





**CYBEX<sup>®</sup> International**  
*Defining Fitness*







**Cybex 900T Treadmill**  
**Service Manual**  
Cardiovascular Systems  
Part Number SM-16106 Rev B

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## About This Manual

For your convenience, all measurements and voltage requirements are listed in both English and metric units. English values are listed first, followed by metric units in parentheses. For example: 1" (2.54 cm).

The 900T Treadmill is a newer model that has replaced the former 685 model. This manual, part number SM-16106, should be referred to for 685 service questions. An Owner's Manual is shipped with each 900T Treadmill. To purchase a copy of any manual, order online at [www.eCybex.com](http://www.eCybex.com), fax your order to 508-533-5383 or contact Cybex Customer Service at 888-462-9239 or 508-533-4300.

To contact Cybex with comments about this manual you may send email to [techpubs@cybexintl.com](mailto:techpubs@cybexintl.com).

## FCC Compliance Information

***! WARNING:*** *Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



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# 1- Safety

**IMPORTANT:** Read all instructions and warnings before using the treadmill.

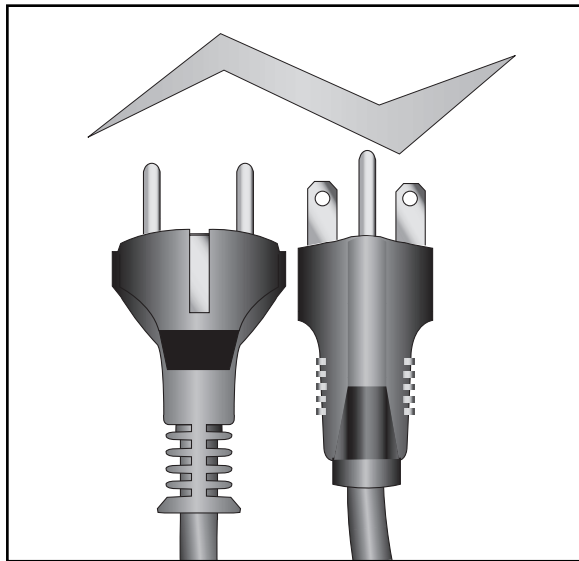
## Important Voltage Information

Before you assemble your 900T, check to make sure that the treadmill has the correct voltage requirements for your area, and that you have the correct model. The power requirements for this treadmill are 220 VAC  $\pm$ 15%, 50 Hz/60 Hz and 15 amps grounded, dedicated circuit.

**! WARNINGS:** Do not attempt to use this unit with a voltage adapter.  
Do not attempt to use this unit with an extension cord.

## Grounding Instructions

This treadmill is intended for commercial use. This treadmill must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.



Euro Plug    208/220V  
CEE 7/7    NEMA 6-15

**! DANGER:**  
**Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service provider if you are in doubt as to whether the treadmill is properly grounded. Seek a qualified electrician to perform any modifications to the cord or plug. Cybox is not responsible for injuries or damages as a result of cord or plug modification.**

This treadmill is for use on a nominal 115 VAC  $\pm$ 15%, 60

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Hz and 20 amps or a 220 VAC  $\pm 15\%$ , 50 Hz/60 Hz and 15 amps grounded, dedicated circuit. Make sure that the treadmill is connected to an outlet having the same configuration as the plug. Do not use a ground plug adapter to adapt the power cord to a non-grounded outlet.

## Important Safety Instructions

(Save These Instructions)

***! DANGER: To reduce the risk of electric shock, always unplug this treadmill from the electrical outlet immediately after using it and before cleaning it.***

***! WARNING: Serious injury could occur if these precautions are not observed. To reduce the risk of burns, fires, electric shock, or injury:***

- Obtain a medical exam before beginning any exercise program.
- Keep children away from the treadmill. Teenagers and disabled persons must be supervised while using.
- Stop exercising if you feel faint, dizzy, or experience pain at any time while exercising and consult your physician.
- Use the treadmill handrails for support and to maintain balance.
- Use caution when mounting and dismounting the treadmill.
- Disconnect all power before servicing the treadmill.
- Use a dedicated line when operating the treadmill.
- Connect the treadmill to a properly grounded outlet only.
- Do not operate electrically powered treadmills in damp or wet locations.
- Keep the running belt clean and dry at all times.
- Stop and place the treadmill at 0 degrees incline (level) after each use.
- Do not leave the treadmill unattended when plugged in and running. After turning off the treadmill, don't leave it until it comes to a complete stop and is level. To disconnect, turn all controls to the STOP or OFF position, and then remove the plug from the outlet.
- Inspect the treadmill for worn or loose components before each use. Do not use until worn or damaged parts are replaced.
- Maintain and replace worn parts regularly. Refer to "Preventive Maintenance" Section of Owner's Manual.



- Do not operate the treadmill if the cord is damaged, if the treadmill is not working properly, or if the treadmill has been dropped or damaged. Seek service from a qualified technician.
- Do not place the cord near heated surfaces or sharp edges.
- Do not use the treadmill outdoors.
- Do not operate the treadmill around or where aerosol (spray) or where oxygen products are being used.
- Read and understand the Owner's Manual completely before using the treadmill.
- Read and understand emergency stop procedures.
- Read and understand all warnings posted on the treadmill.
- Replace any warning label if damaged, worn or illegible.
- Do not wear loose or dangling clothing while using the treadmill.
- Always wear proper footwear on or around exercise equipment.
- Keep all body parts, hair, towels, water bottles, and the like free and clear of moving parts.
- Set up and operate the treadmill on a solid, level surface. Do not operate in recessed areas or on plush carpet.
- Provide the following clearances: 39 inches (1 m) at each side, 78 inches (2 m) at the back, and enough room for safe access and passage at the front of the treadmill. Be sure your treadmill is clear of walls, equipment, and other hard surfaces.
- Do not attempt repairs, electrical or mechanical. Seek trained repair personnel when servicing. Contact the nearest authorized Cybox dealer or other competent repair service.
- Use Cybox factory parts when replacing parts on the treadmill.
- Do not modify the treadmill in any way.
- Do not use attachments unless recommended for the treadmill by Cybox.
- Report any malfunctions, damage or repairs to the facility.
- Do not use the treadmill if you exceed 400 lbs. (181 kg). This is the rated maximum user weight.

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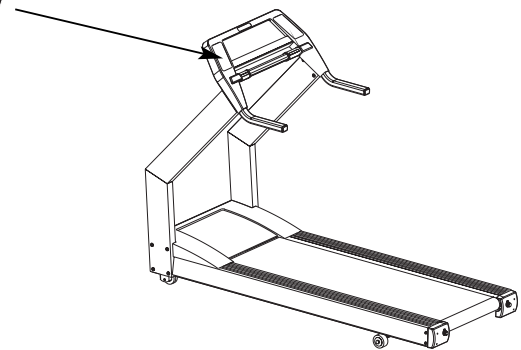
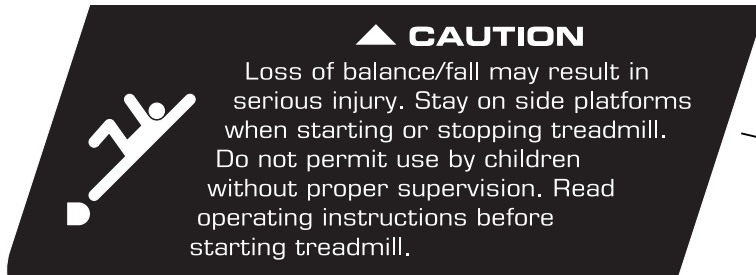
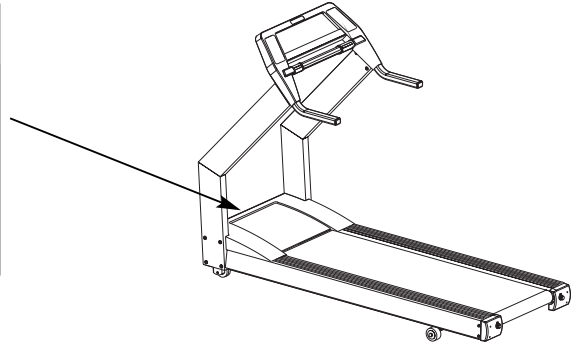
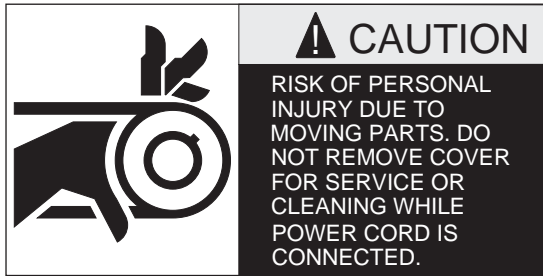
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## Caution Decals

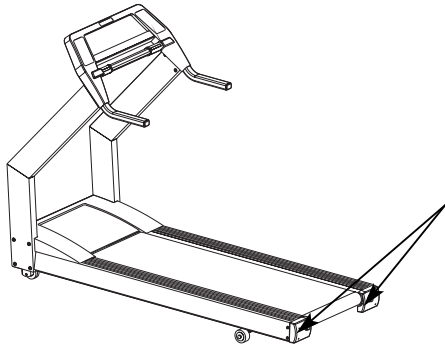
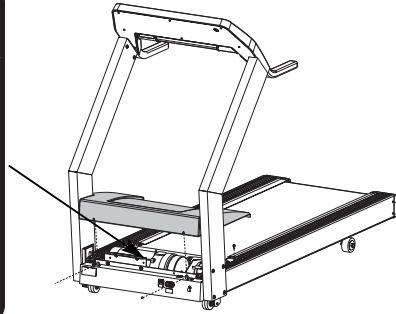
Caution decals indicate a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. The caution decals used on the 900T are shown below. To replace any worn or damaged labels do one of the following: Visit [eCybex.com](http://eCybex.com) to shop for parts online, or download the parts order form and fax your order to 508-533-5183. To speak with a customer service representative, in most areas call 888-GO-CYBEX or 888-462-9239. Otherwise call 508-533-4300.



**CAUTION**

**HIGH VOLTAGE UNDER COVER**  
NO USER SERVICEABLE PARTS INSIDE

**DO NOT OPEN**  
REFER TO QUALIFIED SERVICE PERSONNEL.  
SEE INSTRUCTIONS MANUAL.



**CAUTION**

DO NOT USE  
EXCESSIVE FORCE  
TO TIGHTEN BELT

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## 2 - Technical Specifications

### Specifications

Length:	82" (208 cm)
Width:	33" (84 cm)
Running Area:	20" x 60" (51 cm x 152 cm)
Weight of Product:	350 lbs. (159 kg)
Speed Range:	0.5 to 12.4 mph (0.8 to 20 kph) in 0.1 mph or 0.1 kph increments
Incline Range:	-5 to +20% grade
Levels of Difficulty:	Minimum of 9 per program
Manual Mode:	Yes
Programs:	Cardiovascular, Weight Loss, Speed Interval, Hill Interval, Rolling Hills, Demonstration, Up to 10 Custom
Standard Features:	Contact Heart Rate, Polar
Connectivity:	CSAFE
Chassis Construction:	10 gauge steel
Deck Material:	Wax impregnated wood
Power Requirement:	220 VAC $\pm$ 10%, 50 Hz/60 Hz and 15 amps grounded, dedicated circuit
Motor:	3 hp, DC. continuous duty
Emergency Stop:	Press the stop button
Languages:	English, Spanish, German, French
Maximum User Weight:	400 lbs. (180 kg)
Warranty:	Labor 1 year; parts 2 years except as follows: structural frame, 10 years; deck and belt 1 year.



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## Bioflex

The Bioflex system used on the 900T is optimized for lateral stability. This is accomplished through the use of a 10 gauge steel frame and critically damped rear wheels. The heavy gauge of the steel frame provides a rigid structure to transfer the landing shock to the damped wheels so that they can effectively absorb the impact.

# 3 - Preventive Maintenance

## Regular Maintenance Activities

Preventive maintenance activities must be performed to maintain normal operation of your treadmill. Keeping a log sheet of all maintenance actions will assist you in staying current with all preventive maintenance activities. See Log Sheet in this chapter.

## Cleaning Your Treadmill

When cleaning your treadmill spray a mild cleaning agent, such as a water and dishsoap solution, on a clean cloth first, and then wipe the treadmill with the damp cloth.

**NOTE:** Do not spray cleaning solution directly on the treadmill. Direct spraying could cause damage to the electronics and may void the warranty.

**! WARNING:** To prevent electrical shock, be sure that power is shut off and the treadmill is unplugged from the electrical outlet before performing any cleaning or maintenance procedures.

**After Each Use** — Wipe up any liquid spills immediately. After each workout, use a cloth to wipe up any remaining perspiration from the handrails and painted surfaces.

Be careful not to spill or get excessive moisture between the edge of the display panel and the console, as this might create an electrical hazard or cause failure of the electronics.

**As Needed** — Vacuum any dust or dirt that might accumulate under or around the 900T. Motors are especially susceptible to dust and dirt, and restricted airflow can prevent adequate cooling that could shorten motor life. Cleaning this area should be done as often as indicated in the *Service Schedule*.

**! WARNING:** Keep wet items away from inside parts of the treadmill. Electrical shock could occur even if the treadmill is unplugged. Avoid touching the wire connections at the end of the blue capacitor mounted on top of the aluminum box next to the drive belt.

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To clean the motor components, you must remove the two Phillips head screws that hold the motor cover in place. Lift the cover, and put it and the screws aside. Use a vacuum attachment or hand vacuum to clean the exposed elevation assembly, drive motor, lower electronics and the surrounding areas.

Also use a dry cloth for the areas that you can't reach with the vacuum cleaner. If the machine has not been used for some time or is excessively dirty, use a *dry* cloth to wipe all exposed areas. Replace the cover and screws when finished.

With the help of another person, lift the rear of the treadmill and roll it back from its present position so as to vacuum the floor area underneath the unit. Wipe clean the underside of the 900T to prevent dirt and dust build-up. When finished, return the treadmill to its normal position.

**Contact Heart Rate Grips** — Contaminants, such as hand lotions, oils or body powder, may come off on the contact heart rate grips. These can reduce sensitivity and interfere with the heart rate signal. It is recommended that the user have clean hands when using the contact heart rate. Clean the grips using a cloth dampened with a cleaning solution containing alcohol. The grips are the only part of the treadmill you should use a cleaning solution containing alcohol.

In addition, the nickel plating on the 900T may become tarnished and **blackened** with time. This may reduce sensitivity and interfere with the heart rate signal. Use an emery cloth to remove the tarnish from the exposed nickel plating on the heart rate grips.

### Running Belt Maintenance

**Belt and Deck** — Clean the belt and the deck surfaces to minimize the effect of friction between the wood deck and the running belt. Clean the underside of the running belt and the top of the running deck surface by wiping them with a clean dry towel. This should be done often to prevent premature wear of the deck, running belt, and the drive motor system. See the *Service Schedule* in this chapter to determine the minimum recommended cleaning.

The running belt may become loose and slip on the drive roller with each foot plant. The 900T is equipped with visual indicators of belt tension. These are located at the rear of the treadmill where the two 3/4" bolts protrude from the plastic end caps. See Figure 1. These are designed to indicate if the running belt is at the proper tension to insure safe operation of the unit. If the belt has become loose, the silver colored washer located under the bolt will move out slightly from the protruding tab molded in the end cap. See the *Service Schedule* in this chapter to determine the minimum recommended checking of the belt tension.



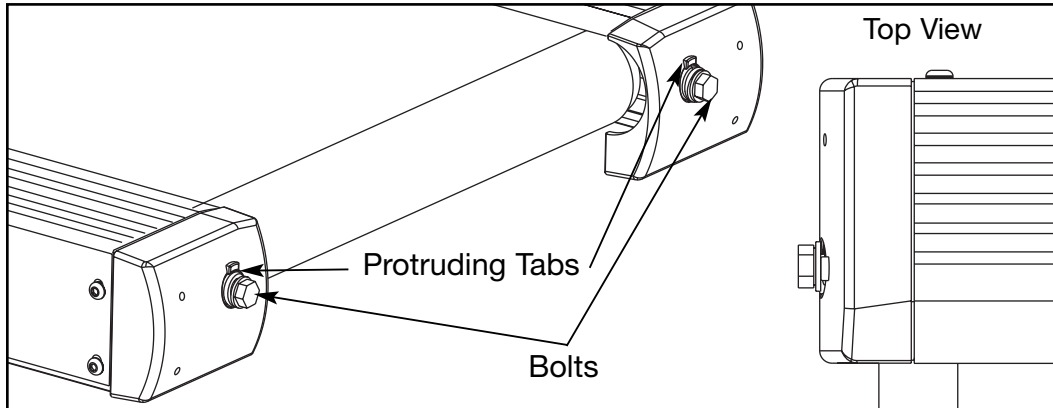


Figure 1

**Re-tensioning and Re-centering the Belt** — Follow the procedure below.

**Tools Required**

- 3/4" wrench

**1. Re-tension the belt.**

- A.** Use a 3/4" wrench to turn each bolt clockwise until the silver washers are flush with the protruding the tab on the end caps. See Figure 1.
- B.** Turn the power on and press the **Manual** key. Press the **Up Arrow** to bring the speed up to 3.5-4 mph (5.6-6.4 kph).
- C.** Allow the treadmill to run for a minute or two. Observe the bolts and silver washers. If they begin to protrude or retract turn the treadmill off and adjust the bolts. Follow the next step to be sure the belt is centered.

**NOTE:** Be careful not to over tighten the belt. Over tightening the belt can create excessive tension on the front and rear rollers.

**NOTE:** While centering the belt choose one bolt to adjust. Do not adjust both bolts.

**2. Re-center the belt.**

- A.** With the treadmill running at 5 mph (8 kph) observe the running belt. If the belt tracks off center to the right or left the deck will become exposed. Use a 3/4" wrench to tighten the rear roller bolts. on the side of the treadmill toward which the belt is moving. For example: If the belt moves to the right and the deck becomes exposed on the left, use a wrench to tighten the bolt on the right side of the frame, tighten about 1/2 of a turn (clockwise) and wait 30 seconds. If the belt does not move back to the center of the treadmill, make another adjustment to the

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**same bolt.** Once the running belt has been adjusted closer to the center of the treadmill use about 1/4 of a turn until the belt has been stabilized.

**B.** After the belt has been centered, check the belt tension again. Make sure the running belt tension is tight enough so that the belt does not slip or hesitate when stepped on. Walk on the treadmill at 3.5-4 mph (5.6-6.4 kph) and every 4th to 5th step throw your weight into your step to feel if the belt is slipping. If the belt does slip, use a wrench to equally tighten **both** rear roller adjustment bolts 1/2 of a turn (clockwise). Adjust the belt until no further slipping is felt. If the running belt continues to slip the drive belt could be loose.

**NOTE:** *The springs may eventually compress slightly. If they compress the silver washers may no longer be flush with the protruding tab on the end caps when the belt is properly tensioned. The washers will be positioned deeper into the end cap and not be as visible.*

**Checking the Belt and Deck Surfaces** — The running belt and deck should be checked periodically for any excessive wear. In an effort to make sure that the running belt operates properly, visually inspect the belt on a weekly basis to make sure that there are no tears or fraying in the belt material.

To inspect the edges of the belt, it is necessary to remove the motor cover and plastic side rails. Follow these steps:

**Tools Required**

- Phillips head screwdriver
- Flat head screwdriver
- 3/16" Allen wrench
- Dry towel

**1. Turn the power off.**

- A.** Turn the main power switch on the front panel to the off (O) position.
- B.** Unplug the treadmill from the power outlet.

**2. Remove the motor cover and side rails.**

- A.** Remove the two Phillips head screws that fasten the motor cover to the frame. Lift the cover and set it aside. This will allow you to remove the side rails. See Figure 2.
- B.** Using a 3/16" Allen wrench, remove the two button head screws on the sides of each side rail. See Figure 2.
- C.** Using a flat head screwdriver, remove the screw on the top of each side rail. See Figure 2.
- D.** Grasp the top edge of each side rail and pull up and away from the deck. This will enable you to see the deck and edges of the belt. It is not necessary to remove the side rails completely off the frame.

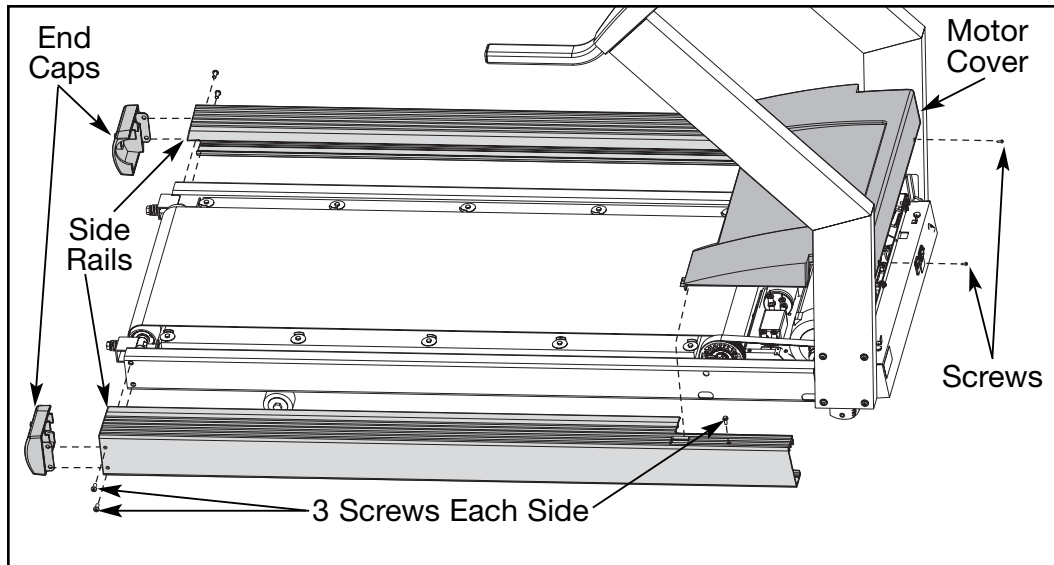


Figure 2

**3. Check the belt and deck condition.**

- A.** Look at the edges of the belt while you roll it by hand. If the belt has any rips or looks excessively worn the belt needs to be replaced.
- B.** Run your hand under the belt on the top of the deck surface. If you feel excessive ridges or cracks, or if the deck feels grooved yet highly polished, the deck should be flipped so that an unused surface faces the top. If the deck is worn on both sides it should be replaced. In time, a worn belt and deck can cause high current draw and ultimately, motor failure. For instructions on replacing the belt and deck, see *Running Belt and Deck* in the *Removal and Replacement* chapter of the Service Manual.

**4. Clean under the belt.**

- A.** To minimize the effect of friction between the deck and the running belt, Cybex recommends cleaning the underside of the running belt and the top of the running deck surface by wiping them with a clean, dry towel. This cleaning should be done each time you check the belt and deck condition to prevent premature wear of the deck, running belt and the drive motor system. See the *Service Schedule* in this chapter.

**5. Replace the side rails and motor cover.**

- A.** After completing the inspection and cleaning of the deck surface, snap the side rails back down into their original position.
- B.** Using a flat head screwdriver, attach the screw on the top of each side rail. See Figure 2.
- C.** Using a 3/16" Allen wrench, attach the two button head screws on the sides of each side rail. See Figure 2.

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D. Lower the motor cover in place and tighten the two Phillips screws. See Figure 2.

### Other Preventive Maintenance

Cybex recommends that the following maintenance activities be completed by a qualified service technician. These activities should be performed at the recommended intervals listed in the *Service Schedule* (located in this chapter):

- Measure the motor brushes and replace worn motor brushes
- Rotate, flip and replace the running deck.
- Replace the running belt
- Check the current draw
- Measure motor voltage at maximum speed, with no load

Refer to the 900T Service Manual for detailed procedures when completing the tasks listed above. If you need to order a manual, call Cybex at 888-GO-CYBEX, 888-462-9239 or in some areas call 508-533-5183.

**Service Schedule**

Odometer Reading in Miles (Km)	Check Running Belt & Tension/Track As Needed	Vacuum Under Motor Cover & Clean Treadmill	Rotate the Deck	Replace the Running Belt	Replace the Running Deck	Check the Current Draw	Measure Motor Brush Length	Measure Motor Voltage at Max Speed, No Load
500 (805)	X							
5000 (8046)	X	X						
10000 (16093)	X	X	X	X				
10500 (16898)	X							
15000 (24140)	X	X			X			X
20000 (32187)	X	X		X				
20500 (32992)	X							
25000 (40234)	X	X	X					
30000 (48280)	X	X		X		X	X	X
30500 (49085)	X							
35000 (56327)	X	X						
40000 (64374)	X	X	X	X				
40500 (67178)	X							
45000 (72420)	X	X			X		X	X
50000 (80467)	X	X		X				
50500 (81272)	X							
55000 (88514)	X	X	X					
60000 (96560)	X	X		X		X	X	X
60500 (97365)	X							
65000 (104607)	X	X						
70000 (112654)	X	X	X	X				
70500 (113459)	X							
75000 (120701)	X	X			X		X	X
80000 (128748)	X	X		X				
80500 (129552)	X							
85000 (136794)	X		X					
90000 (144841)	X	X		X		X	X	X

Current draw with a user of 160 lbs. is 11.3. Maximum current draw is 19.3.

