed by the console
0	Changes the console to English units
1	Changes the console to metric units

HELPFUL HINTS

If you keep your StairMaster® Spinnaker™ systems cycle ergometer properly serviced and in good condition, it will operate more efficiently and last longer. It is strongly recommended that you adhere to the maintenance service guidelines presented in this *Owner's Manual*. Read all maintenance instructions thoroughly before beginning work. In some instances, the use of an assistant is recommended to perform the necessary task efficiently.

All references to the right or the left side and to the front or the back of the Spinnaker systems cycle ergometer are made as if you were sitting on the machine ready to exercise. For example, the drive chain is on the right side of the bike. Major component names and locations are shown in Figures 9 and 10. The circled numbers in each of the Figures identify the parts which are referenced in the Parts Key of the Appendix.

TOOL LIST

The following tools are needed to perform service and maintenance on the Spinnaker systems cycle ergometer:

- shop goggles or other eye protection
- snap ring pliers, internal snap rings
- snap ring pliers, external snap rings
- combination wrenches (sizes 7/16" to 3/4")
- adjustable wrench
- allen wrenches (T-handled and L-bend)
- socket set or nut driver set (sizes 1/4" to 3/4")
- 2-mm cone wrench
- standard screwdriver
- locking pliers
- phillips screwdriver
- adjustable width pliers
- 15-mm pedal wrench
- volt-ohm meter
- wire stripper/crimper
- freewheel removal tool

MAINTENANCE RECORDS

The console on the Spinnaker systems cycle ergometer will keep track of the following usage data on the machine:

- the number of hours the machine has been turned on
- the number of hours the machine has been in use

While the console is in the ATTRACT mode, the machine usage data can be displayed by pressing [UP ARROW], [7], [7], [0], [3], and [ENTER]. The console displays the information in the sequence listed above.

NOTE: The console may display several hours of use when your machine first arrives due to the fact that it has undergone testing at the manufacturing facility.

MAINTENANCE INSTRUCTIONS

INITIAL SERVICE

Upon receiving your new Spinnaker™ systems cycle ergometer, use a soft, clean towel to wipe off the dust that may have accumulated during shipping. Your new machine will require minor assembly. Refer to the "Installation Instructions" section of this *Manual* for details.

PREVENTIVE MAINTENANCE

The procedures for performing recommended preventive maintenance on the Spinnaker systems cycle ergometer are summarized in Table 6.

Cleaning

1. DO NOT USE GLASS CLEANER OR ANY OTHER HOUSEHOLD CLEANERS ON THE CONSOLE. Clean the console daily with a water-dampened cloth and wipe dry after cleaning.
2. Clean the exterior covers, the pedals, and the seat on a weekly basis using either soap and water or a diluted, non-mineral based household cleaner such as Fantastic®.



WARNING

TO AVOID INJURY DUE TO SLIPPERY POINTS-OF-CONTACT, DO NOT USE PETROLEUM-BASED CLEANERS OR ARMOR ALL-TYPE PROTECTANTS ANYWHERE ON THIS MACHINE OR ON THE FLOOR MATS.

Weekly Inspection

1. Inspect the painted surfaces of the exposed frame for any rust, bubbling, or chips during the weekly cleaning. The salt in perspiration will damage unpainted surfaces. Repair the damaged area with a touch-up paint kit provided by StairMaster® Sports/Medical Products, Inc. Refer to the Parts Key for the touch-up kit part number.
2. Inspect the pedal footstraps at both the inside and outside attachment sites. Replace the footstraps if they are torn or ripped.
3. **3000 CE™ only:** Inspect the seat post and the seat adjustment pin. The seat post should slide up and down freely in the plastic collar with the adjustment pin pulled out. Clean the seat post of any accumulated grime with a clean rag. The seat adjustment pin should completely engage the holes in the seat post. If the seat adjustment pin spring action is sticky, apply a few drops of 30W motor oil, or

the equivalent lubricant, to the pin shaft.

Monthly Inspection

1. Inspect the crank bearings for either excessive play or tightness. Either condition will reduce the life of the bearings. Ensure the bearing clamps are tight. Refer to the "Part Removal and Replacement" section of this *Manual* for the proper maintenance and adjustment procedures.
2. Lubricate the drive chain with a spray-on chain lubricant such as Tri-Flow™. There is a lubrication hole on the right side cover at the nine o'clock position in reference to the crank (refer to Figure 6). You must use the plastic nozzle extension if you lubricate the chain through this hole. Insert the nozzle extension into the hole and spray the chain while turning the pedal crank counterclockwise. Three revolutions of the crank will ensure lubrication of the entire chain—*make sure that you do not over-lubricate the chain.*

Quarterly Maintenance

Clean and thoroughly lubricate the drive chain and adjust the chain tension every three months. Follow the chain removal procedures in the "Parts Removal and Replacement" section. Use a degreaser to clean the accumulated grime from the chain. Install the chain and adjust the tension in accordance with the procedures listed in the "Parts Removal and Replacement" section. Lubricate the chain with a spray-on chain lubricant such as Tri-Flow™ before installing the cover.

Annual Maintenance

Replace the drive chain annually.



WARNING

TO AVOID PREMATURE BEARING FAILURE, DO NOT LUBRICATE THE SEALED BEARINGS ON THE FAN SHAFT, THE INTERMEDIATE SHAFT, OR THE CRANK. THEY ARE PERMANENTLY LUBRICATED AT THE MANUFACTURING FACILITY.

MAINTENANCE INSTRUCTIONS

Table 6. Preventive Maintenance Schedule

PART	RECOMMENDED ACTION	FREQUENCY	CLEANER	LUBRICANT
Console	Wipe Clean	Daily	Water-damp rag	N/A
Covers	Clean	Each week or after 70 hours of use	Soap & water or diluted household cleaner	N/A
Seat	Clean	Each week or after 70 hours of use	Soap & water or diluted household cleaner	N/A
Pedals and Footstraps	Clean and inspect	Each week or after 70 hours of use	Soap & water or diluted household cleaner	N/A
Seat Post	Inspect and wipe down	Each week or after 70 hours of use	Clean, dry rag	N/A
Seat Post Locator Pin	Inspect and lubricate	Each week or after 70 hours of use	N/A	30W motor oil or equivalent
Crank Bearings	Inspect	Each month or after 300 hours of use	N/A	N/A
Drive Chain	Lubricate	Each month or after 300 hours of use	N/A	Tri-Flow™ or other spray chain lube
	Clean, lubricate and adjust	Each month or after 300 hours of use	Degreaser	Tri-Flow™ or other spray chain lube
	Replace	Annually	N/A	N/A

GENERAL TROUBLESHOOTING GUIDELINES

This section outlines several tests to systematically identify and isolate problems with the electrical system and the drive train. This troubleshooting section is organized into three basic problem sections: Electrical System, Console Diagnostics, and the Drive Train. Perform the tests in exactly the same order as written. Refer to the "Parts Removal and Replacement" section of this *Manual* for any disassembly and assembly instructions. To order a replacement part, or to get help with the troubleshooting process, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc. at (800) 331-3578. International customers should contact their local distributor or call (206) 823-1825.

TROUBLESHOOTING THE ELECTRICAL SYSTEM

Spinnaker systems cycle ergometers that are set up for single-bike operation in the United States, Canada and Japan use a wall-mounted power supply that plugs directly into the wall AC power outlet. This power supply has a permanently attached DC power cord that connects to one Spinnaker™ systems cycle ergometer. Do not connect more than one Spinnaker systems cycle ergometer to the same wall-mounted power supply.

Spinnaker systems cycle ergometers that are serially linked for the group racing option or that are sold for use outside of the United States, Canada and Japan (both single-use and serially linked) must not use the wall-mount power supplies. The proper power supplies are floor models with cables that must be connected to the power supply unit as well as to the wall AC power outlet and to the DC power connector on the side cover (refer to Figure 8).

Power supplies are not interchangeable. You must use the correct power supply for your application. The troubleshooting procedures are organized according to the type of power supply. Make sure you are following the correct troubleshooting procedures.

The electrical system of your Spinnaker systems cycle ergometer has three major components: the power supply, the power cables, and the console. In order to identify the component that is causing the problem, you must identify the problem and systematically test the system. You will need a Volt-Ohm meter (multimeter) to conduct portions of the following procedures. The console and power supply are not servicable by the owner. If either of these parts are inoperable, they must be replaced. Opening the console or the power supply will void the warranty.

**WARNING**

TO REDUCE THE RISK OF ELECTRICAL SHOCK WHEN WORKING WITH AC VOLTAGE,
A QUALIFIED ELECTRICAL TECHNICIAN SHOULD PERFORM ALL ELECTRICAL
TESTS THAT INVOLVE CHECKING AC POWER.

ELECTRICAL TROUBLESHOOTING: WP-1 POWER SUPPLY

One Spinnaker™ Systems Cycle Ergometer With A Wall-Mounted Power Supply

- I. Symptom: The console fails to power up.
 - A. Perform a visual check of the machine. Check the following things first:
 1. Is the power supply plugged into the AC wall outlet?
 2. Is the DC cable connected to the machine?
 3. Replace or exchange your console with a console you know is good and retest the machine.
 - B. Verify AC power.
 1. Unplug the power supply from the AC wall outlet.
 2. Verify that the AC wall outlet is supplying the correct power in one of two ways: a) Use an AC voltmeter to verify that the AC line voltage is between 100 and 120 VAC at the AC outlet, or b) Plug in an alternate AC powered device (a lamp, for example). If the AC wall outlet is supplying the correct power, proceed to step #3. If the voltage is outside the specified range or if the device does not work when plugged into the wall outlet, consult an electrician for further assistance and then retest the outlet.
 3. Plug the power supply into the AC wall outlet and then verify the DC power.
 - C. Verify DC power.
 1. Make sure that the power supply is plugged into an AC wall outlet that is operational.
 2. Unscrew the DC power cord from the connector located just inside the side cover. Use a DC voltmeter to verify the DC power at the DC connector at the end of the cord from the power supply (refer to Wiring Diagram 1). Pin #1 is positive and pin #2 is negative; the voltage should range between 9 and 15 VDC. If the VDC is within range, proceed to step #3. Replace the power supply if the DC voltage is not within the specified range and retest the new power supply.
 3. Remove the console. Unscrew the main cable from the back of the console.
 4. Reconnect the DC power cord to the connector located just inside the side cover. Use a DC voltmeter to verify 9-15 VDC at the main cable connector.



ELECTRICAL TROUBLESHOOTING: WP-1 POWER SUPPLY

Pin #1 is negative and pin #9 is positive (refer to Wiring Diagram 3). If the VDC is outside the range replace the main cable and then retest the new cable at the connector. If the power is within the range, the console is inoperable and must be replaced.

ELECTRICAL TROUBLESHOOTING: WP-1 POWER SUPPLY

II. Symptom: The console powers up but blanks out while someone is exercising.

A. Verify both the AC and the DC power.

The problem may be a loose connection or a bad cable. Verify the power as outlined in the previous "Troubleshooting" section of this *Manual*. Just moving the cables and the connections during the tests may pinpoint the problem.

B. Check for excessive voltage drop.

If the AC and the DC power tests produce positive results, the problem is either an inoperable power supply or an inoperable console.

1. Remove the DC power connector cap from the unused connector located just inside the side cover. Use a DC voltmeter to check the pins on the DC power connector inside the cover. Pin #1 is positive and pin #2 is negative.
2. If there are less than 8 VDC at the connector, then either the power supply or the console is inoperable. Continue testing at step 3. If the reading is between 8-14 VDC, call the Customer Service Department of StairMaster® Sports/Medical Products, Inc. for additional assistance.
3. Replace or exchange the power supply and repeat step 1. If the problem still exists, go to step 4.
4. Replace or exchange the console and repeat step 1. If the problem still exists, call the Customer Service Department of StairMaster Sports/Medical Products, Inc.

ELECTRICAL TROUBLESHOOTING: WP-1 POWER SUPPLY

- iii. Symptom: The speed (RPM) feedback is either erratic or wrong.
- A. Perform a visual check.
1. Remove the neck covers (3000 CE™ only) and the side covers. Do not disconnect the DC power cable from the connector on the frame.
 2. Make sure the main cable and hall effect sensor wires are connected (refer to Wiring Diagrams 2 and 3).
 3. Check the clearance between the hall effect sensor and the magnet mount. The maximum clearance is 1/4" (0.6 cm); ensure the magnet mount does not contact anything as the fan shaft rotates.
 4. Hold the fans and try to turn the magnet mount with your free hand. If the magnet mount turns on the fan shaft, tighten the magnet mount bolts.
- B. Verify the AC and the DC power.

