Service Manual

TRM10/ GEN06 TREADMILL BASE

20039-165 REV A03

PRECOR CUSTOMER SUPPORT

Contents

Section 1 - Introduction - Gen 06/ TRM10

About This Document

Warning: This service manual is for use by Precor trained service providers only. If you are not a Precor Trained Servicer, should not attempt to service any Precor products. Call your dealer for service.

This document contains information required to perform the majority of troubleshooting and replacement procedures required to repair and maintain this product.

This document contains general product information, software diagnostic procedures (when available), preventative maintenance procedures, inspection and adjustment procedures, troubleshooting procedures, replacement procedures and electrical block and wiring diagrams.

General Information

GEN-06/ TRM10 Treadmill Base

This manual covers service information for the GEN-06 / TRM10 Treadmill Base.

- The GEN-06 treadmill base is defined as any treadmill produced between April of 2006 and April of 2011. GEN-06 Treadmills include the following models; C952, C954, C956, and C966.
- The TRM10 treadmill base is defined as any treadmill produced after April 2011 and is mated to a Pxx console. All of the base and console combinations are part of the "Experience" line of products.

Lubricants

- Do not apply any lubricants to the deck and belt. Do not use Wax Blast, silicon sprays, or other applied lubricants. The use of these lubricants will quickly degrade the low-friction surface of the deck.
- Do not use petroleum based lubricants on mechanical components such as the lift, as this may result in degradation of nylon gearing mechanisms. Use only synthetic lubricants such as "Super Lube with Teflon" or "Mobile One Synthetic" grease (RED).

Use of unapproved lubricants, cleaners, or solvents may void the treadmill warranty.

Electrical Requirements

It is extremely important that any Precor treadmill be connected to and operated on a dedicated 20 amp AC branch circuit. A Dedicated Branch Circuit is defined as a circuit fed by a single circuit breaker feeding a single load, with a single non-shared neutral providing a return line. A treadmill operating from a non-dedicated branch circuit or a circuit breaker of less than 20 amps capacity will not have the necessary power to operate normally under higher load conditions.

Nominal AC operating voltage on 120VAC circuits is 90VAC to 132VAC. Nominal AC operating voltage on 240VAC circuits is 180VAC to 264VAC. For operator safety considerations and to minimize electrostatic discharge conditions the AC frame ground continuity must also be verified to be a low resistance connection to the AC distribution ground bar.

Important

If the AC circuit feeding a treadmill is found to be a non-dedicated branch circuit or a circuit equipped with a circuit breaker with a capacity of less than 20 amps, the AC circuit must be corrected before any reliable troubleshooting can be performed on the treadmill. More importantly, a non-dedicated branch circuit may constitute a safety hazard to the treadmill operator.

120 Vac Systems

120 VAC distribution systems utilize a single pole circuit breaker (hot lead) and a neutral lead connected to a common neutral (ground) bar. The A.C. safety ground (green wire) is connected to a separate ground bar in the distribution system.

If it is determined that any of the above electrical conditions are in question, please consult with a qualified electrician to make appropriate circuit changes.

Safety Guidelines

Safety guidelines you should know and follow include:

- Read the owner's manual and follow all operating instructions.
- Operate the equipment on a solid, level surface.
- Visually check the equipment before beginning service or maintenance operations. If it is not completely assembled or is damaged in anyway, do not attempt to operate the equipment.
- When operating the treadmill:
  - Do not wear loose clothing. Do not wear shoes with heels or leather soles.
  - Check the soles of your shoes and remove any embedded stones.
  - Tie long hair back.
- Do not rock the unit.
- Do not stand or climb on the handlebars, display enclosure or cover.
- Do not set anything on the handlebars, display enclosure, or cover. Never place liquids on any part of the treadmill while performing service.
- To prevent electrical shock, keep all electrical components away from water and other liquids.
- Do not use accessory attachments that are not recommended by the manufacturer-such attachments might cause injuries.
- Removing the hood exposes high voltage components and potentially dangerous machinery. Exercise extreme caution when you perform maintenance procedures with the hood removed.

Section 2 - Operation Verification

This section provides a method of checking the treadmill operation. Check the treadmill operation at the end of a maintenance procedure and when it is necessary to ensure that the treadmill is operating properly.

Operation Verification

Procedure

1 Plug the power cord into the wall outlet and then switch the circuit breaker to the "ON" position.

2 Press and hold the reset key for at least 6 seconds, if errors are present the error log will be displayed. Make note of all the errors in the error log and odometer reading for which the error occurred. The odometer in the error log can help you determine age and relevance of the error.

3 Clear the error log.

4 Enter the **Hardware Validation** test by entering **Service** mode as follows:

- Press either the **STOP**, **PAUSE** or **RESET** buttons and then enter 5,1,7,6,5,7,6,1.

If the console is a P20, reference **P20 Console Service Software Access** ***(on page 14).***

5 Select and run the **Display Test**, the **Keypad Test**, and the **Heart Rate Test.** Verify the following results.

- LEDs light
- Keys all function
- Heart rate is acquired and displayed

6 Enter the **Machine Tests** (submenu) and run the **Belt Speed test** and the **Incline test**, verify following results:

- Running belt spins and is controlled from 0.1mph to 16.0mph.
- Lift goes up and down and the A/D value is approximately 6000+/-500 at 0% incline)

7 Press the reset key to exit diagnostics.

8 Operate the treadmill in the **Manual** program. Adjust the speed of the running belt to 2–3mph. Operate the treadmill for at least 5 minutes while walking on the unit.

- Concentrate on the feel of the running belt, the sound of the drive motor and rollers. Be on the alert for unusual noises, smells or vibrations.

- Observe the LED's on the electronic console. Make sure that each LED lights as the information corresponding to that LED is displayed on the electronic console.

9 Press the INCLINE ↑ key while viewing the electronic console. Confirm that the running deck inclines and the incline display increments to 15% as the INCLINE ↑ key is continually pressed.

10 Press the INCLINE ↓ key while viewing the electronic console. Confirm that the running deck returns to a level position and the incline display decrements to 0% as the INCLINE ↓ key is pressed. (Depending on the software configuration of the console, the lowest level of incline might be -3%)

11 While the unit is running and the running belt is in motion, press the STOP button and verify the running belt stops.

12 Restart the running belt and while the running belt is in motion, pull the ESTOP cord and verify the running belt stops.

13 Press and hold the reset key for at least 6 seconds and look at the error log again. This time look for any NEW errors displayed resulting from the verification test indicating that the unit needs attention.

Operation Verification Checklist

- ☐ Check, record, and then clear any errors in the error log.
- ☐ Verify that all LEDs function properly during the **Hardware Validation Tests**.
- ☐ Verify that all keys on the keypad function properly during the **Hardware Validation** Tests.
- ☐ Verify that the heart rate functions normally and displays a valid heart rate.
- ☐ Verify the running belt drive system functions properly throughout the minimum to maximum range of control. All drive system components (deck, belts, rollers, IFT) are free of excessive noise, vibrations, or smells
- ☐ Verify the Incline A/D value is approximately 6000+/-500 at 0% incline; the incline operates within the complete range of the lift when the ↑ or ↓ keys are pressed and is free of excessive noise or vibrations.
- ☐ The **STOP** button stops the running belt from moving.
- ☐ Pulling the **ESTOP** cord stops the running belt from moving.
- ☐ Check for new errors that may have been recorded in the error log during operation verification of the treadmill.

Section 3 - Standardized Service Access Codes

In This Section

Service Access Codes

The standardized service access codes are utilized on the following consoles:

- Standard Console
- P10 Console
- P20 Console
- P30 Console

The service codes will allow access to three functional modes, Hardware Validation, Club Parameters, and a Information Display.

- **Hardware Validation** is a set of functional diagnostic tests that are useful in troubleshooting problems as well as verifying proper operation.
- **Club Parameters** are sometimes referred to as Club Settings and are used to manage usage of the machine.
- **Information Display** is used to access information such as the odometer, software versions and error logs.

Accessing the Service Software

Accessing these three areas is accomplished the same on all consoles (Standard, P10, P20, P30) except the P80. To enter Service Software, press either the STOP, PAUSE, or RESET key (whichever is available on your specific console) followed by a numeric code for the area of service software you wish to access.

The standard access codes use sequential key presses, not simultaneously holding down multiple keys. The allowable delay between key presses is short. If too much time is taken between key presses or the wrong key is pressed, the access procedure will be aborted. If the access is aborted, it will be necessary to start over from the beginning.

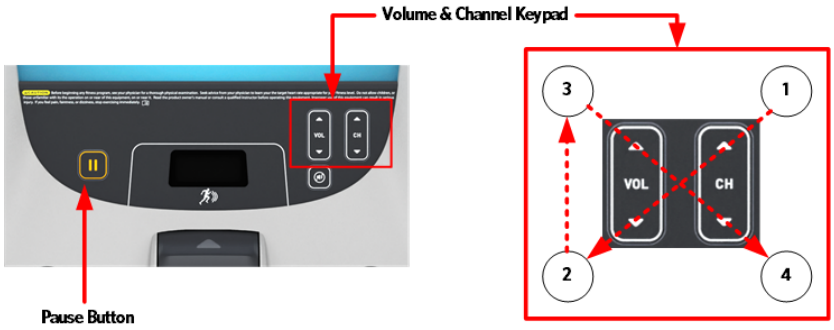
P80 Console

1 Use the System Settings to test your equipment and set parameters that benefit your users and your facility.

2 The Welcome screen will be the first screen you see when you approach the P80 console. Press the Pause key and continue holding it down while you double press (prior to 1.1 version software release) or single press (1.1 version or after software release) in sequential order an X configuration on the Volume and Channel key pad (①Channel Up, ②Volume Down,③ Volume Up,④ Channel Down). Release the Pause key when done pressing the arrows.

Note: The keypad X configuration sequence should be not faster than 1 second between each key stroke. Any speed faster than 1 second may result in an unsuccessful access to the sign-in screen.

Figure 1: P80 Sign In Access



3 The sign-in screen will be displayed. Type in the technician access ,5,1,7,6,5,7,6,1, and then touch OK. The Settings menu will be displayed.

Access Code Table

Access Code	Heading Name	Function
5,1,7,6,5,7,6,1	Hardware Validation	Running Diagnostic Tests
5,6,5,1,5,6,5	Club Parameters (Commercial)	Changing Machine and /or Workout Parameters
6,5	Information Display	Acquiring Information

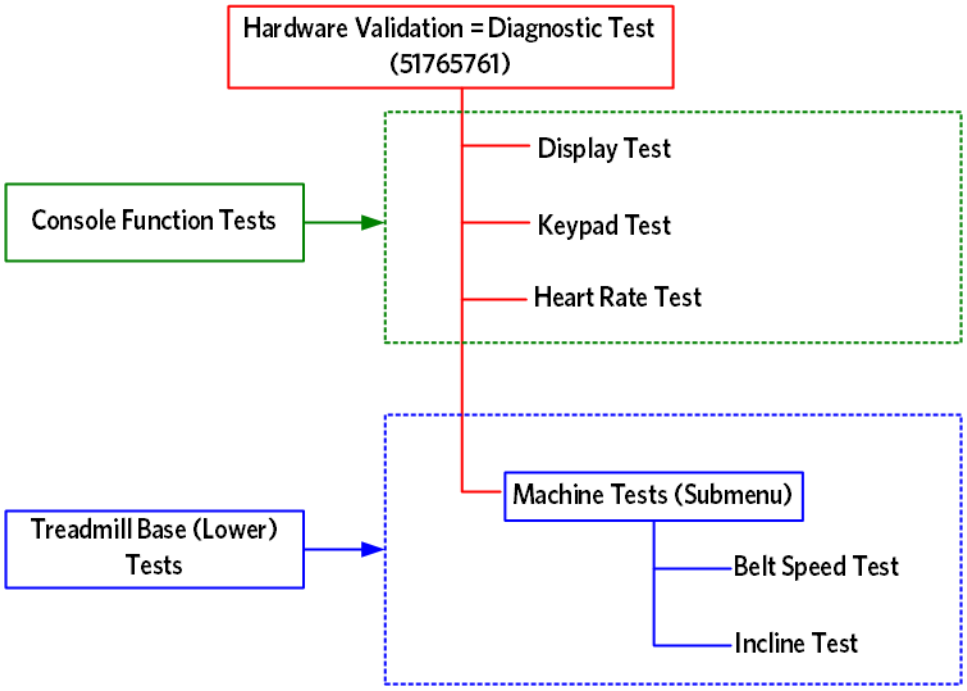
P20 Console Service Software Access

The P20 console starts with STOP, PAUSE, or RESET, however the numeric values of the service software code is assigned to the function keys in the absence of the 10-key pad.

Figure 2: P20 Console Access Keys

Hardware Validation - Diagnostic Tests (51765761)

Figure 3: Hardware Validation Graphic



Diagnostic Test Performed	Console Function or Base Function	Test Description
Display Test	Console Function Test	While in this test, each time the "OK" key is pressed a different group of LEDs will illuminate. Press the back button to exit this test.
Keypad Test	Console Function Test	While in this test, a map of the keys will be displayed. When a key is pressed, the corresponding LED will extinguish. When finished, press and hold the "BACK" button to exit the test.
Heart Rate Test	Console Function Test	While in this test, unfiltered, filtered, and pulse values will be displayed. Use a Polar heart rate simulator to test the wireless heart rate. Grasp the grips to test the hand held heart rate. Press the back button to exit this test.
Machine Tests (submenu)		
Belt Spee Test	Base Function Test	Speed and power bits information will be displayed. Use this test to determine deck and belt wear, and other speed related problems. Press the back button to exit this test.
Incline Test	Base Function Test	Incline, A/D, and glitch information will be display. Use this test to determine the cause of the incline problems. Press the back button to exit this test.

Club Parameter - Settings (5651565)

Safety Code	Either enabled or disabled, this setting requires a password (1234) to be entered in order to start the unit. Factory default is disabled.
Select Language	Sets the default language for ALL workouts on this machine. Language for single use workouts can still be set by the user from the workout options.
Select Units	Sets units of measure (US standard or Metric). Factory default is US standard.
Set Max Workout Time	Sets the maximum allowable workout time for each user. Factory default is 60 minutes.
Set Max Pause Time	Sets the maximum time that the workout can be paused for. Factory default is 120 seconds.
Set Max Cool Down Time	Sets the amount of time that a cool down period will occur at the end of every workout. Factory default is 5 minutes.
Set Metrics Default	Sets a metric that may be of specific importance to the specific facility or fitness trainer. The selected metric will scroll across the screen at regular intervals during the workout. Factory default is "NONE"
Set Speed Limit	Sets the maximum speed that the user can set the unit to. Factory default is 16mph.
Set Incline Limit	Sets a maximum value that the user can set the incline to. Factory default is 15%.
Show Hidden Programs	Either enabled or disabled, this setting allows the unit to access specialized fitness tests designed for police, fire fighters, and the military. Factory default is disabled.

Information Display (65)

Odometer	Displays the total number of accumulated miles on the unit. This value is stored in the upper PCA in the console, so if the PCA is replaced the accumulated miles would start again from “0”.
Hours of Use	Displays the total number of hours that the unit took to accumulate those miles unit. This value is stored in the upper PCA in the console, so if that PCA is replaced the hours of use would start again from “0”
Upper Boot Software	Displays the current version of software that handles flash upgrades of upper PCA (console) software.
Upper Base Software	Displays the current version of software loaded in the upper PCA (console). This is the unit specific console software.
Lower Software	Displays the current version of software loaded in the lower control module (IFT drive).
Metrics Board Software	Displays the current version of software loaded in the metrics board.
Serial Number	The base serial number can be set here using theWinCSAFE computer software. Factory default is NONE.
Usage Log	Displays the type of workout programs the users are accessing most frequently.
Error Log	Displays a running log of the last 10 errors encountered on the unit.

Section 4 - Theory of Operation

Consoles

Basic operation of a console

The purpose of this section is to describe the operation and maintenance of the treadmill base, however it would be difficult to explain the base operation without referring to the console controls. This section will explain basic functions that apply to all models of consoles. For specific details about a particular model of console (Standard, P10, P20, P30, P80), refer to the applicable console manual.

The Controls

All consoles provide user input (keypad functions), user display (LED display / user feedback), automated control (heart rate program, interval program) and service software routines (tests, settings, and information).

The keypad functions can vary between different console models, however the basic functions that all consoles have are Quick Start, Incline (up or down) and Speed (up or down).

The Display

The display features can vary between different console models, however the information conveyed by those displays are very similar.

Service software routines are handled exactly the same for all console models. Entering into Hardware Validation tests, Club Parameter settings, or Information Display is also the same and is called Standardized Service Access Codes.

The service software and standard access codes are described in detail in, ***Standardized Service Access Codes*** (see "***Section 3 - Standardized Service Access Codes***" on page 11) section of this manual.

The service software also includes Standard Error Codes, in all console models. For a full listing of Standard Error Codes used for this model see, ***Section 7 - TRM Base Troubleshooting Procedures*** (see "***Section 5 - TRM Base Troubleshooting Procedures***" on page 29).

Consoles that could appear on the GEN-06 / TRM10 Treadmill Base

Figure 4: Commercial Treadmill Consoles

Standard Console
(GEN-06 Treadmill)

P10 Console
(TRM10 Treadmill)

P20 Console
(TRM10 Treadmill)

P30 Console
(TRM10 Treadmill)

P80 Console
(TRM10 Treadmill)

Console to Base Communication

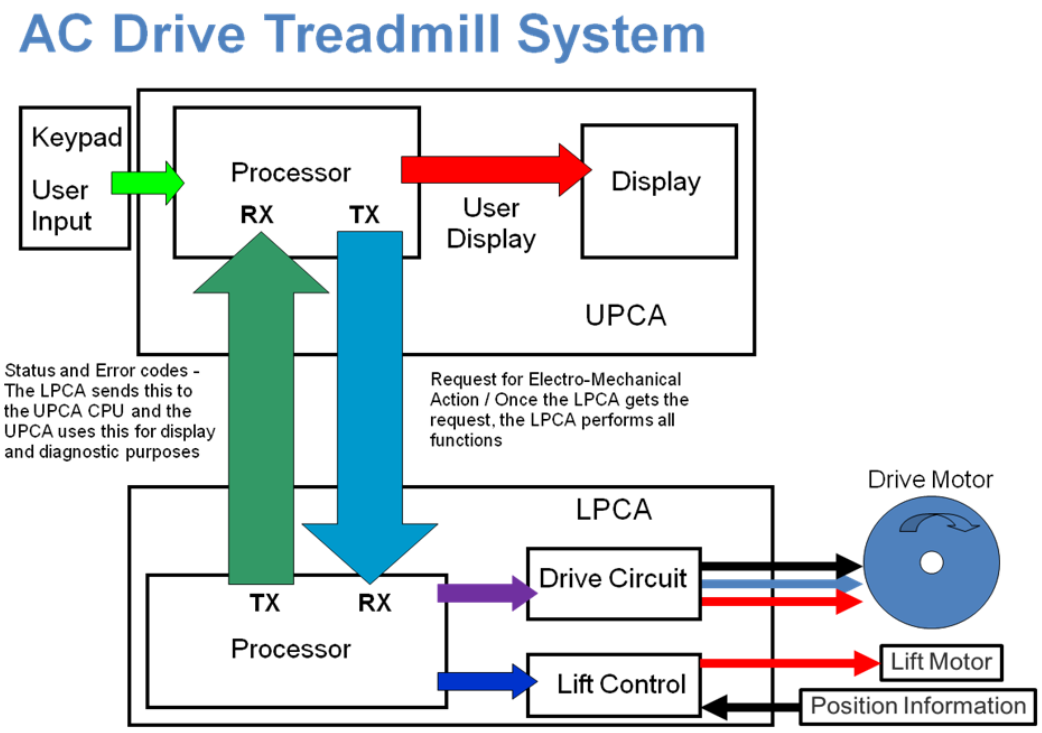
The processor in the console provides user input, user display and automated control to the system. The processor in the lower electronics module performs the actual machine function.

The two processors communicate via a serial data stream. When the user makes a requests a machine function to take place via the keypad, the console processor communicates the request to the processor in the lower electronics module.

Once the lower processor receives the request the lower control module performs the machine task associated with the request. The console processor continues to monitor keypad entry and provide display feedback.

The lower processor also provides status back to the console processor (via the serial data stream) to report if everything occurred properly, or if an error code needs to be written to the error log.

Figure 5: AC Drive Treadmill System

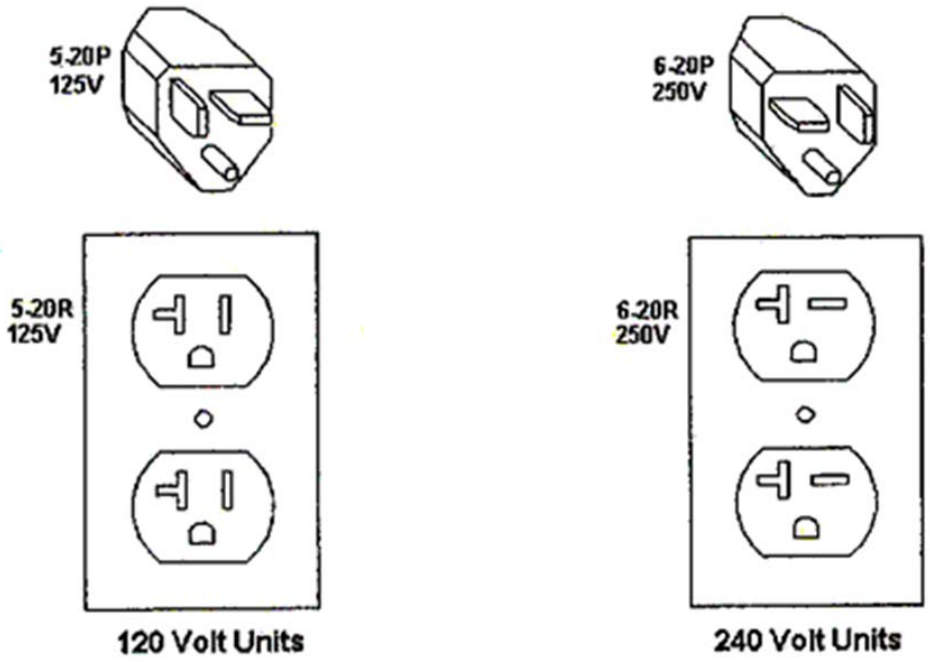


Treadmill Base Operation

Power Entry

The GEN-06 / TRM10 base is equipped with a removable line cord plugged into a power entry socket. This is designed to accommodate either 120V or 240V NEMA compatible line cords, as well as line cords for other countries. The diagram below shows a NEMA 20A plug for both 120V and 240V configurations in the United States.

Figure 6: NEMA Compatible Plugs



120v power, when measured from hot to neutral, should read between 90 and 132v. 240v power, when measured from hot to neutral should read between 180 and 264v. This input voltage is applied through the power entry plug and wired to the breaker switch. The 120v breaker switch only interrupts the hot line and the 240v breaker switch interrupts both the hot and neutral lines. The power is then fed through a line filter which removes high frequency noise from the line voltage. After the power is cleaned by the line filter it can be applied to the lower electronics module (IFT drive).

Lower Electronics Module

The lower control module consists of an AC drive motor controller, an AC lift motor controller and a +8.5V DC power supply to power the console.

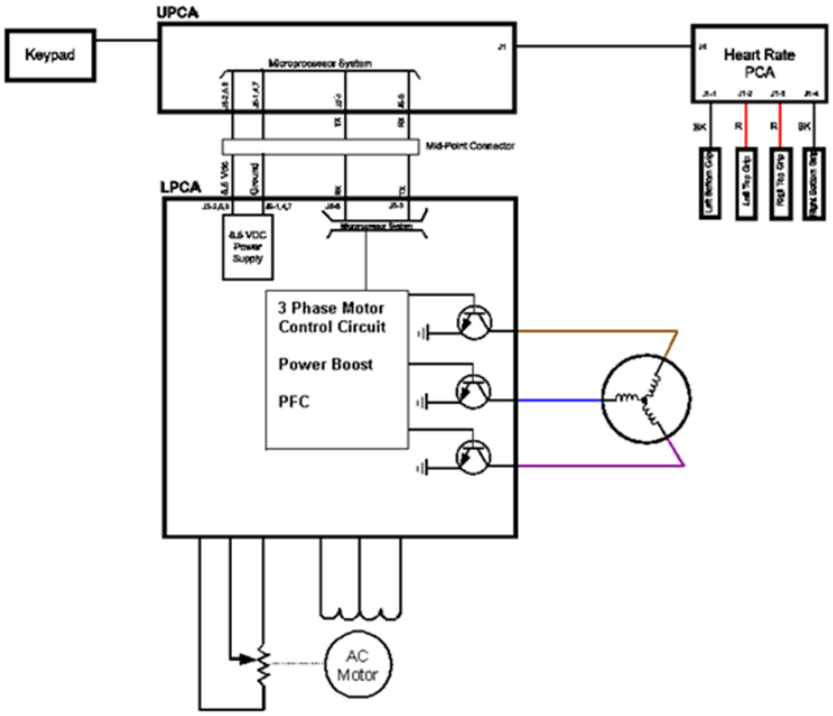
The electronic circuits in the console operate on +5V DC, however the lower control module sends +8.5V DC due to the optional external equipment such as Fitlinxx, which may be connected to the CSAFE (Communication Standard for All Fitness Equipment) port. Sending a higher voltage (+8.5V) and regulating the voltage down to +5V DC, ensures that we can supply enough power to both the console and the optional external equipment.

It is important to note that the lower control module is a different part number for a 120V unit than for a 240V unit.

AC Drive Motor Controller

The Experience Line treadmills use an AC drive system to control a three phase AC drive motor. In an AC motor, speed is controlled by frequency independent of voltage or current and torque is controlled by the voltage/current applied to the 3 windings. The windings (stator) and rotor core of the motor are designed to spin at a specific speed at the design frequency. This is by design of the motor itself. By changing the frequency of the drive current, we can change the speed. The lower control module generates the correct frequency to drive the motor at the desired speed. Since the speed of an AC motor is controlled by frequency, there is no need for a speed sensor.

Figure 7: AC Drive Motor Controller

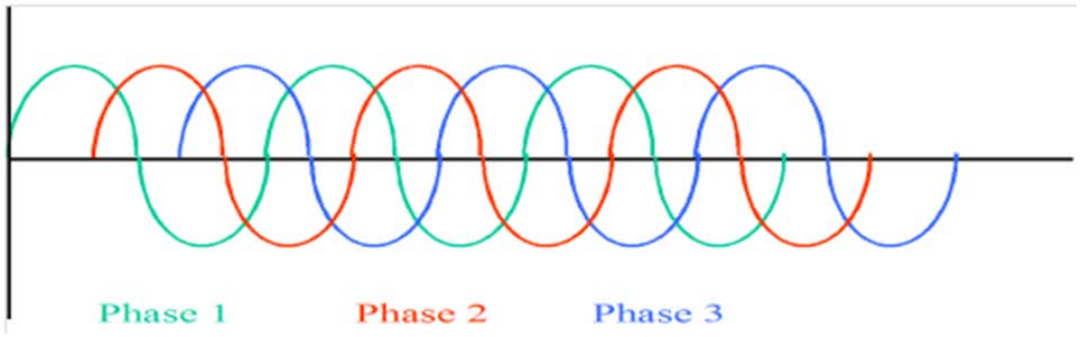


The frequency is then sent to the motor over 3 lines; with each of those lines being phase shifted 120 degrees from each other. This type of AC motor is referred to as a 3 phase AC motor and is used to allow enough torque to be applied over a continuous duty run time. The amplitude (voltage/current) of all three sine waves is the same at any given time and allows the torque to be applied smoothly throughout the rotation of the motor. Increasing the amplitude increases the torque and decreasing the amplitude decreases the torque.

The lower electronics module (IFT drive) is responsible for sending the proper frequency to control speed and the proper amplitude (same on all 3 lines) to control torque. The motor must then be balanced both mechanically and electrically in order to translate the frequency and amplitude into fluid motion. Mechanical balance is achieved by balancing the weight of the flywheel, and electrical balance is achieved by all 3 windings being equal (same number of ohms).

