



Error Code Troubleshooting Guide

Revised (08/2018)



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About this Document

This document covers the error codes that exist within the Precor software hierarchy for products currently supported by Precor. Each section will include a description of the error code being displayed and the systems associated with the error code.

Each code has a symptoms discussion where the error and common causes are discussed. It must be understood this document cannot anticipate every possible cause for a particular error code. However, it should list the causes encountered in the majority of cases.

The document then has the troubleshooting steps associated with each of the possible causes. These steps are listed in order of likelihood of occurrence.

It is worth noting there may be instances of multiple errors occurring, but with only one error listed in the Error Log. Multiple errors in a row that occur with the same hour or odometer reading will not be recorded, only the first occurrence. For a repeat error (with identical readings) to be listed, a different error must be recorded between them. A good practice is to check the error logs of adjoining machines to verify the problem is with the machine and not the location.

List of Changes

7/2017:

- Added Error 56
- Format updates

11/2017:

- Added Chrono errors (5, 11, 30, 46, 65, and 66 have been updated – 47, 48, 57, 58, 59, 63, 67, 84, 96, 97, and 98 are new)
- Added Error 89

5/2018:

- Fixed typos
- Updated E30 symptoms and troubleshooting for Chrono

6/2018:

- Add Error 39 Communication Error from Active Status Light to LPCA

7/2018:

- Updated Errors 16 and 38
- Updated Error 40 lift check steps
- Updated Error 86/87 to include 600 series software mismatches

01, 02, 03, 04

Memory, Ram & EEPROM Test Errors

Applies to

All cardio equipment

Issue Symptoms

Errors 00 through 04 check upper PCA memory locations, RAM memory locations, and the EEPROM checksum during the power up test sequence. If a fault is found during the power up test sequence, the appropriate error code will be displayed.

While rare, these messages may display intermittently due to external causes. If the unit's AC input significantly dips during the power up test sequence the test could fail resulting in triggering one of these errors. In addition, treadmills operating on non-dedicated branch AC circuits may see these errors on an intermittent basis.

Troubleshooting steps

1. Reproduce the error and evaluate
 - a. Turn off unit.
 - b. Turn on unit. Repeat.
 - c. If the error message is consistently displayed when the unit is powered up, replace the upper PCA.

05 (Stuck Key)

Key In The Operated Position At Power Up

Applies to

P series, R series, and Chrono

NOTE: Error 05 has not been displayed on Precor equipment since 2003. It was replaced by the simpler “Stuck Key” message, and is not recorded in the error log.

Issue Symptoms – P and R series

The power up test sequence has detected a key in the operated condition. A permanently stuck key inhibits the correct operation of the unit. Likely causes are liquids present on a touch sensitive display, or a key in the display housing is stuck in the operated condition. Less likely but possible is a failure on the upper PCA.

Troubleshooting steps – P and R series

1. Check for visible liquid
2. Wipe off any visible liquid from the surface of the touch sensitive display.
3. Restart the unit. If error 5 is no longer present, the liquid was the cause.
4. Test the keypad
5. Turn off the unit.
6. Remove the keypad connector cable from the upper PCA.
7. Restart the unit, if error 5 is no longer present, the keypad is the cause. Note that the keypad is typically part of the display housing.
8. Replace the display housing to correct the problem.
9. Test the upper PCA
10. Turn off the unit.
11. Remove the keypad connector cable from the upper PCA.
12. Restart the power up sequence, if error 5 is still present, the upper PCA is the cause.

Issue Symptoms – Chrono

Error is detected for button presses longer than 3 seconds. On symptom will be that the service mode can't be entered.

Troubleshooting steps – Chrono

1. If a user is not pressing a button and this error is displayed, replace the console.

09

Lower PCA Memory Test Errors

Applies to

All cardio equipment

Description

During the power up test sequence the lower PCA memory locations are checked. Error 09 indicates that a fault was found. 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.

These messages may display intermittently due to external causes. If the unit's AC input significantly dips during the power up test sequence the test could fail resulting in triggering one of these errors. In addition, treadmills operating on non-dedicated AC circuits may see these errors on an intermittent basis.

Troubleshooting steps

1. Reproduce the error and evaluate
 - a. Turn off unit.
 - b. Turn on unit. Repeat.
 - c. If the error message is consistently displayed when the unit is powered up, replace the lower PCA.

10

Line Frequency Out Of Acceptable Range

Applies to

Treadmills built since 2006

Issue Symptoms

The AC line frequency must be either 50Hz or 60Hz for Experience treadmills built 2006-2013, and between 45Hz and 65Hz for TRM14. Error 10 is triggered if the line frequency moves beyond these acceptable ranges, or if electrical noise is generated causing a perceived change in frequency.

Error 10 can also be caused by electrical wiring and supply issues, such as shared neutrals or AC hot and AC neutral wires being reversed. If facility power is lost, and a backup generator turns on the frequency can be off for a short time, causing Error 10.

Troubleshooting steps

Verify electrical supply

1. Treadmills must be installed on an AC 20 amp dedicated branch circuit. Both the hot and neutral leads must be dedicated to the treadmill. If another piece of equipment is sharing a circuit with the treadmill it can create enough electrical noise to make AC line frequency identification impossible. The treadmill's AC circuit must be reconfigured as a completely dedicated 20 amp circuit.
2. Most line frequency detection systems monitor the AC line frequency on the hot AC line. In the case of a reversed 120 V.A.C circuit, the monitoring is taking place on the neutral (ground) side of the AC line. Many of the monitoring systems are incapable of detecting line frequency on the neutral wire. It must first be determined if the reversal is in the AC wiring feeding the treadmill or in the treadmill internal wiring. The hot and neutral wires can be verified by measuring each in reference to AC (green wire) ground.
3. Even though unlikely, the AC line frequency could actually be out of acceptable limits. This is more likely to occur in countries where AC power systems may not be well developed and controlled. There may be little that can be done about this condition. If a generator is used during a power outage, during the time the generator is coming up to speed the line frequency may be detected as incorrect.
4. Sometimes AC being fed into the distribution system is too electrically noisy to allow correct line frequency identification. This can be caused by other equipment within the AC distribution system creating the electrical noise. Identifying the source of the electrical noise can be difficult. There may be little that can be done about this condition.

11

Low Voltage Watchdog (Upper PCA)

Applies to

Treadmills, self-powered units with external AC, and Chrono

Issue Symptoms – Treadmills and self-powered units with external AC

This watchdog program monitors the voltage of the upper PCA and displays error 11 if it drops below the acceptable value. This can be present if the communications cable between the lower PCA and the upper PCA is faulty, or if a failure in the upper PCA causes an overload in the low voltage power supply, causing it to drop below the limit.

It is also possible to see this message displayed intermittently due to external causes. If the unit's AC input significantly dips during the power up test sequence the test could fail resulting in this message being displayed. Treadmills operating on non-dedicated AC circuits may see this message displayed on an intermittent basis.

Troubleshooting steps

1. Test the interconnect cable
 - a. Clear the error log and turn off unit.
 - b. Substitute a known good interconnect cable in place of the existing cable directly between the upper PCA and lower PCA.
 - c. Turn on unit and check the error log.
2. Check the upper PCA
 - a. Cycle power of the unit and check the error log.
 - b. If the error is consistently displayed when the unit is powered up, replace the console.

Issue Symptoms – Chrono

This error is a response to an internal processor failure. The console may not function properly.

Troubleshooting steps - Chrono

1. If this error is present and comes back after clearing, replace the console.

12

MC / LPCA Software Watchdog (Lower PCA)

Applies to

Treadmills and powered Ellipticals

Issue Symptoms

On the EFX, the watchdog program monitors the proper execution of software in the LPCA microcontrollers. If a program is stuck in a routine, has a memory leak, or has any other fatal error that stops the program from performing its critical tasks (aka “hung”), the watchdog can be triggered. When this happens, the microcontroller is automatically reset and will restart operation as if power cycled and log an Error 12.

If it is a single occurrence, the machine may log communication errors, go out of order, or go to pause mode before resuming normal operation. If it is continuously occurring, the machine will be unusable and a workout cannot be started.

On a treadmill, this watchdog program monitors the voltage of the lower PCA and displays error 12 if it drops below the acceptable value. This can be present if the communications cable between the lower PCA and the upper PCA is faulty, or if a failure in the upper PCA causes an overload in the low voltage power supply, causing it to drop below the limit.

It is also possible to see this message displayed intermittently due to external causes. If the unit's AC input significantly dips during the power up test sequence the test could fail resulting in this message being displayed. Treadmills operating on non-dedicated branch AC circuits may see this message displayed on an intermittent basis.

Troubleshooting steps

EFX16

1. Install known good LPCA.
2. Reprogram (future feature) or replace bad LPCA.

Treadmill

- 1 Test the interconnect cable
- 2 Clear the error log and turn off unit.
- 3 Substitute a known good interconnect cable in place of the existing cable directly between the upper PCA and lower PCA.
- 4 Turn on unit and check the error log.
- 5 Check the upper PCA
- 6 Cycle power of the unit and check the error log.
- 7 If the error is consistently displayed when the unit is powered up, replace the console.

14

Fan Fail (Lower PCA)

Applies to

Treadmills

Issue Symptoms

The rotation of the cooling fan used to cool the lower PCA is monitored. If the fan is not rotating or rotating too slowly an error 14 will be logged. Typical symptoms include the heatsink by the fan can getting clogged with dust and/or dirt, the fan connector/cable becoming disconnected or damaged, the drive motor cable routed such that it is preventing the fan from turning, or the fan itself is failed.