Minimum brush length, as measured from top of 'box' shape to the bottom: 0.438 (7/16") (1.1 cm)

Running belt should not noticeably slip when loaded at 3.0 mph (4.8 kph). If so, tighten each rear bolt 1/4 turn clockwise and retest.

Motor voltage at 12.4 mph (20 kph) no-load should not go below 163V (the 900T can display  this in diagnostics.)

To determine your treadmill's total mileage see *Diagnostic Tests* in the *Troubleshooting* chapter of  the Service Manual.

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**Log Sheet**

Serial Number \_\_\_\_\_ Date of Installation \_\_\_\_\_

Date of Data Collection									
Total Miles/Kilometers									
Total Hours									
Motor Current @ 3 mph (4.8 kph)									
Motor Voltage @ 12.4 mph (20 kph)									
- without load									
- with 160 lbs. load (72 kg)									
Notes:									
Total Miles/Kilometers									
Total Hours									
Motor Current @ 3 mph (4.8 kph)									
Motor Voltage @ 12.4 mph (20 kph)									
- without load									
- with 160 lbs. load (72 kg)									
Notes:									
Total Miles									
Total Hours									
Motor Current @ 3 mph (4.8 kph)									
Motor Voltage @ 12.4 mph (20 kph)									
- without load									
- with 160 lbs. load (72 kg)									
Notes:									
Total Miles/Kilometers									
Total Hours									
Motor Current @ 3 mph (4.8 kph)									
Motor Voltage @ 12.4 mph (20 kph)									
- without load									
- with 160 lbs. load (72 kg)									
Notes:									

# 4 - Troubleshooting

## Diagnostic Test Mode

To enter *Test Mode* turn the power switch on (I). Press **999** on the keypad and then press **Enter**. The first diagnostic test title scrolls across the display from the right to the left. Use the + and – buttons to select a specific test. When the title is displayed, press **Enter** to activate the test. After the test has been completed, press the + or – buttons to go into the next test desired.

**NOTE:** *The diagnostic tests can only be accessed when the treadmill is in the dormant mode.*

To exit *Test Mode*, press **Clear**. Or press + or – until you see the title: 16. EXIT DIAGNOSTICS. Then press **Enter** to exit the diagnostic mode.

## Diagnostic Menu

1. PROGRAM REVISION LEVEL
2. DYNAMIC TESTS
3. LED TEST
4. TONE GENERATOR TEST
5. OVERLAY TEST
6. DMD CABLE CHECK
7. CSAF PORT CHECK
8. CLEAR ERROR MESSAGE
9. ERROR LOG
10. CLEAR ERROR LOG
11. TOTAL MILEAGE
12. TOTAL HOURS
13. NUMBER OF STARTS
14. 'OUT OF ORDER' DISPLAY MODE
15. DISPLAY BASE ID AND VERSION NUMBER
16. EXIT DIAGNOSTICS

### 1. PROGRAM REVISION LEVEL

This test displays the configuration for the main chip in the control panel. The test displays the treadmill model number for which the chip is intended, followed by the revision level of the main program. Press **Enter** which returns the display to the test menu choices.

For example: 900T rx.xx

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Press **Enter** which returns the display to the test menu choices.

## 2. DYNAMIC TESTS

You will see the words “685 BASE MONITOR MODE”.

Press **Enter** to select the test. Use the **Scan** button to advance through the test displays included in test 2. To start the treadmill in the Dynamic Test Mode, press the **Manual Start** button.

**ERROR REGISTER** — lists the current ERROR CODE.

**LINE FREQUENCY** — displays electrical frequency of power source in Hz.

**MOTOR CURRENT** — displays the average current draw in Amps over the last 15 seconds. Cybex recommends that you check the current draw periodically. The recommended intervals are shown in the *Service Schedule* in the *Preventive Maintenance* chapter. See instructions under *Motor Current and Voltage* in this chapter.

**MOTOR VOLTAGE** — displays DC voltage measured across the drive motor. The MOTOR VOLTAGE test is used to indicate if the motor's permanent magnets have weakened. Cybex recommends that you check the motor voltage periodically. The recommended intervals are shown in the *Service Schedule* in the *Preventive Maintenance* chapter. See instructions under *Motor Current and Voltage* in this chapter.

**ACTUAL SPEED** — displays actual speed in kilometers per hour (minus the decimal point): for example:

1 mph = 161

5 mph = 805

10 mph = 1610

12.4 mph = 1996

**ENCODER COUNT** — confirms that a signal is being detected by the speed sensor.

**ELEV RPM** — displays measured revolutions per minute of the elevation motor.

**ACTUAL ELEV** — displays incline in % grade.

To exit test 2, press **Enter** to return to the Diagnostic Menu; press **Clear** to return to Dormant Mode.

## 3. LED TEST

This test illuminates each LED on the control panel independently. This test begins by sequentially illuminating each segment of the Time, Distance, Incline and Speed windows then follows by illuminating the central control panel LEDs in the green frequency for the first vertical column of LEDs on the far right of the display. The test moves from right to left, one column at a time.



After the test of the green LEDs is completed, the test repeats for the red LEDs, this time only illuminating the LEDs from the 0-15 range.

Pressing and holding the + button will illuminate all of the green LEDs at one time. Pressing and holding the – button will illuminate all of the red LEDs from 0-15.

With test 3, you can easily locate any LED that may not be working properly. The display can be disassembled and the LED can be replaced with a new one.

#### 4. TONE GENERATOR CHECK

This test checks the tone generator on the control panel.

When you press **Enter** to begin this test, the display scrolls the message, “YOU SHOULD HEAR 10 BEEPS“, and the display will emit 10 audible beeps. A defective tone generator will not produce any tones.

With test 4 you can determine if the tone generator needs to be replaced. Press + or – to increment to another test.

#### 5. OVERLAY TEST

This test checks that each button on the overlay is sending a signal to the control panel.

When you press **Enter** to begin this test, the control panel will display the message:

“PRESS STOP TO END” (it will scroll across the top line of the Dot Matrix panel) and “KEY HIT” (stays illuminated on the middle line throughout the test until **Stop** is pressed).

Pressing any button will cause the number or name of the button pressed to be displayed on the bottom line of the Dot Matrix panel.

**NOTE:** Press **Stop** last because it will also cause you to exit test 5 and return to the diagnostic test menu.

If you locate a button that is not functioning properly, the overlay can be replaced to correct the problem.

#### 6. DMD CABLE CHECK

This test checks to see that the cable connecting the upper display board and the lower control board is functioning property. If this cable is defective, no

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signals can be transmitted to and from either board.

Press **Enter** to activate this test. If the cable is functioning, the display will show “LOWER COMM OK, LOWER TIMING OK”

If the cable is not transmitting data successfully, the message will scroll either:

“**NO LOWER COMM, LOWER TIMING OK**” — indicates a problem with the communications between the two boards

or

“**LOWER COMM OK, NO LOWER TIMING**” — indicates a problem with the timing circuit of the upper board or the 'RTS' (ready to send) wire in one or both of the display cables.

In most cases, if either of the “NO” messages are present, replacing the upper and/or lower display cable will correct the problem.

### **7. CSAFE PORT CHECK**

This test checks the CSAFE port, located on the rear of the control panel console. When you run this test, the display will indicate either “OK” or “CSAFE PORT CONNECTION OPEN”.

To conduct this test properly, the CSAFE test wire fixture needs to be plugged into the connector at the back of the console. Without the connector in place, the test will always read CSAFE PORT CONNECTION OPEN

### **8. CLEAR ERROR MESSAGE**

This test will allow you to clear an error code displayed in the control panel.

When **Enter** is pressed, “ERROR MESSAGE CLEARED” will scroll across the top of the display.

### **9. ERROR LOG**

This test lists the last 16 error code numbers the treadmill has recorded. The first number to scroll across the display is the most recent error code generated by the treadmill.

### **10. CLEAR ERROR LOG**

This test will allow you to clear the log displayed in test 9.

When **Enter** is pressed, the message “ERROR LOG CLEARED” will scroll across the top of display.

### 11. TOTAL MILEAGE

This test displays the actual accumulated total mileage, to date, the treadmill has been used.

For example: "1348 MI"

The control panel displays the test results until you press + or –.

### 12. TOTAL HOURS

This test displays the actual accumulated total time, to date, in hours and minutes the treadmill has been used.

For example: HOURS RUN: 396:52

The control panel displays the test results until you press + or –.

### 13. NUMBER OF STARTS

This test displays the number of treadmill startups.

For example: 469 STARTS

### 14. "OUT OF ORDER" DISPLAY MODE

Repeated pressing of the **Enter** button allows you to toggle between activation and deactivation of the "OUT OF ORDER" message. The display will indicate status as follows:

"OUT OF ORDER" DISPLAY ON, TREADMILL DISABLED

or

"OUT OF ORDER" DISPLAY OFF, TREADMILL RE-ENABLED

### 15. DISPLAY BASE ID AND VERSION NUMBER

This test displays the revision number of the software version of the program chip in the lower board.

For example: BASE ID #: 3 REVISION 3.01

### 16. EXIT DIAGNOSTICS

To exit the *Test Mode*, return to the diagnostic menu and press + or – until you see the "16. EXIT DIAGNOSTICS" message. Press **Enter** to return the treadmill to its previous state before entering diagnostic mode.

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## LED Functions

The model 900T is equipped with diagnostic LEDs in the PWM module and the on the display panel that are used to indicate a problem.

### PWM LEDs

In the 900T PWM, there are 2 LEDs in the power supply circuit that indicate proper voltage to the display panel.

**LED 1** — LED1 is located on the PWM's printed circuit board (PCB) in the corner of the board near the display cable connector. This LED is used to verify that the PWM is supplying the proper +5VDC output to the display assembly for the normal operation of the display's microprocessor. This LED should be lit at all times while power is applied to the PWM. If LED 1 is not lit, this shows that the PWM is not supplying +5VDC to the display and the PWM should be replaced.

**LED 2** — LED 2 is located near the center of the PCB, close to the transformer. This LED is used to indicate the status of the DC voltage coming from the transformer on the PWM's PCB. This voltage is the main source for the power supply circuitry and verifies that the transformer's output is correct. LED 2 should be illuminated at all times while power is applied to the PWM. If LED 2 fails to illuminate or is flashing, this indicates that a problem exists in the transformer circuit and the PWM should be replaced.

### Display LEDs

The 900T display is equipped with 4 diagnostic LEDs to help determine an insufficient cable connection or a failed sub assembly.

**LED 9** — LED 9 is located in the upper left corner of the display, facing the treadmill from the front, just above the DMD wafer connector. LED 9 is used to indicate an adequate supply of +5VDC from the treadmill's power supply circuitry in the PWM module. This LED should be lit at all times while power is applied to the treadmill.

If LED 9 is not illuminated and PWM's LED 1 is illuminated, replace display cables.

If LED 9 and LED 10 are both illuminated and the display will not function, check the communication LEDs (11 and 12). If communication LEDs are OK, replace the display.

**LED 10** — LED 10 is located near the upper left corner of the display just below LED 9. LED 10 is used to indicate an adequate supply of +4VDC from the treadmill's power supply circuitry used to power the DOT MATRIX LEDs. This LED should be illuminated at all times while power is applied to the treadmill.

If LED 10 is not illuminated and PWM is supplying +4VDC, replace the display cables.

If LED 9 and 10 are both illuminated and the display will not function, check the communication LEDs (11 and 12). If communication LEDs are OK, replace the display.

**LED 11** — LED 11 is located near the lower left corner of the display, below the wafer connector. LED 11 is used to indicate 'DATA IN'. This LED illuminates (flashes) when an input pulse (of data) is received by the display from the PWM module. LED 11 should flash in response to an initiation pulse from the display and therefore should flash immediately after LED 12. If LED 12 flashes and no response is seen from LED 11, the problem will be either the display cables or PWM module.

**LED 12** — LED 12 is located near the lower left corner of the display, below LED 11. LED 12 is used to indicate 'DATA OUT'. This LED illuminates (flashes) when an output pulse (of data) is sent from the display to the PWM module. If LED 12 does not flash when power is applied to the display, check LEDs 9 and 10. If LED 9 and 10 illuminate, recycle the power to the treadmill. If problem continues, replace the display.

## Motor Current & Voltage

Cybex recommends that you check your motor current draw and measure motor voltage as scheduled in the *Service Schedule* in the *Preventive Maintenance* chapter. By performing these procedures you can evaluate the performance of your drive motor and help prevent premature failure.

### Tools Required

- Phillips head screwdriver
- Flat head screwdriver
- 3/16" Allen wrench

### 1. Measure current draw.

- A.** With the treadmill in *Dormant Mode*, press **999 Enter**.
- B.** Press **+** or **-** to scroll to Test 2, Dynamic Tests, then press **Enter**.
- C.** Press **Scan** until you reach "MOTOR CURRENT". Then press the **Manual** key. The belt will move at 1 mph (1.6 kph). You will see a number displayed which represents motor current in DC current.
- D.** Without standing on the belt, press the **+** key to bring the speed of the treadmill up to 3 mph (4.8 kph). At 3 mph (4.8 kph) average current draw should be between 2.00 and 3.00 without anyone on the running belt.
- E.** Now, have a user walk on the belt at 3 mph (4.8 kph). The maximum current draw with a 160 lbs. (72 kg) user should not exceed 9.6. Even with a heavier user, the current should not be more than 9.6. Press **Clear** to exit *Test Mode*.

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**2. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**3. Remove the motor cover and side rails.**

- A. Remove the two Phillips head screws that fasten the motor cover to the frame. Lift the cover and set it aside. This will allow you to remove the side rails.
- B. Using a 3/16" Allen wrench, remove the two button head screws on the sides of each side rail.
- C. Using a flat head screwdriver, remove the screw on the top of each side rail.
- D. Grasp the top edge of each side rail and pull up and away from the deck. This will enable you to see the deck and edges of the belt. It is not necessary to remove the side rails completely off the frame.

**4. Check the belt and deck condition.**

- A. Look at the edges of the belt while you roll it by hand. If the belt has any rips or looks excessively worn the belt needs to be replaced.
- B. Run your hand under the belt on the top of the deck surface. If you feel excessive ridges or cracks, or if the deck feels grooved, yet highly polished, the deck should be flipped so that an unused surface faces the top. If the deck is worn on both sides it should be replaced. In time, a worn belt and deck can cause high current draw and ultimately, motor failure. See *Running Belt and Deck* in the *Removal and Replacement* chapter of the Service Manual.

**6. Replace the side rails and motor cover.**

- A. Snap the side rails back down into their original position.
- B. Using a flat head screwdriver, attach the screw on the top of each side rail.
- C. Using a 3/16" Allen wrench, attach the two button head screws on the sides of each side rail.
- D. Lower the motor cover in place and attach it with the two Phillips screws.

**7. Measure motor voltage.**

- A. With the treadmill in *Dormant Mode*, press **999 Enter**.
- B. Press **+** or **-** to scroll to Test 2, Dynamic Tests, then press **Enter**.
- C. Press **Scan** until you reach "MOTOR VOLTAGE". Then press the **Manual** key.
- D. Without standing on the belt, press the **+** key to bring the speed of the treadmill up until the treadmill reaches its highest speed, 12.4 mph (20 kph). You will see a number displayed which represents motor voltage. At this speed the measured voltage should be

about 188 VDC. Motor voltage at 12.4 mph (20 kph) with no load should not go below 163 VDC. If it is below 163 VDC the magnets are weak and the drive motor should be replaced. Press **Clear** to exit the test.

## Speed Sensor Adjustment

### Tools Required

- Phillips head screwdriver

- 1. Turn the power off.**
  - A.** Turn the main power switch on the front panel to the off (O) position.
  - B.** Unplug the treadmill from the power outlet.
- 2. Remove the motor cover.**
  - A.** Remove the two Phillips head screws that fasten the motor cover to the frame. Lift the cover and set it aside.
- 3. Adjust the speed sensor gap.**
  - A.** Loosen the Phillips head screw that attach the speed sensor to the motor. Adjust the gap between the speed sensor and the sheave should be between .015 - .040" (.0381 - .1016 cm).
  - B.** Tighten the Phillips head screw.
- 4. Turn power on (I), plug in the power cord and test for any speed errors.**
- 5. If any errors occur, readjust the speed sensor.**
- 6. Attach the motor cover.**
  - A.** Lower the motor cover in place and attach it with the two Phillips screws.

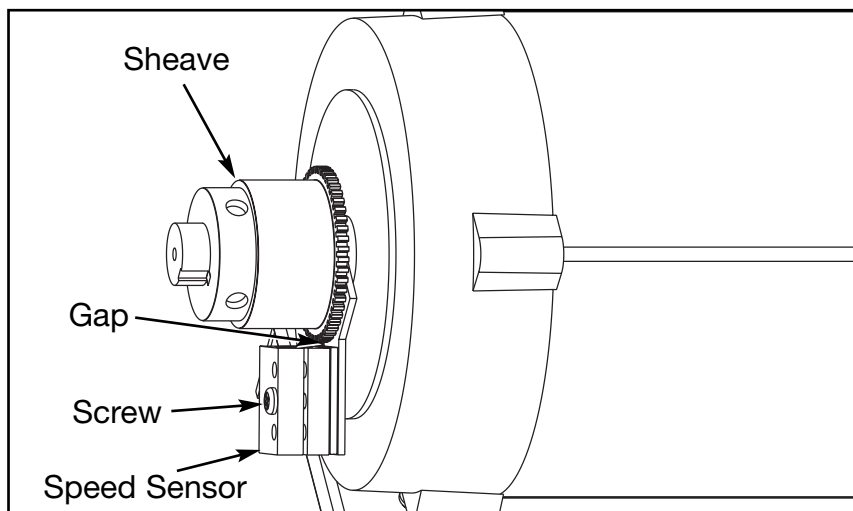


Figure 3

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## Error Codes

These codes notify you of a problem condition and provide a measure of safety by stopping the treadmill. These codes can also help to indicate the part of the treadmill most likely to be causing the problem.

If you have a problem that interrupts an important operational area of the treadmill, you may see one of the following error codes displayed on the control panel. If you are in the middle of an exercise routine, these error codes initiate an immediate treadmill shutdown.

All error codes are numbered and will appear in the dot matrix display. Unless otherwise described, occurrence of these error codes disables the operation of the treadmill.

An error code must be corrected before the machine will again be operable. Often, you can clear the error code by simply turning the power to the treadmill off, waiting a few seconds, and then on again. An error code can also be cleared by entering the Diagnostic Mode and going to Test 8 and clearing the code. Should an error code reappear soon after cycling on and off, Cybex recommends that you contact our Customer Service department or an authorized Cybex service technician. To reach Cybex Customer Service from most areas call 888-GO-CYBEX or 888-462-9239. Otherwise call 508-533-4300 or fax 508-533-5183.

**NOTE:** *When recycling power, wait for the display to go out before turning power back on.*

The following list will help to explain the specific error messages:

### **ERR CODE 01: PWM Shutdown**

This condition will cause an abrupt shutdown of the belt as the motor control detects a sharp increase in drive current and immediately stops driving the belt. While some situations, such as jamming the belt, may cause this error, an ERR CODE 1 without such abuse should be a cause for extreme care and analysis by an authorized service technician.

### **ERR CODE 02: Belt Speed Loss**

This condition indicates that the speed pickup signal was lost continuously for longer than one second after the motor successfully started. It normally indicates a failure of the speed pickup or an abrupt belt stoppage due to any motor, wiring, or motor controller failure.

### **ERR CODE 03: No Belt Speed**

This condition indicates that no speed is detected when the motor is first started. If the belt moves slightly before the error occurs, it indicates a speed pickup problem. If it does not move at all, the indication is for a motor or controller problem.

### **ERR CODE 04: Belt Over Speed**

The belt was running at least 1 mph (1.6 kmh) above the set speed. It indicates a loss of control.



**ERR CODE 06: Drive Motor Over Voltage**

The voltage on the motor exceeded the maximum rated voltage due to a controller failure. This error usually indicates an open circuit across the drive motor, such as a bad motor brush.

**ERR CODE 08: Power Fault**

A motor controller failure is detected which will prevent full power being switched on for the motor. This error is usually the result of an intermittent power loss such as the power cord getting kicked or turning the power switch on too quickly when recycling the power.

**ERR CODE 10: Elevation Overspeed**

The elevation motor is not within the controlled speed range. Either the motor speed detector is generating extraneous information that will cause the elevation to be uncalibrated, or the motor may be overdriven by a controller failure.

**NOTE:** Only the elevation system is disabled by errors 10, 12 and 13.

**ERR CODE 11: No Elevation Speed**

This condition indicates that no elevation movement is detected when the elevation motor is powered. If the elevation system moves slightly before the error occurs, it indicates an elevation detector problem. If it doesn't move at all, it indicates an elevation or motor controller problem.

**ERR CODE 12: Elevation Limit**

This condition indicates that the elevation limit switch has traveled outside of the normal range of the treadmill (-5% to 20%). If the treadmill is at one of the limits, this may indicate that there may be another failure in the elevation system which has caused loss of elevation calibration. Turning the power switch to off (O) then on (I) will cause the controller to attempt to adjust the elevation by a 0.1% adjustment in the appropriate direction. If the elevation moves in the correct direction, cycling the power switch should correct this condition. If near a limit and cycling the power switch causes the elevation to move further in the wrong direction, the treadmill should be turned off and a service technician should be called. Repeated occurrences of this error message should be addressed by a service technician.

If this error occurs and the treadmill is not near one of the limits, it is an indication of a failure of the limit detectors. If cycling the power switch does not remove the error condition, the treadmill may be used without the elevation control until the problem is addressed.

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**ERR CODE 13: Elevation Time Limit**

The elevation motor has been on for a longer time period than any movement should take. The treadmill can still be used without the elevation until the condition is addressed. Cycling the power switch normally clears this error.

**ERR CODE 14: Communications Time-out Lower**

the signal from the upper console to the motor controller. Check the connections between the console cables and the PWM as well as the connection into the display board.

**ERR CODE 15: Line Tick Loss**

This is a warning condition that is noted only in the Error Log. It does not disable the treadmill. It indicates a loss of, or an erratic line frequency count.

**ERR CODE 16: Loss of NOVRAM Data**

Information stored in non-volatile memory (NOVRAM), such as the error log and user programs, is different than that expected by the program stored in the EPROM. The most likely cause of this error is a corrupted or failing EPROM. If the EPROM is old, replace it with the latest version.

This error can also occur by booting up the first time with a newer version EPROM. In this case, simply clear the error.

**ERR CODE 17: No Lower Board**

If no information is detected from a lower board, a special "mockup" mode is entered which simulates normal treadmill user interface without lower board functions. This condition is noted only in the error log file, and is primarily used for stand-alone console board service testing.

**ERR CODE 18: Communications Time-out Upper**

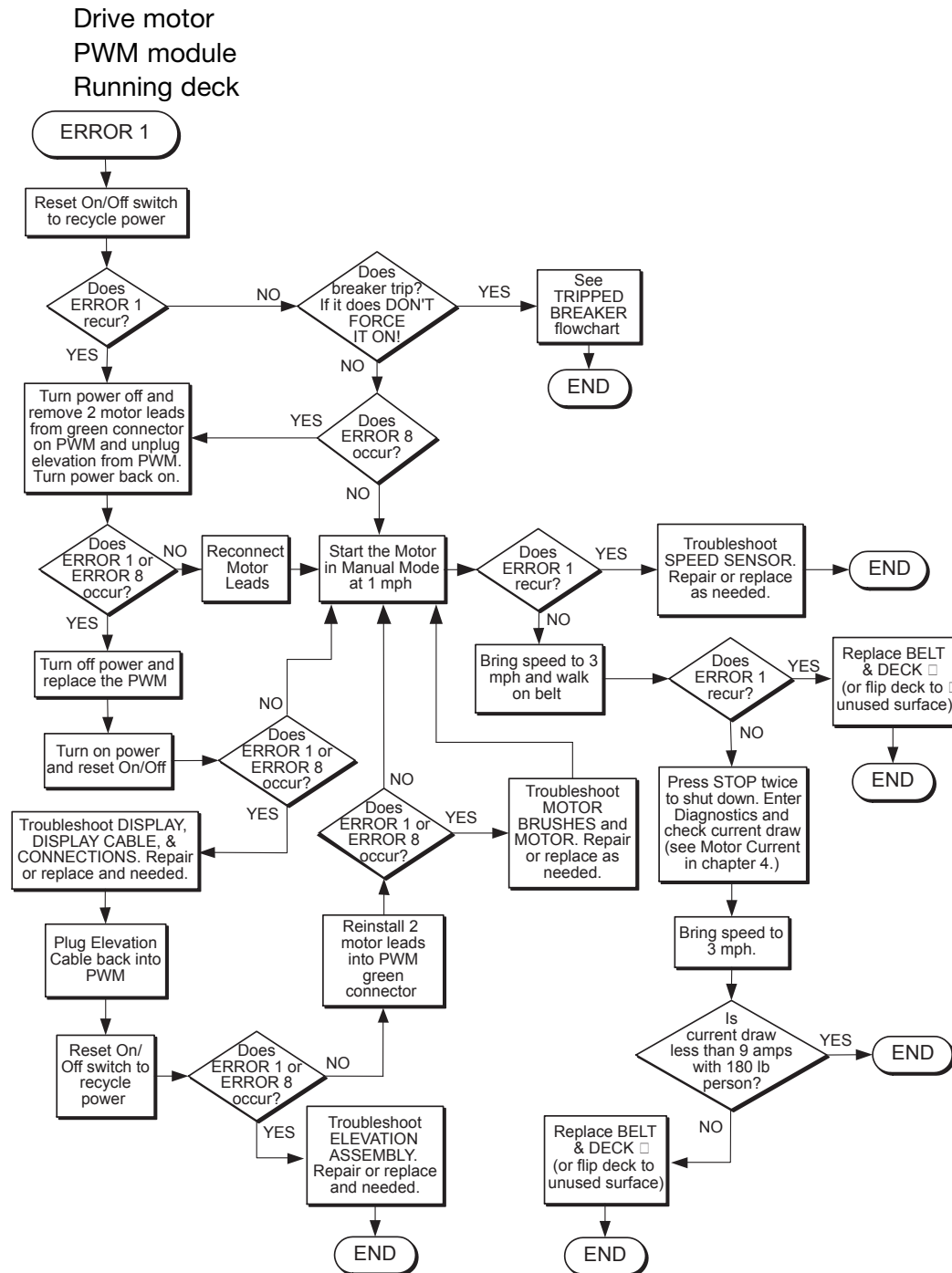
There is an interruption in the signal from the motor controller to the upper console. Check the connections between the console cables and the PWM as well as the connection into the display board.