The problem may be a loose connection or a bad cable. Verify the power as outlined in the first "Troubleshooting" section of this *Manual*. Just moving the cables and the connections during the tests may pinpoint the problem.

- C. Check the hall effect sensor circuits.
1. Disconnect the plastic connector at the junction of the wires from the hall effect sensor and the main cable wires (refer to Wiring Diagram 3). Use a DC voltmeter to check the VDC at the main cable connector. Pin #1 (the red wire) is negative and pin #4 (the orange wire) is positive. The reading should range between 4.8-5.2 VDC. If it does not, proceed to step #2. If the VDC is within the range, go to step #3.
 2. If the VDC reading is outside the specified range, check for continuity in the main cable (refer to Wiring Diagram 3).
 - Unplug the power supply from the AC wall outlet.
 - Unscrew the main cable from the back of the console.
 - Place one lead of the multimeter at the console connector end of the cable and place the other lead at the main cable connector to the hall effect sensor wires (the connector you disconnected in step 1).
 - Set the multimeter to the continuity check mode; on most meters this will be the resistance or ohms setting.
 - Check for continuity through the main cable at pins #1 (the red wire), #3 (the green wire) and #4 (the orange wire).
 - If there is continuity through the cable (the reading is near

ELECTRICAL TROUBLESHOOTING: WP-1 POWER SUPPLY

zero ohms) the cable is good and the console must be replaced. If there is no continuity through the main cable at any of the pins, replace the cable.

3. If the VDC reading is within the specified range, check for continuity in the main cable at pin #3 (refer to Wiring Diagram 3).
 - Unplug the power supply from the AC wall outlet.
 - Unscrew the main cable from the back of the console.
 - Place one lead of the multimeter at the console connector end of the cable at pin #3 (the green wire) and place the other lead at the green wire on the main cable connector to the hall effect sensors wires (the connector you disconnected in step 1).
 - Set the multimeter to the continuity check mode; on most meters this will be the resistance or ohms setting.
 - If continuity exists through the cable (the reading is near zero ohms), the cable is good and you should proceed to step #4. If continuity does not exist through the main cable, replace the cable.

4. Plug the power supply into the AC wall outlet. Reconnect the plastic connector at the hall effect sensor and the main cable wire junction. Check the power at the connector by inserting the voltmeter probes into the connector (at the hall effect sensor side) at pin #1 (the black wire) is negative and pin #4 (the red wire) is positive (refer to Wiring Diagram 2). The reading should be between 4.8 and 5.2 VDC. If the reading is within the specified range, replace either the console or the hall effect sensor. If the reading is outside the recommended range, replace the hall effect sensor.

ELECTRICAL TROUBLESHOOTING: SERIALY-LINKED SPINNAKERS

Multiple Spinnaker™ Systems Cycle Ergometers Serially Linked For The Group Racing Option

- I. Symptom: One (or more) Spinnaker systems cycle ergometer does not power up. (These power tests will also work on serially linked Spinnaker cycle ergometers which are operated outside the United States, Canada, and Japan.)
 - A. Perform a visual check. Check the following things first:
 1. Is the power supply plugged in?
 2. Is the green light lit on the power supply? If the light is not on, is the power supply switched on and/or does the circuit breaker need to be reset?
 3. Are all the cables, power and serial, properly connected to the power supply and to the machines?
 4. While the console is in the ATTRACT mode, press [UP ARROW], [1], [7], [4], [6], [ENTER] and verify the addresses of all the serially linked bikes. Each console must have a unique address number within the range #1 to #5.
 - B. Isolate and test the inoperable Spinnaker 3000 CE™ Cycle Ergometer.
 1. Disconnect all serial cables from the inoperable Spinnaker systems cycle ergometer and connect the power supply directly to that machine. If the console does not power up, perform the power tests as outlined in sections C and D. These tests will identify the inoperable component.
 2. If the console does power up, use a serial cable to connect this machine to another bike. Continue connecting additional bikes until the original bike fails. Use a multimeter to check for continuity through the serial cables (at all three pins) coming out of and going into the last bike that passed the test (refer to Wiring Diagram 4). Replace the inoperable cable(s).
 3. If there is continuity through the serial cables, the power supply is probably inoperable. Replace or exchange the power supply and retest.
 4. If the problem still exists, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc.
 - C. Verify AC power.
 1. Disconnect the AC power cord from the power supply and the AC wall outlet.

ELECTRICAL TROUBLESHOOTING: SERIALLY-LINKED SPINNAKERS

2. Verify that the AC wall outlet is supplying the correct power in one of two ways: a) Use an AC voltmeter to verify that the AC line voltage is between 100 and 120 VAC (or between 220 and 240 VAC, if applicable) at the AC wall outlet; or b) Plug in an alternate AC-powered device (a lamp, for example). If the AC wall outlet is supplying the correct power, go to step #3. If the voltage is outside the specified range or if the device does not work when plugged into the wall outlet, consult an electrician for further assistance and then retest the outlet.
3. Plug the AC cord into the AC wall outlet and verify that the AC line voltage is between 100 and 120 VAC (or between 220 and 240 VAC, if applicable) at the opposite end of the cord. Go to step #4 if the AC line voltage is within range. Replace the cord if the voltage is not within the specified range and then test the new cord.
4. Reconnect the AC power cord to the power supply and proceed to section D.

D. Verify DC power.

1. Make sure that the AC power cord is properly connected to the power supply and that the AC wall outlet is delivering the proper voltage.
2. Turn on the power supply. The indicator light on the front panel should be lit. If it is, proceed to step #3. If the indicator is not lit when the switch is on, reset the circuit breaker. If the light is still not lit, replace the power supply and test the new power supply.
3. Disconnect the DC cable from the power supply. Use a DC voltmeter to verify the DC power at the DC connector on the power supply front panel (refer to Wiring Diagram 5). Pin #1 is positive and pin #2 is negative. The voltage should range between 10 and 16 VDC. If it does, go to step #4. Replace the power supply if the DC voltage is not within the specified range and test the new power supply.
4. Reconnect the DC cable to the power supply front panel. Disconnect the cable from the DC power connector located just inside the side cover. Use a DC voltmeter to verify 10-16 VDC at this end of the cable. Pin #1 is positive and pin #2 is negative (refer to Wiring Diagram 5). If the VDC is within range, go to step #5. Replace the DC cable if the VDC is outside the specified range and test the new DC cable.
5. Remove the console. Unscrew the main cable from the back of the console.

ELECTRICAL TROUBLESHOOTING: SERIALLY LINKED SPINNAKERS

6. Reconnect the DC cord from the power supply to the DC connector just inside of the side cover. Use a DC voltmeter to verify 10-15 VDC at the main cable connector. Pin #2 is negative and pin #9 is positive (refer to Wiring Diagram 3). If you have no power at pins #2 and #9, check pins #1 (negative) and #8 (positive). The correct pin combination depends on which side the power supply is connected. Getting the correct reading, not the pin combination, is the issue.

If the VDC reading is outside the specified range, replace the main cable and then retest the cable at the connector. If the power is within the specified range the console is probably inoperable and must be replaced.

7. If the problem still exists, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc. for further assistance.

ELECTRICAL TROUBLESHOOTING: IPS-3 POWER SUPPLY

Single-Use Spinnaker™ Systems Cycle Ergometers Operated Outside The United States, Canada, and Japan

- I. Symptom: The console fails to power up.
 - A. Perform a visual check. Check the following things first:
 1. Is the power supply plugged in?
 2. Is the green light lit on the power supply? If the light is not on, is the power supply switched on and/or does the circuit breaker need to be reset?
 3. Are all the cables properly connected to the power supply and the machine?
 - B. Verify AC power.
 1. Disconnect the AC power cord from the power supply and the AC wall outlet.
 2. Verify that the AC wall outlet is supplying the correct power in one of two ways: a) Use an AC voltmeter to verify that the AC line voltage is between 220 and 240 VAC at the AC outlet; b) Plug in an alternate AC-powered device (a lamp, for example). If the AC wall outlet is supplying the correct power, to to step #3. If the voltage is outside the specified range or if the device does not work when plugged into the wall outlet, consult an electrician for further assistance and then retest the outlet.
 3. Plug the AC cord into the AC wall outlet and verify that the AC line voltage is between 220 and 240 VAC at the opposite end of the cord. Go to step #4 if the AC line voltage is within range. Replace the cord if the voltage is not within the specified range and then test the new cord.
 4. Reconnect the AC power cord to the power supply and proceed to section C.
 - C. Verify DC power.
 1. Make sure that the AC power cord is properly connected to the power supply and that the AC wall outlet is delivering the proper voltage.
 2. Turn on the power supply. The indicator light on the front panel should be lit. If it is, proceed to step #3. If the indicator is not lit when the switch is on, reset the circuit breaker. If the light is still not lit, replace the power supply and test the new power supply.

ELECTRICAL TROUBLESHOOTING: IPS-3 POWER SUPPLY

3. Disconnect the DC cable from the power supply. Use a DC voltmeter to verify the DC power at the DC connector on the power supply front panel (refer to Wiring Diagram 5). Pin #1 is positive and pin #2 is negative. The voltage should range between 10 and 16 VDC. If it does, go to step #4. Replace the power supply if the DC voltage is not within the specified range and test the new power supply.
4. Reconnect the DC cable to the power supply front panel. Disconnect the cable from the DC power connector located just inside the side cover. Use a DC voltmeter to verify 10-16 VDC at this end of the cable. Pin #1 is positive and pin #2 is negative (refer to Wiring Diagram 5). If the VDC is within range, go to step #5. Replace the DC cable if the VDC is outside the specified range and test the new DC cable.
5. Remove the console. Unscrew the main cable from the back of the console.
6. Reconnect the DC cord from the power supply to the DC connector just inside of the side cover. Use a DC voltmeter to verify 10-16 VDC at the main cable connector. Pin #1 is negative and pin #9 is positive (refer to Wiring Diagram 3). If the VDC reading is outside the specified range, replace the main cable and then retest the cable at the connector. If the power is within the specified range the console is inoperable and must be replaced.
7. If the problem still exists, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc. for further assistance.

II. Symptom: The console powers up but blanks out during exercise.

Perform the tests as outlined for Symptom II in the "Electrical Troubleshooting: WP-1 Power Supply" section. The procedures are the same regardless of the AC power supply.

III. Symptom: The speed or RPM feedback is either erratic or wrong.

Perform the tests as outlined for Symptom III in the "Electrical Troubleshooting: WP-1 Power Supply" section. The procedures are the same regardless of the AC power supply.

CONSOLE DIAGNOSTIC TESTS

The following tests must be performed while the console is in the DIAGNOSTIC mode. To activate the DIAGNOSTIC mode, press the [UP ARROW], [1], [0], [7], [ENTER]. If the console fails any test, the console should be replaced or exchanged.

Display Test

Use this test if the console display or the text bar exhibits blank spots during use. This test checks for inoperable light emitting diodes (LEDs) in the console display and the text bar. If any LED will not light, replace the console.

1. Press [0] to start the test.
2. All LEDs in the console display should be lit. The 26 alpha characters (A-Z) and 10 numeric characters (0-9) will scroll across the text bar.
3. Press [CLEAR] to end the test.

Speaker Test

Use this test to make sure the console speaker is fully operational. The speaker will ascend and then descend through the musical scale.

1. Press [1] to start the test.
2. Press [ENTER] to pause the test. Press [CLEAR] to end the test.

Keypad Test

Perform this test if you are having trouble entering data into the console. If you cannot enter the DIAGNOSTIC mode code due to an inoperable keypad, replace the console.

1. Press [2] to start the test.
2. The display LEDs will light up in an L-shaped formation, representing the keypad matrix. Pressing a button on either the exercise program keypad or the function keypad will light an LED within the outline on the display that corresponds to that button's position on the console.
3. Firmly press each button. If the LED corresponding to the button you pushed does not light up, the keypad is bad and the console must be replaced.
4. Pressing the [CLEAR] button will light that LED and then end the keypad test 10 seconds later.

Test

This test makes sure the hall effect sensor is sending a pulse to the console. If you want to verify the console rpm reading, count the crank revolutions while pedaling during the tach test and compare your count to the RPM displayed in the text bar.

