

Table of Contents

	Page
I. General Information	2-5
II. Set Up	6
III. Theory of Operations	7-11
IV. Mechanical Troubleshooting	12-13
V. Electrical Troubleshooting	14-37
VI. Adjustments and Parts Replacement	38-70
VII. Assembly Drawings and Part List	71-

I. General Information

Purpose

This manual provides information for the servicing of **SCIFIT AC7000M** treadmills. It uses systematic troubleshooting procedures to address problems that may arise with the AC7000M. The actions taken to resolve problems must be performed in the order stated. Deviating from this sequence may cause damage to the equipment, lead to unnecessary repairs, or void the warranty.

Technical Support

For further assistance in the service of **SCIFIT** products, please call **(800) 745-1373 or (918) 359-2000, ext 3**. We can also be reached by fax at **(918) 359-2045** or by e-mail at **service@scifit.com**. The product support department is staffed from 7 AM to 6 PM CST Monday through Friday. A voicemail service is available 24 hours daily for recording messages to request technical support and to order replacement parts. Our mailing address is **5151 S. 110th E. Avenue, Tulsa, OK 74146**.

Please have the following information prior to calling product support:

- Model number of equipment
- Serial number of equipment
- Point of contact name, address, and phone number
- Detailed description of symptoms encountered

SCIFIT Statement of Warranty

SCIFIT warranties new products against defective workmanship and/ or materials under normal and proper use subject to the following limitations:

1. SCIFIT's obligation to the original purchaser shall apply to both parts and cost of labor required to replace or repair a defective product for a period of one (1) year from the user purchase date as documented by the warranty card. If the customer fails to return the warranty card, the date of shipment from the factory is used. Thereafter, for a period of two (2) years, such obligation shall extend only to the supply of replacement parts or products with any labor costs associated with such replacement or repair to be at the Buyer's expense.
2. SCIFIT's obligation shall be limited to repairing or replacing defective parts. ***No allowance shall be granted for repairs made by Buyer without SCIFIT's prior written approval.*** The decision to replace or repair shall be solely at SCIFIT's election.

3. SCIFIT's warranty does not apply to parts requiring replacement or repair due to abnormal wear and tear, improper use, corrosion (perspiration), improper maintenance, improper rated grounded or dedicated electrical circuits, or improper storage, nor does it apply where all or part of the product has been altered from its original state.
4. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE INCLUDING WARRANTY OR MERCHANTABILITY OF FITNESS FOR PARTICULAR PURPOSE, AND IS IN LIEU OF ALL OTHER LIABILITIES OF SCIFIT INCLUDING DIRECT, INDIRECT, SPECIAL AND CONSEQUENTIAL DAMAGES OR PENALTIES EXPRESSED OR IMPLIED WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, OR OTHER TORT.**
5. Certain wear items are excluded from warranty coverage unless determined to be defective. These items include, but are not limited to:
 - Grips
 - Decks
 - Running Belt
 - Rubber Foot Pads
6. The following items are covered for a period of one (1) year only:
 - Contact Heart Rate Grips
 - Heart Rate Receiver/ Transmitter

Freight and Shipping

SCIFIT is NOT responsible for the repair or replacement of any unit or part damaged during transit or installation. Fire, flood, and acts of God are NOT covered under this warranty. The customer is responsible for pursuing all freight damage claims with the appropriate transit company. ***If the customer signs for freight-damaged goods without noting the damage on the bill of lading, the customer is solely responsible for the cost of repair or replacement for such freight damage. If freight damage is noted on the bill of lading, the customer must pursue a claim with the freight carrier.***

Parts Supply

During the first 30 days, warranty parts will be shipped via next day overnight delivery, excluding international shipments. Determination must be made before 2:00 p.m. CST on any given weekday for next day delivery. After 30 days, parts will be shipped via ground shipment. The customer is welcome to request overnight or second day parts shipping at the customer's expense. If requested, SCIFIT will charge the customer's

UPS or Federal Express account, or COD the difference in freight cost between ground shipment and overnight or second day.

Return Parts

In order to research problems and ensure they do not reoccur, the rapid return of defective parts is our biggest help! Thank you in advance for your assistance.

On electronics orders, a \$100.00 core charge is assessed to each printed circuit board. This amount will be credited once the boards have been received by SCIFIT. All defective parts must be returned to the SCIFIT factory within 20 days of receipt of replacement part for invoice credit. Otherwise, SCIFIT will expect payment on the parts invoice net 30 days.

Please follow these three easy steps for returning parts:

Step 1: Keep the box and packing material in which the new parts arrived. Locate the enclosed prepaid UPS return label.

Step 2: Wrap the defective part and place in the box for a safe return. Include a copy of the picking ticket that came with the replacement part.

Step 3: SCIFIT service will include a prepaid return label in the parts box for only those parts that need to be returned. Call **UPS** at **(800) 742-5777** for pick-up. When ALL of the parts are received and inspected at the factory, a credit will be issued for the original parts invoice. **Attention service companies: Warranty labor invoices will NOT be paid until required defective parts are returned to the factory.**

Installation

SCIFIT is NOT responsible for the repair or replacement of any unit or part damaged during installation. The customer is responsible for inspection of each unit and part for damage at the time of installation. The customer is responsible for pursuing all damage claims with the installer.

Service Labor

Where applicable, the SCIFIT service consultant will arrange a local field service technician to provide field support. Every effort will be made to schedule service during the two working days following notification of a problem or as soon as repair parts are available to the field service technician. Where possible, parts will be supplied in advance of the field service technicians so that the product is repaired with one call. ***All jobs to be performed under labor warranty must have SCIFIT's prior written approval or they will not be paid.***

Preventative Maintenance

After training, always wipe down your SCIFIT exercise product. Perspiration that continuously settles on the frame, casings, and control panels may eventually cause rust or damage. Damage resulting from lack of maintenance will NOT be covered under warranty. To clean, use mild soap and warm water. Dry with a clean towel.

Preventative maintenance, completed according to the schedule below, will keep your SCIFIT equipment functioning properly. We realize your time is valuable and have kept these maintenance items to a minimum. This preventative maintenance schedule assumes the equipment is utilized 6 to 8 hours per day. If the equipment is utilized to a greater extent, the maintenance schedule must be adjusted accordingly.

Machine	Weekly	Monthly	6 Months	12,000 Miles
AC7000M Treadmills	Clean exterior. See Note 1.	Vacuum interior & blow off electronics. See Note 2.	Grease Racks. See Note 4.	Flip deck, clean rollers. See Note 3.

Note 1: Clean the console with a damp cloth. The rest of the machine can be cleaned using common household cleaners.

Note 2: Be careful not to vacuum the electronics. Touching the electronics with any object can cause static damage.

Note 3: These maintenance items should be performed every 12,000 miles. This schedule assumes a treadmill is operated 12,000 miles in one year. The treadmill console will display “**FLIP**” in the top center window when 12,000 miles has been reached.

Note 4: We use Super Lube ® synthetic grease (item no. 82328). Any high quality industrial grease will do.

II. AC7000M Treadmill Power Requirements

The AC7000 Treadmill is a high performance machine with certain power requirements that must be maintained in the field for proper operation. Inadequate power to the AC7000 may result in intermittent failure of the elevation system, low voltage shutdown of the variable frequency drive, and improper speed valuation of the running belt.

The following electrical parameters must be met when determining existing power in a facility:

1. **Source voltage is between 208 – 245 volts AC on a dedicated 20 amp circuit.**

Note: Source voltage below 208 Volts may cause inconsistent operation of the elevation motor and/or drive system.

2. **“Dedicated circuits” for each treadmill must be installed in accordance with current voltage drop standards set by NEC code.** See Table 1 below. (Table 1 shall be considered as a guideline only; any questions should be brought to the attention of a licensed electrician.)

Note: A dedicated circuit is a power outlet reserved for the exclusive use of one and only one treadmill. This includes hot, neutral, and ground wires. This is done to provide proper frame ground drainage of the treadmill. The outlet should not be shared with any other piece of equipment.

Table 1

Source Voltage	Maximum Distance from Source	Minimum Cable Size
240V	121 feet / 36.3 meters	12 AWG
240V	193 feet / 57.9 meters	10 AWG
240V	307 feet / 92.1 meters	8 AWG
240V	488 feet / 146.4 meters	6 AWG

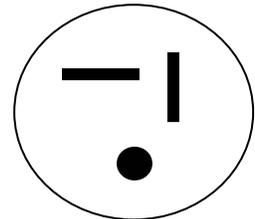
Calculations based on NEC code table 310-16 with 3% Voltage drop on a copper conductor 240V service.

3. **Have a proper outlet installed by a qualified electrician.** See plug diagram below.

Note: DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded.

Receptacle and Plug Diagram -

NEMA 6-20R (Receptacle)
NEMA 6-20P (Plug)



III. Theory of Operations

This theory of operations is designed to give the service technician an understanding of how the different systems of the treadmill operate and how the systems work together. Having an overall understanding of the treadmill systems enables the service technician to better trouble shoot the various problems that occur.

The AC7000M is an AC variable frequency drive controlled treadmill designed for a wide range of applications that vary from the medical market to the sports performance market. This theory of operation encompasses all electrical components, their functions, and how the components interact with each other.

The following is a list of independent electrical components found in the treadmill:

1. 15A Rocker Breaker switch
2. Lower PCB
3. Upper (Display) PCB
4. Elevation System
 - Elevation motor
 - Starter cap
 - Elevation potentiometer--- Epot
 - Omron general purpose Limit Switches
5. Drive System
 - Inverter (variable frequency drive)
 - Filter
 - Ferrite ring
 - AC Three Phase Drive Motor
6. Hand Grip Heart rate PCB (HG HR)
7. Wireless Heart rate PCB (Polar)

Component Functions

1. 15A Rocker Switch

The power cord is attached to a rocker style switch combined with a 15 Amp circuit breaker to prevent electrical damage to the electrical components. If the breaker trips, just turn it back on and the breaker resets. The switch routes power to the lower PCB and the inverter (actually the inverter filter).

2. Lower PCB

- Provides 240 VAC to the elevation system.
- Rectifies the 240 VAC to 12, 6, and 5 VDC for various control circuits.
- Provides 12 and 6 VDC power to the upper PCB.
- Controls the input of the inverter via opto-isolator components. The opto-isolators electrically isolate the lower PCB from the inverter.
- Contains relays that function as controllers for both motors.

3. Display PCB

- Powers the serial communications (C-Safe and Cardio-Key).
- Powers the contact heart rate and wireless heart rate jacks.
- Powers the membrane switch.
- Contains the display (LED) drivers although the power for the drivers comes from the lower PCB.
- Contains the memory and processor components.

4. Elevation Motor

Consists of a 230 VAC motor with a torque of 345 inch-lbs., which is attached to a 600-to-1 ratio gearbox. It draws 1.5 to 2 amps nominally, but like all constant speed motors, it draws five (5) to six (6) times it's nominal current when energized (this is called inrush current). Its duty cycle is two (2) minutes.

5. Starter Cap

Is a 10uf 370VAC oil capacitor that provides the immediate energy required for the inrush current for the elevation motor. The value of this cap is critical.

6. Elevation Potentiometer

Is a 10-turn, 2K ohm potentiometer that functions as the elevation servo-positioning device. It is fed a voltage from the lower PCB and depending on its position it variably drops the voltage and returns it.

7. Omron General Purpose Limit Switches

Are used for calibration and safety only. They are attached to the right side of the frame next to the elevation rack. They have one input and two outputs (normally open N.O. or normally closed N.C.). We only use the N.O., but the way we use it the N.O. switch is held closed and the switch opens when it hits the limits (the indentations on the elevation rack).

8. Inverter

- Is a variable frequency drive (VFD). It has its own processor, memory, settings, error codes, inputs, and outputs.
- Rectifies the input AC into DC and the processor uses a clock to fire insulate gate bipolar transistors (IGBT) in such an order that a synthetic AC wave is made. Each output line is made 60° out of phase and that runs the three-phase motor.
- All inputs and outputs are electrically isolated from the lower PCB and upper PCB via the opto-isolators on the lower PCB.

9. Filter

The filter is an electromagnetic interference (EMI) filter that stabilizes the input voltage for the inverter, which makes the inverter more dependable and the output to the motor cleaner.

10. Ferrite Ring

Is an inductor and opposes change in current, hence it functions as a surge protector. The ring is installed on the cable between the inverter and AC three phase, drive motor.

11. AC Three Phase Drive Motor

- Is a Brook Crompton 5.5 horsepower, three-phase, electric motor in older models. Newer models have a 4.0 horsepower, three-phase, electric motor.
- The three phase terminals are labeled U, W, and V. If a three-phase motor run the wrong direction just flip any two of the three wires around.
- Turns the front roller via a HTD belt, which turns the running belt.

12. Hand Grip (Contact) Heart Rate (HGHR)

The PCB has right and left grip inputs, its own program, and hardware that output a square wave to the display PCB. Power and ground is provided by the upper PCB.

13. Wireless Heart rate PCB

Like the HG heart rate, it also outputs a square wave. Power and ground is provided by the upper PCB. This PCB has a 30" range and position is critical.

System Functions

1. Turning on the treadmill

- The power cord must be plugged into a 240 VAC, 20 amp dedicated circuit.
- Turning on the rocker switch provides power (240 VAC, 120 VAC on each line) to the lower PCB and the inverter filter.
- Power to the lower PCB is verified by observing a lighted LED (D7). The lower PCB regulates 12 VDC into 6 VDC for VR1 which powers half the display LEDs, 6 VDC for VR2 which powers the other half of the display LEDs, and 5 VDC which powers the elevation pot.
- Power from the inverter filter energizes the inverter, turning on the fan and display. The display should read 0.00 in the window and a light showing what kind of data it is displaying (e.g. Hz, volts, current, RPM).
- Power (12 VDC) is routed from the lower PCB to the upper PCB (pin 5 of the 8-pin cable). The upper PCB regulates the 12 VDC into 5 VDC for VR1, which powers the HR power pins and other components, and 8 VDC for VR2, which powers C-Safe and Cardio Key. On start up, the display will emit a beep and it will begin a startup sequence. The upper display window will show how many times it has been turned on, the left display window will show the software version, and the right display window will show the system of measure (English or metric units). This information will be displayed for five (5) seconds and then the upper display window will show a racetrack pattern and zeros in the other windows.

2. Starting the treadmill

- Pressing the “Start” button activates the processor to issue various commands to start the treadmill. The processor starts the clock, which is displayed on the upper PCB.
- The processor issues a command to the lower PCB and the opto-isolators switch sends 24 VDC to the inverter. This tells the inverter to run and the run light on the inverter should display. The belt enable light (D6) should illuminate on the power supply at the same time. The inverter signals the motor to start, which runs the belt at 0.3 mph. The inverter varies the frequency of the signal it sends to the motor to control the speed.
- The upper middle LED window on the upper PCB displays six different parameters (Time, Distance, Pace, Calories, Calories per Hour, and Heart Rate). The software displays

the parameters in the above order. If the “Select” button is pushed, the selected parameter is held. If the display deviates from the above pattern, the software is corrupt.

- The upper PCB controls the elevation system. It measures the voltage drop across the Epot. If there is a difference between the elevation entered by the user and the elevation shown by the Epot, the upper PCB sends a signal to a relay on the lower PCB to switch on 220 VAC for the elevation circuit. The voltage runs through the starter capacitor to the elevation limit switches and then to the elevation motor. The motor runs until the elevation entered by the user and the elevation shown by the Epot are equal.
- If there is a failure, the upper PCB breaks the signal and it cannot be reestablished unless power is recycled and a new command issued.

3. Stopping the treadmill

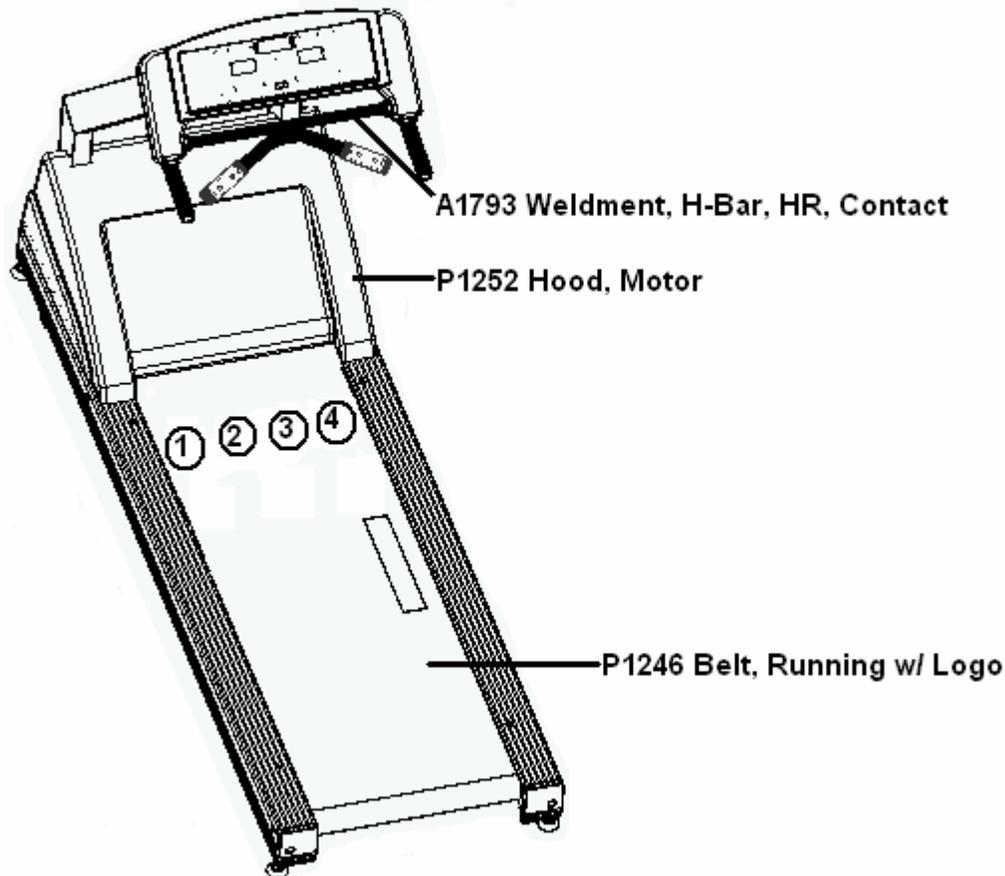
- Pressing the “Stop” button signals the software to go into idle mode after a 30-second pause period. During this period, the upper display window will cycle through the workout statistics while the two (2) lower display windows will flash. It also shuts off the lower PCB and inverter. Elevation cannot be adjusted when in idle mode.
- Pulling the emergency stop magnet opens the 12VDC path from the lower PCB to the upper PCB. This shuts down the upper PCB, which shuts down the lower PCB. Even though the LEDs get power from the lower PCB, the LED drivers won’t run without the 5VDC from the display VR1.

IV. Mechanical Troubleshooting

A. Mechanical Troubleshooting Table

Problem	Possible Reasons	Solutions
Front, rear, or guide roller is making clicking, grinding, or knocking noises.	Running belt over-tensioned.	Re-tension running belt. (See page 38)
	Bearings are bad.	Replace roller. (See pages 48-51)
Running belt slipping.	Running belt is too loose.	Re-tension running belt. (See page 38)
Running belt running off to one side or the other.	Belt tracking off.	Re-track running belt. (See page 38)
	Guide roller missing or malfunctioning.	Replace guide roller. (See page 48)
Drive motor knocking or grinding.	Pulley and flywheel are loose.	Tighten the 9/16" head bolt in the end of motor shaft.
	Internal problems with motor.	Replace motor. (See pages 52-55)
Drive (timing) belt is slipping.	Not enough tension on motor.	Re-tension motor. (See page 55-56)
	Teeth missing from the belt.	Replace drive (timing) belt. (See pages 55-56)
Deck rattles.	Bolts on the bottom of the deck are loose.	Tighten bolts on bottom of deck and cross braces (See pages 39-46)
	Deck is cracked.	Replace deck. (See pages 39-46)
Elevation racks binding on the way up or down.	Racks need to be greased.	Grease racks.

B. Running Belt to Deck Friction Test



1. With the treadmill either turned off or in idle mode, stand on the running belt (P1246) with your feet in positions 1 and 4. Position your toes so they are approximately 12 inches from the motor hood (P1252).
2. Place both hands on the handle bar (A1793).
3. Push on the handle bar to see if you can propel yourself backwards on the running belt. **Reminder: Your full weight needs to be on the running belt and your feet in positions 1 and 4.**
4. Repeat step 1-3 with your feet in positions 2 and 3 instead of positions 1 and 4.

Note: If you can propel yourself without the belt binding up in either foot position set, the belt and deck friction should not be a problem. If the friction is significantly higher in one foot position set than the other or the belt to bind ups or sticks in either, the belt needs to be replaced and the deck flipped or replaced.