Flowcharts

Error 1: PWM Shutdown

Motor controller detects excessive drive current. The motor will abruptly stop when this error code is generated. The most likely causes of this problem are as follows, listed in order of probability.

Possible failures to create Error 1:



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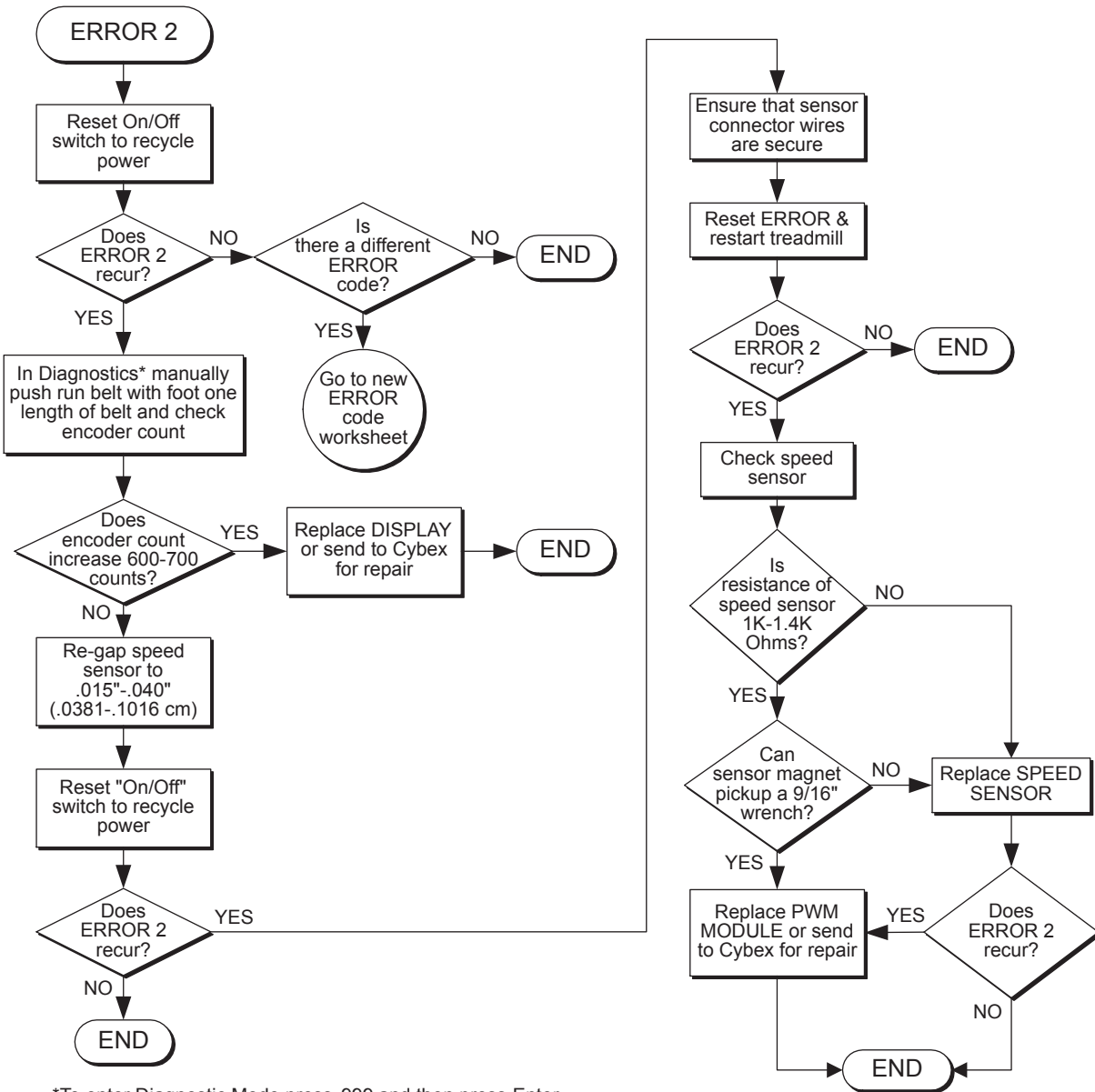
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**Error 2: Belt Speed Loss**

Speed Signal was lost for more than one second after the drive motor has successfully started.

Possible failures to create Error 2:

- Speed sensor
- PWM module
- Running deck
- Speed sensor cable
- Speed sensor adjustment



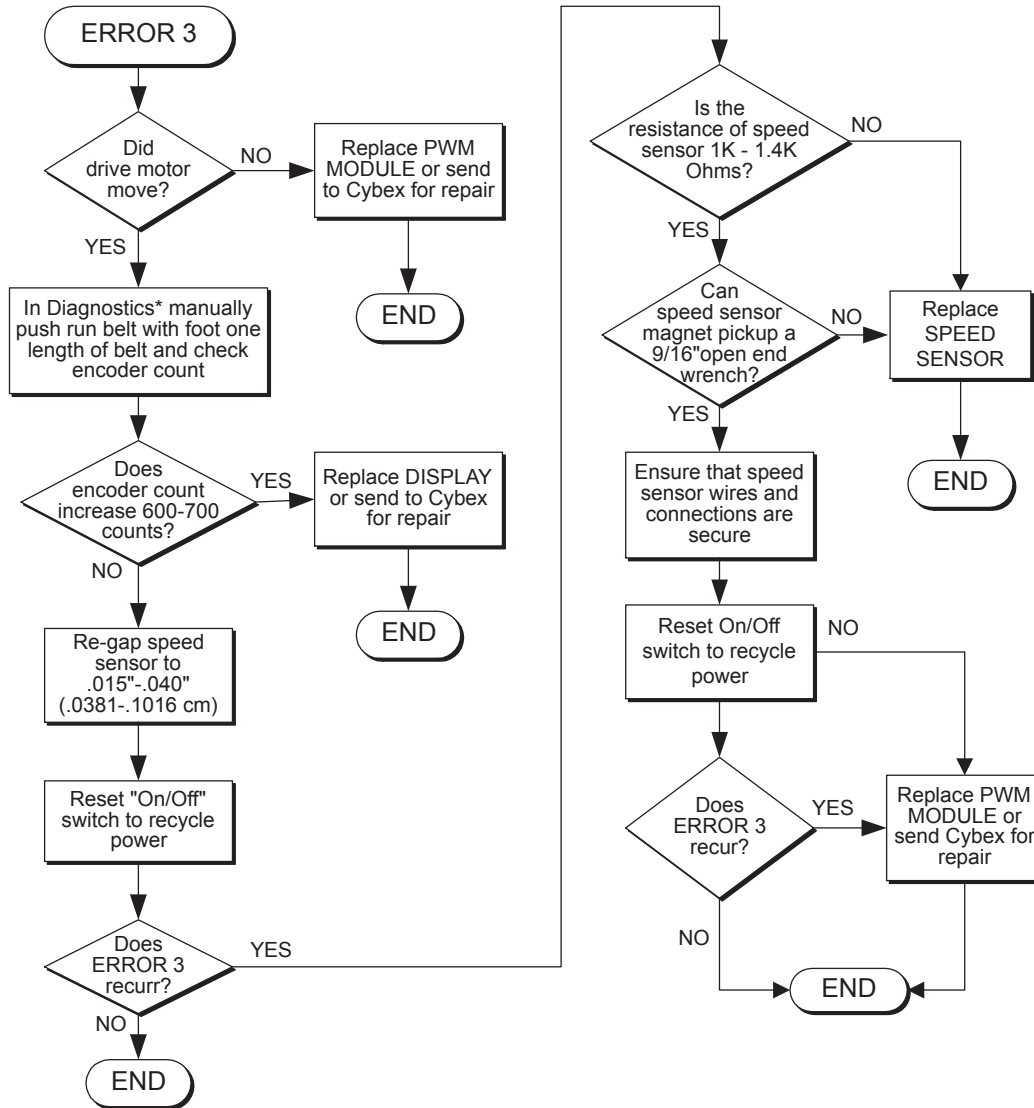
\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear .

**Error 3: No Belt Speed**

No speed signal is detected when treadmill is first started. The belt may move briefly before the error occurs.

Possible failures to create Error 3:

- Speed sensor
- Speed sensor cable
- PWM module



\*To enter Diagnostic Mode press 999 and then press Enter.  
To exit Diagnostic Mode press Clear.

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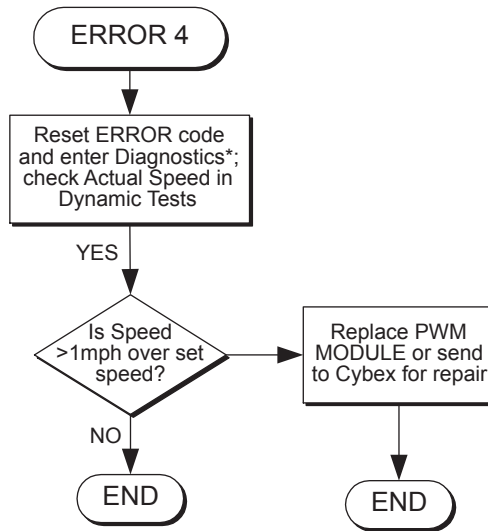
**Error 4: Belt Over Speed**

The measured belt speed exceeded the setpoint speed by 1 mph for 200 ms.

Possible failures to create Error 4:

PWM module

User created problem by forcefully pushing run belt (usually while elevated).



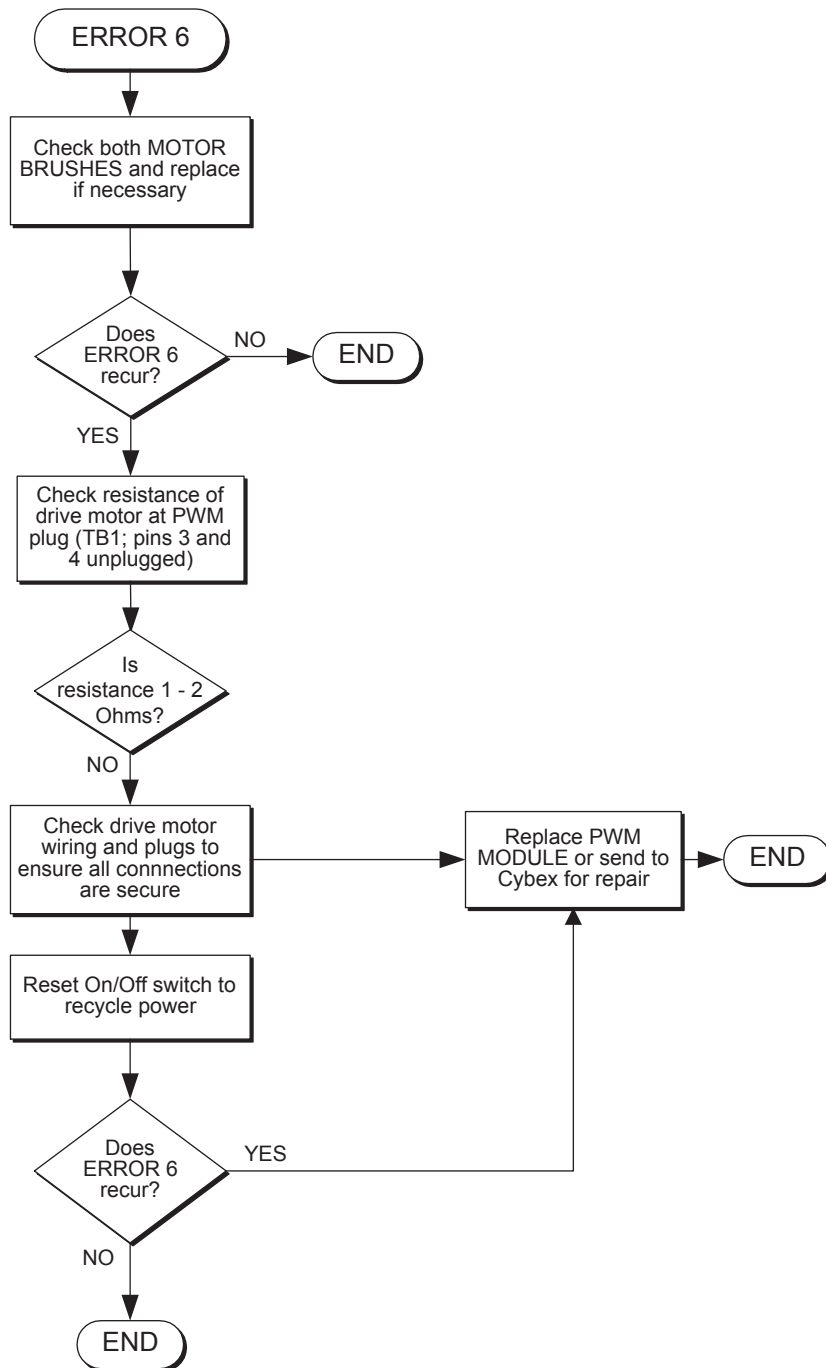
\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear .

**Error 6: Drive Motor Over Voltage**

The measured motor voltage exceeded 200 VDC for 200 ms.

Possible failures to create Error 6:

- Motor brush
- PWM module



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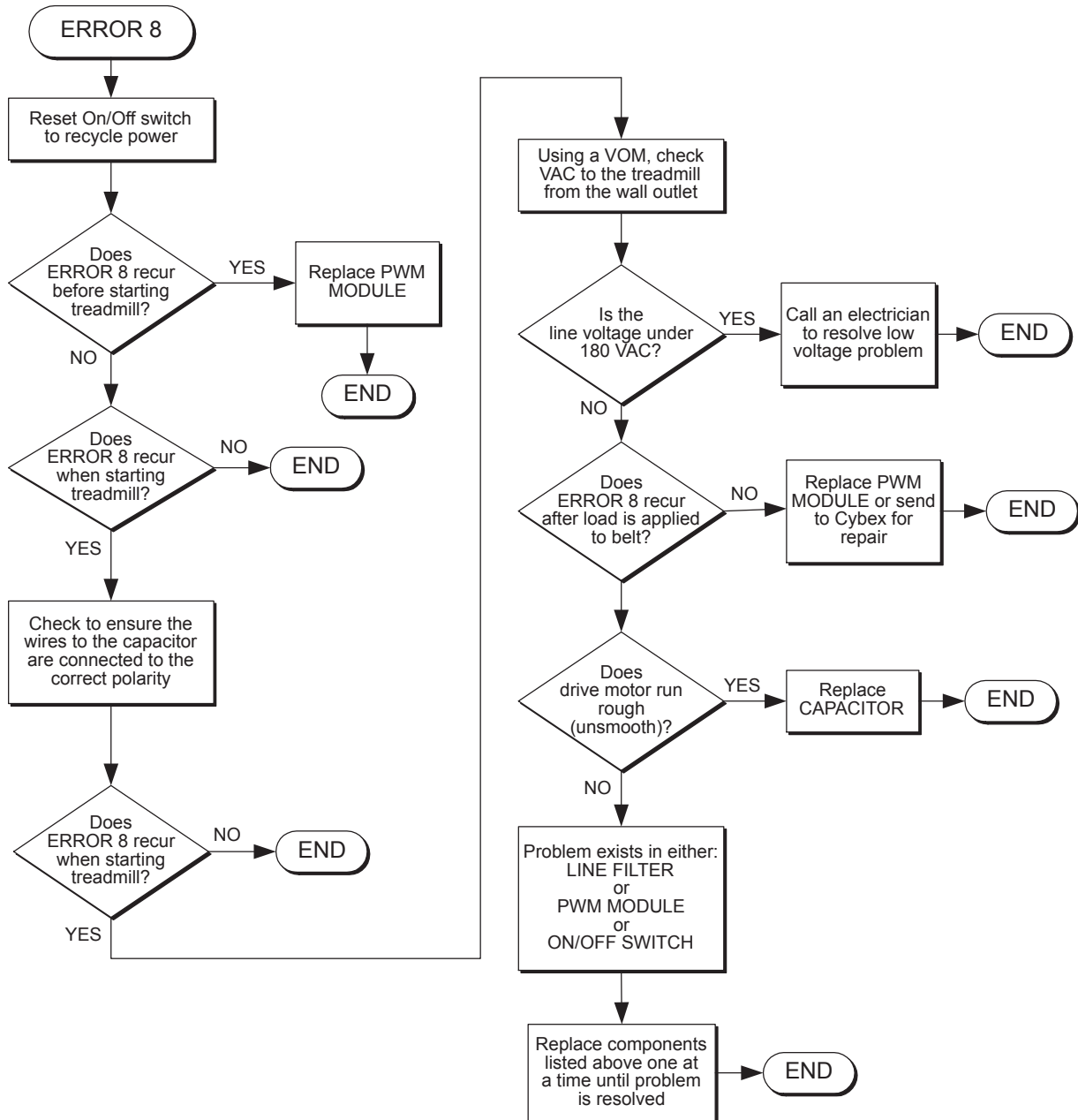
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**Error 8: Power Fault**

The drive motor supply was detected below 190 VDC for 5 seconds.

Possible failures to create Error 8:

- PWM module
- Low line voltage
- Faulty connection
- On/off switch
- Capacitor
- Line filter



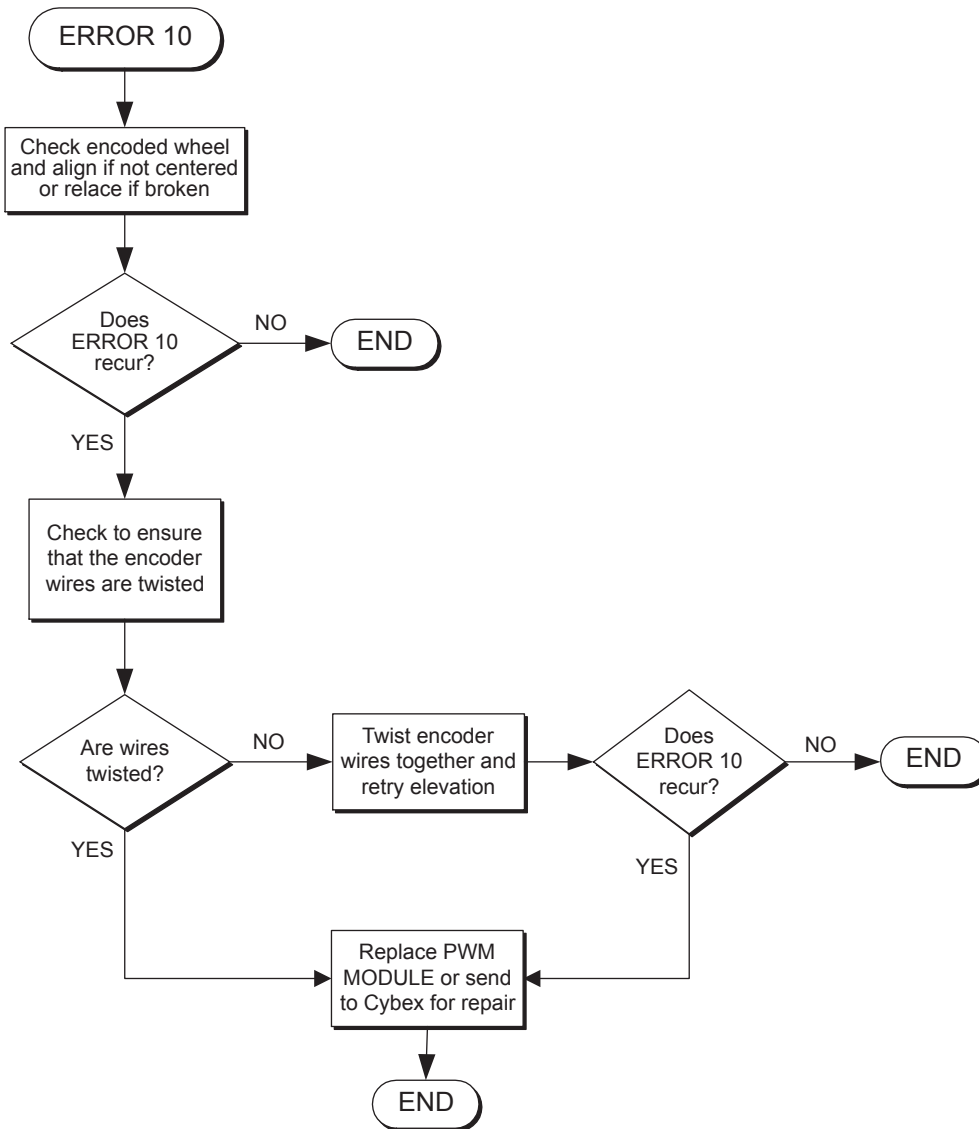


## Error 10: Elevation Over Speed

The measured elevation motor speed exceeded 3800 rpm for 2 seconds.

Possible failures to create Error 10:

- PWM module
- Elevation encoder



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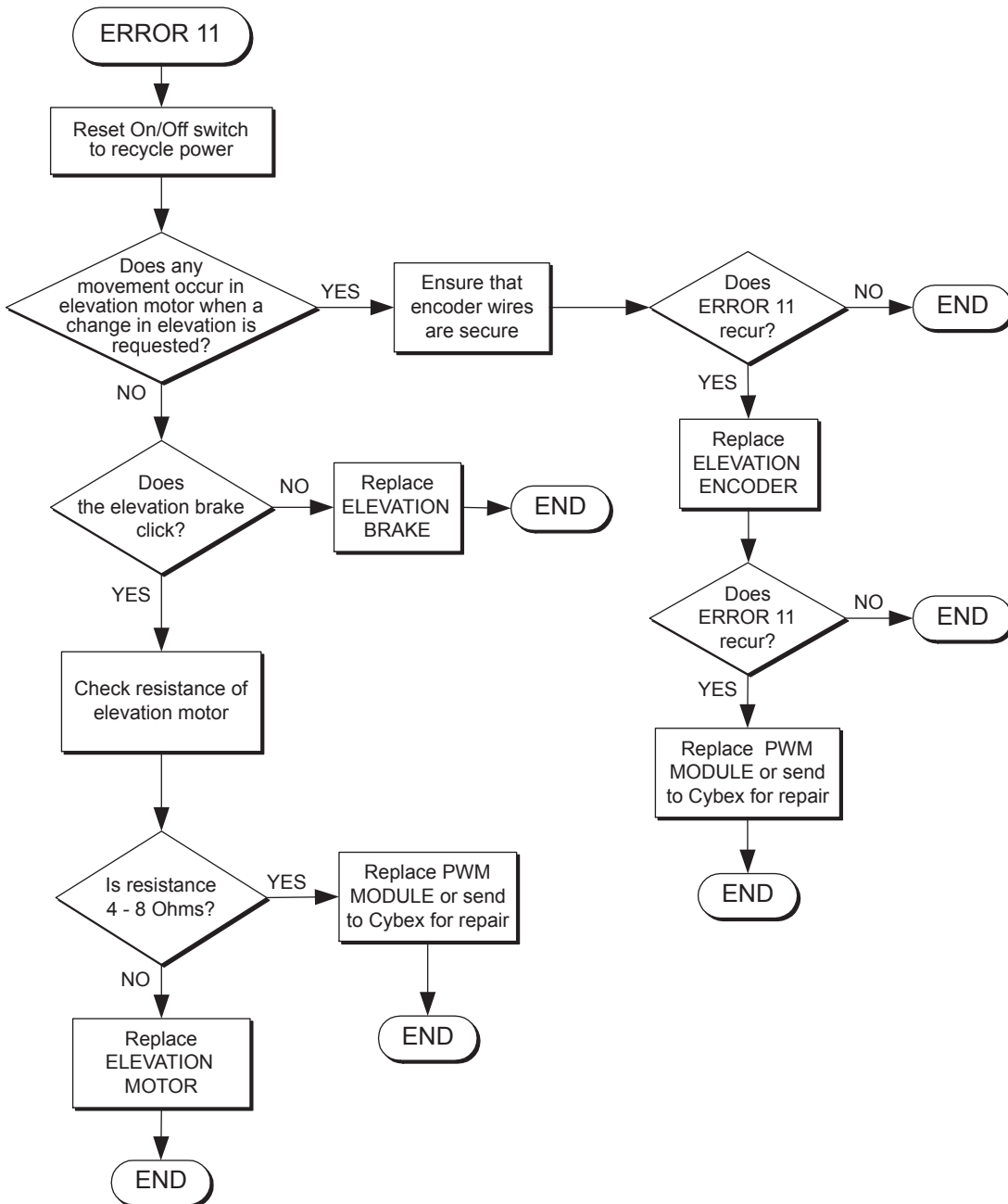
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**Error 11: No Elevation Speed**

No movement is detected when the elevation motor is powered. This could occur with or without slight elevation motor movement.