1. Press [3] to start the test.
2. The text bar will display the pedal rpm continuously if the hall effect sensor is working properly. Refer to the appropriate troubleshooting section if the RPM feedback is either wrong or erratic.
3. Press [CLEAR] to end the test.

Software Revision Level Test

This test allows you to check the version number of the software installed in the console.

1. Press [4] to start the test.
2. The software version number will scroll across the text bar. The console will automatically return to the ATTRACT mode.
3. Contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc. for the most current software revision updates.

TROUBLESHOOTING THE DRIVE TRAIN

Drive train problems are manifested first as unusual, annoying noises and then by damaged and seized parts. It is important to accurately diagnose the problem and quickly remedy it. Fortunately, because the drive train is fairly simple, problems with it are relatively easy to identify and repair. This troubleshooting section is organized according to the symptoms of the problems which most commonly occur.

Refer to the "Parts Removal and Replacement" section of this *Manual* for any disassembly and assembly instructions. To order a replacement part, or to get help with the troubleshooting process, contact the Customer Service Department of StairMaster® Sports/Medical Products, Inc.

- I. Symptom: A squealing or whining noise is heard whenever the fans are spinning; the noise is heard whether the cranks are turning or not. This noise is caused by a loose Poly-V belt or seized bearings in either the fan shaft or the intermediate shaft.
 1. Remove the neck covers (3000 CE™ only) and the side covers. Check the Poly-V belt for proper tension. If necessary, tighten the belt according to the procedure outlined in the "Poly-V Belt" section of this *Manual*.
 2. If the Poly-V belt is properly tensioned, you will need to check the shaft bearings. Watch the fan and intermediate shafts. The noise may be in sync with the revolutions of one of the shafts. The fan shaft spins at a faster rate than the intermediate shaft. You may be able to isolate the problem by observing how often the noise occurs. Check the bearings in the noisy shaft and replace if necessary. If the noise cannot be isolated in this manner, start by removing and checking the intermediate shaft bearings and then the fan shaft bearings.

- II. Symptom: A clunking or clicking noise is heard when the pedals are turned but not when you stop pedaling. This indicates a problem in the pedal/crank area.
 1. Remove the neck covers (3000 CE only) and the side covers. Examine the area around the chain, crank and pedals for anything out of the ordinary. Slowly turn the crank and see if there are any obstructions in the drive train area. Hold one crank arm in each hand. Rock the crank back and forth to detect excess play or looseness in the crank bearings. Readjust the bearing nut assemblies and tighten the bearing clamps if necessary.
 2. Turn the cranks and listen for the noise. If the noise is still present, go to step #3. If you do not hear the noise, the cranks or the pedals were hitting the covers. Examine the side covers near the crank cutout for evidence of wear. Verify that both crank arms are straight. When you reinstall the side covers, make sure all fasteners are properly installed.

TROUBLESHOOTING THE DRIVE TRAIN

3. Remove the drive chain. Spin the crank. If the noise is still present, go to step #4. If you do not hear the noise, reinstall the drive chain and check the chain alignment between the chainring and the freewheel. If the noise is still present and the drive chain is properly aligned, replace the drive chain.
 4. Remove both pedals from the crank. Spin the crank. If the noise is still present, go to step #5. If you do not hear the noise, the pedal spindle bearings may be worn out. To check the bearings, hold a pedal in one hand and rotate the pedal spindle with the other hand. If the spindle is hard to turn or if you detect rough spots as you rotate the spindle, replace the pedal. Repeat this procedure with the other pedal.
 5. Check the bearing clamps. If the allen bolts are loose, tighten them and spin the crank. If the noise is still present, readjust the bearing nut assemblies and spin the crank. Remove the crank assembly from the frame if the noise is still present. Check the right and left bearing nut assemblies for smoothness of operation. Replace the bearing nut assembly if necessary.
- III. Symptom: A clunking or clicking noise is heard while the fans spin and the crank is stationary. This noise indicates a problem in the drive reduction train.
1. Remove the neck covers (3000 CE™ only) and the side covers. Examine the area around the flywheel and the Poly-V pulley for anything out of the ordinary. Slowly turn the crank and see if there are any obstructions in the drive reduction area.
 2. If the Poly-V belt is properly tensioned, you will need to check the shaft bearings. Watch the fan and intermediate shafts. The noise may be in sync with the revolutions of one of the shafts. The fan shaft spins at a faster rate than the intermediate shaft. you may be able to isolate the problem by observing how often the noise occurs. Check the bearings in the noisy shaft and replace if necessary. If the noise cannot be isolated in this manner, start by removing and checking the intermediate shaft bearings and then the fan shaft bearings.
 3. Remove both fans and check the pillow block bearing set screws. They should be snug. Check the nut on the left end of the intermediate shaft; it should also be tight. Reinstall the fans, spin them and listen for noise. If the noise is still present, go to step #4.
 4. Remove the intermediate shaft assembly and the fan shaft assembly. Inspect the fan shaft bearings for smoothness of operation. Replace the bearings if necessary.

TROUBLESHOOTING THE DRIVE TRAIN

5. Remove the intermediate shaft from the Poly-V pulley. Inspect the intermediate shaft bearings for smoothness of operation. Replace the bearings if necessary.
6. Check the freewheel for smoothness of operation in the counterclockwise direction and positive engagement in the clockwise direction. If the freewheel sticks, or fails to engage, replace it.
7. Reassemble the drive train. Turn the crank; if the noise is still present call the Customer Service Department of StairMaster® Sports/Medical Products, Inc. for further assistance.

COVERS**3000 CE**

The Spinnaker™ 3000 CE™ cycle ergometer is protected by four plastic covers: two large side covers and two smaller neck covers. Refer to Figure 6 for the fastener locations.

1. The neck covers are held in place with six screws: one on each side, two on the front, and two on the rear. The neck covers must be removed before the side covers are removed.
2. Disconnect the DC power cable from the connector located just inside the bottom front corner of the side cover.
3. The side covers are held in place with four reusable fasteners. Slide either end of the fastener removal tool under the edge of the pin head and pull the pin out about halfway (refer to Figure 9). The pin should not be pulled out of the base.
4. After the fasteners have been removed, lift the square rubber grommet away from the base of the seat post.
5. Move the crank to about the eleven o'clock position on the right side to get the right side cover over the crank. Once the right cover is off the frame, move the cranks to the one o'clock position on the left side and remove the left cover.
6. When reinstalling the side covers, feed the connector caps and chains through the holes in the side covers. To reinstall the fastener, insert the base of the fastener through the cover and into the frame. When the base is in place, push the pin in all the way to secure the fastener. Connect the DC power cable to the power connector once the side covers are in place.

3600 RC

The Spinnaker 3600 RC™ cycle ergometer is protected by two plastic side covers. Refer to Figure 7 for the fastener locations.

1. Disconnect the DC power cable from the connector located just inside the bottom rear corner of the side cover.
2. The side covers are held in place with five reusable fasteners. Slide either end of the fastener removal tool under the edge of the pin head and pull the pin out about halfway (refer to Figure 9). The pin should not be pulled out of the base.
3. After the fasteners have been removed, lift the neck grommet away from the covers.

PARTS REMOVAL AND REPLACEMENT

4. Move the crank to about the eleven o'clock position on the right side to get the right side cover over the crank. Once the right cover is off the frame, move the cranks to the one o'clock position on the left side and remove the left cover.
5. When reinstalling the side covers, feed the connector caps and chains through the holes in the side covers. To reinstall the fastener, reinsert the base of the fastener through the cover and into the frame. When the base is in place, push the pin in all the way to secure the fastener.

CONSOLE

1. Disconnect the DC power cable from the connector located just inside the side cover.
2. Remove the neck covers (3000 CE™ only).
3. Remove the four mounting bolts and associated hardware from the back of the console.
4. Unscrew the main cable connector from the back of the console.
5. Reverse the steps to reinstall the console.

HANDLEBAR/CONSOLE MOUNTING TUBE

3000 CE

1. Remove the console.
2. Loosen and remove the two nyloc nuts and flat washers from the mounting bolts (refer to Figure 10).
3. Remove the mounting bolts from the frame tube.
4. Hold onto the handlebar with both hands and remove the handlebar/console mounting tube from the frame tube. You may have to twist the handlebar/console mounting tube as you pull up on the handlebar.
5. Reinstall in the reverse order.

3600 RC™

1. Remove the console.
2. Loosen and remove the four nyloc nuts from the mounting flange (refer to Figure 12).

PARTS REMOVAL AND REPLACEMENT

3. Remove the mounting bolts and flat washers from the frame.
4. Hold onto the handlebar with both hands and lift the handlebar/console mount off the frame.
5. Reinstall in reverse order.

SEAT

3000 CE™

1. Loosen and remove the four mounting bolts and lock washers located underneath the seat (refer to Figure 11).
2. To reinstall the seat, line up the holes in the seat post mounting tab with the holes in the seat. Insert one bolt with a lock washer into each hole and tighten securely.

3600 RC™

The seat pads can be removed while the seat is in the seat track. Loosen and remove the four mounting bolts from each seat pad and lift the pad free. To remove the seat from the seat track:

1. Loosen and remove the nyloc nut from the rear of the seat track. Remove the bolt.
2. Remove the seat track cover.
3. Lift the seat adjustment handle and slide the seat to the rear and off the track.
4. To reinstall the seat, line up the front guide wheels with the seat track. Carefully slide the seat forward while holding up on the seat adjustment handle.
5. Install the seat track cover.
6. Install the bolt and nyloc nut. Securely tighten the nut.
7. The seat track play can be adjusted. Loosen the nut on both center wheels. Use a standard screwdriver to turn the bolt. Ideally, the seat should slide easily without excessive side play. Tighten the nuts after the wheels are adjusted.

PARTS REMOVAL AND REPLACEMENT

SEAT LOCATION POST (3000 CE ONLY)

1. Pull the seat adjustment knob out and raise the seat.
2. Insert a phillips screwdriver into one of the holes in the seat post which are located above the seat tube cap (refer to Figure 11). Gently lower the seat so that the seat is held up by the screwdriver. The seat adjustment shaft will be protruding slightly because the shaft is between the holes in the seat post.
3. Hold the seat adjustment shaft with a pair of locking pliers and remove the seat location knob from the shaft by turning the knob counterclockwise.
4. Remove the screwdriver from the hole in the seat post and lower the seat slightly so the seat adjustment shaft engages a hole in the seat post. This will reduce the tension in the spring return mechanism.



WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

5. Remove the outermost snap ring.
6. Unweight the seat post by applying a slight upward force to the bottom of the seat.
7. Pull out the seat adjustment shaft, removing both washers and the spring at the same time.
8. Insert a phillips screwdriver into one of the holes in the seat post which are located above the seat tube cap. Remove the snap ring located in front of the seat selector bushing.
9. Remove the two screws securing the seat tube cap to the frame.
10. Remove the screwdriver from the seat post. Raise the seat tube cap up and away from the frame.
11. Push the seat location post forward so the seat adjustment bushing is moved slightly forward in the bushing housing.
12. Insert a standard screwdriver between the seat post and the seat adjustment bushing and gently pry the bushing farther out of the bushing housing and out of the way of the nylon seat post guides.

PARTS REMOVAL AND REPLACEMENT

Remove the grommets from the holes in the seat tube. Pull the seat post up and out of the frame.

14. Reverse the steps to reinstall the seat post in the frame.

SEAT TRAY (3600 RC™ ONLY)

1. Remove the right side cover.
2. Remove the seat.
3. Loosen and remove the three nyloc nuts, bolts and flat washers that fasten the seat tray to the frame (refer to Figure 13).
4. Reverse the steps to reinstall the seat tray.

DRIVE CHAIN

1. Remove both neck covers (3000 CE™ only) and the right side cover.
2. Slowly rotate the right pedal. As the chain rotates, locate the master link.
3. Remove the master link retaining plate with a standard screwdriver. Use the flat of the screwdriver to push the retaining plate off the pins.
4. Remove the master link from both ends of the chain. Remove the chain from the chainring and freewheel.
5. Reverse the steps to install the chain. Ensure that the closed end of the master link retaining plate is facing the direction of chain travel.
6. Check the tension in the drive chain. There should be 1/2" (1 cm) of up and down travel for a total of 1" (2 cm) in the middle of the lower section of the drive chain (refer to Figure 16).
7. To adjust the chain tension, loosen the nuts at the top and the bottom of the intermediate shaft bracket. Pivot the brackets as needed to get the proper chain tension. Tighten the nuts and recheck the chain tension. Readjust the chain if necessary.
8. Reinstall the covers.