V. Electrical Troubleshooting

A. Electrical Troubleshooting Tables

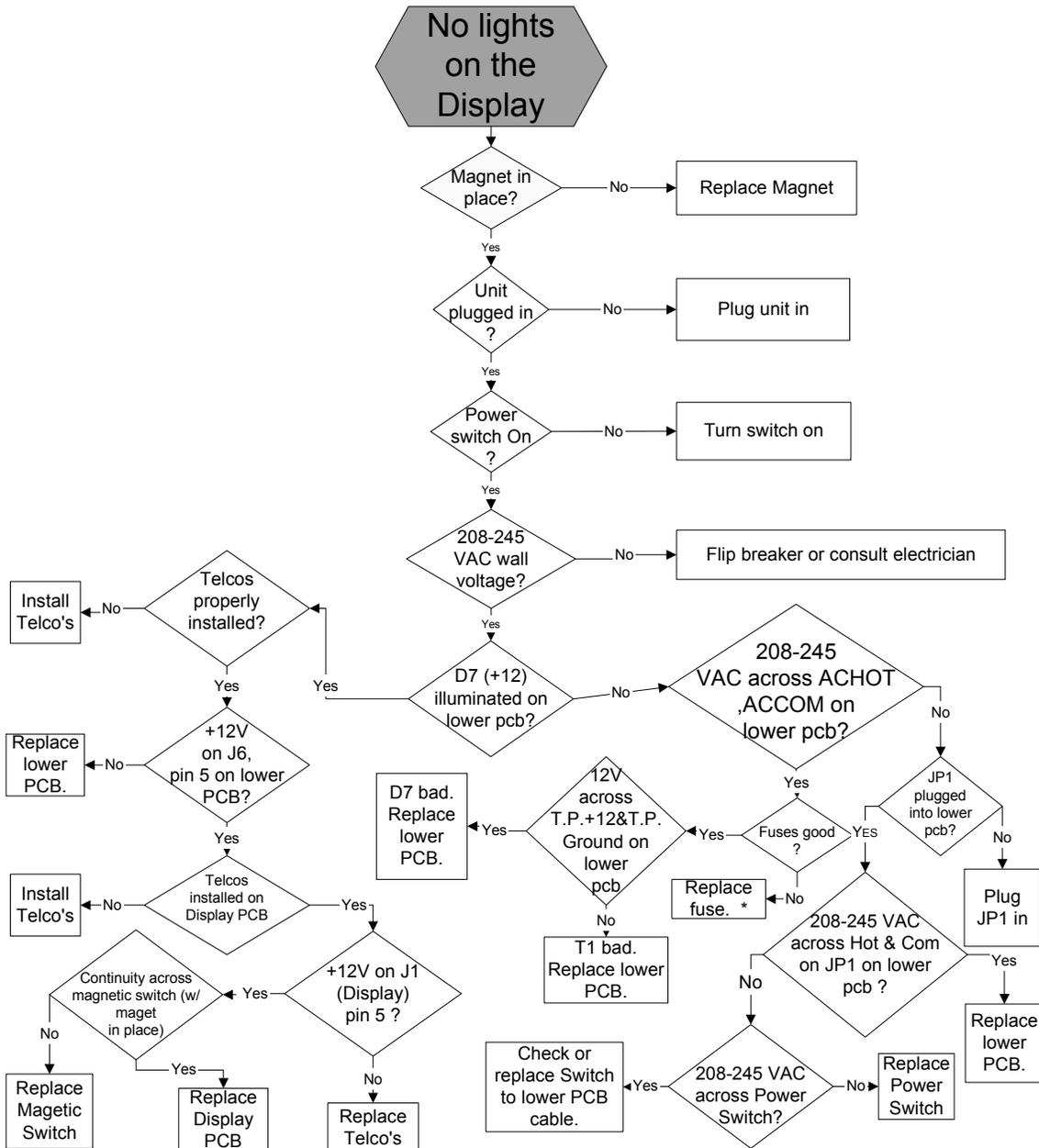
Problem	Possible Reasons	Solutions
Unit keeps blowing fuses on lower board.	Incoming voltage too high. Relays sticking on lower board. Defective lower PCB.	Verify voltage to the unit. Replace lower PCB. (See pages 68-69) Replace lower PCB. (See pages 68-69)
No lights on upper display.	Numerous	See flowchart. (Page 16)
Upper display lights are dim.	Improper wall voltage. Faulty lower PCB. Damaged Telco.	Check wall voltage. Replace lower PCB. (See pages 68-69) Replace if needed.
When pressed, buttons do not beep and numbers do not change on upper display.	Ribbon cable from membrane to upper PCB unplugged. Faulty membrane.	Plug in ribbon cables. Replace membrane. (See page 65-66)
Upper display resets after starting workout.	Loose Telco connection. Power cord loose. Faulty upper PCB. Bad magnet positioning.	Fix or replace Telcos. Fix loose connection. Replace upper PCB. (See pages 64-65) Verify magnet stays in position.
Running belt does not move.	Faulty inverter or cable connection from inverter to lower PCB. Loose Telco connection. Faulty membrane. Speed reference on lower PCB.	See flowchart. (Page 17) Fix or replace Telcos. Replace membrane. (See page 65-66) See flowchart. (Page 17)

Electrical Troubleshooting (cont.)

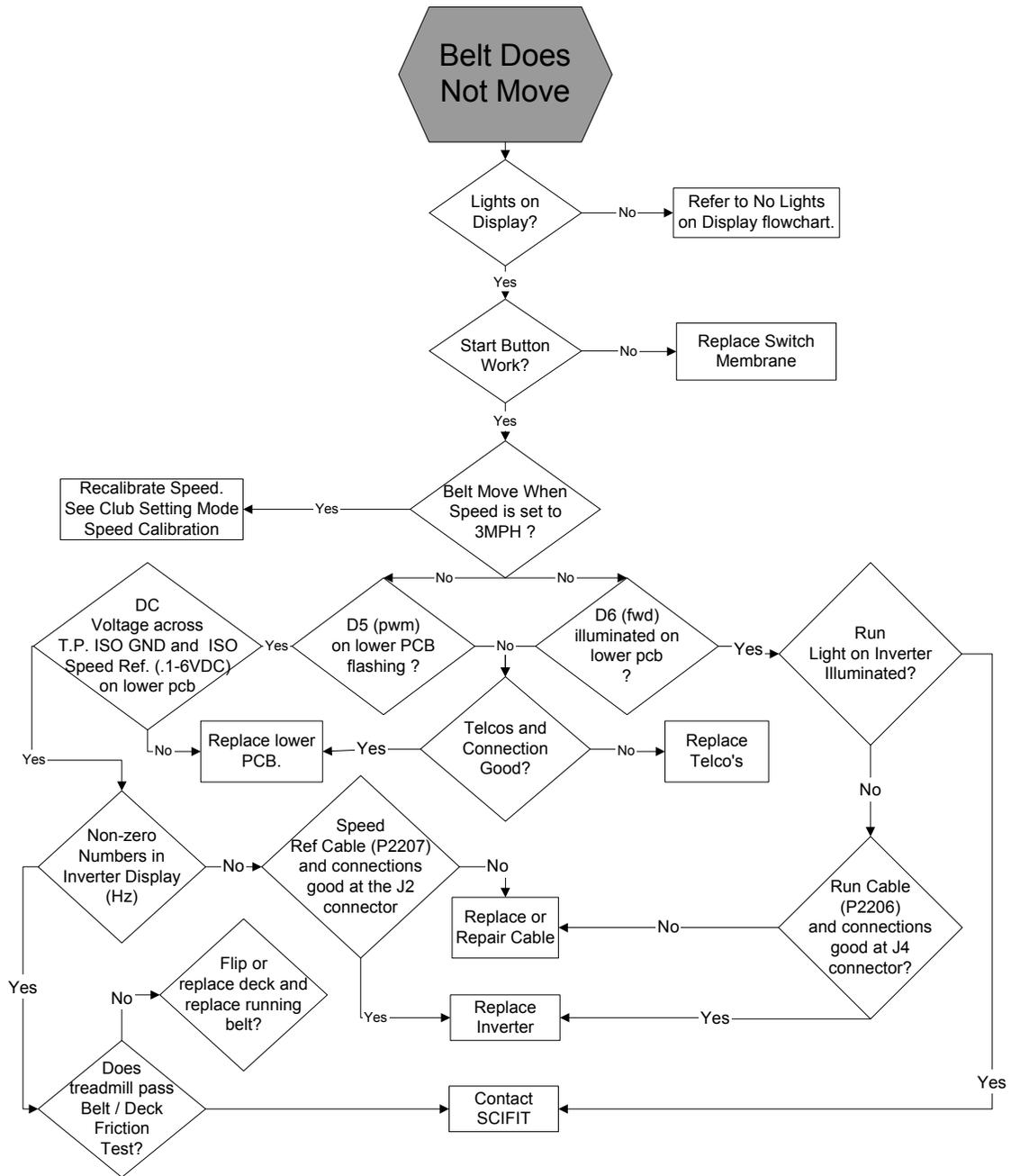
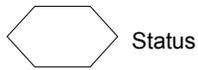
Problem	Possible Reasons	Solutions
Running belt does not change speeds.	Faulty membrane.	See flowchart. (Page 18)
	Faulty lower PCB.	See flowchart. (Page 18)
No elevation.	Bad relay on lower board.	See flowchart. (Page 19)
	Motor unplugged.	See flowchart. (Page 19)
	Bad starter capacitor.	See flowchart. (Page 19)
	Loose Telco connection.	See flowchart. (Page 19)
	Bad potentiometer.	See flowchart. (Page 19)
	Broken limit switch.	See flowchart. (Page 19)
	Limit switch cable unplugged.	See flowchart. (Page 19)
Wireless heart rate displays zero (0) in window.	Chest strap isn't working.	Verify chest strap.
	Loose plug connection at upper PCB.	Check and adjust as needed.
	Faulty wireless heart rate PCB.	Replace wireless heart rate PCB. (See page 67)
Contact heart rate displays zero (0) in window.	Not using both hands.	Use both hands.
	Loose connection.	Check all contact heart rate connections from the upper board all the way to the handgrip connections.
	Faulty contact heart rate PCB.	Replace contact heart rate PCB. (See page 68)
	Faulty upper PCB.	Replace upper PCB. (See page 64-65)

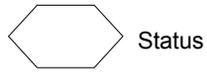
B. Troubleshooting Flowcharts

Although it is impossible to foresee every eventuality, the flowcharts on the following pages will cover the more common possibilities. If further assistance is required, please consult SCIFIT SYSYSTEMS Inc.
Warning: Disconnect power before making any test connections.

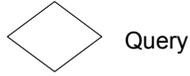


* If the unit continually blows fuses, replace the power supply (lower board).





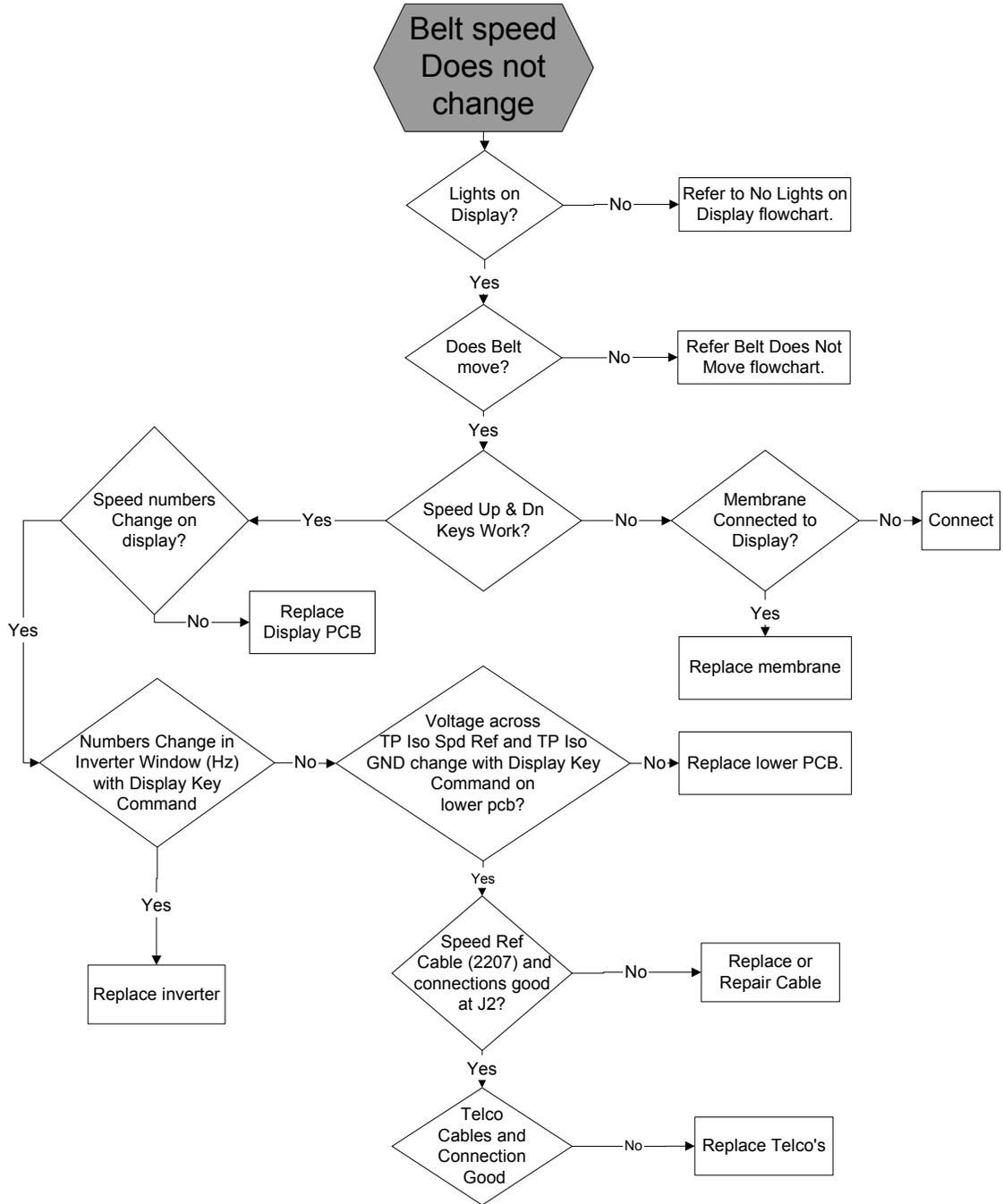
Status

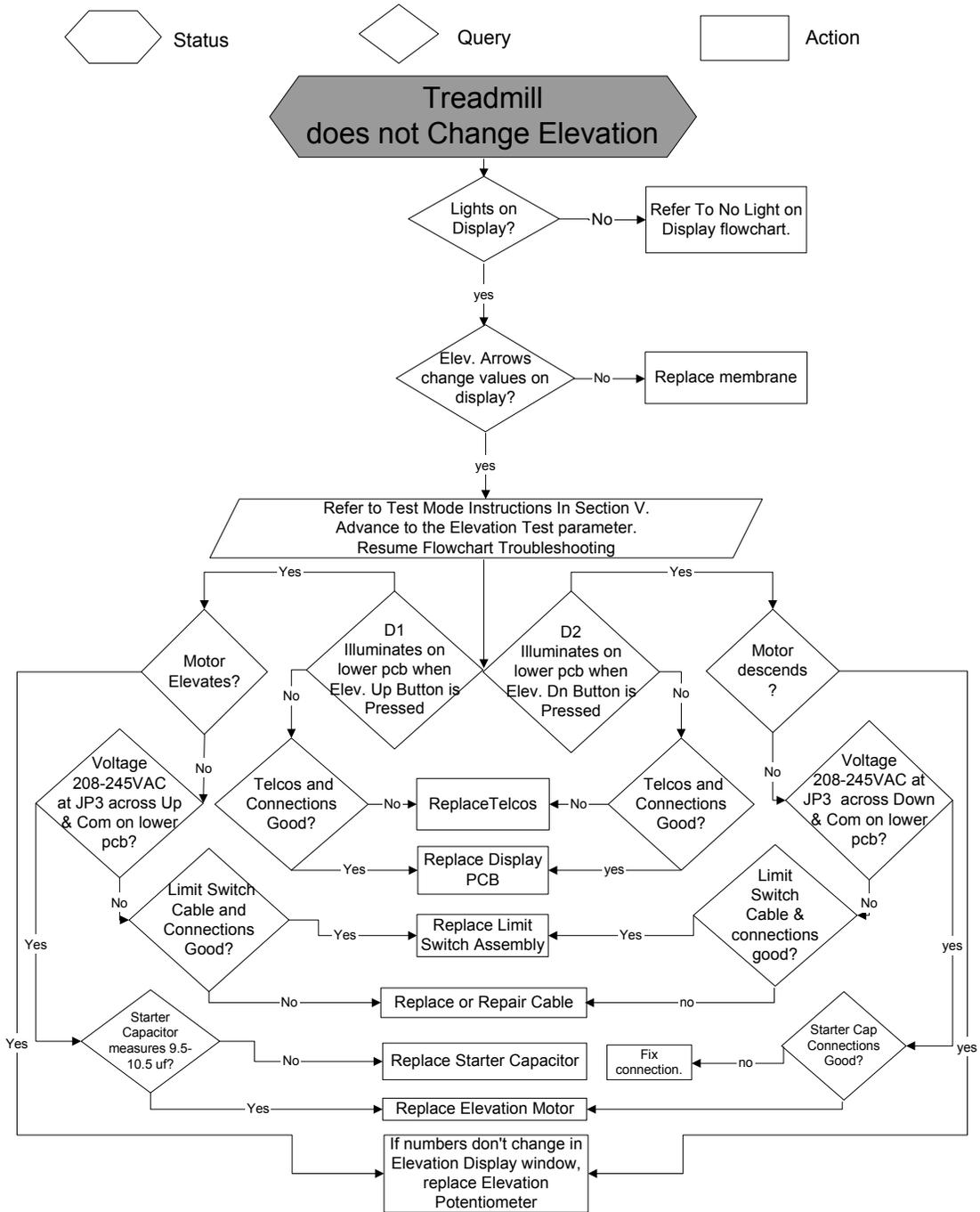


Query



Action





* If the unit continually blows fuses, replace the power supply (lower board).

C. Lower PCB LED's and Test Points

AC 7000M Lower PCB LED's

LED	Function	Function Description
1	Elevation up	Illuminated when up relay is activated.
2	Elevation down	Illuminated when down relay is activated.
3	Not used	
4	Not used	
5	PWM	Flashes when belt motor is on.
6	Run	Illuminated when belt motor is on.
7	Power	12 to 18 VDC is present. Illuminated when power is on.

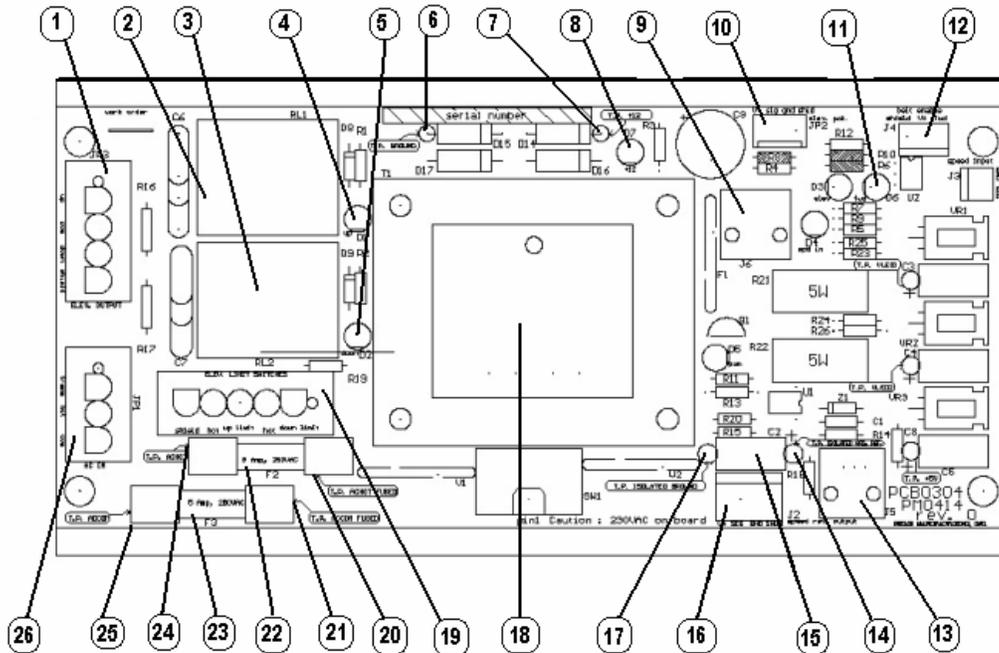
AC 7000M Lower PCB Test Points

Test Point	Circuit Function	Voltage to Ground
T.P. ACCOM	110 VAC input leg of 220 VAC.	110 VAC
T.P. ACHOT	110 VAC input leg of 220 VAC.	110 VAC
T. P. ACCOM FUSED	Circuit board side of fuse for input voltage.	110 VAC
T.P. ACHOT FUSED	Circuit board side of fuse for input voltage.	110 VAC
T.P. 12	Provides 12 to 18 VDC to circuit board.	12 to 18 VDC
T.P. VLED1	Controls ½ of console LEDs.	6 VDC
T.P. VLED2	Controls ½ of console LEDs.	6 VDC
T.P. +5V	Controls LEDs at console. Will have sound.	5 VDC
T.P. ISOLATED GROUND	Controls speed.	Variable based on speed.
T.P. ISOLATED SPD REF	Controls speed.	Variable based on speed.