Other features of this AC drive motor controller include "Dynamic Braking" and "Power Factor Correction". Dynamic Braking addresses an issue where an over-speed condition could occur. If a heavy user runs at a high incline, the weight of the user has the potential to push the running belt to go faster than the motor control was trying to maintain. The dynamic brake circuit senses the load variations and applies a braking force within the motor. The system utilizes an external power resistor to determine the point at which the braking force is applied. Power Factor Correction is a feature that attempts to reduce power consumption. The system monitors that this power factor is held within certain parameters. If it falls outside those parameters (IE, the system is suing more current than expected), the system will flag an ERROR 29. Error codes are addressed in detail in the troubleshooting section of this manual.

Figure 8: AC Motor Phase Chart



Auto-Stop

The Auto Stop feature monitors up and down movement of the deck. The deck motion indicates a user is present. The lack of motion indicates that a user is not present. If the running belt is moving and the Auto Stop does not detect motion from the running deck, the Auto Stop feature will stop the motion of the running belt.

Treadmills built between April of 2006 and April of 2011 (referred to as the Gen-06 Treadmill) did not have this auto-stop feature. Treadmills built From April of 2011 to present (referred to as the "TRM10 Treadmill") support the auto-stop feature.

The auto-stop feature consists of a magnet mounted on the edge of the deck, the sensor mounted on the roller mounting bracket and a cable connecting Auto-stop to the console. When a user is running on the deck, it causes the magnet to be in motion relative to the sensor. When a program is entered, Quick Start is pressed or the treadmill has been resumed after being paused, the treadmill starts at 1 mph. The user will then have 60 seconds to enter any remaining workout settings before motion detection begins. Once motion detection has commenced and if no or very little motion is detected, the Auto Stop feature interprets that the treadmill is no longer in use. The Auto Stop feature will continue to monitor the treadmill for motion for 30 seconds; if motion is still not detected a 10 second count down will be displayed on the console. After the 10 second count down has elapsed and motion has not been detected, the Auto Stop feature will stop the motion of the running belt and go into pause mode. If motion is detected within the 10 second count down cycles the shut down feature will be aborted.

The Auto Stop feature can be enabled or disabled within the service software menus. See "Setting Club Parameters" in the corresponding P10 console, P20 console, P30 console or the P80 console service manual.

Note: If enabled, adjustment and tracking procedures should be preformed while in the Hardware Validation – Belt Speed Test. This is because the Auto-Stop feature is not active during the Belt Speed Test.

AC Lift System – Motion Control

The motor used in the lift system is a "Permanent Split Capacitance" type, single phase AC motor. What this means is that the motor incorporates the use of a capacitor to provide the torque required to lift the weight of the user as well as the weight of the unit. Power to the lift motor is provided directly from the AC coming into the unit.

In order to turn the motor in 2 directions, the AC motor has 2 separate windings, one for up and one for down. AC1 has a continuous connection to the center / common connection of the motor.

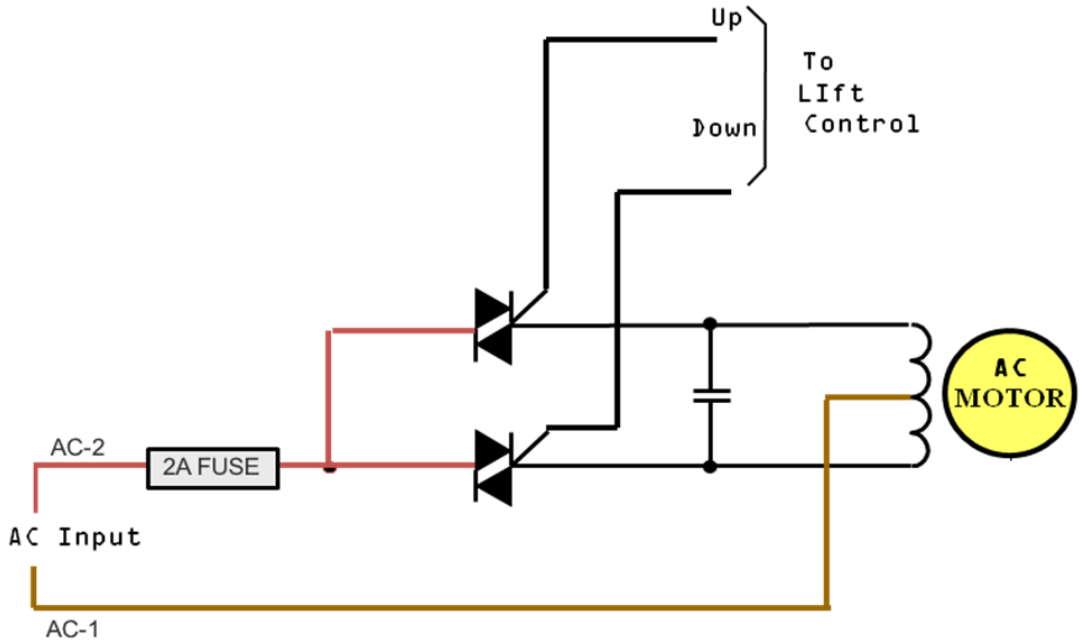
The system has a 2A fuse to protect the components from over-current failure.

When a control signal is applied to the "UP" input, TRIAC 1control line is active and turns on the up triac. This directs the AC2 connection to the up winding of the motor, causing the motor to spin in the up direction.

When a control signal is applied to the "DOWN" input, TRIAC 2 control line is active, turns on the down triac. This directs the AC2 connection to the down winding of the motor, causing the motor to spin in the down direction.

Since the lift motor runs directly on the AC line voltage coming into the unit, it is important to note that the lift motor is a different part number for a 120v unit than for a 240v unit.

Figure 9: AC Lift System - Motion Control



AC Lift System – Position Monitoring

The unit also requires an absolute measurement of lift position. This is achieved through the use of a potentiometer. The potentiometer is turned by connected gears in the lift motor, which changes the wiper resistance.

With +3.3V DC applied across the potentiometer, the center wiper connection will be a variable voltage (between 0 and +3.3V DC), dependant on the position of the lift. This variable voltage is applied to the input of a 16-bit A/D converter which converts the analog voltage into a 16-bit binary numeric representation that the processor can understand.

As the voltage returned by the potentiometer changes between 0 and 3.3V DC, the corresponding A/D values change between 0 and 65507. In this way, the processor can keep track of where the lift is positioned.

It is important to note that since the potentiometer is mechanically connected to the gearing of the motor, it would be highly unlikely for a lift motor to go out of calibration without having some damage that needs to be repaired. See the section, ***Troubleshooting the Incline System*** (on page 51) if this occurs.

Section 5 - TRM Base Troubleshooting Procedures

This section contains troubleshooting procedures and presents a methodology for identifying and isolating system issues. Not all system issues will create an error code condition so the approach is to identify and verify the stated problem and then use the systems own self tests to help isolate the problem. In many cases, that will include the use of error codes, but not always.

In This Section

Introduction to Treadmill Troubleshooting

- The failure that is reported by the user may differ from your observations as a trained technician. That is why it is important to validate the reported failure. The first step in this investigative troubleshooting methodology is to first identify the current overall operating condition of the treadmill. Is it operational or not. If the system powers up and can be at least partially operated:
  - Follow the procedure, ***Validating the Reported Failure*** (on page 36).
- If the treadmill does not turn on, trips the breaker or the console will not illuminate:
  - Follow the appropriate procedure for ***Troubleshooting Tripped Breakers*** (on page 30) or ***Troubleshooting No Power to the Console*** (on page 32).

Troubleshooting Tripped Breakers

It is extremely important to note whether the unit's breaker trips or the wall outlet breaker trips. It is also extremely important to note when the trip occurs:

- Immediately on power up
- After the belt starts but before the user walks on the belt
- After the user walks on the belt.

If the unit trips the wall breaker:

1 Check the voltage coming from the wall. If it is approximately to 0V, the wall breaker has likely tripped.

2 Inspect the line cord, If damaged, replace the line cord. If the line cord is not damaged continue with the following steps.

3 Verify if two or more treadmills on the same wall breaker. This will be especially evident if two or more treadmills shut down at the same time. To verify if multiple treadmills are sharing the same wall breaker, manually turned off the wall breaker. If more than one treadmill loses power, the treadmills are on the same breaker.

- If YES, advise the customer to have their facility wiring upgraded per Precor specifications.
- If NO, continue with the following steps.

4 Verify the wall outlets do not share neutral wiring and that each wall outlet is on a individual branch circuit. An individual branch circuit will have its own load line, neutral line and ground line. To verify that the treadmill is not on a individual branch circuit use an AC voltmeter measure from the hot contact of one AC receptacle to the neutral contact of another AC receptacle. If AC line voltage is present then the treadmills are sharing neutral lines.

- If YES, advise customer to have their facility wiring upgraded per Precor specifications, and then continue to step 5.
- If NO, Continue to step 6

5 Measure the AC input voltage with the treadmill unloaded (running belt moving, with no one walking on the running belt) and then again while loaded (someone walking/running on the belt). The difference between the two states should be no more than about 6 volts RMS, and ideally less.

- If the voltage variance is more than 6 volts RMS, the distance the branch circuit wire are runs maybe very long or may have used smaller diameter wire. Recommend to the club that they should consult with an electrician if this is suspected.
- If NO, Continue to step 6.

6 Overloading is the most frequent cause of treadmill shutting down. Overloading is most often caused by excess deck/belt friction, but can be made worse by line voltage conditions. This condition happens more often with heavier runners, but never walkers. In high user clubs (10 hours or more of use per day), the decks/belts will wear out much faster than at other locations, sometimes in months rather than years. It is often accompanied by error codes 27, 28, or 29. Follow the steps for these errors as per procedure, ***Troubleshooting the Drive Motor System*** (on page 44).

If the Treadmill breaker (power switch) is tripped:

1 Verify the wall outlets do not share neutral wiring and that each wall outlet is on a individual branch circuit. A individual branch circuit will have its own load line, neutral line and ground line. To verify that the treadmill is not on a individual branch circuit use an AC voltmeter measure from the hot contact of one AC receptacle to the neutral contact of another AC receptacle. If AC line voltage is present then the treadmills are sharing neutral lines.

- If YES, advise customer to have their facility wiring upgraded per Precor specifications, and then continue with step 2.
- If NO, continue with the following steps.

2 Verify that there long branch run with inadequate gauge wire.

- If YES, advise customer to have their facility wiring upgraded per Precor specifications.
- If NO, continue with the following steps.

3 Verify line voltage. Low line voltage for the U.S. is anything below 108VAC, measured while the treadmill circuit breaker is turned "ON", but the running belt is idle. For international, low line voltage is anything below 200VAC while the treadmill circuit breaker is turned "ON" and the running belt is idle. Measure the line voltage with the treadmill circuit breaker is turned "ON", but the running belt is idle. Make note of the voltage. Then measure the voltage again using the instantaneous voltage drop using the min/max function on your volt meter while someone is running on the treadmill at 7.0 MPH or higher.

- If any measurement is below 108VAC (US) or 200VAC (International), advise the customer to have their facility wiring inspected by an electrician.
- If the measurements are at or above 108VAC (US) or 200VAC (International), continue with following steps.

4 Does the treadmill trip its breaker immediately on power up?

- If YES, it is likely that there is a shorted component (line filter, lower control module) or faulty/shorted wiring.
- If NO, continue with the following steps.

5 Does the treadmill power up, but trips the breaker after the motor is started?

- If YES, it is likely that there is a bad roller or bad drive motor.
- If NO, continue with the following steps.

6 Does the drive motor start up fine, but trips the breaker after a user walks/runs on the running belt?

- If YES, Overloading is the most frequent cause of treadmill shutting down. Overloading is most often caused by excess deck/belt friction, but can be made worse by line voltage conditions. The overloading condition happens more often with heavier runners, but never walkers. In high user clubs (10 hours or more of use per day), the decks/belts will wear out much faster than at other locations, sometimes in months rather than years. It is often accompanied by error codes 27, 28, or 29. Perform an amp draw test by following troubleshooting procedure, ***Running Belt & Deck Troubleshooting*** (on page 63).

Troubleshooting No Power to the Console

This troubleshooting is for Standard, P10, P20, or P30 consoles only. P80 uses a power source separate from the lower control module.

1 Using an AC voltmeter, verify that the outlet voltage is appropriate. See procedure, ***Troubleshooting Tripped Breakers*** (on page 30)

- If NO, advise customer to have their facility wiring upgraded per Precor specifications and then continue with troubleshooting.
- If Yes, continue with the following steps.

2 Remove the treadmill hood and measure the AC voltage at the input side of the line filter with a voltmeter. Verify that line voltage is present when the breaker switch is turned on.

- If NO, Replace the breaker switch.
- If Yes, continue with the following steps.

3 Measure the AC voltage at the output side of the line filter with a voltmeter. Verify that line voltage is present when the breaker switch is turned on.

- If NO, Replace the line filter.
- If Yes, continue with the following steps.

4 Use a known good console and communication cable. Plug the test console and test communications cable into the suspect treadmill lower control module (IFT drive). Does the test console power up?

- If NO, Replace the lower control module (IFT drive).
- If Yes, continue with the following steps.

5 If the test console did power up in step 4, re-connect the test communications cable from the test console to the original console. Does the original console power up?

- If Yes, Replace the Communications Cable.
- If No, Replace the upper PCA.

CAUTION: Swapping a lower control module from a good unit into a bad unit could damage the lower control module from the good unit. If the control module that is being swapped may have a defect and could damage components in the good unit.This could potentially produce two bad units instead of one.

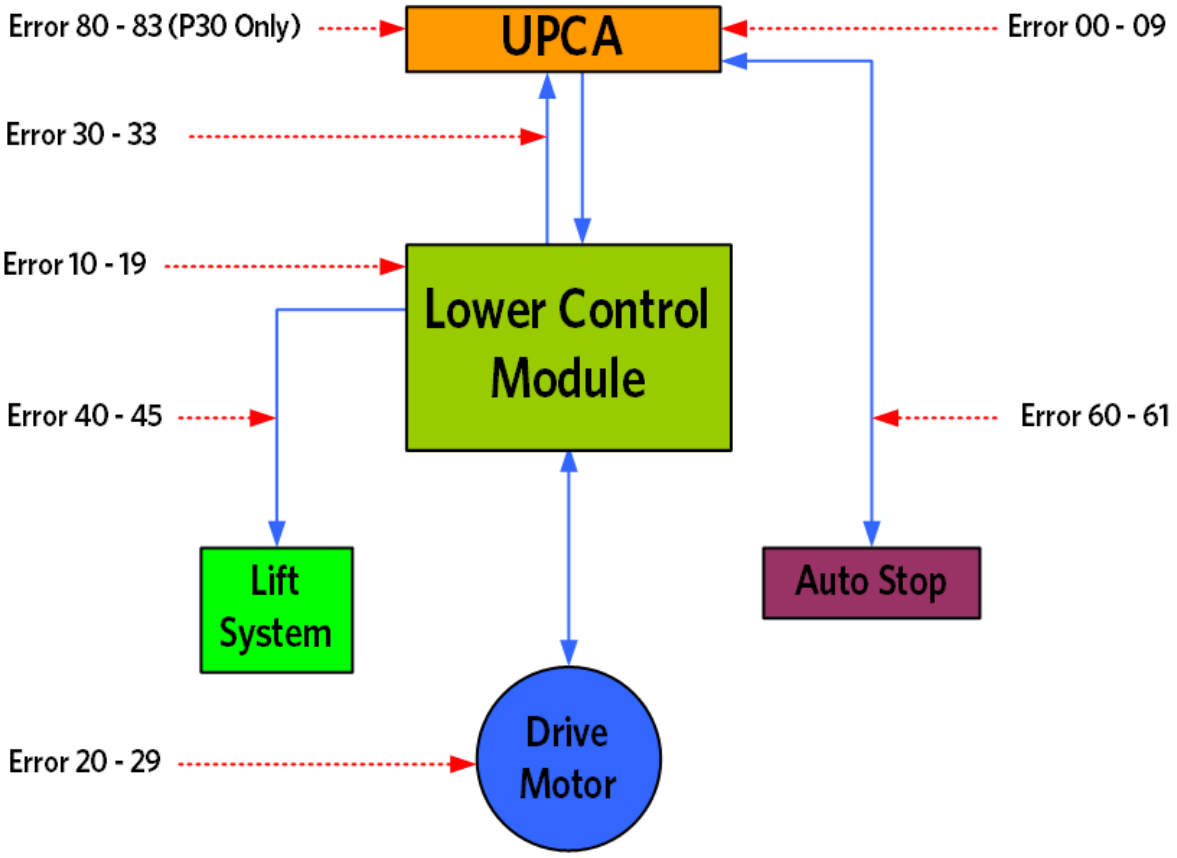
Standardized Error Codes

The system generates error codes and stores those codes in a block of memory known as the ERROR LOG. The error is entered into the error log when it detects conditions that are defined in the error reporting software.

The error log displays the 10 most resent errors, with error location one being the most recent. Not all system issues will generate an error code, only the errors that can be generated in the treadmill will be described in this section. The error codes are useful in isolating certain system issues.

To view errors in the error log, press and hold the reset key for at least 6 seconds. If there are errors logged, this action will take you into the error log. The error log can also be accessed through the Information Display by pressing either, STOP, PAUSE, or RESET, then the numbers 6, 5.

Figure 10: Standard Error Codes Flow Chart



Error Codes

The subsequent pages list the details of each of the error codes that exist within the Precor software hierarchy. Each page will include a description of the error code being displayed and the systems associated with the error code.

Potential causes for the error codes will be listed with the most likely cause first and the least likely cause listed last. It must be understood that this document can not anticipate every possible cause for a particular error code. However, it should list the causes encountered in the majority of cases.

The document will then list the suggested remedies associated with each of the possible causes. The possible remedy listing will numerically coincide with the possible cause listing.

Error Code Table

The following is a list of the error codes currently assigned to the Gen-06 / TRM10:

Table 1: Error Code Table by Systems

Systems	Errors	Error Description
Input Power & Control Errors	Error 05	Key depressed at power up
	Error 09	Memory error (Lower PCA)
	Error 12	Watchdog (Lower PCA)
	Error 15	AC input voltage too high
	Error16	AC input voltage too low
Drive System Errors	Error 20	Drive Motor Does Not Start
	Error 27	Drive motor current too high
	Error 28	Drive motor temperature too high
	Error 29	Excessive AC Input Current
Communication Errors	Error 30	Upper PCA not receiving data from lower PCA
	Error 31	Faulty data received from lower PCA
	Error 32	Lower PCA not receiving data from upper PCA
	Error 33	Faulty data received from upper PCA
	Error 37	ESTOP Not Working
Lift System Errors	Error 40	No lift motion detected
	Error 42	Lift position value out of range
	Error 44	Un-commanded lift movement
	Error 45	Lift moving in incorrect direction
Auto Stop Errors	Error 60	"Temporarily Out Of Order" – Auto Stop Not Working
	Error 61	"Temporarily Out Of Order" – Auto Stop Not Present
P30 Machine Control Errors	Error 80	P30 Lift Up Not Working
	Error 81	P30 Lift Down Not Working
	Error 82	P30 Speed Up Not Working
	Error 83	P30 Speed Down Not Working

Validating the Reported Failure

1 Look to see if there is an error in the error log. This is often the source of vital information to point your troubleshooting in the right direction. Write down the errors and the odometer readings that are reported in the log and then clear the error log by pressing and holding the "Quick Start" key.

2 Run the unit in normal user mode and verify that the reported failure occurs. Make note of any other observations of things that occur at the time of the failure.

3 Run the unit in the service access software per the procedure in section 5 (5-1-7-6-5-7-6-1, Hardware Validation Tests), and verify that the console (display, keypad, and heart rate) functions are working normally.

> ***NOTE: Keep in mind that if a key on the keypad does not function, the lower control module will not be aware of any request for action that the user has initiated. In this case the cause for the failure would not be in the lower portion of the unit, and no errors will be logged.***

4 Run the unit in the service access software per the procedure in section 5 (5-1-7-6-5-7-6-1, Hardware Validation Tests), and verify that the machine (belt speed and incline) functions are working normally.

> ***NOTE: If a failure is observed in user mode but works perfectly in the hardware validation tests, this could be an indication that a setting in the club parameters has been incorrectly set. It is also important to keep in mind that some problems are weight (load) related and you may need to recreate that condition.***

5 Look at the error log again to see what errors have returned. This will validate that they are real and current errors. Do not disregard the previous errors that were cleared, but understand that the odometer reading when compared to the total unit odometer reading will determine how recent the error message occurred.

> ***NOTE: If no error codes are present but the system is not operating normally, such as irregular or rough drive motor movement, follow the troubleshooting steps for the most directly related troubleshooting topic.***

6 Look up the current service bulletins for this unit. If no service bulletin exists for this issue, continue with the troubleshooting steps for the system that is failing (Power & Control, Drive Motor System, Incline System, Communication, Belt & Deck, Auto Stop, or Heart Rate).

Troubleshooting Input Power & Control Error Codes

Errors in this section cover either input power (error 15 & 16) conditions, Console controls (error 5 & 80-83), or processor/memory (error 9 & 11) conditions. These are errors that although they are valid to the proper function of the machine, are not part of a specific treadmill base system (lift system, drive system, deck & belt system, etc...). Follow the steps for error code 5, 9, 12, 15, 16, 80, 81, 82, or 83 on the following pages.

Error 05 - Key Depressed at Power Up

Description

The power up test sequence has detected a key in the operated condition. The power up test sequence is performed every time the unit is turned on (powered up). This test is performed because a permanently stuck key will inhibit the correct operation of the unit.

Possible Causes

1 A key on the display housing is permanently stuck in the operated condition.

2 One of the upper PCA's keypad interface chips has failed.

3 Liquid (perhaps perspiration) is present on the surface of the display overlay.

Possible Remedies

1 Remove the keypad connector cable from the upper PCA. Restart the power up sequence; if the ERROR 5 is no longer present, the keypad is the cause. The keypad is typically part of the display housing. Replace the display housing to correct the problem.

2 Remove the keypad connector cable from the upper PCA. Restart the power up sequence; if the ERROR 5 is still present, the upper PCA is the cause. Replace the upper PCA to correct this problem.

3 Wipe the surface of the display overlay clean of all liquid. Restart the power up sequence; if the ERROR 5 is no longer present, the liquid was the cause.

Error 09 - Lower PCA Memory Test Errors

Description

Error 09 checks lower PCA memory locations during the power up test sequence. If a fault is found during the power up test sequence, error 09 will be displayed. This error code is only used on products utilizing the dual microprocessor system.

Possible Cause

This error message almost always indicates a lower PCA problem when it is consistently displayed. Failures causing this error message to be displayed are rare.

Possible Remedy

If the error message is consistently displayed when the unit is powered up, the lower PCA should be replaced. It is possible to see this error message displayed intermittently due to external causes. If the unit's A.C. input significantly dips during the power up test sequence the test could fail resulting in this message being displayed. Treadmills operating on non-dedicated A.C. circuits may see this message displayed on an intermittent basis.

Error 12 - Watchdog (Lower PCA)

Description

The error 12 watchdog monitors the lower PCA low voltage power. If the low voltage power drops below a preset level, the error 12 will be displayed.

Possible Causes

1 A failure in the lower PCA overloads the low voltage power supply and causes it to drop below the preset limit.

2 A fault is in the interconnect cable (lower PCA to upper PCA) causing the lower PCA low voltage power supply be too low.

3 A failure in the upper PCA that overloads the lower PCA low voltage power supply causing it to be too low.

Possible Remedies

1 If the error message is consistently displayed when the unit is powered up, the lower PCA should be replaced. It is possible to see this message displayed intermittently due to external causes. If the unit's A.C. input significantly dips during the power up test sequence the test could fail resulting in this message being displayed. Treadmills operating on non-dedicated A.C. circuits may see this message displayed on an intermittent basis.

2 Substitute a known good interconnect cable in place of the existing cable to determine if the interconnect cable is the cause. For the purpose of the test, the substitute cable should be connected directly between the upper and lower PCA's.

3 Substitute a known good upper PCA for the existing PCA to determine if the upper PCA is the cause.

Error 15 - A.C. Input Voltage Too High

Description

This error monitors the AC input voltage. If the AC input momentarily reaches the upper limit, an error 15 will be logged. The upper acceptable input voltage limit is 132V AC on 120V AC systems or 264V AC on 240V AC systems.

When the treadmill is used by a vigorous exerciser walking or running at steep incline, the AC motor can become a generator, forcing power backwards into the IFT module. This excess power would cause the IFT's internal reservoir, called the Bus Voltage, to rise to the point of damaging the drive were it not for the DB (dynamic brake) resistor, which automatically switches on to absorb it.

Error 15 is an indication that the Bus Voltage somehow rose too high, either because the DB system wasn't functional or because the Bus Voltage power was more than the DB system could absorb at once. The power reservoir is also fed by the input (line) voltage, so it is also possible that a temporary line voltage surge could result in an Error 15 condition.

Possible Causes

1 AC input voltage transients. Transients can be caused by lightning strikes or by other pieces of equipment sharing the treadmill's AC power.

2 Lower control module failure or dynamic braking resistor failure.

3 Sticky substances on the underside of the running belt causing high current.

Possible Remedies

1 Verify that the AC grounding is good at the treadmill's AC outlet. Verify that the treadmill is operating on a dedicated 20 amp branch circuit. This condition would require a licensed electrician to correct the problem.

2 This could be either the lower control module or the dynamic braking resistor.

- Check error logs to determine Error 15 frequency.
- Has this continued to happen for this treadmill, or was it a one-time event?
- Could it have happened when a user intentionally pushed against the handrail, back-driving the motor for a sustained time?
  - If YES, and the problem has only happened once or twice for this treadmill, dismiss it and clear the error logs.
  - If NO, proceed with the tests below.
- Raise elevation to 15%. Walk at a fast but comfortable pace on the belt, and push off slightly against the treadmill handrail. Are you able to generate an Error 15 relatively easily?
  - If YES, replace the IFT drive and DB resistor.

- If NO, proceed with next step.

- Test the IFT drive. Have someone run on the treadmill at moderate speed (7 or 8 MPH) with the incline at 0%.Is it possible to induce an Error 15 within 30 seconds?
  - If YES, replace the IFT drive and DB resistor.
  - If NO, proceed with next step.
- Test the DB resistor. With power turned off, unplug DB cable from IFT drive and then measure across the resistor with an ohmmeter. It should measure 90 to 110 ohms. Is there high resistance or an open circuit?
  - If NO, and the problem has only happened once or twice for this treadmill, dismiss it and clear the error logs.
  - If NO (the resistor is good), but the problem has happened chronically for this particular treadmill, check the line voltage.
  - If YES (the resistor is bad), replace both DB resistor and IFT drive.

3 Replace the running belt.

Error 16 - A.C. Input Voltage Too Low

Description

This error monitors the A.C input voltage. If the A.C. input momentarily reaches the lower limit, an error 16 will be logged. The lower acceptable input voltage limit is 90 V.A.C. on 120 V.A.C systems or 180 V.A.C. on 240 V.A.C. systems

Possible Causes

1 A.C input voltage incorrect; treadmill is operating on undersized A.C. wiring and/or is drawing high current.

2 Treadmill is operating on a non-dedicated circuit.

Possible Remedies

1 Voltage drop across the AC input wiring is a product of the length of the wire run and the amount of current being demanded by the treadmill. The longer the run and the higher the current the larger the wire must be. The AC wiring must be sized to handle 20 amps of current over the loop length of the AC wiring. This condition would require a licensed electrician to correct the problem.

2 Verify that the treadmill is operating on a dedicated 20 amp branch circuit. This condition would require a licensed electrician to correct the problem.

Error 80, 81, 82, & 83 – P30 Machine Controls Not Working

Description

This error monitors the incline (up and down), and speed (up and down) controls of a P30 console. These switches are not traditional mechanical switches, they are optical switches.