Possible failures to create Error 11:

- PWM module
- Elevation encoder
- Elevation motor

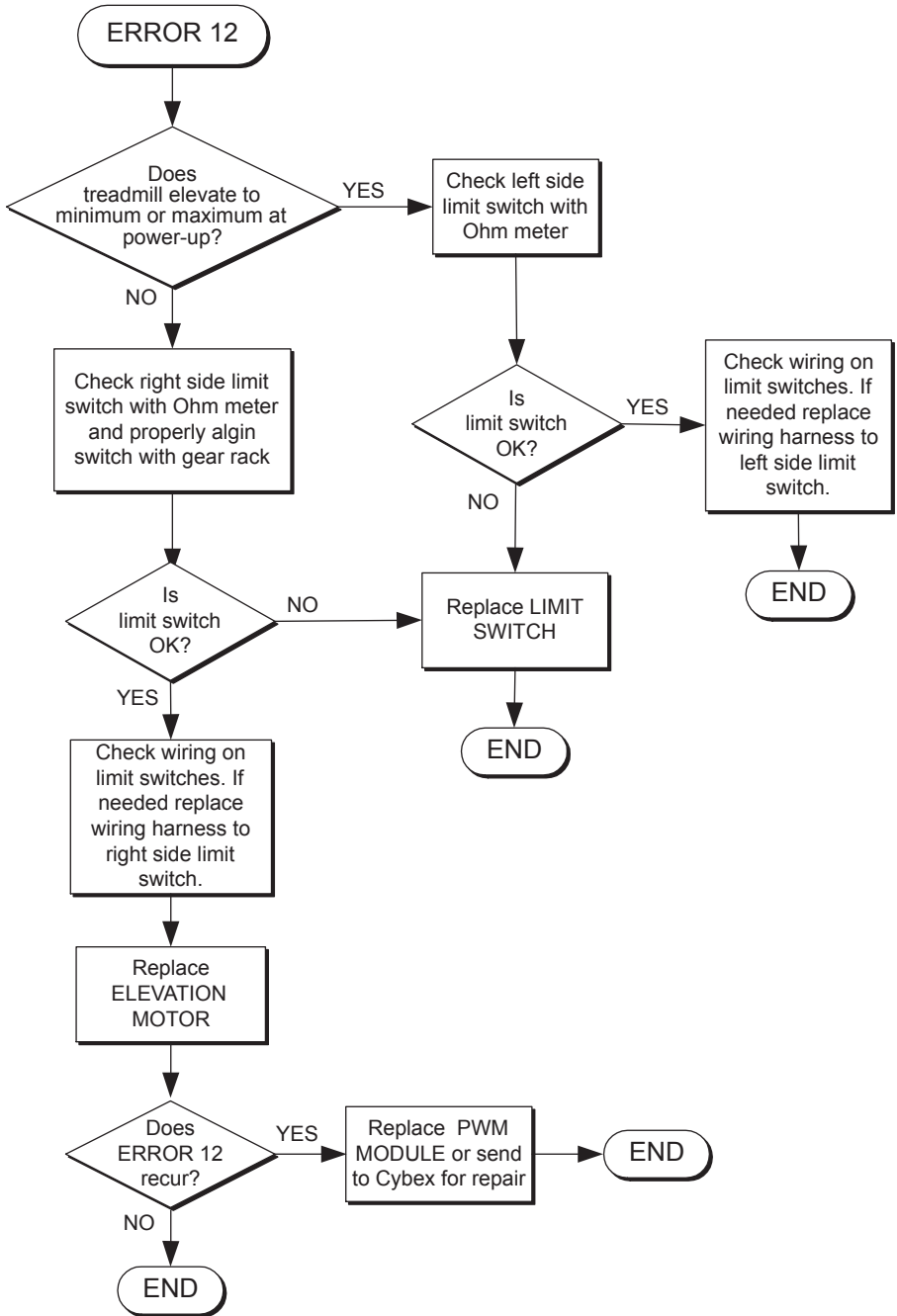


**Error 12: Elevation Limit**

Elevation right side gear rack limit switch is open.

Possible failures to create Error 12:

- Elevation has gone past its normal operating limits
- Limit switch is broken
- Limit switch connection problem (wiring harness)



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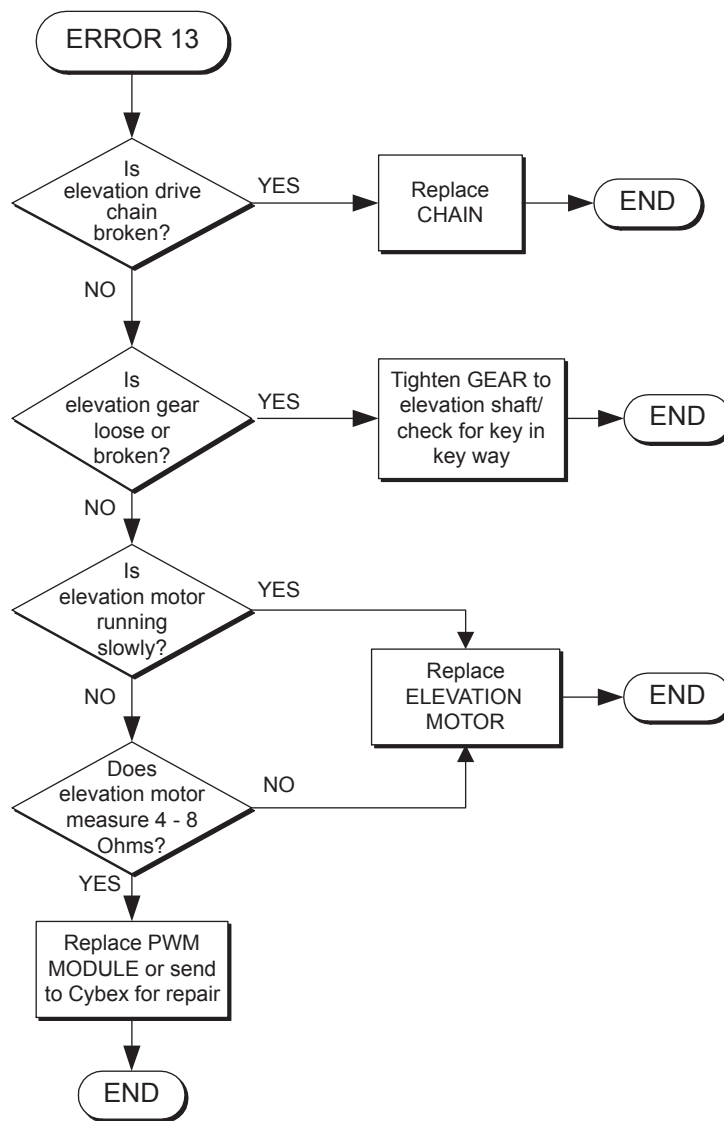
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**Error 13: Elevation Time Limit**

Elevation motor was driven for 60 seconds without stopping, changing directions or reaching a limit.

Possible failures to create Error 13:

- Elevation chain may be broken
- Drive gear may be loose
- Elevation motor running slow

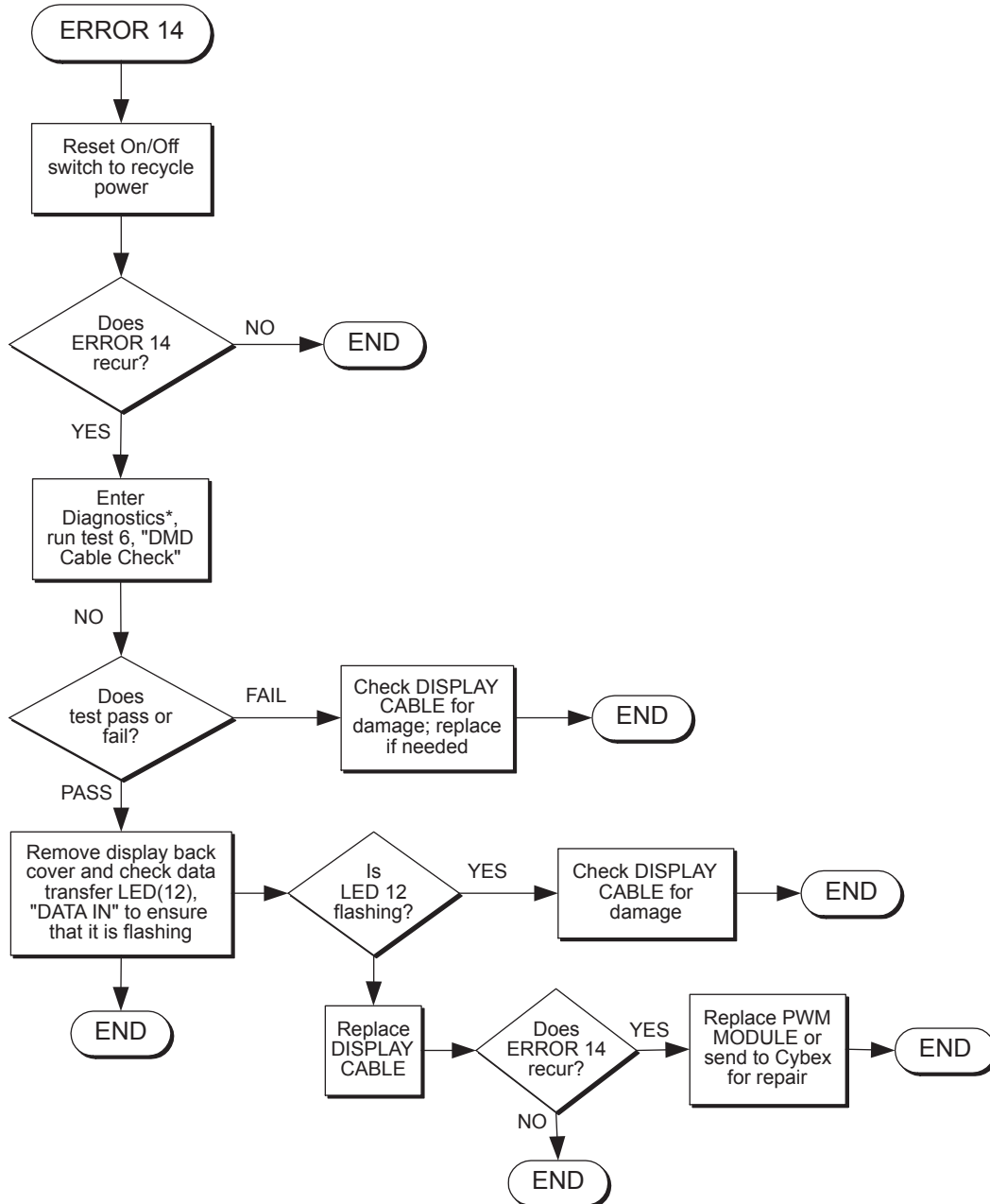


**Error 14: Communication Time Out Lower**

No valid messages received from the upper board for 3 seconds.

Possible failures to create Error 14:

- Display board
- PWM module
- display cables



\*To enter Diagnostic Mode press 999 and then press Enter.  
To exit Diagnostic Mode press Clear.

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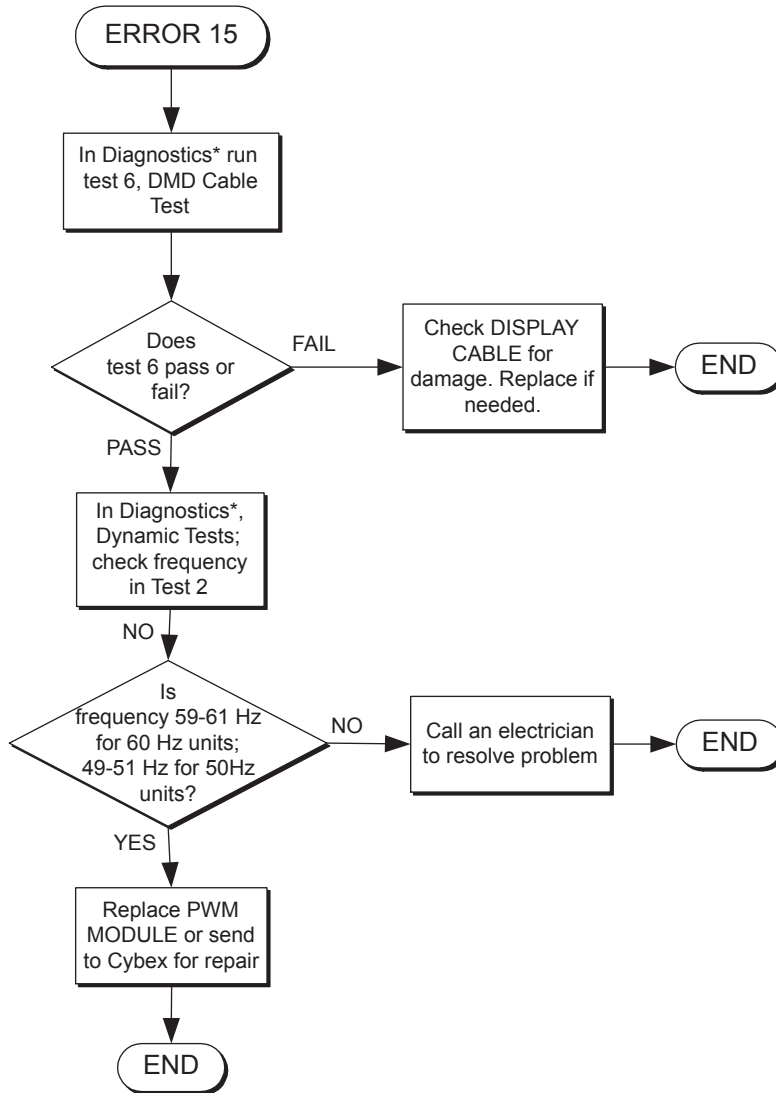
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**Error 15: Line Tick Loss**

The timing has been lost from the lower board power line sync. This error code only shows up in the error log and will not interrupt the operation of the treadmill.

- PWM module
- Display cable
- Line frequency out of spec

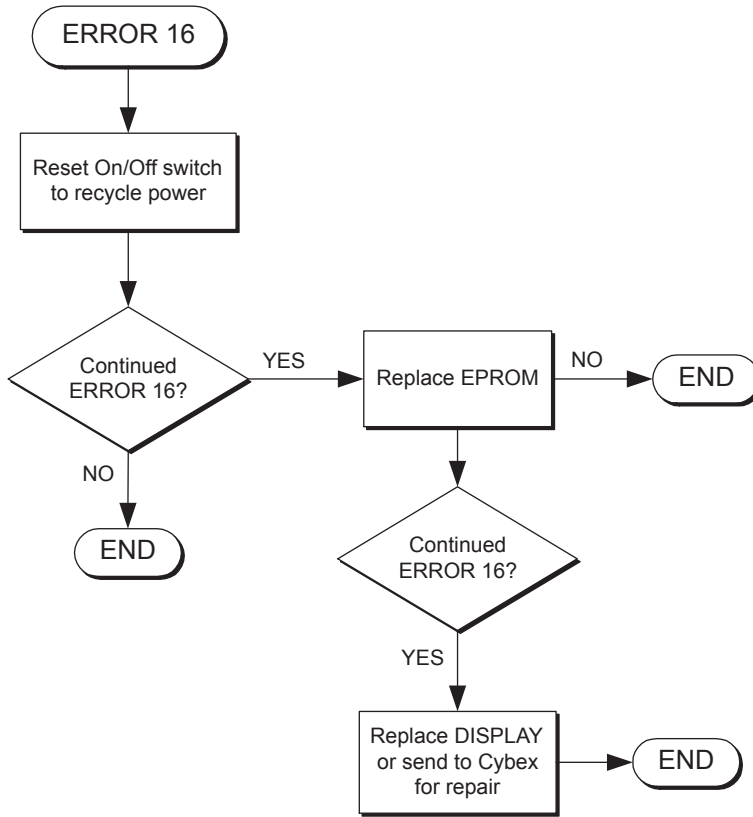


\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear .

**Error 16: Loss of NOVRAM Data**

Novram data doesn't match EPROM version, or novram can't be written to.

- NOVRAM
- Other misc. components in display



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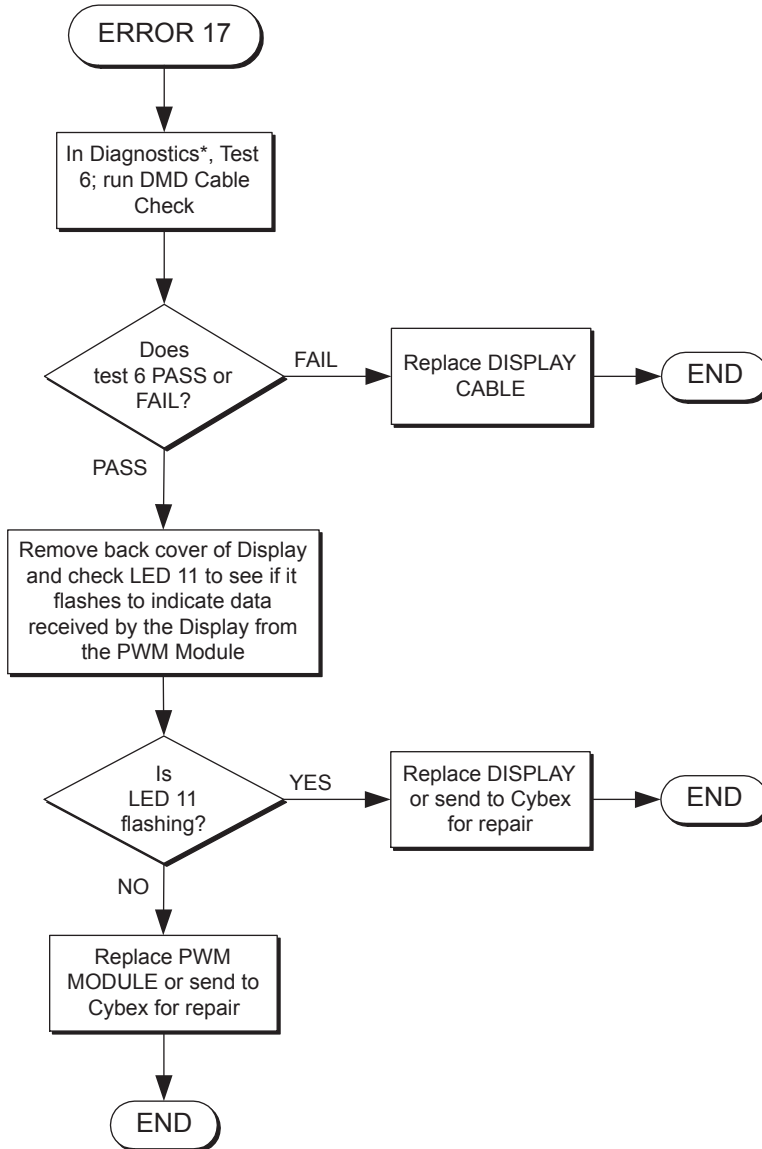
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**Error 17: No Lower Board**

No information is received from the lower board at power-up. This error code only shows up in the error log and will not interrupt the operation of the treadmill.

Display cable  
Lower board



\*To enter Diagnostic Mode press 999 and then press Enter. To exit Diagnostic Mode press Clear.

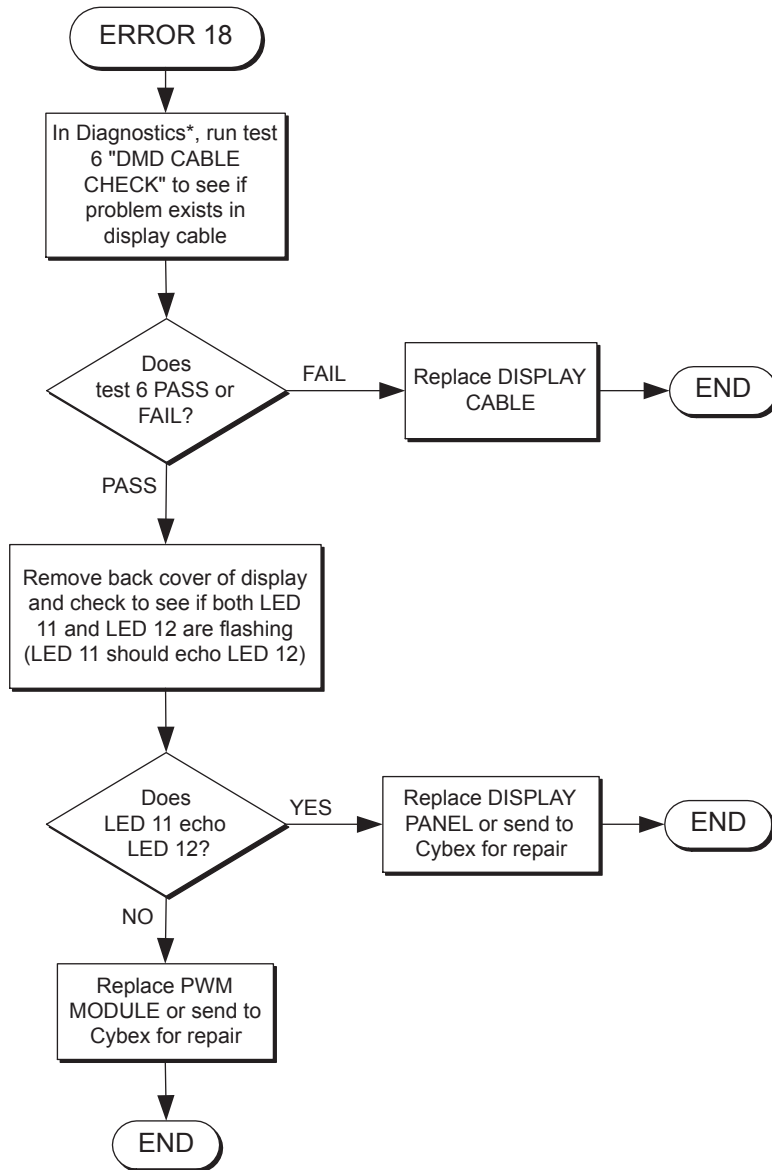


**Error 18: Communication Time-out Upper**

An interruption has been indicated in the signal from the PWM module to the display board.

Possible failures to cause no display:

- Display cable
- Lower board



\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear.

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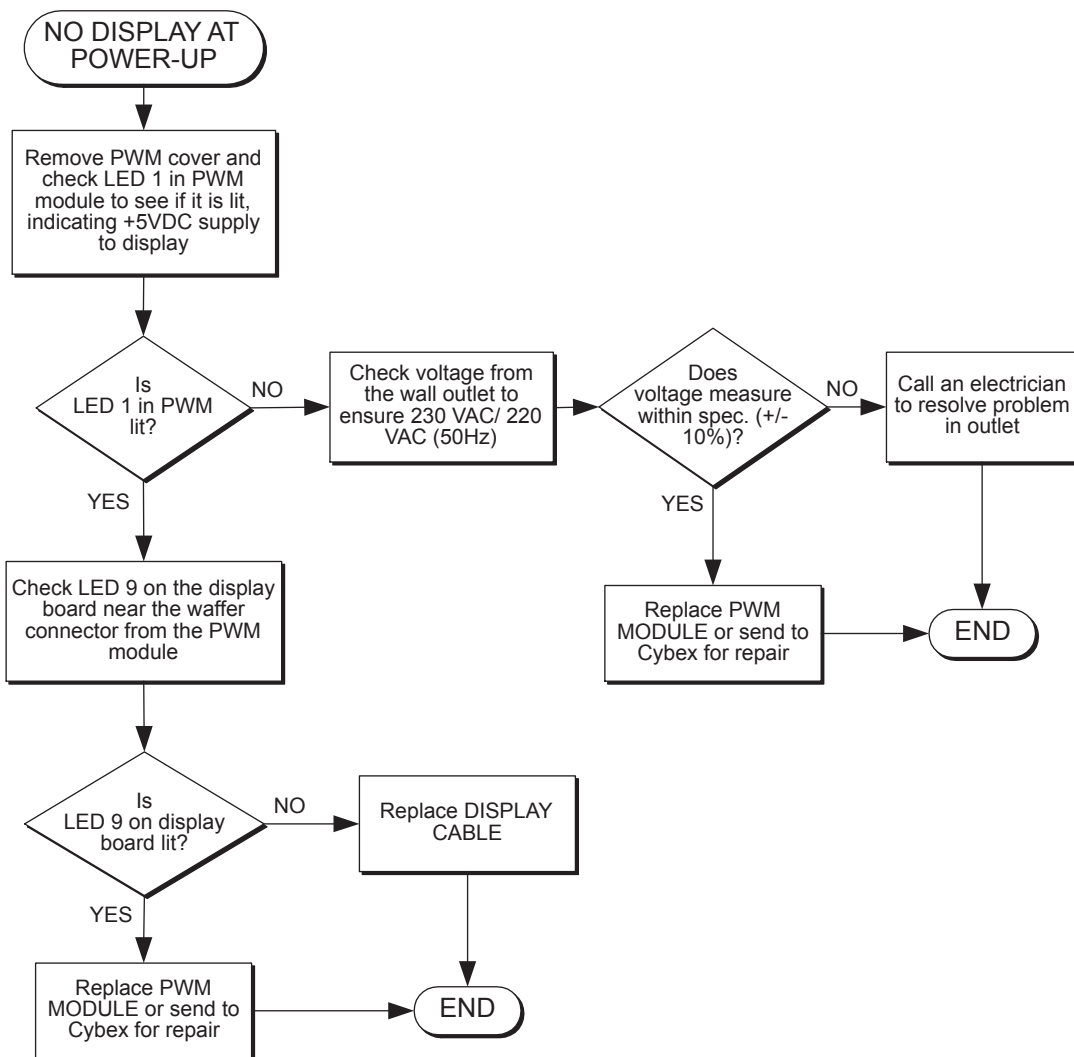
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### No Display at Power-up

No LEDs on the display light up after turning the on/off switch to the "on" position. The display remains blank.