D. AC 7000M Upper (Display) PCB Jacks

Jack	PCB ID	Function/Interface	Jack Type	Pin 1	Pin 2	Pin 3	Pin 4
JP1	None	CardioKey	4-pin Molex	Xmit	Rec	+5 V	Grd.
J1	None	To Power Supply J6	8-pin Molex				
J2	None	To Power Supply J5	6-pin Molex				
J3	None	Not Used					
J4	Grip	Contact HR	3-pin Molex	Signal	V+	Grd.	
J5	Polar	Polar HR	3-pin Molex	Signal	V+	Grd.	
J6	None	Not Used					
J7	None	Not Used					
J8	None	C-Safe	8-pin Telco				
J9	None	Jumped to J10	Single Blade				
J10	None	Jumped to J9	Single Blade				
J11	Right Stop SW	Not Used					
J12	Left Stop SW	Not Used					
J13	Lower Console SW	Switch interface	4-pin Molex				
J14	Upper Console SW	Switch interface	7-pin Molex				

E. Lower PCB Diagram

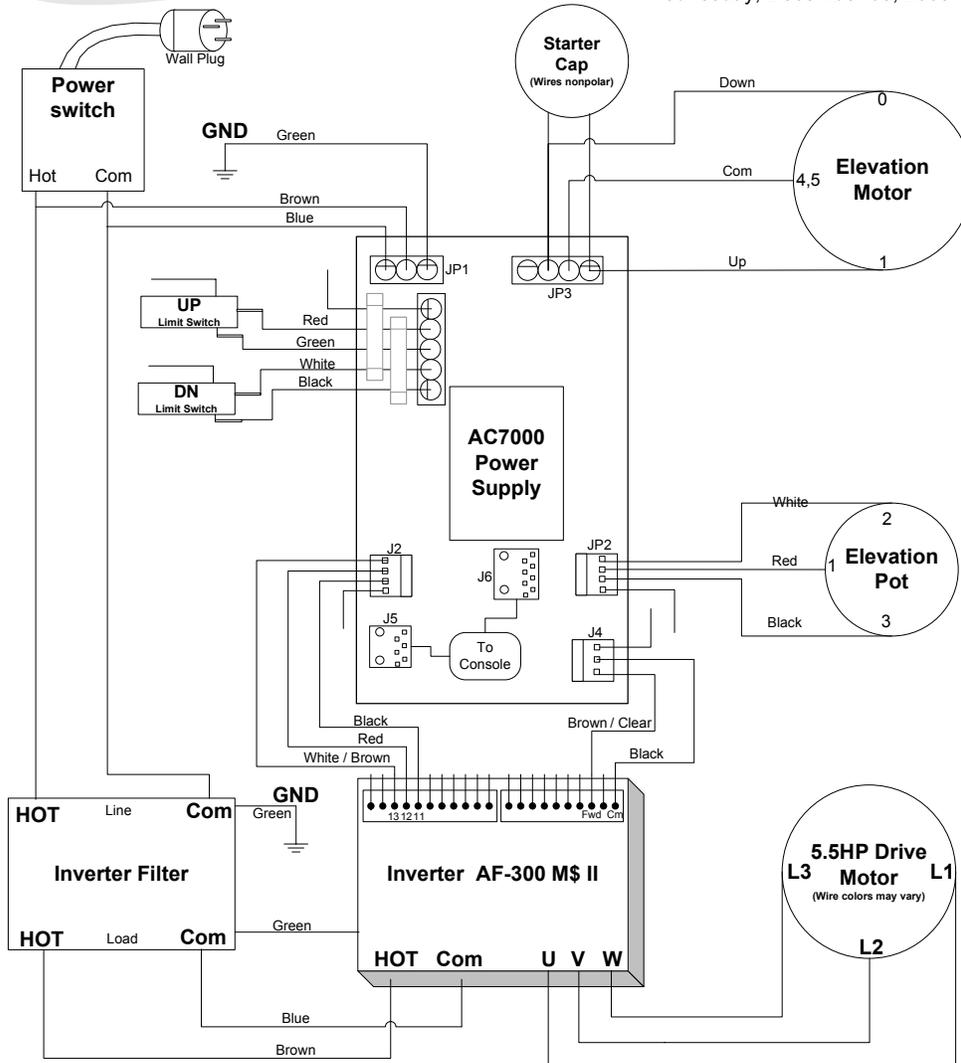


1. JP3 Elev. Output Connector
2. RL1 Elev. Up Relay
3. RL2 Elev. Down Relay
4. D1 Elev. Up LED
5. D2 Elev. Down LED
6. T.P. Ground
7. T.P. +12
8. D7 +12 LED
9. J6 8 Pin Telco Connector
10. JP2 Elev. Pot Connector
11. D6 Fwd LED
12. J4 Belt Enable Connector
13. J5 6 Pin Telco Connector
14. T.P. Isolated Speed Reference
15. C2 Cap
16. J2 Speed Reference Output Connector
17. T.P. Isolated Ground
18. T1 Transformer
19. J1 (not printed on PCB) Limit Switch Connector
20. T.P. AC Hot Fused
21. T.P. AC Com Fused
22. F2 5A, 250V, fast-acting fuse
23. F3 5A, 250V, fast-acting fuse
24. T.P. AC Hot
25. T.P. AC Com
26. JP1 AC In Connector

F. Block Diagrams

AC7000 AF-300 4-Wire Block Diagram

Wednesday, December 03, 2003

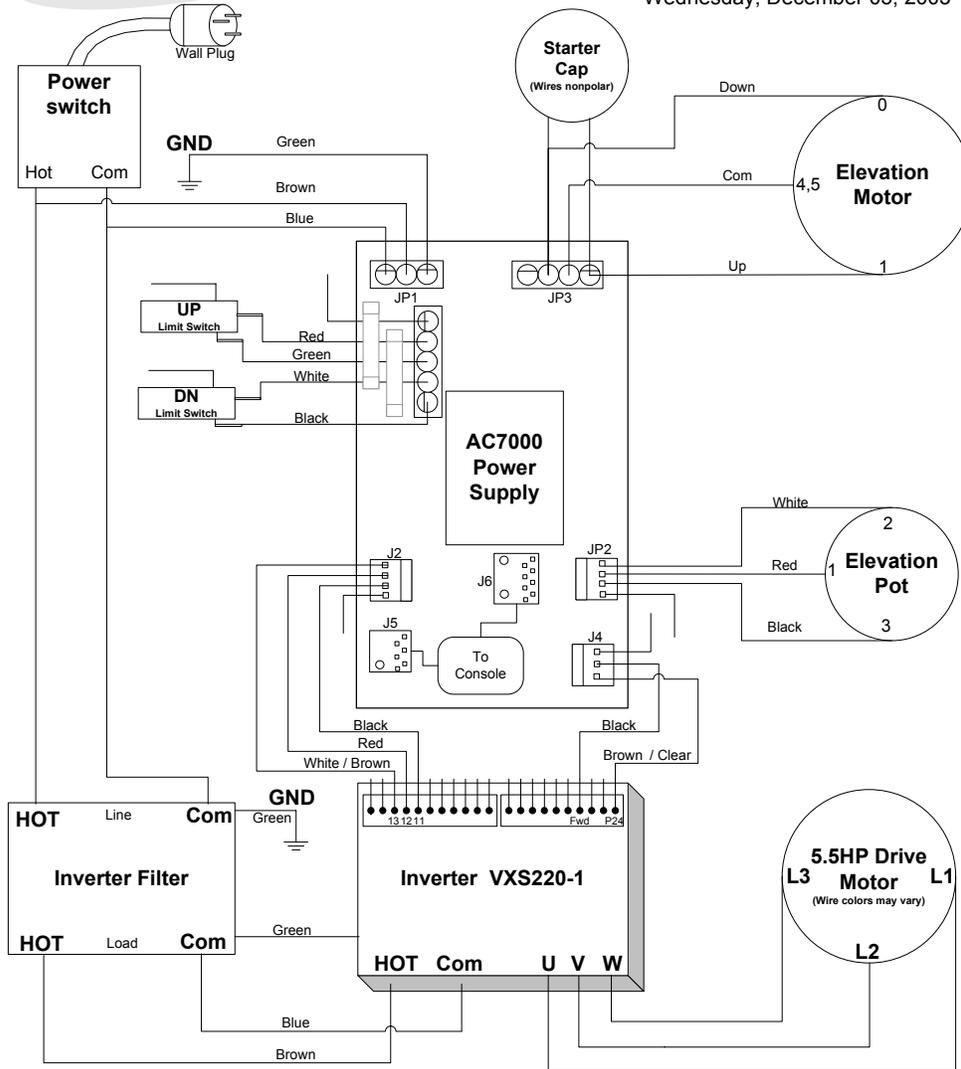


Page 1

Note: Use this wiring diagram if your treadmill is equipped with an IMO inverter (VXS 220-1) mounted on top of the filter and has a four-wire elevation motor.

AC7000 VXS 4-Wire Block Diagram

Wednesday, December 03, 2003

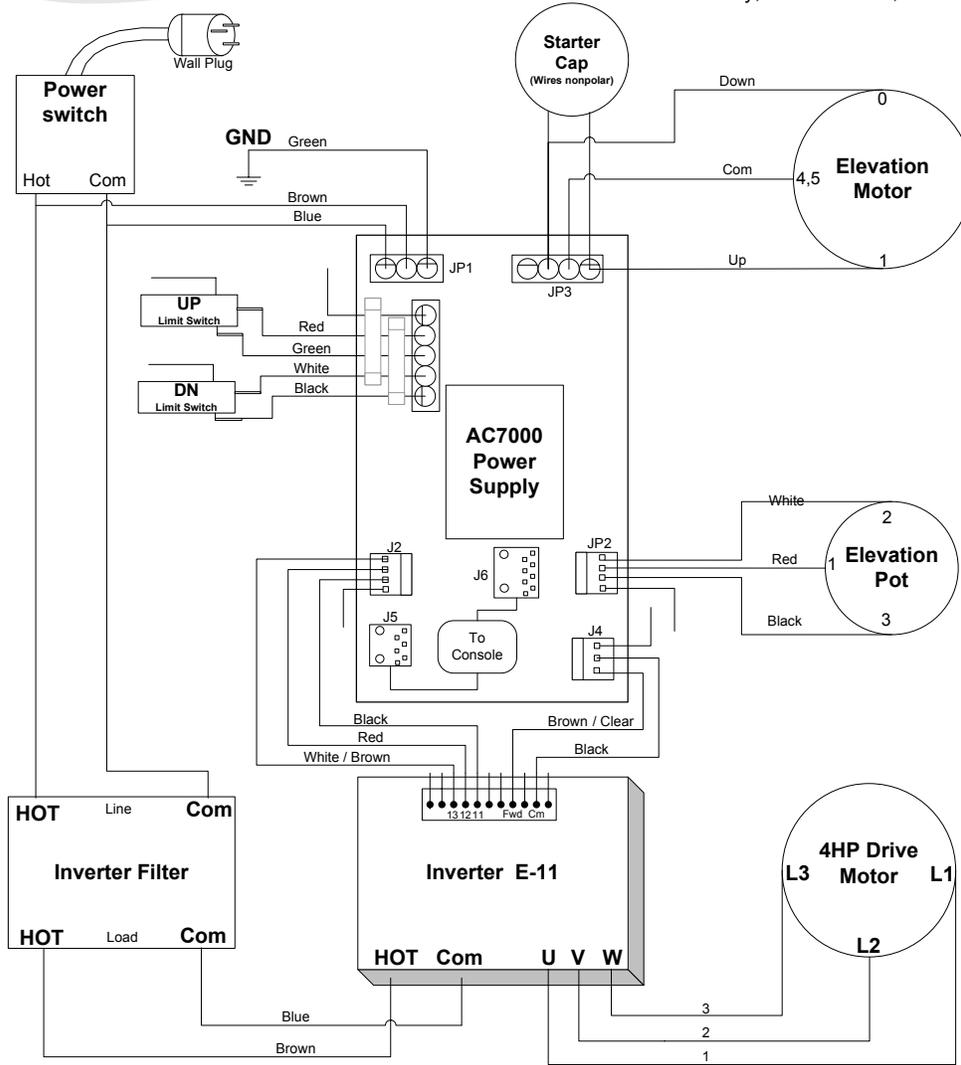


Page 1

Note: Use this wiring diagram if your treadmill has a G.E. inverter (AF-300 MS) mounted on top of the filter and has a four-wire elevation motor.

AC7000 E-11 4-Wire Block Diagram

Wednesday, December 03, 2003

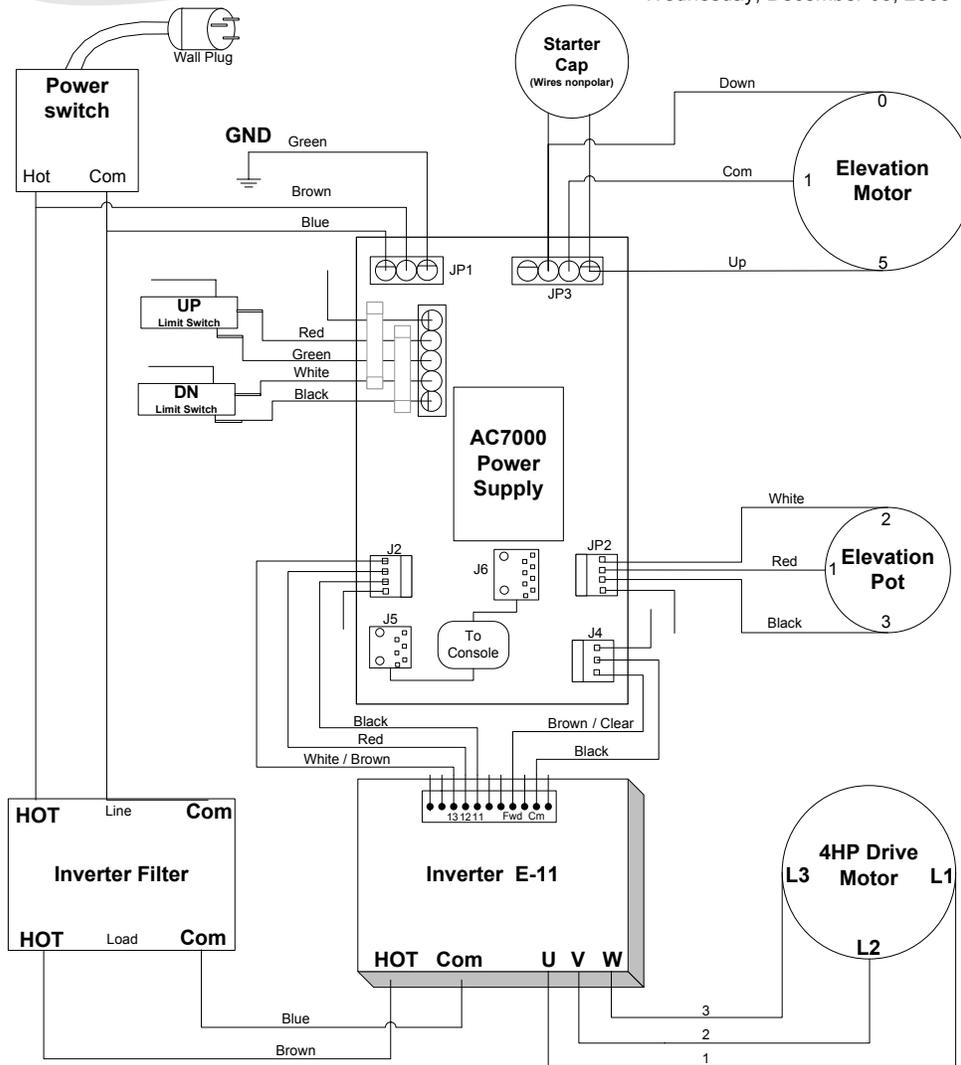


Page 1

Note: Use this wiring diagram if your treadmill is equipped with a G.E. inverter (AF-300 E-11) and a four-wire elevation motor.

AC7000 E-11 3-Wire Block Diagram

Wednesday, December 03, 2003



Page 1

Note: Use this wiring diagram if your treadmill is equipped with a G.E. inverter (AF-300 E-11) and a three-wire elevation motor.

G. TEST MODE

The Test Mode provides technicians with additional information for use in troubleshooting the AC7000 treadmill. Turn the power switch on the treadmill to the OFF position. Press the ELEVATION UP arrow and the ELEVATION DOWN arrow, and simultaneously turn the treadmill power switch to the ON position. Continue to press ELEVATION UP and ELEVATION DOWN throughout the entire power up process and until “**tEst**” appears in the center display. This process will take three (3) seconds.

1. Display test

Press any button. The first test will illuminate each individual segment of all three displays in a racetrack pattern. The LED to the sides of the top display as well as the LED between the heart symbols will be illuminated in turn. Press any button. The second test will illuminate the number “8” in sequence for all the displays and then illuminate all the LEDs. Press any button. The third test will illuminate all the displays and all the LEDs and keep them all on. Press any key to end the test and advance to the Switch test.

2. Switch Test

“**S**” and “**I**” will be shown in the top display. The second number corresponds to the switches as shown in the table below. Press the appropriate switch for the number displayed. If the switch functions properly, the number in the top display will advance. The number in the top display will be shown in the sequence listed in the following table and the switches must be pressed in this sequence. If the switches are not pressed in this sequence, the test will not advance.

Number	Switch
1	Start
2	Stop
3	Scan
4	Select
5	Elevation Up

Number	Switch
6	Elevation Down
7	Speed Up
8	Speed Down
9	Heart Rate Up
10	Heart Rate Down

3. Grade Test

When the Switch test is complete, the system will automatically advance to the Grade test. “**GrAd**” will be shown in the top display. This test removes the software from the elevation control system. It utilizes only the hardware of the system. Press the ELEVATION UP arrow **only** or ELEVATION DOWN arrow **only** to determine if the elevation system is working properly. **WARNING:** Do *not* press both the ELEVATION UP and ELEVATION DOWN arrows at the same time in this mode – severe damage will result!

The speed display will show “**UP**” or “**dn**” depending on whether the treadmill’s elevation is going up or down. The elevation display will show the scale that is used by the software—high numbers when the treadmill is down and low numbers when it is elevated. When satisfied that the elevation system is working, press STOP to advance to the next test.

4. Speed Test

WARNING: DO NOT TO STAND ON THE BELT!! IT WILL MOVE DURING THIS TEST!!

“**bELt**” will be shown on the top display. This test removes the software from the speed control system. It utilizes only the hardware of the system. Press the SPEED UP and SPEED DOWN arrows to determine if the speed system is working properly. The elevation display shows the scale that is used by the software with higher numbers for faster speeds. When satisfied that the speed system is working, press STOP to advance to the next test.

5. Heart Rate Test

“**Hrt0**” will be shown on the top display. This test evaluates both the wireless and contact heart rate systems. A heart rate transmitter belt must be worn for the wireless test. The wireless heart rate will be shown in the Speed display, which can be compared to another receiver, such as a Polar wrist watch. The Pace LED will flash in pace with the heartbeats received. If contact heart rate is installed, the contact heart rate will be shown in the Elevation display. The heart symbol LED (at the lower right of the top display) will flash in pace with the heartbeat signal received. When satisfied that the heart rate system(s) is working, press STOP to advance to the next test.

6. EEPROM Tests

“**EE**” will be shown in the top display. If the EEPROM passes the test, “**PAS**” will be shown in the Elevation display. If it fails, “**FAL**” will be shown and the upper display board will need to be replaced. Press any key to end this test. When the display goes back to the start mode, the system will perform a watchdog test. The watchdog circuit ensures the software is functioning properly. If the system passes the watchdog test, “**dOG**” will be shown in the top display momentarily and the display will go back to the start mode. If the system fails the watchdog test, “**dOG**” will remain in the top display, a continuous sound will be heard, and the upper display board will need to be replaced.

H. Club Mode (Thru Version 3.7)

The Club Mode enables club owners and managers to customize certain features of the AC7000 treadmill. Press the ELEVATION UP and ELEVATION DOWN keys simultaneously for three (3) seconds to enter this mode (press the keys until “**UnIt**” is shown in the top display).

1. Unit of Measure

This setting determines whether English or metric units of measure will be displayed. The top display will show “**UnIt**”. The speed display will show “**brl**” or “**SI**”. “**brl**” represents British or English units (miles) and “**SI**” represents metric units (kilometers). Select the unit of measure by using the SPEED UP, SPEED DOWN, ELEVATION UP, or ELEVATION DOWN keys. After selecting the desired unit of measure, press the SELECT key to advance to the next setting.

2. Duration

This setting allows the owner/manager to select the maximum workout time, which will be available to the user. The speed display will show “**dUr**”. The range is from 0 to 90 minutes in increments of 5 minutes. “0” is unlimited time and is the default setting. The top display shows the time selected. Select the duration by using the ELEVATION UP or ELEVATION DOWN keys. After selecting the desired duration, press the SELECT key to advance to the next setting.

3. External Communication

This setting selects either the C-Safe (CSF) or Cardio-Key (CAr) communications protocol. The top display will show “S.CO”. The speed display will show either “**CAr**” or “**CSF**”. Use the SPEED UP or SPEED DOWN keys to toggle between the two. If neither C-Safe nor Cardio-Key is used, either setting will work. After selecting the desired communication protocol, press the SELECT key to advance to the next setting.

4. User Speed

This setting allows the owner/manager to select the maximum speed, which will be available to the user. The top display will show “**U.SPd**”. The range will depend on the factory settings the defaults of which are 0.3 to 10.0 MPH (1 to 16 KPH). The speed display shows the value selected. The default setting is 10.0 MPH (16.0 KPH). Select the maximum user speed by using the SPEED UP or SPEED DOWN keys. After selecting the desired speed, press the SELECT key to advance to the next setting.