PARTS REMOVAL AND REPLACEMENT

FAN

1. Remove both neck covers (3000 CE™ only) and the side covers.
2. The fan is attached to the fan shaft with an allen-head set screw. Slowly spin the fans and find the small cutout located along the outside edge of the fan, directly above the set screw. Use a T-handled allen wrench to loosen the set screw.
3. Slide the fan off the fan shaft.
4. Reverse the steps to reinstall the fan. Make sure the set screw in the fan bushing makes contact with the flat section of the fan shaft.
5. If you remove both fans, remember that the larger-diameter fan goes on the right side of the fan shaft. The fan blades should be facing the direction of rotation. The fans are marked with directional arrows.

INTERMEDIATE SHAFT ASSEMBLY/POLY-V BELT/POLY-V PULLEY/FREEWHEEL

1. Remove both neck covers (3000 CE only) and the side covers.
2. Remove both fans.
3. Remove the drive chain.
4. Loosen, but do not remove, the nuts at the top and bottom of the intermediate shaft bracket (refer to Figure 19).
5. Loosen the j-bolt nut so the Poly-V belt is slack.
6. Loosen the mounting nut and remove the magnet mount from the left side of the fan shaft.
7. Loosen the pillow block bearing set screws on the left side fan shaft bracket (refer to Figure 17).
8. Loosen and remove the hall effect sensor mounting nuts and screws. Cut the tywrap that holds the sensor cable to the left side fan shaft bracket. Set the hall effect sensor to the side.
9. Support the flywheel and remove the two bolts from the threaded spacer. Carefully lower the flywheel onto the Poly-V pulley.
10. Support the intermediate shaft bracket and remove the nut and bolt from the top of the intermediate shaft bracket. Lean the intermediate shaft bracket out of the way.

PARTS REMOVAL AND REPLACEMENT

11. Hold onto the flywheel and slide the left side fan shaft bracket off the fan shaft.
12. Slide the Poly-V belt off the flywheel. Remove the right side fan shaft bracket and flywheel, as a unit, from the frame.
13. Loosen and remove the nut from the left side of the intermediate shaft. Pull the intermediate shaft out of the intermediate shaft bracket.
14. Remove the Poly-V pulley and Poly-V belt from the intermediate shaft bracket.
15. Inspect the intermediate shaft bearings (they are inside the Poly-V pulley) for smoothness of operation. Replace the bearings if necessary.
16. Inspect the freewheel for smoothness of operation in the counterclockwise direction and for positive engagement in the clockwise direction. Use a freewheel tool to remove the freewheel from the Poly-V pulley, if replacement is necessary.
17. Reverse the steps to reinstall the parts. Additionally, ensure that:
 - The short side of the j-bolt hook faces to the rear of the frame.
 - The wider portion of the threaded spacer faces to the right.
 - You use a new tywrap on the sensor cable and the left side fan shaft bracket. Ensure the wires are fully seated in the white plastic connector.
 - The magnet mount is as close to the hall effect sensor as it can get while not contacting the hall effect sensor as the fan shaft turns. The magnet mount can be up to 1/4 inch (0.6 cm) away from the hall effect sensor.
 - The fans are installed according to the instructions in the "Fan" section of the *Manual*.
 - The drive chain is adjusted according to the procedure outlined in the "Drive Chain" section of this *Manual*.
 - The Poly-V belt is adjusted so the distance between the edges of the top and bottom spring retainers on the j-bolt is between 1-7/16 and 1-9/16 inches (3.7 - 4.0 cm) (refer to Figure 18).

FAN SHAFT ASSEMBLY

1. Remove both neck covers (3000 CE™ only) and the side covers.
2. Remove both fans.
3. Remove the drive chain.
4. Loosen, but do not remove, the nuts at the top and bottom of the intermediate shaft bracket (refer to Figure 19).
5. Loosen the j-bolt nut so the Poly-V belt is slack.

PARTS REMOVAL AND REPLACEMENT

6. Loosen the mounting nut and remove the magnet mount from the left side of the fan shaft.
7. Loosen the four pillow block bearing set screws on the right and left side fan shaft brackets (refer to Figure 17).
8. Loosen and remove the hall effect sensor mounting nuts and screws. Cut the tywrap that holds the sensor cable to the left side fan shaft bracket. Set the hall effect sensor to the side.
9. Support the flywheel and remove the two bolts from the threaded spacer. Carefully lower the flywheel onto the Poly-V pulley.
10. Support the intermediate shaft bracket and remove the nut and bolt from the top of the intermediate shaft bracket. Lean the intermediate shaft bracket out of the way.
11. Hold onto the flywheel and slide the left side fan shaft bracket off the fan shaft.
12. Slide the Poly-V belt off the flywheel. Remove the right side fan shaft bracket and flywheel, as a unit, from the frame.
13. Remove the right side fan shaft bracket from the fan shaft once the assembly is away from the frame.
14. Inspect the pillow block bearings for smoothness of operation. The pillow block bearing assemblies can be removed from the fan shaft brackets by loosening and removing the two jamnuts, lock washers, and screws.
15. Reverse the steps to reinstall the fan shaft assembly. Additionally, ensure that:
 - The short side of the j-bolt hook faces to the rear of the frame.
 - The wider portion of the threaded spacer faces to the right.
 - You use a new tywrap on the sensor cable and the left side fan shaft bracket. Ensure the wires are fully seated in the white plastic connector.
 - The magnet mount is as close to the hall effect sensor as it can get while not contacting the hall effect sensor as the fan shaft turns. The magnet mount can be up to 1/4 inch (0.6 cm) away from the hall effect sensor.
 - The fans are installed according to instructions in the "Fan" section of the *Manual*.
 - The drive chain is adjusted according to the procedure outlined in the "Drive Chain" section of this *Manual*.
 - The Poly-V belt is adjusted so the distance between the edges of the top and bottom spring retainers on the j-bolt is between 1-7/16 and 1-9/16 inches (3.7 - 4.0 cm) (refer to Figure 18).



1. Use a 15-mm pedal wrench or a 5/8" open end wrench to loosen and remove the pedals from the crank.
2. The pedal on the left side of the crank has reverse threads. Turn the wrench on the left pedal clockwise to loosen it. Turn the wrench on the right pedal counter-clockwise to loosen it.
3. Apply a small amount of multi-purpose grease to the threads of the pedal spindle before reinstalling the pedals on the crank.
4. The left pedal spindle is marked with an "L" and the right pedal spindle with an "R."

CRANK AND BOTTOM BRACKET ASSEMBLY

1. Remove both neck covers (3000 CE™ only) and the side covers.
2. Remove the drive chain.
3. Remove the left pedal.
4. Loosen and remove the bottom bracket jam nut located on the left side of the crank (refer to Figure 20). This nut has reverse threads; loosen it by turning it clockwise.
5. Remove the round, plastic crank shield from the left side of the crank.
6. Remove the bearing clamps by loosening the allen bolts from the left side clamp.
7. Loosen and remove the left bearing nut assembly. This nut has reverse threads; loosen it by turning it clockwise.
8. Slide the crank out of the frame to the right.
9. The right bearing nut assembly can be removed from the crank with a 32-mm cone wrench. The right bearing nut assembly also holds the chainring in place on the crank. If the chainring is damaged, replace it now.
10. Inspect the bearings for smoothness of operation. Replace the bearings if necessary.
11. Ensure that the right bearing nut assembly is tight against the chainring before reinstalling the crank into the frame.

PARTS REMOVAL AND REPLACEMENT

12. Install the left bearing nut assembly onto the crank and tighten it with a torque wrench set to 22 inch pounds (2.5 Newton meters). Do not overtighten the nut; the crank should spin freely.
13. Install both bearing clamps and tighten the allen bolts. Do not overtighten the allen bolts; the crank should spin freely.
14. Install the round, plastic crank shield, the jam nut and the pedal onto the left side of the crank. Remember, the jam nut and the pedal have reverse threads (tighten them in the counterclockwise direction).
15. Adjust the side play in the crank by tightening or loosening the left side bearing nut with a 32-mm cone wrench. The crank should spin freely without binding. When the crank is properly adjusted, hold the left side bearing nut with the cone wrench and tighten the jam nut securely. Recheck the crank adjustment after you've tightened the jam nut.
16. Install the drive chain and the side and neck covers.

GROUNDING INSTRUCTIONS

The StairMaster® Spinnaker™ systems cycle ergometer must be grounded. If it should malfunction or break down, grounding provides the path of least resistance for the electric current, thereby reducing the risk of electric shock. This machine is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

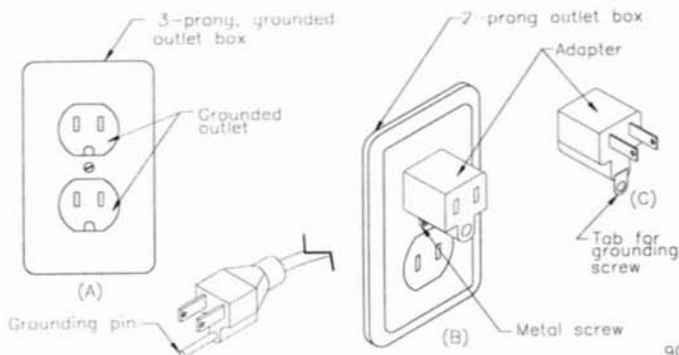


WARNING

IMPROPER CONNECTION OF THE EQUIPMENT-GROUNDING CONDUCTOR CAN RESULT IN THE RISK OF ELECTRIC SHOCK. CHECK WITH A QUALIFIED ELECTRICIAN OR SERVICEMAN IF YOU ARE IN DOUBT AS TO WHETHER THE MACHINE IS PROPERLY GROUNDING. DO NOT MODIFY THE PLUG PROVIDED WITH THIS MACHINE. IF IT WILL NOT FIT THE AVAILABLE OUTLET, HAVE A PROPER OUTLET INSTALLED BY A QUALIFIED TECHNICIAN.

The Spinnaker systems cycle ergometer is designed for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in sketch A in Figure 16.* A temporary adapter that looks like the adapter illustrated in sketches B and C may be used to connect this plug to a two-prong receptacle as shown in sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet (sketch A) can be installed by a qualified electrician. The green colored lug extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever an adapter is used, it must be held in place by a metal screw.

* This may vary for International power supplies.



90034-A
2/22/95 1-4

Figure 22: Grounding Systems

NOTICE OF FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of equipment in a residential area may cause harmful interference in which case the user will be required to correct the interference at his own expense.



WARNING

CHANGES OR MODIFICATIONS TO EQUIPMENT NOT EXPRESSLY APPROVED BY STAIRMASTER® SPORTS/MEDICAL PRODUCTS, INC. COULD VOID THE USER'S AUTHORITY TO OPERATE THIS EQUIPMENT.

CANADIAN DOC CLASS A COMPLIANCE

This digital apparatus does not exceed the Class A limits for radio emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

La présent appareil numérique ne dépasse pas les limites établies pour les bruits radioélectriques applicables aux appareils numériques de la Class A prescrites dans les règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

HOW TO ORDER PARTS

If you need assistance, please have both the serial number of your machine and the date of purchase available when you contact the appropriate StairMaster® Sports/Medical Products, Inc. office listed below.