Troubleshooting steps

- 1 Visually inspect the fan
- 2 Clear the error log.
- 3 Turn off unit.
- 4 Remove any debris from the fan.
- 5 Reset the motor cable as required.
- 6 Turn on unit, test when running the belt.
- 7 Inspect the fan connector
- 8 Turn off unit.
- 9 Inspect and reconnect the fan connector.
- 10 Visually inspect the drive motor cable for clearance away from the fan
- 11 Visually inspect the fan for movement during operation
- 12 If the fan does not move, replace the lower PCA.

15

DC Bus Over Voltage

Applies to

Treadmills

Issue Symptoms

The DC bus (motor) voltage is monitored. When the treadmill is used by a vigorous exerciser walking or running at steep incline or when pushing against the handlebars while the belt is moving, the AC motor becomes a generator forcing power back into the Motor Controller. This excess power would cause the bus voltage to increase enough to damage the control module were it not for the DB (dynamic brake) resistor, which automatically switches on to absorb the excess power. Error 15 is an indication that the Bus Voltage exceeded the bus voltage limits, either because the DB system wasn't functional or because the bus voltage power exceeded the DB system limit.

Troubleshooting steps – all models unless noted

1. Check the error log to determine the error frequency and repeatability.
 - a. If one time event, clear the error log and return to service.
 - b. If repeated occurrences of the error are shown, clear the error log, raise the elevation to 15%, and walk at a fast but comfortable pace, pushing slightly against the handrail. If you are able to easily generate an Error 15, replace the DB resistor.
2. **TRM10/Gen06 treads only** – Test the MC by running on the tread going 7-8 MPH with incline at 0%. Does the error occur within 30 seconds?
 - a. If yes, replace the motor controller drive with a recent revision – 300503-106 (120VAC) or 300504-106 (240VAC) – and the DB resistor.
 - b. If no, proceed to the next steps.
3. Check DB resistor connection
 - a. Turn off unit.
 - b. Verify all DB resistor connections are connected and are seated properly.
4. Check DB resistance
 - a. Check the DB resistance. It should be 90 to 110 ohms. If greater than 150ohms, replace the DB resistor.
 - b. **TRM800 only** – Check the resistance between either terminals of the switch connector (smaller black) to either terminal of the resistor element connector (larger white/natural). The resistance should be greater than 1Meg of resistance. If less than 1Meg, replace the DB resistor.
5. If none of the above, replace the motor controller.

16

AC Input Voltage Too Low

Applies to

All AC powered cardio equipment

Issue Symptoms

The condition that causes error 16 has to persist for 15 seconds before it is logged. The most common cause of this problem is external input power fluctuations due to brownouts, blackouts or other poor power conditions. This can also be caused by wiring that is too small of a gauge or too long to handle the current, or if the neutrals are shared between multiple outlets.

Troubleshooting steps

- 1 Find out if blackouts/brownouts have occurred recently in that area
- 2 Check if treadmill was running off of a backup generator or backup power source
- 3 Monitor the minimum line voltage as follows:
 - a. With the TRM at the Welcome banner
 - b. With a runner at 6MPH
 - c. With the TRM at the Welcome banner and a runner at 6MPH on an adjoining treadmill
 - d. Check for fluctuations of greater than 15% between steps 3a and 3b, or fluctuations of 5V or more when running on the adjoining TRM.
- 4 If either of the conditions in step 3d exist and the error has been occurring frequently and/or on multiple units, request an evaluation of the facility distribution wiring.

17

DB Resistor Thermal Trip

Applies to

TRM 800.v2

Issue Symptoms

This error monitors generated current being sent to the Dynamic Brake (DB) resistor. When the drive motor is energized, and external forces cause it to turn faster than it is being driven, current is created. This current is sent through the MC to the DB resistor. When the MC perceives that enough current is being delivered to the DB resistor to make it hot, this error is displayed and the treadmill comes to a stop.

The most likely causes for this are a runner at incline with a new deck and belt, a large runner at incline, or a user pushing against the handgrips while forcing the belt with their feet.

Troubleshooting steps

- 1 If deck and belt are new, this failure mode will likely go away after a few months of use.
- 2 Allow DB resistor to cool down- reset MC status- monitor for repeat error.

18

DB Resistor Thermal Switch Open

Applies to

TRM14

Issue Symptoms

As with Error 17, current generated by the drive motor is sent to the DB resistor. If sufficient current is sent to the DB resistor such that it becomes excessively warm, an internal thermal switch will open, which will stop the treadmill and briefly display Error 18. This error will be logged and “Use Another Treadmill” will be displayed if the DB resistor thermal switch connector is not plugged in, or if the DB resistor has reached its thermal upper limit.

Troubleshooting steps

- 1 Check to see if the DB resistor thermal switch is properly seated into the connector (it can be wedged into the connector opening without being properly seated).
- 2 Check DB resistor temperature. If it is stuck ON it may be hot. If stuck ON and it is not hot, replace both Motor Controller and DB resistor.
- 3 Unplug all connections from the DB resistor and check resistance of the DB thermal switch (smaller black connector). If 10Ω or greater, replace the DB resistor.

NOTE: Use care to only touch the multimeter probes to the connector contacts, do not push the probe tips into the contacts. Doing so may cause damage to the contacts.

19

PFC Malfunction

Applies to

TRM14

Issue Symptoms

The treadmill uses Power Factor Correction (PFC) to maximize the input power for greatest efficiency. This allows for fluctuations in the input voltage without affecting the performance of the treadmill. When the MC detects that the PFC circuitry is not able to correctly compensate for fluctuating input voltage, the treadmill will stop and Error 19 will be displayed.

Troubleshooting steps

- 1 Check for an error 16. If the Error 16 is present, troubleshoot that first. The PFC will not be able to compensate for input voltage that is below the lowest threshold. As such, an Error 19 will be displayed along with an Error 16.
- 2 Absent an accompanying Error 16, replace the MC.

20

Motor Will Not Start / No Motor Movement Detected

Applies to

All AC drive motor treadmills

Issue Symptoms

The treadmill is monitoring the motor movement, through current monitoring. If the lower PCA does not detect that the motor is moving an error 20 will be displayed. This can be caused by a disconnected drive motor, or a very heavy user standing on the belt while starting.

Troubleshooting steps

- 1 Verify motor connector is connected to drive
- 2 Check machine for stalling during operation 1MPH through 6MPH
- 3 Check error log for motor current during fault - If it is very low, check the connector and contacts, if it is over 7amps, it is likely a true stall condition
- 4 Check belt rating and current draw of treadmill - replace belt and deck if necessary.

21

Too Many Maximum Consecutive Power Requests

Applies to

Consumer Treadmills, Commercial treadmills pre 2006

Issue Symptoms

This error monitors the treadmill's power bit reading when the treadmill was operating at speeds above 1 mph. Power bits indicate the relative time that the motor controller drive circuit is turned on. Therefore power bits is an indication of the amount of power the load is demanding from the motor controller. Error 21 indicates that at a speed of greater than 1 mile per hour an excessive amount of power is being demanded from the motor controller.

The main cause of this error being displayed while the commercial treadmill is being used between 7 and 8 MPH is a missing jumper on a recently replaced LPCA. The next most likely cause is a badly worn running belt/deck. This error can also be caused by badly worn motor brushes, or brushes that are not making contact with the commutator. Least likely but possible is a shorted drive motor.

Troubleshooting steps

- 1 Because the LPCA for the commercial treadmills is the same for both 120VAC and 230VAC, there is a jumper that must be installed on the 120VAC treadmill. If the LPCA requires the 120VAC voltage doubler jumper and the jumper is not installed, the treadmill will typically display an error 21 between 7 and 8 MPH. Install the lower PCA voltage doubler jumper to correct this problem.
WARNING: Be sure the treadmill is a 120VAC unit before installing the jumper. Installing the voltage doubler jumper on a 230VAC treadmill will cause the lower PCA to fail spectacularly.
- 2 A clamp-on AC ammeter must be used to determine the amount of A.C input current being drawn by the treadmill under no load and loaded conditions. Remember, many running beds are double sided and the bed can be flipped over rather than being replaced. If the current is excessively high at slow speed replace the belt and deck surface with new.
- 3 Turn off the treadmill, and disconnect power from the wall receptacle. Remove and inspect the motor brushes for arcing and pitting. If present replace both drive motor brushes. Also check that the brush can move smoothly in the grooves, and that the spring is able to press the brushes against the commutator. Adjust or replace the brushes as necessary.
- 4 Test the drive motor resistance, it should not be near 0Ω . If 0Ω , a known good drive motor must be substituted for the existing drive motor.

22, 23, 26

Motor Pulses Incorrect

Applies to

Consumer Treadmills, Commercial Treadmills prior to 2006

Issue Symptoms

Dust on the speed sensor, an inoperative sensor, and a failed lower PCA will cause these errors to be displayed.

- **Error 22** indicates that the drive motor has been instructed to start, by either manual or program control, and the monitoring system has not received any response from the speed sensing system indicating that the drive motor has started.
- **Error 23** indicates that the speed sensor signal was lost while the treadmill was in operation.
- **Error 26** monitors the speed sensor signal and verifies the speed sensor signal is appropriate for the requested speed. If the speed sensor signal is incorrect or erratic an Error 26 will be displayed.