5. Distance

This function displays the distance since the deck was last flipped. The top display will show “**FLIP**”. The speed and elevation displays combine to show the distance with the speed display showing thousands of miles

(or kilometers) and the elevation display showing hundreds of miles (or kilometers). If “**FLIP**” was displayed in the TIME window in normal operating mode and the deck has been flipped, the following steps must be performed to clear the distance. Press and hold the ELEVATION UP arrow for three (3) seconds to reset (once 12,000 miles has been accumulated). Press SELECT to exit the Club Mode and return to start mode. If the treadmill is not displaying “**FLIP**” in the TIME window, press SELECT to advance to Speed Calibration.

6. Calibrate Speed

“**CALS**” will be shown in the top display. This setting calibrates the speed of the treadmill. After this calibration is completed, the system will reboot, load data and resume normal operation. If you want to calibrate the elevation instead of speed, press SELECT to bypass this setting. **Prior to performing Speed Calibration, the inverter functions need to be verified. Contact SCIFIT’s Service Department @ 1-800-745-1373 for the current inverter values.**

Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the speed calibration subprogram. “**SCAL**” will be shown in the top display. Press START.

WARNING: The belt will start moving at the set low speed.

The top display will show “**LO**” for low speed. The elevation display shows the scale used by the software (for .3 MPH, the default is **3**). Use the SPEED UP arrow to change the value to read **4**. Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

WARNING: The belt will start moving at the set high speed.

The top display will show “**HI**” for high speed. The elevation display shows the scale used by the software (for 15 MPH, the default is **162**). Use the SPEED UP arrow to change the value to read **196**. Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**AUG**” for average speed. The elevation display shows the scale used by the software (for 6 MPH, the default is **64**). Use the SPEED UP arrow to change the value to read **77**. Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**SCAL**” and the elevation display will show “**PAS**” for pass for a few seconds. The system will automatically reboot and resume normal operation.

7. Calibrate Elevation

If you have calibrated the speed, you will need to reenter the Club Setting Mode again. Press SELECT until “**CALE**” is shown in the top display. This setting calibrates the elevation of the treadmill. Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the elevation calibration subprogram. “**ECAL**” will be shown in the top display. Press START.

The top display will show the high grade selected the Factory Settings Mode, which is “**25.0**”. The speed display will show “**UP2**”. The elevation display shows position in the 256-bit scale used by the software as indicated by the elevation potentiometer (it should be more than 225 when the treadmill is completely elevated). The treadmill will elevate to the high limit switch. The top display will then change to “**0.0**” which is the low grade set in the Factory Settings Mode. The speed display will show “**dn4**”. The elevation display should be less than 30 when the treadmill is completely lowered. The treadmill will descend to the lower limit switch. The software will automatically create a scale based on the difference in resistance of the potentiometer from the upper to the lower limit switches.

When the elevation calibration is complete, the top display will show “**ECAL**” and the speed display will show the lower grade limit and the elevation display will show the upper grade limit (both in terms of the scale value). Press START and the system will reboot, load data and resume normal operation.

I. Club Mode (Version 10.1-10.5, Thru Serial Number 710-005121)

The Club Mode enables club owners and managers to customize certain features of the AC7000 treadmill. Press the ELEVATION UP and ELEVATION DOWN keys simultaneously for three (3) seconds to enter this mode (press the keys until “**UnIt**” is shown in the top display).

1. Unit of Measure

This setting determines whether English or metric units of measure will be displayed. The top display will show “**UnIt**”. The speed display will show “**brl**” or “**SI**”. “**brl**” represents British or English units (miles) and “**SI**” represents metric units (kilometers). Select the unit of measure by using the SPEED UP, SPEED DOWN, ELEVATION UP, or ELEVATION DOWN keys. After selecting the desired unit of measure, press the SELECT key to advance to the next setting.

2. Duration
This setting allows the owner/manager to select the maximum workout time, which will be available to the user. The speed display will show “**dUr**”. The range is from 0 to 90 minutes in increments of 5 minutes. “0” is unlimited time and is the default setting. The top display shows the time selected. Select the duration by using the ELEVATION UP or ELEVATION DOWN keys. After selecting the desired duration, press the SELECT key to advance to the next setting.
3. External Communication
This setting selects either the C-Safe (CSF) or Cardio-Key (CAr) communications protocol. The top display will show “S.CO”. The speed display will show either “**CAr**” or “**CSF**”. Use the SPEED UP or SPEED DOWN keys to toggle between the two. If neither C-Safe nor Cardio-Key is used, either setting will work. After selecting the desired communication protocol, press the SELECT key to advance to the next setting.
4. User Speed
This setting allows the owner/manager to select the maximum speed, which will be available to the user. The top display will show “**U.SPd**”. The range will depend on the factory settings the defaults of which are 0.3 to 10.0 MPH (1 to 16 KPH). The speed display shows the value selected. The default setting is 10.0 MPH (16.0 KPH). Select the maximum user speed by using the SPEED UP or SPEED DOWN keys. After selecting the desired speed, press the SELECT key to advance to the next setting.
5. Distance
This function displays the distance since the deck was last flipped. The top display will show “**FLIP**”. The speed and elevation displays combine to show the distance with the speed display showing thousands of miles (or kilometers) and the elevation display showing hundreds of miles (or kilometers). If “**FLIP**” is displayed in the TIME window in normal operating mode and the deck has been flipped, the following steps must be performed to clear the distance. Press and hold the ELEVATION UP arrow for three (3) seconds to reset (once 12,000 miles has been accumulated). Press SELECT to exit the Club Mode and return to start mode. If the treadmill is not displaying “**FLIP**” in the TIME window, press SELECT to advance to Speed Calibration.
6. Calibrate Speed
“**CALS**” will be shown in the top display. This setting calibrates the speed of the treadmill. After this calibration is completed, the system will reboot, load data and resume normal operation. If you want to calibrate the elevation instead of speed, press SELECT to bypass this Setting.

Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the speed calibration subprogram. “**SCAL**” will be shown in the top display. Press START.

WARNING: The belt will start moving at the set low speed.

The top display will show “**LO**” for low speed. The elevation display shows the scale used by the software (for .3 MPH, the default is **4**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

WARNING: The belt will start moving at the set high speed.

The top display will show “**HI**” for high speed. The elevation display shows the scale used by the software (for **15** MPH, the default is **249**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**AUG**” for average speed. The elevation display shows the scale used by the software (for **6** MPH, the default is **96**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**SCAL**” and the elevation display will show “**PAS**” for pass for a few seconds. The system will automatically reboot and resume normal operation.

7. Calibrate Elevation

If you have calibrated the speed, you will need to reenter the Club Setting Mode again. Press SELECT until “**CALE**” is shown in the top display. This setting calibrates the elevation of the treadmill. Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the elevation calibration subprogram. “**ECAL**” will be shown in the top display. Press START.

The top display will show the high grade selected the Factory Settings Mode, which is “**25.0**”. The speed display will show “**UP2**”. The elevation display shows position in the 256-bit scale used by the software as indicated by the elevation potentiometer (it should be more than 225 when the treadmill is completely elevated). The treadmill will elevate to the high limit switch. The top display will then change to “**0.0**” which is the low grade set in the Factory Settings Mode. The speed display will show “**dn4**”. The elevation display should be less than 30 when the treadmill is completely lowered. The treadmill will descend to the lower limit switch. The software will automatically create a scale based on the difference in resistance of the potentiometer from the upper to the lower limit switches.

When the elevation calibration is complete, the top display will show “**ECAL**” and the speed display will show the lower grade limit and the elevation display will show the upper grade limit (both in terms of the scale value). Press START and the system will reboot, load data and resume normal operation.

J. Club Mode (Version 10.1-10.5, Serial Number 710-005122 and Up)

The Club Mode enables club owners and managers to customize certain features of the AC7000 treadmill. Press the ELEVATION UP and ELEVATION DOWN keys simultaneously for three (3) seconds to enter this mode (press the keys until “**UnIt**” is shown in the top display).

1. Unit of Measure

This setting determines whether English or metric units of measure will be displayed. The top display will show “**UnIt**”. The speed display will show “**brl**” or “**SI**”. “**brl**” represents British or English units (miles) and “**SI**” represents metric units (kilometers). Select the unit of measure by using the SPEED UP, SPEED DOWN, ELEVATION UP, or ELEVATION DOWN keys. After selecting the desired unit of measure, press the SELECT key to advance to the next setting.

2. Duration

This setting allows the owner/manager to select the maximum workout time, which will be available to the user. The speed display will show “**dUr**”. The range is from 0 to 90 minutes in increments of 5 minutes. “0” is unlimited time and is the default setting. The top display shows the time selected. Select the duration by using the ELEVATION UP or ELEVATION DOWN keys. After selecting the desired duration, press the SELECT key to advance to the next setting.

3. External Communication

This setting selects either the C-Safe (CSF) or Cardio-Key (CAr) communications protocol. The top display will show “S.CO”. The speed display will show either “**CAr**” or “**CSF**”. Use the SPEED UP or SPEED DOWN keys to toggle between the two. If neither C-Safe nor Cardio-Key is used, either setting will work. After selecting the desired communication protocol, press the SELECT key to advance to the next setting.

4. User Speed

This setting allows the owner/manager to select the maximum speed, which will be available to the user. The top display will show “**U.SPd**”. The range will depend on the factory settings the defaults of which are 0.3

to 10.0 MPH (1 to 16 KPH). The speed display shows the value selected. The default setting is 10.0 MPH (16.0 KPH). Select the maximum user speed by using the SPEED UP or SPEED DOWN keys. After selecting the desired speed, press the SELECT key to advance to the next setting.

5. Distance

This function displays the distance since the deck was last flipped. The top display will show “**FLIP**”. The speed and elevation displays combine to show the distance with the speed display showing thousands of miles (or kilometers) and the elevation display showing hundreds of miles (or kilometers). If “**FLIP**” is displayed in the TIME window in normal operating mode and the deck has been flipped, the following steps must be performed to clear the distance. Press and hold the ELEVATION UP arrow for three (3) seconds to reset (once 12,000 miles has been accumulated). Press SELECT to exit the Club Mode and return to start mode. If the treadmill is not displaying “**FLIP**” in the TIME window, press SELECT to advance to Speed Calibration.

6. Calibrate Speed

“**CALS**” will be shown in the top display. This setting calibrates the speed of the treadmill. After this calibration is completed, the system will reboot, load data and resume normal operation. If you want to calibrate the elevation instead of speed, press SELECT to bypass this Setting.

Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the speed calibration subprogram. “**SCAL**” will be shown in the top display. Press START.

WARNING: The belt will start moving at the set low speed.

The top display will show “**LO**” for low speed. The elevation display shows the scale used by the software (for .3 MPH, the default is **3**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

WARNING: The belt will start moving at the set high speed.

The top display will show “**HI**” for high speed. The elevation display shows the scale used by the software (for **15** MPH, the default is **240**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**AUG**” for average speed. The elevation display shows the scale used by the software (for **6** MPH, the default is **92**). Let the treadmill run until the numerical display on the inverter stabilizes. Press START.

The top display will show “**SCAL**” and the elevation display will show “**PAS**” for pass for a few seconds. The system will automatically reboot and resume normal operation.

7. Calibrate Elevation

If you have calibrated the speed, you will need to reenter the Club Setting Mode again. Press SELECT until “**CALE**” is shown in the top display. This setting calibrates the elevation of the treadmill. Press the ELEVATION UP and ELEVATION DOWN switches simultaneously for three (3) seconds to enter the elevation calibration subprogram. “**ECAL**” will be shown in the top display. Press START.

The top display will show the high grade selected the Factory Settings Mode, which is “**25.0**”. The speed display will show “**UP2**”. The elevation display shows position in the 256-bit scale used by the software as indicated by the elevation potentiometer (it should be more than 225 when the treadmill is completely elevated). The treadmill will elevate to the high limit switch. The top display will then change to “**0.0**” which is the low grade set in the Factory Settings Mode. The speed display will show “**dn4**”. The elevation display should be less than 30 when the treadmill is completely lowered. The treadmill will descend to the lower limit switch. The software will automatically create a scale based on the difference in resistance of the potentiometer from the upper to the lower limit switches.

When the elevation calibration is complete, the top display will show “**ECAL**” and the speed display will show the lower grade limit and the elevation display will show the upper grade limit (both in terms of the scale value). Press START and the system will reboot, load data and resume normal operation.

K. Software Set Up After Upper PCB Replacement (10.1-10.5)

1. Once the upper display has been replaced, put the magnet in place and restore power to the unit. ***Make sure not to press any buttons on the display when doing so.***
2. Once the display board boots up, “-AC-“will appear in the time window.
3. Press the START button one time. “**ECAL**” will appear in the time window.
4. Press the START button once more. The treadmill will elevate to its highest point and will set a value. It will stay at its highest point for approximately four (4) seconds. The treadmill will then descend to its lowest point and retrieve a value. Once ECAL is completed, “**ECAL**” will show in the time window, the lowest elevation value in the speed window, and highest elevation value in the elevation window.
5. Press the START button one more time. The display will flash “**ECAL PAS**” and then reboot back to the main screen.
6. Go into Club Mode to calibrate speed. Press the ELEVATION UP and ELEVATION DOWN arrows simultaneously for three (3) seconds to enter this mode (press the keys until “**Unit**” is shown in the top display).
7. Press SELECT five times until “**CALS**” is displayed in the TIME window.
8. Press the ELEVATION UP and ELEVATION DOWN arrows simultaneously until “**CALS**” changes to “**SCAL**” in the TIME window. Press START.

WARNING: The belt will start moving at the set low speed.

The top display will show “**LO**” for low speed. The elevation display shows the scale used by the software (for .3 MPH, the default is **3**). Let the treadmill run until the numerical display on the IMO (inverter) stabilizes. Press START.

WARNING: The belt will start moving at the set high speed.

The top display will show “**HI**” for high speed. The elevation display shows the scale used by the software (for **15** MPH, the default is **240**). Let the treadmill run until the numerical display on the IMO (inverter) stabilizes. Press START.

The top display will show “**AUG**” for average speed. The elevation display shows the scale used by the software (for **6** MPH, the default is **92**). Let the treadmill run until the numerical display on the IMO (inverter) stabilizes. Press START.

The top display will show “**SCAL**” and the elevation display will show “**PAS**” for pass for a few seconds. Press START and the system will automatically reboot and resume normal operation.

VI. Adjustments and Parts Replacement

A. Running Belt Tracking and Tensioning

1. Checking Belt Tracking:

- a. Observe the location of the belt (P1246) on the deck (P1425 or A2352) relative to the side rails.
- b. Verify that the belt is centered between the side rails along the entire deck surface.

2. Adjusting Belt Tracking:

- a. If the belt tracks to the left from front to rear – Using a 5/16" Allen wrench, turn the rear roller's left Allen bolt $\frac{1}{4}$ turn in the clockwise direction until the belt shifts to the right. Repeat, until the belt is centered.
- b. If the belt tracks to the right from front to rear -- Turn the rear roller's right Allen bolt $\frac{1}{4}$ turn in the clockwise direction until the belt shifts to the left. Repeat, until the belt is centered.

3. Checking Belt Tension:

- a. Run the treadmill at approximately 3 MPH (5 Km/Hr).
- b. Walk on the belt and grip the right and left handlebars firmly.
- c. Attempt to stop the belt by planting the feet firmly. Position the legs at a forward angle, bend the knees moderately, and pull upward on the handlebars to leverage moderate force against the belt. **Warning: Do not lock knees straight, as this can result in injury.**
- d. The belt should only slip from one-half to one second before re-engaging.

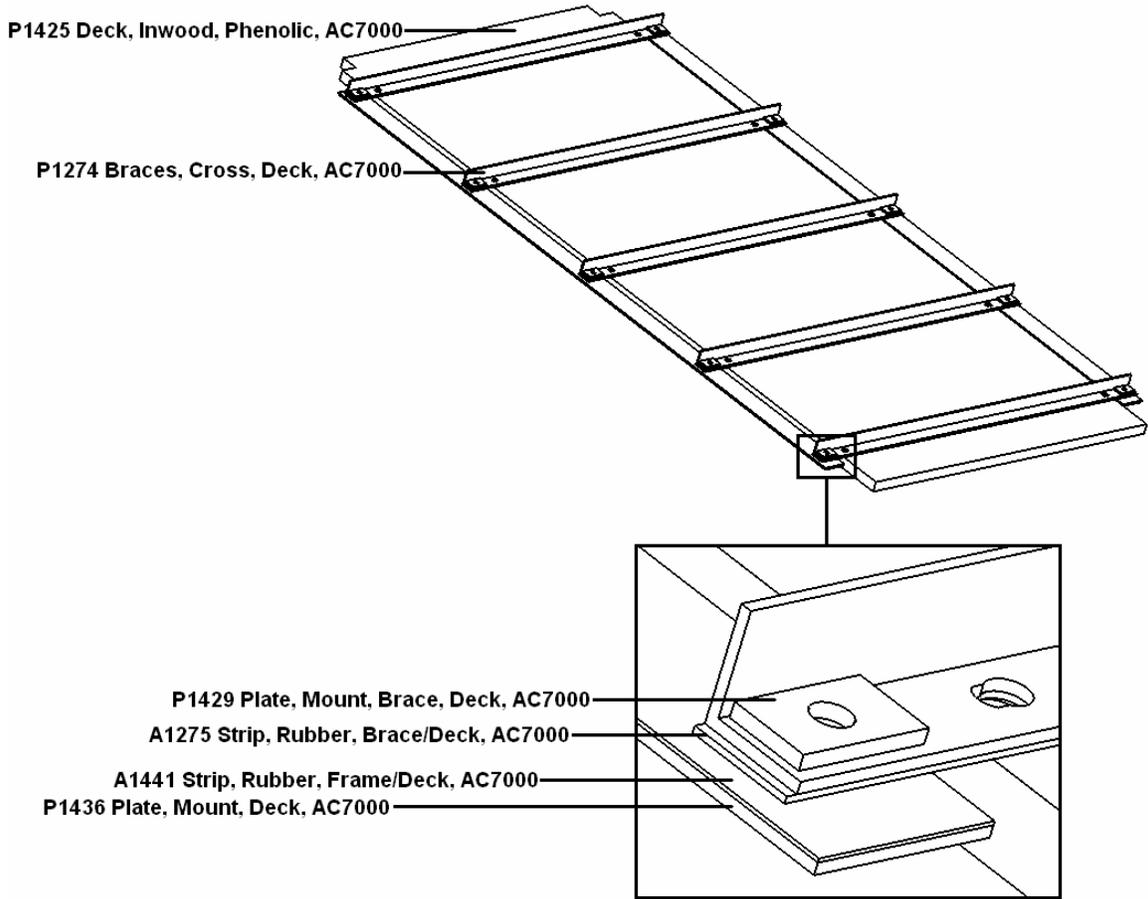
4. Adjusting Belt Tension:

- a. Determine if the belt is too tight or loose using the "Checking Belt Tension" procedure. Loosen or tighten the belt as needed.
- b. Loosen the belt tension by turning both the left and right rear rollers' Allen bolts equally in the counterclockwise direction.
- c. Tighten the belt tension by turning both the left and right rear rollers' Allen bolts equally in the clockwise direction.

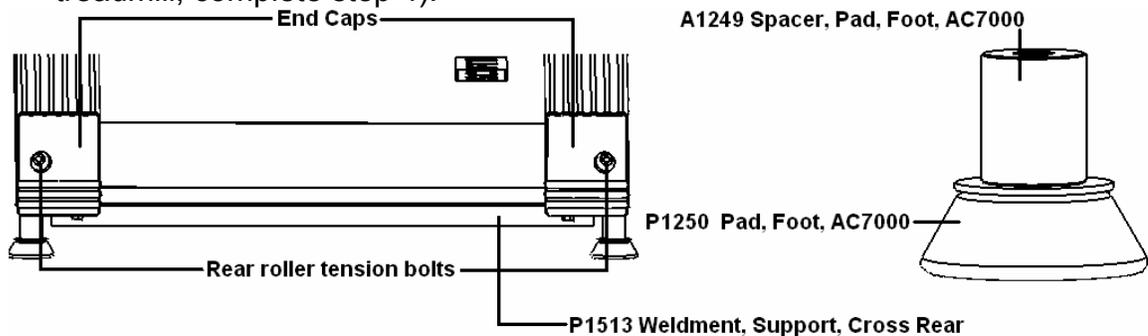
NOTE: Repeat the "Checking Belt Tension" and "Adjusting Belt Tension" procedures until optimal tension is achieved.

WARNING: Over-tensioning the running belt can cause premature belt, deck and roller failure. For this reason, running belts and decks are considered as "normal wear" items that are not covered by warranty.

B. Deck and Running Belt Replacement

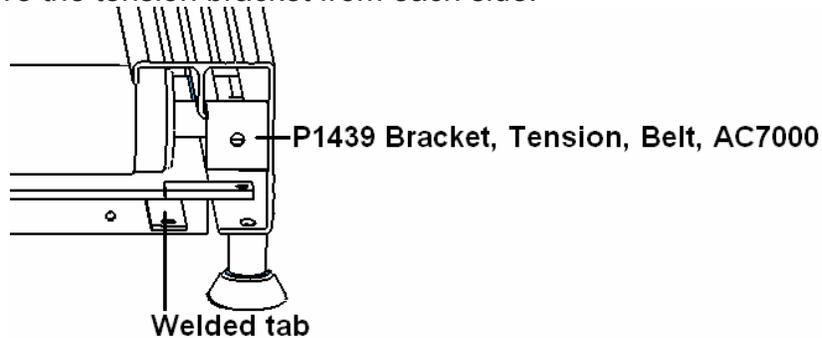


1. Elevate the treadmill to 15% grade.
2. Unplug treadmill from the outlet. The treadmill will remain elevated.
3. Place a solid object under the rear cross member (P1513) of the treadmill to elevate the rear of the treadmill and give access to the underside. If nothing is available, flip the treadmill on its side (before you flip the treadmill, complete step 4).