OFFICES IN THE UNITED STATES

CORPORATE HEADQUARTERS
12421 Willows Road NE, Suite 100
Kirkland, WA 98034
(800) 635-2936 or (206) 823-1825
FAX: (206) 823-9490

CUSTOMER SERVICE
12421 Willows Road NE, Suite 100
Kirkland, WA 98034
(800) 331-3578 or (206) 823-1825
FAX: (206) 814-0601

INTERNATIONAL OFFICES AND DISTRIBUTORS

INTERNATIONAL DIVISION
(206) 823-1825
FAX: (206) 820-7505

CANADA: TRC SPORTS SYSTEMS
(800) 668-4857
(905) 712-2719
FAX: (905) 712-3722

EUROPE: HEADQUARTERS
41-92-823801
FAX: 41-92-823802

JAPAN: SENOH CORPORATION
81-035479-6711
FAX: 81-035479-6703

GERMANY: HEADQUARTERS
49-2204/610-27
FAX: 49-2204/628-90

AUSTRALIA: THE FITNESS
GENERATION PTY LTD
61-3/800-2122
FAX: 61-3/800-2722

ITALY: HEADQUARTERS
44-908/221-323
FAX: 44-908/223-162

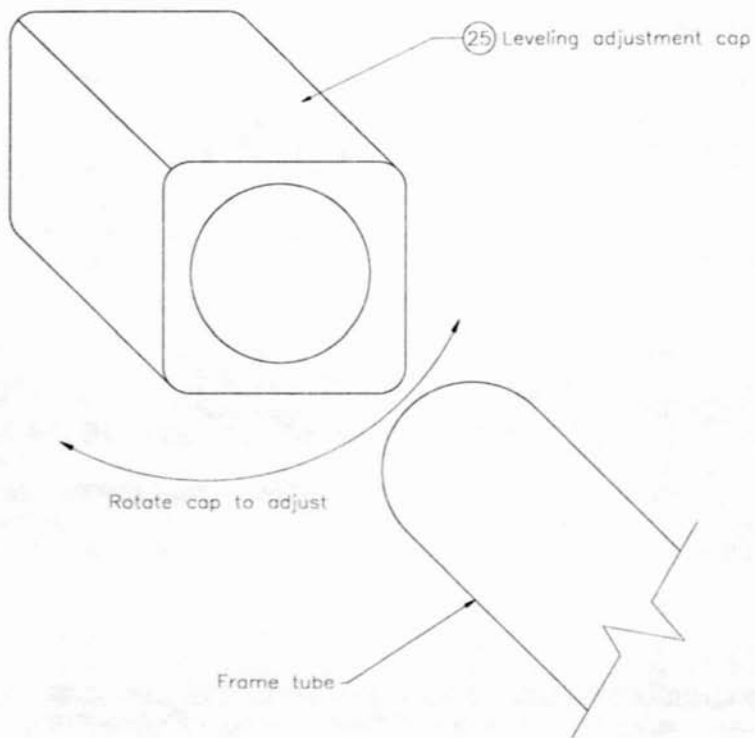
SWEDEN/NORWAY: NORDIC GYM
PRODUCTION
46-278/242-10
FAX: 46-278/159-66

FRANCE/BELGIUM:
MONDIAL S.P.R.L.
32-82/226775
FAX: 32-82/226854

COUNTRIES NOT LISTED
(206) 823-1825
FAX: (206) 823-7505

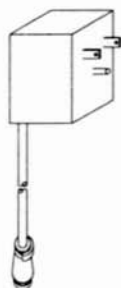
FIGURES

Figure 5: Leveling Adjustment Cap

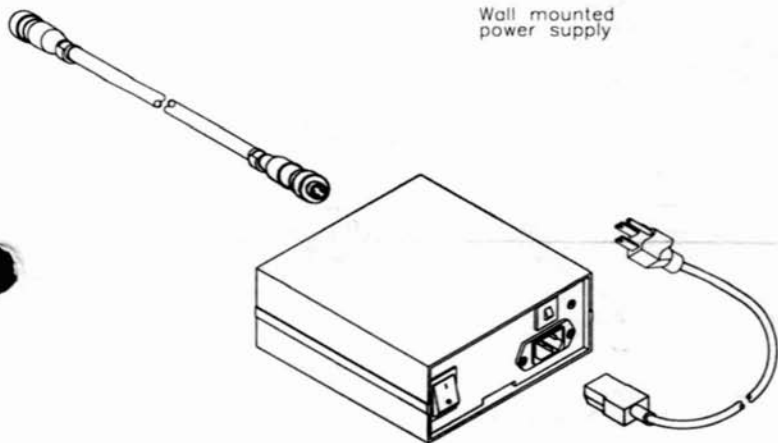


90028-B
2/16/95 1-5

Figure 6: Power Supplies



Wall mounted power supply



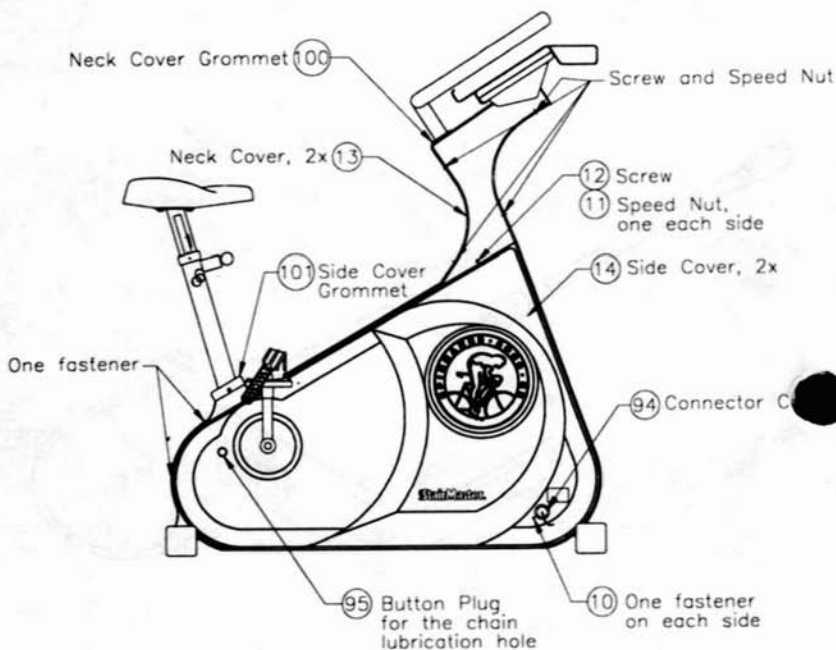
Multiple bike power supply, domestic; PS-6
International power supply; IPS-3

90031-c
2/14/78 1-6

FIGURES

Figure 7: Cover Fastener Location, 3000 CE™

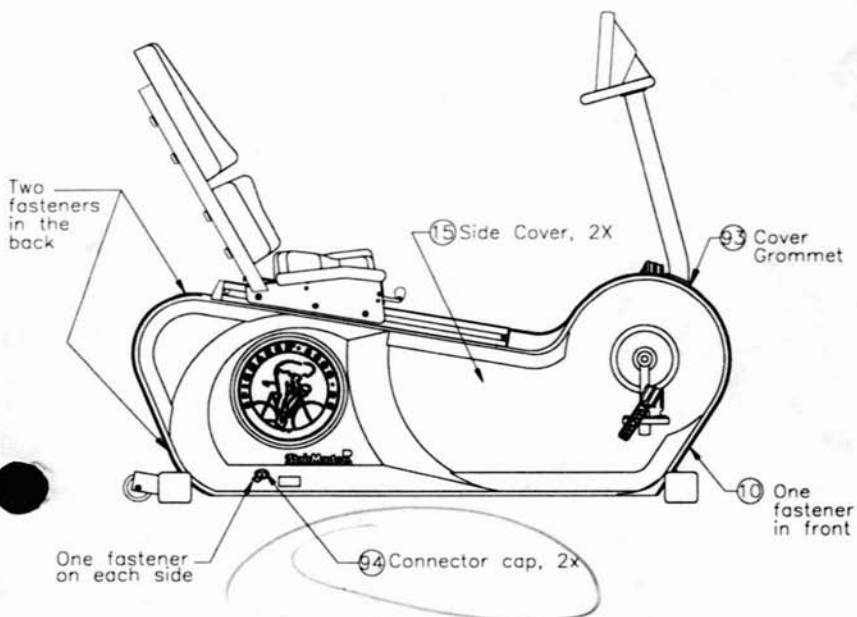
1. A total of six screws, with six speed nuts, on the neck covers.
2. A total of four fasteners on the side covers.



90111-A
3/02/95 1-20

Figure 8: Cover Fastener Location, 3600 RC™

There are a total of 5 fasteners on the side covers.