Troubleshooting steps

- 1 Carefully, vacuum out the drive motor compartment with a static safe vacuum cleaner.
- 2 Test the speed sensor at the board for a 0-5Vdc transition when the sensor is activated by the appropriate device or actuator. The 400 Series treadmills utilize an optical (infrared) through speed sensor. The through sensor beam is broken by a chopper wheel attached to the motor. Dust can accumulate in the sensor. The 200 Series treadmills use a reed switch attached to the frame, actuated by a magnet installed in the drive roller pulley. Check to make sure the magnet is still installed in the pulley.
- 3 Turn off the treadmill, and disconnect power from the wall receptacle. Remove and inspect the motor brushes for arcing and pitting. If present replace both drive motor brushes. Also check that the brush can move smoothly in the grooves, and that the spring is able to press the brushes against the commutator. Adjust or replace the brushes as necessary.
- 4 Substitute a known good lower PCA to determine if the lower PCA is bad.

25

Motor Controller / LPCA Hardware Error

Applies to

TRM14, EFX16

Issue Symptoms

- On the treadmill this error monitors the functionality of the MC. If the software detects a defect in the MC the treadmill will stop working and Error 25 will be displayed.
- On the EFX this error monitors the functionality of the LPCA. The Major processor is detecting that the Minor processor is not working correctly, is not powering up, or is otherwise out of synch with the Major.

Troubleshooting steps

TRM14

- 1 Attempt to clear the error. If it does not clear, cycle power to the cycle three times. If the error persists, replace the MC.

EFX16

- 1 If a continuous occurrence it is likely a hardware issue or a corrupt program in the Minor processor. Reprogram (future feature) or replace the LPCA.
- 2 If the problem is intermittent, reprogram (future feature) or replace the LPCA and monitor.

27, 28, 29

Drive Motor Current Overloading Overview

Applies to

Treadmills

Overview

Characteristics of treadmill overloading are:

- 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.
- 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.
- Often accompanied by an error code:
 - Error 27 (motor current too high)
 - Error 28 (average input current too high, or motor controller overheated)
 - Error 29 (instantaneous input current too high)

27

Motor Current Too High

Issue Symptoms for Error 27

The motor controller monitors 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. The most likely cause of this is a badly worn running belt/deck. Less likely but possible is a faulty drive motor causing high current demand.

Troubleshooting steps

- 1 Check the belt rating for TRM800.v2 treads. If below 2 replace the bed and belt.
- 2 For older treadmills, a clamp-on AC ammeter must be used to determine the amount of A.C input current being drawn by the treadmill under no load and loaded conditions. The current readings can be used to determine the condition of the running belt and/or running bed. Replace the running belt and/or running bed as required. Remember, many running beds are double sided and the bed can be flipped over rather than being replaced.
- 3 A known good drive motor must be substituted for the existing drive motor.

28

Electronics Temperature Too High

Issue Symptoms for Error 28

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 device's heat sink. This error indicates that the heat sink temperature has exceeded maximum. The most common cause of this is a clogged cooling fan or heat-sink. Lesser causes include an inoperative cooling fan, a defective lower PCA or a faulty drive motor.

Troubleshooting steps

- 1 Check the cooling fan mounted on the lower PCA to ensure that the fan is not clogged with dust.
- 2 Thoroughly clean the fan and ensure that it spins freely.
- 3 As with Error 27, check the belt rating or current, and replace bed and belt as needed.
- 4 Replace the lower board.
- 5 Replace the motor.

29

Excessive AC Input Current

Applies to

Commercial treadmills built after 2006 and prior to 2014.

Issue Symptoms for Error 29

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

Intermittent AC input power:	Facilities using supplemental AC generator power may cause error events due to excess AC-grid to generator power switchover time.
Shared AC power circuit (wall outlets):	Each treadmill must be connected to separate 20 amp AC individual branch circuits including the Hot, Neutral, and Ground wires. Shared outlet power is not allowed.
Faulty AC Neutral wiring:	Each treadmill power outlet circuit must use a separate neutral wire. Neutral wires cannot be shared by multiple outlets (Exception: one PVS allowed per treadmill).
Low AC wire voltage:	Low AC input voltage drops (< 108 Vrms for 120 VAC and 200 VAC for 240 VAC systems) can cause an error event.
Heavy exerciser loading:	A heavy user under certain conditions (high speed running on a used belt) can overload the motor drive system causing an error event.
Excessive Deck/Belt friction loading:	Worn deck and running belt friction can overload the motor drive system causing an error event.
Treadmill faulty component issues:	A shorted lower control module (IFT module). A shorted drive motor is causing the high power demand

Troubleshooting steps

Check for a one time nonrecurring error event.

Check the error log for multiple occurrences of error 29. Clear the error code from the lower PCA memory by cycling the input power (OFF/ON).

- 1 Check the error log for multiple occurrences.
 - If there are multiple error events continue to the next step.
 - If there is only one error event recorded clear the error log and put back in service.

Check for a multiple time recurring error event.

- 1 Check the error code log for multiple occurrences of the error, and check the error logs of adjoining treadmills for occurrences of the error. If the adjoining treadmills have error 29 occurrences it is likely that the problem is within the house electrical wiring. If not, the problem is most likely with the one individual treadmill.

Check for correct input AC power and circuit wiring:

- 1 Verify the wall outlets **do not** share a common neutral wire and each wall outlet is on an individual branch circuit. Each branch circuit should have its own separate hot (120/240 VAC), neutral, and ground wire.
 - If SHARED, advise customer to have their facility wiring upgraded per Precor specifications. See the Owner's Manual for specifications.
 - If NOT SHARED, continue with the next step.

Check for intermittent, inconsistent, and/or low AC input line voltage.

- 1 Measure and note the average AC input line voltage at the Input Module between the brown and blue wire contacts with the treadmill circuit breaker "ON" and the speed set to 0 (idle). Then measure the instantaneous voltage drop while someone is running on the treadmill at 7.0 MPH or higher for several minutes. You can use an analog volt meter or a digital volt meter with a min/max function.
 - If any measurement is below 108 VAC for 120 VAC units (or 200 VAC for 240 VAC units), advise the customer to have the facility wiring inspected by an electrician. For example, a 250 lb person running at 7mph on a good deck and belt can cause the voltage to drop to near 108 VAC.
 - If the measurements are within specification continue with the next step.

Note: Facilities that use generator power can cause an error 29 event due to intermittent and/or inconsistent AC input voltage levels and frequency stability. Make sure to verify that the AC Input power is within Precor specification for proper operation.

Check for excessive current draw due to worn running belt and/or deck.

This procedure will require a Clamp Ammeter to measure pulsed AC input load current.

- 1 Remove the treadmill cover and place the Clamp ammeter onto the Brown wire between the AC input module (AC power cord input) to the circuit breaker (ON/OFF switch).
- 2 Set the treadmill speed at 7 mph and 0% incline. Run on the treadmill and observe the average AC current reading. The average AC current reading for a new running belt and deck is between 8 to 12 amperes.
 - If the average current reading approaches 20 amperes or greater, the running belt should be replaced. The running deck should be flipped (or replaced if previously flipped).

Note: Repeat the amp measurement test after replacing a running belt and deck. Compare these new numbers to the worn deck/belt numbers. This will help you to establish a baseline for you and your meter, which you can use to help troubleshoot future high current service calls.

Check for a faulty Motor Drive Module (IFT module):

A shorted Motor Drive Module (IFT module) can be the cause of the error 29 event.

1. Replace the treadmill Motor Drive Module with a known "in good condition" module and verify proper treadmill operation and that the error event has been fixed.
 - If the error event was not fixed, continue with the next step.

Check for a faulty Drive Motor:

A shorted drive motor creating a high power demand can be the cause of the error 29 event.

- 1 Replace the treadmill Drive Motor with a known "in good condition" Drive Motor and verify proper treadmill operation and that the error event has been fixed.
 - If the error event was not fixed, contact Precor Customer Support for further assistance.

30, 31, 32, 33

Communication Errors

Applies to

All products

Issue Symptoms - TRM, EFX, RBK, UBK, CLM

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 troubleshooting procedures for all of them are essentially the same.

- Error 30 is defined as upper PCA is active, the lower PCA is not communicating
- Error 31 is defined as faulty data received from lower PCA (extremely rare)
- Error 32 is defined as lower PCA is active, the upper PCA is not communicating
- Error 33 is defined as faulty data received from upper PCA (extremely rare)

The main reason for a general communication error is a faulty interconnect cable, either it is not connected securely, or it has become damaged. Error 30 can be caused by an overloaded or shorted +3.3VDC or +5VDC on the lower PCA, which can be caused by an external component plugged into the lower PCA. Error 32 is often caused right after service or installation, when the interconnect cable is unplugged from the upper PCA while the lower PCA is powered. It is also caused when the cable is plugged into the CSAFE port on the upper PCA.

Less likely but possible is a defective upper or lower PCA.

Troubleshooting steps – TRM, EFX, RBK, UBK, CLM

- 1 Substitute a known GOOD interconnect cable between the upper and lower PCAs to determine if the interconnect cable is defective.
- 2 Verify the interconnect cable is securely connected into the proper connectors on both PCA's. The cable should lock, if the locking tab on the connector is broken replace the cable.
- 3 Unplug all the components from the upper and lower PCA's except the data cable and the AC power going to the lower PCA. If the unit does not show an error, plug in components one at a time, cycling power on after each new component is plugged in. If a communication error is newly displayed, the last component plugged in is the cause of the error.
- 4 Substitute a known good lower PCA to determine if the lower PCA is defective.
- 5 Substitute a known good upper PCA to determine if the upper PCA is defective.