4. Remove motor hood (P1252), which is held on by nine (9) Philips screws.

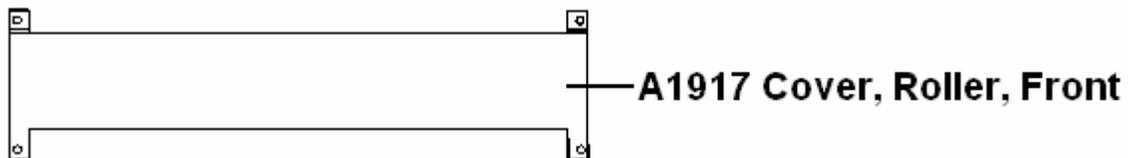
5. Remove the two (2) rear end caps by removing two (2) 5/16" bolts, one (1) per side, using a 1/2" wrench and socket. Using a 9/16" wrench, remove the 3/8" bolt on each side securing the foot pad and spacer to each side.
6. Remove the two (2) running belt tensioning socket head cap screws, one (1) on each side, using a 5/16" Allen wrench.
7. Remove the tension bracket from each side.



8. Locate the guide roller assemblies (P1242). There is one (1) guide roller assembly (P1242) on the bottom side of each extrusion.

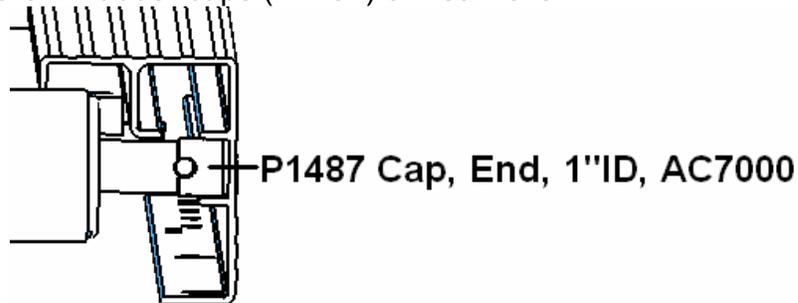


9. Using a 1/2" wrench, remove the two (2) bolts with 5/16" lock washers that runs up through the front roller cover (A1917), the extrusion and into the guide roller bracket. There is one (1) located on the underside of each extrusion.

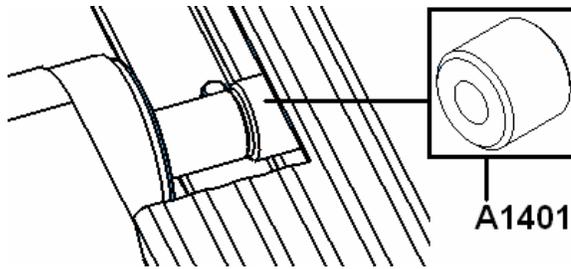


10. Slide guide roller assemblies out from under the extrusion and deck belt.
11. Using a 9/16" socket, remove the two (2) bolts holding front roller cover to the motor plate. This will allow you to remove the front roller cover.
12. Using a 1/2" socket, loosen the ten (10) outer bolts that run through the deck mount braces (P1429) and cross braces (P1274) on the bottom of the deck (P1425), approximately three (3) to four (4) turns. **Only loosen these outside bolts. Do not do anything to the bolts that runs through the cross braces and into the deck.**
13. Once the deck is free, remove the left front roller bolt using a 9/16" wrench. Then remove the right front roller bolt. Rotate the right side of the front roller (A1244) under the belt (P1246). This will loosen the timing belt (P1247) and make it easy to slide off. The front roller will now be rotated almost 90° from its original position. Pull out the front roller.
14. Clean off any wax built up on the front roller with a straight edge.

15. The rear roller (A1245) will slide out the back of the treadmill. Repeat cleaning procedure.
16. Slide out deck and belt from the back of the treadmill.
17. Remove the five (5) deck cross braces (P1274).
18. Remove T-nuts in the deck and insert on the opposite side of the deck.
19. Install the five (5) deck cross braces on opposite side of new deck. **Do not over torque bolts.** Use blue Loctite on these bolts.
20. Mist the rubber frame strips (A1441) on the deck frame braces (P1440) with WD-40 to make the deck easier to slide.
21. Slide belt and deck back in place in the side frames. Be careful the rubber on the long deck braces does not bind while sliding.
22. Install the 1" rubber caps (P1487) on rear roller.



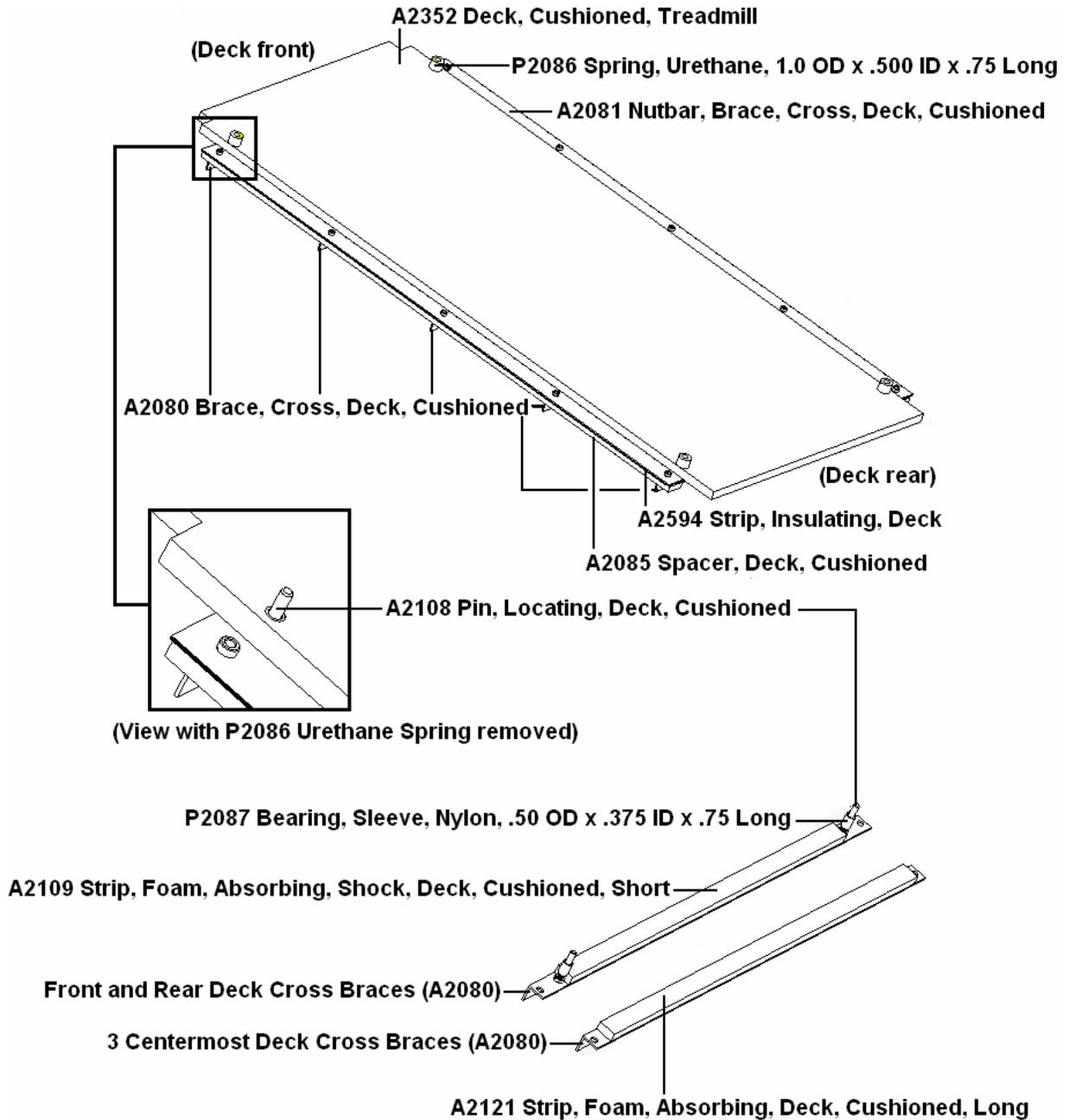
23. With the running belt slid over, install the rear roller into the extrusions, making sure the threads for the tension bolts can be seen.
24. Position each tension bracket over the lips of the extrusion from which they were removed. With a mallet, tap the bracket onto lips of the extrusion. Do the same to both sides.
25. Insert the rear roller tension bolt through each tension bracket and into the rear roller. When threads catch, turn each bolt approximately 3-4 turns.
26. Push each end cap bracket back into the appropriate extrusion.
27. Line up the holes in the end cap bracket with the holes in the extrusions and welded tabs of the rear cross member.
28. Insert the bolts for the foot pads and foot spacers on each side. This bolt will run from inside the extrusion on down through hole.
29. Slide spacer onto each bolt followed by the flat washer and foot pad. Place 9/16" wrench onto bolt head and turn foot pad clockwise until tight.
30. Insert the bolts that run up through the welded tabs and the end cap brackets. Put a 5/16"-18 nylock nut on each bolt and tighten down. Insert the front roller the reverse of the way you removed it. Position the roller with motor belt in place and install the two (2) front roller bolts. The right side has a roller spacer (A1401) that goes between the front roller and frame.



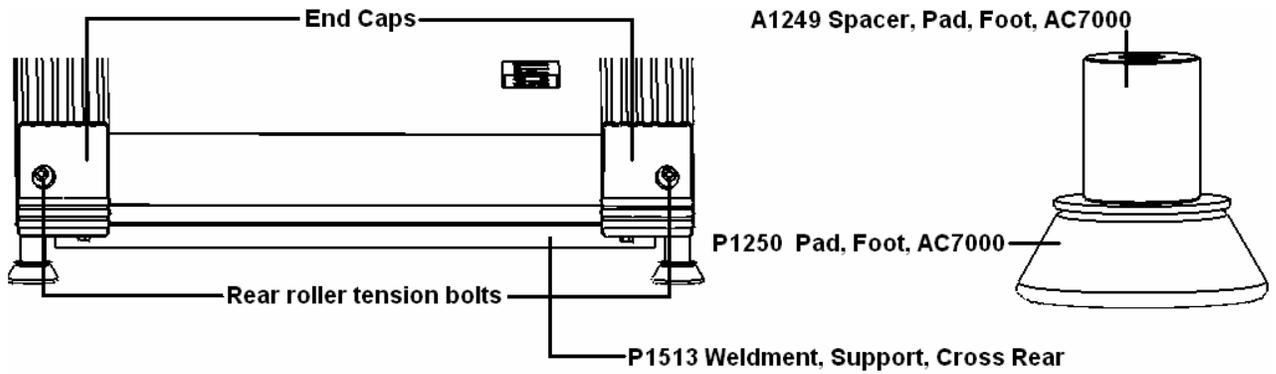
A1401 Spacer, Roller, Belt, Front, AC7000

31. Slide deck to where it is $\frac{1}{2}$ " to 1" from the front roller. Tighten the ten (10) outer bolts that run through the cross braces on the bottom of the deck.
32. Install the two (2) guide rollers. Hook the roller housing inside the deck belt and place the flat side of the guide roller bracket on the innermost lip of the extrusion.
33. Start the HCS $\frac{5}{16}$ – 18 X $\frac{3}{4}$ " and $\frac{5}{16}$ " lock washer up through the extrusion and the guide roller bracket.
34. Make sure the bracket is perpendicular (90° angle) to the extrusion. Tighten bracket in place.
35. Install rear roller tensioning socket head cap screws (one on each side), the two (2) end caps, and the two (2) footpads.
36. Tension the running belt by tightening the rear roller tensioning socket head cap screws equally.
37. Plug the treadmill power cord into the electrical outlet.
38. Turn the unit on and press **START** to allow the unit to return to 0% grade.
39. Tension the running belt according to the "Running Belt Tracking and Tensioning" procedure (Page 38).
40. After properly tensioning the running belt, you must walk it in according to the "Belt Replacement Walk-In" procedure (Page 47). **Failure to do so may result in damage to the deck.**

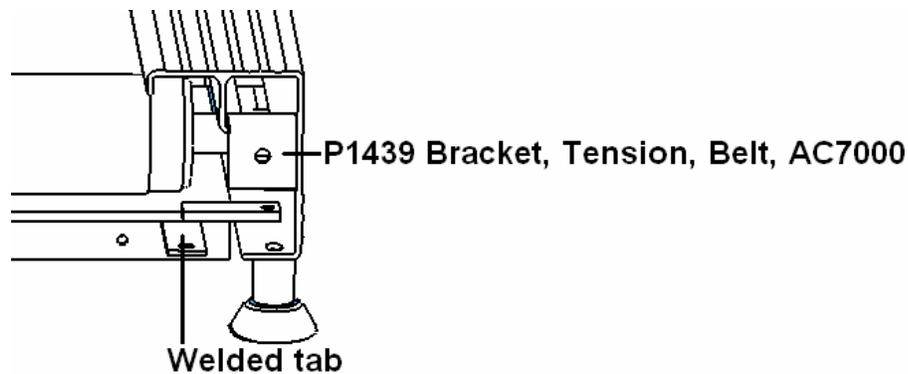
C. Cushioned Deck and Running Belt Replacement



1. Elevate the treadmill to 15% grade.
2. Unplug treadmill from the outlet. The treadmill will remain elevated.
3. Place a solid object under the rear cross member (P1513) of the treadmill to elevate the rear of the treadmill and give access to the underside. If nothing is available, flip the treadmill on its side (before you flip the treadmill, complete step 4).



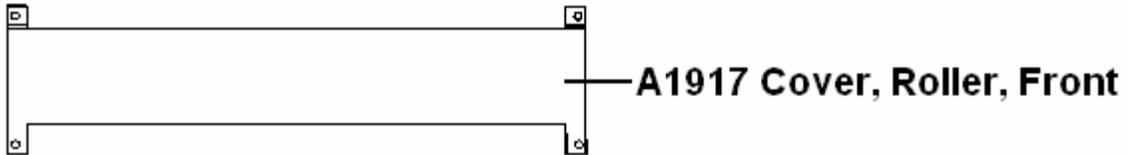
4. Remove motor hood (P1252), which is held on by nine (9) Philips screws.
5. Remove the two (2) rear end caps by removing two (2) 5/16" bolts, one (1) per side, using a 1/2" wrench and socket. Using a 9/16" wrench, remove the 3/8" bolt on each side securing the foot pad and spacer to each side.
6. Remove the two (2) running belt tensioning socket head cap screws, one (1) on each side, using a 5/16" Allen wrench.
7. Remove the tension bracket from each side.



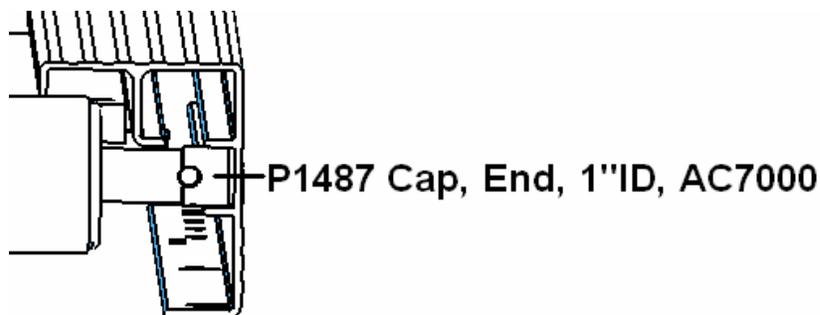
8. Locate the guide roller assemblies (P1242). There is one (1) guide roller assembly (P1242) on the bottom side of each extrusion.



9. Using a 1/2" wrench, remove the two (2) bolts with 5/16" lock washers that runs up through the front roller cover (A1917), the extrusion and into the guide roller bracket. There is one (1) located on the underside of each extrusion.

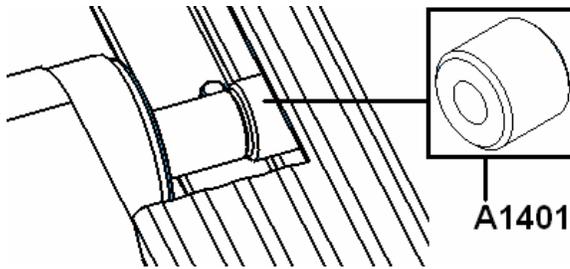


10. Slide guide roller assemblies out from under the extrusion and deck belt.
11. Using a 9/16" socket, remove the two (2) bolts holding front roller cover to the motor plate. This will allow you to remove the front roller cover.
12. Using a 1/2" socket, loosen the ten (10) outer bolts that run through the deck spacer (A2085), deck cross braces (A2080) and into the nut bar (A2081) on the bottom of the deck (A2352), approximately 3-4 turns.
Only loosen these outside bolts. Do not completely remove them.
13. Once the deck is free, remove the left front roller bolt using a 9/16" wrench. Then remove the right front roller bolt. Rotate the right side of the front roller (A1244) under the belt (P1246). This will loosen the timing belt (P1247) and make it easy to slide off. The front roller will now be rotated almost 90° from its original position. Pull out the front roller.
14. Clean off any wax built up on the front roller with a straight edge.
15. The rear roller (A1245) will slide out the back of the treadmill. Repeat cleaning procedure.
16. Slide out deck assembly and belt out the back of the treadmill.
17. Remove the four (4) urethane springs (P2086).
18. Flip the deck over if it hasn't been done before. If the deck has been flipped once before, install new deck. **Do not loose the nylon sleeves (P2087) on the locating pins (A2108) near the corners of the deck.**
19. Reinstall the urethane springs.
20. Slide belt and deck back in place in the side frames.
21. Install the 1" rubber caps (P1487) on rear roller.



22. With the running belt slid over, install the rear roller into the extrusions, making sure the threads for the tension bolts can be seen.
23. Position each tension bracket over the lips of the extrusion from which they were removed. With a mallet, tap the bracket onto lips of the extrusion. Do the same to both sides.
24. Insert the rear roller tension bolt through each tension bracket and into the rear roller. When threads catch, turn each bolt approximately 3-4 turns.

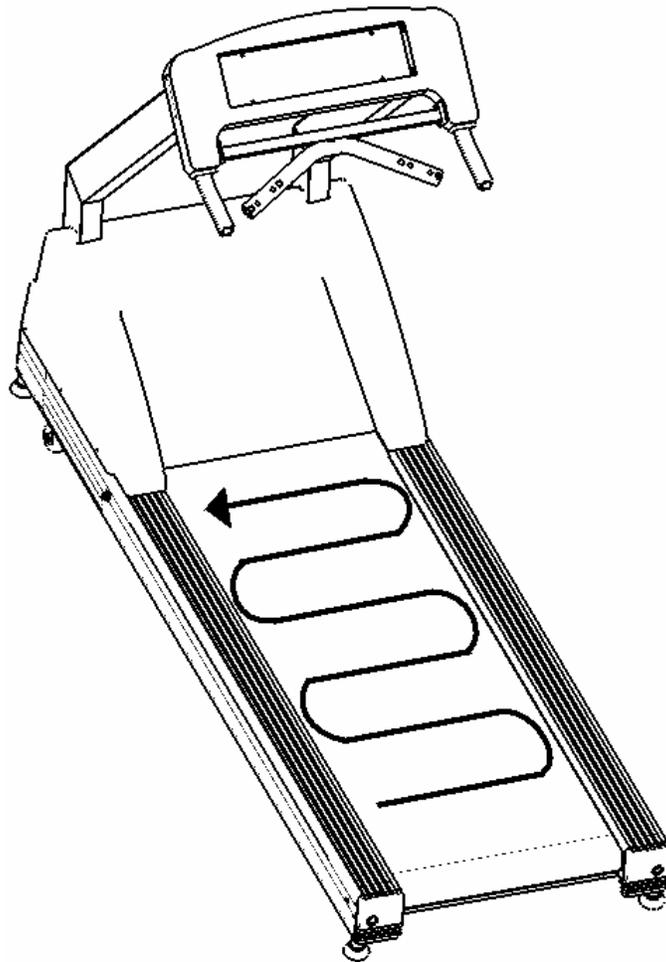
25. Push each end cap bracket back into the appropriate extrusion.
26. Line up the holes in the end cap bracket with the holes in the extrusions and welded tabs of the rear cross member.
27. Insert the bolts for the foot pads and foot spacers on each side. This bolt will run from inside the extrusion on down through hole.
28. Slide spacer onto each bolt followed by the flat washer and foot pad. Place 9/16" wrench onto bolt head and turn foot pad clockwise until tight.
29. Insert the bolts that run up through the welded tabs and the end cap brackets. Put a 5/16"-18 nylock nut on each bolt and tighten down. Insert the front roller the reverse of the way you removed it. Position the roller with motor belt in place and install the two (2) front roller bolts. The right side has a roller spacer (A1401) that goes between the front roller and frame.