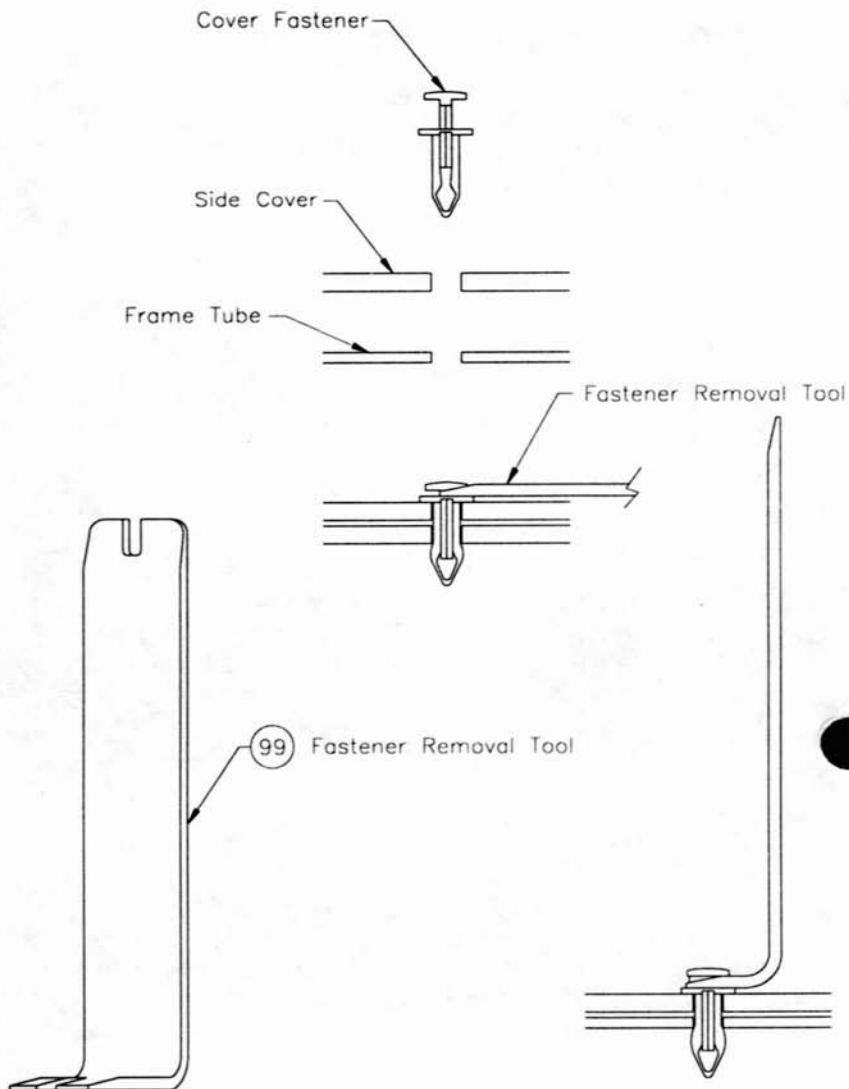


*Special ORDER
From Stairmaster*

90112-A
3/02/95 1-20

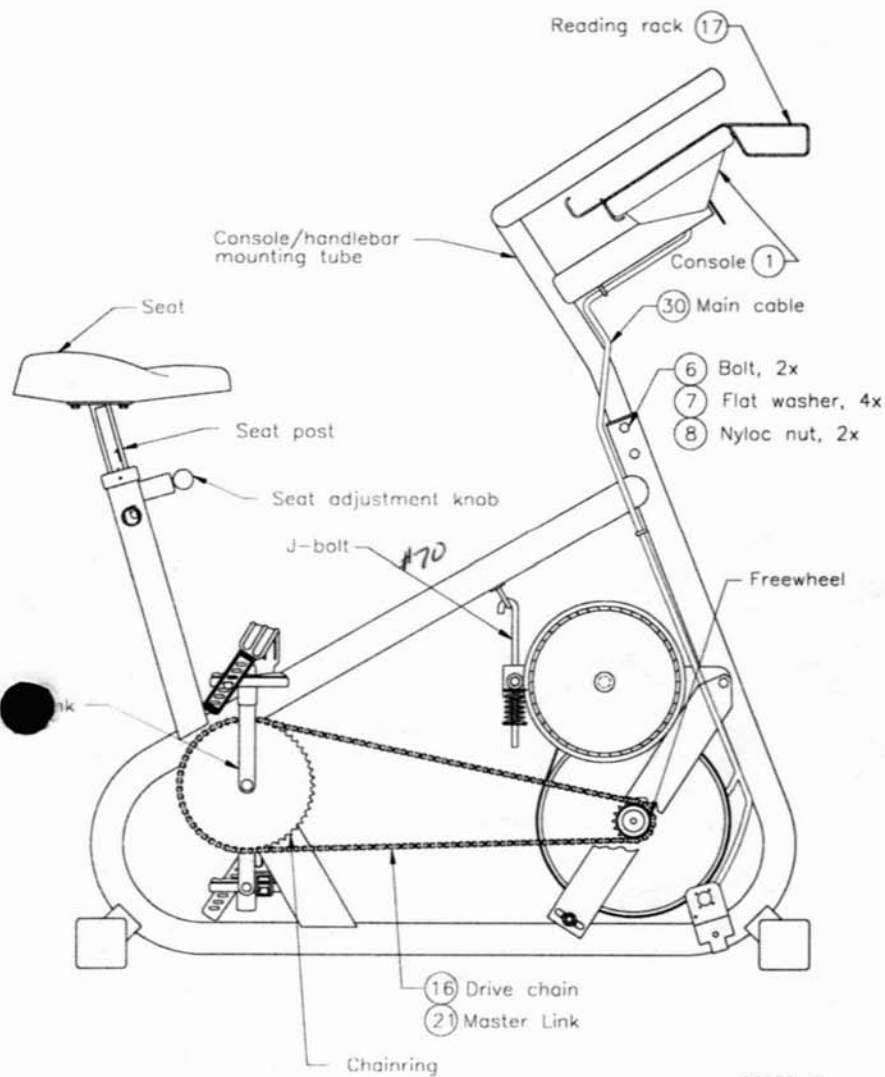
FIGURES

Figure 9: Cover Fasteners



90117-A
3/02/95 1-2

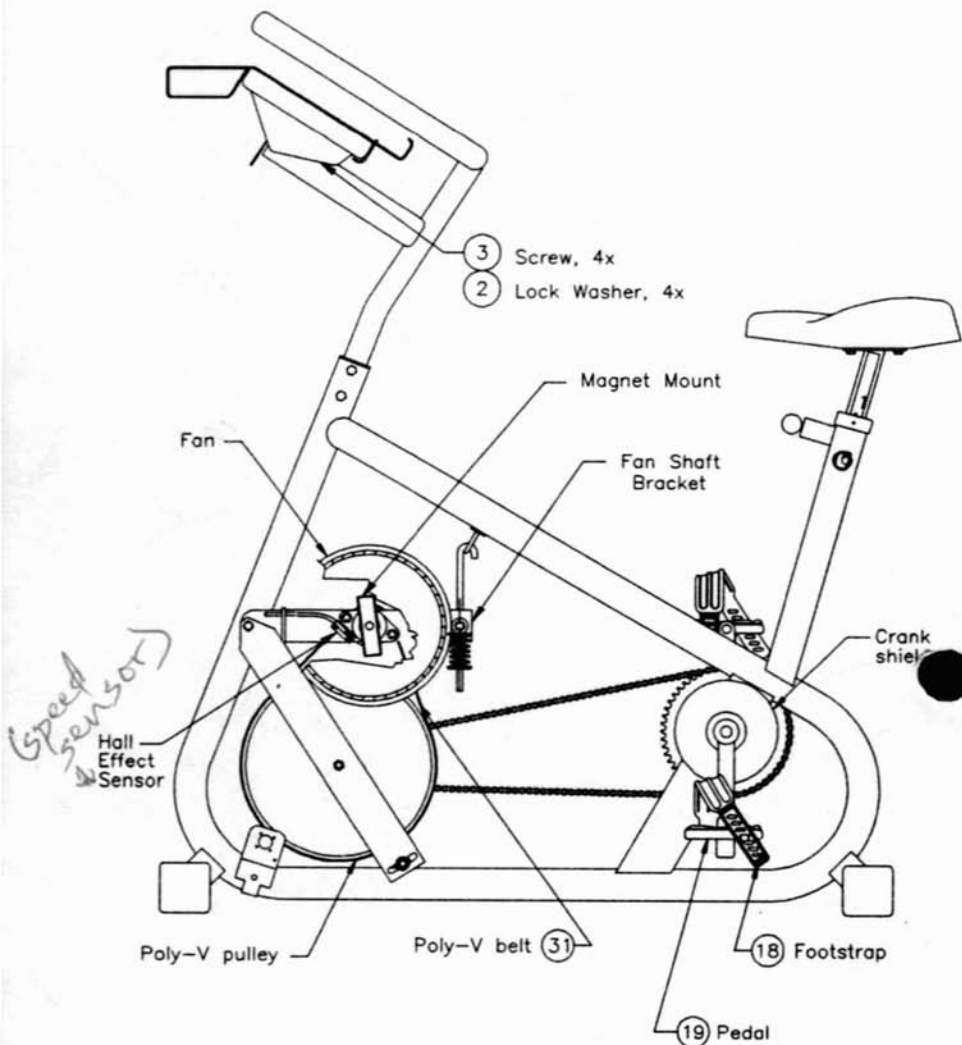
Figure 10: Right Side View, 3000 CE



90029-C
3/02/95 1-12

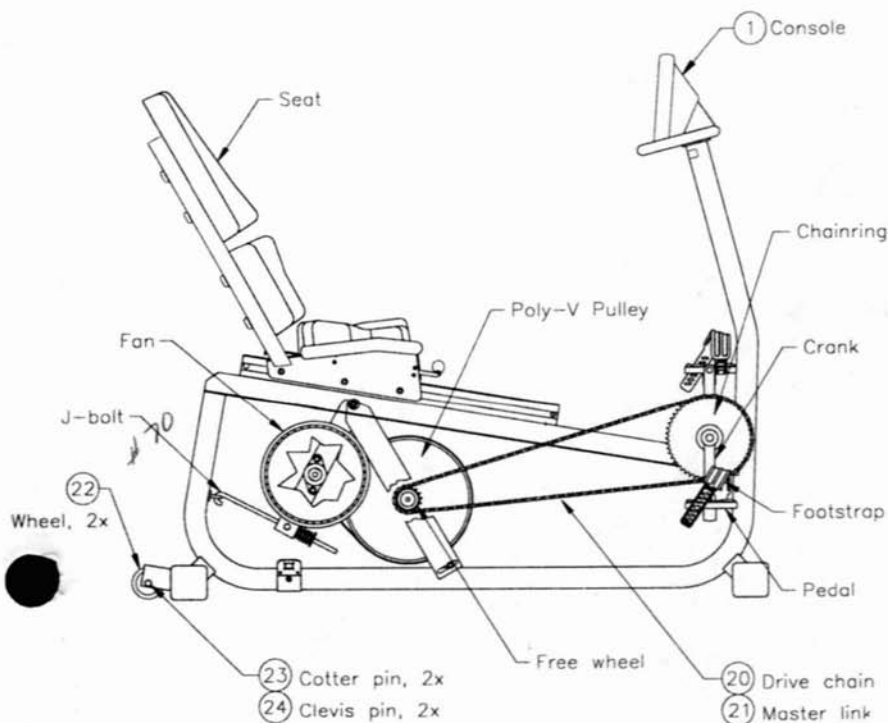
FIGURES

Figure 11: Left Side View, 3000 CE



90026-C
2/16/95 1-12

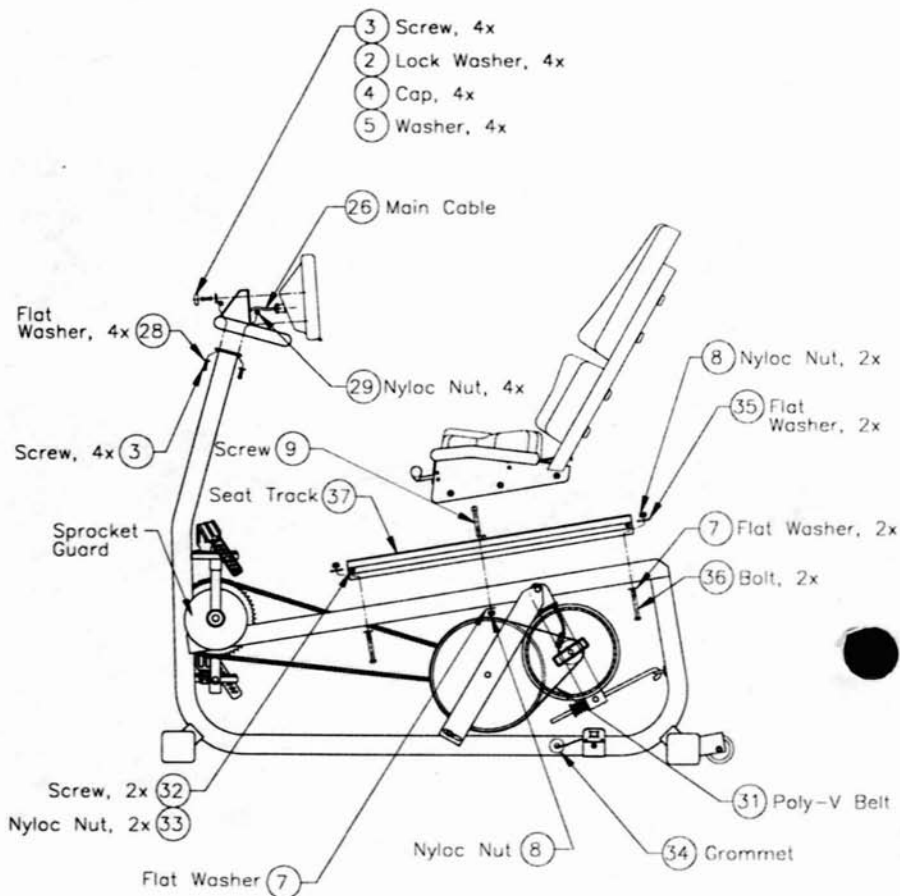
Figure 12: Right Side View, 3600 RC



90113-A
3/02/95 1-18

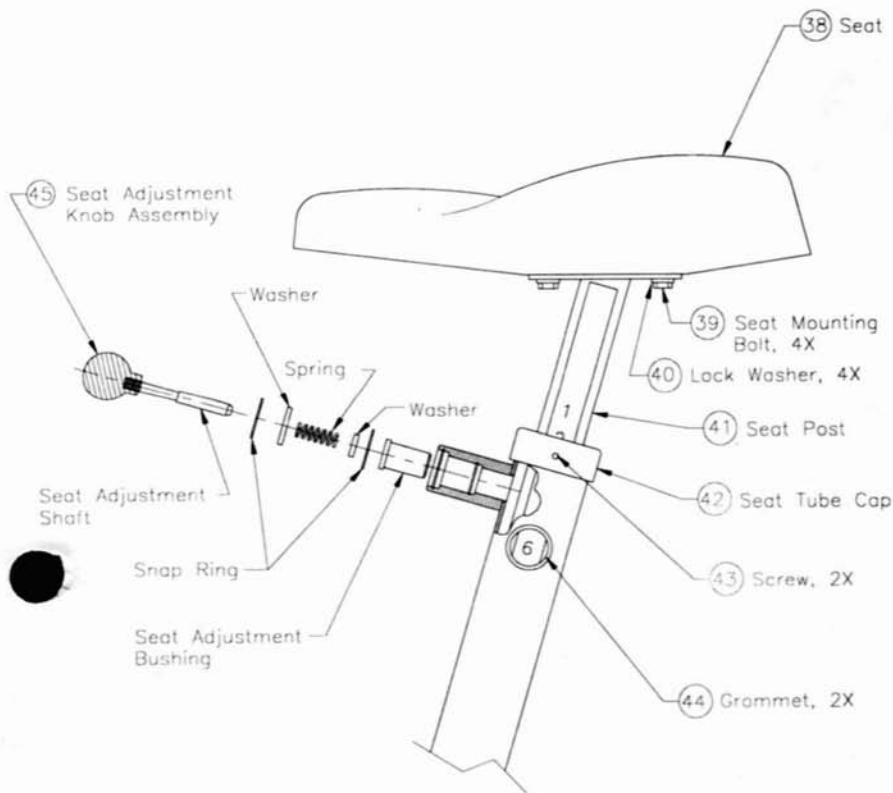
FIGURES

Figure 13: Left Side View, 3600 RC



90114-A
3/02/95 1=20

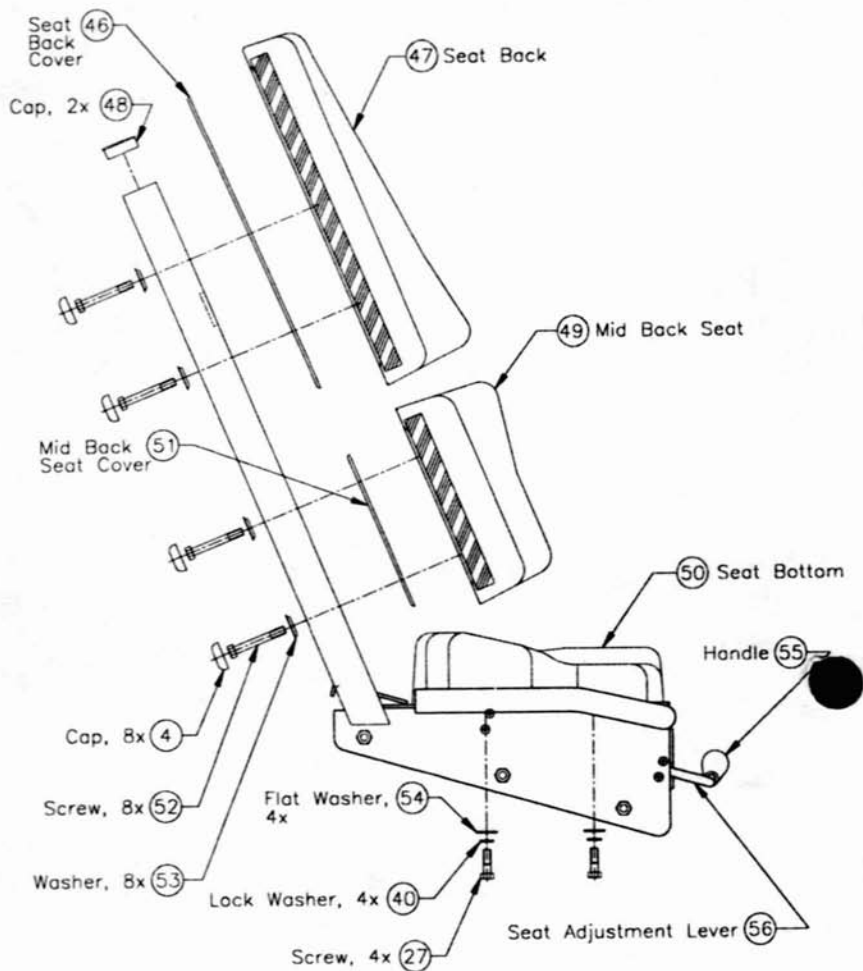
Figure 14: Seat Adjustment Pin Assembly, 3000 CE