Issue Symptoms - Chrono

Error 30 indicates communication between the console and LPCA was interrupted for 3 seconds or more. If the LPCA receives no input from the console for 10 seconds or more, it will shut down if the user is not pedaling or there is no external charger attached.

- Zip tie around the LPCA Mylar moisture barrier (Product Dates approx. 11/18/2017 to 2/12/2018).
- Data COMM communication cable rubbing against the flywheel.
- The Data COMM cable LPCA or Console connectors are not properly seated.
- Pinched Data COMM cable where the cable exits the front of the handle bar mount and then reenters the console backplate (excessive cable strain).
- If the Data COMM cable and connections are good, the LPCA may have failed.
- Console failure.

Troubleshooting steps – Chrono

1. Check battery condition. If less than 5.4 VDC (not fully charged), try charging by pedaling the bike > 55 rpm or use a Precor power adapter. If the battery will not hold charge “dead”, replace the battery.



Note: Always make sure the battery is charged and not dead before troubleshooting error 30 codes. A dead battery exhibits the same symptoms as an error 30 and a frozen “Welcome” screen but does not contribute too or cause an error 30 event.



Note: If the console “Welcome” screen is frozen, disconnect power from LPCA, wait for 3 seconds and reconnect the power.

2. Check for a zip tie securing the Mylar cover around the LPCA. If installed, remove the zip tie (no longer required) and reseal the LPCA Data COMM cable connector, see Chrono Service Manual [LPCA Board Replacement](#) procedure.
3. Check for cable wear (especially where the cable is routed next to the flywheel). Replace the cable if damaged, see Chrono Service Manual [Data COMM Cable Replacement](#) procedure.
4. Check for proper cable routing and excessive cable strain, see Chrono Service Manual [Data COMM Cable Replacement](#) procedure.
 - a. Correct any incorrect cable routing.
 - b. Check for excessive cable strain and create slack if needed.
 - c. Check that the cable is properly secured to the frame cable clamps and zip ties.
 - d. Replace any missing or damaged frame cable clamps or zip ties.
5. Check for a pinched cable located where the cable exits the front of the handlebar post and renters at the console backplate. Excessive cable strain is the most likely cause of the pinched cable. Create slack in the cable and reseal the Data COMM cable Console connector. Replace cable if damaged.
6. Reseat the LPCA and Console cable connections, see Chrono Service Manual [Data COMM Cable Replacement](#) procedure.
7. Verify the LPCA is not defective.
8. Verify that the Console is not defective.

35

Excessive AC Input Current Spike

Applies to

TRM14

Issue Symptoms

Error 35: This error monitors the instantaneous input current to the treadmill. If the input current should spike above 65 amps, an Error 35 will be displayed. The most likely cause of this error will be a catastrophic failure internally to the MC.

Troubleshooting steps

Recycle power to the treadmill. If error 35 remains, replace the MC.

36

Excessive AC Average Input Current

Applies to

TRM14, 120VAC only

Issue Symptoms

This error will occur if the Overload Slowdown (Error 38) continues to detect high current, and has limited the treadmill speed below 5MPH (8KPH). The most likely cause of this is a worn deck and belt. It is possible that this error could be caused by a combination of a worn deck/belt and the DB Resistor being stuck ON. Low line voltage can cause Error 36; however this usually causes an error 16, so check for that error in the log. If Error 36 occurs when the treadmill is fairly new and the facility has not had other treadmills plugged in previously, it is possible that the wiring to the outlet is not of sufficient gauge to conduct the current required.

If the speed drops below 5 mph or 8 kph and the overload condition is still present, an Error 36 will be displayed and the treadmill will be temporarily out of service. It will slow to a stop, but will recover from the error.

Troubleshooting steps

- 1 Check the belt rating (120VAC only) and current draw of the treadmill, replace the belt and deck as necessary.
- 2 Monitor the minimum line voltage as follows:
 - a. With the TRM at the Welcome banner
 - b. With a runner at 6MPH
 - c. With the TRM at the Welcome banner and a runner at 6MPH on an adjoining treadmill
 - d. Check for fluctuations of greater than 15% between steps 2a and 2b, or fluctuations of 5V or more when running on the adjoining TRM.
- 3 If either of the conditions in step 2d exist and the error has been occurring frequently and/or on multiple units, request an evaluation of the facility distribution wiring.

37

E-STOP Upper PCA/Lower PCA Mismatch

Applies to

TRM14, TRM2XX

Issue Symptoms

The error 37 may occur after an E-STOP event. If the E-STOP event is not successfully cleared in the lower PCA and the upper display believes the E-STOP has been cleared, an error 37 will occur. Possible causes include pulling and resetting the E-STOP twice within the 10 second time-out period, pulling the E-STOP, turning off the treadmill, turning the treadmill back on, and then starting a course, or pulling the E-STOP, turning off the treadmill, reset the E-STOP, turning the treadmill back on, and then starting a course. Also possible is a break in the E-STOP line, or a loose cable connection.

Troubleshooting steps:

- 1 Verify the connectors are seated properly.
- 2 Verify Dielectric grease has been applied to both connectors.
- 3 Run the treadmill and move the communications cable attempting to duplicate the error. If it reproduces, change out the cable.
- 4 If this error is persistent and none of the above corrects the problem, install a new console.
- 5 If the console does not correct the problem, change the MC.

Recommended Additional Action:

Add Dielectric grease, NYOGEL 760G 0.1ml, to both connectors, recommended for all products regardless of age. Precor part number PPP000000013012010.

38

Overload Slowdown

Applies to

TRM600, 120V only
Lower SW 304643-101 012 and later
P30 Software Version 304716-101 002 and later

TRM700, 120V only
Lower SW 304235-105 003 and later
P30 Software Version 304254-101 007 and later
P30i Software Version 304756-101 002 and later

TRM800, 120V only
Lower SW 302105-104 and later
P10 Software Version 303310-102 008 and later
P30 Software Version 303080-105 016 and later

Issue Symptoms

NOTE: Previous to this P30/P10 software version when too much current was used by the motor an Error 36 was displayed and the treadmill would become temporarily out of service with the belt slowing to a stop. Overload Slowdown has been added to help with the user experience.

When a heavy exerciser uses the treadmill at high speed, the treadmill needs more power to move the running belt. In this case, the treadmill attempts to draw more power from the wall outlet and therefore draws more current from the wall outlet. The maximum current that the treadmill can draw from the wall outlet is 20 amperes. If the treadmill draws more than 20 amperes, the treadmill causes an overload. In order to prevent an overload, the treadmill slows down the running belt and limits the speed. A heavy exerciser could still use the treadmill but the speed is limited.

When the Motor Controller Unit (MCU) detects excessive current being used by the motor, the MCU will slow the belt down in 3% mph/kph increments, which will decrease the current draw from the motor until the motor is no longer under an overload condition. An Error 38 will be logged in the Error Log, but will not be immediately be scrolled on the console. The speed displayed on the console will be updated to the actual speed, and this new speed will be limited by the MC. The user will not be able to increase the speed beyond the new temporarily limited speed during the workout in progress, and "SPEED IS TEMPORARILY LIMITED" will be displayed when the user tries to increase beyond the temporary speed set by the MCU. Once an Error 38 is triggered, the belt must come to a complete stop to clear the error condition. The tread will reset to Club Setting Max Speed without being power cycled. Once recovered, the user may start another workout. The next user will not see any speed limitations unless an Error 38 is triggered again.

If the speed drops below 5 mph or 8 kph and the overload condition is still present, an Error 36 will be displayed and the treadmill will be temporarily out of service. It will slow to a stop, but will recover from the error. See Error 36 for details.

The most important factor to remember when encountering a logged Error 38 is that it is meant for capturing information and is not necessarily an indication of a problem. Most of the time the code, taken by itself, is normal. Even with a new deck/belt, an Error 38 can trigger with the right combination of high weight/high speed

runner, even if this person runs for just a few seconds. Gyms that have a lot of heavy members running at high speeds may need to replace belts more often.

Servicers should rely on the belt rating and current measurement troubleshooting methods if an actual problem is suspected with the treadmill.

Troubleshooting steps:

- 1 Intermittent occurrences of Error 38 are not a major concern and is most likely caused by a heavy exerciser running at high speed.
 - a. Check for other error codes. Errors 16 and 36 could indicate other power problems.
 - b. If no other errors are present, monitor for other occurrences.
- 2 **TRM700/800** - If the occurrence of Error 38 becomes more frequent, check the belt rating.
 - a. If the belt rating is 2 or below, check for a dirty or worn deck and belt and replace as necessary.
- 3 **TRM600** - If the occurrence of Error 38 becomes more frequent, check belt maintenance.
 - a. If current draws are high, check for a worn deck and belt and replace as necessary.

39

LPCA ASL processor communication Error

Applies to

EFX800-16, EFX700-17 ellipticals.

Issue Symptoms

There is a loss of communication between the Major and ASL processors on the LPCA board. An error code 39 event will be logged but an error message will not be shown on the console. Depending on the failure mode, the ASL status light may not illuminate.

Possible causes

- Damage to one of two processors on the LPCA board: either the Major or ASL processors.
- Intermittent failure caused by a shorted ASL cable or a short on the ASL board.