A1401 Spacer, Roller, Belt, Front, AC7000

30. Slide deck to where it is ½" to 1" from the front roller. Tighten the ten (10) outer bolts that run through the cross braces on the bottom of the deck.
31. Install the front roller cover. Only insert and tighten the bolts going through the front roller cover and into the motor plate.
32. Install the two (2) guide rollers. Hook the roller housing inside the deck belt and place the flat side of the guide roller bracket on the innermost lip of the extrusion.
33. Start the HCS 5/16 – 18 X ¾" and 5/16" lock washer up through the front roller cover, extrusion and the guide roller bracket.
34. Make sure the bracket is perpendicular (90° angle) to the extrusion. Tighten bracket in place.
35. Install rear roller tensioning socket head cap screws (one on each side), the two (2) end caps, and the two (2) footpads.
36. Tension the running belt by tightening the rear roller tensioning socket head cap screws equally.
37. Plug the treadmill power cord into the electrical outlet.
38. Turn the unit on and press **START** to allow the unit to return to 0% grade.
39. Tension the running belt according to the "Running Belt Tracking and Tensioning" procedure (Page 38).
40. After properly tensioning the running belt, you must walk it in according to the "Belt Replacement Walk-In" procedure (Page 47). **Failure to do so may result in damage to the deck.**

D. Belt Replacement Walk-In



1. Once the deck has been flipped or replaced and a new belt has been installed, the combination must be “walked in”. The “walk in” is designed to distribute the phenolic wax on the deck evenly into the belt fibers and across the deck. Not “walking in” a belt can cause chunks of wax to break loose from the deck and embed on the rollers causing a thumping noise and leaving an area of the deck with no wax which will cause a friction problem. **Failure to “walk in” the combination may result in damage to the deck.**
2. Start the treadmill and increase the speed to 10 MPH and let it run for five (5) to ten (10) minutes to warm up the new belt.
3. Once the five (5) minutes has been completed, decrease the speed to 1.5 MPH.
4. While facing the display, step onto left side of the belt, approximately ten (10) to twelve (12) inches from the rear, and walk in a snakelike pattern until you reach the front of walking surface. (Pattern is shown above.)
5. You may reverse the snakelike pattern until reaching the rear or step off and repeat the first pattern.
6. “Walk in” must be performed for ten (10) minutes.

E. Guide Roller Replacement

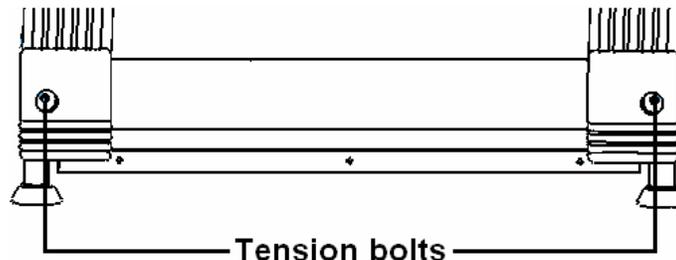
1. Elevate treadmill to a grade of 15%. Turn off power switch or unplug unit.
2. Locate the guide roller assemblies. There is one (1) guide roller assembly (P1242) on the bottom side each extrusion.



3. Using a $\frac{1}{2}$ " wrench, remove the bolt with lock washer that runs up through the extrusion and up into the guide roller bracket.
4. Slide guide roller assembly from under extrusion and running belt (P1246).
5. To install the new guide roller assembly, hook the roller housing inside the deck belt and place the flat side of the guide roller bracket on the innermost lip of the extrusion.
6. Start the HCS $\frac{5}{16}$ – 18 X $\frac{3}{4}$ " bolt and $\frac{5}{16}$ " lock washer up through the extrusion and the guide roller bracket.
7. Make sure the bracket is perpendicular (90° angle) to the extrusion. Tighten bracket in place.

F. Front Roller Replacement

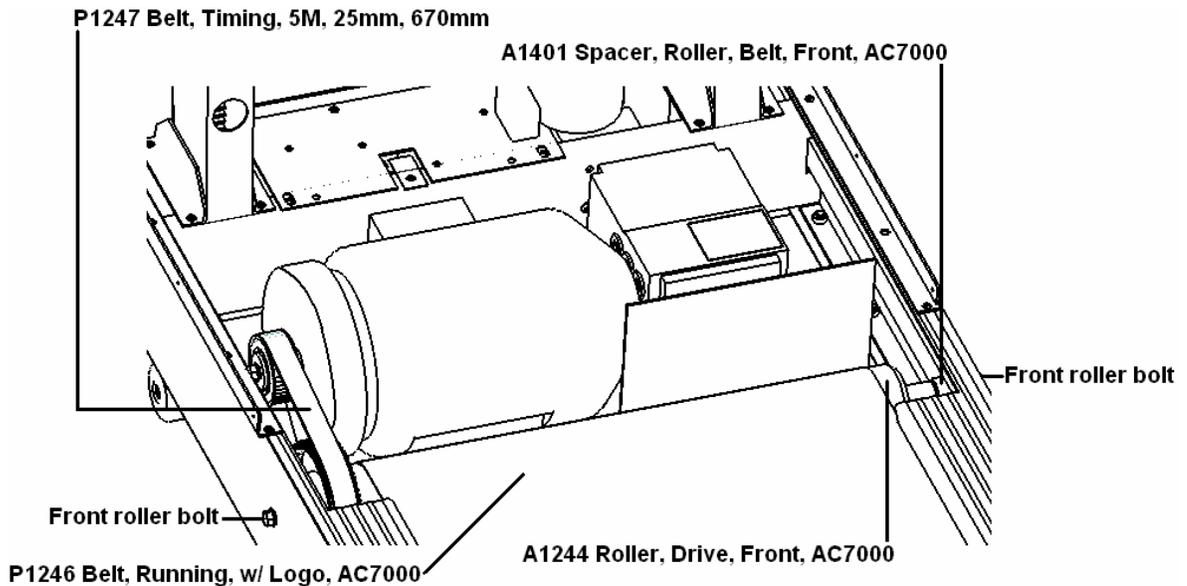
1. Elevate the treadmill to 15% grade and unplug treadmill.
2. Unplug treadmill from the wall outlet. Treadmill will remain elevated.
3. Remove the motor hood, using a Philips screwdriver.
4. Using a $\frac{5}{16}$ " Allen wrench, turn each of the rear roller tension bolts counterclockwise, approximately 6-10 turns, to relieve tension from the running belt.



5. Remove both guide rollers, using a $\frac{1}{2}$ " wrench.



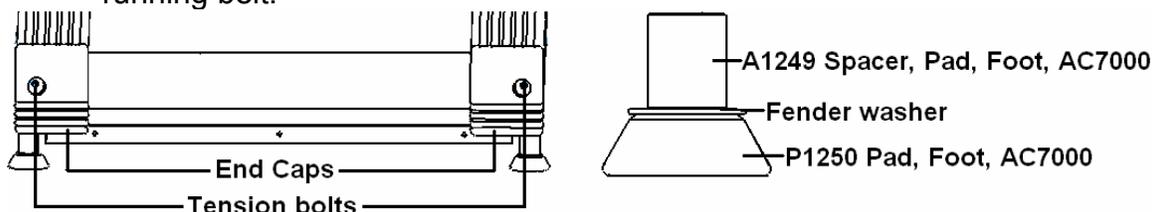
- With a 9/16" wrench, remove the left side, front roller bolt. Loosen the right side, front roller bolt far enough to disengage the bolt threads from the roller threads. Rotate the right side of the front roller under the deck and belt. This will loosen the motor's timing belt on the left side of the front roller and make it easy to slide off. Rotate the front roller approximately 90° from its original position. Pull the roller out from under the treadmill.



- Install new front roller by reversing step 6.
- Put guide roller back in place using the "Guide Roller Replacement" procedure (Page 48).
- Turn each rear roller tension bolt clockwise, approximately 6-10 turns.
- Tension running belt according to the "Running Belt Tracking and Tensioning" procedure (Page 38).

G. Rear Roller Replacement

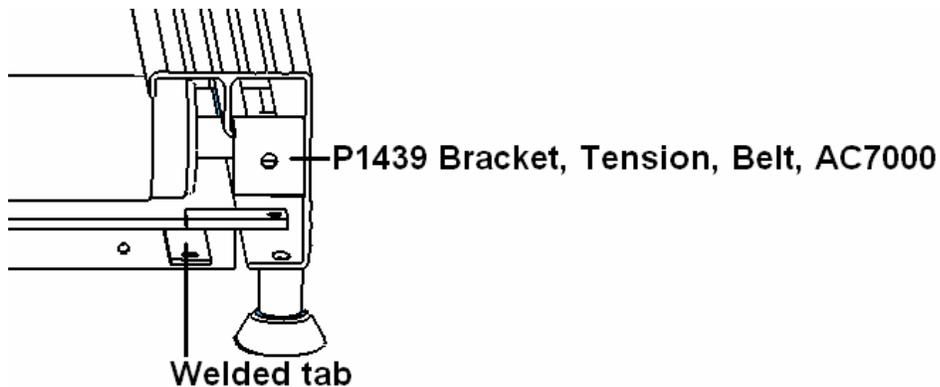
- Elevate the treadmill to 15% grade.
- Unplug treadmill from the wall outlet. Treadmill will remain elevated.
- Remove the motor hood, using a Philips screwdriver.
- Using a 5/16" Allen wrench, turn each of the rear roller tension bolts counterclockwise, approximately 6-10 turns, to relieve tension from the running belt.



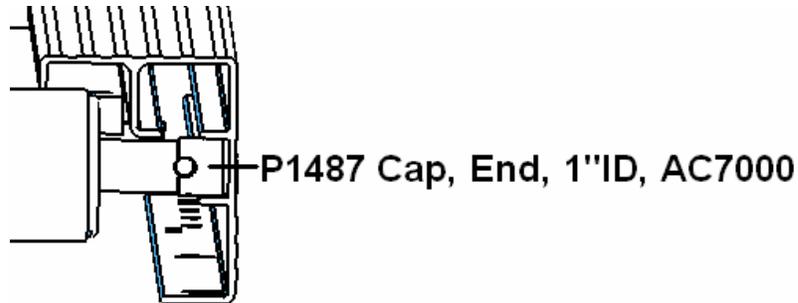
5. Remove both guide rollers, using a 1/2" wrench.



6. With a 9/16" wrench, remove the left side, front roller bolt. Loosen the right side, front roller bolt far enough to disengage the bolt threads from the roller threads. Rotate the right side of the front roller under the deck and belt. This will loosen the motor belt on the left side of the front roller and make it easy to slide off. Rotate the front roller approximately 90° from its original position. Pull the roller out from under the treadmill.
7. Place a solid object under the rear cross member (P1513) of the treadmill. This will allow access to the underside of the treadmill.
8. Remove the rear feet. Using a 9/16" wrench, hold the head of the bolt that runs through the center of the foot spacer (A1249) and into the foot pad (P1250). Rotate the foot pad until it unthreads completely from the bolt. Repeat this procedure for the other foot removal.
9. Using a 1/2" wrench and socket, remove the bolts that hold the end cap brackets to the welded tabs of the rear cross member.

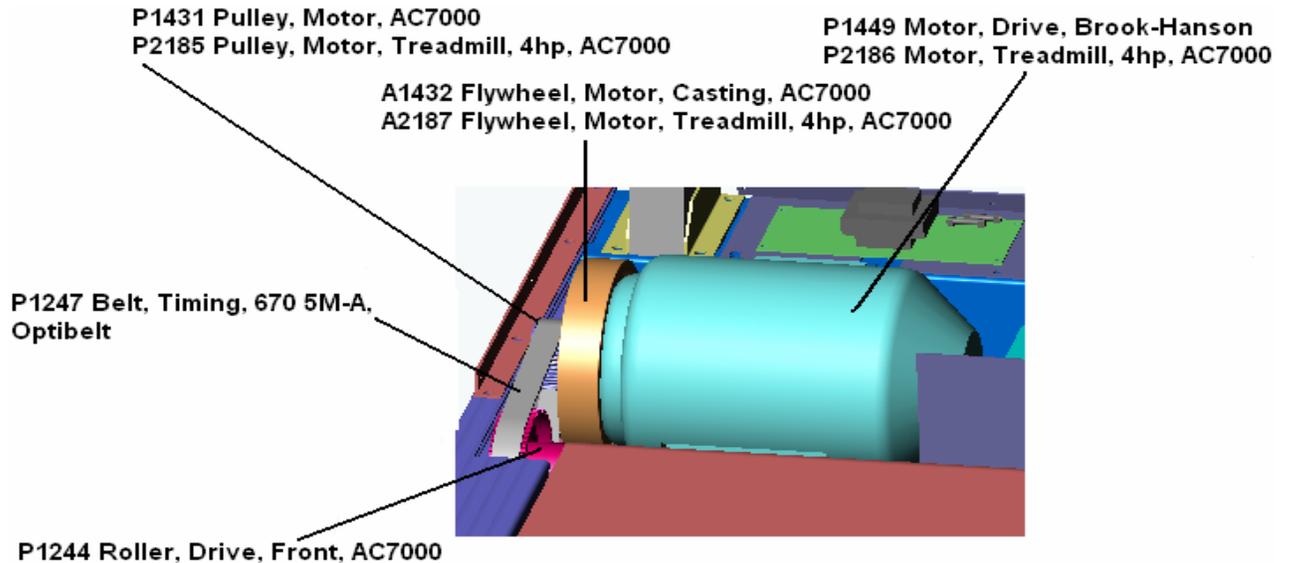


10. Pull end caps out of the extrusions.
11. Remove both rear roller tension bolts and the tension brackets.
12. Slide the running belt to one side or the other.
13. Pull the rear roller out of the treadmill.
14. Install the two (2) 1" rubber caps (P1487) from old roller onto new roller.



15. With the running belt slid over, install the new rear roller into the extrusions, making sure the threads for the tension bolts can be seen.
16. Position each tension bracket over the lips of the extrusion from which they were removed. With a mallet, tap the bracket onto lips of the extrusion. Do the same to both sides.
17. Insert the rear roller tension bolt through each bracket and into the rear roller. Once the threads catch, turn each bolt approximately 3-4 turns.
18. Push each end cap bracket back into the appropriate extrusion.
19. Line up the holes in the end cap bracket with the holes in the extrusions and welded tabs of the rear cross member.
20. Insert the bolts for the foot pads and spacers on each side. This bolt will run from inside the extrusion on down through hole.
21. Slide spacer onto each bolt followed by the flat washer and foot pad. Place 9/16" wrench onto bolt head and turn foot pad clockwise until tight.
22. Insert each of the bolts that run up through the welded tabs and the end cap brackets. Put a 5/16"-18 nylock nut on each bolt and tighten down.
23. Install front roller by laying it inside the running belt at a 90° angle. Once the pulley of the front roller clears the deck, slide the drive belt over it. Proceed to rotate roller until it gets to its normal mounting position. Place the front roller spacer between front roller and the extrusion. Install and tighten the 3/8" bolt.
24. Mount the guide rollers back into their normal positions.
25. Tension the running belt according to the "Running Belt Tracking and Tensioning" procedure (Page 38).

H. Drive Motor Replacement



If two part numbers are listed, the top is for units with the 5.5 hp drive motor while the bottom number is for units equipped with the 4 hp drive motor. If only one part number is listed, the part is on both.

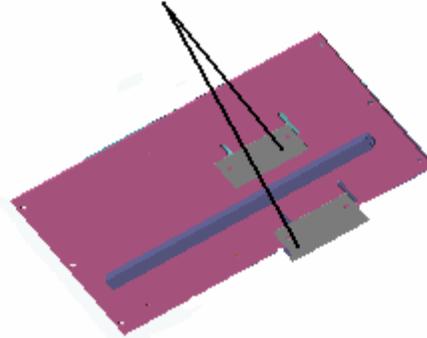
1. Elevate treadmill to a 15% grade and disconnect power at the outlet.
2. Using a Philips screwdriver, remove the motor hood, which is held on by nine (9) screws.
3. With a 9/16" wrench, loosen the hex nut on the "L-shaped" motor tension bracket (A1428) approximately four (4) turns. This is located between the motor and the elevation system.



P1428 Bracket, Motor, Tensor, AC7000

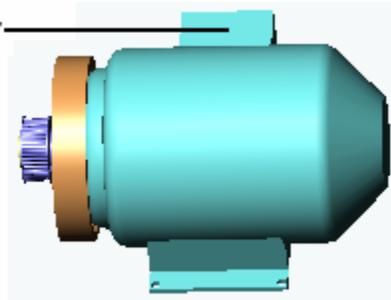
4. Using a 9/16" wrench and a 9/16" socket, hold the wrench on the nuts at the base of the motor while placing the socket on the heads of the bolts under the treadmill motor plate.
5. Turn the bolts counterclockwise until they separate from the retaining nut. (The older models have two (2) slot cover plates under the motor plate (A1445), which the motor bolts run through.)

A1445 Plate, Cover, Slot, Motor, AC7000



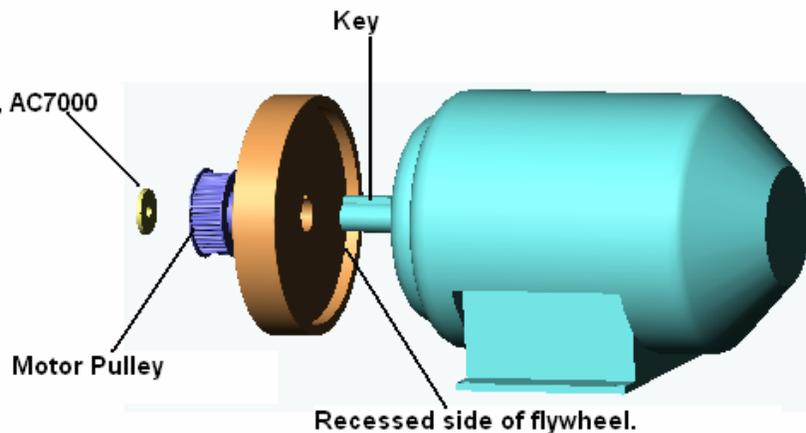
6. Once you have removed the four (4) bolts that hold the motor (P1449/ P2186) in place, slide the motor towards the front roller (P1244) about 1". (There are three (3) flat spacers under the motor to offset the motor tension bracket.)
7. Slide the timing belt (P1247) off the motor pulley (P1431/ P2185).
8. Using a Philips screwdriver, remove the motor terminal block cover, which is held on by four (4) screws.

Terminal block cover



9. Using a 7/16" socket, remove the nuts fastening the wires to the terminals.
10. Push the cable through the grommet in the bottom of the terminal block housing.
11. Carefully remove the drive motor from the treadmill.
12. Using a 9/16" wrench, remove the bolt and motor spacer from motor shaft. This will free the motor pulley and flywheel (A1432/ A2187).

P1443 Spacer, Motor, Axle, AC7000

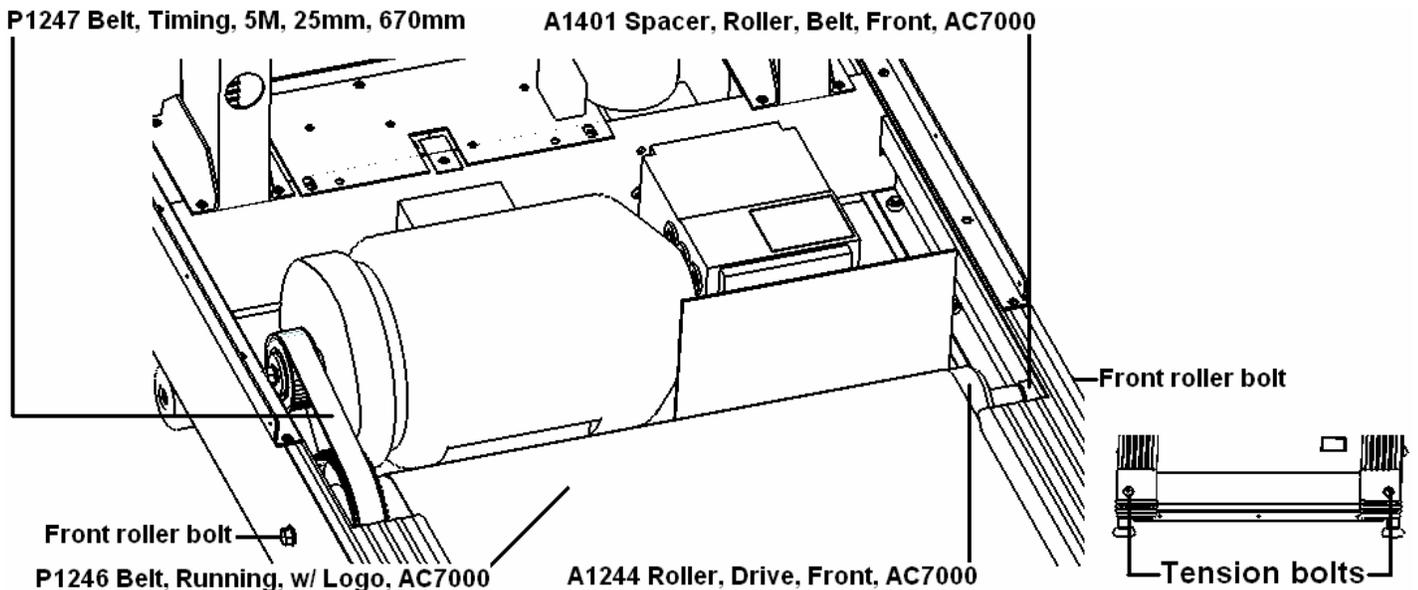


13. Slide the motor pulley and flywheel horizontally off motor shaft.
Occasionally, this step might require the aid of a wheel puller to get the flywheel off. Don't use a hammer to remove or install flywheel. Use of a hammer can cause damage to the motor bearings.
14. Make sure the key is inserted into the keyway on the motor shaft of the new motor.
15. Slide the flywheel onto the new motor shaft, recessed side first. You must line up the notch in the center bore of the flywheel with the key.
16. Push flywheel on until it stops.
17. Line the cutout in the pulley with the key in the motor shaft.
18. Slide the pulley onto shaft, hub-side first.
19. Take the retaining bolt with the lock washer and run it through the spacer (P1443) and into the motor shaft.
20. Tighten bolt using a 9/16" wrench.
21. Set new motor in treadmill, lining up the holes with the hole in the motor tension bracket and the three, flat spacers. (Motor tension bracket and spacers are placed between the bottom of the motor and the motor plate.)
22. Insert each bolt with a lock washer up through the slot cover plates (long side goes towards the front of treadmill), motor plate, spacers, and motor mount base.
23. Place the 3/8" lock washer onto bolt followed by the 3/8" locking nut.
Thread the locking nut by hand until it stops.
24. Repeat steps 22 and 23 until all four (4) bolts are in place.
25. Slide the motor towards the front roller.
26. Re-insert the motor cable and attach wires to terminal block. The wiring connections, from left to right, are brown, blue, and green.
27. Put the terminal block cover back onto motor.
28. Install timing belt onto motor pulley.
29. Slide motor towards the front of the treadmill until the timing belt is taut and the motor and front roller pulley are aligned.
30. Hold the motor in this position and slowly spin the flywheel to allow belt to seat properly on the pulleys. (If slack develops, slide motor towards the front of unit to take up slack created when the belt seated.)
31. Once this alignment has been done and the belt is taut, use a 9/16" wrench and ratchet with 9/16" socket to tighten the motor bolts.
32. This action should create a little play in the timing belt. Once the motor has been locked down, snug the nut on the motor tension bracket. The belt should have approximately 3/8" travel when pushed down and then pulled up on. If this is too tight or too loose, loosen motor and tension nuts and move motor slightly forward or backwards and retighten nuts. Repeat this procedure until the tension is correct.
33. Verify all nuts and bolts are tightened down.
34. Plug the treadmill back into the wall and restore power to the unit.
35. **All 60 Hz treadmills need to be auto-tuned. 50 Hz treadmills do not get auto-tuned.** Start the Auto Tune process by pressing the PRG/RESET key one time. "F00" will appear on your inverter display.