- Error 80, P30 Lift Up Not Working
- Error 81, P30 Lift Down Not Working
- Error 82, P30 Speed Up Not Working
- Error 83, P30 Speed Down Not Working

Possible Causes

1 Machine control interconnect cable has come unplugged from the upper PCA.

2 Bad machine control cable.

3 Bad machine control assembly.

Possible Remedies

1 Open the P30 console to expose the circuit boards, and verify that the machine control cable has not become unplugged from the upper PCA.

2 Substitute a known good machine control cable.

3 Substitute a known good machine control assembly.

Troubleshooting the Drive Motor System

Occasionally, there may be issues with the proper operation of the drive system that do not generate error codes. This troubleshooting procedure is intended for those times.

If there is an error code for the drive system (Error 20 through 29) in the error log, go to the appropriate error code troubleshooting page and follow the steps for that error.

If there are no errors in the log, yet the drive system appears to have issues (such as jittery motion) follow the steps below.

Note: When taking voltage readings of the AC drive motor, the readings may not seem accurate because of the frequencies being used, however, they are indicative of the presence of drive motor voltage and relative frequency changes.

Procedure:

If the drive motor starts when you force the running belt to move and once running the drive motor runs rough, skip to step 8. If the drive motor will not start at all, continue with step 1.

If the drive motor does not start, the lower control module will only apply voltage for a couple of seconds before it shuts down. Therefore the voltage readings in the following step must be taken within the first couple of seconds after the treadmill is instructed to start the running belt. (A multi-meter with a hold feature is advisable in this case)

1 Connect an AC voltmeter between terminals 4 (red) & 5 (white) of the OUTPUT connector on the lower control module. See Figure Below. Set the treadmills on/off switch to the on position. Press the QUICK START key. If the lower control module is supplying output, you will momentarily read some value of AC voltage. Make a note of the value and set the treadmill's on/off switch to the off position.

2 Set the treadmill's on/off switch to the off position and repeat the procedure in step 1 between terminals 4 (red) & 6 (black) of the OUTPUT connector on the power control module. Voltage should read the same value as in step 1. Set the treadmill's on/off switch to the off position.

3 Set the treadmill's on/off switch to the off position and repeat the procedure in step 1 between terminals 5 (white) & 6 (black) of the OUTPUT connector on the lower control module. Voltage should read the same value as in step 1. Set the treadmill's on/off switch to the off position.

4 If one or more of the voltage readings in steps 1 through 3 are not present, replace the lower control module. If the voltage readings in steps 1 through 3 are present, continue with step 5.

NOTE: All resistance measurements must be performed with power removed from the treadmill. Performing the resistance measurements with voltage applied may damage your multi-meter.

5 Set the treadmill's on/off switch to the off position. Disconnect the drive motor connector from the OUTPUT connector on the power control module. With an ohmmeter, measure between terminals 4 (red) & 5 (white), 4 (red) & 6 (black) and 5 (white) & 6 (black) of the drive motor connector. Each reading should be approximately 2.5 W (Ohms). If any of the readings are significantly high or open, replace the drive motor.

6 If the ohm readings are correct, inspect the female terminals of the drive motor connector. Verify that they are not spread beyond the point of making good connection with the male pins on the OUTPUT connector on the power control module. If proper connection is not being achieved, the connector CAN BE repaired (using the appropriate crimper and connector ends) as a preferable solution to replacing a costly drive motor.

7 If you have performed all of the procedures above and have been unable to correct the problem, call Precor customer support.

Note: All resistance measurements must be performed with power removed from the treadmill. Performing resistance measurements with voltage applied may damage your ohmmeter.

Figure 11: Lower Control Module

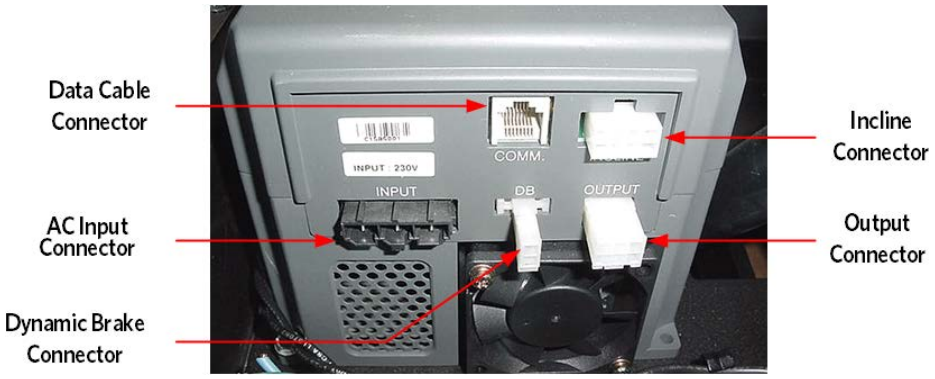
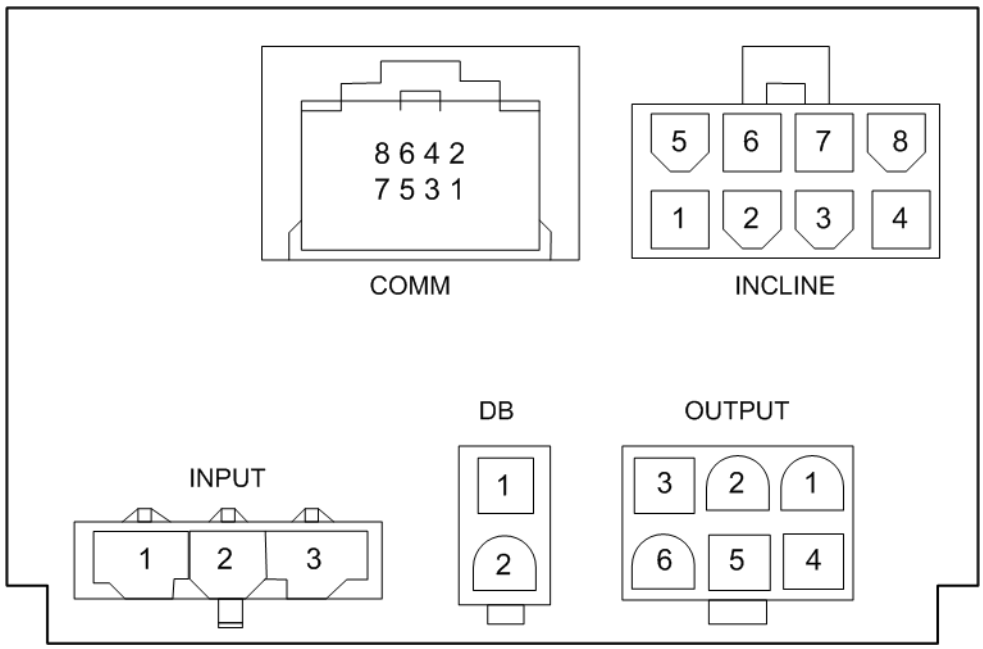


Figure 12: Lower Control Module Connector Numbering



Error 20 - Too many Maximum Power Requests in 1 Second

Description

The lower control module monitors drive system loading effects to determine many parameters of the drive system, including if the motor starts. If the motor does not start, and error 20 is reported

Possible Causes

1 This error requires that the power must be cycled on the lower control module.

2 The drive motor could be bad.

3 The lower control module could be bad.

Possible Remedies

1 Cycle the power on the lower control module by setting the units breaker switch to OFF and then ON again.

2 Test the drive motor per procedure, ***Troubleshooting the Drive Motor System*** (on page 44) , step 6. A known good drive motor can be substituted for the existing drive motor.

3 Test the lower control module per procedure, ***Troubleshooting the Drive Motor System*** (on page 44), steps 1 thru 4). A known good lower control module can be substituted for the existing lower control module.

Error 27 - Too Much Drive Motor Current

Description

Some treadmill motor controllers monitor the amount of current being delivered to the drive motor. The software sets a maximum amount of allowable drive motor current. This error indicates that maximum drive motor current has been reached.

Possible Causes

1 The running belt and/or running bed is badly worn.

Possible Remedies

1 A clamp-on AC ammeter must be used to determine the amount of AC input current being drawn by the treadmill under no load and loaded conditions. Follow the troubleshooting per procedure, ***Running Belt & Deck Troubleshooting*** (on page 63).

Error 28 - Temperature Too High

Description

Some treadmill motor controllers monitor the temperature of the motor controller output switching device. Typically, these motor controllers use a fan to force cool the output devices heat sink. This error indicates that the heat sink temperature has exceeded maximum.

Possible Causes

1 The lower PCA cooling fan is clogged.

2 The lower PCA cooling fan is inoperative.

3 The lower PCA is defective.

Possible Remedies

1 Check the cooling fan mounted on the lower control module to ensure that the fan is not clogged with dust. Thoroughly clean the fan and ensure that it spins freely. Insure that machine motor cables are not routed to close and not touching the fan.

2 The lower PCA is clean and unobstructed but the fan does not spin. Ensure that the fan wiring is securely and correctly connected to the lower control module. If the fan is unobstructed and the fan wiring is good, replace the lower control module.

3 Substitute a known good lower control module to determine if the lower control module is defective.

NOTE: Some older lower control module software revisions used error 28 as a "catch all" and therefore reported a wider range of errors as an error 28. Verify lower control module software is current.

Error 29 - Excessive AC Input Current

Description

This error code is used on three phase AC drive motor systems. If the AC input current reaches a value slightly over 20 amps R.M.S. or there is an instantaneous AC input current spike of 65 amps, the drive motor system will shut down and an error 29 will be logged.

Possible Causes

1 If the facility is powered by a generator, or frequently switches between city and generator backup voltage, interruption of the treadmill operation may occur.

2 The neutral wires are shared on multiple outlets.

3 The running belt and/or running bed is badly worn.

4 A shorted lower control module (IFT module).

5 A shorted drive motor is causing the high power demand.

Possible Remedies

1 Call Precor support for lower board built specifically to handle generator power.

2 The outlet is not on a dedicated 20 amp branch circuit. Using an AC voltmeter, measure from the hot contact of one AC receptacle to the neutral contact of another AC receptacle. If AC line voltage is present then they are sharing neutral lines. If YES, advise customer to have their facility wiring upgraded per Precor specifications. This condition would require a licensed electrician to correct the problem

3 A clamp-on AC ammeter must be used to determine the amount of AC input current being drawn by the treadmill under no load and loaded conditions. Follow the troubleshooting procedure, ***Running Belt & Deck Troubleshooting*** (on page 63).

4 A known good drive motor power module must be substituted for the existing drive motor power module.

5 A known good drive motor must be substituted for the existing drive motor.

Troubleshooting the Incline System

Incline System Description:

The Lift system consists of an AC line voltage driven lift motor (120VAC or 240VAC), and an internal 1 K W (Ohms) potentiometer for lift position monitoring. It is important when you start to troubleshoot the lift system to determine if the problem is due to an inability to move the lift, or an inability to monitor the lift position.

This will determine whether you need to troubleshoot the AC voltages going to the motor windings, or if you need to troubleshoot the DC voltages and/or ohm readings from the potentiometer. The error log will help determine which is causing the issue.

Press and hold the reset key for at least 6 seconds, if there are errors logged in the error log this action will take you into the error log.

If there is an error code for a lift system error (Error 40 through 45) logged in the error log, go to the appropriate error code troubleshooting page and follow the steps for that error.

> ***Note: All resistance measurements must be performed with power removed from the treadmill. Performing resistance measurements with voltage applied may damage your ohmmeter.***

Operation of lift motor for testing:

Most Precor treadmills require the running belt to be moving to operate the lift. For this reason it is recommended that the servicer use the Machine Tests within the "Hardware Validation" mode (accessible through Pause-5-1-7-6-5-7-6-1) to check lift operation.

Error 40 - No Lift Motion Detected

Description

Error indicates that the incline (lift) system on either a treadmill, EFX or AMT12 has been instructed to start moving and no lift motion has been detected by the lift position monitoring system.

Possible Causes

1 The lower control module lift fuse blown.

2 The lift motor is physically jammed and unable to move.

3 The lower control module is bad.

4 The lift capacitor is bad.

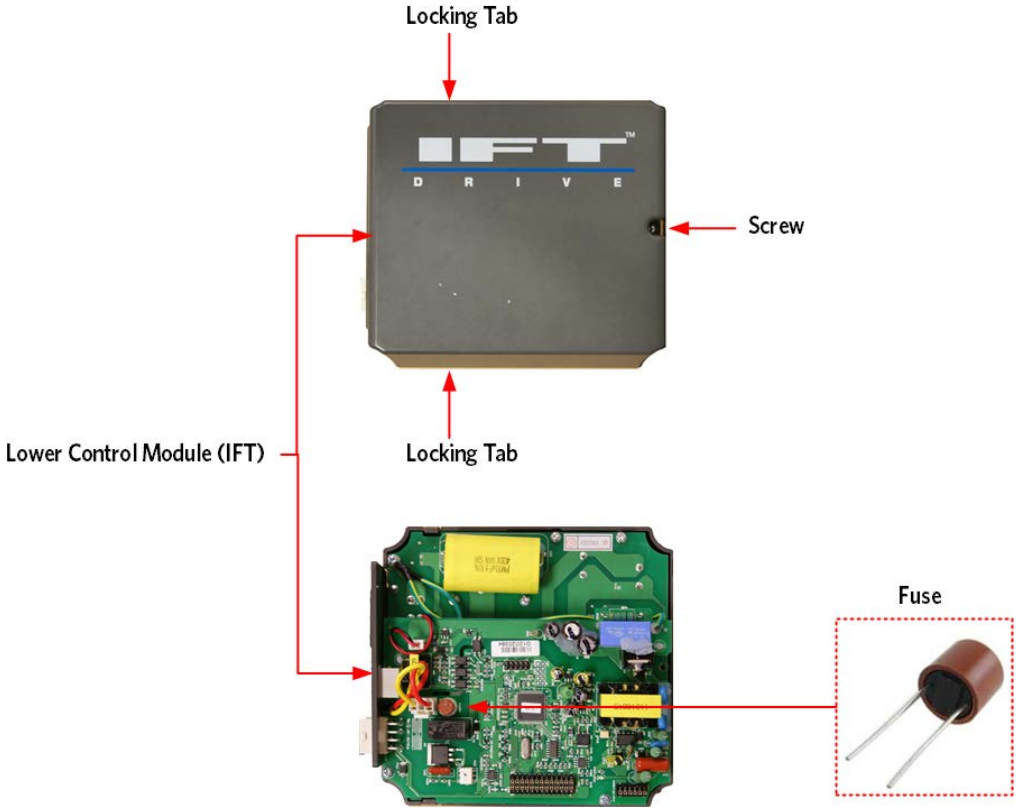
5 A lift motor winding is bad.

Possible Remedies

1 Remove power from the unit. Remove the screw from the back of the lower control (IFT) module and press in the two locking tabs to remove the cover. Remove the 2amp fuse (it looks like a pencil eraser) and with an ohmmeter, check the resistance. The ohm value of the fuse should be less than 1 ohm.

- If the fuse is higher than one ohm, replace it.
- If the fuse is one ohm or less, plug it back into its socket and re-install the cover. If the fuse is good and the lift still will not move, continue to the next possible cause.

Figure 13: Lower Control Module - Fuse Location

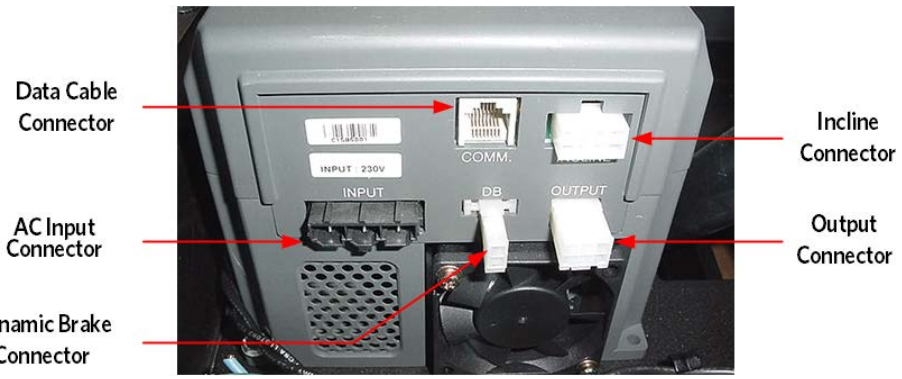


- Disconnect the lift motor from the lift platform. If the lift tube or lift nut is jammed against the motor housing, rotate the lift nut or lift tube away from the motor housing.
- If the lift was jammed, please refer to step 3 before you continue. Calibrate the lift motor per the procedure, calibrating the Incline Motor, and reattach the lift motor to the lift platform or ramp.

2 The lower control module can fail in one of two modes. The lift switch could fail in an operated (shorted) condition.

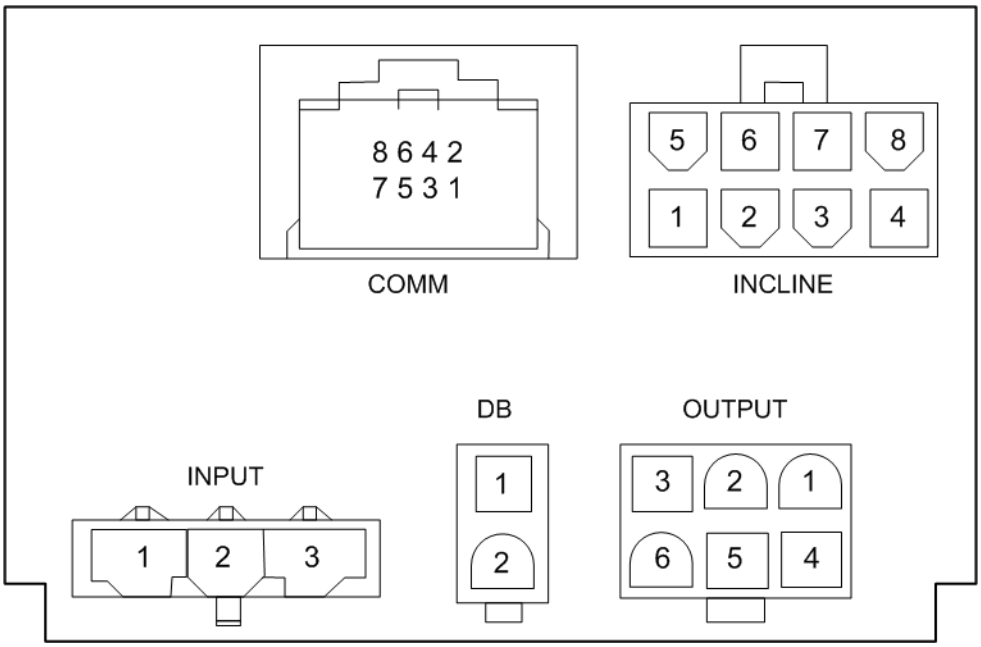
3 If this happens the lift will move (either up or down) as soon as the unit is powered up. The typical result is that the lift will be physically jammed as described above, and it will also probably cause the lift fuse to blow. If the lift moves un-commanded as soon as the power is turned on to the machine and eventually jams, the lower control module (IFT drive) must be replaced. The lift switch may also fail in an open condition. If this happens the lift will not operate in one direction. Perform the following steps to determine if the switch is open.

Figure 14: Lower Control Module



- With the incline below 15% (to allow room for lift travel up), connect an AC voltmeter between terminals 1 (white) & 6 (red) of the INCLINE connector. (See Figure above for connector location, and Figure below for the connector pin-out). Set the treadmill in the manual program and press the INCLINE ↑ key. The AC voltmeter should read AC line voltage (either 120VAC or 240VAC). Note that the AC line voltage reading will only be present before an error condition is displayed. A correct reading here verifies that the UP triac switch is working properly.

Figure 15: Lower Control Module Connector Numbering



- With the incline above 0% (to allow room for lift travel down), connect an AC voltmeter between terminals 1 (white) & 5 (black) of the INCLINE connector. Set the treadmill in the manual program and press the INCLINE ↑ key. The AC voltmeter should read AC line voltage

(either 120VAC or 240VAC). Note that the AC line voltage reading will only be present before an error condition is displayed. A correct reading here verifies that the DOWN triac switch is working properly.

- **If either of these conditions fails, the lower control module must be replaced**.

4 The lift capacitor mounted inside the lift motor. If the lift capacitor is shorted (0 W), the lift fuse will blow. The capacitor may be checked by disconnecting the lift motor connector from the lower control module and using an ohmmeter to measure between pins 5 & 6 of the lift motor connector.

- If the capacitor is open or leaky it cannot be determined with an ohmmeter. A leaky capacitor functions normally for light users, while failing to move the lift for heavier users. An open capacitor will not function at all and cannot be determined by an ohmmeter, so the following test will determine if the capacitor is bad.
- With the incline below 15% (to allow room for lift travel), connect an AC voltmeter between terminals 5 (black) & 6 (red) of the INCLINE connector. See Figure above and below. Set the treadmill in the manual program and press the INCLINE ↑ key. The AC voltmeter should read between 1.5 to 2.0 times the AC line voltages. If this reading is significantly low, replace the lift motor. Note that the AC line voltage reading will only be present before an error condition is displayed.
  - **If the capacitor is bad the lift motor must be replaced.**

5 If a lift motor winding is bad, the lift will not operate in one or both directions depending on the exact fault in the motor.

Error 42 - Lift Position Value Out of Range

Troubleshooting Procedure

Set the treadmill's on/off switch in the off position. Visually inspect the lift motor's wiring and connector for any broken or improperly crimped connections. With an ohmmeter, measure between terminals 1 (white) & 5 (black) and 1 (white) & 6 (red) of the INCLINE connector. Both readings should be approximately 12 Ω (Ohms) for a 120VAC lift motor and approximately 24 Ω (Ohms) for a 240 VAC lift motor. If either reading is significantly high or open replace the lift motor.

Description

This error code monitors the physical lift position via a lift position potentiometer that mechanically tracks the lift's physical position and sends a DC voltage back to the control system. The voltage is converted to a 16 bit digital number. This number is then used to represent the lifts physical position. Software sets upper and lower numerical limits. If the lift position number is found to be outside of the set limits, error 42 will be displayed.

When troubleshooting an error 42 it is important to be aware of the actual physical position of the lift when the error occurs. If the lift is physically out of range or jammed you must first determine why the lift is physically out of range. When the lift is out of range the error 42 is a secondary symptom and the problem should be treated as an error 40 instead of an error 42.

The A/D value for the home position (0%) is approximately 6200, and its A/D value at its lowest incline (-3%) is approximately 3200

Possible Cause

1 Incorrect lower control module part number.

2 Bad or intermittent connection in the lift motor connector.

3 The lift motor requires re-calibration.

> ***If the lift had been calibrated correctly at the time of installation and working for some period of time it would be highly unlikely (if not impossible) for lift calibration to go out of calibration on its own. It would be more likely that something has broken causing the A/D value to be wrong.***

4 The lift motor potentiometer is bad.

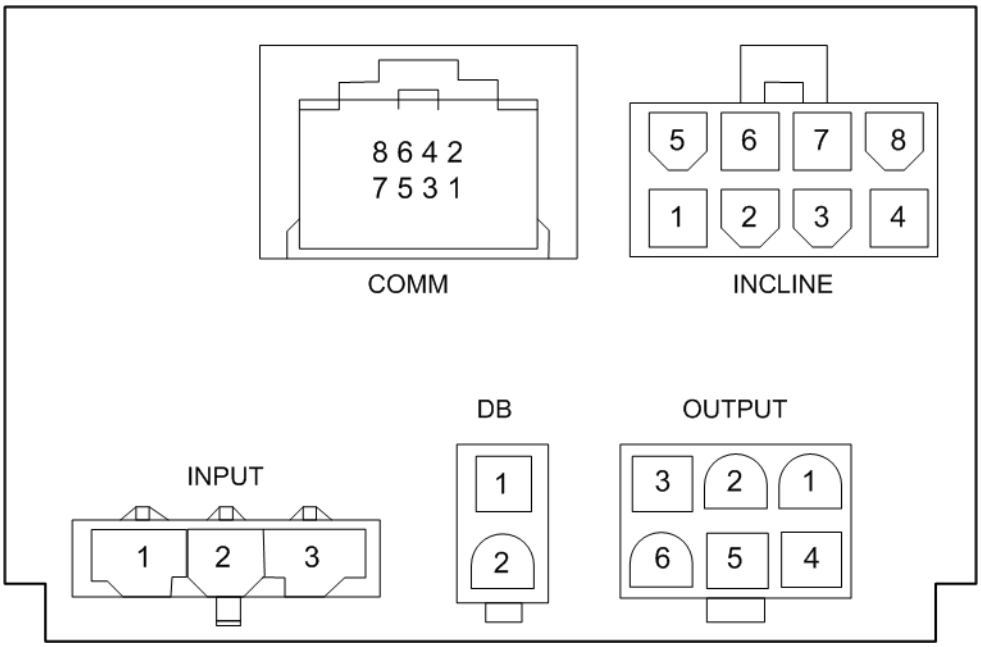
Possible Remedies

1 The vertical market treadmill uses an IFT lower control module that looks the same, but is programmed differently. One of the things that are programmed differently is the lowest A/D value for the lift range (approximately 3000 in the vertical market unit). Having the wrong lower control module installed could easily cause an out of range (error 42) condition.

2 Intermittent connections can be difficult to locate. If the error 42 condition is intermittent a connection is almost certainly the problem. This is especially true if the error 42 occurs while the lift is within its normal physical range.

- Carefully inspect the lift potentiometer connector, repair the poor connection, if possible. If the intermittent connection cannot be found or repaired, replace the lift motor.
- A lift calibration number of 0 or 65535 indicate an open or shorted potentiometer connection. This problem could be anywhere between the lift motor and the upper PCA. It can typically be found and traced with an ohmmeter.

Figure 16: Lower Control Module Connector Numbering



- Set the treadmill's on/off switch in the off position. Remove the lift motor's connector from the INCLINE connector on the power control (IFT) module. Visually inspect the lift motor's wiring and connector for any broken or improperly crimped connections. With an ohmmeter, read between terminals 3 (red) & 4 (black), 4 (black) & 8 (white) and 3 (red) & 8 (white) of the INCLINE connector. Terminals 3 (red) & 4 (black) should read approximately 1K W (Ohms). The sum of the readings between terminals 4 (black) & 8 (white) and 3 (red) & 8 (white) should total approximately 1K W (Ohms). If either reading is significantly high or open, replace the lift motor.

NOTE: Readings While The Unit Is In The Home Position (Level)

- Potentiometer resistance black to red = approximately 1kW.
- Potentiometer resistance black to white = 20% of black to red (approximately 200W)
- Potentiometer voltage black to red = approximately 3.3 volts.
- Potentiometer voltage black to white = 20% of black to red (approximately 0.66 volts)
- A/D value = approximately 6200

3 Refer to the lift calibration procedure. If the lift position number and physical lift position measurement does not correspond with the service manual, calibrate the lift motor.

Note: There must be a reason for the lift motor to be out of calibration, therefore simply re-calibrating the lift motor will often not fix the problem.

4 If the lift calibration number (A/D value) is not 0 or 65535 and does not increment when the lift motor moves, replace the lift motor.

Error 44 - Un-commanded Lift Motion

If you have performed all of the procedures above and have been unable to correct the problem, search for solutions in the service bulletins or call Precor customer service.

Description

The lift control system has detected that the lift is in motion without a lift command having been issued. This can happen in one of two ways: either the lift drive circuit has failed in a turned on condition or the lift position sensor (lift position potentiometer or revolution sensor) is sending an erroneous signal to the lift control circuit.

Possible Causes

1 The sensitivity of the 16-bit A/D converter has generated a false error.

2 Poor or intermittent connection in the lift position sensor (potentiometer).

3 Bad lift position sensor

4 Bad lower control module.

Possible Remedies

1 Due to the high sensitivity of the 16-bit A/D converter, vibration during foot plant can cause the A/D value to change enough to generate this error. This condition is most likely to occur while the lift is not commanded to move. While the system software detects this as an error code 44, it does not stop the lift system from functioning normally. If this is the case the error should be considered a nuisance error, and the error log should be cleared.