Troubleshooting steps

Case 1: Error 39 only occurs intermittently, not at every power up.

1. Replace the ASL board and ASL cable.
2. If issue continues, replace the LPCA board.

Case 2: Error 39 occurs continuously, can be reproduced at every power up.

1. Disconnect the ASL cable from the ASL board. Wait for diagnostic LEDs on the LPCA to power OFF, then power up the machine and verify if error 39 reoccurs.
 - a. If error 39 does not reoccur, replace the ASL board.
2. Disconnect the ASL cable from the LPCA board. Wait for diagnostic LEDs on the LPCA to power OFF, then power up the machine and verify if error 39 reoccurs
 - a. If error 39 does not reoccur, replace the ASL cable and the ASL board.
 - b. If error 39 does reoccur, replace the LPCA board, the ASL board, and the ASL cable.

40

No Lift Motion Detected

Applies to

All Machines with a Lift Motor

Issue Symptoms

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. Most likely causes are a blown lift fuse on the lower PCA or the lift motor is physically jammed and unable to move. On the EFX and the AMT12 a fully dead battery can also cause this error. While unlikely but possible, a faulty lift motor capacitor or winding will prevent movement.

Troubleshooting steps

- 1 Remove power from the unit and remove the lift fuse from the lower PCA. Measure the fuse with an ohmmeter, if the reading is higher than very near zero, replace the fuse.
- 2 **TRM800-14 treadmills:** Verify the current motor controller (IFT drive) software part number version meets the following minimum SW version requirement:

Treadmill	Minimum Software Version
TRM800-14 120V	302105-103 or later
TRM800-14 230V	302106-103 or later

- 3 Disconnect the lift motor from the lift platform (treadmill, AMT12) or ramp (EFX). 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. Calibrate and install the lift motor per the appropriate service manual procedure.
- 4 **Treadmills built before March 2014:** With a voltmeter reading AC volts and one meter lead placed on the **brown** lead of the line filter:
 - a. The meter should read 120VAC on each of the red, white, and black lift motor wires.
 - b. Enter Diagnostics > Machine Test > Incline Test to operate the lift.
 - c. With a meter lead on the **red** wire, move the lift up - the meter should read close to 0VAC.
 - d. Staying on the **red** wire, move the lift down – the meter should read approximately 200VAC (120V Units) or 300V (240V units).
 - i. If this value is significantly low, the capacitor is failing, requiring lift motor replacement.
 - e. Move the meter lead to the **black** motor wire and move the lift down - the meter should read close to 0VAC.
 - f. Staying on the **black** wire, move the lift up – the meter should read approximately 200VAC (120V Units) or 300V (240V units).
 - i. If this value is significantly low, the capacitor is failing, requiring lift motor replacement.
- 5 **Treadmills build after March 2014:** With a voltmeter reading AC volts and one meter lead placed on the **blue** lead of the line filter, follow steps a – f above.
- 6 **EFX/AMT Only:** Set the meter to DC volts and check the voltage of the battery while the lift is in operation (under load).
 - a. With the meter leads on the red and black lift wires respectively, the meter should read +12 volts when moving up and -12 volts when moving down.

- b. If the voltage drops below 11 volts, check the battery according to the ***Troubleshooting the Incline System*** in the Service Manual.
- 7 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. The lift motor winding may be checked with an ohmmeter. A.C lift motors will have a split winding (3 wires). D.C lift motors will have a single winding (2 wires). On AC motors both windings must be checked. Depending on the lift motor being tested, normal winding readings could vary anywhere between 1 and 60 ohms. Refer to the appropriate service manual for the motor being tested
- 5 Defective A/D potentiometer:
- a. Defective lift motor A/D potentiometer connections can cause a mix of error 40s “lift not moving”, error 42s “lift out of range”, and/or error 45s “lift moving in wrong direction” event. An error 45 is almost always an indication the potentiometer has a bad internal motor connection. It is possible that the error log (or event log) will fill with error 40s and 45s when it was actually only a single event. Even after the cause of error 40 and 45 event has stopped, these errors will continue to be logged until the treadmill power is cycled OFF/ON. Error 42 will clear if the lift goes back within range limits. As long as the lift remains in an out of range condition, the error log will continue to fill with error 42s with use. Replace the lift motor if these conditions are confirmed.
 - b. The lift motor calibration will remain set to factory specification unless the lift motor has been replaced. If the machine is exhibiting an out-of-calibration condition (e.g. the treadmill incline level is set to 0 but the running deck is not level) and the lift motor has not been replaced, it is most likely caused by defective A/D potentiometer connections. If this condition is confirmed, replace the lift motor.

42

Lift Position Out Of Range

Applies to

All Machines with a Lift Motor

Issue Symptoms

The software on the lower PCA is expecting that the A/D value from the lift potentiometer is within a certain range, low to high. If the A/D value goes outside this range, an Error 42 will be displayed. The most likely cause of this error is the motor moving further than it should, or jamming against the housing. A loose connector or a damaged potentiometer inside the motor assembly will also cause this error.

Troubleshooting steps

- 3 If the lift motor has drifted too low, disconnect the motor from the lift assembly and adjust the jack screw until the motor is in range. Perform the appropriate lift motor calibration procedure. If the motor continues to drift low, replace the motor.
- 4 Inspect the lift motor connector, verifying the pins are secure in the connector. Attach the connector to the lower PCA and ensure that it is locked into the header.
- 5 Enter Diagnostics, Machine Test, Incline or Crossramp test. Run the lift all the way extended and back to minimum. The A/D number should climb and decrease smoothly during the test. If not, replace the lift motor.
- 6 While in the Incline or Crossramp test scroll to see Glitches, and run the lift to both extremes. Glitches are anomalies recorded by the lower board during lift movement, indicating a possible or existing problem with the internal potentiometer or the gearing that turns it. Very few if any glitches should be recorded. If greater than 50 glitches are recorded during a full movement to either extreme, replacement of the lift motor is necessary.
- 7 Defective A/D potentiometer:
 - a. Defective A/D potentiometer connections can cause a mix of error 40s “lift not moving”, error 42s “lift out of range”, and/or error 45s “lift moving in wrong direction” event. An error 45 is almost always an indication the potentiometer has a bad internal motor connection. It is possible that the error log (or event log) will fill with error 40s and 45s when it was actually only a single event. Even after the cause of error 40 and 45 event has stopped, these errors will continue to be logged until the treadmill power is cycled OFF/ON. Error 42 will clear if the lift goes back within range limits. As long as the lift remains in an out of range condition, the error log will continue to fill with error 42s with use. Replace the lift motor if these conditions are confirmed.
 - b. The lift motor calibration will remain set to factory specification unless the lift motor has been replaced. If the machine is exhibiting an out-of-calibration condition (e.g. the treadmill incline level is set to 0 but the running deck is not level) and the lift motor has not been replaced, it is most likely caused by defective A/D potentiometer connections. Replace the lift motor if these conditions are confirmed.

44

Un-commanded Lift Motion

Applies to

All machines with a lift actuator

Issue Symptoms

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. This is most often caused by a poor or intermittent connection of the lift motor potentiometer, or the potentiometer itself is defective. Less likely but possible is a defective lower PCA.

Troubleshooting steps

- 1 Verify all wiring and connections associated with the lift motor assembly. Repair or replace wiring or connections as appropriate.
- 2 Operate the lift in the diagnostics while monitoring the lift position A/D 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 assembly.
- 3 If there is actual lift motion without a manual or program control lift command having been issued, replace the lower PCA.

45

Lift Moving In the Wrong Direction

Applies to

All machines with a lift actuator

Issue Symptoms

The lift control system has detected that the lift is moving in the opposite direction of the issued lift command. 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. Less likely but also possible would be a defective motor controller.

Troubleshooting steps

- 1 Check that the MC is properly controlling the lift motor.
Treadmills built before March 2014 Only: Measure between the line filter brown wire and the red wire of the lift motor connector while pressing the up button in Diagnostics. You should see line voltage when the motor is not being driven, and 0Vac when it is being driven. Repeat the test with the black wire of the connector and the downward drive. If the MC is not switching properly, replace the MC.
Treadmills built after March 2014 Only: With a voltmeter reading AC volts, measure between the red wire of the lift motor connector and the blue lead of the line filter. You should read zero volts. Enter Diagnostics, Machine Test, Incline Test, and operate the lift in the up direction. You should read line voltage. Repeat the test with the black wire of the lift motor connector and the blue wire of the line filter. You should see zero volts. Enter diagnostics and at the Incline Test operate the motor downward. You should see line voltage.
EFX/AMT Only: Measure across the red and black wires of the connector, and operate the lift. You should see 12 to 14 VDC when the motor is operated in the up direction, and -12 to -14 volts when the motor is moved to the down direction.
- 2 If the error 45 condition is persistent and the voltages from the controller are correct, replace the lift motor.
- 3 Defective A/D potentiometer:
 - a. Defective A/D potentiometer connections can cause a mix of error 40s “lift not moving”, error 42s “lift out of range”, and/or error 45s “lift moving in wrong direction” event. An error 45 is almost always an indication the potentiometer has a bad internal motor connection. It is possible that the error log (or event log) will fill with error 40s and 45s when it was actually only a single event. Even after the cause of error 40 and 45 event has stopped, these errors will continue to be logged until the treadmill power is cycled OFF/ON. Error 42 will clear if the lift goes back within range limits. As long as the lift remains in an out of range condition, the error log will continue to fill with error 42s with use. Replace the lift motor if these conditions are confirmed.
 - b. The lift motor calibration will remain set to factory specification unless the lift motor has been replaced. If the machine is exhibiting an out-of-calibration condition (e.g. the treadmill incline level is set to 0 but the running deck is not level) and the lift motor has not been replaced, it is most likely caused by defective A/D potentiometer connections. Replace the lift motor if these conditions are confirmed.