Use the arrow up or arrow down until you see “F74” appear in the inverter window. Press the FUNC/DATA button one time. A value of “0” will be shown. Make sure there is nothing on the belt and everything is clear of the motor. Using the arrow up, change the value to “1”. Press FUNC/DATA one more time. You will hear three electrical pulses from the inverter to the motor. The running belt will move approximately one inch. “F75” will be displayed in the inverter window. Press PROG/RESET once. The inverter will now display is normal operating screen. If any other values are displayed after performing the auto-tuning function, please consult SCIFIT at 1-800-745-1373.

36. Once the treadmill has been performance tested, replace the motor hood.

I. Timing Belt Replacement



1. Elevate treadmill to 15% incline and turn off power to the unit.
2. Using a Philips screwdriver, remove the motor hood (P1252), which is held on by nine (9) screws.
3. Use a 5/16” Allen wrench to turn each rear roller tension bolt, counterclockwise, 6-10 full turns to release running belt pressure.
4. Remove the left, front roller bolt using a 9/16” wrench or socket.
5. Loosen the right, front roller bolt far enough to disengage bolt threads from the roller threads.
6. Press down on the right side of the front roller until it is free of the front roller spacer (A1401).
7. Remove the Front roller spacer. Newer models have a nylon thrust bearing (P2046) between the spacer and extrusion. Pull the bolt out of the extrusion. Newer models have an additional nylon flange bushing (P2045) inserted into the front roller bolt hole on the outside of the right extrusion.

P2046 Bearing, Thrust, 7/16" ID, 1/2" OD



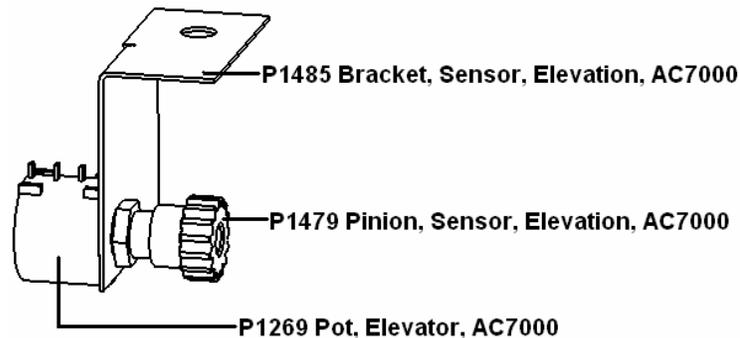
P2045 Bushing, Flange, 3/8" ID, 7/16" OAL



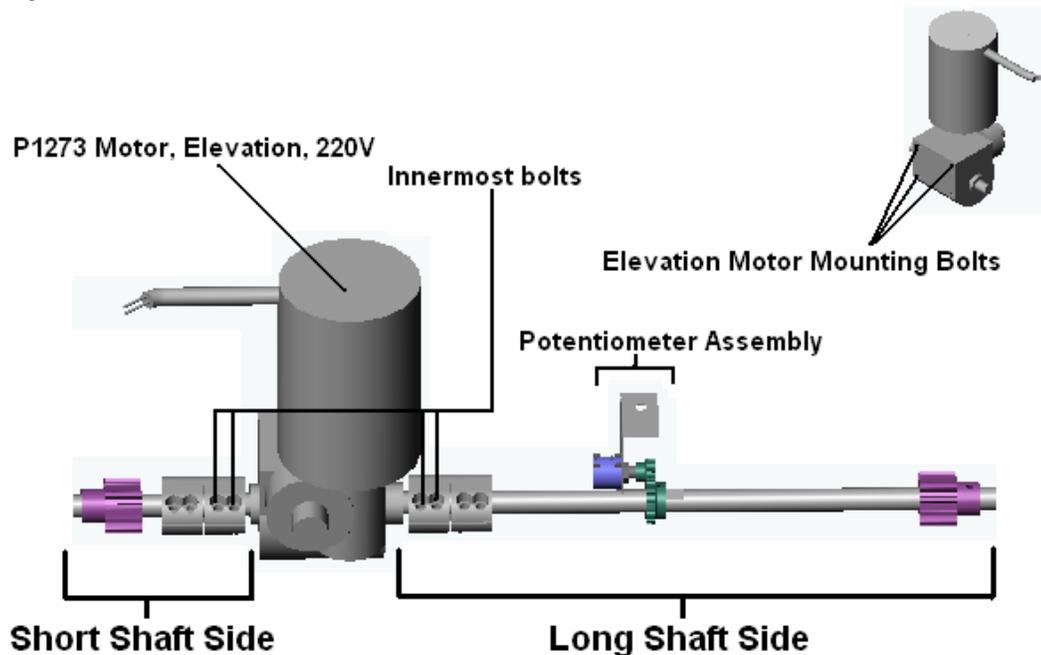
8. Lift the front roller back up slightly and slide to the right, into the extrusion channel vacated by the spacer. This will create enough of a gap on the left end of the front roller to remove your old belt.
9. Slide the old belt off the front roller pulley and the motor pulley.
10. Install your new belt around the two pulleys.
11. Once the new timing belt is in place, slide the front roller to the left until the threaded hole in the end of the roller shaft line up with the bolt hole for the front roller in the left extrusion.
12. Insert the bolt and lock washer through the left extrusion and into the front roller. Thread about $\frac{3}{4}$ of the bolt into the front roller.
13. On the right side, insert the bolt through the extrusion, and nylon flange bushing (if applicable). On the inside of the extrusion, place nylon thrust bearing (if it originally had one) onto bolt followed by the spacer.
14. Line the threaded hole in the right end of front roller with the bolt coming through the spacer.
15. Thread the bolt into roller and then tighten both front roller bolts.
16. Restore power to the unit and tension the running belt according to the "Treadmill Running Belt Tracking and Tensioning" procedure (Page 37).
17. With the power off, check the drive belt tension. There should be approximately $\frac{3}{8}$ " travel when pressing down on top of the belt to put belt at its lowest position between the pulley, then hooking a finger below the belt and pulling to its highest point. If this isn't correct, loosen the nuts at the base of the motor and the motor tension bracket.
18. Slide motor towards the front of the treadmill until the timing belt is taut and the motor and front roller pulley are aligned.
19. Hold the motor in this position and slowly spin the flywheel to allow belt to seat properly on the pulleys. (If slack develops, slide motor towards the front of unit to take up slack created when the belt seated.)
20. Once this alignment has been done and the belt is taut, use a $\frac{9}{16}$ " wrench and ratchet with $\frac{9}{16}$ " socket to tighten the motor bolts.
21. This action should create a little play in the timing belt. Once the motor has been locked down, snug the nut on the motor tension bracket. The belt should have approximately $\frac{3}{8}$ " travel when pushed down and then pulled up on. If this is too tight or too loose, loosen motor and tension nuts and move motor slightly forward or backwards and retighten nuts. Repeat this procedure until the tension is correct.
22. Verify all nuts and bolts are tightened down.
23. Restore power and test operation of the treadmill.
24. Restore and fasten motor hood in place.

J. Elevation Motor Replacement

1. Make sure treadmill is at 0% elevation.
2. Turn power off to unit.
3. Remove motor hood, which is held on by nine (9) Phillips-head screws.
4. Disconnect all eight (8) wires connected to lower PCB (P1500). Grab each cable at the connector. **Do not pull on the cable itself as it may do damage to the cable or the header on the lower PCB.**
5. Remove the lower PCB mounting plate (C1456), using a 1/2" socket.
6. Using a 1/2" socket, remove the 1/2" bolt that holds the potentiometer and mounting bracket. Be careful with the cable, as it is soldered to the potentiometer.

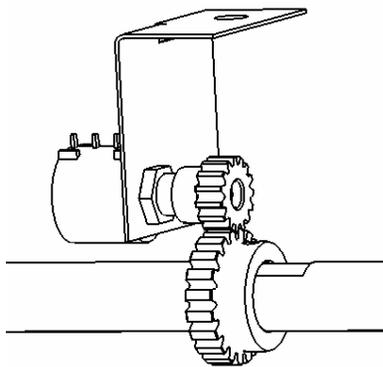


7. Loosen the two (2) innermost bolts, closest to the elevation motor, on each coupling using a 5/32" Allen wrench. Do not loosen the outer two bolts, as this is not necessary and will lengthen the time needed for this job.



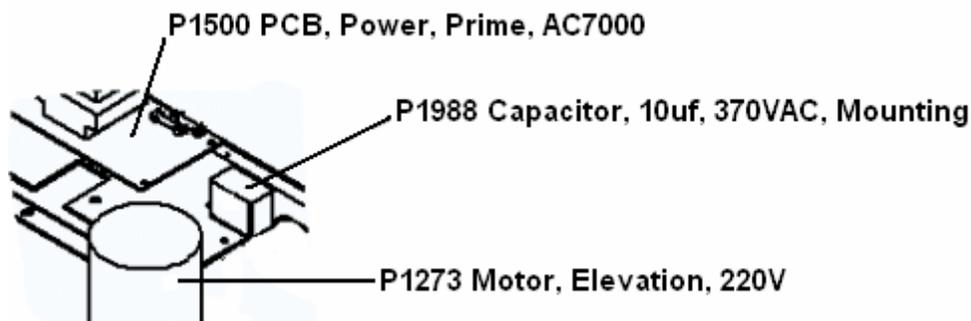
8. Slide the long shaft and coupling off the elevation motor shaft by moving them horizontally and away from the elevation motor.

9. Remove the three (3) elevation motor mounting bolts. Earlier elevation motors were mounted using $\frac{1}{4}$ -20 x .5 button head bolts. These require a $\frac{3}{32}$ " Allen wrench to remove bolts. Later models used $\frac{1}{4}$ -20 x .5 with a $\frac{1}{4}$ " lock washer. These require a $\frac{7}{16}$ " wrench to remove.
10. Slide the elevation motor horizontally out of coupling on the short shaft side and remove from system. (Motor will slide towards left side of treadmill, as if you were using the treadmill.)
11. Install the new elevation motor by sliding the elevation motor shaft into the coupling on the short shaft side. Slide elevation motor until the mounting holes in the motor line up with the mounting holes in the plate.
12. Install the three (3) elevation motor mounting bolts finger tight.
13. Pull short shaft and coupling onto motor shaft as far as it will go. The pinion and elevation rack should line up vertically. If they do not, slide the shaft horizontally until they do.
14. Tighten the inner bolts on short shaft coupling.
15. Slide the long shaft and coupling back onto the elevation motor shaft until there is about $\frac{1}{32}$ " between the coupling and the elevation motor's gearbox casing. The pinion on the long shaft should line vertically with the elevation rack.
16. Tighten the three (3) elevation motor mounting bolts.
17. Turn the shaft on top of the elevation motor, using a drill, until the wheel on the short shaft side barely touches the floor. (Clockwise will raise the wheels and counterclockwise will lower the wheels).
18. It is possible that you will have to pull the wheel on the long shaft side to the floor by hand because the coupling is not locked in place yet.
19. Make sure racks are set using a level spot on the floor. Both wheels should be making light contact with the floor at this point.
20. When the racks are level, tighten the inner bolts on long shaft coupling.
21. With the potentiometer gear facing you, gently turn the gear counterclockwise until it stops. You can damage the potentiometer if you turn it too far. Then turn the gear clockwise $\frac{1}{4}$ of a turn.
22. Mesh the potentiometer gear with the gear on the long shaft off the elevation motor. Make sure they are properly aligned. The teeth should be meshed together and the gears should line up with each other vertically.



23. Reinstall and tighten the $\frac{1}{2}$ " bolt holding the potentiometer bracket.

24. Check all bolts for tightness and all gears for alignment, including how the pinions align with the elevation racks. If the pinions do not align, loosen the two (2) outermost bolts on whichever coupling does not line up. Slide that shaft and pinion horizontally until it does. Then re-tighten the outermost bolts.
25. Replace the lower PCB mounting plate using the four ½” head bolts. Be careful not to pinch the potentiometer cable under the plate.
26. Re-install the lower PCB.
27. Reconnect all eight (8) wires to the lower PCB. Refer to pages 21 for lower PCB configuration. The wiring connections are as follows:
 - The limit switch cable is a cable assembly with a gray jacket and a white 5-pin mate-n-lock connector. It plugs into the brown 5-pin socket, which is not labeled.
 - The power cable from the rocker switch is to lower PCB plugs is a cable assembly with a black jacket and a white 3-pin mate-n-lock connector. This plugs into the socket labeled JP1.
 - The wires coming out of the elevation motor that tie together with the starter cap plug into the socket labeled JP3.
 - The potentiometer cable has a gray jacket with a 4-pin Molex connector. This plugs into JP2.
 - There are two gray cable that run from the inverter to the lower PCB. The cable with the white, 3-pin large Molex header plugs into J4. The other cable has a white, 4-pin large Molex header and connects to J2.
 - The 6-pin Telco cable plugs in where the board is labeled J5.
 - The 8-pin Telco cable plugs into J6.
28. Secure the elevation motor starter cap to the lower PCB mounting plate between the elevation motor and the lower PCB. This can be done using clear silicone or 3M, two-sided tape on the bottom of the cap.



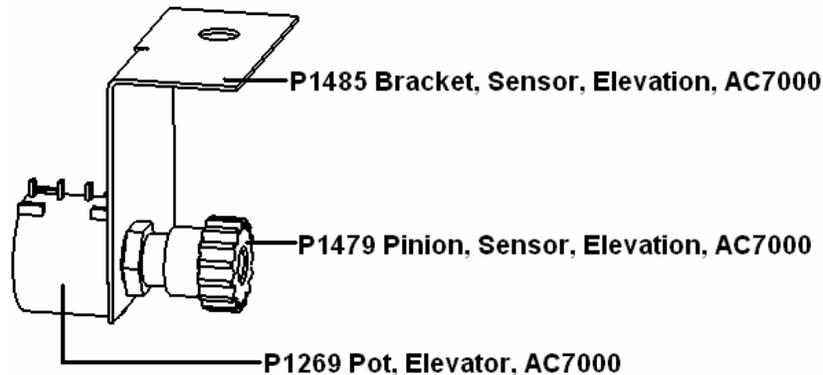
29. Double-check all wiring connections.
30. Restore power to the treadmill.
31. Calibrate the elevation using the Elevation Calibration procedure explained in the Club Mode for your version of software (Pages 29-36).

K. Potentiometer Replacement

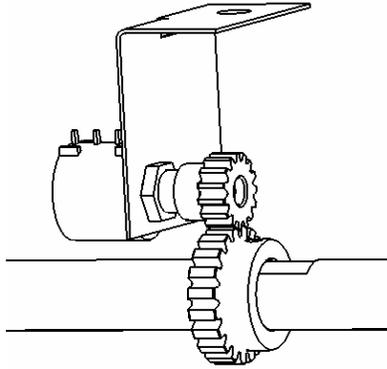
1. Make sure treadmill is at 0% elevation.
2. Turn power off to unit.
3. Remove motor hood, which is held on by nine (9) Phillips-head screws.
4. Disconnect all eight (8) wires connected to lower PCB (P1500). Grab each cable at the connector. **Do not pull on the cable itself as it may do damage to the cable or the header on the lower PCB.**
5. Remove the lower PCB mounting plate (C1456), using a 1/2" socket.



6. Using a 1/2" socket, remove the 1/2" bolt that holds the potentiometer and mounting bracket. Be careful with the cable, as it is soldered to the potentiometer.



7. Install the new potentiometer (P1269) onto the old bracket (P1485). To do this step, loosen the set screw on the pinion (P1479), using a 1/16" Allen wrench and slide the pinion off the end of the potentiometer shaft. Using a 1/2" wrench, remove the nut that holds the potentiometer to the mounting bracket. Pull the old potentiometer out of the bracket and insert the new one with the wires facing the top of the bracket. Re-install the 1/2" nut and tighten. Slide the pinion back onto the potentiometer shaft and re-tighten the set screw.
8. With the potentiometer gear facing you, gently turn the gear counterclockwise until it stops. You can damage the potentiometer if you turn it too far. Then turn the gear clockwise 1/4 of a turn.
9. Mesh the potentiometer gear with the gear on the long shaft off the elevation motor. Make sure they are properly aligned. The teeth should be meshed together and the gears should line up with each other vertically.



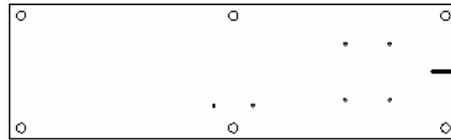
10. Reinstall and tighten the ½” bolt holding the potentiometer bracket.
11. Reinstall the lower PCB mounting plate, making sure not to pinch the potentiometer cable underneath it.
12. Reconnect all eight (8) wires to the lower board. Refer to pages 21 for lower PCB configuration. The wiring connections are as follows:
 - The limit switch cable is a cable assembly with a gray jacket and a white 5-pin mate-n-lock connector. It plugs into the brown 5-pin socket, which is not labeled.
 - The power cable from the rocker switch is to lower PCB plugs is a cable assembly with a black jacket and a white 3-pin mate-n-lock connector. This plugs into the socket labeled JP1.
 - The wires coming out of the elevation motor that tie together with the starter cap plug into the socket labeled JP3.
 - The potentiometer cable has a gray jacket with a 4-pin Molex connector. This plugs into JP2.
 - There are two gray cable that run from the inverter to the lower PCB. The cable with the white, 3-pin large Molex header plugs into J4. The other cable has a white, 4-pin large Molex header and connects to J2.
 - The 6-pin Telco cable plugs in where the board is labeled J5.
 - The 8-pin Telco cable plugs into J6.
13. Calibrate the elevation using the Elevation Calibration procedure explained in the Club Mode for your version of software (Pages 29-36).

L. Limit Switch Replacement

If your unit is equipped with a safety pan follow procedure 1. If your treadmill has a solid motor plate that extends all the way to the front of the unit, go directly to procedure 2.

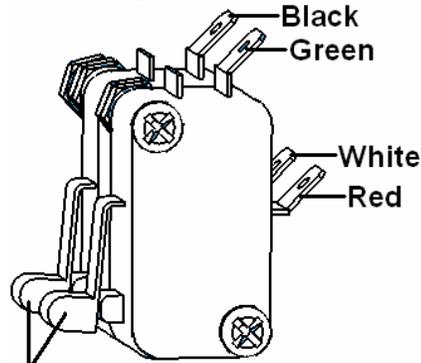
Procedure 1

1. Elevate the treadmill to 15% grade. Disconnect power by unplugging the treadmill power cord from wall socket.
2. Using a ½” socket, remove bolts holding safety pan (A1446) on the bottom of the elevation assembly.