2 This is the most common cause of an error 44. Verify all wiring and connections associated with the lift position potentiometer. Repair or replace wiring or connections as appropriate. Because of the nature of the revolution sensor an error 44 is rarely associated with it.

3 Operate the lift in the diagnostics while monitoring the lift position number being displayed. If the reading is erratic and makes large changes in readings the lift position potentiometer is probably bad. Replace the lift motor.

4 If there is actual lift motion without a manual or program control lift command having been issued, replace the lower control module.

Error 45 - Lift Moving in Wrong Direction

Description

The lift control system has detected that the lift is moving in the opposite direction of the issued lift command.

Possible Causes

1 Lift Motor hysteresis.

2 Bad lower control module

Possible Remedies

1 This error would typically happen when the lift was already in motion (typically downward) when a lift command in the opposite direction (lift up) was issued.

Some motors exhibited a very long turnaround time and the lift motor would still be moving in the original direction (downward) while the control system was attempting to move the lift in the opposite direction.

If the error 45 condition is persistent, replace the lift motor.

2 This is a very rare condition, if the lift moves in the opposite direction of the issued lift command, replace the lower control module.

Troubleshooting Communications Errors

Error 30, 31, 32 and 33 - Communications Error

Description

Errors 30 through 33 all indicate the loss of communications or erratic communications between the microprocessors in the upper PCA and the lower PCA. The trouble shooting procedures for all of the communication errors are essentially the same.

- Error 30 is defined as upper PCA not receiving from lower PCA.
- Error 31 is defined as faulty data received from lower PCA.
- Error 32 is defined as lower PCA not receiving from upper PCA.
- Error 33 is defined as faulty data received from upper PCA

Possible Causes

1. An upper PCA to lower PCA interconnect cable is bad.
2. The interconnect cable at the upper PCA was mistakenly plugged into the CSAFE connector.
3. +5V DC power supply is being overloaded by another component that is plugged onto the lower PCA.
4. A defective lower control module.
5. A defective upper PCA.

Possible Remedies

1. Substitute a know good interconnect cable between the upper and lower PCAs to determine if the interconnect cable is defective.
2. Remove the interconnect cable from the CSAFE connector and insert it in the correct upper PCA connector.
3. Unplug all the components from the upper PCA and lower control module except, data cable, and the AC power going to the lower control module. If the unit shows an error other than a communication error, plug in components one at a time, cycling power after each new component is plugged in. If a communication error is displayed, the last component plugged in is the cause of the error.
4. Substitute a known good lower control module to determine if the lower control module is defective.
5. Substitute a known good upper PCA determine if the upper PCAs defective.

Error 37 - E-Stop Not Communicating

Description:

The error 37 is generated by the upper PCA in the console when the lower control module gets into an E-Stop state and the upper PCA in the console did not know about it. The system uses pin 8 of the data cable to communicate E-Stop states between the console and the lower control module.

Possible Cause:

1 Out of date software in a P30 Upper PCA.

2 Bad data cable or mating connector.

3 Bad lower control module.

Possible Remedies:

1 Ensure that the software in the upper PCA is at the current revision..

2 Substitute a known good data cable.

3 Substitute a known good lower control module.

Running Belt & Deck Troubleshooting

This procedure is to be used to determine the condition of the running belt and running deck combination. A clamp-on ammeter will be used to measure the treadmill's AC input current under load. The AC input current is a direct indication of the load being placed on the treadmill. Treadmill loading consists of several factors, the user's weight, treadmill speed and condition of the running belt and running deck.

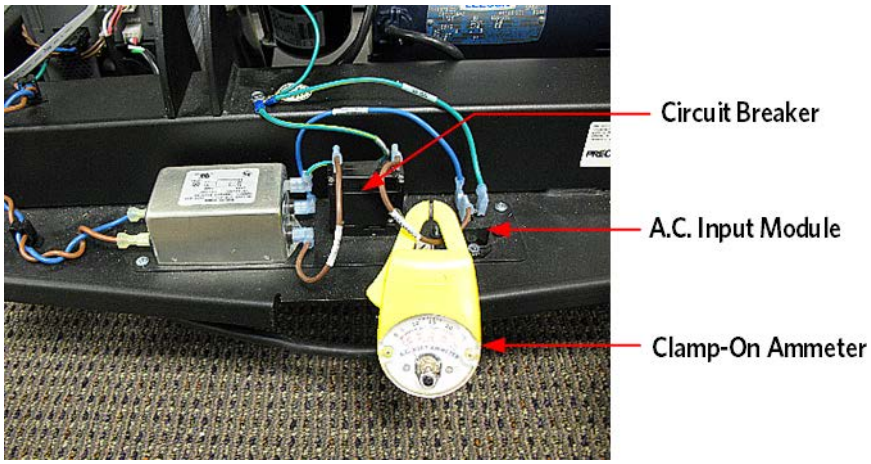
The AC input current measurements should be performed at 7-8 m.p.h. and 0% incline. Because the loading varies with the user's weight, you should perform the AC input current measurement test on a new running belt and deck combination. That will provide you with a benchmark reading to account for your individual weight.

Because the AC input current reading will pulse between a high value (during foot plant) and a low reading (between foot plants) we suggest the use of an analog clamp-on ammeter. An analog ammeter makes it very easy to see the AC current pulses. The refresh rate on digital ammeters may make it difficult to see the current peaks unless the digital ammeter is equipped with a peak hold feature.

Procedure

1 Remove the treadmill's motor cover and place the A.C clamp-on ammeter on the brown wire from the A.C. input module (or A.C. power cord) to the circuit breaker (on/off switch). See the illustration below.

Figure 17: A.C. Clamp-On Ammeter



2 Set the treadmill's speed at 7-8 m.p.h. and the incline at 0%. Walk on the treadmill and observe the average A.C. current reading. Typical average A.C. current readings on a new running belt and deck are between 8 to 12 amperes. Average readings (those read by a digital meter) could be as high as 20 amps, even on a new belt and deck.

3 If the average current reading approaches 20 amperes, the running belt should be replaced. The running deck should be flipped or replaced if the running deck has been previously flipped. See Procedure, ***Running Belt and/or Deck Replacement*** (on page 100) for running belt and running deck replacement.

4 If the average AC current readings are greater than on a new running belt and deck combination but not approaching 20 amperes, the reading will give you an indication of the running belt and deck combination's general condition.

NOTE: Repeat the amp draw test after replacing a running belt and deck. Damage to the lower control module can occur if the unit had been run in an overload/high current condition for prolonged periods of time. This type of damage would not generate an error code, but would cause the breaker to trip intermittently. An amp draw test will catch this condition.

Troubleshooting the Auto Stop Feature

Auto stop is a feature incorporated into all next generation Experience series treadmills. This procedure will provide troubleshooting steps for the Auto Stop feature

Procedure:

1 If the Auto Stop feature does not function continue with step 3.

2 If the Console is displaying Temporarily Out of Order (P80) or Please use another Treadmill (P30, P20, P10) go to step 7.

3 Check the treadmill to ensure the Auto Stop hardware is installed. See Figure Below.

- If the Auto Stop hardware is not installed, contact Precor customer support to see if your treadmill is compatible for the Auto Stop or arrange the installation of the Auto Stop hardware.
- If the Auto Stop hardware is installed, continue with the following steps.

4 Verify that the Auto Stop cable was plugged into the correct port in the console. The connector for the Auto Stop is the same number of pins as the connector for the heart rate grips, and you need to make sure that they were not reversed.

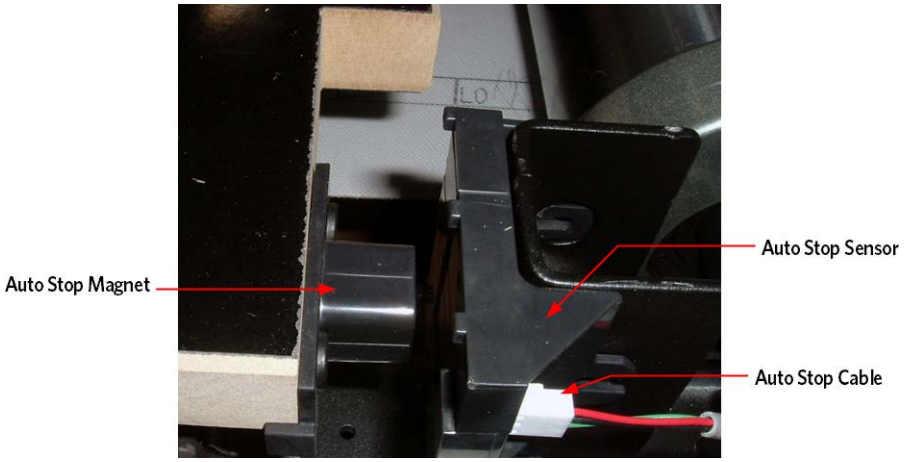
- If the cables were reversed, swap the connectors and re-test.
- If the cables were correctly connected, continue

5 If the Auto Stop hardware is installed, access the club settings and check if the Auto Stop feature is enabled. If it is not enabled, enable the feature. See Procedure (P80), (P30), (P20) or (P10) Setting Club Parameters.

6 If the Auto Stop feature is enabled and you have performed steps 3 and 4 contact Precor customer service.

7 Access the service access software (hardware validation tests), and select the Auto Stop test (see section-5). If the feature is enabled the P80 Auto Stop sensor test will count the number of times the magnet crosses the sensor. The P10, P20, or P30 consoles will display USER DETECTED if motion is detected from the running deck or NO USER DETECTED if no motion is detected from the running deck. If the unit passes this test or a USER DETECTED is displayed and the Auto Stop feature still does not function contact Precor Customer Support. If the Auto Stop did not pass the test continue with step 8.

Figure 18: Auto Stop Assembly

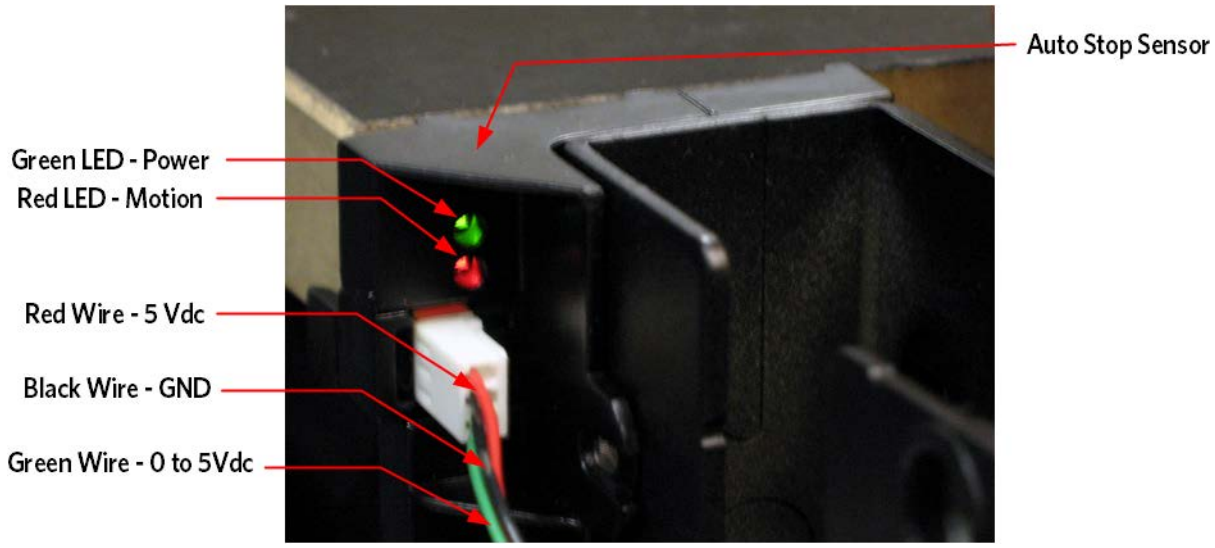


Caution: Do not place the auto stop magnet on or near a steel structure. If the magnet assembly comes in contact with a steel structure and then pulled away from the steel structure, the magnet can become dislodged from the magnet assembly housing. Should this occur, contact PRECOR customer service for possible options for repairing the magnet assembly or to obtain a replacement part.

8 The Auto Stop system consists of a magnet holder mounted to the right front corner of the deck and a Hall Effect sensor mounted to the drive roller bracket of the frame. Check the alignment and gap (3/16") between the Auto Stop magnet holder and the Auto Stop sensor. If the alignment and gap are not correct, it may be necessary to loosen the deck and adjust so that the magnet is gapped and positioned properly relative to the sensor. Reference Procedure, Replacing the Auto Stop Magnet. If the alignment and the gap between the Auto Stop magnet holder and the Auto Stop sensor are correct continue with step 9.

9 The Auto Stop sensor will display a green blinking LED visible next to the connector, indicating that power is being applied to the sensor board. The LED does not tell you if the voltage is correct, just that it is present. If the LED is not lit or if LED is lit continue with step 9. See Figure Below.

Figure 19: Auto Stop LED's and Wire Connector



10 The connector has 3 wires (red, black, and green), which can be metered for troubleshooting. Unplug the Auto Stop connector from the Auto Stop Sensor.

11 Place the meter's red lead to the red wire and black lead to the black wire of the Auto Stop connector. The meter should indicate 5 volts +/- 0.1 volt. If 5 volts is present skip to step 12.

12 If the 5 volts is not present of significantly low temporarily replace the Auto Stop cable with a known good cable and repeat step 10. If the 5 volts is not present or the voltage is still significantly low replace the console or upper PCA. If 5 volts is present permanently replace the Auto Stop cable.

Note: The running belt does not need to be moving for this test.

13 With the Auto Stop connector plugged into the Auto Stop sensor place the meter's red lead to the green wire and black lead to the black wire. The meter should indicate 5 volts +/- 0.1volt. While monitoring this voltage, have someone step and/or bounce on the deck The voltage between the black and green wires should fluctuate when the deck is moving up and down. If the voltage does not change with movement replace the Auto Stop Sensor.

14 If you have preformed all the described steps and the Auto Stop feature will still not function contact Precor Customer Support.

Error 60 or "Temporarily Out of Order" – Auto Stop Not Working

Description

The error indicates the Auto Stop feature has stopped functioning during a workout. If the error is detected while a workout is in progress, the treadmill will operate normally until the workout has ended. At the end of the workout, the error will lock out the next user, displaying "Temporarily Out of Order, Please Use another treadmill" on the P80 console and "PLEASE USE ANOTHER TREADMILL" on the P30 and P20 consoles.

When this error occurs "1376256 E_AUTOSTOP_SENSOR_FAILURE" will be recorded to the event log of the P80 console. Error 60 will be recorded in the error log of the P10, P20 or P30 console.

Possible Causes

1 Intermittent connections.

2 Bad upper PCA or Console.

3 Bad Auto Stop cable.

4 Damaged or faulty Auto Stop sensor.

5 Damaged or missing Auto Stop magnet.

6 The gap or alignment between the Auto Stop magnet and sensor is incorrect.

Possible Remedies

1 Check that the Auto Stop cable connectors are secure at the sensor and console.

2 Check for 5VDC at the upper PCA or console. Disconnect the Auto Stop cable connector from the upper PCA or console and measure the voltage from the console. If 5VDC is not present replace the upper PCA or console. If 5VDC is present then continue troubleshooting the Auto Stop cable.

3 Check for 5VDC at the Auto Stop sensor. Disconnect the Auto Stop cable connector from the Auto Stop sensor, turn the treadmill's "On/Off" switch to "On", and check for 5VDC between the red and black wire in the Auto Stop cable connector. If 5VDC is present at the at the Auto Stop connector of the console, but not at the end of the cable, then replace the Auto Stop cable.

4 Visually inspect the Auto Stop sensor for physical damage. Replace if appropriate. Access the Service Access software (hardware validation tests), and select the Auto Stop test (see section-5).

- If the feature is enabled the P80 Auto Stop sensor test will count the number of times the magnet crosses the sensor.
  - The P10, P20 and P30 consoles will display "USER DETECTED" if motion is detected from the running deck or "NO USER DETECTED" if no motion is detected from the running deck. If the Auto Stop test in the P80 did not count steps or if the P10, P20 or P30 consoles

displayed "NO USER DETECTED", disconnect the Auto Stop cable from the Auto Stop sensor and check for 5vDC between the red and black wire.

- If 5VDC is present replace the Auto Stop sensor.

5 Ensure the Auto Stop magnet and/or holder is mounted on the edge of the running deck and visually inspect for damage. Replace if appropriate.

6 Check the gap and alignment between the Auto Stop magnet and sensor. The gap should be approximately 3/16 of an inch and the center markings on the top of the magnet and sensor should be aligned. If the gap is larger than 3/16"and/or the magnet and sensor are not aligned, adjust the running deck to the correct alignment and gap.

Error 61 or "Temporarily Out of Order" – Auto Stop Not Present

Description

This error is associated with the TRM Treadmill. The error indicates the Auto Stop sensor is not detected. If the error is detected the user will be locked out, displaying "Temporarily Out of Order, Please Use another treadmill" on the P80 console and "PLEASE USE ANOTHER TREADMILL" on the P30 and P20 consoles. When this error occurs "1376257-E_AUTOSTOP_SENSOR_NOT_INSTALLED" will be recorded to the event log of the P80 console. Error 61 will be recorded in the error log of the P10, P20 or 30 consoles.

Possible Causes

1 Intermittent connections.

2 Bad upper PCA or Console.

3 Bad Auto Stop cable.

4 Damaged or faulty Auto Stop sensor.

Possible Remedies

1 Visually verify the Auto Stop hardware components are installed onto the treadmill frame. The Auto Stop feature was not on the TRM as a standard feature until 12/28/2010 but may have shipped with a P80 console prior to 12/28/2010. If the Auto Stop hardware is not present contact Precor Customer Support. Check that the Auto Stop cable connectors are secure at the sensor and console.

2 Check for 5vDC at the upper PCA or console. Disconnect the Auto Stop cable connector from the upper PCA or console and measure the voltage from the console. If 5vDC is not present replace the upper PCA or console. If 5vDC is present then continue troubleshooting the Auto Stop cable.

3 Check for 5vDC at the Auto Stop sensor. Disconnect the Auto Stop cable connector from the Auto Stop sensor, turn the treadmill's "On/Off" switch to "On", and check for 5vDC between the red and black wire in the Auto Stop cable connector. If 5vDC is present at the at the Auto Stop connector of the console, but not at the end of the cable, then replace the Auto Stop cable.

4 Visually inspect the Auto Stop sensor for physical damage. Replace if appropriate. Access the Service Access software (hardware validation tests), and select the Auto Stop test (see section-5). If the feature is enabled the P80 Auto Stop sensor test will count the number of times the magnet crosses the sensor. The P10, P20 and P30 consoles will display "USER DETECTED" if motion is detected from the running deck or "NO USER DETECTED" if no motion is detected from the running deck. If the Auto Stop test in the P80 did not count steps or if the P10, P20 or P30 consoles displayed "NO USER DETECTED", disconnect the Auto Stop cable from the Auto Stop sensor and check for 5vDC between the red and black wire. If 5vDC is present replace the Auto Stop sensor.

Troubleshooting Heart Rate Issues

Hand Held Heart Rate Does Not Work

1 Place your hands on the HHHR (Hand Held Heart Rate) contacts, making full contact with both top and bottom contacts for at least 15 seconds.
   - If the unit displays a heart rate, no problem exists.
   - If the unit does not display a heart rate value within this time, Continue to step 2.

2 Set the on/off switch to the off position, wait 10 seconds, then set the on/off switch to the on position and repeat step 1.
   - If the HHHR functions correctly, then the processor on the HR board was in a "latched-up" condition, and cycling the power cleared the condition.
   - If the HHHR does not function correctly, continue with step 3.

3 Verify that the HHHR board has the correct operating voltage. Connect a voltmeter to VCC and Ground on the Power/Signal connector. The voltage should read between 4.5 and 5.5VDC.

4 Verify the wiring of the HHHR contacts (top left, bottom left, top right, bottom right) go to the proper pin on the Grip/Contact connector, that none of the lines are shorted,
   - If NO, Correct the wiring error.
   - If Yes, Continue.

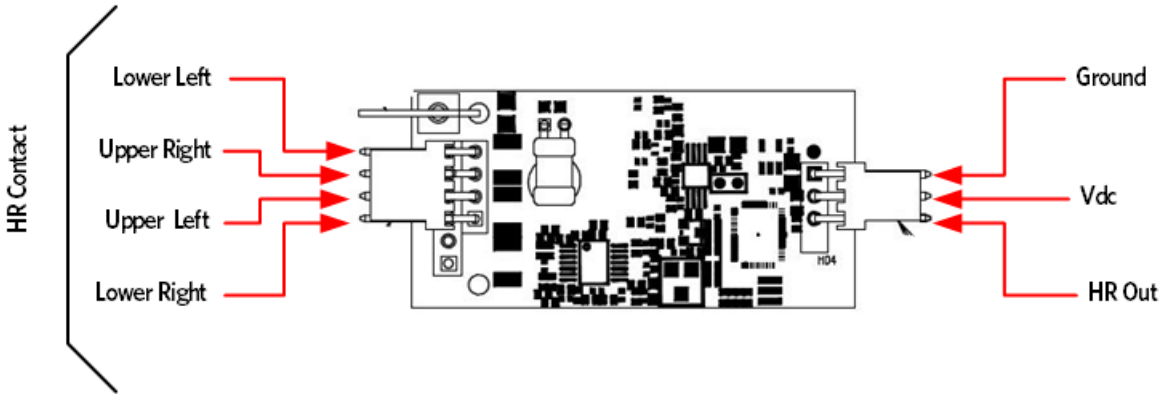
5 Verify that the grip connections are free of corrosion.
   - If NO, Replace the corroded HHHR grips.
   - If Yes, Continue.

6 Verify that there is a ferrite bead around the cable from the HHHR board to the upper PCA. (GEN-06 treadmill only)

7 Verify that the unit does not display a heart rate with only one hand on a grip. This would indicate static damage, and require replacement of the heart rate board.

8 If the above procedures do not correct the problem, replace the heart rate board.

Figure 20: Hand Held - Chest Strap Heart Rate PCA



Wireless Heart Rate Does Not Work

1 Verify wireless heart rate with a known good chest strap transmitter or test transmitter. If the heart rate reading is erratic, incorrect, or absent, continue with step 2.

> ***NOTE: It may be necessary to lean in closer to the console at first to allow receiver to begin to acquire a heart rate signal.***

2 Verify that the HHHR board has the correct operating voltage. Connect a voltmeter to VCC and Ground on the Power/Signal connector. The voltage should read between 4.5 and 5.5VDC.

3 Identify other sources of wireless interference signals in close proximity to the unit (such as Wi-Fi networks, cordless phones, etc.).

> ***NOTE: Wi-Fi network is transmitting in close proximity to the treadmill the heart rate system MAY pick it up. Using an ohmmeter, verify that upper and lower PCAs have a good electrical path to chassis ground.***

4 If the above procedures do not correct the problem, replace the heart rate board.

Possible sources of interference signals include, BUT NOT LIMITED TO:

- Wi-Fi Network Routers
- Cordless Telephones
- Cell Phones
- Electronic Dog Fences
- Garage Door Remotes
- Noisy AC feeds
- Florescent light ballasts

Section 6 - Replacement Procedures

In This Section

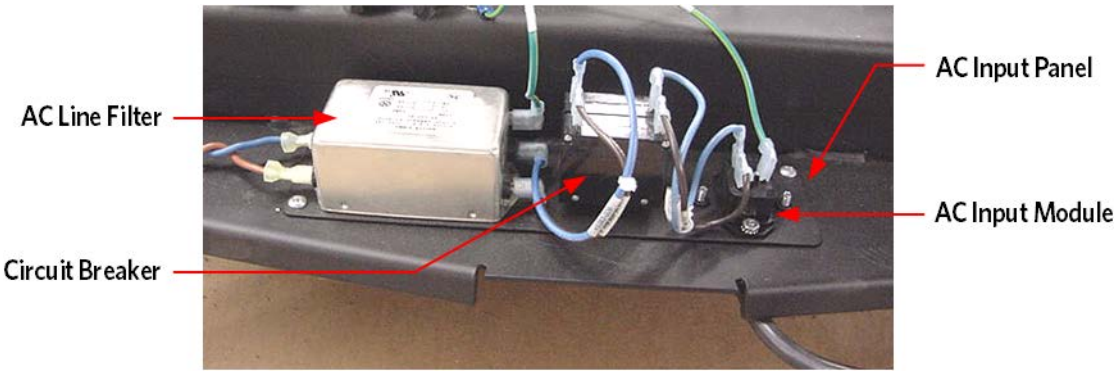
Replacing the Line Cord

1 Set the treadmill circuit breaker in the off position and unplug the treadmill's line cord from the AC outlet.

2 Remove the treadmill's hood.

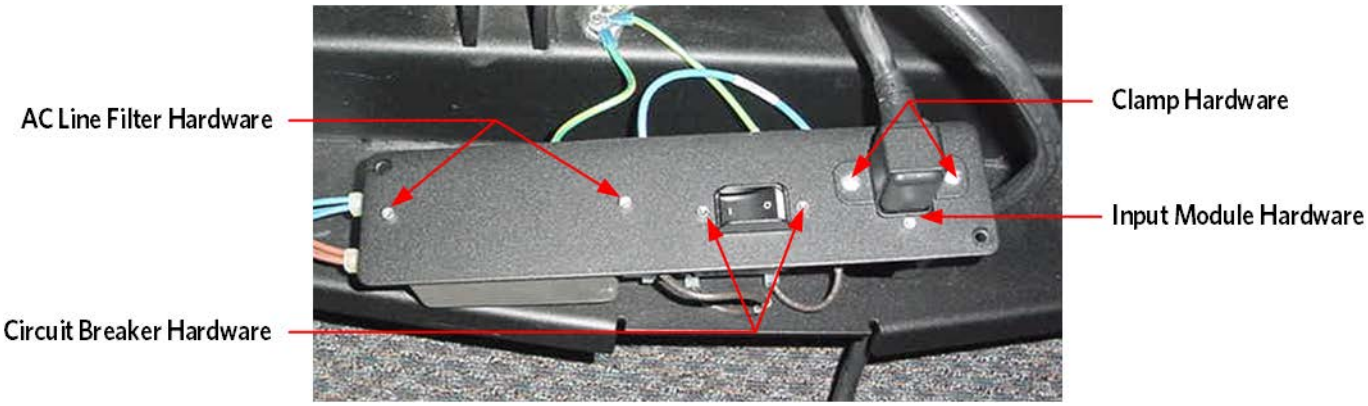
3 Remove the two screws that fasten the AC input panel to the frame.

Figure 21: AC Input Panel



4 Lift the AC input panel from the frame and rotate it to expose the AC line cord clamp screws.

Figure 22: AC Input Panel Hardware



5 Remove the hardware that retains the AC line cord clamp and remove the clamp.

6 Disconnect the AC line cord from the input module.

7 Feed the end of the replacement AC line cord that mates with the input module through its hole in the frame and firmly insert it into the input module.

8 Set the AC line cord clamp in its mounting position and fasten it with the hardware removed in step 3.

9 Set the input panel in its mounting position and fasten it with the hardware removed in step 5.

10 Check treadmill operation per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the Circuit Breaker

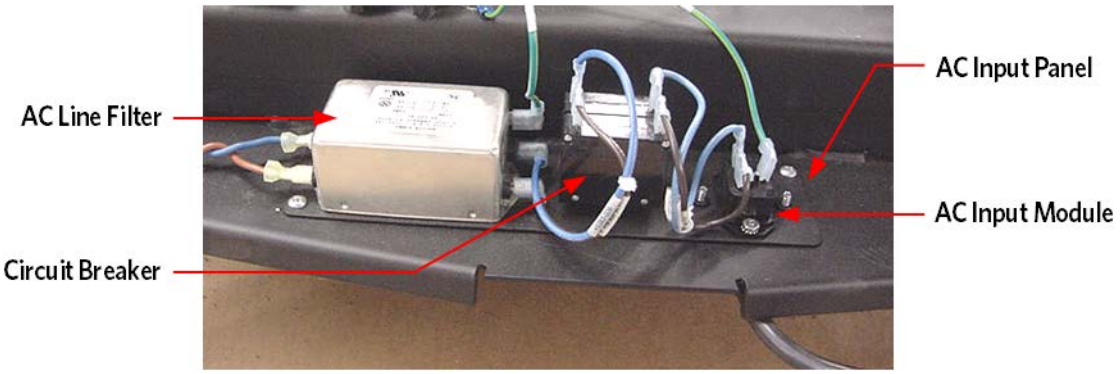
1 Set the treadmill circuit breaker in the off position and unplug the treadmill's line cord from the AC outlet.