46

Low Battery Voltage

Applies to

All self-powered units

Issue Symptoms - *EFX, AMT, UBK, RBK, Climber*

The operating system has a battery monitoring system. If the battery voltage falls below 11 Vdc when stride height movement is initiated (AMT12) or the battery voltage falls below 10 Vdc after the ramp movement has been initiated (EFX), ramp movement will be stopped and the message ERROR 46 will be displayed. Stride Height motion will not be enabled until such time as the battery voltage exceeds the above limits. The battery voltage must be raised to correct this condition either by battery charging or battery replacement. This is strictly a battery problem and not an incline system or incline motor problem.

Possible causes include an open 10A slow blow fuse (AMT12 only) on the battery terminal, faulty or poor connection on the battery or lower PCA, or a depleted battery.

Note: While an occurrence of the error is possible, this error is rarely reported on self-powered bikes and climbers.

Troubleshooting steps - *EFX, AMT, UBK, RBK, Climber*

- 1 (AMT12) Remove the lift fuse from the in-line fuse holder on the positive battery cable. Measure the fuse with an ohmmeter, the fuse should read approximately 1 ohm or less. If the ohmmeter reading is significantly high, replace the fuse.
- 2 Check battery cable connector for shorts or poor connections.
- 3 Enter the diagnostic program per procedure, P80 Settings or Accessing the P30 Diagnostic Software. Using the diagnostic program allows you to test the incline system without continuously pedaling the unit if you have an external power supply. Otherwise, you will need to continue to pedal the unit. Connect a DC voltmeter to the J3 connector on the lower PCA as follows: voltmeter common lead to terminal 3 (black wire) and voltmeter "hot" lead to terminal 2 (red wire). Using the STRIDE HEIGHT, keys operate the incline. The voltmeter should read +12 Vdc approximately when the incline is instructed to move upward and -12 Vdc approximately when the incline is instructed to move downward. If the either voltage measurement is significantly low, replace the battery.

Issue Symptoms - *Chrono*

The error is only detected while not pedaling because, when pedaling, the generator SHOULD be charging the battery and have a higher voltage. This can be a temporary condition that has been corrected by user pedaling and recharging or with the use an external charger.

Troubleshooting steps - *Chrono*

- 1 Use the Battery Voltage service test to see real time voltage when not pedaling. Battery should be above 5.8 Vdc.
- 2 Verify the Generator voltage is adequate during this test by selecting the Generator Voltage test. Should read approximately 9Vac at 60 RPM.

- 3 If the battery voltage increases when pedaling above 55 RPM, but the battery was in a low state (5.5 – 5.7 Vdc), verify the unit is routinely used. Low use can result in battery drain over time and an external charger may be needed.
 - a. Batteries below 5.4 volts that can't be brought up or hold a charge should be replaced.
- 4 If the battery voltage doesn't increase when pedaling above 55 RPM, the LPCA may have a problem with its charging circuit and need to be replaced.

47, 48

High Battery Charging Voltage or Current

Applies to

Chrono

Issue Symptoms

E47 (High current)

Battery charging current is or has been detected as too high. The error is only detected or cleared while pedaling because, when pedaling, the generator SHOULD be charging the battery.

E48 (High voltage)

Battery voltage is or has been detected as too high.

NOTE: The battery fuse should be checked for all battery problems. One symptom of a bad fuse, or bad battery, is the console will immediately power down when pedaling has stopped.

NOTE: If used, the external charger will give erroneous readings and needs to be unplugged for the below checks.

Troubleshooting steps

E47

- 1 Use Battery Amp service test to see real time charging current **WHILE** pedaling above 55 RPM. Should read 0.32 amps.
- 2 Check the battery fuse if the battery voltage stays constant (approximately 7.0 Vdc) and the generator and battery currents stay at zero.
- 3 Verify the Generator voltage is adequate by selecting the Generator Voltage and Generator Amp tests. While pedaling at 60 RPM, the generator voltage should read approximately 9Vac and the generator amperage should read 0.40 amps.
- 4 If the battery charging current is high when pedaling, the LPCA may have a problem with its charging circuit and need to be replaced.

E48

- 1 Use Battery Voltage service test to see real time voltage. When not pedaling, the battery should read maximum 6.6 Vdc. When pedaling above 55 RPM, the maximum voltage should be 7.5 Vdc.
- 2 Check the battery fuse if the battery voltage remains constant (approximately 7.0 Vdc) and the generator and battery currents remain at or near zero.
- 3 Verify the Generator voltage is adequate by selecting the Generator Voltage test. Generator voltage should read approximately 9Vac at 60 RPM.
- 4 If the battery voltage doesn't change or is always too high while pedaling above 55 RPM, the LPCA may have a problem with its charging circuit and need to be replaced.

50

Too Much Brake (Magnet) Current

Applies to

Consumer EFX, AMT, U/RBK, EFX16

Issue Symptoms

This error is associated with eddy current EFX's, AMT's, Climbers and Bikes. The resistance (brake) control system constantly monitors the amount of current being demanded by the eddy current magnet. Error 50 indicates that the amount of current being demanded by the eddy current magnet is excessive.

The most common cause of this error is shorted or damaged wiring between the lower PCA and the eddy current magnet. While possible but less likely, this can be caused when the eddy current magnet is bad or the lower PCA is bad.

Troubleshooting steps

- 1 Carefully check the eddy current wiring and connections, ensuring that the wires are not shorted together or shorted to the frame. Repair or replace the damaged wiring as appropriate.
- 2 Unplug the eddy current cable connection from the lower PCA. Pedal the unit and increase the resistance level, if the error is still displayed, replace the lower PCA. If the error is not displayed, replace the eddy current magnet.

56

Too Much Brake (Magnet) Current

Applies to

Consumer EFX 200

Issue Symptoms

This error is associated with the EFX 200. Error 56 indicates the LPCA has lost communication with the DC motor assembly, which controls the magnetic brake assembly. The magnetic brake will remain at the last position successfully set by the DC motor, so the resistance applied by the brake will not change until new instructions are successfully received and executed by the DC resistance motor, even if the machine is set to “off.”

After reestablishing communication between the LPCA and DC motor assembly, it may be necessary to power cycle the machine in order for the error to clear, and for the DC motor to move the magnetic brake assembly.

Troubleshooting steps

1. Check the cable and connections at the LPCA and DC motor to ensure they are properly seated and free of damage. If cable or connections are damaged, repair or replace the damaged part.
2. With the machine “on,” enter a manual program and peddle the EFX. Using a DC volt meter, place the red lead on the brown wire, and the black lead on the black wire. The meter should read +4.9Vdc when resistance is increased, and -4.9 Vdc when resistance is decreased. If these readings are significantly out of range, recheck the wire harness. If still significantly out of range, replace the LPCA.
3. With the machine “on,” use a DC volt meter to measure between terminals 1 and 3 on the JK8 connector that is located below the DC motor assembly. If a constant 5 Vdc is present, replace the DC motor assembly. If voltage is significantly out of range, check terminals 1 and 3 at the LPCA for 5 Vdc. If voltage is in range at LPCA, replace the wire bundle. If voltages are significantly out of range, replace the LPCA.
4. Check the function of the DC motor potentiometer by reconnecting the JK8 connector located below the DC motor assembly. Place the black lead on the frame ground screw, and the red lead on the orange wire of the potentiometer. At resistance level 1, the measurement should be approximately 0.17 Vdc. The voltage will gradually increase at each resistance level, with a maximum voltage of approximately 3.9 Vdc at resistance level 16. If the readings are significantly high or low, check wires and connectors for damage. If readings are still significantly high or low, replace the LPCA.

57, 58

Generator Voltage Low or High

Applies to

Chrono

Issue Symptoms

Generator voltage is or has been detected as too low (**Error 57**) or too high (**Error 58**). These errors are only detected or cleared while pedaling above 35 RPM. May be a temporary condition due to some user pedaling modalities.

Troubleshooting steps

- 1 Use Generator Voltage service test to see real time voltage while pedaling.
NOTE: that if the external charger is connected this voltage will always be shown as the charger's voltage (approximately).
- 2 When pedaling, the voltage should vary based on the RPM. Should read approximately 9Vac at 60 RPM.
NOTE: RPM is read from pin 3 of the generator cable. If this phase has dropped, the console may not operate and will not display RPM.
- 3 Replace the generator if the readings are off.
- 4 If the error persists, replace the lower board.

59

High Generator Current

Applies to

Chrono

Issue Symptoms

Generator voltage is or has been detected as too high. The error is only detected or cleared while pedaling above 35 RPM. May be a temporary condition due to some user pedaling modalities.

Troubleshooting steps

- 1 Use Generator Voltage and Amp service tests to see real time voltage and current while pedaling. While pedaling at 60 RPM, the generator voltage should read approximately 9Vac and the generator amperage should read 0.40 amps.
NOTE that if the external charger is connected the voltage will always be shown as the charger's voltage (approximately).
- 2 While pedaling, the voltage should vary based on the RPM (higher RPM = higher voltage). The current should go **lower** as the voltage/RPM increases. If it's always the same or high the likely cause is the LPCA.
- 3 If Generator Current varies, the system may have a battery problem (check battery service tests).
- 4 If the battery checks GOOD, check all wiring and connections.
- 5 If conditions persist, swap the LPCA, then console.