Possible failures to cause no display:

- PWM module
- Display cable
- Display board



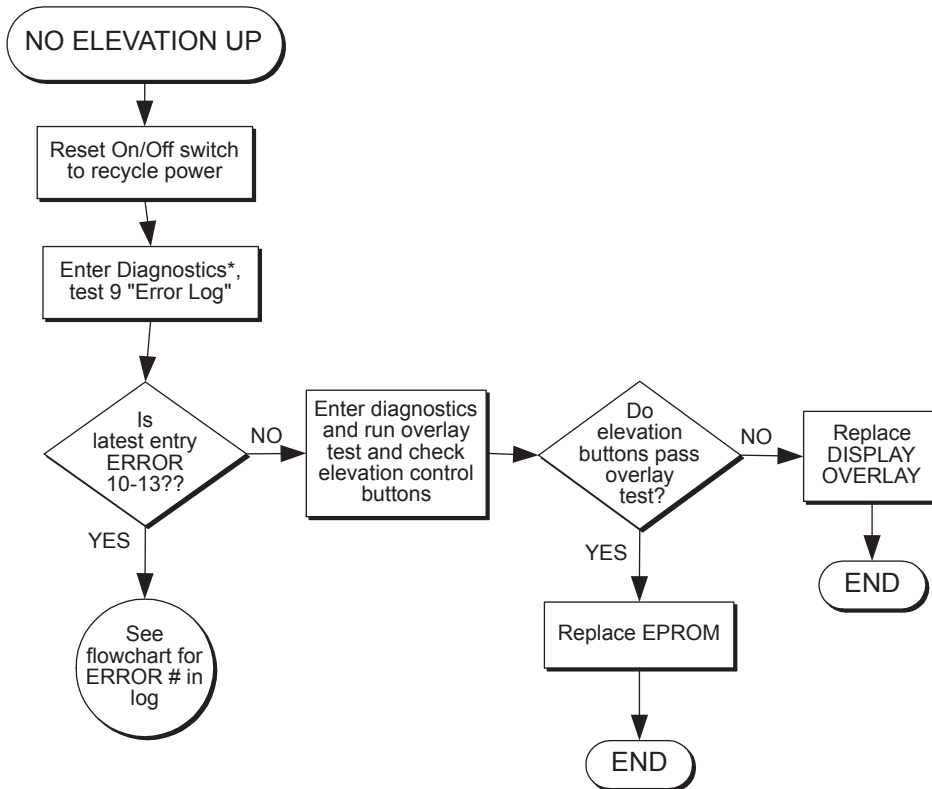
## No Elevation Up

The drive motor runs, but the treadmill will not elevate up.

**NOTE:** This treadmill continually monitors the elevation system and will usually identify any problem that occurs in this area. When a problem does exist on the elevation system, the failure will be stored in the error log. As with most elevation failures, first check the error log to see if an elevation failure has been detected by the microprocessor. The most likely causes of this problem are as follows, listed in the order of probability.

Possible failures to cause no elevation down:

- Limit switch
- Elevation motor
- PWM module
- Elevation sensor
- Elevation motor connection
- Elevation motor brake
- Elevation control button on the display
- EPROM



\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear.

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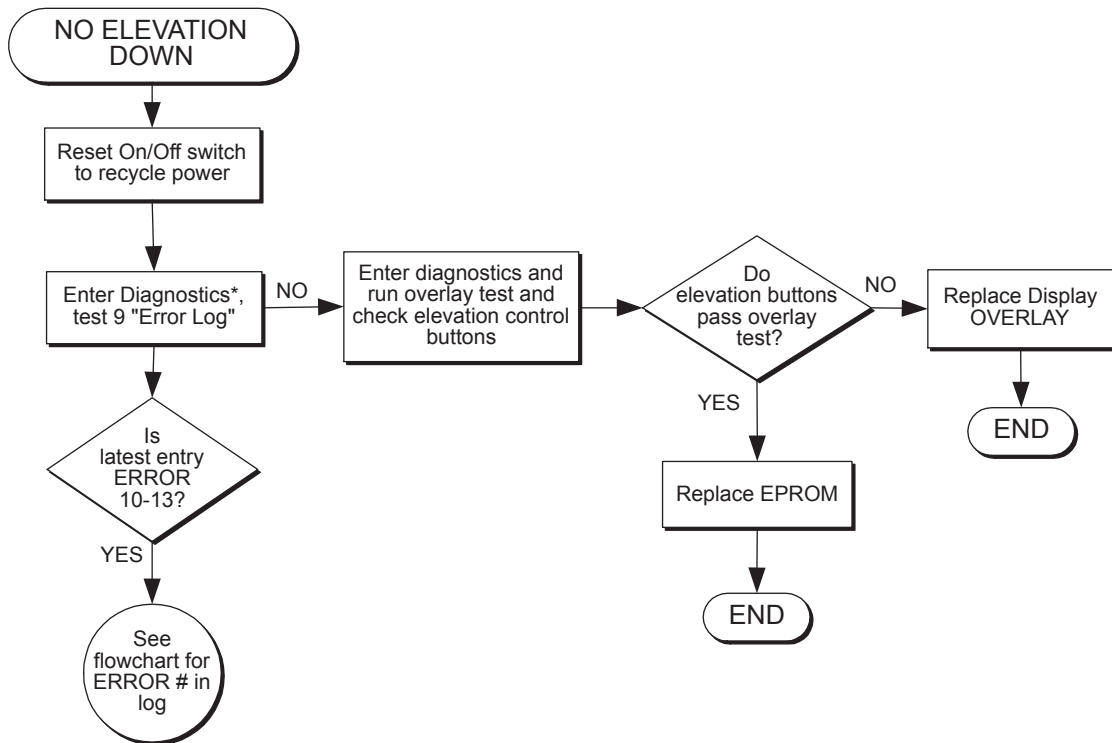
**No Elevation Down**

The drive motor runs, but the treadmill will not elevate down.

**NOTE:** This treadmill continually monitors the elevation system and will usually identify any problem that occurs in this area. When a problem does exist on the elevation system, the failure will be stored in the error log. As with most elevation failures, first check the error log to see if an elevation failure has been detected by the microprocessor. The most likely causes of this problem are as follows, listed in the order of probability.

Possible failures to cause no elevation up:

- Limit switch
- Elevation motor
- PWM module
- Elevation sensor
- Elevation motor connection
- Elevation motor brake
- Elevation control button on the display
- EPROM



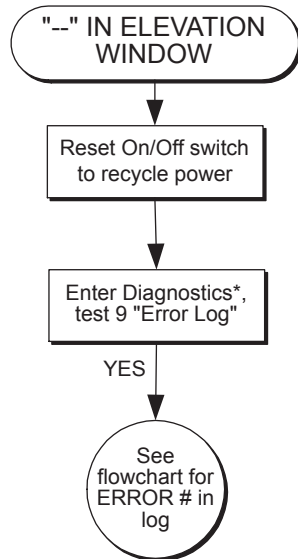
\*To enter Diagnostic Mode press 999 and then press Enter .  
To exit Diagnostic Mode press Clear .

## "-" in Elevation Window

The drive motor runs, but the treadmill will not elevate up or down. The "-" in the elevation window indicates that a problem has been detected in the elevation assembly and the failure type will have been stored in the error log. The elevation will remain inactive until the problem has been resolved and the power has been reset.

**NOTE:** *This treadmill continually monitors the elevation system and will usually identify any problem that occurs in this area. When a problem does exist on the elevation system, the failure will be stored in the error log. As with most elevation failures, first check the error log to see if an elevation failure has been detected by the microprocessor. The most likely causes of this problem are as follows, listed in the order of probability.*

- Limit switch
- Elevation motor
- PWM module
- Elevation sensor
- Elevation motor connection
- Elevation motor brake



\*To enter Diagnostic Mode press 999 and then press Enter.  
To exit Diagnostic Mode press Clear.

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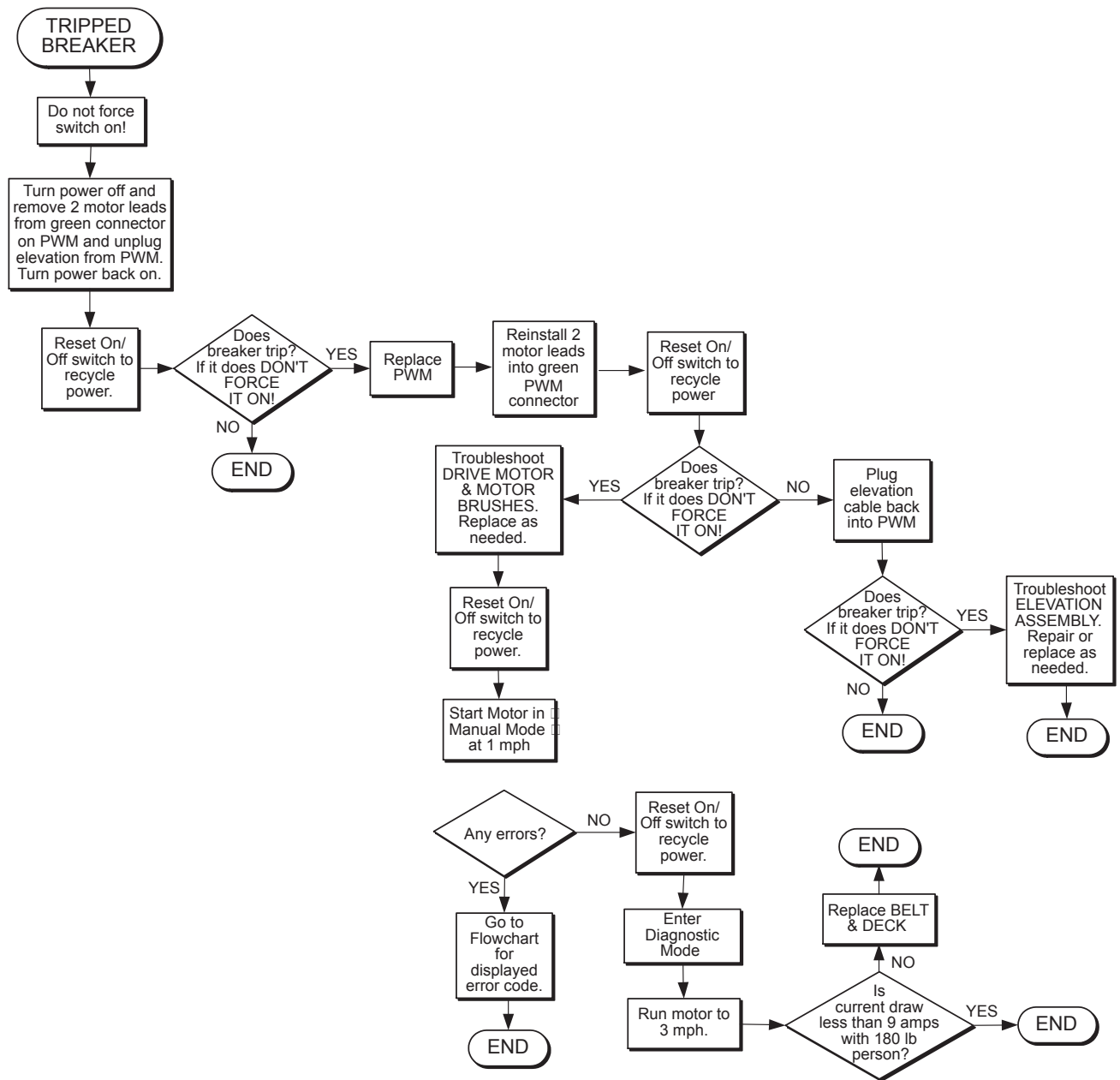
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# Tripped Breaker



# 5 - Removal & Replacement

## Running Belt & Deck

**NOTE:** This procedure will cover the running deck, running belt, front roller, rear roller and drive belt.

### Tools Required

- Phillips head screwdriver
- Flat head screwdriver
- 3/8" Socket wrench
- 7/16" Wrench
- 1/2" Wrench
- 3/4" Socket wrench
- 3/16" Allen wrench

### 1. Turn the power off.

- A. Turn the main power switch in the front panel to the off (O) position. (It is labeled I/O).
- B. Unplug the treadmill from the power outlet.

### 2. Remove the motor cover.

- A. Remove the two Phillips head screws that fasten the motor cover to the frame.
- B. Lift the motor cover and remove it from the treadmill. Set the cover and screws aside. See Figure 1.

### 3. Remove the side rails.

- A. Using a flat head screw driver, remove the hex head screw on the top of each side rail toward the front of the treadmill. See Figure 2.
- B. Use a 3/16" Allen wrench to remove the two button head screws that fasten each side rail to the frame. See Figure 2. Set the end caps aside.
- C. Grip the top edge of each side rail and firmly pull it up and outward from the treadmill.

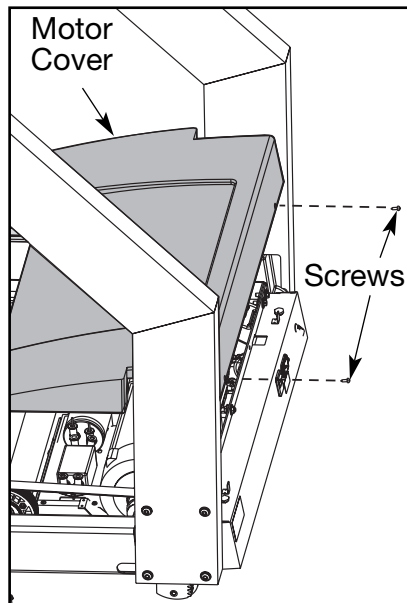


Figure 1

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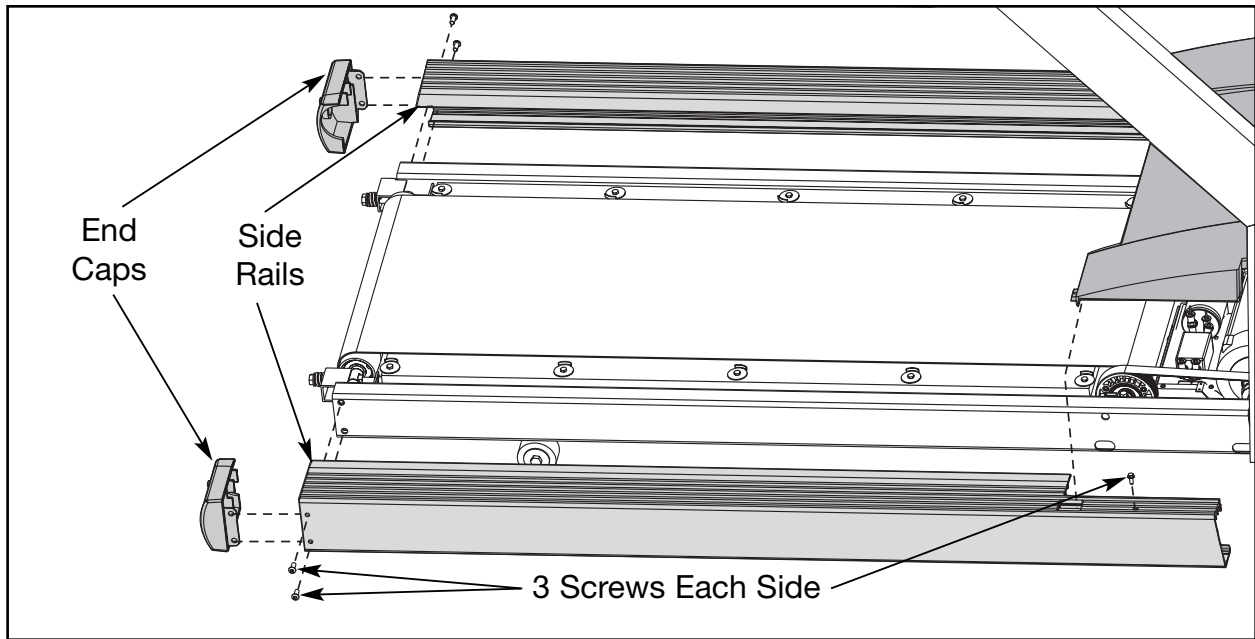


Figure 2

**4. Remove the rear roller.**

- A.** Using a 3/4" socket wrench, loosen and remove the two rear roller bolts. See Figure 3. Loosen each bolt evenly, making sure not to loosen either bolt too many turns before moving to the other bolt. Remove the bolts, washers, springs, and nuts and set them aside.

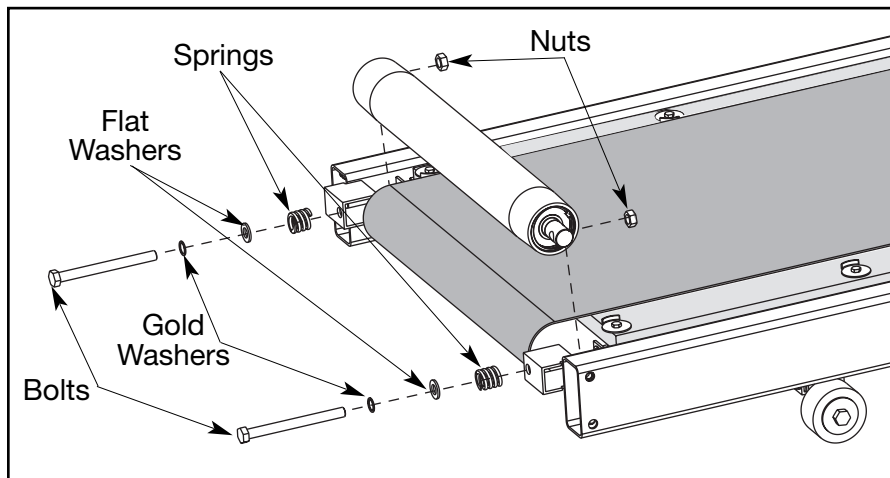


Figure 3

- B.** Lift one side of the rear roller and slide the roller out of the running belt.

**5. Loosen the deck.**

- A.** Using a 3/8" socket wrench, remove the ten bolts and ten belt retaining washers that hold the deck in place. Set these aside. See Figure 4.



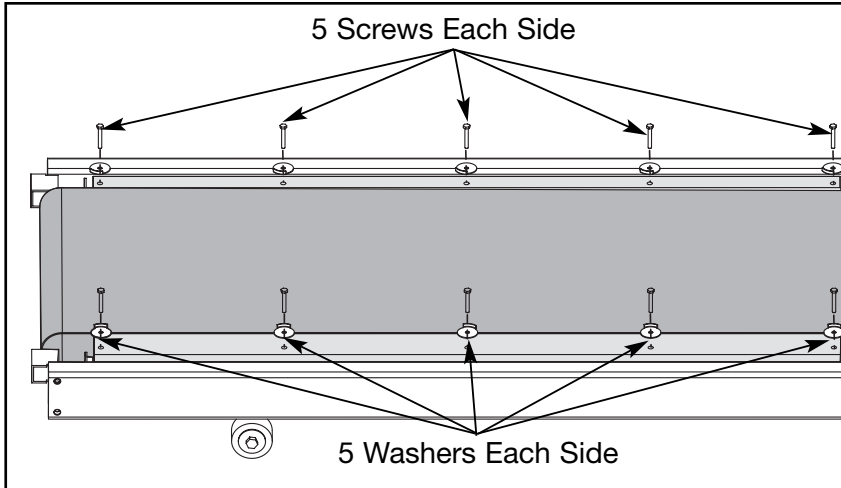


Figure 4

**6. Remove the front roller.**

- A.** Loosen the two nuts and two washers on the drive motor mounting plate. See Figure 5. This will loosen the drive motor assembly and drive belt.
- B.** Loosen and remove the two screws and four washers that fasten the front roller to the front end assembly. See Figure 6.
- C.** Lift and slide the front roller out of the drive belt and running belt.

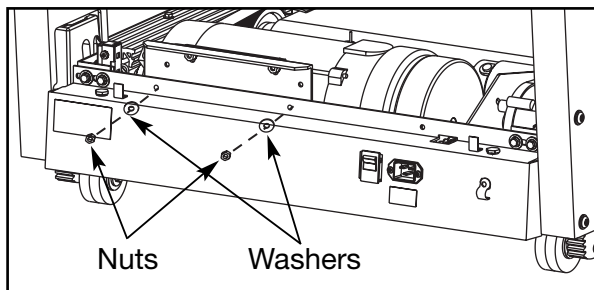


Figure 5

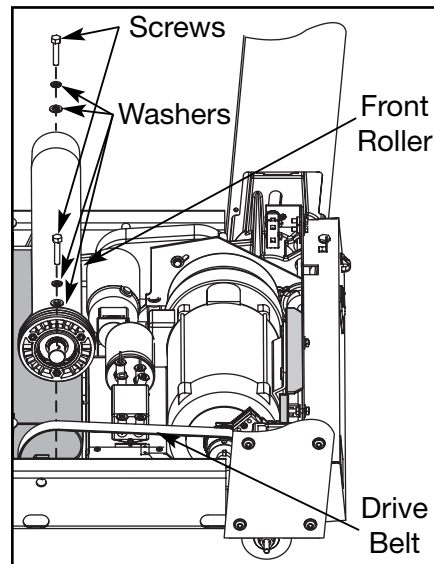


Figure 6

**7. Remove the running deck and running belt.**

- A.** If you are rotating or flipping the deck make a note on the deck so you know which way it was positioned. If you make the note near the edge of the deck where the bolts are, the note will not be worn down by belt contact.

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- B. Lift one side of the deck and slide it out of the running belt. The running belt is now free to remove from the treadmill.

**NOTE:** We recommend using only Cybex running belts because we cannot guarantee the performance of other brands.

#### 8. Position the running belt and running deck.

- A. Place the running belt in position around the deck. It doesn't matter which way the belt goes on the 900T model treadmill.
- B. Place the deck in position and then continue with step 9.

### Drive Belt

#### 9. Position the drive belt.

- A. If you are changing the drive belt you can slip the old one around the motor's drive pulley and off the treadmill. Slide the new drive belt around the drive pulley. Slide the front roller into the running belt. Be sure the drive belt is around the drive pulley and the front roller before attaching the front roller. There will be some slack in the drive belt until step 10 B is complete.

### Front Roller

#### 10. Attach the front roller.

- A. With the drive belt around the drive pulley and the front roller, loosely attach the two bolts and four washers that fasten the front roller to the front end assembly. See Figure 6. Tighten each of the two bolts evenly. Make sure not to tighten one bolt too many turns before moving to the other bolt.
- B. Attach the two washers and two nuts on the drive motor mounting plate. See Figure 5. This will tighten the drive motor assembly and drive belt. **NOTE:** A drive belt that is too loose may squeal and you may be able to see it slip when you walk on the running belt.

#### 11. Attach the running deck.

- A. Attach the ten bolts and ten belt retaining washers that hold the deck to the treadmill frame. See Figure 4.

### Rear Roller

#### 12. Replace the rear roller.

- A. Slide the rear roller into the running belt.

- B. Place the bolts, washers, springs, and nuts in position as shown in Figure 3. Partially tighten the two bolts leaving them loose until step 13 D.