2 Remove the treadmill's hood.

3 Remove the two screws that fasten the AC input panel to the frame.

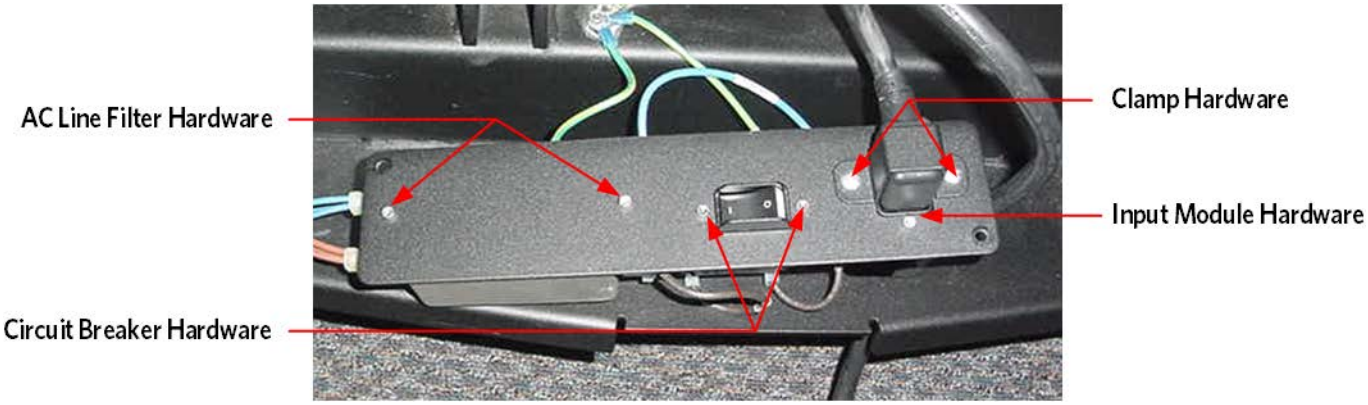
4 Disconnect the wiring from the circuit breaker (2 blue wires on 120 Vac treadmills or 2 blue and 2 brown wires on 240 Vac treadmills).Note: The figure below is showing a 240 volt configuration.

Figure 23: AC Input Panel



5 Lift the AC input panel from the frame and rotate it to expose the circuit breaker mounting screws.

Figure 24: AC Input Panel Hardware



6 Remove the two screws retaining the circuit breaker and remove the circuit breaker.

7 Reference the label on the replacement circuit breaker and set the circuit breaker in its mounting position with the LINE side of the breaker facing the input module and the LOAD side of the circuit breaker facing the AC line filter. Fasten the circuit breaker with the hardware removed in step 6.

NOTE:

On 120 Vac treadmills connect the blue wire from the input module to the LINE terminal on the circuit breaker and the blue wire from the AC line filter to the LOAD terminal on the circuit breaker.

On 240 Vac treadmills connect the blue wire from the input module to the upper LINE terminal on the circuit breaker and the blue wire from the AC line filter to the upper LOAD terminal on the circuit breaker. Connect the brown wire from the input module to the lower LINE terminal on the circuit breaker and the brown wire from the AC line filter to the lower LOAD terminal on the circuit breaker.

8 Set the input panel in its mounting position and fasten it with the hardware removed in step 3.

9 Thoroughly check the treadmill per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the Line Filter

1 Set the treadmill circuit breaker in the off position and unplug the treadmill's line cord from the AC outlet.

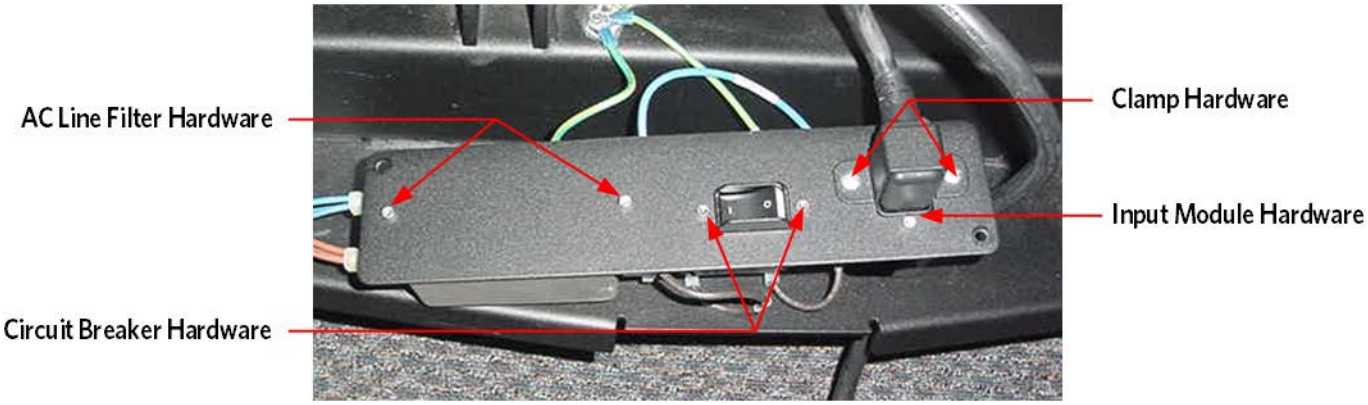
2 Remove the treadmill's hood.

3 Remove the two screws that fasten the AC input panel to the frame, See Figure below.

4 Disconnect the wiring from the AC line filter (2 blue wires, 2 brown wires and a green/yellow wire).

5 Lift the AC input panel from the frame and rotate it to expose the AC line filter mounting screws.

Figure 25: AC Input Panel Hardware



6 Remove the screws that retain the AC line filter. Remove the AC line filter.

7 Set the replacement AC line filter in its mounting position with the side with three terminals facing the circuit breaker and replace the screws removed in step 6.

NOTE: On 120 Vac and 240 Vac treadmills, connect the blue wire from the power control module to the L1 terminal on the LOAD side of the AC line filter and the brown wire from the power control module to the L2 terminal on the LOAD side of the AC line filter.

On 120 Vac treadmills, connect the blue wire from the input module to the L1 terminal on the LINE side of the AC line filter, the brown wire from the circuit breaker to the L2 terminal on the LINE side of the AC line filter and the green/yellow wire to the (non-insulated) terminal mounted directly on the line filter case.

On 240 Vac treadmills, connect the blue wire from the circuit breaker to the L1 terminal on the LINE side of the AC line filter, the brown wire from the circuit breaker to the L2 terminal on the LINE side of the AC line filter and the green/yellow wire to the (non-insulated) terminal mounted directly on the line filter case.

8 Set the input panel in its mounting position and fasten it with the hardware removed in step 3.

9 Thoroughly check the treadmill per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

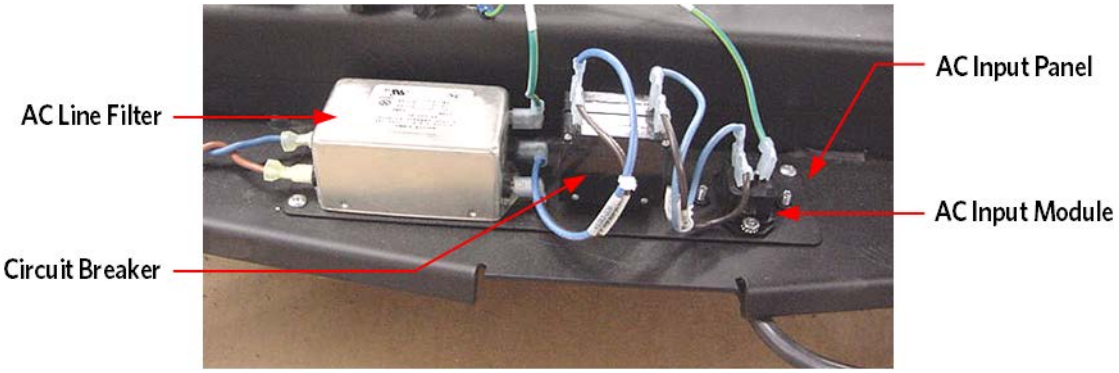
Replacing the Input Module

1 Set the treadmill circuit breaker in the off position and unplug the treadmill's line cord from the AC outlet.

2 Remove the treadmill's hood.

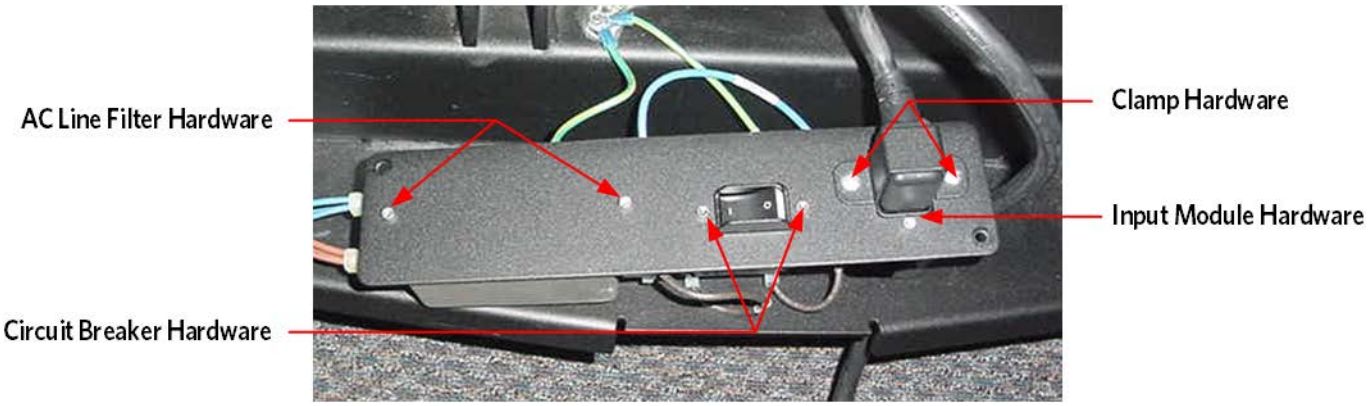
3 Remove the two screws that fasten the AC input panel to the frame.

Figure 26: AC Input Panel



4 Lift the AC input panel from the frame and rotate it to expose the AC line cord clamp screws and input module screws.

Figure 27: AC Input Panel Hardware



5 Remove the hardware that retains the AC line cord clamp and remove the clamp.

6 Disconnect the AC line cord from the input module.

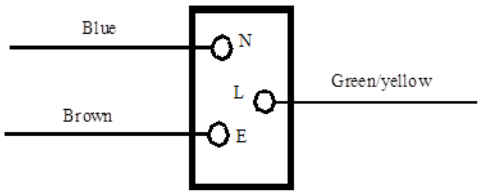
7 Disconnect the wiring from the input module (1 blue wire, 1 brown wire and 1 green/yellow wire).

8 Remove the hardware that retains the input module and remove the input module.

9 Set the input module in its mounting position with the side with two terminals facing the circuit breaker. Replace the hardware that fastens the module to the input panel.

10 Connect the blue wire removed in step 7 to terminal N, the brown wire to terminal L and the green/yellow wire to terminal E of the input module.

Figure 28: Input Module Wiring



11 Insert the AC line cord firmly into the input module. Set the AC line cord clamp in its mounting position and fasten it with the hardware removed in step 5.

12 Set the input panel in its mounting position and fasten it with the hardware removed in step 3.

13 Check treadmill operation per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the Auto Stop Sensor

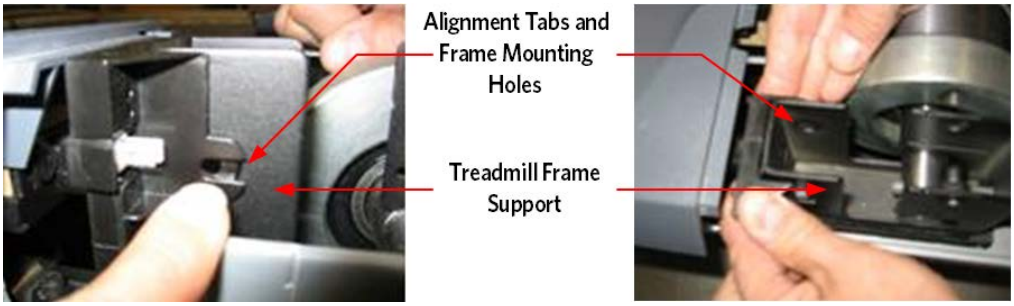
Caution: Do not place the auto stop magnet on or near a steel structure. If the magnet assembly comes in contact with a steel structure and then pulled away from the steel structure, the magnet can become dislodged from the magnet assembly housing. Should this occur, contact PRECOR customer service for possible options for repairing the magnet assembly or to obtain a replacement part.

1 Remove the motor hood.

2 Unplug the Auto Stop Cable from the Auto Stop assembly.

3 The auto stop sensor assembly has round alignment tabs that match the holes of the treadmill frame support. With one hand grasp the side of the Auto Stop sensor assembly that is closest to the outside of the treadmill and apply pressure toward the running deck. With your other hand push on each alignment tab from the inside of the frame mounting holes. The Auto Stop Assembly should disengage from the frame.

Figure 29: Auto Stop Sensor Mounting



4 Position the replacement auto stop assembly with the cable connector facing to the right side of the treadmill. Slide the auto stop assembly over the treadmill frame support and push down until the round tabs align with the holes in the support. The round tabs will snap into the treadmills frame mounting holes securing the auto stop assembly in place.

5 Check the alignment of the magnet and the auto stop assembly. The magnet and the auto stop assembly each have an alignment mark on the top of their housings. The magnet mark and the auto stop mark should align and the gap should be approximately 3/16 of an inch between the housings. A 3/16 allen wrench can be used as a feeler gauge to set the correct gap. If the gap or alignment are off adjust the running deck until the magnet and auto housing are properly aligned. See procedure, ***Replacing the Auto Stop Magnet*** (on page 81)

6 Replace the Auto Stop Cable to the Auto Stop Sensor Assembly.

7 Replace the motor hood.

Replacing the Auto Stop Magnet

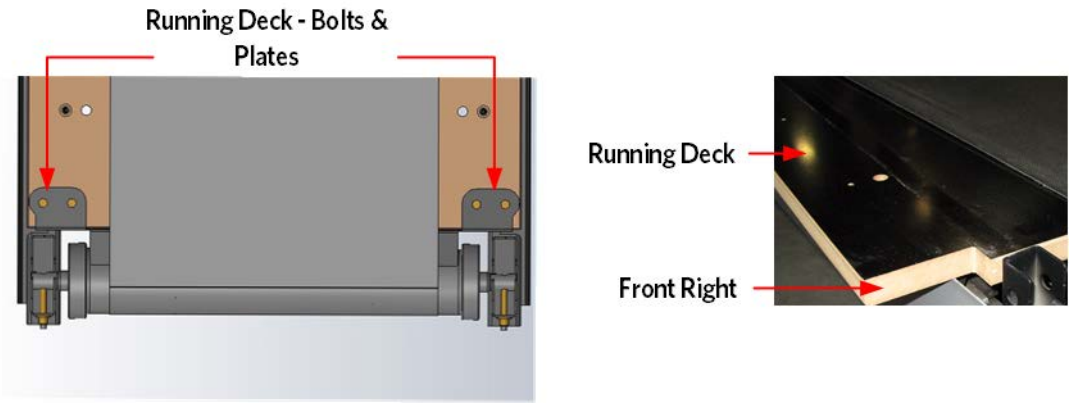
1 Remove the motor hood.

2 Remove the left and right trim strips from the treadmill deck.

3 Remove the four mounting bolts and two top plates that fasten the running deck to the pivot bracket at the back end of the treadmill.

4 Pull the running deck out from the right side of the treadmill just far enough to expose the front right edge of the running deck. (Left and Right side orientations are based as if you were standing on the treadmill facing the console.)

Figure 30: Running Deck Removal



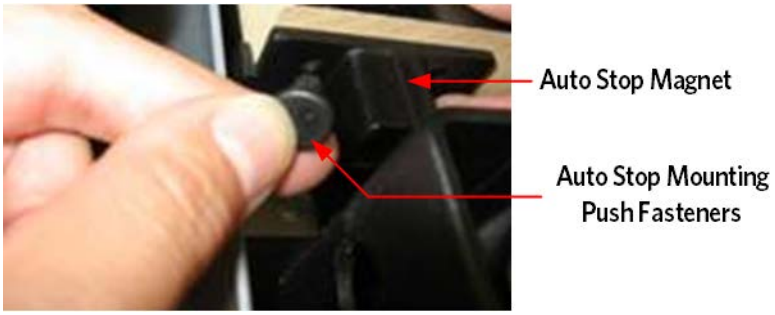
5 Pry out the two push fasteners from the deck using a flat head screw driver and remove the Auto Stop magnet.

6 Align the replacement magnet on the running deck and then secure the magnet to the running deck using the two push fasteners removed in step 4.

7 Slide the running deck back into position over the running deck pivot bracket. Align the bottom plate and pivot bracket holes with the running deck bolt holes.

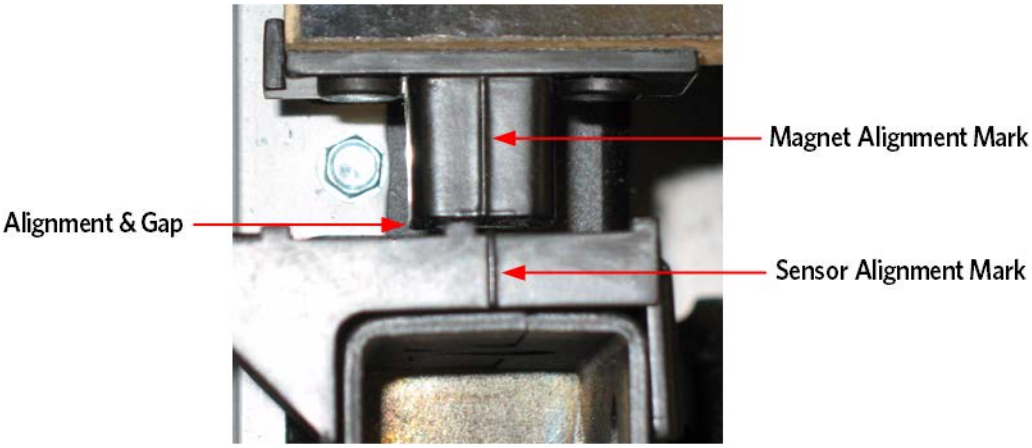
8 Replace the plates and the running deck mounting bolts removed in step 3. Only tighten the bolts by hand at this time.

Figure 31: Auto Stop Magnet Mounting



9 Check the alignment of the magnet and the auto stop assembly. The magnet and the auto stop assembly each have an alignment mark on the top of their housings. The magnet mark and the auto stop mark should align and the gap should be approximately 3/16 of an inch between the housings. A 3/16 allen wrench can be used as a feeler gauge to set the correct gap. If the gap or alignment are off adjust the running deck until the magnet and auto housing are properly aligned.

Figure 32: Auto Stop Alignment



10 Securely tighten the running deck mounting bolts. Torque the bolts to 150 inch pounds.

11 Replace the left and right running deck trim strips.

12 Replace the motor hood.

Replacing Drive Motor

1 Set the treadmills on/off switch in the off position and unplug the treadmill's line cord from the AC outlet.

2 Remove the hood.

3 Disconnect the drive motor connector from the OUTPUT connector on the power control module.

4 Remove the drive belt from the drive motor.

5 Mark the outline of the current motors mounting plate for reference when you install the new motor.

6 Remove the four bolts that fasten the drive motor to the frame.

7 Set the replacement drive motor in its mounting position and fasten the drive motor with four mounting bolts removed in step 5 and fasten the drive motor with four mounting bolts removed in step 6.

8 Place the drive belt on the drive roller pulley and on the drive motor pulley.

9 Adjust the drive belt tension and complete the motor installation per Procedure, Adjusting Drive Belt Tension.

10 Thoroughly check the treadmill per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the Incline Motor

Note: The replacement incline motor must be calibrated prior to installation.

1 Set the treadmill's circuit breaker in the off position and remove the AC line cord from the AC outlet.

2 Disconnect the incline motor connector from the INCLINE connector on the power control module. See Figures below (TRM Lift Motor and Lower Control Module).

3 Lay the replacement incline motor on the floor in front of the treadmill and insert its connector in the INCLINE connector on the power control module.

Figure 33: TRM Lift Motor

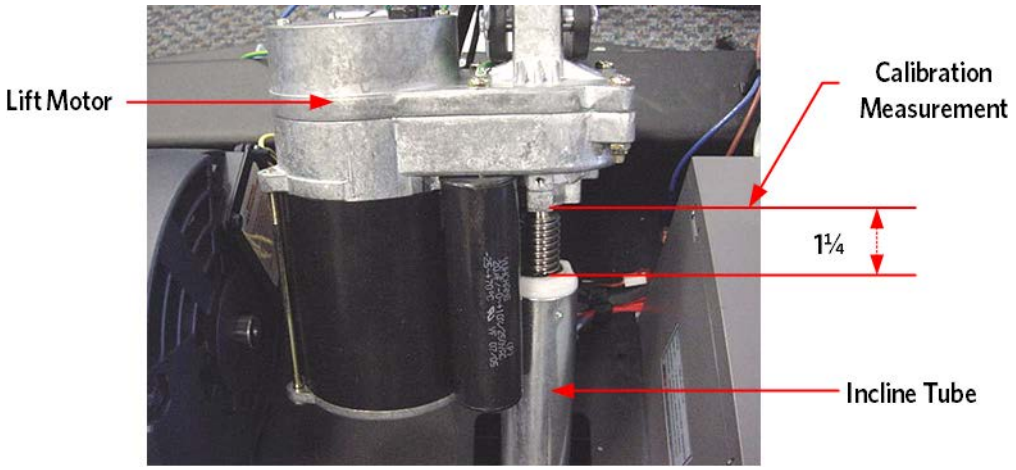
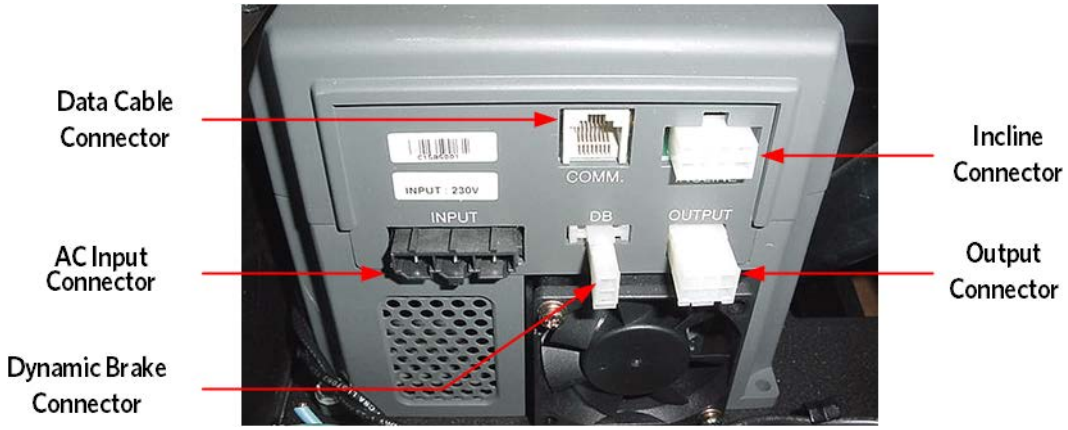


Figure 34: Power Control Module



4 Either lay the treadmill on its side or securely block the front of the treadmill so that the treadmill's weight is off of the incline platform.

5 Remove the defective incline motor as follows: remove the screw that fastens the frame ground wire (green with yellow stripe) to the treadmill frame. Remove the hitch and clevis pins from the top and bottom of the incline motor. Remove the incline motor from the treadmill.

6 Set the calibrated incline motor in its mounting position. Replace the upper clevis and hitch pins.

7 Replace the lower clevis and hitch pins. It may be necessary to slightly rotate the incline tube to align it so that the clevis pin may be inserted. To align the hole in the incline tube, rotate it in the direction that will cause the least amount of rotation to make alignment possible.

8 Connect the frame ground wire to the treadmill frame with the screw removed in step 5. Route both incline motor cables as noted in the incline motor removal procedure.

9 Route both lift motor cables in the cable management clips to hold the cables away from the jack screw.

10 Insert the incline motor connector in the INCLINE connector on the power control module.

11 Check treadmill operation per Procedure, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the Incline Platform

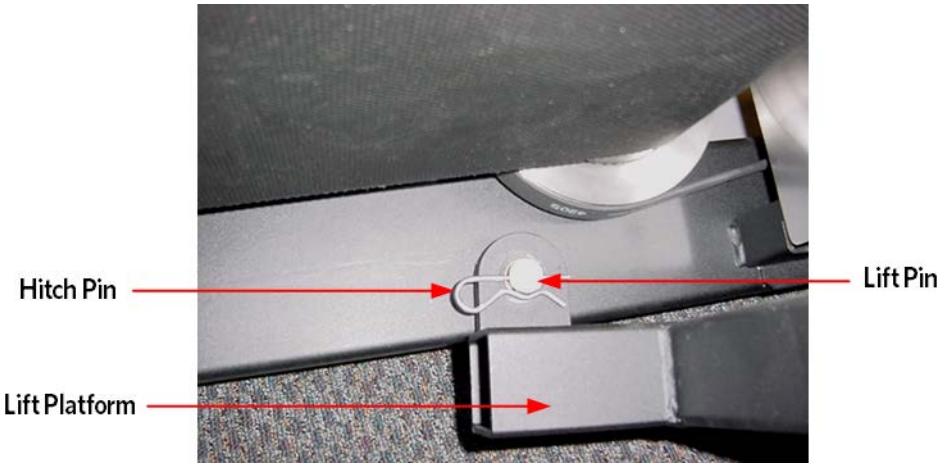
1 Set the treadmill circuit breaker in the off position. Remove the AC line cord from the AC outlet.

2 Carefully, lay the treadmill on its side.

3 Remove the hitch pin and clevis pin that fastens the incline motor tube to the incline platform. While the incline tube is not fastened to the incline platform, care must be taken to not allow the incline tube to rotate. If the incline tube rotates, the incline motor must be re-calibrated per Procedure, Calibrating the Incline Motor.

4 Remove the two large hitch pins (one each side) from the incline platform to frame mounting. See Figure Below. Remove the incline platform mounting pins and remove the incline platform from the treadmill.

Figure 35: Incline Platform Mounting

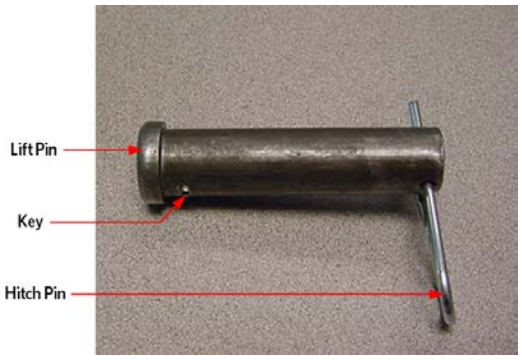


5 Remove the wheels from the old incline platform and remount them on the replacement incline platform.

6 Set the replacement incline platform in it mounting position. Align the key in the incline mounting pin with the key way in the frame and slide the incline mounting pins into place. See Figure Below (Incline Mounting Pin). Fasten the incline mounting pins with the hitch pins removed in step 4.

7 If the incline tube or the incline motor's drive screw has been moved, re-calibrate the incline motor per Procedure, Calibrating the Incline Motor, at this time.