90023-C
3/02/95 1=5

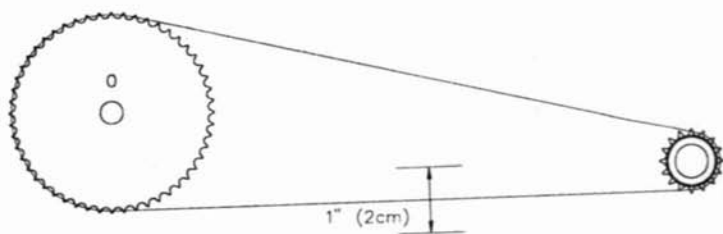
FIGURES

Figure 15: Seat Assembly, 3600 RC



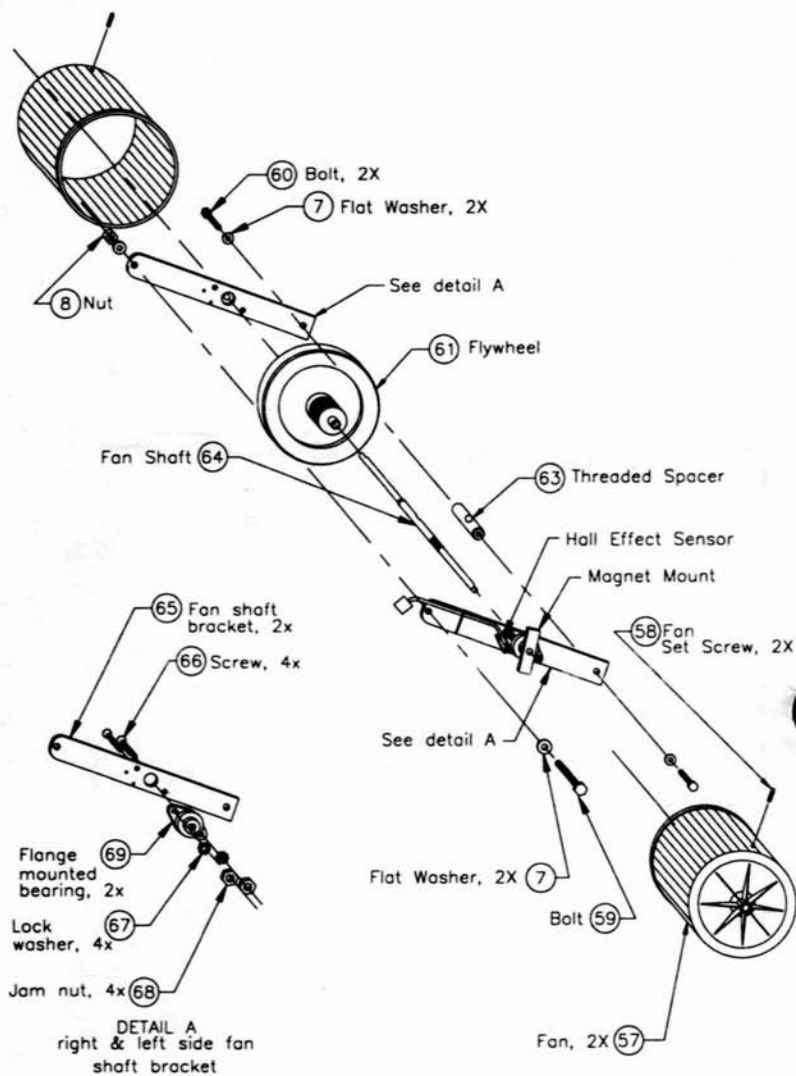
A90115-A
2/16/95 1-8

Figure 16: Drive Chain Tension



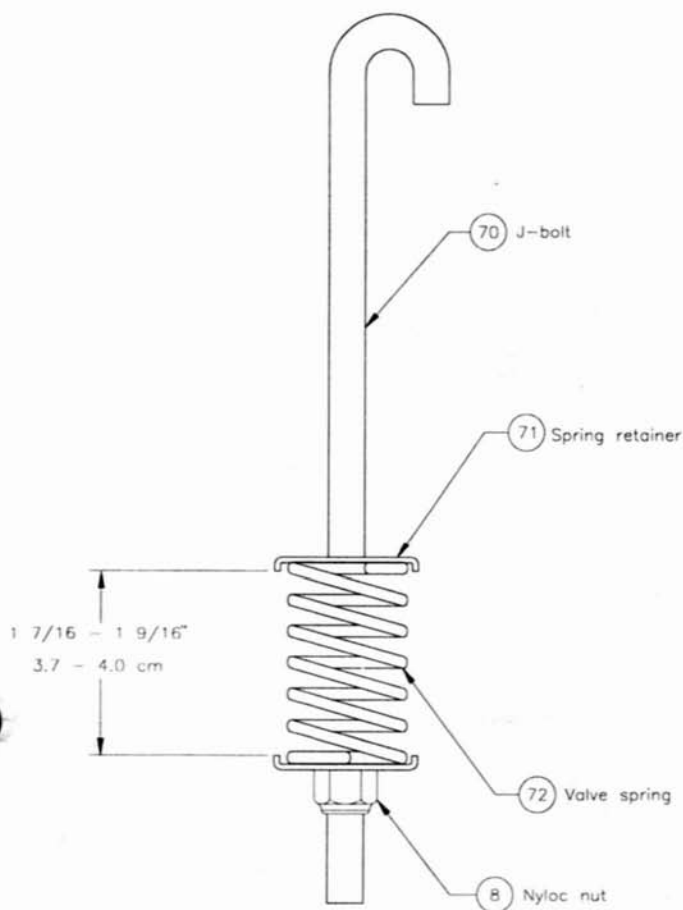
FIGURES

Figure 17: Fan Shaft Assembly



90030-C
3/02/95 1-16

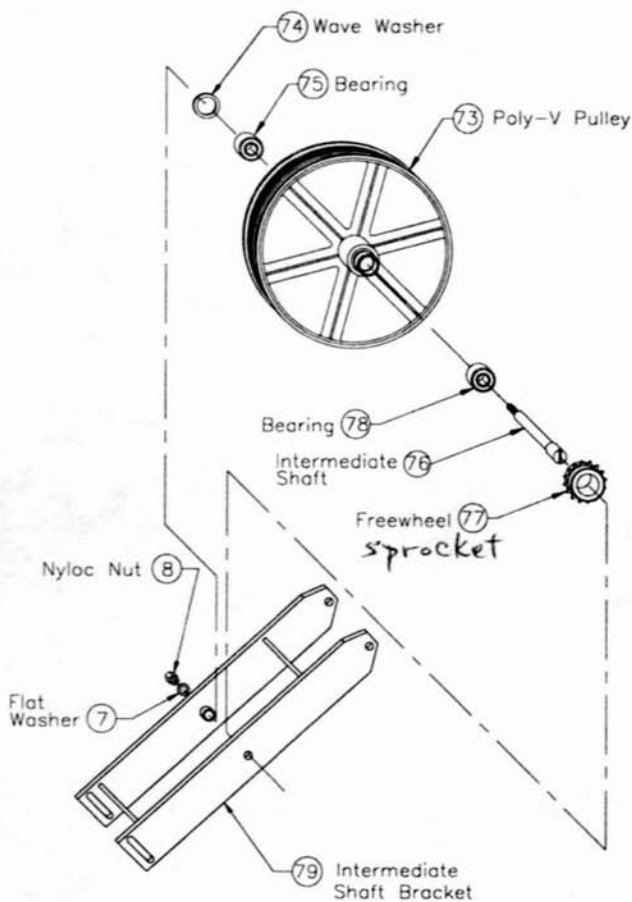
Figure 18: J-bolt Assembly



90116-A
2/16/95 1-2

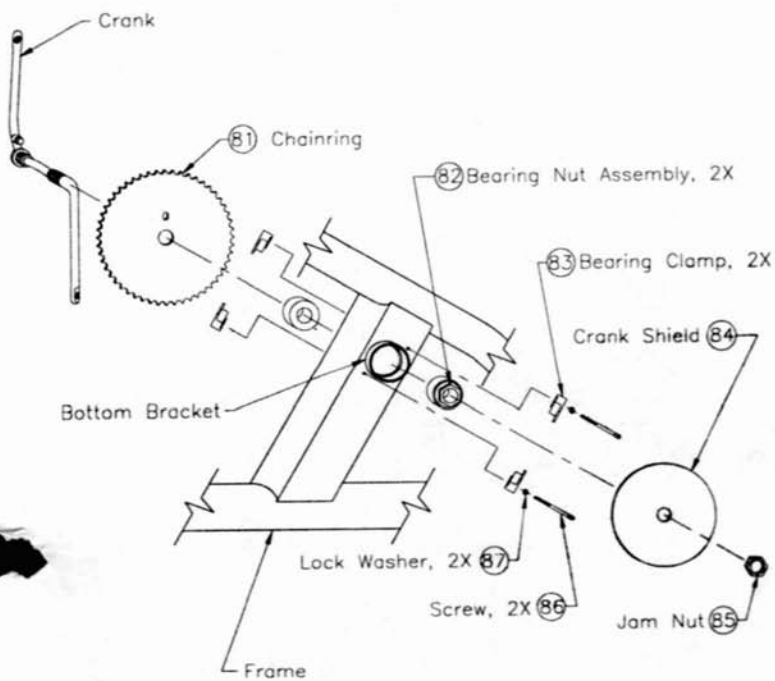
FIGURES

Figure 19: Intermediate Shaft Assembly



90032-C
3/02/95 1-12

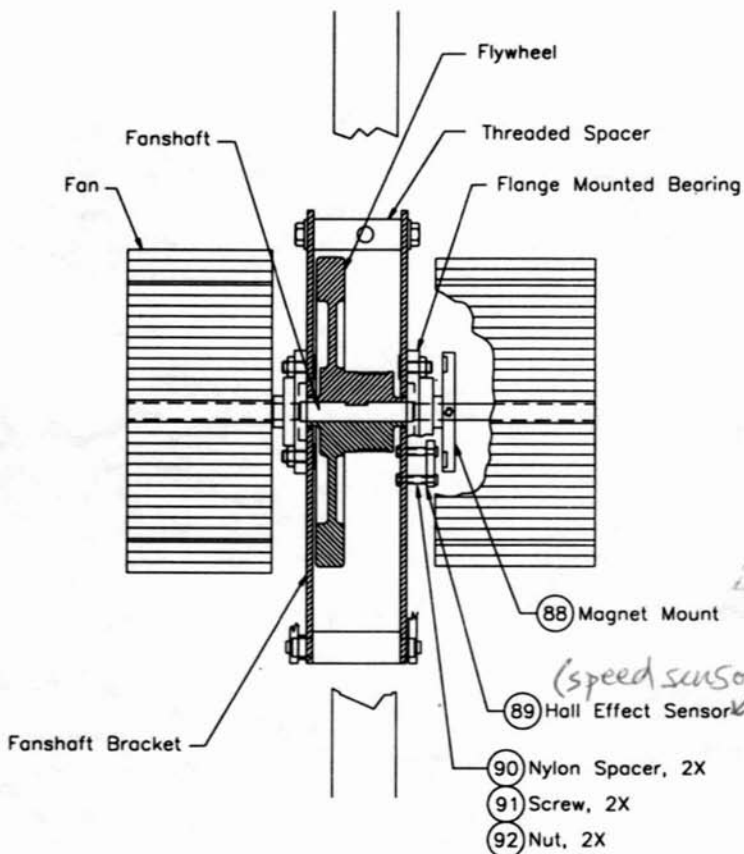
Figure 20: Crank Assembly



90033-B
3/02/95 1=12

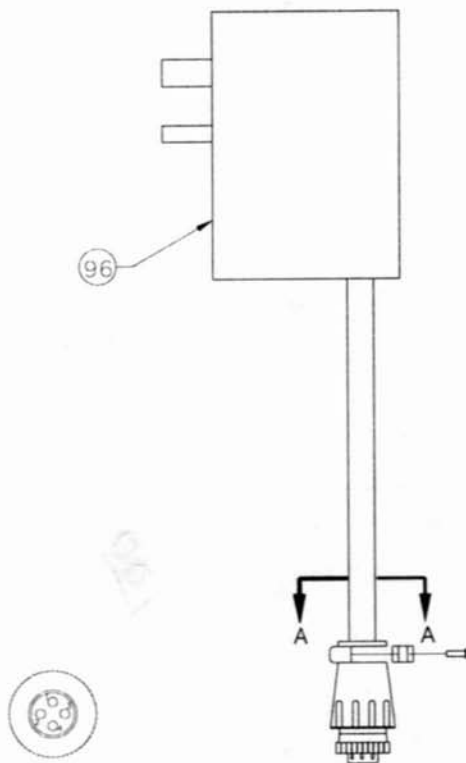
FIGURES

Figure 21: Fan Shaft Assembly Cross Section



90035-C
3/03/95 1-6

Wiring Diagram 1: Wall-Mounted Power Supply



VIEW A-A

- PIN 1—WHITE (POS)
- PIN 2—BLACK (NEG)
- PIN 3—GREEN
- PIN 4—N/C

90016-B
3/02/95 1-2

WIRING DIAGRAMS

Wiring Diagram 2: Main Cable Assembly

- 1-YEL (POS)
- 2-BLK (NEG)
- 3-GRN \ YEL (E GND)
- 4-BRN (SERIAL)



VIEW D-D
(Power Connector)

- 1-PUR (POS)
- 2-WHT (NEG)
- 3-GRN \ YEL (E GND)
- 4-BLU (SERIAL)

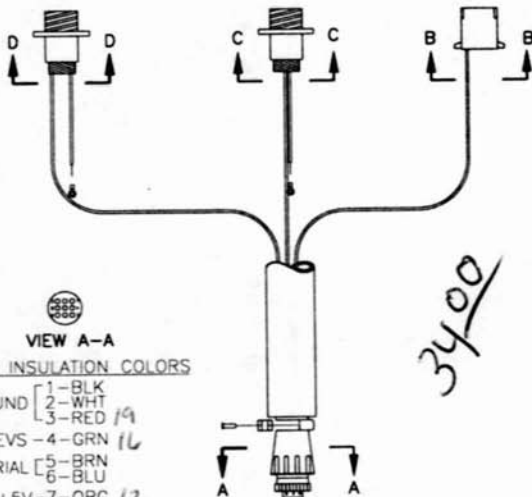


VIEW C-C
(Power Connector)

- 4-ORG (POS)
- 3-GRN (REVS)
- 2-N/C
- 1-RED (NEG)



VIEW B-B
(To Hall Effect Sensor)



VIEW A-A

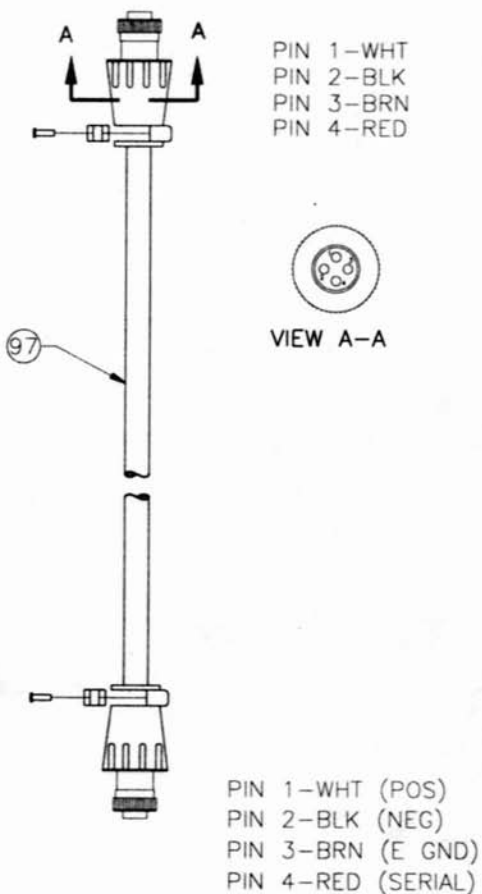
WIRE INSULATION COLORS

- GROUND [1-BLK
- [2-WHT
- [3-RED 19
- REVS - 4-GRN 16
- SERIAL [5-BRN
- [6-BLU
- +5V - 7-ORG 12
- VSUPPLY [8-YEL
- [9-PUR

3400

90020-C
2/16/95 1-4

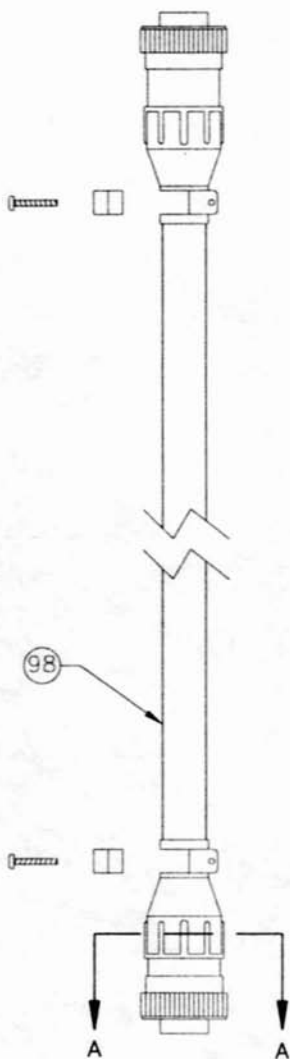
Wiring Diagram 3: Serial Cable Assembly



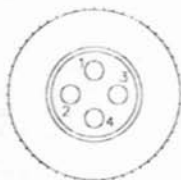
90021-B
3/02/95 1-2

WIRING DIAGRAMS

Wiring Diagram 4: 8' D.C. Power Cable Assembly



PIN 1-WHITE (POS)
PIN 2-BLACK (NEG)
PIN 3-GREEN (E GND)
PIN 4-N/C



VIEW A-A

90118-A
3/02/95 1=2

KEY TO FIGURES AND WIRING DIAGRAMS

ID Number	Description	Part Number
1	Console Assembly, 3000 CE	24075
	Console Assembly, 3600 RC	21414
2	Lock washer, 1/4"	22027
3	Screw, 1/4 - 20 x 3/4	22162
4	Finishing cap	22323
5	Finishing washer, 1/4"	22324
6	Bolt, 3/8 - 16 x 2 3/4	22196
7	Flat washer, 3/8"	22030
8	Nyloc nut, 3/8 - 16	22029
9	Screw, 3/8 - 16 x 2 3/4	24510
10	Cover fastener	22086
11	Speed nut	24201
12	Screw, #8 x 5/8	22117
13	Neck cover, right, 3000 CE	24080
	Neck cover, left, 3000 CE	24081
14	Side cover, right, 3000 CE	24145
	Side cover, left, 3000 CE	24146
15	Side cover, right, 3600 RC	24464
	Side cover, right, 3600 RC	24463
16	Drive chain, 3000 CE	24034
17	Reading rack, 3000 CE	24246
18	Footstrap, right	24218
	Footstrap, left	24217
19	Pedal, right	24037
	Pedal, left	24048
20	Drive chain, 3600 RC	24410
21	Master link	24198
22	Wheel, 3" diameter	24164