60, 61

Auto Stop Not Working/Present

Applies to

These errors are associated with the TRM10 Treadmill, built starting March 2010 through May 2014. 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. These errors will only be present when the Auto Stop function is Enabled in the Club Settings/Workout Limits. When the Auto Stop function is Disabled, the input to the console is ignored in the software, and any failures or broken cables/connection will be made moot.

NOTE: These errors will not be present if the magnet on the deck is missing or misaligned. These errors will only indicate an electrical problem with the sensor. Failing to move or correctly align/gap the magnet when the deck is flipped, or moved to a new deck when a previously flipped deck is replaced, will cause the Auto Stop function to engage after 90 seconds of use, with a 10 second countdown following.

Issue Symptoms

Error 60 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 P10 consoles. When this error occurs error 60 will be recorded in the error log of the console. The most likely cause of error 60 is a poor or missing connection between the Auto Stop sensor and the cable connecting the sensor to the console. A damaged or faulty Auto Stop sensor may also cause this problem. Least likely but possible is a failure in the upper PCA/Console.

Error 61 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 error 61 will be recorded in the error log of the console. The most likely cause of error 61 is a broken or disconnected cable between the sensor and the console. Less likely but possible is a missing or faulty sensor.

Troubleshooting steps

- 1 Check that the Auto Stop cable connectors are secure at the sensor and console. Visually verify the Auto Stop hardware components are installed onto the treadmill frame. 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. Visually inspect the Auto Stop sensor for physical damage and correct installation. Replace if appropriate.
- 2 Access the diagnostic system tests, and select the Auto Stop test. If the feature is enabled the P80 Auto Stop sensor test will count the number of times the magnet crosses the sensor. The P30 and P20 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 P30 and P20 consoles displayed "NO USER DETECTED", disconnect the Auto Stop cable from the Auto Stop sensor and check for 5 vdc between the red and black wire. If 5 vdc is present replace the Auto Stop sensor. If not present, continue with the next test.
- 3 Check for 5 vdc 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 5 vdc is not present replace the upper PCA or console. If 5 vdc is present then replace the Auto Stop cable.

62

Vertical Sensor Failure

Applies to

AMT12

Issue Symptoms

Error 62 will occur when the vertical stride is not detected. The most likely cause of this will be a faulty, broken or poor cable connection at the lower PCA. A missing or reversed magnet on the crank arm is also a possibility, as is a defective sensor. Least likely but possible is a fault on the lower PCA.

Troubleshooting steps:

- 1 Check to ensure vertical sensor cable connector is secure on lower PCA, and that the cable is intact, that it has not been compromised.
- 2 Verify the magnet is present in the crank arm, and is correctly installed. The sensor is polarity sensitive, and an incorrectly installed magnet will cause this error. To test it, remove the magnet from the crank arm, and while in the Stride Sensor test move the magnet back and forth past the sensor, if the polarity is correct you will see counts recorded.
- 3 If the previous test does not show a count (regardless of polarity) replace the vertical sensor with a known good vertical sensor. Retest.
- 4 Substitute the lower PCA with a known good lower PCA.

63

High RPM

Applies to

Chrono

Issue Symptoms

RPM is or has been detected as too high. The RPM is measured from one of the three time-varying AC phases from the generator (pin 3). May be a temporary condition due to some user pedaling modalities.

Troubleshooting steps

- 1 Use the RPM service test to see real time status while pedaling. Pedaling one rotation per second will read 60 RPM. The test should read approximately 9Vac at 60 RPM
- 2 When pedaling, the RPM should vary based on the speed being pedaled. If always high or low, the likely cause is the LPCA is not sensing the AC variations.
- 3 If it appears random or different than normal, examine the Generator output voltage. It may be excessively varying if one phase were not functional.
- 4 Replace the LPCA. If conditions persist, replace the generator.

65, 66

LPCA Minor Interface Version Error

Applies to

EFX16, Chrono

Issue Symptoms

E65

Error 65 will show at startup. It indicates that the software in LPCA is not compatible with the software in the UPCA. It could be caused by a wrong version of the LPCA being installed and may be resolved by a software update.

Workouts will not run at all if this error is active.

E66

Error 66 is shown at startup. This indicates that the software on the Major section of the LPCA is not compatible with the software in the Active Status Light section.

The ASL may not turn ON while this error is active, otherwise system will operate normally.

Troubleshooting steps:

- 1 Record the serial numbers and software versions from and verify compatibility.
- 2 **CHRONO**: Update the software.
- 3 If the error persists, replace the LPCA.

67

GEM Module Failure

Applies to

Chrono

Issue Symptoms

The GEM module affecting ANT+ and Bluetooth data transport has not always responded to control queries. This is considered a non-fatal condition as sporadic errors have been detected during testing, but operation of the Bluetooth and ANT+ (leaderboard and HR) may be affected. If this error appears randomly or there are very few, this can be ignored.

Troubleshooting steps:

- 1 Update the console software.
- 2 If the Bluetooth and ANT+ operation is still non-functional and the console is otherwise usable but for full operational modes, replace the console.
- 3 If many errors are in the error log the console should be replaced.

69

Stuck Wake-up Button

Applies to

EFX16

Issue Symptoms

Error 69 is shown after pressing QuickStart. The machine may not be able to power itself down in this situation, which can lead to battery failure or depletion. A primary symptom would be a console that does not turn off, or a console that will not stay operating when pedaling is stopped (indicating battery failure).

Troubleshooting steps:

NOTE: This condition can cause the battery to fully discharge and be damaged. Disconnect the ASL board from the LPCA as an interim preventative action if the machine is not powering down (LPCA lights stay ON for longer than 90 seconds with no pedaling).

NOTE: This error may take up to 2 minutes to be logged.

- 1 Unplug the battery and check the battery voltage. If the voltage is 12V or less, it has been severely discharged and may need to be recharged or replaced prior to troubleshooting.
- 2 Connect a known good battery to the LPCA battery connector without moving the pedals at all and observe the status lights on the LPCA (this is the “battery test”).
 - a. If any of these lights immediately turn ON when the battery is plugged in, there is a problem with the ASL button circuit or the button is stuck.
- 3 Unplug the battery from the LPCA, remove ASL board from its plastic mount while keeping it connected to the LPCA. Press the ASL button directly with your finger. A good switch has a tactile and audible click (compare it to a known good ASL board), replace if no tactile click is present.
- 4 If ASL button feels OK, leave ASL connected to the LPCA but not installed in cover plastic and repeat battery test.
 - a. If the LPCA lights **do not** turn ON immediately, go to Step 5.
 - b. If the LPCA lights **do** turn ON immediately, go to Step 6.
- 5 If the LPCA lights **do not** turn on immediately, check the plastic mount for damage and misalignment on the rear drive cover assembly. Replace the cover if needed and reassemble and verify proper operation.
- 6 If the lights **do** turn ON immediately, there is a problem with the ASL or the LPCA. Disconnect the ASL cable from the LPCA and repeat the battery test.
 - a. If the LPCA lights **do not** turn ON immediately, there is a problem with the ASL.
 - i. Check the ASL cable and replace the cable if it is bad.
 - ii. If the cable is good, replace the ASL board.
 - b. If the lights **do** turn ON, there is problem with the LPCA. Replace the LPCA.

70-79 overview

Flat Belt Count Error Overview

Applies to

AMT12, all models

Issue Symptoms

These errors have to do with the flat belt count of the AMT12. The AMT12 utilizes a flat belt system to provide fluid movement and support to the stairarms. It is critical that the flat belts are replaced at a defined stride count. To ensure the stride count is maintained throughout the life of the AMT12, the stride count is stored on both the lower PCA and the upper PCA.

If either PCA is replaced, the stride count will be written to the new board, depending on certain criteria. Different conditions will cause an error to be logged. In most cases errors 70 to 77 will be for informational purposes, and will not affect the operation of the AMT. Errors 78 and 79 will indicate that belt replacement is imminent or necessary.

The PCA's will compare software versions and stride counts, and an appropriate error will be generated as an indicator of the condition. These error scan be used to determine if used or new PCA's were installed.

70, 71, 72, 73

Flat Belt Count/Software Mismatches

Applies to

AMT12, all models

Issues Symptoms

When power is applied to the upper PCA and lower PCA, the stride count written on each of the EEPROMs will be compared to each other and to a set of preset stride conditions. If the stride count written on the EEPROM's do not match or meet a preset stride count condition, an error will be written to the error log or displayed to the user at the end of the workout summary.