**13. Reinstall the side rails and end caps.**

- A. Line up the round hole in the top of the side rail with the hole in the metal frame. Place the bottom edge of each side rail under the treadmill frame and push the top edge of each side rail in place. It will snap on.
- B. Using a flat head screwdriver, attach the hex head screw on the top of each side rail toward the front of the treadmill. See Figure 2.
- C. Place the end cap flush with the end of the side rail and the end of the frame. Use a 3/16" Allen wrench to attach the two button head screws that fasten each side rail to the frame. See Figure 2.
- D. Using a 3/4" socket wrench, tighten each rear roller bolt evenly, making sure not to tighten either bolt too many turns before moving to the other bolt. Use the small plastic tab above the bolt hole as a visual reference to tension the rear roller bolts. When tightening the rear roller bolts, look down onto the plastic tab located just above the bolt head. Make sure the entire side of the silver washer is visible and is not hidden by any portion of the tab. See Figure 7.

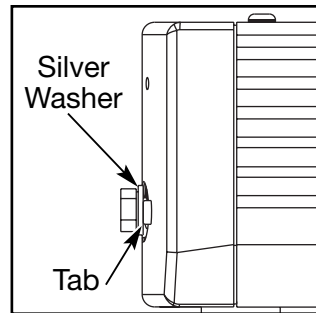


Figure 7

**14. Adjust the running belt tension and center the belt by following the instructions *Running Belt Adjustments* in the Preventive Maintenance chapter. Then continue with step 15.**

**15. Attach the motor cover.**

- A. Lower the motor cover in position and install the two Phillips head screws that hold it in place.

**Drive Motor**

**NOTE:** This procedure will cover the drive motor and motor cleaning.

**Tools Required**

- Phillips head screwdriver
- Flat head screwdriver (small tipped)
- 3/8" Socket wrench
- 7/16" Wrench
- 1/2" Socket wrench
- Commutator stone

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***! WARNING: Keep wet items away from inside parts of the treadmill. Electrical shock could occur even if the treadmill is unplugged.***

**1. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**2. Remove the motor cover.**

- A. Remove the two Phillips head screws that fasten the motor cover to the frame.
- B. Lift the motor cover and remove it from the treadmill. Set the cover and screws aside.

**3. Remove the front panel.**

- A. Using a 3/8" socket wrench, remove the two screws and two washers that hold each limit switch bracket to the front panel. Set the screws, washers and limit switch assemblies aside. See Figure 8.
- B. Using a 1/2" socket wrench, remove the two screws from the top of the front panel. See Figure 8.
- C. Using a 7/16" wrench, remove the two nuts and washers that hold the mounting plate to the front panel. See Figure 8.
- D. Carefully place the front panel on the floor next to the treadmill.

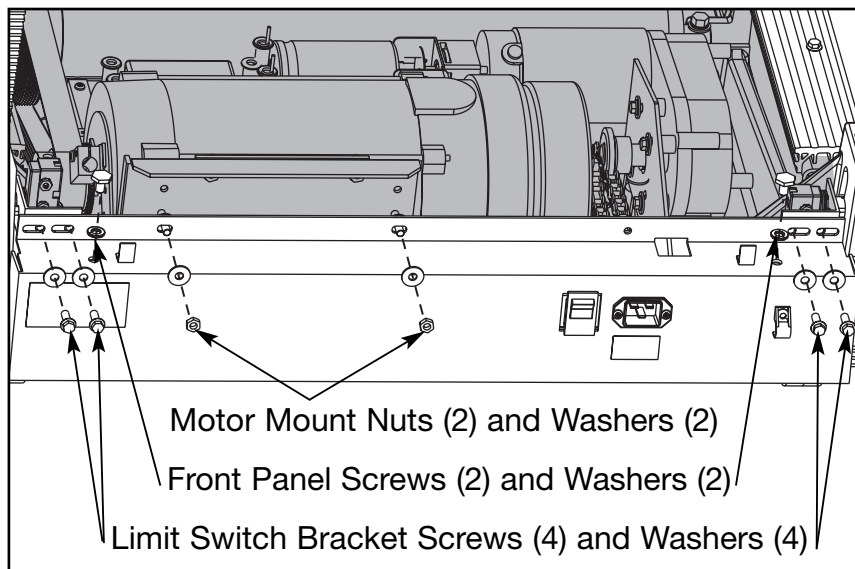


Figure 8

**4. Remove the motor.**

- A. Using a 3/8" socket wrench, loosen and remove the three screws that hold the mounting plate to the front end assembly.

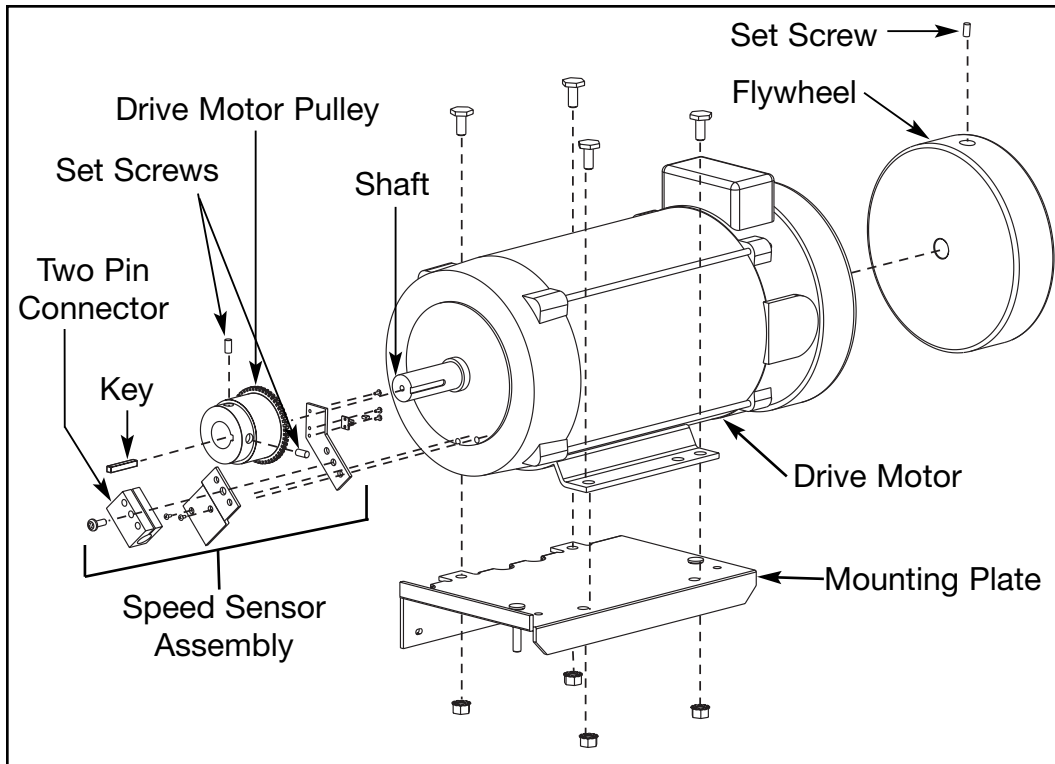


Figure 9

- B. Disconnect the speed sensor cable by unplugging the cable from the two pin connector on the speed sensor. See Figure 9.
- C. Disconnect the bulk head connector (green connector) from the PWM module. See Figure 10.
- D. Use a small tipped flat head screw driver to loosen the screw on the **black** wire in slot 3 and the white wire in slot 4 on the bulk head connector.
- E. Push the drive belt out of the way and carefully lift the motor, with its mounting plate, up and out of the treadmill.

**NOTE:** If you are replacing the motor with a new one follow step 5. If not, skip to step 6.

**5. Transfer the flywheel, drive pulley, speed sensor and mounting plate.**

**NOTE:** Some older treadmills do not have a flywheel.

- A. Loosen the set screw that holds the flywheel in place. Remove the flywheel and install it on the new motor. See Figure 9. **NOTE:** Flywheels can be difficult to remove. You may need to use a gear puller.

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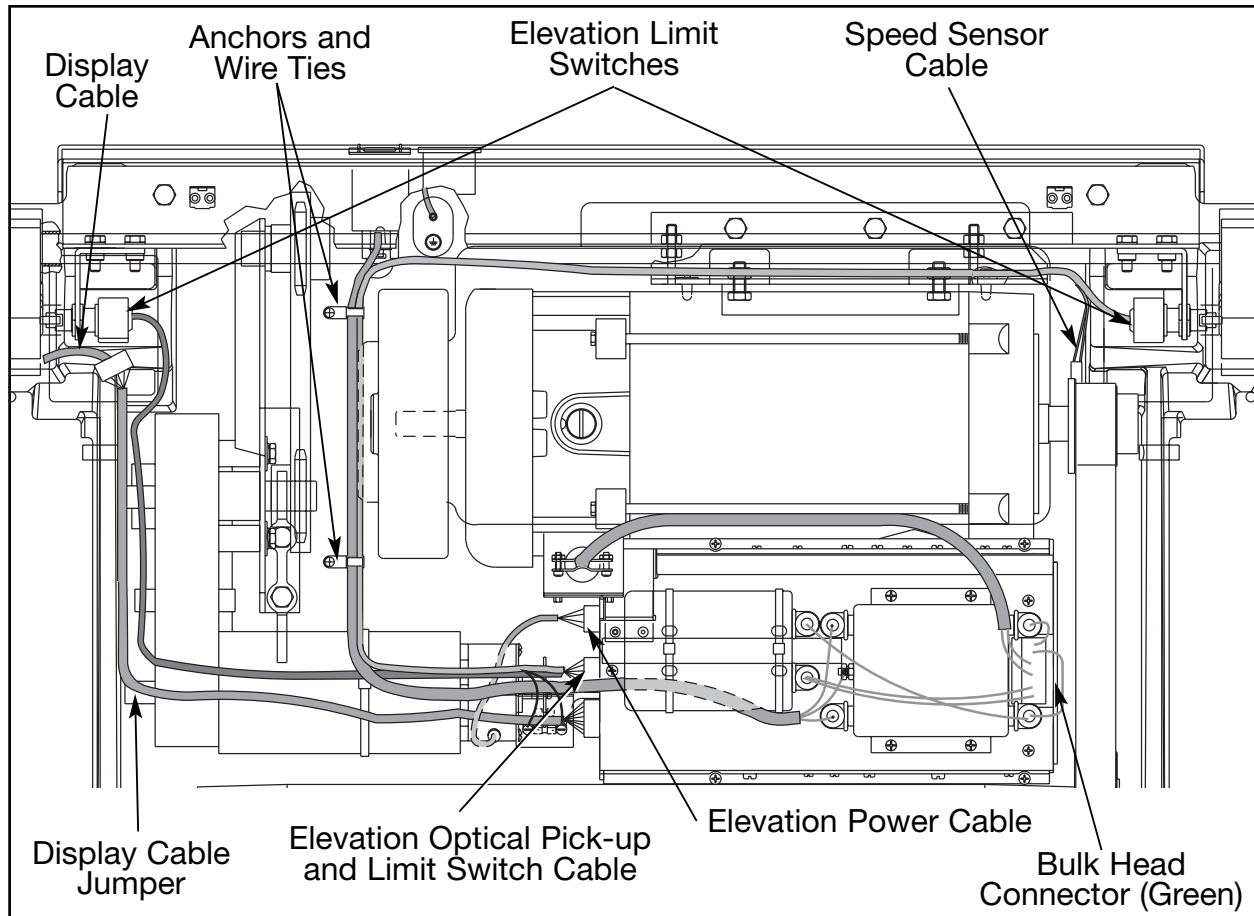


Figure 10

- B.** Using an Allen wrench, loosen the two set screws that fasten the drive motor pulley to the drive motor shaft and slide the pulley off of the shaft. Install the pulley on the new motor.
- C.** Remove the two Phillips head screws that hold the speed sensor bracket on to the side of the motor. Transfer the speed sensor assembly to the new motor and install it in the same orientation. See Figure 9. See *Speed Sensor Adjustment* in the Troubleshooting chapter for gap information if necessary.  
**NOTE:** Use caution while removing the speed sensor bracket. The external motor brush spring may pop out of the holder making it difficult to find.
- D.** Remove the four bolts and nuts that hold the motor to the mounting plate. Install the plate to the new motor using the four bolts and nuts.

### Drive Motor Cleaning

**NOTE:** Dirt and brush dust inside the drive motor can cause a short. Taking the motor apart will allow you to thoroughly clean it and easily use a commutator stone. If you intend to clean your motor continue with steps 6-8. If not, skip to step 9.

**! CAUTIONS:** *If the drive motor is warm wait until it is cool to the touch before proceeding. The inside components may be hot. Keep the motor dry. Do not get the inside of the motor wet.*

**6. Disassemble the drive motor.**

- A.** Remove the mounting plate and the four bolts and nuts that hold the motor to the mounting plate.
- B.** Loosen the set screw that holds the flywheel in place and remove the flywheel. See Figure 9. **NOTE:** *Flywheels can be difficult to remove. You may need to use a gear puller.*
- C.** Remove the fan shroud and the three screws that hold it in place. See Figure 11.
- D.** Remove the fan and the screw that holds it in place. See Figure 11.
- E.** Remove the lead end bell and the four 10" (25.4 cm) screws that hold it in place. See Figure 11.
- F.** Remove the motor brush caps with a large flat screwdriver. See Figure 11. See *Motor Brushes* in this chapter for instructions to check motor brush wear and then return to step 7.

**7. Clean the drive motor.**

- A.** The commutator may be cleaned with a commutator stone if carbon

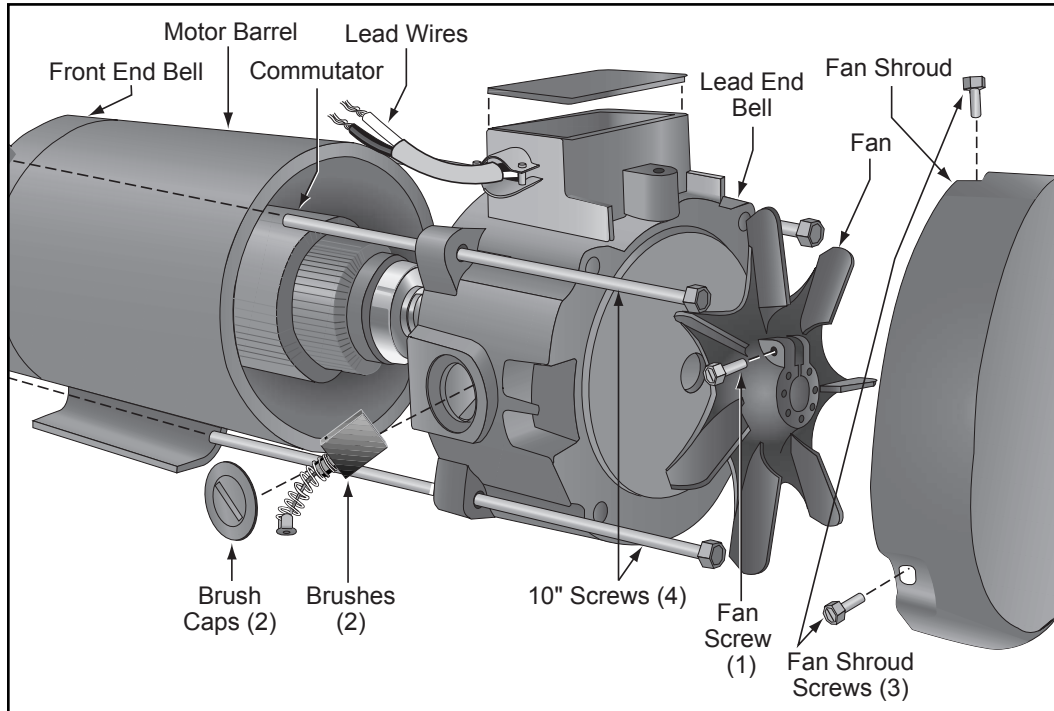


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build-up is present. If you'd like to order commutator stones call Cybex Customer Service and ask for part number EH-14257. If the commutator is noticeably damaged with signs of wear such as arcing, pitting, burning, or uneven wear. Commutator bars that are 'dirty penny' brownish copper are in great condition. However, some commutator bars may be pitted or blackened on one edge. Too many of these indicate a worn commutator, and the motor should be replaced. Cybex offers refurbished and new motors for replacement.

- B.** Use a *dry* cloth to loosen and wipe away dirt and brush dust from around the brush holder area and inside the lead end bell. Brush dust can be loosened from the brush holder area by lightly filing the surfaces. See Figure 12. If there is excess dust you may use a vacuum.

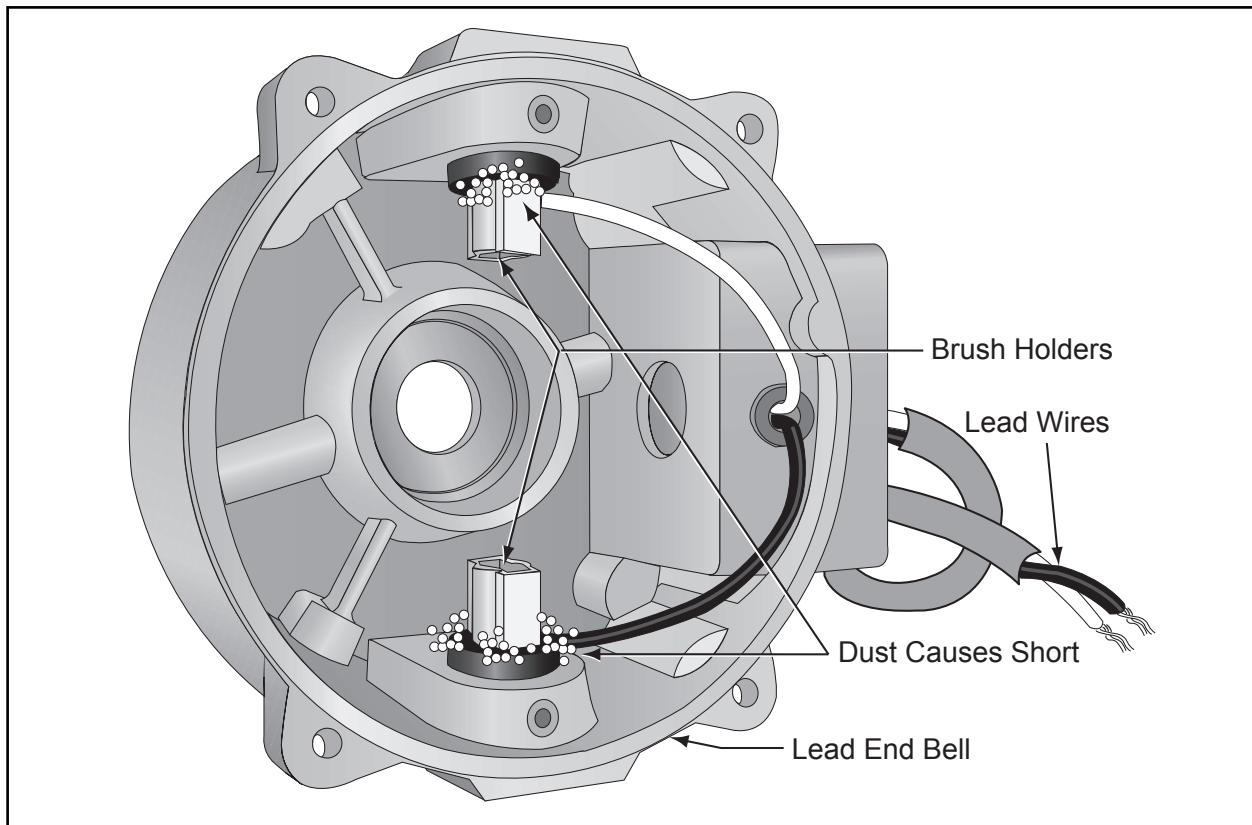


Figure 12

## 8. Assemble the drive motor.

- A.** Attach the lead end bell with the four 10" (25.4 cm) screws that hold it in place. See Figure 11.
- B.** Attach the fan with the screw that holds it in place. See Figure 11.
- C.** Attach the fan shroud and the three screws that hold it in place. See Figure 11.
- D.** Place the flywheel on the shaft and tighten the set screw that holds it in place. See Figure 9.



- E. Place each brush in its brush holder and carefully push the spring in while screwing on the brush cap. Secure the brush caps over the brushes using a large flat screwdriver. See Figure 11.
- F. Attach the mounting plate and the four bolts and nuts that hold the motor to the mounting plate.

**9. Attach the drive motor.**

- A. Carefully lower the drive motor in position. Place the drive belt loosely around the drive pulley.
- B. Attach the motor mounting plate to the front end using three screws.

**10. Attach the front panel.**

- A. Carefully place the front panel in position on the front of the treadmill. Hold it in place while you continue with the next step.
- B. Place the elevation limit switch assemblies in position. Be sure the gold limit switch spacer is flush with the side wall of the elevation gear rack for correct gap width. See Figure 13.
- C. Using a 3/8" wrench, tighten the two washers and two screws that hold each elevation limit switch bracket to the front panel. See Figure 8.
- D. Using a 1/2" wrench, tighten the two screws into the top of the front panel. See Figure 8.
- E. Be sure that the drive pulley is aligned with the drive belt.
- F. Using a 7/16" wrench, tighten the two nuts and washers that tightens the motor mounting plate to the front panel. See Figure 8.

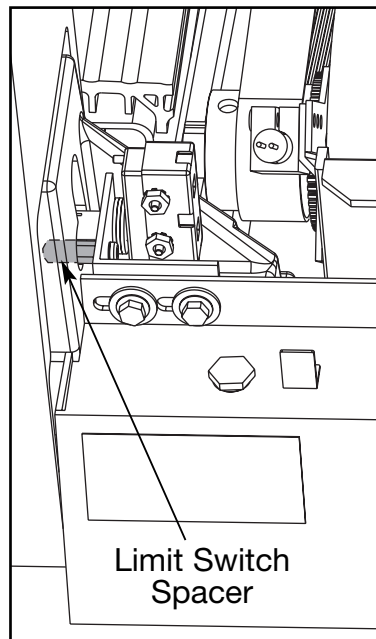


Figure 13

**NOTE:** The drive motor lead wires are **black** and white. When connecting the drive motor wires, be sure that the **black** wire is inserted into the slot labeled "3" and the white wire into the slot labeled "4".

**11. Connect the wires.**

- A. Insert the **black** wire into slot 3 and the white wire into slot 4 on the bulk head connector. Use a small tipped flat head screw driver to secure the wires in the connector.

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- B. Plug the bulk head connector into the slot on the PWM module. See Figure 10.
- C. Connect the speed sensor cable by plugging it into the two pin connector on the speed sensor. The speed sensor cable is located on the right limit switch cable.

## 12. Attach the motor cover.

- A. Lower the motor cover in position and install the two Phillips head screws that hold it in place.

## Motor Brushes

**NOTES:** Motor brushes are wear items that will periodically need to be replaced. Both drive motor brushes must be replaced as a pair. This will ensure even commutator contact and brush wear. However, the negative brush will wear 20% faster than the positive brush. Therefore, always measure the negative brush length to determine whether you should replace the pair. The negative brush has a white lead and is facing the floor. You should still check the positive brush for cracks or chips. It is not necessary to remove the drive motor in order to reach the motor brushes. You can get at the lower brush from underneath the treadmill.

### Tools Required

- Phillips head screwdriver (or hex key for some models)
- Large flat head screwdriver (or brush cap tool, part number FS-12263)

**! WARNING: Keep wet items away from inside parts of the treadmill. Electrical shock could occur even if the treadmill is unplugged.**

### 1. Turn the power on.

- A. With the power cord plugged in turn the main power switch to the on (I) position.

### 2. Elevate the treadmill.

- A. Without standing on the belt, press the **Start** key and begin running the treadmill.
- B. Press the **Up Arrow** and elevate the treadmill fully.

### 3. Turn the power off.

- A. While the treadmill is still fully elevated and running turn the main power switch to the off (O) position.
- B. Unplug the treadmill from the power outlet.

### 4. Remove the motor cover.

- A. Remove the screws that fasten the motor cover to the frame.
- B. Lift the cover and remove it from the treadmill. Set the cover and screws aside.

5. Remove the brush caps.

- A. Using a large flat head screwdriver unscrew the two brush caps on the drive motor. The brushes should spring out. The lower brush cap may be difficult to remove with a long screwdriver. If you need a brush cap tool, call Cybox Customer Service and order Cybox part number FS-12263.

**NOTE:** *If the brush doesn't spring out, you can use a small screwdriver or needle nose pliers to pry up the base of the brush spring. If the brush spring is broken, ensure no loose parts are left behind.*

6. Examine the brushes and commutator.

- A. Inspect the commutator by looking through the top brush holder into the motor. Slowly spin the motor by turning the flywheel. Look for noticeable damage and for signs of wear such as arcing, pitting, burning, or uneven wear. Commutator bars that are 'dirty penny' brownish copper are in great condition. However, some commutator bars may be pitted or blackened on one edge. Too many of these indicate a worn commutator, and the motor should be replaced. The commutator may be cleaned with narrow commutator stone if carbon build-up is present. (File down the stone if it won't fit in the brush holder hole.) Brush dust can be loosened from the brush holder area by lightly filing the surfaces. Dirt and brush dust inside the drive motor can cause a short and should be vacuumed out of the motor. To thoroughly clean the drive motor see *Motor Cleaning* in this chapter.