Figure 36: Incline Mounting Pin



8 Fasten the incline tube to the incline platform with the clevis pin and hitch pin removed in step 3.

9 Set the treadmill in its upright position and thoroughly check it per ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

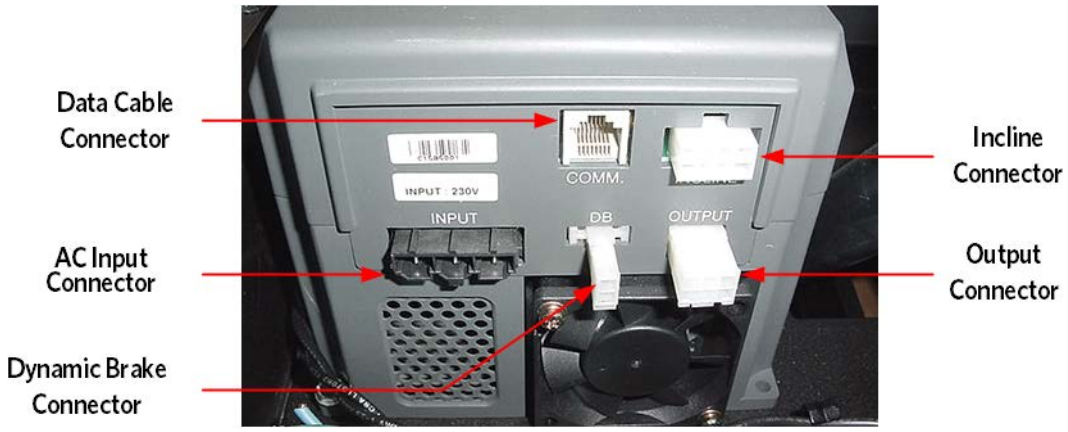
Replacing the Power Control Module

1 Set the treadmills on/off switch in the off position and remove the AC line cord from the AC outlet.

2 Remove the treadmill's hood.

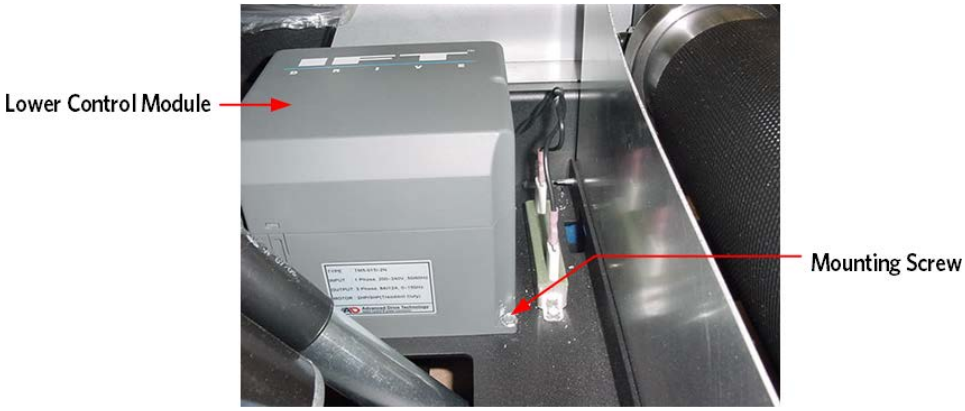
3 Disconnect the COMM, INCLINE, INPUT, DB and OUTPUT connectors from the power control module.

Figure 37: Power Control Module



4 Remove the four screws that mount the power control module. See Figure below (Lower Control Module Mounting.

Figure 38: Lower Control Module Mounting



5 Set the replacement power control module in its mounting position.

6 Fasten the power control module with the four screws removed in step 4.

7 Reconnect the COMM, INCLINE, INPUT, DB and OUTPUT connectors removed in step 3. The mating connectors on the power control module are polarized; therefore they cannot be reconnected incorrectly.

8 Replace the treadmill's hood.

9 Thoroughly check the treadmill per, ***Checking Treadmill Operation*** (see "***Section 2 - Operation Verification***" on page 7).

Replacing the End Cap or Belt Guard

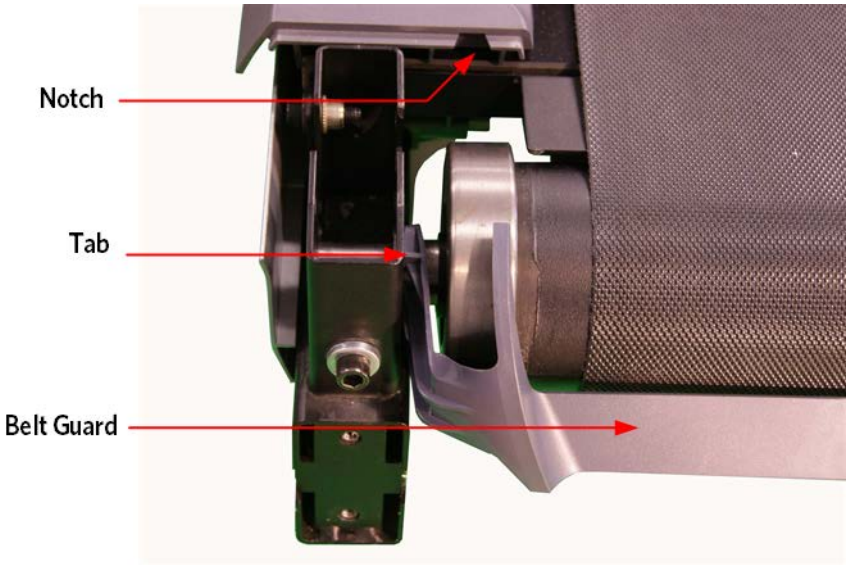
1 Set the treadmill circuit breaker in the off position and unplug the treadmill's line cord from the AC outlet.

2 Remove the four screws (2 lower screws, each side) that retain the end cap. Do Not loosen or move the take up roller mounting/adjustment bolts. Doing so will change the running belt's tension and alignment.

Figure 39: End Cap Mounting

3 Slide the end cap off of the treadmill. If you are not replacing the belt guard skip to step 5. The tabs on the belt guard (1 each side) snap into the take up roller mounts.

Figure 40: Belt Guard Mounting



4 Press inwards on the belt guard to remove the belt guard's tabs from the take up roller mounts. Slide the belt guard off of the treadmill.

5 Slide the replacement belt guard into place so that the tabs on the belt guard engage in both take up roller mounts.

6 Slide the end cap into place so that the tabs on the end cap engage in the notches in the running belt trim strips.

7 Fasten the end cap with the hardware removed in step 2.

Drive Belt Replacement

Note: Two running belt gauges, Precor part number 20007-101, are required. It is important that this procedure be followed to maintain correct drive belt and running belt tension. Improper tensioning of the belt will lead to premature running belt wear, premature driver roller bearing failure and premature take up roller bearing failure.

1. Remove the end caps or rear guard from the rear of the treadmill to expose the take up roller mounting bolts. Remove the treadmill motor cover.
2. Remove the deck trim from both sides.
3. Loosen, but do not remove the take up roller mounting bolts. These bolts are being loosened to remove the tension on the running belt.
4. Walk the drive belt off the motor pulley.
5. Remove both drive roller mounting bolts evenly, releasing the tension. Remove the drive roller from the treadmill using the drive belt as a handle.
6. Place the new drive belt on the drive roller and use the drive belt as a handle to slide the drive roller through the running belt and into place. Hand tighten both drive roller mounting bolts.
7. Make sure the running belt is in the center of the deck, the spacing should be the same on each side of the running belt to the edge of the running deck.
8. Start tightening the left and right side drive roller mounting bolts. Move back and forth between the left and right side mounting bolts so the bolts will tension evenly which will reduce the stress on the threads of the bolts. The left side drive roller shaft will tighten flush to the front frame bracket.
9. Using a measuring tape, measure the distance from the front of the left side drive roller shaft to the front of the frame cross beam and make note of that measurement.

10 Tighten the right side drive roller bolt until it measures the same distance as the left side drive roller, shaft to frame. This will ensure that the drive roller is parallel and square to the front of the frame.

Figure 41: Measuring Point - Drive Shaft

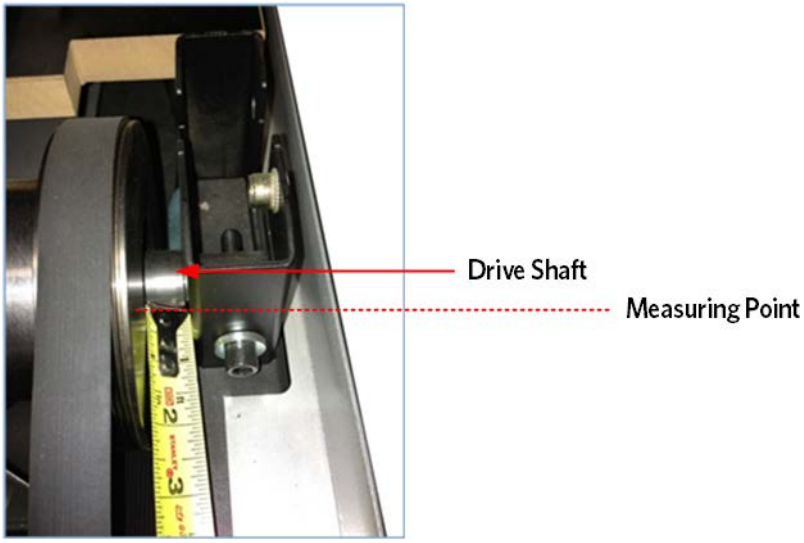
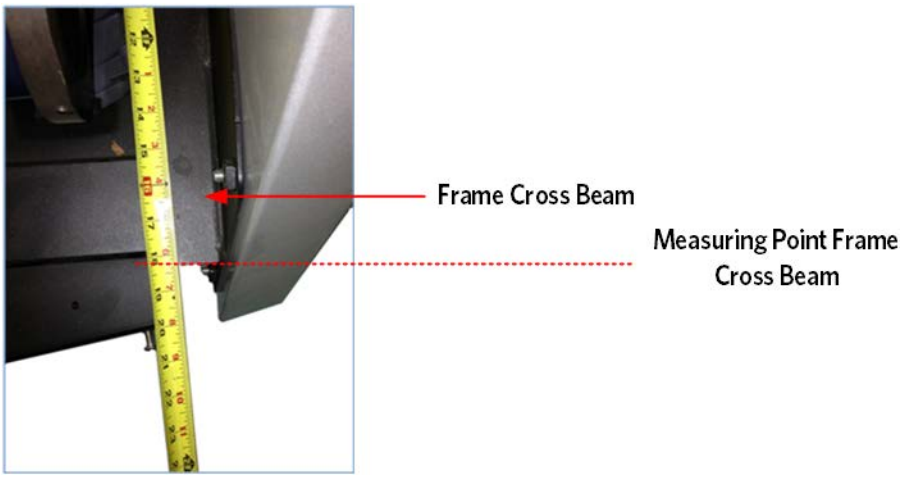


Figure 42: Measuring Point Frame Cross Beam



11 Walk the drive belt onto the drive roller pulley by rotating the drive motor flywheel. Be sure the belt is fully seated in the grooves of both pulleys and correctly aligned.

12 Adjust the drive belt tension per the Procedure, ***Adjusting Drive Belt Tension*** (on page 109).

13 Tensioning the Running Belt as per procedure, ***Tensioning the Running Belt*** (on page 111) and Running Belt Tracking Adjustment as per procedure, ***Running Belt Tracking Adjustment*** (on page 112).

14 Replace the belt guard, ensuring the belt guard tabs are firmly locked in the frame locking tabs and snapped onto the take up roller shaft.

15 Replace the end caps or rear guard and motor cover.

Replacing the Drive Roller

Note: Two running belt gauges, Precor part number 20007-101, are required. It is important that this procedure be followed to maintain correct drive belt and running belt tension. Improper tensioning of the belt will lead to premature running belt wear, premature driver roller bearing failure and premature take up roller bearing failure.

Drive Roller Removal

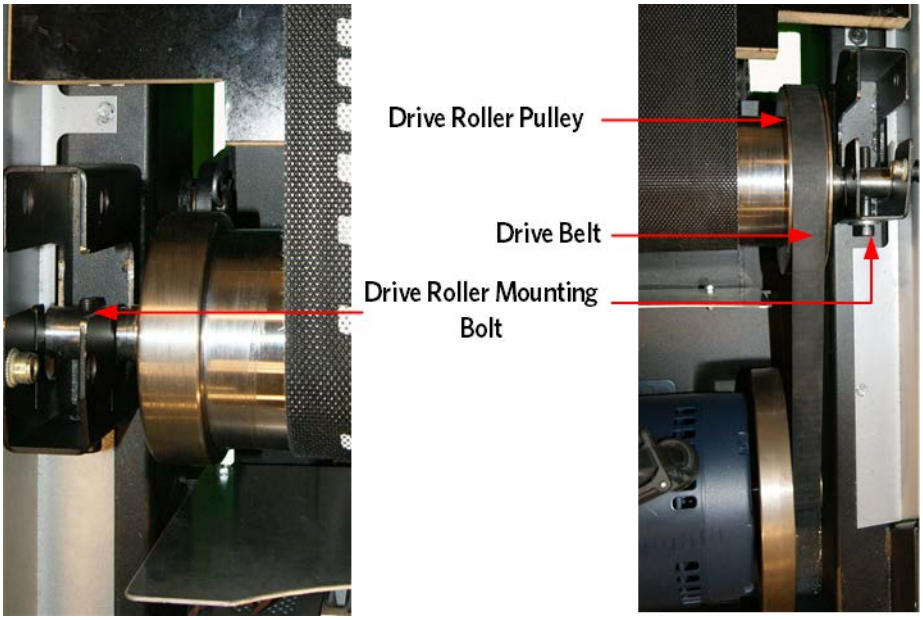
1 Remove the end caps from the rear of treadmill to expose the take up roller mounting bolts. Remove the treadmill's motor cover.

2 Remove the deck trim from both sides.

3 Loosen, but do not remove the take up roller mounting bolts. The bolts are being loosened to remove tension from the running belt.

4 Slowly rotate the drive motor flywheel while pressing the drive belt off of the motor pulley.

Figure 43: Drive Roller



5 Remove both drive roller mounting bolts releasing the tension evenly on both sides. Remove the drive roller from the treadmill using the drive belt as a handle.

Installing the Drive Roller

1 Place the drive belt on the new drive roller and use as a handle to slide the drive roller through the running belt and into place. Hand tighten both drive roller mounting bolts.

2 Make sure the running belt is in the center of the deck, the spacing should be the same on each side of the running belt to the edge of the running deck.

3 Start tightening the left and right side drive roller mounting bolts. Move back and forth between the left and right side mounting bolts so the bolts will tension evenly which will reduce the stress on the threads of the bolts. The left side drive roller shaft will tighten flush to the front frame bracket.

4 Using a measuring tape, measure the distance from the front of the left side drive roller shaft to the front of the frame cross beam and make note of that measurement.

5 Tighten the right side drive roller bolt until it measures the same distance as the left side drive roller, shaft to frame. This will ensure that the drive roller is parallel and square to the front of the frame.

Figure 44: Measuring Point - Drive Shaft

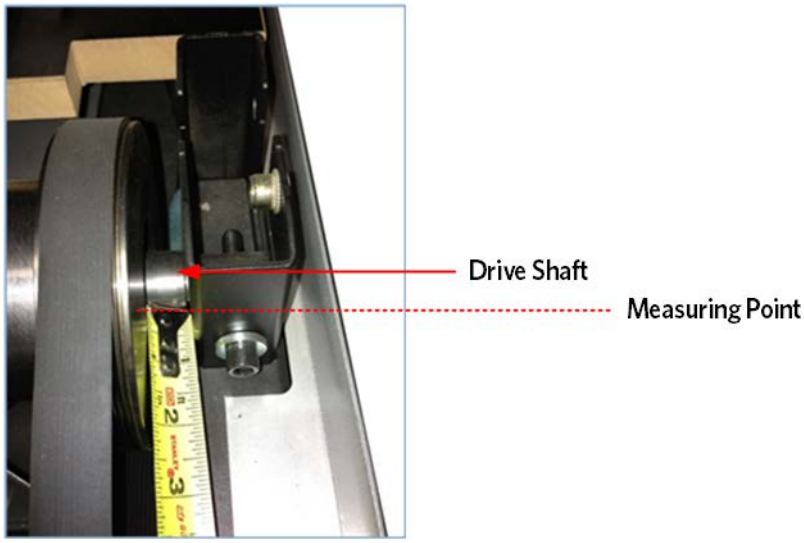
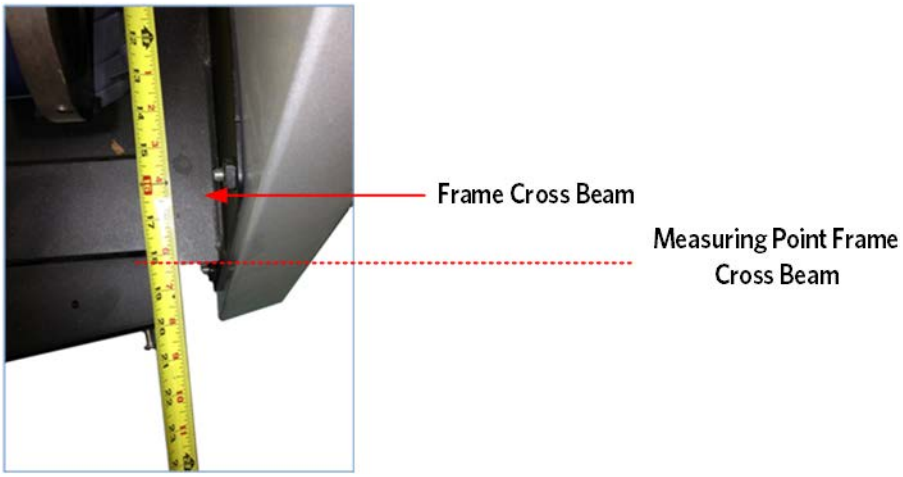


Figure 45: Measuring Point Frame Cross Beam



6 Walk the drive belt onto the motor pulley by rotating the drive motor flywheel. Be sure the belt is fully seated in the grooves of both pulleys and correctly aligned.

7 Adjust the drive belt tension per the Procedure, ***Adjusting Drive Belt Tension*** (on page 109).

8 Tensioning the Running Belt as per procedure, ***Tensioning the Running Belt*** (on page 111) and Running Belt Tracking Adjustment as per procedure, ***Running Belt Tracking Adjustment*** (on page 112).

9 Replace the belt guard, ensuring the belt guard tabs are firmly locked in the frame locking tabs and snapped onto the take up roller shaft.

10 Replace the end caps, deck trim strips and motor cover.

Take Up Roller Replacement

Note: Two running belt gauges, Precor part number 20007-101, are required. It is important that this procedure be followed to maintain correct drive belt and running belt tension. Improper tensioning of the belt will lead to premature running belt wear, premature driver roller bearing failure and premature take up roller bearing failure.

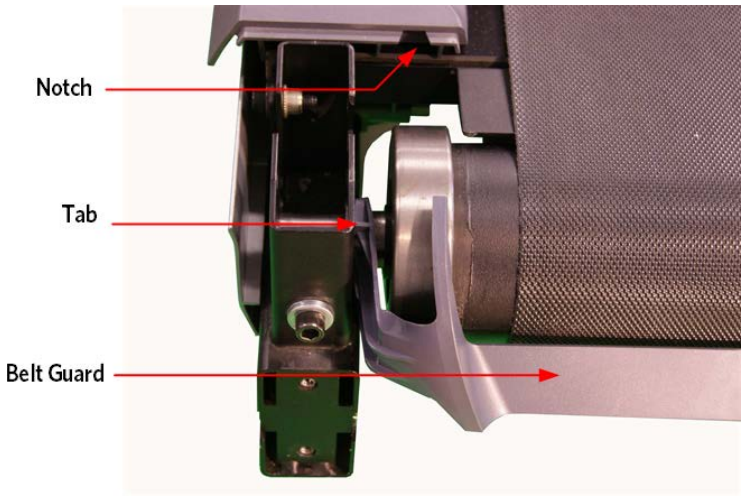
Procedure:

1 Remove the end caps or guard from the rear of the treadmill to expose the take up roller mounting bolts.

2 Remove the deck trim from both sides.

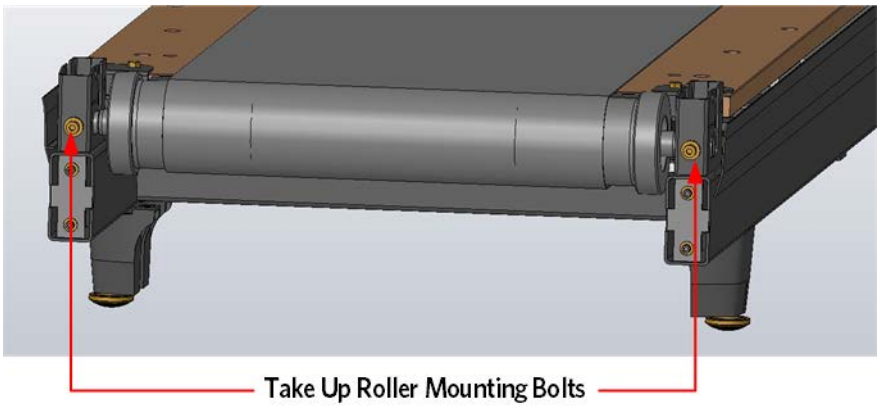
3 If applicable, remove the rear roller guard located in the front of the take up roller.

Figure 46: Belt Guard



4 Remove the take up roller mounting bolts by releasing the tension evenly on both sides. Then lift and slide the take up roller out.

Figure 47: Take Up Roller Mounting Bolt



5 Slide the new take up roller through the running belt and into place. Hand tighten both take up roller mounting bolts a few turns only.

6 Replace the roller guard and mounting bolts.

7 Make sure the running belt is in the center of the deck, the spacing should be the same on each side of the running belt to the edge of the running deck.

8 Move the running belt so that the seam is underneath the treadmill.

9 Adjust the drive belt tension per the Procedure, ***Adjusting Drive Belt Tension*** (on page 109).

10 Tensioning the Running Belt as per procedure, ***Tensioning the Running Belt*** (on page 111) and Running Belt Tracking Adjustment as per procedure, ***Running Belt Tracking Adjustment*** (on page 112).

11 Replace the belt guard, ensuring the belt guard tabs are firmly locked in the frame locking tabs and snapped onto the take up roller shaft.

12 Replace the end caps and trim strips.

Running Belt and/or Deck Replacement

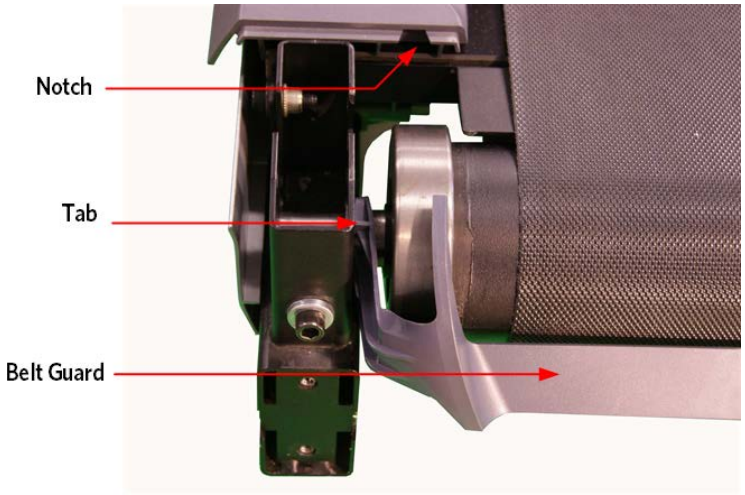
Note: Two running belt gauges, Precor part number 20007-101, are required. It is important that this procedure be followed to maintain correct drive belt and running belt tension. Improper tensioning of the belt will lead to premature running belt wear, premature driver roller bearing failure and premature take up roller bearing failure

Procedure:

1 Remove the end caps from the rear of treadmill to expose the take up roller mounting bolts. Remove the treadmill's motor cover.

2 Remove the belt guard by pulling the belt guard tabs away from the frame locking slots and then pulling it off the take up roller shaft.

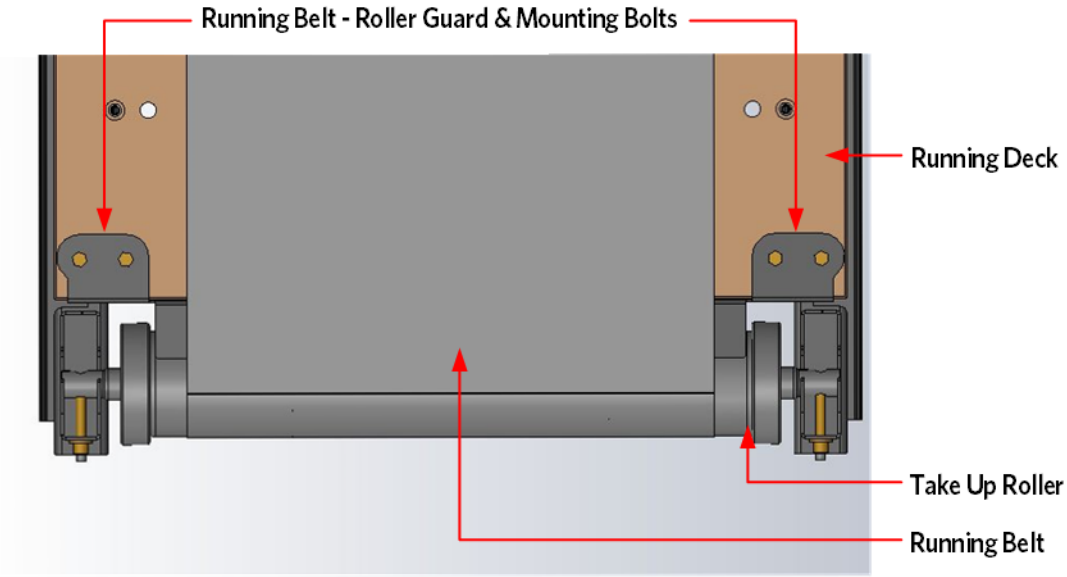
Figure 48: Belt Guard



3 Remove both running deck trim strips.

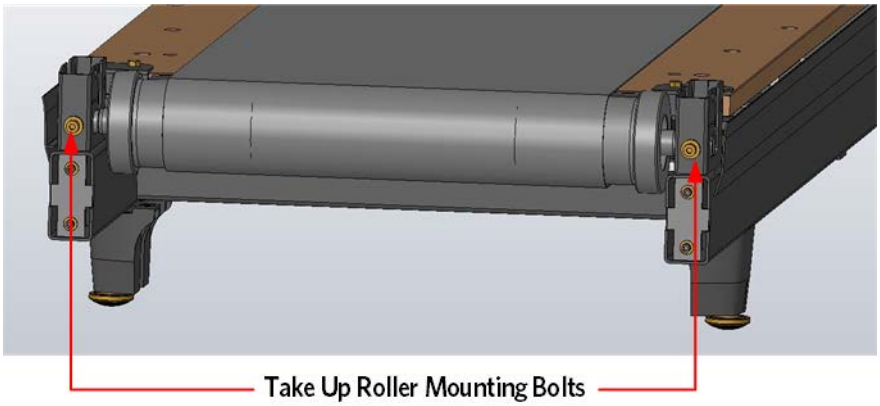
4 Remove the four bolts and the roller guard that hold the deck to the frame.