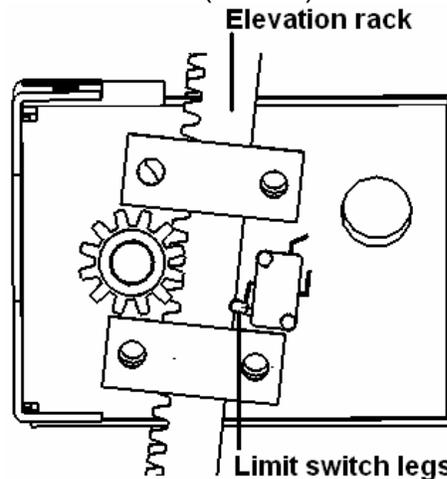
—A1446 Pan, Safety, AC7000

3. Disconnect wires running to each limit switch (P1260).



P1260 Switch, Limit, Elevation, AC7000

4. On the backside of the bracket that the limit switches mount to, remove the two (2) nuts holding the limit switches in place. Remove switches.
5. Re-attach wires in the same order on the new limit switches.
6. Replace the new limit switches through the same two (2) holes that the other ones were removed from. Make sure the two (2) legs on the limit switches clear the elevation rack (A1508).

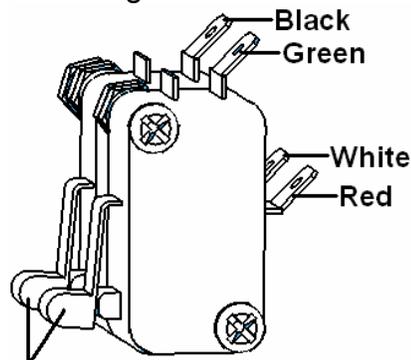


7. Replace the two (2) 4-40 machine nuts on the backside of the bracket.
8. Install the bolts back in the bottom of the safety pan.
9. Calibrate the elevation using the Elevation Calibration procedure explained in the Club Mode for your version of software (Pages 28-36).

Procedure 2

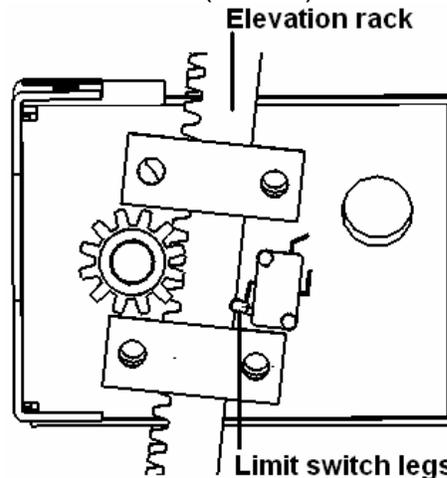
1. With the treadmill at 0% elevation, turn power switch to the off position.
2. Using a Philips screwdriver, remove the motor hood.
3. Disconnect the 6-pin and 8-pin Telco cables from the lower board.

4. Disconnect the green static drain wire. This wire comes out of the hole in the left upright and has a connector between the upright base and the lower board mounting plate.
5. Using a ½" socket and extension, remove the four (4) bolts with washers and the four (4) nuts with washers from the upright bases.
6. Remove the upright assembly by lifting it up over the elevation racks and set it off to the side.
7. Disconnect wires running to each limit switch (P1260).



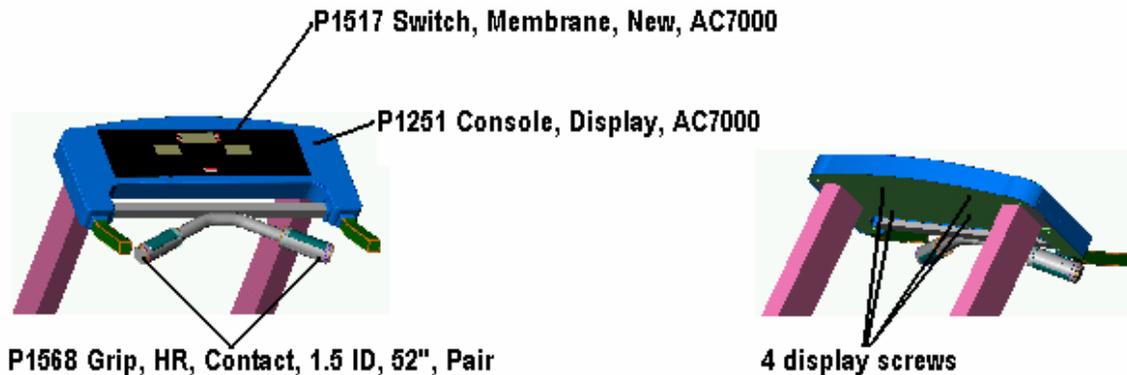
P1260 Switch, Limit, Elevation, AC7000

8. On the backside of the bracket that the limit switches mount to, remove the two (2) nuts holding the limit switches in place. Remove switches.
9. Re-attach wires in the same order on the new limit switches.
10. Replace the new limit switches through the same two (2) holes that the other ones were removed from. Make sure the two (2) legs on the limit switches clear the elevation rack (A1508).



11. Replace the two (2) 4-40 machine nuts on the backside of the bracket.
12. Set the upright assembly back in place. **Make sure not to catch the wires on the elevation racks.**
13. Reinstall and tighten the bolts, washers, and nuts to secure the uprights in place.
14. Plug the Telco cables into the lower PCB.
15. Reconnect the green static drain wire.
16. Calibrate the elevation using the Elevation Calibration procedure explained in the Club Mode for your version of software (Pages 29-36).

M. Upper PCB Replacement

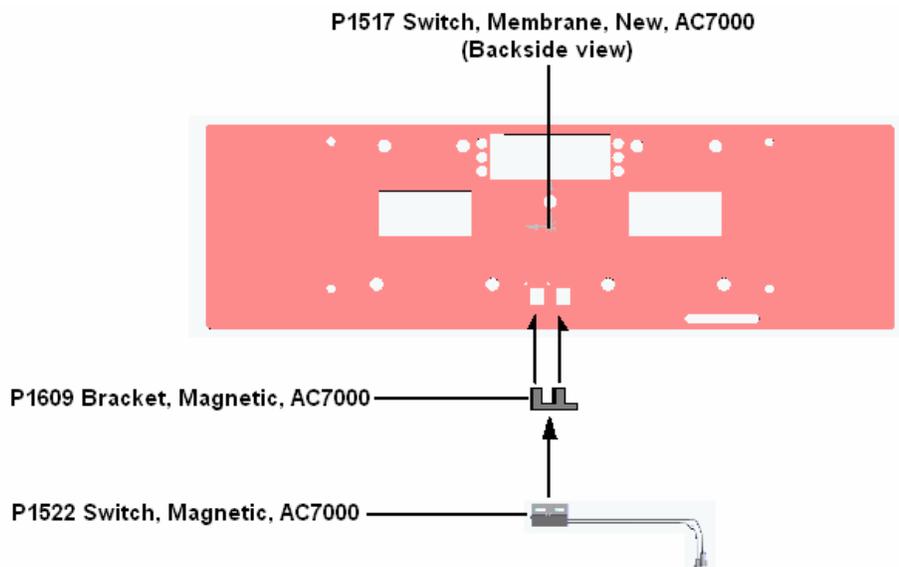


1. Turn off the power to the unit then remove magnet from upper display.
2. Using a Philips screwdriver, remove the four (4) screws that mount the upper display. They are located on the bottom side of the console.
3. Lift membrane up to expose wiring connections on the back of the upper PCB. **Warning: Make sure you are grounded before handling electronics. Failure to do so may result in static damage.**
4. Disconnect all wires to the upper PCB by grabbing them at the connector and pulling away from the connector on the upper PCB. While holding only the membrane, remove the display assembly from the console.
5. Remove the eight (8) Philips screws holding upper PCB to the membrane.
6. Disconnect both ribbon cables from the membrane to the upper PCB.
7. Replace upper PCB and install the eight (8) Philips screws.
8. Reconnect the ribbon cables.
9. Reconnect the two (2) black wires from the magnetic switch. These wires are not polarity sensitive.
10. Rest bottom of membrane on the cutout in the upper console. Tilt the top of the membrane back toward you. This will create enough room for you to access the wires and the back of the upper PCB.
11. Reconnect wires to the upper PCB.
 - The wireless heart rate cable comes out of the left side of the console. This component has a gray cable with the 3-pin Molex header and connects to the horizontally mounted, 3-pin connector on the left, backside of the upper PCB.
 - If your treadmill is equipped with contact heart rate, a black cable with a 3-pin Molex header will be coming from the left side of the console. This plugs into the vertically mounted, 3-pin header just below the wireless heart rate header.
 - Plug the 6-pin and 8-pin Telco cables into the black headers on the bottom, center part of the upper PCB.
 - If your unit is equipped with Cardio Key, there will be a gray cable with a 4-pin Molex header coming through the right side of the console.

This plugs into the vertically mounted header on the right, backside of the upper PCB.

- Broadcast Vision is another optional feature of the treadmill. If your unit is set up for this option, there is a black, 8-pin Telco cable coming into the console housing. Its location depends on where the user decided to mount the keypad. This plugs into the black header that sits by itself on the right, backside of the upper PCB.
12. While making sure not to pinch any wires, lay the display down into the console housing.
 13. Insert the four (4) display screws through the console back plate and into the standoffs.
 14. Snug these screws until secure. Do not heavily torque.
 15. Calibrate the elevation using the Elevation Calibration procedure explained in the Club Mode for your version of software (Pages 29-36).
 16. Complete Software Set Up (Page 37).

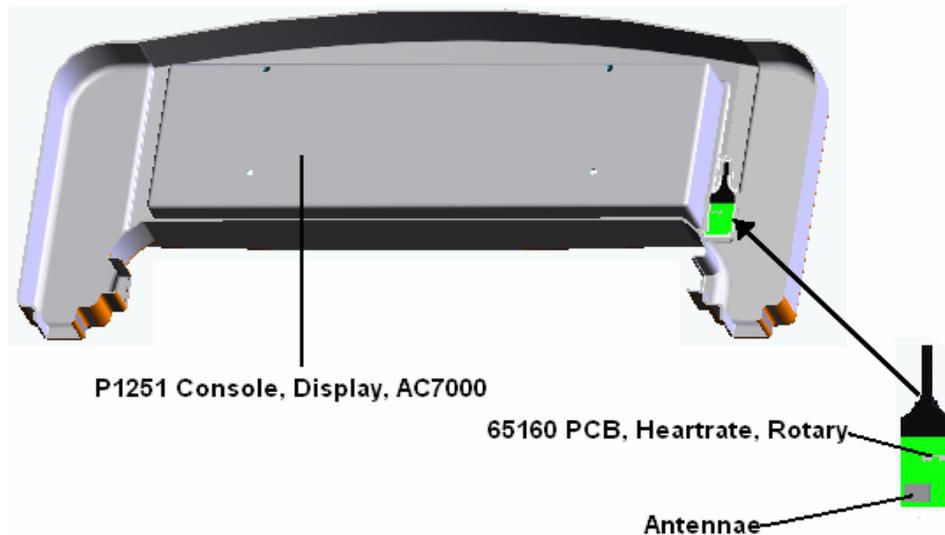
N. Membrane Replacement



1. Turn off the power to the unit then remove magnet from upper display.
2. Using a Philips screwdriver, remove the four (4) screws that mount the upper display. They are located on the bottom side of the console.
3. Lift membrane up to expose wiring connections on the back of the upper PCB. **Warning: Make sure you are grounded before handling electronics. Failure to do so may result in static damage.**
4. Disconnect all wires to the upper board by grabbing them at the connector. While holding only the membrane, remove the display assembly from the console.
5. Remove the eight (8) Philips screws holding upper PCB to the membrane.

6. Disconnect both ribbon cables from the membrane to the upper PCB.
7. Remove upper PCB.
8. Using a 1/16" Allen wrench, remove the two (2) 4-40 X 1/2" screws holding the magnetic switch in place.
9. Pull magnetic bracket loose and reinsert on the new membrane.
10. Place the magnetic switch flat side down and start the two (2) 4-40 X 1/2" screws through the slots in the switch.
11. Slide switch completely to the right and tighten screws.
12. Replace upper PCB and install the eight (8) Philips screws.
13. Reconnect the ribbon cables.
14. Rest bottom of membrane on the cutout in the upper console. Tilt the top of the membrane back toward you. This will create enough room for you to access the wires and the back of the upper PCB.
15. Reconnect wires to the upper PCB.
 - The wireless heart rate cable comes out of the left side of the console. This component has a gray cable with the 3-pin Molex header and connects to the horizontally mounted, 3-pin connector on the left, backside of the upper PCB.
 - If your treadmill is equipped with contact heart rate, a black cable with a 3-pin Molex header will be coming from the left side of the console. This plugs into the vertically mounted, 3-pin header just below the wireless heart rate header.
 - Plug the 6-pin and 8-pin Telco cables into the black headers on the bottom, center part of the upper PCB.
 - If your unit is equipped with Cardio Key, there will be a gray cable with a 4-pin Molex header coming through the right side of the console. This plugs into the vertically mounted header on the right, backside of the upper PCB.
 - Broadcast Vision is another optional feature of the treadmill. If your unit is set up for this option, there is a black, 8-pin Telco cable coming into the console housing. Its location depends on where the user decided to mount the keypad. This plugs into the black header that sits by itself on the right, backside of the upper PCB.
17. While making sure not to pinch any wires, lay the display down into the console housing.
18. Insert the four (4) display screws through the console back plate and into the standoffs.
19. Snug these screws until secure. **Do not heavily torque.**

O. Wireless Heart Rate PCB Replacement



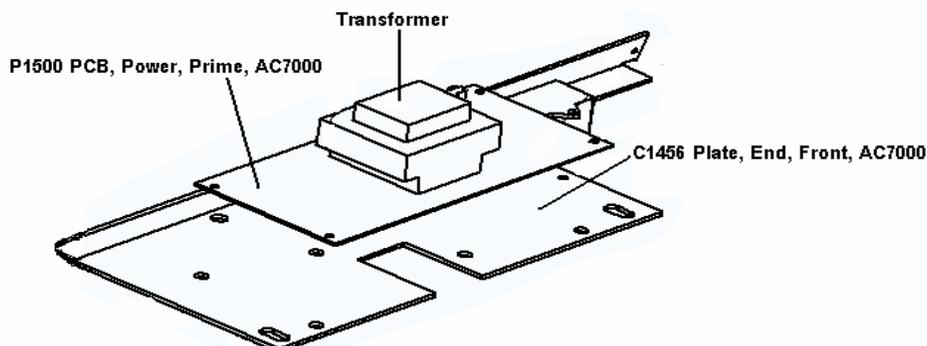
1. Turn off the power to the unit then remove magnet from upper display.
2. Using a Philips screwdriver, remove the four (4) screws that mount the upper display. They are located on the bottom side of the console.
3. Lift membrane up to expose wiring connections on the back of the upper PCB. **Warning: Make sure you are grounded before handling electronics. Failure to do so may result in static damage.**
4. Disconnect all wires to the upper PCB by grabbing them at the connector and pulling away from the connector on the upper PCB. While holding only the membrane, remove the display assembly from the console.
5. Using a Philips screwdriver, remove the four (4) screws located in the sides of the console.
6. Tilt the top of the console towards the running belt area. This will allow you access to the wireless heart rate PCB.
7. Make sure you are grounded, i.e. use of a grounding strap, before performing the steps below.
8. Remove the old wireless heart rate PCB, which is held in with a two-sided foam tape on each side and a tie wrap.
9. Clean the mounting surface.
10. Secure new wireless heart rate PCB the same way the old one came out.
11. Run wireless heart rate cable into console. Place console into its normal mounting position. Insert the four (4) screws through the sides of the console until snug. **Do not heavily torque.**
12. While making sure not to pinch any wires, lay the display down into the console housing.
13. Insert the four (4) display screws through console back plate and into standoffs.
14. Snug these screws until secure. **Do not heavily torque.**

P. Contact Heart Rate PCB Replacement

1. Turn off the power to the unit then remove magnet from upper display.
2. Using a Philips screwdriver, remove the four (4) screws that mount the upper display. They are located on the bottom side of the console.
3. Lift membrane up to expose wiring connections on the back of the upper PCB. **Warning: Make sure you are grounded before handling electronics. Failure to do so may result in static damage.**
4. Disconnect all wires to the upper PCB by grabbing them at the connector and pulling away from the connector on the upper PCB. While holding only the membrane, remove the display assembly from the console.
5. Remove the eight (8) Philips screws holding upper PCB to the membrane.
6. The contact heart rate PCB is the “black box” mounted inside the console. Cut the tie wrap tab, which holds this in place.
7. One (1) side of the contact heart rate PCB has one (1) wire coming out of it, which connects to the upper PCB. The other side of the contact heart rate PCB has two (2) wires coming out of it. Follow the two (2) wires to the point where they connect to the two (2) wires leading to the contact grips. Disconnect both wires at that point.
8. Plug the two (2) leads from the new contact heart rate PCB into the two (2) wires leading to the contact grips.
9. Mount the new contact heart rate PCB in position, using a 4” tie wrap. Once secure, cut off the excess of the tie wrap.
10. While making sure not to pinch any wires, lay the display down into the console housing.
11. Insert the four (4) display screws through console back plate and into standoffs.
12. Snug these screws until secure. Do not heavily torque.

Q. Lower PCB Replacement

1. Turn off all power to the unit.
2. Remove motor hood by removing nine (9) Phillips screws.
3. Make sure you are grounded, i.e. use of an ESD grounding strap.
4. Disconnect all eight (8) wires that run to the lower PCB (P1500).



5. Remove the four (4) Philips screws in the corners and the two (2) in the top of the transformer on the lower PCB.
6. Put old board in anti-static wrap or anti-static bag.
7. Place new lower PCB on the lower PCB mounting plate (C1456).
8. Start the four (4) corner screws and two (2) transformer screws.
9. Tighten the corner screws and then lightly snug the transformer screws.
Do not over tighten the transformer screws as it may damage the lower PCB.
10. Reconnect all the wires to the lower PCB. Refer to page 21 for lower PCB configuration. The wiring connections are as follows:
 - The limit switch cable has a gray jacket and a white 5-pin mate-n-lock connector. It plugs into the brown 5-pin socket.
 - The power cable from the rocker switch to lower PCB plugs is a cable assembly with a black jacket and a white 3-pin mate-n-lock connector. This plugs into the socket labeled JP1.
 - The wires coming out of the elevation motor that tie together with the starter cap plug into the socket labeled JP3.
 - The potentiometer cable has a gray jacket with a 4-pin Molex connector. This plugs into JP2.
 - Two (2) gray cables run from the inverter to the lower PCB. The cable with the white 3-pin large Molex header plugs into J4. The other cable has a white 4-pin large Molex header and connects to J2.
 - The 6-pin Telco cable plugs in where the board is labeled J5.
 - The 8-pin Telco cable plugs into J6.
11. Verify all wires are connected.
12. Restore power to the unit.
13. Run through Test Mode on pages 27-28 to ensure that all other functions are working properly with the new lower PCB.
14. Install motor hood.

R. Inverter Replacement

For units equipped with the IMO VXS or G.E. AF-300 (not E-11) inverter follow procedure 1. For units equipped with the G.E. AF-300 E-11 inverter, follow step 2.

Procedure 1

1. Turn off power to the treadmill at the switch.
2. Remove the Philips screw on the lid of the inverter.
3. Using a Philips and a small flat-head screwdriver, remove all wires from inside the inverter.
4. Remove the four (4) flat-head screws that mount the inverter.
5. Mount the new inverter the same way the old one came out.
6. Wire according to the appropriate diagram on pages 22-25.

7. Verify all connections, install inverter lid, and then restore power to unit.
8. **All 60 Hz treadmills need to be auto-tuned. 50 Hz treadmills do not get auto-tuned.** Start the Auto Tune process by pressing the PRG/RESET key one time. “F00” will appear on your inverter display. Use the arrow up or arrow down until you see “F74” appear in the inverter window. Press the FUNC/DATA button one time. A value of “0” will be shown. Make sure there is nothing on the belt and everything is clear of the motor. Using the arrow up, change the value to “1”. Press FUNC/DATA one more time. You will hear three electrical pulses from the inverter to the motor. The running belt will move approximately one inch. “F75” will be displayed in the inverter window. Press PROG/RESET once. The inverter will now display is normal operating screen.

Procedure 2

1. Turn off power to the treadmill at the switch.
2. Remove the top panel with the “AF-300 E-11” stamped on it. Using your index fingers, reach down into the cavities on the sides of the top panel, press in at the bottom, and lift the panel off the inverter.
3. Remove the inverter’s side panel closest to the motor. To remove, you must press in on both sides and pull away from the inverter. This action will expose the wire terminals.
4. Using both #1 and #2 Philips screwdrivers, loosen all terminals with wires pinched underneath them and remove wires from the inverter.
5. The inverter is mounted to the motor plate by Allen bolts. Using a 5/32” Allen socket and extension, remove the Allen bolts.
6. Remove the inverter from the treadmill. **Do not lose the four (4) nylon washers between the inverter and the motor plate.**
7. Install the new inverter. Make sure the nylon washers are line up with the mounting holes and placed between the motor plate and the inverter. Insert the Allen bolts into the mounting holes and tighten down.
8. Re-wire the inverter according to the diagram on page 25.
9. **All 60 Hz treadmills need to be auto-tuned. 50 Hz treadmills do not get auto-tuned.** Start the Auto Tune process by pressing the PRG/RESET key one time. “F00” will appear on your inverter display. Use the arrow up or arrow down until you see “P04” appear in the inverter window. Press the FUNC/DATA button one time. A value of “0” will be shown. Make sure there is nothing on the belt and everything is clear of the motor. Using the arrow up, change the value to “1”. Press FUNC/DATA one more time. Press START on the upper display. When “P05” appears on the inverter, press STOP on the upper display. Press PROG/RESET once. The inverter will now display is normal operating screen.

VII. Assembly Drawings and Part List