- B. Inspect the brushes for signs of excessive wear or cracks. The motor brushes must be replaced if one or both is worn to .438" (7/16"/11.13mm) or less in length, is broken or chipped, has a broken spring, or binds in the motor. See Figure 14.

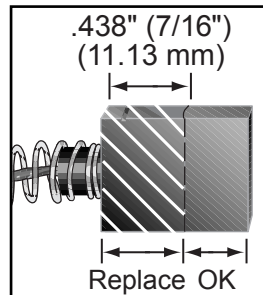


Figure 14

7. Replace the brushes.

- A. Slide the brushes (new or original) into the motor brush holders. If the new brush does not slide in and out easily, the edges or corners of the brush can be lightly filed down. If cleaning the motor, (see step 6A), and filing the brush doesn't allow the brush to slide easily in the brush holder, the motor should be replaced.

**NOTE:** *The motor may make a clicking noise as new brushes wear in. If you reinstall the original brushes it is good to install them facing their original position. Reversing the orientation of the brush can cause a clicking noise during operation until the brushes wear in.*

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**8. Replace the brush caps.**

- A. Place each brush in its brush holder and carefully push the spring in while screwing on the brush cap. If the brush cap is damaged, order Cybex replacement part number **HX-10300-2**.

**9. Attach the motor cover.**

- A. Lower the motor cover in position and install the two Phillips head screws that hold it in place.

**10. Turn the power on.**

- A. Connect the treadmill to the power outlet.
- B. Turn the main power switch to the on (I) position.
- C. The treadmill will lower itself. Wait until the treadmill resets its elevation to 0%.

**11. Clear the error log.**

- A. Enter *Diagnostic Test Mode* by pressing 999, then press **Enter**.
- B. Display the error codes by pressing + (forward), – (backward) and scrolling to Test 9. You'll be able to view all error codes recorded (up to 16) on the display. Make a note of the errors and refer to the manual for the interpretation of these errors. Likely brush error codes are errors 2, 4, 6 or 1.
- C. Clear the entire error log by pressing + to scroll to Test 10, then press **Enter**.
- D. Exit *Diagnostic Test Mode* by pressing **Clear**.

## Elevation Motor

**NOTE:** *This procedure will cover the elevation motor and limit switches.*

### Tools Required

- Phillips head screwdriver
- Block of wood 4" (10 cm) tall
- 3/8" wrench
- 7/16" wrench
- 1/2" wrench

**! WARNING:** *Keep wet items away from inside parts of the treadmill. Electrical shock could occur even if the treadmill is unplugged.*

**NOTE:** *Elevation motor must be fully stopped at its lower limit for this procedure.*

**1. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**2. Remove the motor cover.**

- A. Remove the two Phillips head screws that fasten the motor cover to the frame.
- B. Lift the cover from the front and remove it from the treadmill. Set the cover and screws aside.

**3. Place wooden blocks under the frame.**

**NOTE:** *It is recommended that two people lift the treadmill.*

- A. Two people should lift the front of the treadmill. Place a wooden block under the frame to support the front end of the treadmill. This will get the weight of the treadmill off of the elevation wheels and provide support at the bottom of the wheels for the gear racks.

**4. Remove the limit switch assembly.**

- A. Disconnect the speed sensor cable by unplugging the cable from the two pin connector on the speed sensor.
- B. Using a 3/8" wrench, remove the two screws and two washers that hold each limit switch bracket to the front panel. Set the screws, washers and limit switch assemblies aside. See Figure 8.

**5. Remove the elevation motor.**

- A. Unplug the elevation motor power, and the elevation optical pick-up connector from the PWM. See Figure 10.
- B. Cut the two wire ties that hold the cables to the anchors and remove the elevation power cable from the wire ties. See Figure 10.
- C. Loosen and remove the two bolts that fasten the mounting plate to the treadmill base. See Figure 15.
- D. Loosen and remove the four bolts that fasten the elevation motor to the mounting plate. See Figure 15.
- E. Slide the motor toward the front of the treadmill to create slack in the chain. Remove the chain from the drive gear. See Figure 15.

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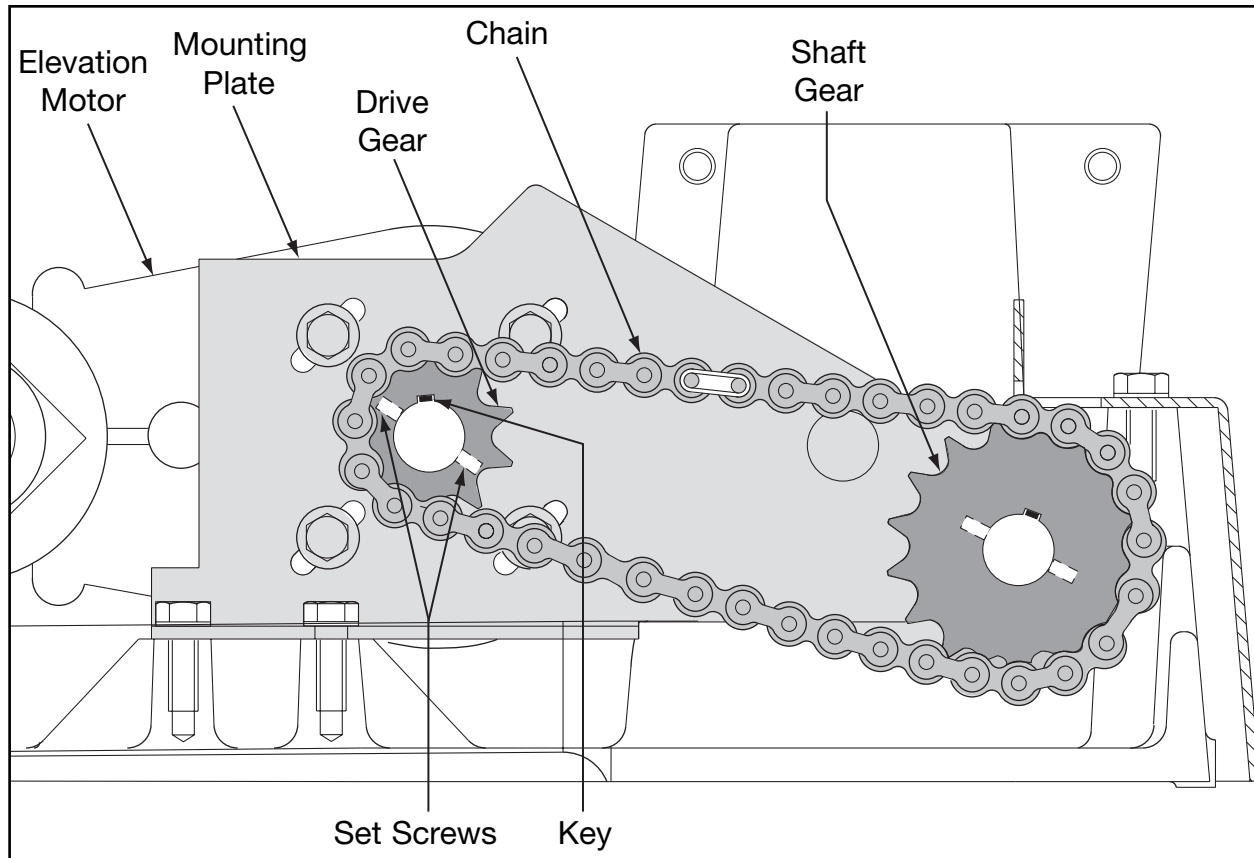


Figure 15

**F.** Using an Allen wrench, loosen the two set screws on the drive gear. Slide the drive gear off of the motor shaft. See Figure 15.

**G.** Carefully lift and remove the elevation motor from the treadmill.

**6. Attach the elevation motor.**

**A.** Carefully place the elevation motor in position on the treadmill.

**B.** Be sure the key is in place during this step. Slide the drive gear on the motor shaft and use an Allen wrench to tighten the two set screws that fasten the drive gear to the shaft.

**C.** Partially tighten the four screws that fasten the elevation motor to the motor mounting plate. Leave them loose until step F.

**D.** Place the chain around the drive gear and the shaft gear.

**E.** Attach the two screws that fasten the mounting plate to the treadmill base.

**F.** Fully tighten the four bolts that fasten the elevation motor to the motor mounting plate.

**G.** Place the elevation power cable on top of the anchor and secure the cables with two wire ties that hold the cables to the anchor.

- H. Plug the elevation motor power and the elevation optical pick-up connector into the PWM.

## Limit Switch Assembly

### 7. Attach the limit switch assembly.

- A. Place the elevation limit switch assembly in position. Be sure each gold spacer is flush with the side wall of the elevation gear rack for correct gap width. See Figure 16.

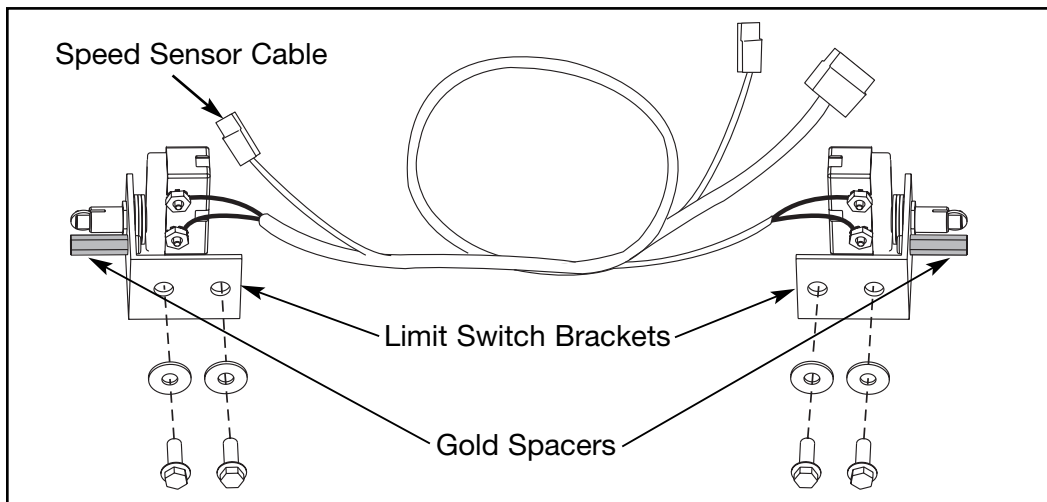


Figure 16

- B. Using a 3/8" wrench, tighten the two washers and two screws that hold each limit switch bracket to the front panel.
  - C. Connect the speed sensor cable by plugging the cable into the two pin connector on the speed sensor. See Figure 16.
- ### 8. Test the elevation motor.
- A. Connect the main power cord into the front panel and turn the power switch the on position (I).
  - B. Start the treadmill in *Manual Mode* and raise the elevation to 6%.
  - C. Remove the wooden block from under the front end assembly. This will load the elevation assembly.
  - D. Lower the elevation.
  - E. Stop the treadmill. Turn the main power switch in the front panel to the off (O) position.

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**9. Attach the motor cover.**

- A. Lower the motor cover and in position and install the two Phillips head screws that hold it in place.

**PWM Module**

**Tools Required**

- Phillips head screwdriver
- Paper towels
- ESD grounding strap

**1. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**2. Remove the motor cover.**

- A. Remove the two Phillips head screws that fasten the motor cover to the frame.
- B. Lift the motor cover and remove it from the treadmill. Set the cover and screws aside.

**3. Remove the PWM module.**

- A. Unplug the four connectors from the PWM module; elevation optical pick-up cable, display cable jumper, elevation power cable and the bulk head connector. See Figure 17.
- B. Using a Phillips head screwdriver, remove the three screws that hold the cover to the PWM module. Set the cover and screws aside.

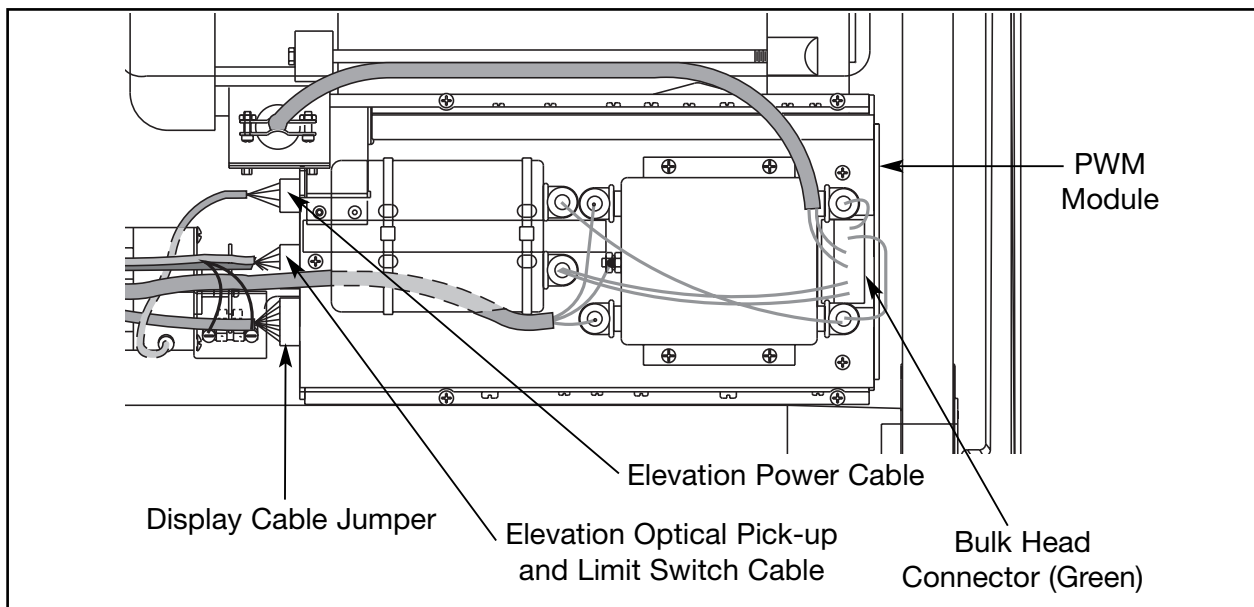


Figure 17



- C. Cover the front of the running belt with paper towels.
- D. Using a Phillips head screwdriver, fully loosen, but do not remove the four mounting screws fastening the PWM module to the front end assembly base; two between the PWM module and the front roller, and two between the PWM module and the drive motor. The module should now be free to remove from the treadmill.

**NOTE:** Use paper towels or a rag to cover the running belt while lifting the PWM module out of the treadmill. This will keep any excess thermal compound from transferring from the bottom of the PWM module to the run belt. The compound is very difficult to remove and may stain clothing and the running belt.

**4. Attach the PWM module.**

- A. Use paper towels to wipe the base of the treadmill so that it is free of all dirt and thermal compound.

**NOTE:** The PWM board is susceptible to damage from a discharge of static electricity. While handling parts underneath the PWM use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.

- B. While wearing an ESD strap, apply thermal compound to the two bottom rails of the new PWM module evenly. Completely cover the two bottom rails. This will insure a maximum transfer of heat to the base.

- C. Using a thin shaft Phillips head screwdriver, fully tighten the four mounting screws that hold the PWM module to the base of the treadmill; two between the PWM module and the front roller, and two between the PWM module and the drive motor.

- D. Plug the four connectors into the PWM module; elevation optical pick-up cable, display cable jumper, elevation power cable and the bulk head connector.

- E. Place the cover to the PWM module in position and, using a Phillips head screwdriver, tighten the three screws that hold the cover to the PWM module. Set the cover and screws aside.

**5. Attach the motor cover.**

- A. Lower the motor cover and in position and install the two Phillips head screws that hold it in place.

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## Display Board

### Tools Required

- Phillips head screwdriver
- ESD grounding strap

### 1. Turn the power off.

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

### 2. Remove the console back.

- A. Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.

### 3. Remove the display board.

- A. While wearing an ESD strap, disconnect all five cables from the display board; the display cable, the CSAFE cable, the ribbon cable, the contact heart rate cable and the ground terminal. See Figure 18.

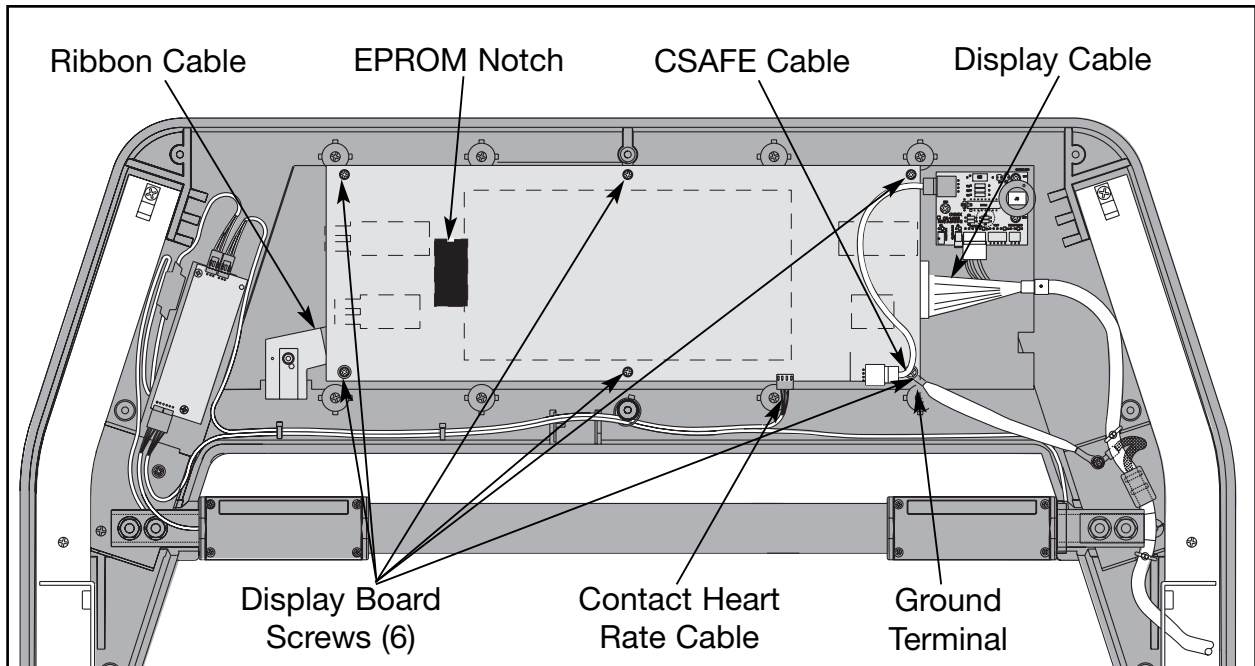


Figure 18

- B. Remove the six Phillips head screws that hold the display board to the console. The display board is now free to remove.
4. **Attach the display board.**
    - A. Place the display board in position in the console.
    - B. With the ground terminal in position, attach the display board with the six Phillips head screws that hold the board to the console. See Figure 18.
  5. **Connect the cables.**
    - A. Connect all five cables into the display board; the display cable, the CSAFE cable, the ribbon cable, the contact heart rate cable and the ground terminal. See Figure 17.
  6. **Attach the console back.**
    - A. While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

## EPROM

### Tools Required

- Phillips head screwdriver
- ESD grounding strap
- Chip extraction tool (also called IC (integrated circuit) puller, part number HT-15150)

1. **Turn the power off.**
  - A. Turn the main power switch in the front panel to the off (O) position.
  - B. Unplug the treadmill from the power outlet.
2. **Remove the console back cover.**
  - A. Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** *The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.*

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**3. Remove the EPROM.**

- A.** While wearing an ESD strap, carefully remove the EPROM from the back of the display board, using a chip extraction tool.

**NOTE:** *The EPROM pins can be easily bent. To prevent bending during installation, make sure the pins are aligned properly during the insertion of the chip into the socket.*

**4. Install the new EPROM.**

- A.** Hold the EPROM up to the slot and verify that the pins are lined up properly so that they won't be bent during installation.

- B.** With the notch, pin 1, toward the top, press the EPROM into the slot.

**NOTE:** *Make sure to position the new EPROM so the location of pin 1 is toward the top of the display board. The end of the chip where pin 1 is located is usually indicated by a "notch", or a small half circle that is etched out of one end of the chip.*

**5. Attach the console back.**

- A.** While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

## Contact Heart Rate Board

### Tools Required

- Phillips head screwdriver
- ESD grounding strap

**1. Turn the power off.**

- A.** Turn the main power switch in the front panel to the off (O) position.

- B.** Unplug the treadmill from the power outlet.

**2. Remove the console back cover.**

- A.** Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** *The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.*

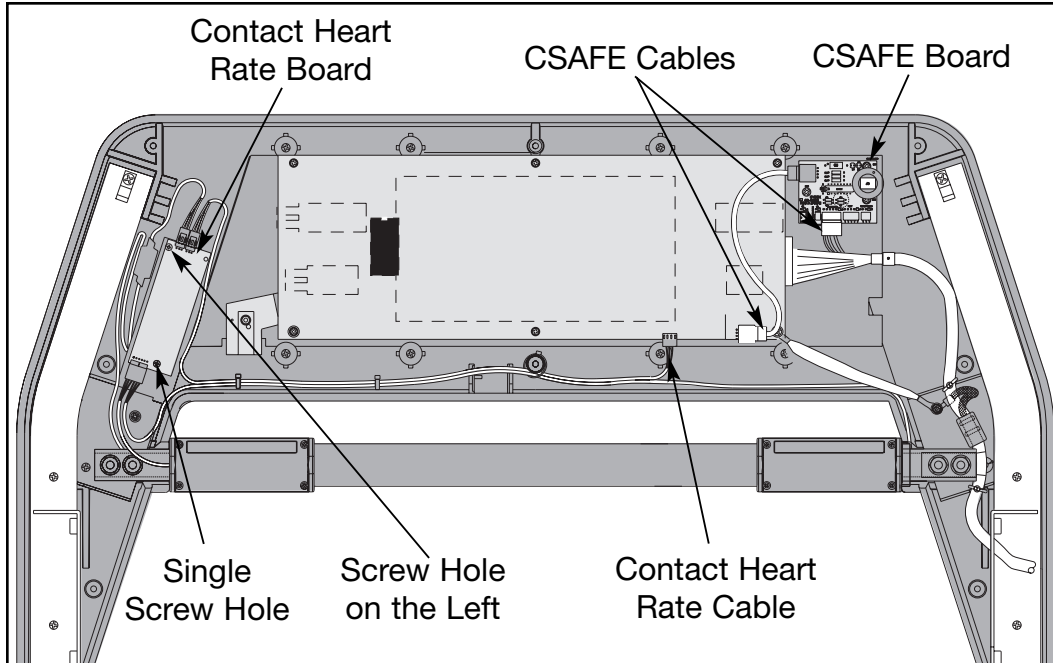


Figure 19

**3. Remove the contact heart rate board.**

- A.** While wearing an ESD strap, unscrew the two Phillips head screws holding the contact heart rate board in place. See Figure 19.
- B.** Disconnect the contact heart rate cable from the display board. See Figure 19. The board is now free to remove.

**4. Attach the contact heart rate board.**

- A.** Place the contact heart rate board in position with the single hole facing down.
- B.** Attach the contact heart rate board with the two Phillips head screws. The screw on top goes in the hole on the left. See Figure 19.
- C.** Connect the contact heart rate cable from into the display board. See Figure 19.

**5. Attach the console back.**

- A.** While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

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## CSAFE Board

### Tools Required

- Phillips head screwdriver
- ESD grounding strap

### 1. Turn the power off.

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

### 2. Remove the console back cover.

- A. Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** *The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.*

### 3. Remove the CSAFE board.

- A. While wearing an ESD strap, unscrew the three Phillips head screws holding the CSAFE board in place.
- B. Disconnect the 4 pin CSAFE cable that branches off from the display cable. See Figure 19.

### 4. Attach the CSAFE board.

- A. Place the CSAFE board in position.
- B. Attach the CSAFE board with the three Phillips head screws
- C. Connect the 4 pin CSAFE cable that branches off from the display cable into the CSAFE board. See Figure 19.

### 5. Attach the console back.

- A. While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

## Display Cable

### Tools Required

- Phillips head screwdriver
- ESD grounding strap

### 1. Turn the power off.

- Turn the main power switch in the front panel to the off (O) position.
- Unplug the treadmill from the power outlet.

### 2. Remove the console back cover.

- Remove the eight Phillips head screws that hold the back cover to the console.

### 3. Remove the motor cover.

- Remove the two Phillips head screws that fasten the motor cover to the frame.
- Lift the motor cover and remove it from the treadmill. Set the cover and screws aside.

**NOTE:** *The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.*

### 4. Remove the display cable.

- While wearing an ESD strap, disconnect the display cable from the display board and from the CSAFE board. See Figure 18.
- Disconnect the display cable from the elevation optical pick-up cable near the left limit switch. See Figure 10.
- Cut the plastic wire tie that holds the display cable in place.
- Pull the display cable out of the left upright.

### 5. Connect the display cable.

- Connect the display cable into the display board. See Figure 18.
- Straighten out the cable and drop it down the left upright.