Figure 49: Running Deck - Bolts & Plates



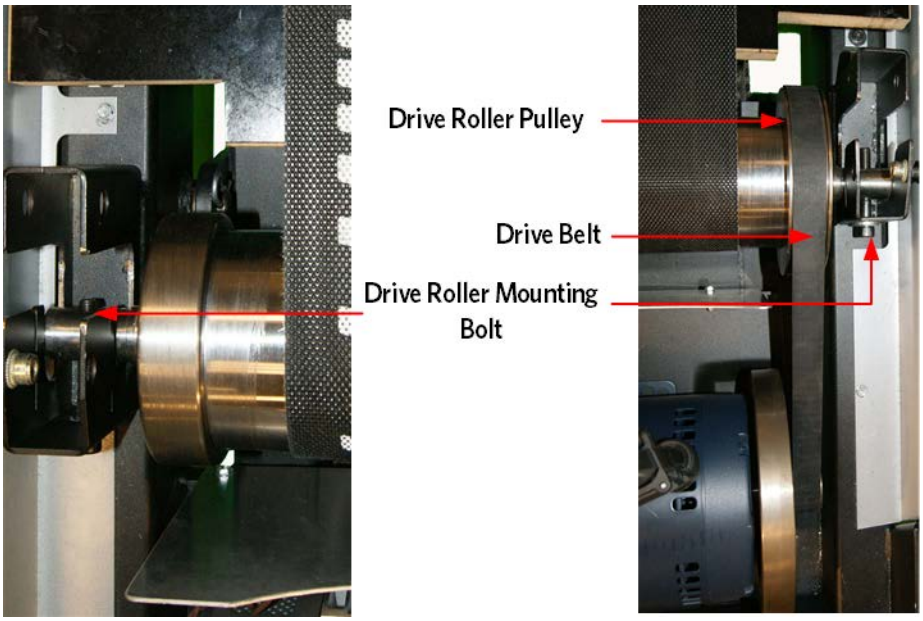
5 Remove both take up roller mounting bolts. Remove the take up roller from the treadmill.

Figure 50: Take Up Roller Mounting Bolt



6 Slowly rotate the drive motor flywheel while pressing the drive belt off of the motor pulley. Continue until the drive belt walks completely off of the drive roller pulley.

Figure 51: Drive Roller



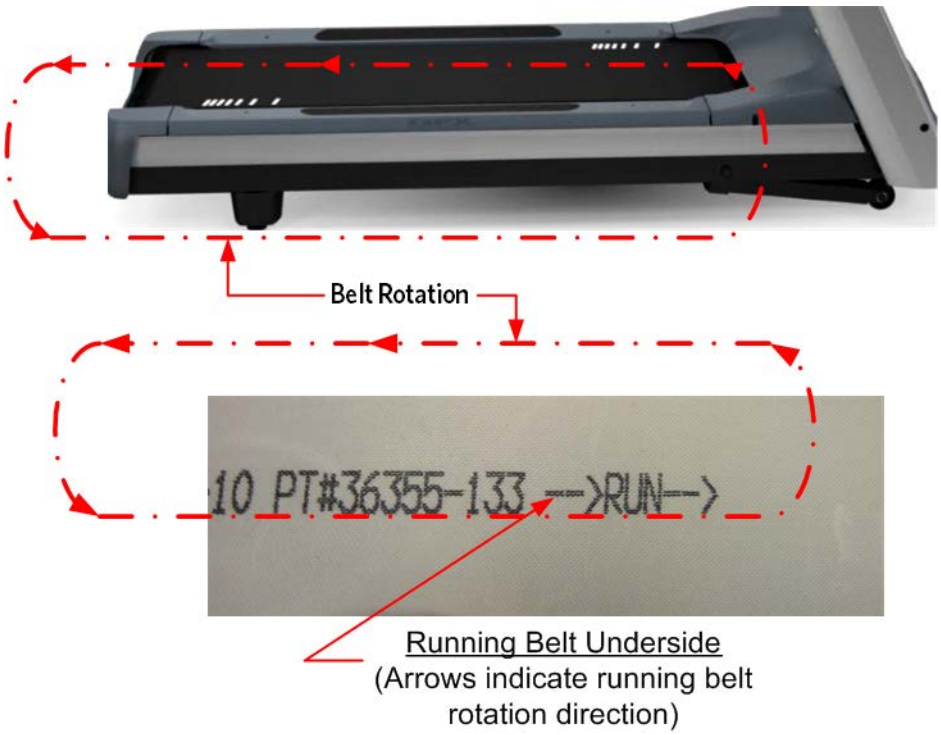
7 Remove both drive roller mounting bolts evenly releasing the tension. Remove the drive roller from the treadmill using the drive belt as a handle.

8 Lift the deck and running belt up and away from the treadmill.

9 Remove the Auto Stop magnet from the deck, if applicable. Slip the running belt off the deck and discard. Remove the inserts from the deck and flip it over, re-insert inserts into the new deck surface. If the deck has already been flipped replace it with a new deck. Make sure that the new deck surface is clear of debris. Ensure the new deck is installed with the inserts on the bottom of the deck.

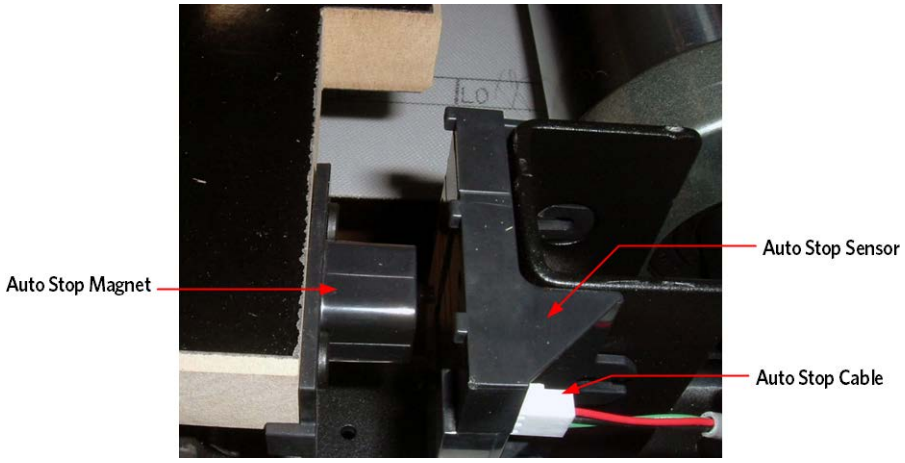
10 The new running belt will have an arrow pointing in one direction on the underside. The arrow indicates the correct direction of travel for the belt. Premature belt failure will occur if the belt is installed incorrectly. Slip the new running belt onto the deck and carefully place them back onto the treadmill.

Figure 52: Running Belt Direction



11 Reinstall the Auto Stop magnet on the right front corner of the deck, if applicable.

Figure 53: Auto Stop Assembly



12 Slide the take up roller though the running belt and positing in the frame. Hand tighten the mounting bolts into the take up roller shaft.

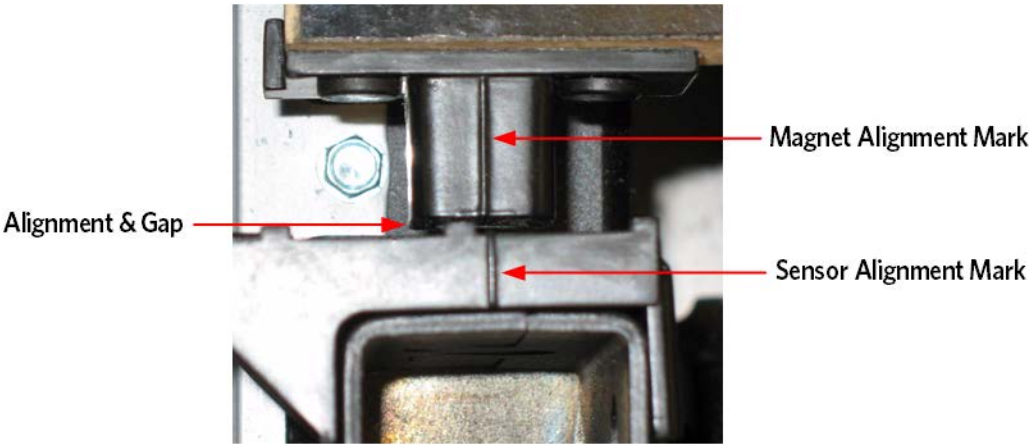
13 Align the bottom plate and pivot bracket holes with the running deck bolt holes.

14 Replace the roller guard and mounting bolts. Only hand tighten the bolts at this time.

15 Verify the spacing on all four corners that they are the same.

16 Check the alignment of the magnet and the auto stop assembly. The magnet and the auto stop assembly each have an alignment mark on the top of their housings. The magnet mark and the auto stop mark should align and the gap should be approximately 3/16 of an inch between the housings. A 3/16 allen wrench can be used as a feeler gauge to set the correct gap. If the gap or alignment are off adjust the running deck until the magnet and auto housing are properly aligned.

Figure 54: Auto Stop Alignment



17 Tighten the bolts so the deck is secure. Torque the bolts to 150 inch pounds.

18 Position the drive belt around the drive roller pulley. Use drive belt as a handle to assist in sliding the drive roller through the running belt and into the frame. Hand tighten the mounting bolts into the drive roller shaft.

19 Make sure the running belt is in the center of the deck, the spacing should be the same on each side of the running belt to the edge of the running deck

20 Start tightening the left and right side drive roller mounting bolts. Move back and forth between the left and right side mounting bolts so the bolts will tension evenly which will reduce the stress on the threads of the bolts. The left side drive roller shaft will tighten flush to the front frame bracket.

21 Using a measuring tape, measure the distance from the front of the left side drive roller shaft to the front of the frame cross beam and make note of that measurement.

22 Tighten the right side drive roller bolt until it measures the same distance as the left side drive roller, shaft to frame. This will ensure that the drive roller is parallel and square to the front of the frame.

Figure 55: Measuring Point - Drive Shaft

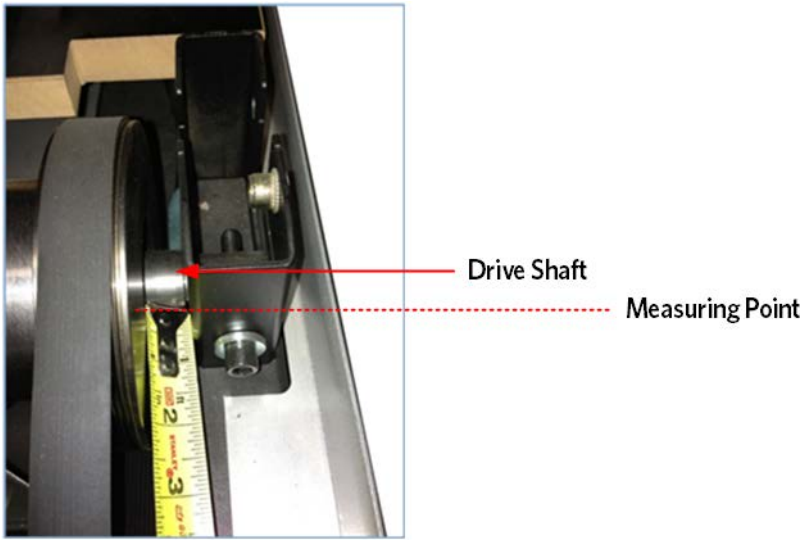
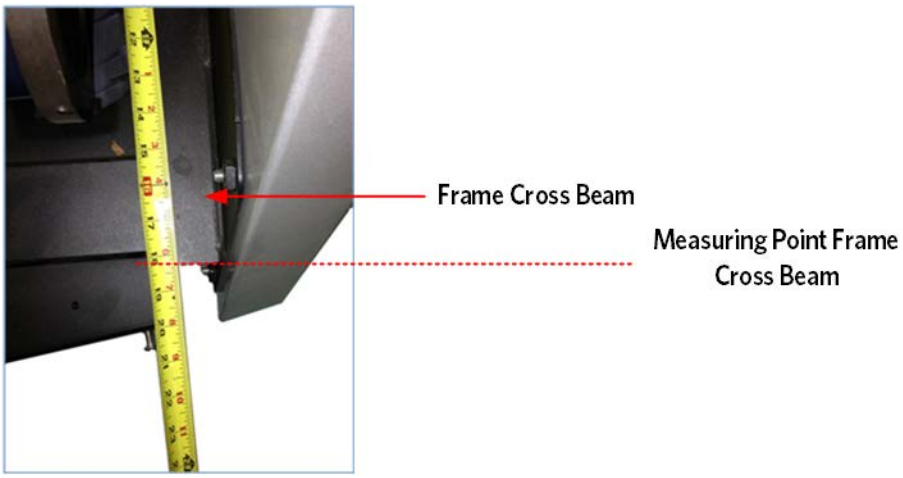


Figure 56: Measuring Point Frame Cross Beam



23 Walk the drive belt onto the motor pulley by rotating the drive motor flywheel. Be sure the belt is fully seated in the grooves of both pulleys and correctly aligned.

24 Adjust the drive belt tension per the Procedure, ***Adjusting Drive Belt Tension*** (on page 109).

25 Move the running belt so that the seam is underneath the treadmill.

26 Tensioning the Running Belt as per procedure, ***Tensioning the Running Belt*** (on page 111) and Running Belt Tracking Adjustment as per procedure, ***Running Belt Tracking Adjustment*** (on page 112).

27 Replace the belt guard, ensuring the belt guard tabs are firmly locked in the frame locking tabs and snapped onto the take up roller shaft.

28 Replace the end caps.

29 Replace both running deck trim strips and motor cover.

Section 7 - Adjustment Procedures

This section provides you with the step-by-step procedures required to make adjustments. Perform the appropriate adjustment procedures when a trouble symptom points to a particular problem and after removing and replacing major components. Refer to the Replacement Procedures, ***Section 8 - Replacement Procedures*** (see "***Section 6 - Replacement Procedures***" on page 73) for instructions on how to disassemble and reassemble the running belt, deck, drive motor, rollers and all associated parts.

Adjusting Drive Belt Tension

1 Set the treadmill circuit breaker in the off position and unplug the line cord from the wall outlet.

2 Remove the hood.

3 Walk the drive belt onto the drive motor pulley.

Note: if a gauge is placed on the drive belt at this point, prior to the grooves of the belt and drive pulley being properly aligned, the tension should measure approximately 120 pounds.

4 Run the tread at 3 mph for one minute to allow the belt and pulley groves to properly align.

5 Stop the treadmill, set the treadmill circuit breaker in the off position and unplug the line cord from the wall outlet.

6 Place the drive belt tension gauge on the drive belt as shown in *Figure Below*.

Figure 57: Drive Belt Tension Gauge

7 The gauge should read approximately 80 pounds. The drive belt tension is acceptable if it is in the range of 70 to 90 pounds. If the drive belt tension is less than 70 or greater than 90 pounds, the belt will need to be re-tensioned. Follow steps 8-13 to re-tension the belt.

8 Walk the drive belt off the drive motor pulley and slightly loosen the four drive motor mounting bolts. The drive motor mounts on slotted holes allowing the drive motor to be moved forward or rearward (*See Figure below*). Move the drive motor forward or rearward, as required.

9 Tighten the four drive motor mounting bolts.

10 Walk the drive belt back onto the drive motor pulley.

11 Run the tread at 3 mph for one minute to allow the belt and pulley groves to align

12 Stop the treadmill, set the treadmill circuit breaker in the off position and unplug the line cord from the wall outlet

13 Attach the drive belt gauge. Belt gauge should read approximately 80 pounds (70-90).

14 If not correct, repeat the steps above and re-measure.

15 Torque the four drive motor mounting bolts to 204 inch pounds (17 foot pounds).

Figure 58: Drive Belt Adjustment

16 Re-install the hood.

17 Plug the line cord into the wall outlet and set the treadmill circuit breaker in the on position.

18 Check treadmill operation.

Tensioning the Running Belt

Tensioning the Running Belt

1 Move the running belt so that the seam is underneath the treadmill.

2 Place a running belt tension gauge on each side of the running belt parallel from each other. The gauges have a fixed side and a movable side.

3 Place the movable side to the middle of its travel and adjust the dial pointer to the number 3.

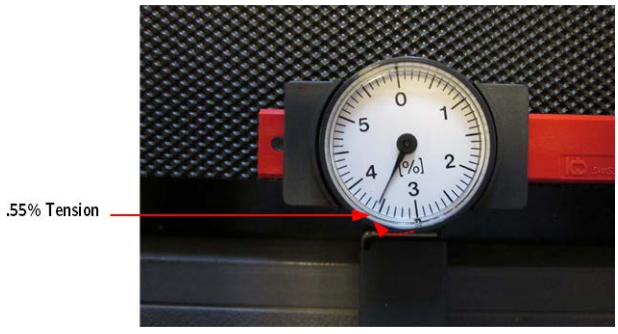
NOTE: Using the number 3 as a reference point and centering the movable side of the gauge allows increment or decrement movement without impeding the travel of the gauge.

Figure 59: Running Belt Gauges

4 Carefully move the running belt so that you can see the dials easily while tightening the take up roller mounting bolts.

5 Tighten the take up roller mounting bolts alternately in order to evenly tighten the running belt. Tighten bolts until the gauges read .55%, which is five and 1/2 lines past the number 3.

Figure 60: Running Belt Gauge_55%



6 Remove both gauges from the running belt.

Running Belt Tracking Adjustment

Running Belt Tracking Adjustment

1 Place a reference point on the deck right next to one edge of the running belt so that any side to side movement can be observed.

2 Start the treadmill and set the speed to 1 mph.

3 Observe the running belt, if the belt starts to drift toward the right, slowly turn the right side take up roller mounting bolt clockwise until the drifting stops.

4 If the belt starts to drift toward the left, slowly turn the right side take up roller mounting bolt counterclockwise until the drifting stops. The adjustments should only be done in 1/4 turn increments.

NOTE: ONLY use the right side take up roller mounting bolt to adjust tracking.

5 Increase the speed to 3 mph for a minute, then 6 mph, 9 mph and finally 12 mph, making any small adjustments as needed.

6 Set the treadmill speed to 3 mph and walk on the treadmill for a couple of minutes. Verify that the belt has not moved. Adjust the right side take up roller mounting bolt if needed to make final adjustments.

7 Replace the belt guard, ensuring the belt guard tabs are firmly locked in the frame locking tabs and snapped onto the take up roller shaft.

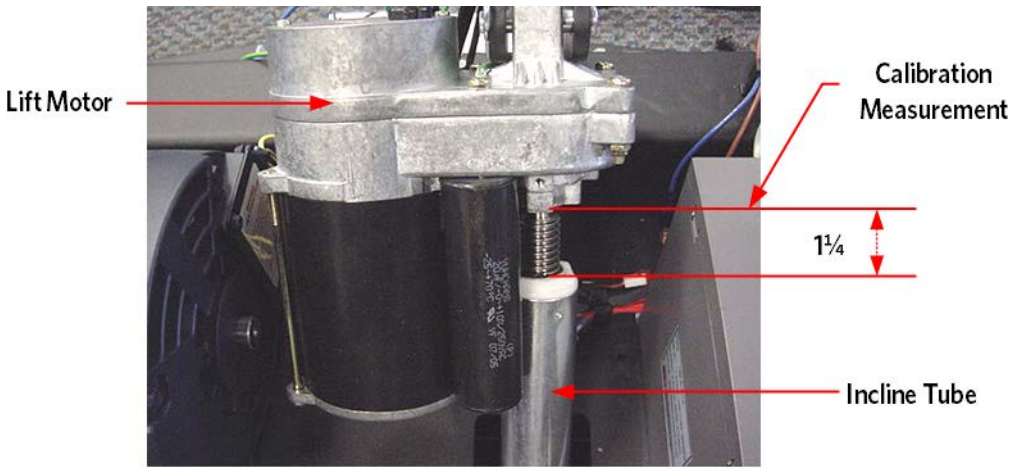
8 Replace the end caps or rear guard and motor cover.

Calibrating the Lift Motor

1 Set the treadmill circuit breaker in the off position and unplug the line cord from the wall outlet. Remove the hood.

2 Place the treadmill on its right side. Remove hitch and clevis pins that secure the incline tube to the incline platform. See Figure Below.

Figure 61: TRM Lift Motor



3 Plug the power cord into the wall outlet, set the treadmill circuit breaker in the on position. If the lift motor is not at its "home" position, it will start operating, and the incline tube will turn until "home" is reached. This is the position for 0% incline.

4 With the system at 0% incline, rotate the incline tube until the distance from the top of the incline tube to the incline motor is 1-1/4 inch. See Figure Above. return to step 3, then continue.

5 Set the treadmill circuit breaker in the off position and remove the line cord from the wall outlet.

6 Replace the clevis and hitch pins removed in step 2. Return the treadmill to an upright position.

7 Plug the line cord into the wall outlet, set the treadmill circuit breaker in the on position.

8 Check the calibration of the incline system by performing the following steps:

9 Press the INCLINE ↑ key until maximum incline is obtained, 15%.

10 Press the INCLINE ↓ key until minimum incline is obtained, 0% on TRM811, TRM 823 and TRM833 treadmills or -3% on TRM835 and TRM885 treadmills.

11 Re-install the hood.

Section 8 - Preventive Maintenance

Cleanliness of the equipment and its operating environment will keep maintenance problems and service calls to a minimum. Precor recommends the following preventative maintenance schedule.

Regular Preventative Maintenance - performed by owner

The following steps are recommended to be done on a regular basis as indicated by owner/facility personnel.

Daily

1 Turn off power switch/circuit breaker and unplug the power cord from the wall outlet.

2 Visually inspect the running deck and belt, make sure that neither the bed nor the belt is worn or damaged.

> ***The top side of the belt is a friction/running surface and should NOT be used to indicate belt wear. Belt wear is all about the under-surface that touches the deck. Any belt thought to be worn to the point of needing replacement must be verified by the current draw of the machine.***

3 Wipe down the running bed and belt, using a dry or lightly moistened cloth to clean the top surface of the running belt.

4 Clean all other surfaces of the unit with a diluted solution of simple green and water (30 parts water to 1 part simple green). Be sure to dampen the cloth with the solution and then wipe the machine down.

Do not spray liquid directly onto the machine and then wipe.

5 Inspect the power cord, make sure it is not damaged or positioned at risk of being damaged by the lift mechanism. The power cord is detachable; make sure there is a cord clamp installed.

Weekly: (Plus Daily Preventive Maintenance)

1 Elevate the treadmill to maximum elevation, then turn off the power switch/circuit breaker and unplug the power cord from the wall outlet.

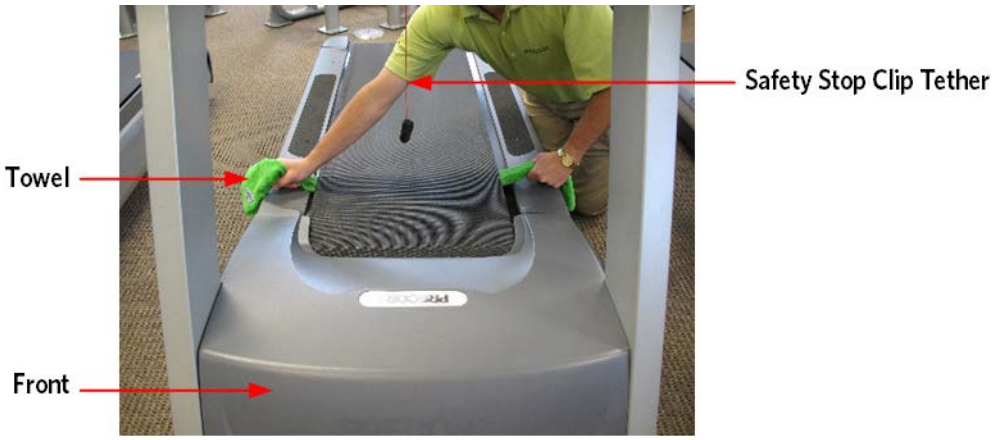
2 Vacuum the carpet or "damp mop" the floor underneath the treadmill.

3 Make sure the floor is dry before returning the treadmill to the level position. Re-connect the power cord and turn the switch/circuit breaker to the "ON" position. The elevation should perform an auto-return to the home position.

Running Belt and Deck Cleaning Procedure

4 First, check for proper operation of the safety stop key. Stand to one side of the treadmill. Ensure that the stop key tether is hanging straight down from the stop key and is not wrapped around the handle bars. Push the Quick Start button and wait for the display to count down and for the running belt to begin moving. Once the running belt is moving pull the safety stop key tether. See the Figure Below. When the belt stops reset the safety stop key.

Figure 62: Running Belt and Deck Cleaning



CAUTION: If the running belt does not stop, turn off the power using the ON/OFF switch at the front of the treadmill and unplug the power cord. The treadmill must remain out of service until the stop switch is repaired. If the running belt stops, continue with the cleaning procedure

5 A clean, dry towel approximately 36 inches or 1 meter in length is required. Fold the towel in half lengthwise, lift the running belt up and insert the towel beneath the belt so that an end of towel extends on to each deck trim. See the Figure Below.

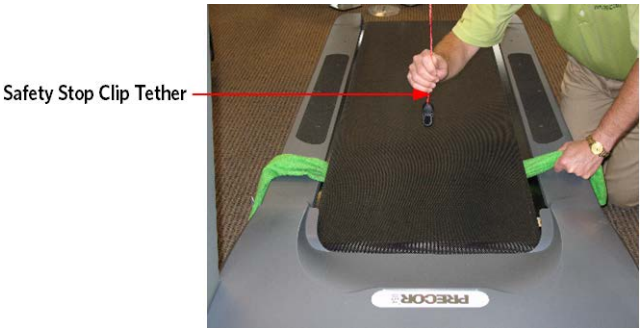
6 Stand to one side of the treadmill, push the Quick Start button, and grasp the towel as illustrated in the illustration above. Note: You will have 3 seconds to firmly grasp your hands on the towel before the treadmill running belt begins to move. Allow the treadmill to run for about one minute while holding the towel firmly in place.

CAUTION: If the towel becomes loose it may be pulled into the treadmill's rollers. Pull the safety key tether to stop the treadmill and retrieve the towel, no damage should occur. Start the procedure over again. See Figure Below.

7 Keep one hand firmly grasped on the towel, use your other hand to pull on the safety stop key tether to stop the treadmill running belt. See Figure Below.

8 Turn the power off. Place your hands on the towel and push it up and down the length of the running deck several times to clean the deck.

9 Remove the towel.



10 Turn the power on.

Monthly: (Plus Daily and Weekly Preventive Maintenance)

1 Turn off power switch/circuit breaker, and unplug the power cord from the wall outlet.

2 Clean the treadmill's frame using a cloth dampened with water or a solution of SimpleGreen® and water (1 part SimpleGreen® to 30 parts Water). (Do not use acidic cleaners, and do not spray liquid directly on the machine). Use water and a soft nylon scrub brush to clean the top surface of the running belt, wiping excess water quickly so as not to allow liquid to flow underneath the belt.

3 Wipe the surface of the electronic console with a damp sponge or soft cloth (Do not use acidic cleaners, and do not spray liquid directly on the machine), and dry with a clean towel. Keep liquids away from electronic components to prevent electrical shock or damage.

Preventative Maintenance Checklist (Facility personnel)

(To be done by the facility personnel)

To Be Done Daily:

- ☐ Turn off and unplug the unit.
- ☐ Visually inspect the deck and belt.
- ☐ Wipe down the deck and belt with a dry cloth.
- ☐ All outer surfaces of the unit are clean
- ☐ Inspect the power cord.