23	Cotter pin	22329
24	Clevis pin	22326
25	Leveling adjustment cap	24074
26	Main cable, 3600 RC	24415
27	Screw, .312 - 18 x 1	22165
28	Flat washer, 1/4"	22038
29	Nyloc nut, 1/4"	22036
30	Main cable, 3000 CE	24131
31	Poly-V belt	24031
32	Screw, 5/16 - 18 x 2 3/4	24516
33	Nyloc nut, 5/16"	22032
34	Grommet, 1 1/2" O.D.	24519

3600

console knob
w/star washer }

24677

KEY TO FIGURES AND WIRING DIAGRAMS

ID Number	Description	Part Number
35	Flat washer	24518
36	Bolt, 3/8 - 16 x 3	24102
37	Seat track	24490
38	Seat, 3000 CE	24036
39	Bolt, 5/16 - 18 x 1	22071
40	Lock washer, 5/16"	22070
41	Seat post assembly	24205
42	Seat tube cap	24062
43	Screw, #8 x 3/8	24069
44	Grommet, seat post	21146
45	Seat adjustment knob assembly	
46	Seat back cover	24414
47	Back, seat, 3600 RC	23647
48	Cap, seat frame	24563
49	Mid back seat, 3600 RC	23648
50	Bottom, seat, 3600 RC	24477
51	Mid back seat cover	24416
52	Screw, 5/16 - 18 x 2 1/4	24498
53	Finishing washer, .312"	24554
54	Flat washer, 5/16"	22075
55	Tapered handle	24499
56	Adjustment lever	24482
57	Fan, right side	24047
	Fan, left side	24046
58	Fan set screw	22072
59	Bolt, 3/8 - 16 x 4 3/4	24203
60	Bolt, 3/8 - 16 x 1 1/2	22017
61	Flywheel	24007-03
63	Threaded spacer	24024
64	Fan shaft	24462
65	Fan shaft bracket	24541-03
66	Screw, 3/8 - 16 x 1	23851
67	Lock washer, 3/8	23729
68	Jam nut, 3/8 - 16	22228
69	Flange mounted bearing	24531
70	J-bolt, 3000 CE	24317
	J-bolt, 3600 RC	24428
71	Spring retainer	23760
72	Valve spring	23758

KEY TO FIGURES AND WIRING DIAGRAMS

Item Number	Description	Part Number
73	Poly-V pulley, 12" diameter	24386
74	Wave washer	24545
75	Bearing, 15mm x 35mm	24387
76	Intermediate shaft	24542
77	Freewheel <i>sprocket</i>	24035
78	Bearing, 15mm x 28mm	24032
79	Intermediate shaft bracket	24537-03
80	Crank	24055
81	Chainring <i>sprocket</i>	24057
82	Bearing nut assembly, right side	24086
	Bearing nut assembly, left side	24087
83	Bearing clamp, left side	24077
	Threaded bearing clamp, right side	24078
84	Crank shield	24083
85	Crank jam nut	24073
86	Screw, #10 - 32	24079
87	Lock washer, #10	24088
88	Magnet mount assembly	24395
89	Hall effect sensor assembly (<i>speed sensor</i>)	14101
90	Nylon spacer, .63 long	24383
91	Screw, #8 - 32 x 1.25	24394
92	Nut, #8 - 32	22110
93	Grommet, cover, 3600 RC	24474
94	Connector cap	14063
95	Button plug	22083
96	Wall-mounted power supply, WP-1 <i>obsolete</i>	14051
	Multiple-bike power supply, domestic, PS-6	23873
	Multiple-bike power supply, international, IPS-3	14072
97	Serial cable assembly	24099
98	DC power cable	10841
99	Fastener removal tool	23853
100	Grommet, neck cover, 3000 CE	24221
101	Grommet, side cover, 3000 CE	24214

*new part
#381*