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- C. Carefully pull the display cable out of the bottom of the upright and away from the elevation rack. Don't pull it too hard.
  - D. Tie the display cable in place with a white plastic wire tie.
  - E. Connect the display cable into the elevation optical pick-up cable near the left limit switch. See Figure 10.
- 6. Attach the motor cover.**
- A. Place the rear of the motor cover in the rear guide holes.
  - B. Lower the front end of the motor cover and install the two Phillips head screws that hold it in place.
- 7. Attach the console back.**
- A. While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

## Display Overlays

**NOTE:** *This procedure will cover the lower display overlay. The upper display overlay is removed and replaced the same way except that there is no ribbon cable, slot, silicone and ground tab.*

### Tools Required

- Phillips head screwdriver
- ESD grounding strap
- 5/16" socket wrench
- Razor blade

**1. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**2. Remove the console back cover.**

- A. Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** *The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.*



**3. Remove the display overlay(s).**

- A. While wearing an ESD strap, disconnect the ribbon cable from the display board. See Figures 18 and 20.
- B. Use a 5/16" socket wrench to remove the ground tab nut from the aluminum plate. See Figure 20.
- C. Use a razor blade to peel up a corner of the old display overlay(s) and pull off the overlay(s).

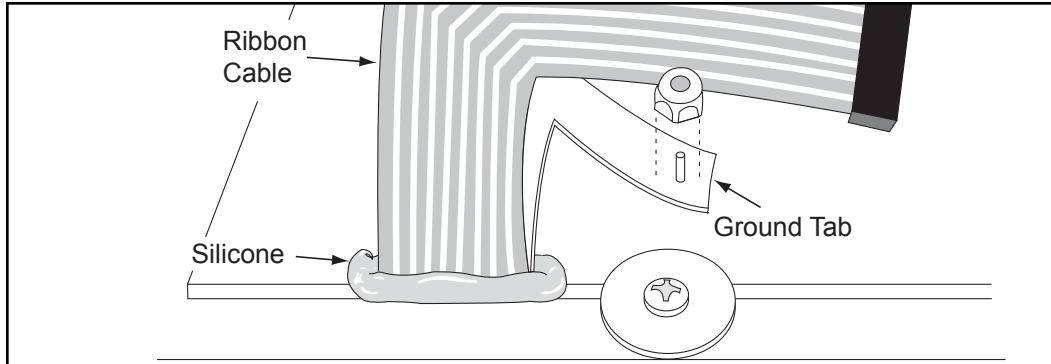


Figure 20

**4. Attach the display overlay(s).**

- A. Remove the paper backing from the new display overlay(s).
- B. Slide the ribbon cable and ground tab through the slot.
- C. Carefully place the display overlay in position within the indentation on the console front.
- D. Firmly rub the display overlay so that it adheres to the console.

**5. Apply silicone.**

- A. Gently bend down the ribbon and ground tab. Run a bead of silicone that fills the void surrounding the ribbon and ground tab. Be sure the silicone is placed all the way around the ribbon and tab. See Figure 20.
- B. Place the ground tab on the stud and use a 5/16" socket wrench to secure the nut over the ground tab.
- C. Plug the ribbon connector into the display board.

**6. Attach the console back.**

- A. While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

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**7. Test the new display overlay.**

- A. Turn the main power switch in the front panel to the on (I) position.
- B. Plug the treadmill into the power outlet.
- C. Try each key to be sure that it functions properly.

## Handrail Assembly

### Tools Required

- Phillips head screwdriver
- ESD grounding strap
- Open end wrench

**1. Turn the power off.**

- A. Turn the main power switch in the front panel to the off (O) position.
- B. Unplug the treadmill from the power outlet.

**2. Remove the console back cover.**

- A. Remove the eight Phillips head screws that hold the back cover to the console.

**NOTE:** The display board is susceptible to damage from a discharge of static electricity. While handling parts underneath the console cover use an ESD (Electro Static Discharge) grounding strap. This eliminates the potential voltage (static) difference between you and the equipment you are working on.

**3. Remove the handrail assembly.**

- A. While wearing an ESD strap, disconnect the top left connector and the lower connector from the contact heart rate board. See Figure 19.
- B. Using an open end wrench remove the four nuts that hold the handrail assembly to the treadmill. See Figure 21.

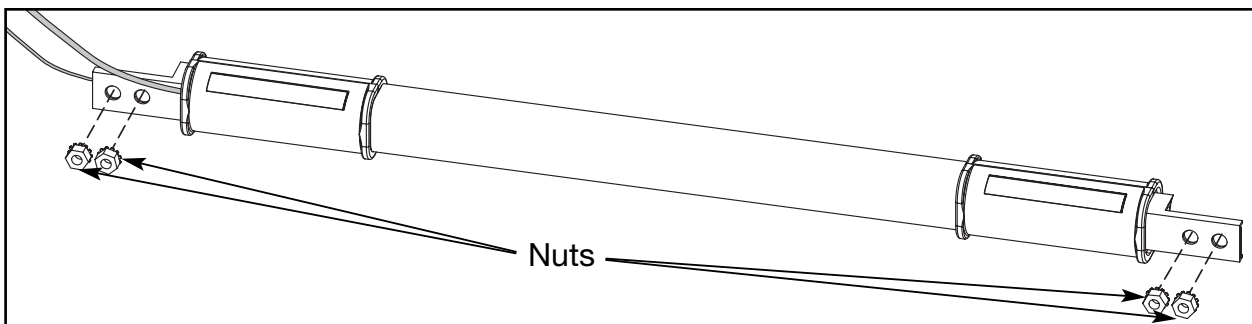


Figure 21

**4. Remove the handrail assembly.**

- A.** Place the handrail assembly in position on the treadmill without pinching any cables. Be sure the cables are exiting the assembly to the left.
- B.** Use an open end wrench to attach the four nuts that hold the handrail assembly to the treadmill. See Figure 21.
- C.** While wearing an ESD strap, connect the top left connector and the lower connector to the contact heart rate board. See Figure 19.

**5. Attach the console back.**

- A.** While being sure not to pinch any cables, attach the console back to the console with the eight Phillips head screws.

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1	1	FS-11429	Brace, Crossrail
2	1	AF-11017	Frame Weldment, Right
3	1	AF-11012	Frame Weldment, Left
4	1	FM-12164	Casting, Front End
5	19	HS-00266	Bolt, Hex Head. 5/16-18 x 3/4
6	17	HW-00165	Washer, Lock EXT 5-16 Zinc
7	23	HW-12042	Washer, Lock EXT 3-8 Zinc
8	2	HX-11425	Wheel, Rear
9	2	HS-13769	Bolt, HHCS 1-2-13 x 2.5 B-Zinc
10	2	FM-11428	Insert, Aluminum, Rear Foot Mnt.
11	2	HW-11427	Washer, .593 x 2.0 OD Zinc, Rear Foot Mnt.
12	8	HW-11873	Washer, 1/2 Lock, Zinc, Rear Foot Mnt.
13	6	HN-10029	Nut, 1/2-13, Zinc, Rear Foot Mnt.
14	2	AF-13462	Bracket, End Cap
15	1	PL-12977	End Cap, Left
16	1	PL-12978	End Cap, Right
17	10	HS-11328	Screw
18	4	HS-00163	Screw, 5/16 x 3/4
19	1	PL-10970	Side Cover, Right
20	1	PL-10969	Side Cover, Left
21	6	HS-11170	Screw, Hex Head #10 x 1.0, Self Tap
22	6	HS-00190	Screw, 3/8-16 x 3/4
23	6	HW-10028	Washer B 1-2 Narrow Zinc
24	2	HS-12204	Screw, 1-2-13 x 3.50 Hex Head GR5 STL
25	2	WH-10957	Wheel, Elevation
26	2	EH-10230	Anchor, Wire
27	2	HS-11328	Screw
28	1	AM-12262	Limit Switch Assembly
29	1	GR-10967	Gear Rack, Left
30	1	GR-10968	Gear Rack, Right
31	1	DK-10953	Deck, Running
32	10	HS-12295	Bolt, 1/4-20 x 1.75 Hex Head
33	10	HX-14956	Disk Guide Deck Edge
34	1	BD-10983	Belt, Drive, Poly - V 320J10
35	1	PL-13566	Pulley
36	1	AL-10980	Roller Assy. Front, 3"
37	2	HS-00195	Screw, .312-18 x 1.50 Hex Head Bolt
38	1	AL-10975	Roller Assy. Rear, 3"
39	2	HS-00261	Bolt, 1/2-13 x 5.5, Hex Head
40	2	HB-00188	Bushing,Thrust, .50"
41	2	HX-11049	Spring, 1"OD Rear Roller Tensioning
42	2	HW-00590	Bushing, 1/2" Nylon, Rear Roller Bolt
43	2	HX-13771	Retaining Ring
44	1	BD-10981	Belt, Running 20.75 x 127.50
45	1	AF-12163	Panel, Front End
46	1	HX-14821	Brake, Elevation 90 VDC
47	1	DE-10288	Label, Belt Caution, Grey
48	1	FS-11129	Disc, Elevation Sensor

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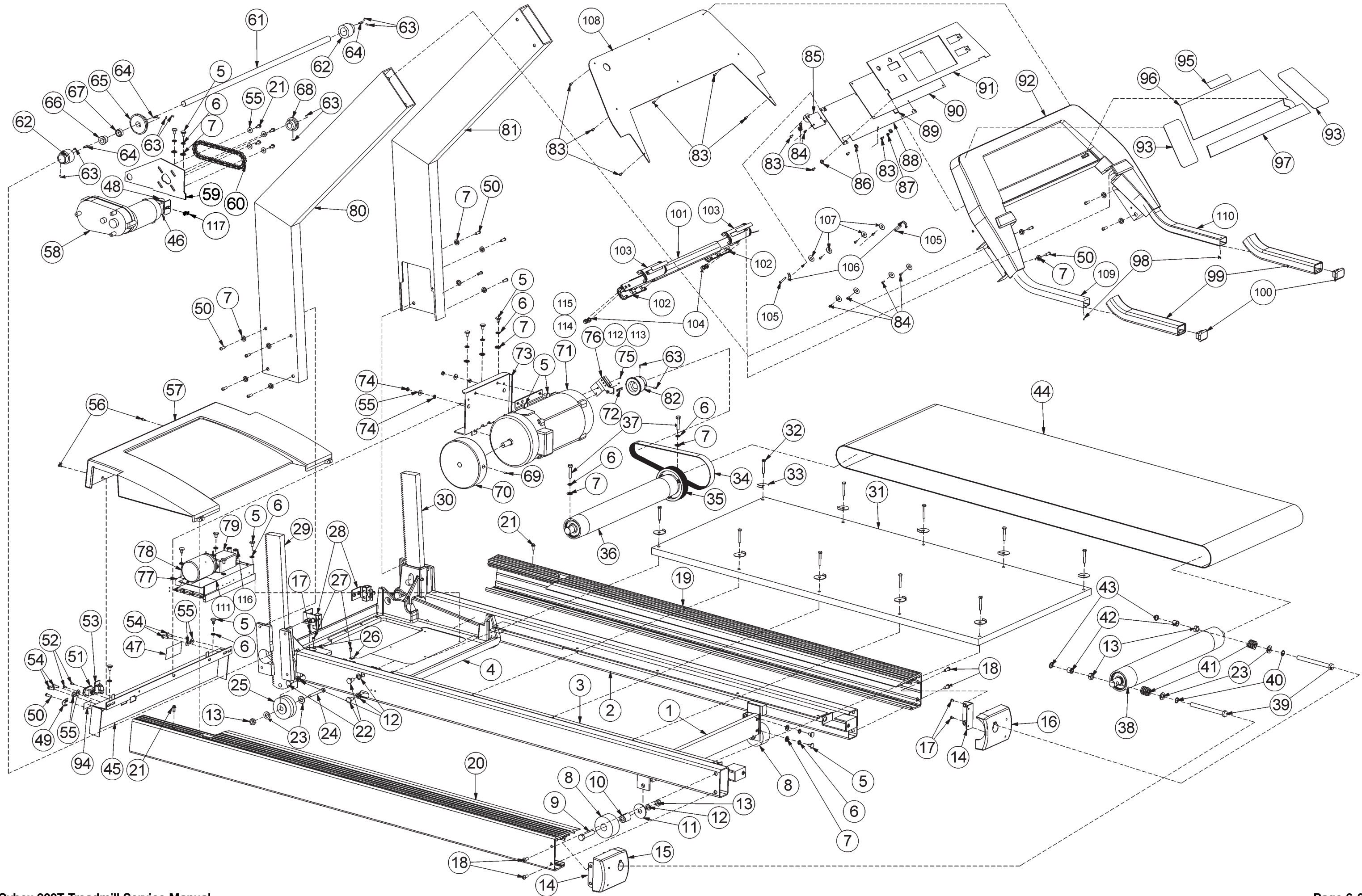
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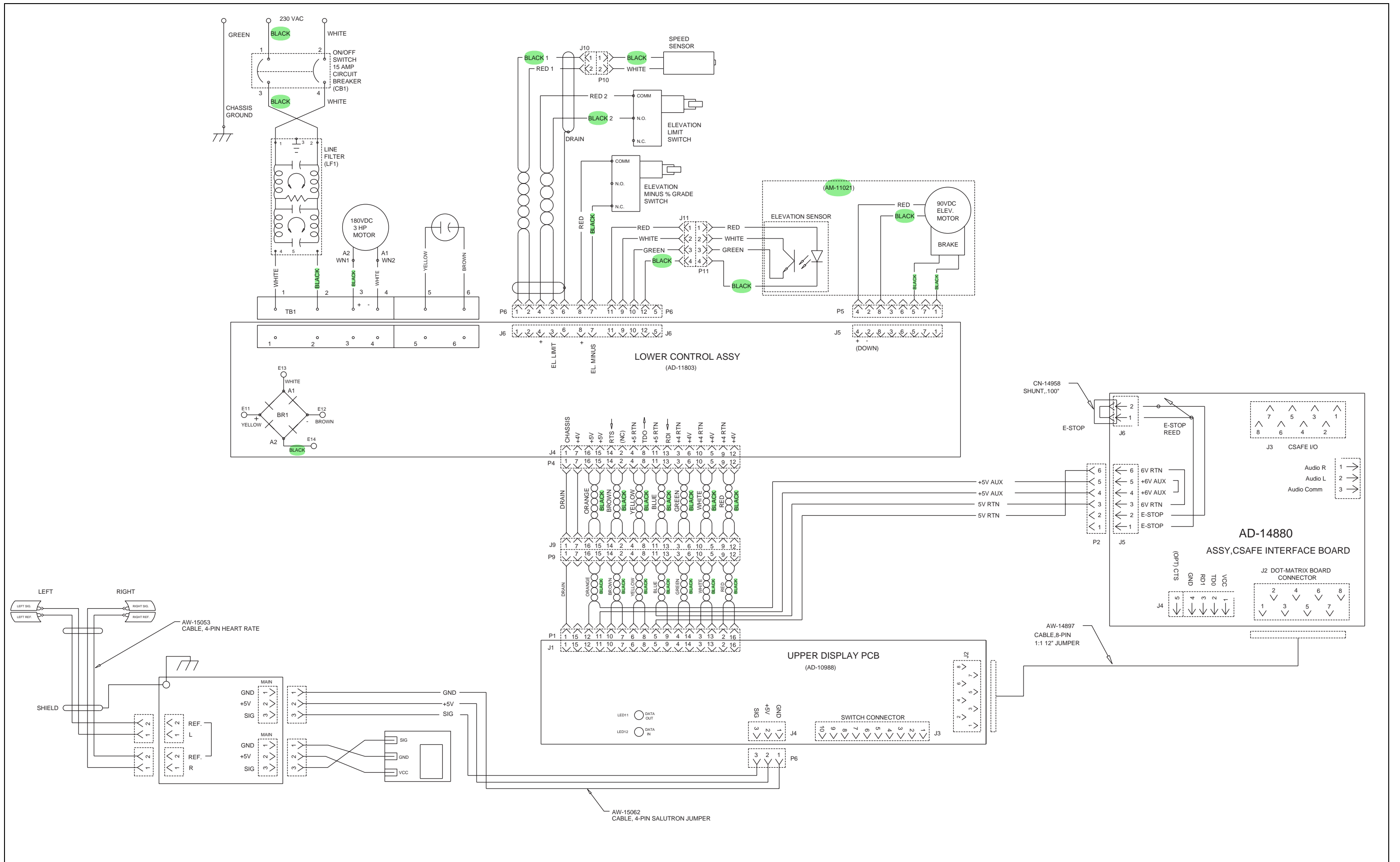
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50	13	HS-00193	Screw, 3/8-16 x 1/2 Button Head	104	8	HN-11136	Nut, 5/16-18", Hex, KEPS
51	1	EH-12208	Receptacle, Inlet, 20 Amp	105	4	HS-11139	SEMS 10-32 x 1.25 PNHD
52	2	HS-00985	Screw, Type B 8-18 x .38 SLFTP	106	2	FS-13808	Bracket, Grounding
53	1	SW-11168	Switch, CB, 15 Amp, 250V, Rocker	107	8	HW-13656	Washer Flat .187 ID x .875 OD x .06
54	4	HS-11874	Screw	108	1	FS-14898	Panel Rear Console w/CSAFE
55	12	HW-00431	Washer USS 1-4 x .75 x .062 Zinc	109	1	AF-11007	Handrail Assembly, Right
56	2	HS-11885	Screw, #8 x .75, Self Tap	110	1	AF-11005	Handrail Assembly, Left
57	1	PL-10952	Motor Cover	111	1	DE-10243	Label, Caution High Voltage
58	1	AM-11021	Motor Assy., Elevation	112	1	EC-00434	Speed Sensor Pickup
59	1	FS-11023	Plate, Elevation Motor Mounting	113	1	FS-07503	Speed Sensor Clamp
60	1	AX-11068	Chain	114	1	SK-15893	Drive Motor Brush Kit
61	1	FM-11034	Shaft, Elevation Pinion	115	2	HX-10300-2	Brush Cap, Drive Motor
62	2	GR-11036	Gear, Pinion Shaft	116	6	EH-10059	Insulated Boot, Rubber
63	8	HS-00219	Set Screw	117	1	EC-11101	Sensor, Optical
64	1	GR-11444	Sprocket, 1/2 Pitch, 10 Tooth, Motor Gear	NS	2	HS-00109	Screw, 10-32 x .38 PNHD PHIL
65	1	GR-11445	Sprocket, 1/2 Pitch, 16 Tooth, Shaft Gear	NS	1	AW-15142	Cable, 6-Pin Heart Rate
66	1	HB-00244	Bearing 3-4IN. NO. FB1214-6	NS	1	AW-15090	Cable, 900T CSAFE, Console
67	1	EH-11875	Spacer 1.0 OD x .766 ID x .38 Nylon	NS	1	AW-11106	Cable, Console Jumper
68	3	HX-11055	Woodruff Key	NS	1	AW-11041	Cable, Console
69	1	HS-00219	Screw, Set 5/16-18 x 3/8	NS	1	AW-11141	Cable, Ground Jumper, Console
70	1	FW-09392	Flywheel, Drive Motor	NS	1	AW-13840	Cable, H/R Pickup
71	1	MR-13575	Motor, 3.0 HP 180V, Double Shaft	NS	1	AW-12211	Cable, Switch to Inlet Jumper, Blk, 12AWG
72	1	HX-11593	Key, ANSI Square, 3/16 x 1 3/16	NS	1	AW-12210	Cable, Switch to Inlet Jumper, Grn, 12AWG
73	1	AF-12175	Base, Drive Motor, 3.0 HP.	NS	1	AW-12212	Cable, Switch to Inlet Jumper, Wht, 12AWG
74	4	HN-00117	Nut 1-4-20 Hex STL Zinc	NS	1	WR-13966	<b>Cord, Power, 12', 230V, 60Hz, Right Angle, USA</b>
75	5	HS-12247	Screw, 4-40 x .25, Pan HD	NS	1	WR-13965	<b>Cord, Power, 12', 220V, 50Hz, Right Angle, International, Round Prongs</b>
76	1	FS-12024	Speed Sensor Mounting Plate	NS	2	HS-00700	Screw, 8-32 x .50, PNHD Phil
77	1	SK-15543	PWM Assy., Kit	NS	1	AW-12303	Strap, Ground 8"
78	1	CA-11213	Capacitor, 1500uf, 450 Volt	NS	1	FS-12251	Bracket, External Brush Holder
79	1	EC-13809	Line Filter	NS	1	FS-12257	Bracket, External Brush Housing
80	1	AF-10958	Upright, Left	NS	1	EH-12250	Brush, External, Motor
81	1	AF-10959	Upright, Right	NS	1	HX-12244	Spring, Compression, External Brush
82	1	PW-10989	Pulley, Motor	NS	1	LT-10963	Owner's Manual, 900T Treadmill
83	14	HS-14391	Screw, 6-32 x .38 PNHD PHIL SEM	NS	0	SM-16106	Service Manual, 900T Treadmill
84	11	HS-11894	Screw, 6-32 x .25 PNHD PHIL INT SEM	<b>NS = Not Shown</b>			
85	1	AD-14880	CSAFE Interface Board				
86	6	HW-00432	Washer, SAE NO.6 STL Zinc				
87	1	HN-11585	Nut, Grounding				
88	1	FS-12381	Shield, RF, Circuit Board				
89	1	EC-11009	EPROM, V3.06				
90	1	AD-10988G1	Control PCB with EPROM				
91	1	AF-13511	Plate, Aluminum Switch				
92	1	PL-13507	Console, Front				
93	1	DE-11353	Label, Console Set				
94	1	DE-10278	Decal, Caution				
95	1	DE-15383	Decal, 900T Console				
96	1	DE-13536	Console Window				
97	1	SW-13537	Switch Panel, 900T				
98	2	HP-16288	Pin, Roll, 1/8 x 1.125"				
99	2	HX-10941	Grip Handrail				
100	2	HX-10942	Plug, Handrail End				
101	1	HX-14922	Grip, Crossrail, Contact Heart Rate				
102	2	PL-14920	Handgrip, Lower Contact Heart Rate				









# 7 - Customer Service

## Contacting Service

In most areas call 888-GO-CYBEX or 888-462-9239. Otherwise call 508-533-4300 or fax 508-533-5183. Hours of phone service are Monday through Thursday from 8:30 a.m. to 6:00 p.m. and Friday from 8:30 a.m. to 5:00 p.m. Eastern Standard Time.

Order parts and find information on the web at [www.eCybox.com](http://www.eCybox.com) or by email at [techhelp@cyboxintl.com](mailto:techhelp@cyboxintl.com).

## Serial Number

Your serial number can be found on the front panel of your treadmill near the on/off (I/O) switch. For your convenience record your serial number below so that you will have it ready if you call Cybox Customer Service.

Serial Number \_\_\_\_\_

## Return Material Authorization (RMA)

The Return Material Authorization (RMA) system outlines the procedures to follow when returning material for replacement, repair, or credit. The system assures that returned materials are properly handled and analyzed. Follow the following procedures carefully.

Contact your authorized Cybox dealer on all warranty-related matters. Your local Cybox dealer will request an RMA from Cybox, if applicable. Under no circumstances will defective parts or equipment be accepted by Cybox without proper RMA and an Automated Return Service (ARS) label.

1. Call the Customer Service Hotline listed above for the return of any item that is defective.
2. Provide the technician with a detailed description of the problem you are having or the defect in the item you wish to return.
3. Provide the model and serial number of your treadmill. The serial number is located on the front panel of your treadmill. The serial number begins with a letter, for example: R09-101331100.

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4. At Cybex's discretion, the technician may request that you return the problem part(s) to Cybex for evaluation and repair or replacement. The technician will assign you an RMA number and will send you an ARS label. The ARS label and RMA number must be clearly displayed on the outside of the package that contains the item(s) to be returned. Include a description of the problem, the serial number of the treadmill and the name and address of the owner in the package along with the part(s).
5. Forward the package through UPS to Cybex.  
Attn: Customer Service Department  
Cybex International, Inc.,  
10 Trotter Drive  
Medway, MA 02053

**NOTE:** *Merchandise returned without an RMA number on the outside of the package or shipments sent C.O.D. will not be accepted by the Cybex receiving department.*

## Damaged Parts

Materials damaged in shipment should not be returned for credit. Shipping damages are the responsibility of the carrier (UPS, Federal Express, trucking companies, etc.)

**Apparent Damage** — Upon receipt of your shipment, check all boxes carefully. Any damage seen with a visual check must be noted on the freight bill and signed by the carrier's agent. Failure to do so will result in the carrier's refusal to honor your damage claim. The carrier will provide you with the required forms for filing such claims.

**Concealed Damage** — Damage not seen with a visual check upon receipt of a shipment but noticed later must be reported to the carrier as soon as possible. Upon discovery of the damage, a written or phone request to the carrier asking them to perform an inspection of the materials must be made within ten days of the date of delivery. Keep all shipping containers and packing materials: they will be needed as part of the inspection process. The carrier will provide you with an inspection report and the necessary forms for filing a concealed damage claim. Concealed damage is the carrier's responsibility.

## Ordering Parts

Visit [eCybex.com](http://eCybex.com) to shop for parts online, or download the parts order form and fax your order to 508-533-5183. To speak with a customer service representative, in most areas call 888-GO-CYBEX or 888-462-9239. Otherwise call 508-533-4300.



**CYBEX<sup>®</sup> International**  
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