To Be Done Weekly: All of the above plus

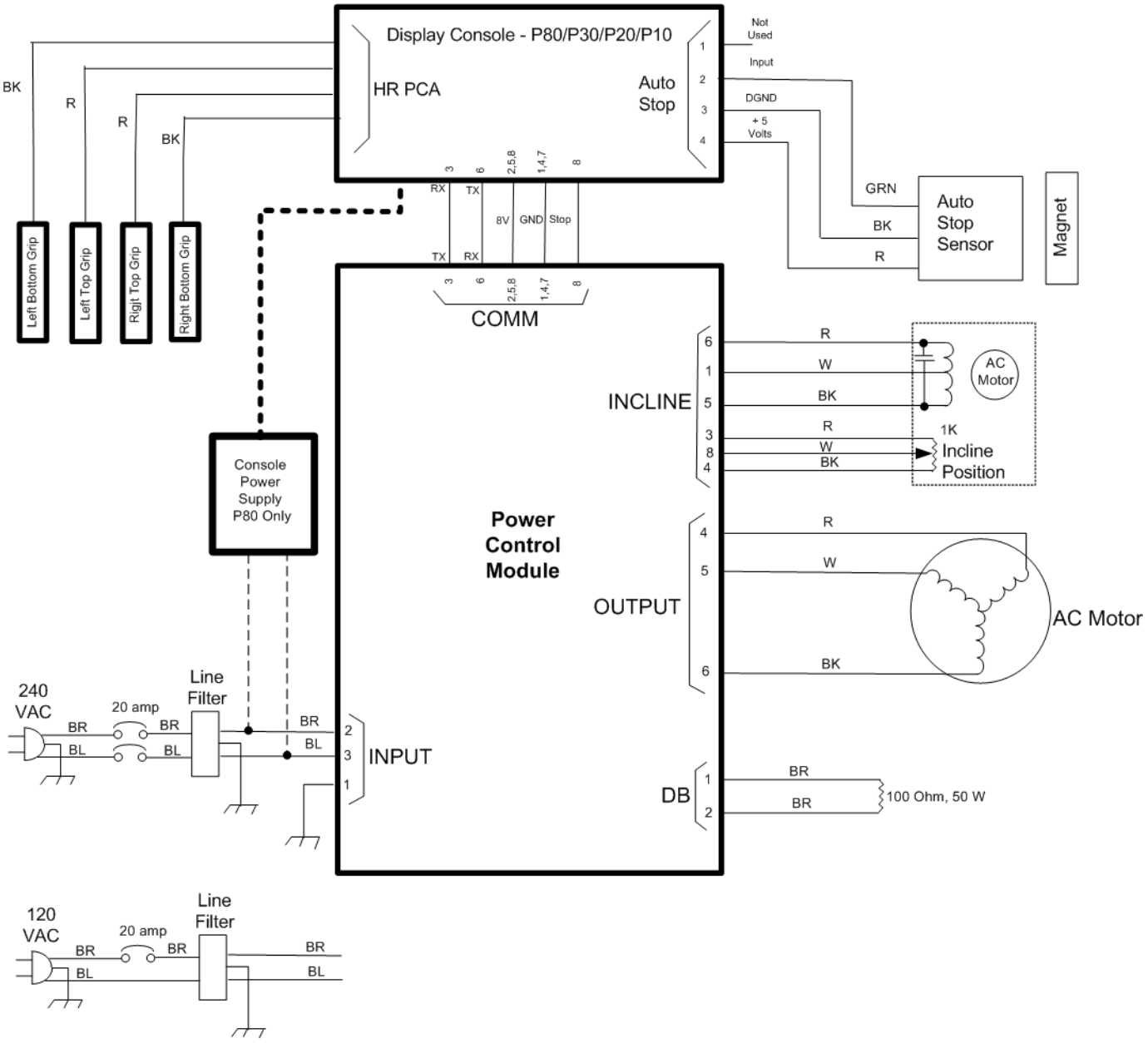
- ☐ Elevate the unit to maximum incline and remove power.
- ☐ Totally clean the environment around and under the machine.
- ☐ Re-connect power and turn the unit on.
- ☐ Perform the "Running Belt and Deck Cleaning Procedure"

To Be Done Monthly: All of the above plus

- ☐ Remove the power from the unit.
- ☐ Clean the outer surfaces of the unit, and scrub the top surface of the belt.

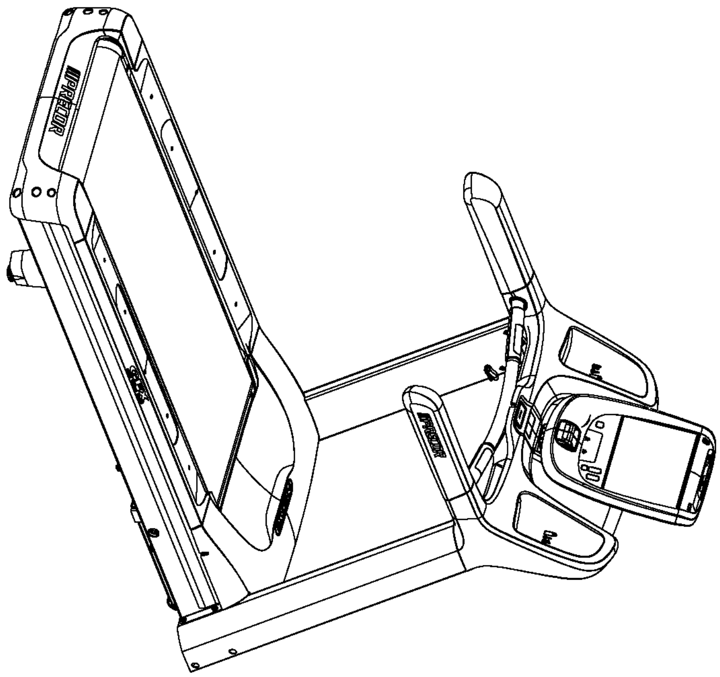
Section 9 - Block Diagram

Block Diagram - 120 Volt



Section 10 - Exploded View & Parts Identification

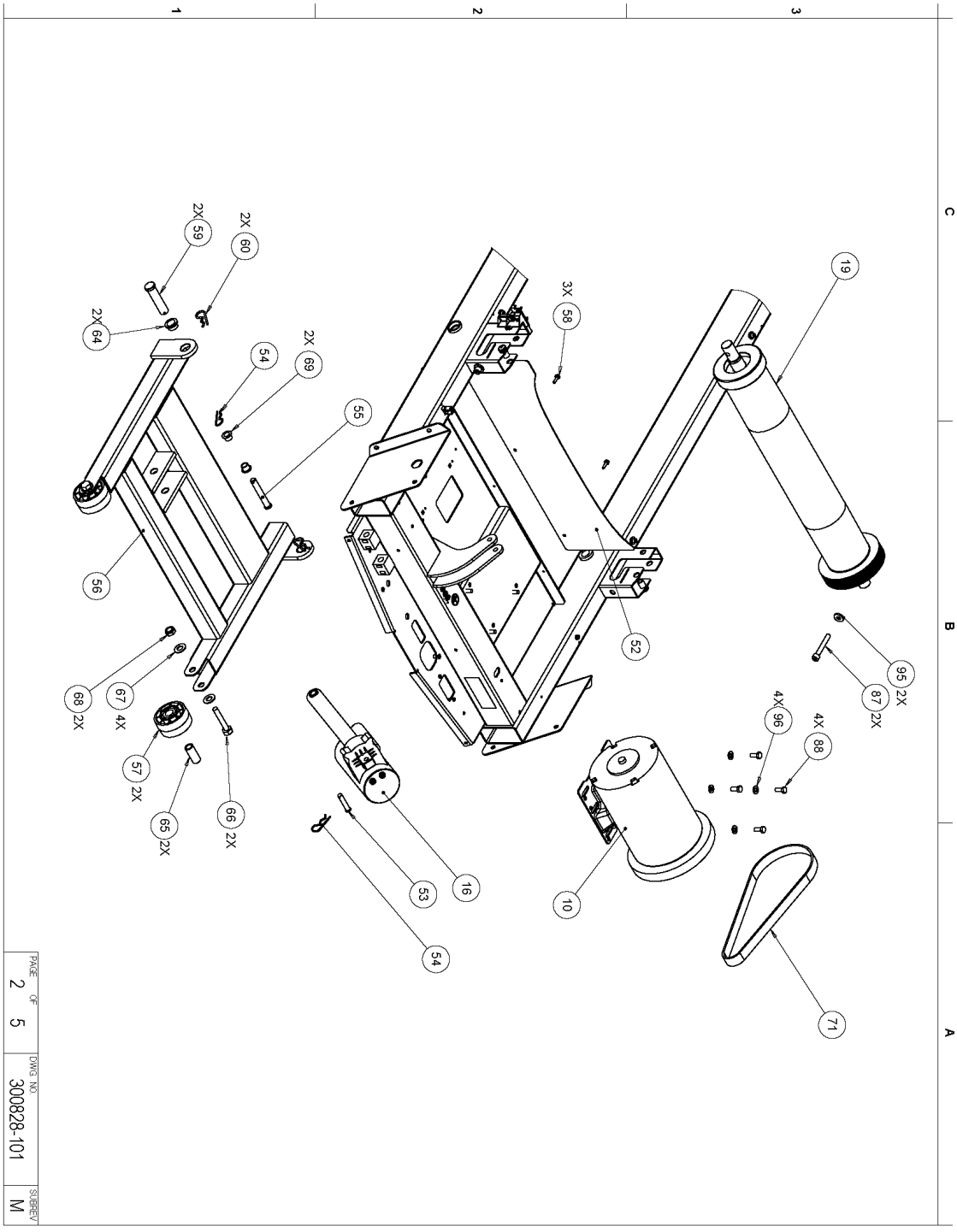
Exploded View

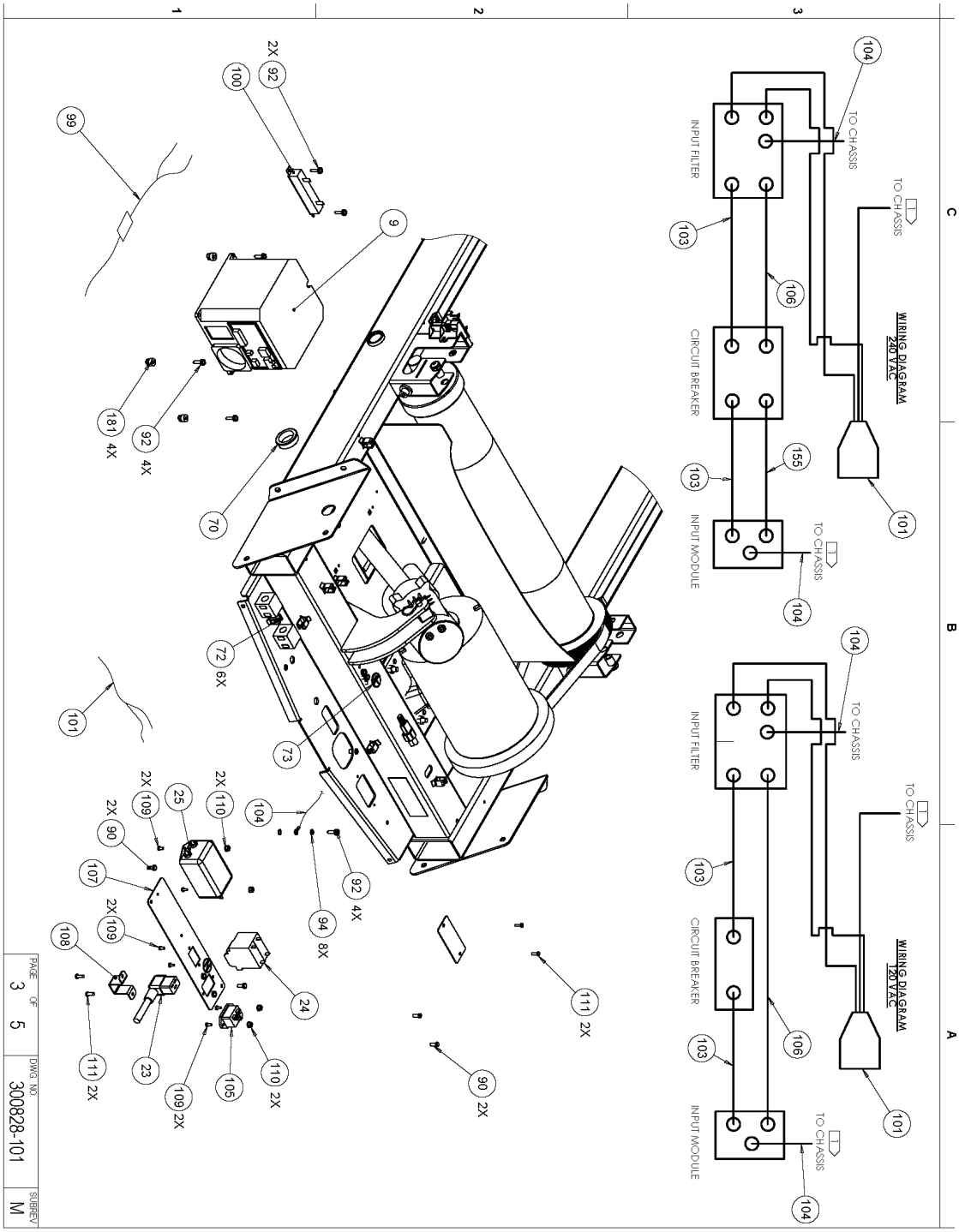


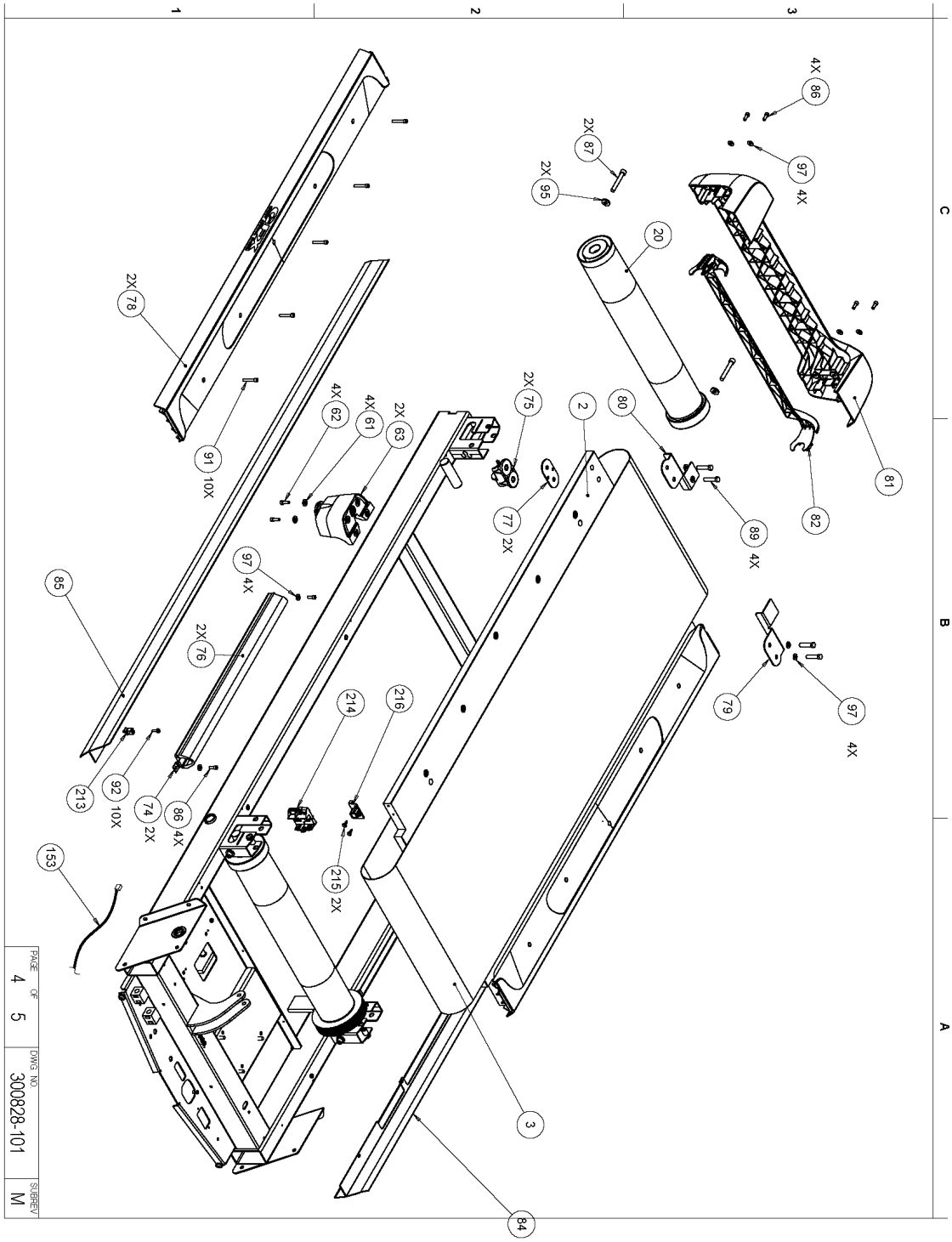
NOTES:

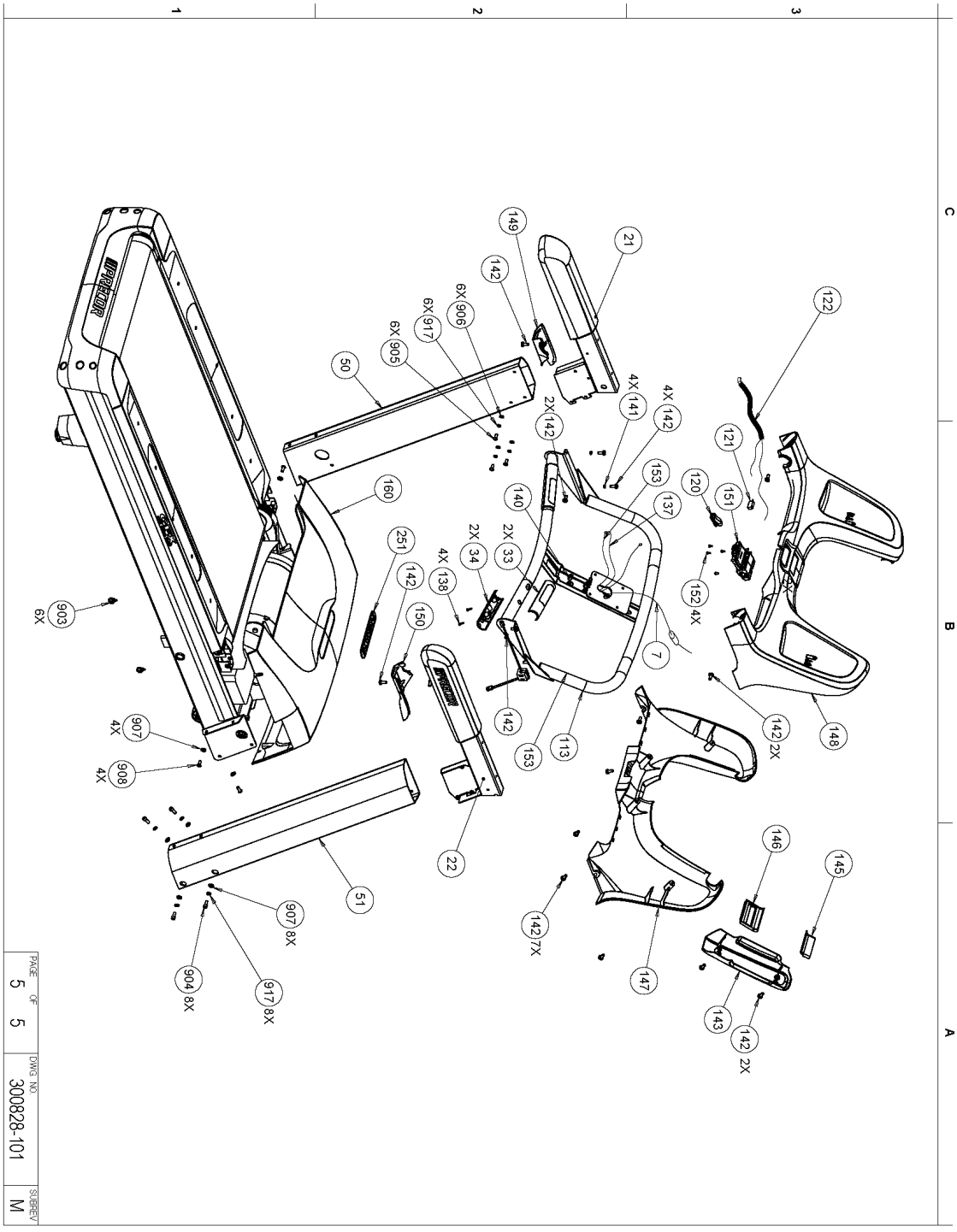
1. GROUND WIRES FROM ITEM 101 (POWER SPLITTER AND ITEM 104 LINE INPUT)MUST BE SECURED TO FRAME SEPARATELY.

PRODUCT:					
TRM10 BASE					
DRWN BY	06.19.13	WDC	SIZE A	PAGE 1 OF 5	DWG NO. 300828-101
CS	05.06.13	BG			SUBREV M




WIRING DIAGRAM
240 VAC
WIRING DIAGRAM
120 VAC
INPUT FILTER
CIRCUIT BREAKER
INPUT MODULE
TO CHASSIS
PAGE 3 OF 5
DWG NO 300828-101
SUBREV M





Parts Identification List

Description	Bubble Number
DECK W/SHIPPER, EXP. LINE	2
RUNNING BELT, SIEGLING 132.75 X 20 (NP7169) LASER LOGO	3
PCA, DISPLAY, P30	4
ASSY, UPPER PCA & SW, TRM 833, P30	4.01
DISPLAY HOUSING, P30, TRM, ASSY	6
ASSEMBLY, CABLE, MOD 8P8C 1-1, W/FE	7
MODULE, MOTOR DRIVE, AC INDUCTION, 240V, ROHS COMPLIANT	9
ASSY, DRIVE MOTOR, AC, 2HP #6305 BR	10
MOTOR, LIFT ACTUATOR, 240V, ROHS	16
ASSEMBLY, DRIVE ROLLER	19
ASSEMBLY, TAKE-UP ROLLER	20
ASSEMBLY, OVERMOLD, LEFT	21
ASSEMBLY, OVERMOLD, RIGHT	22
PWR CORD,250VAC,16A,CEE 7/7RA - IEC	23
PWR CORD,250VAC,C19 90 DEG	23.1
SCKT BRKR,250V,MAGNETIC,ROCKER,2 PO	24
FILTER, POWER LINE, 250VAC, 16A, GE	25
GRIP, HHHR, TOP 9.3X-07, BLACK	33
GRIP, HHHR, BOTTOM 9.3X-07, BLACK	34
TARGA, LEFT,PAINTED	50
TARGA, RIGHT,PAINTED	51

PIN,CLEVIS, 3/8 X 1.75, ZINC	53
PIN, HITCH, .093 DIA, ZINC, #203	54
PIN, LIFT PIVOT, 3.34, MUSHROOM HEA	55
WELDMENT, LIFT PLATFORM	56
WHEEL, LIFT	57
SCREW,S/T,#10X.75,WSHHXHD,ZN	58
PIN, LIFT PIVOT, 3.27, MUSHROOM HEA	59
PIN, HITCH, .125 DIA, ZINC, #216	60
WASHER,FLT,5/16X.688X.065, ZN	61
SCREW,SKHD,5/16-18X1,ZN (MECH PLATI	62
ASSEMBLY, REAR FOOT	63
BEARING,FLANGE .875ODX.750IDX.50L	64
BUSHING, SPANNER	65
SCREW,HEX,GR 5,1/2-13X2-1/2,BLK SHA	66
WASHER, FLT, 1/2, ID=.531,	67
LOCKNUT,HALF,1/2-13,ZN	68
BEARING,FLANGE,OD=.62 ID=.5	69
BUSHING, SNAP	70
BELT, DRIVE, 320J10 POLY V, TEM	71
CABLE CLAMP,INSERT	72
LABEL, SAFETY, GROUND SYMBOL	73
STRAP, GFX TIE DOWN	74
DECK PIVOT	75
GFX CUSHION	76
PLATE, SPACER, DECK	77

ASSEMBLY, TRIM STRIP, C966I,PACIFIC	78
BRACKET, REAR ROLLER GUARD, LEFT, P	79
BRACKET, REAR ROLLER GUARD, RIGHT,	80
END CAP, PACIFIC BLUE, NEW LOGO	81
BELT GUARD, END CAP, PACIFIC BLUE	82
SIDE TRIM, LEFT, PLASTIC	84
SIDE TRIM, RIGHT, PLASTIC	85
SCREW, SKHD, 1/4 X 0.75, ZN,(MECH P	86
SHCS,3/8-24 X 2.50,STL,ZNCOAT	87
SCREW, HEX HD, GRADE 5, 5/16-18 X .	88
SCREW,HEX,GR 5,3/8-16X1 1/2,ZN	89
SCREW, MACHINE, 10-24X1/2, PANHD, P	90
SCREW, SKHD,1/4-20X1.50,BLK SHARPER	91
SCREW,S/T,#10X.75,WSHHXHD,ZN	92
WASHER, LOCK, EXT TOOTH, #10	94
WASHER, FLAT, 3/8 X .875 X .150	95
WASHER,FLT,5/16X.688X.065, ZN	96
WASHER,FLT,1/4X.625X.063,ZN	97
ASSY,CBL,2C,16AWG,BROWN,QK DISC - M	99
RES,WW,100 OHM,50W,10%,METAL CASE,.	100
ASSY,CABLE, FILTER TO DRIVE MODULE,	101
LABEL, CHASIS NEUTRAL	102
ASSY,CBL,1 C0ND,14AWG,QK DISC,6",BR	103
CBL,1C,14AWG,#10 RING/250X032 QD RECP,GRN/YEL,9"	104

IEC 16/20A POWER CORD INLET	105
CBL,1C,14AWG,250X032 QD RECP/250X03	106
PLATE, POWER ENTRY	107
CLAMP, POWER CORD	108
SCREW,MCH,6-32X3/8,PANHD,PHIL,	109
LOCKNUT, STARWASHER 6-32, #6	110
SCREW, MACHINE, 10-24X1/2, PANHD, P	111
WELDMENT,CONSOLE, PT	113
COUPLER,MOD,8P8C,CAT5E,INLINE,SNAP-	114
COUPLER,COAX,F81,F/F,75 OHM,LONG BARREL	115
WASHER, INTERNAL LOCK, .384 ID, .50	116
PLATE, CONNECTOR, COAX/CAT5,	117
NUT, PANEL, HEX, 3/8-32 X 7/16, ZIN	118
CLIP ASSEMBLY	120
SWITCH,MICRO,PLUNGER,SPNC	121
ASSY,CABLE W/JACKET,E-STOP PLUS SOF	122
ASSY, CABLE, HHHR PCA TO GRIP, W/SH	137
SCREW, BTHD, 8-32X.75,SS	138
CABLE TIE,11 LONG,WHITE,NYL	139
CABLE CLAMP,INSERT	140
WASHER, SPLIT LOCK, 1/4 MED,	141
SCREW,S/T,#1/4-20X1/2,PANHD,PHIL,TR	142
COVER, CONDUIT, REAR, TREADMILL	143
COVER, CONDUIT, UPPER TREADMILL	145
COVER, CONDUIT, LOWER TREADMILL	146

DASH, BACK, TREADMILL	147
ASSY,DASH,TREADMILL	148
TRANSITION,DASH,TARGA,LEFT	149
TRANSITION,DASH,TARGA,RIGHT	150
ASSY,STOP SWITCH,CONSOLE	151
SCREW,MCH,8-32X3/8,PANHD,PHIL,ZN	152
CBL, 4P3C-3P3C,22AWG, W/RAMP & RIBS	153
ASSEMBLY, HOOD, PACIFIC BLUE, NEW L	160
FERRITE,CLAMP ON,RND CBL	180
GEN06 ADT DRIVE 240V SPACER	181
SCREW,S/T,#10X1.25,WSHHXHD,ZN	182
HARDWARE KIT,TRM10	200
LABEL, HOOD ALUMINUM, NEW LOGO	251
PLATE, CONNECTOR COVER, BLANK	252
CABLE P-CLIP,OPEN ENDED,0.375" BUND	213
ASSY,AUTO-STOP, PCA & PLASTIC HOUSI	214
FASTENER, SNAP-IN, PANEL (CHRISTMAS	215
ASSEMBLY, MAGNET HOLDER, AUTO STOP	216
FUSE,2.00A,250VAC,SLOW,RADIAL	250
CABLE CLAMP INSERT,SNAP IN	903
SCREW,SKHD,5/16-18X0.75,BLK SHARPER	904
SCREW,BTHD,5/16-18X.75,SS	905
WASHER, FLT, 5/16X.688X.065,SS, BLK	906
WASHER, FLT, 5/16X.688X.065,SS	907
SCREW,BTHD,5/16-18X3/4,BLK SHARPERI	908

LOCKNUT,STARWASHER,5/16-18,1/2	909
MACHINE SCREW, 1/4-20, [FLAT HEAD,	910
WASHER, 5/16 SPLIT LOCK, ZINC	917
LITERATURE KIT, TREAD,ATLAS, EN	999