- **Error 70:** Lower PCA not read. The upper PCA EEPROM cannot detect the stride count written on the lower PCA. This error is only reported to the error log. This is usually caused by a lower PCA with no software installed.
- **Error 71:** Virgin lower PCA. The upper PCA has detected a lower PCA that does not have a stride count written to the lower PCA EEPROM. This is not an error and is used for tracking only. For reference it will be reported to the error log.
- **Error 72:** Lower PCA version not known. A version mismatch is detected between the EEPROMs of the upper PCA and the lower PCA. When the upper PCA reads the data from the lower PCA's EEPROM, and the internal version isn't correct, the upper PCA logs error 72. The upper PCA will then attempt to write the correct version number to the lower PCA. If the correct version can be successfully written to the lower PCA's EEPROM, then this error probably won't be seen again. If the upper PCA version number cannot be successfully written to the lower PCA, then numerous errors will be logged with different odometer values. The occurrence of this error would be rare and if it did occur, the normal operation of the AMT12 would not be effected.
- **Error 73:** Lower PCA record bad. A byte size error is detected between the EEPROMs of the upper PCA and the lower PCA. When the upper PCA reads the data from the lower PCA's EEPROM, and the byte size isn't correct, the upper PCA logs error 73. The upper PCA will then attempt to write the correct byte size to the lower PCA. If the correct byte size can be written to the lower PCA's EEPROM, then this error probably won't be seen again. If the upper PCA byte size cannot be successfully written to the lower PCA, then numerous errors will be logged with different odometer values. The occurrence of this error would be rare and if it did occur, the normal operation of the AMT12 would not be effected.

Troubleshooting steps

- 1 Error 70: Replace lower PCA with a known good lower PCA.
- 2 Error 71: None, this is for informational purposes only.
- 3 Errors 72 and 73: These errors will not affect the operation of the AMT12 and the error would only be recorded in the error log. Replacing the lower PCA would only resolve the repeated recordings of the error in the error log.

74, 75, 76, 77

Flat Belt Count, Mismatched console

Applies to

AMT12, all models

Issues Symptoms

The upper PCA and lower PCA compare the stride count record written on each EEPROM.

- **Error 74:** The lower PCA stride count is less than that of the upper PCA, and the upper PCA is less than 30,000 strides.
- **Error 75:** The lower PCA stride count is less than that of the upper PCA, and the lower PCA is less than 30,000 strides.
- **Error 76:** The lower PCA stride count is greater than that of the upper PCA, and the upper PCA is greater than 30,000 strides.
- **Error 77:** The upper PCA stride count is greater than that of the lower PCA, and the lower PCA is greater than 30,000 strides.

The events will be recorded to the error log during the workout summary and the lower PCA stride count record is written to the upper PCA EEPROM.

The most likely cause of these errors is that upper PCA or lower PCA was replaced during troubleshooting, utilizing the related board from an adjoining unit. See Note below.

Troubleshooting steps

In general, no action is needed. This is an event that has been recorded to the error log.

Troubleshooting Note:

If you are swapping a PCA to perform troubleshooting, note the process below to prevent the stride count odometer from being prematurely overwritten.

- When you stop pedaling the AMT, the AMT will pause for 20 seconds, and then give a 10 second workout summary (which is when the records are written between the PCA's). After the PCA is replaced and testing the AMT is complete you will need to unplug the data cable from either PCA within the 20 second pause period to prevent the summary from happening. If the AMT is prevented from going into the summary, the stride count will not be overwritten.
- When testing is complete make sure that each PCA board is replaced in the original unit from which it was removed. The only exception to this would be if you find a bad board that needs to be replaced.
- All of these functions will place a code in the error log, and they should be cleared before returning the unit to use.

78, 79

Flat Belt Replacement

Applies to

AMT 12

Issue Symptom

The AMT12 flat belt system has a predetermined life span of 100,000,000 (100M) strides. The AMT12 maintains a stride count independent from the overall machine stride count. When this stride count reaches 90,000,000 (90M) strides, error 78 is recorded in the error log and displays a message, alerting that the flat belts need to be replaced soon. Normal workout operation is still available. When the stride count reaches 100M strides error 79 is recorded in the error log and displays a message, indicating that the flat belts must be replaced. If this occurs during a workout the user will be able to continue the workout until ended. No further workouts will be allowed until the stride count is reset in the console after the belts have been replaced.

Troubleshooting steps

- 1 Replace all four flat belts.
- 2 Reset the flat belt stride odometer.

80, 81, 82, 83

Phase A or B Missing / Incline Control

Applies to

P30 Console, all products

Issue Symptoms

The main symptoms for these errors are lack of control for incline and speed (TRM) or resistance and crossramp (EFX, AMT). These errors will occur upon “lack of” or broken hardware communication. The sensors communicate through an 8-pin connection. Pins 1-3 are incline controls; pins 6-8 are drive (speed or resistance) controls.

- Error 80 - Incline (or crossramp) will stop at current incline. Error 80 is displayed when there is a missing incline signal on pins 1 or 2. Restart is not needed to clear the error, self-recovery possible when the control is returned to the center position.
- Error 81 - Incline (or crossramp) will stop at current incline. Error 81 is displayed when there is a missing incline signal on pin 3. Restart is not needed to clear the error, self-recovery possible when the control is returned to the center position.
- Error 82 - Speed will decrease at 0.1mph per key press until belt stops. Error 82 is displayed when there is a missing drive signal on pins 6 or 7. Restart is not needed to clear the error, self-recovery possible when the control is returned to the center position.
- Error 83 - Speed will remain at current speed. Error 83 is displayed when there is a missing drive signal on pin 8. Restart is not needed to clear the error, self-recovery possible when the control is returned to the center position.

The most likely causes for these errors are a loose or disconnected connector to the upper PCA, damaged cables, or a faulty machine control.

Troubleshooting steps

- 1 Check the Error log for multiple occurrences of the error with the same odometer reading. Clear the error log, and cycle power to the machine.
- 2 Open the console and check the connectors. Ensure that they are securely connected to both the upper PCA and to the machine control.
- 3 Check the cable for visual damage; use an ohmmeter to verify continuity on each line. Replace both the cable and machine control if a fault is found.
- 4 Inspect the machine control for corrosion or damage, and replace both the machine control and cable if any damage is found.
- 5 Review the software version of the P30. If the user states the issue is related to the machine controls not working as designed, the P30 software may need to be updated in addition to the replacement of the machine control and cable assemblies. Current software versions are available on the Precor Connection website.

84

Strain Gauge Response Too High

Applies to

Chrono

Issue Symptoms

Strain gauge response is, or has been, detected as too high. This error is only detected or cleared while **NOT** pedaling. The LPCA software has an Auto-Cal operation that zeros the torque when the user stops pedaling. Auto-Cal operation should show some change when pedaling is stopped. See below:

- Seconds after pedaling stopped, and with **NO** pedaling, the torque should reset to 0 – this is normal.
- If the user stops with the resistance knob at a high resistance AND the torque reading has a large difference, this will cause power readings to be wrong for the user.
- This issue can be resolved if the user **reduces** the resistance **and** stops pedaling, which will zero the unit properly.

This can be a temporary condition due to some user pedaling/resistance settings and residual torque difference modalities.

Troubleshooting steps:

- 1 Use Torque service test to see real time responses.
- 2 While pedaling, the response should vary based on the position of the resistance knob and, to a small amount, vary with the pedaling rate. If the torque remains the same, the strain gauge is broken or the cable or cable connection is defective.
 - a. Check all connections. If the issue persists, replace the caliper.
- 3 If the value varies but is large at minimal resistance, the caliper gauge may have been deformed by mechanical stress.
 - a. Check all connections. If the issue persists, replace the caliper.

85

No Dynamic Brake Resistor Detected

Applies to

TRM800.v2

Issue Symptoms

The dynamic brake resistor (DBR) is designed to absorb the excessive current produced by the drive motor running faster than it is being driven. When the Machine Controller boots up, it checks for the resistor to be plugged in. If it does not detect the DBR an error 85 will be displayed. It will only be displayed briefly when power is applied to the MC. The most probable cause for this is the DBR not being plugged in, or it is open due to overheating or a broken cable.

Troubleshooting steps

- 1 Visually determine if the DBR is connected to the MC. Ensure the cable connector is securely fastened and locked to the MC connector.
- 2 Use a multimeter to measure the DBR. It should read 100 ohms. If this is significantly higher than 100 ohms replace the resistor.

86-87

Console Mismatch

Applies to

TRM and EFX with P10/P30 consoles

Issue Symptoms

The P10 and P30 consoles have specific software versions for communicating with the proper LPCA. Installing a console with mismatched software between the console and lower board will cause an error to be displayed.

NOTE: The MCU's for the TRM 600, 700, and 800 are model specific, so errors 86 and 87 will be triggered if the incorrect version of the TRM MCU is installed.

Troubleshooting steps

- 1 Check to ensure proper LPCA/MCU is installed. Replace if not.
- 2 Update the console software to the correct/current version.

88

Drive Motor Temperature Too High

Applies to

TRM800.v2

Issue Symptoms

The MC monitors both the current delivered to the drive motor and a thermal switch connected from the motor to the MC. When the software perceives that excessive current has been required, an error 88 will be displayed. Cycling power will allow the treadmill to restart. Additionally, a thermal switch is imbedded into the drive motor housing. When the motor exceeds a certain temperature, an Error 88 is displayed, and the treadmill stops until the switch closes when the temperature drops.

Troubleshooting steps

- 1 Disconnect the thermal switch from the MC and using an ohmmeter measure across the switch. If the motor is hot and the switch is open, allow the motor to cool and repeat the test. If the motor is not hot and the switch is open, replace the motor.

89

Line Voltage Too High

Applies to

TRM800.v2, TRM700

Issue Symptoms

Error 89 will trip when the MCU detects an input voltage greater than 160v for more than 10 seconds. This error is meant to prevent 120v units from being operated if plugged into a 240v power source. The console will display the please use another treadmill banner and the treadmill will be unusable.

Troubleshooting steps

- 1 Check the unit make sure the correct unit is being used for the applicable power source.
- 2 Clear the error and cycle power on the machine.

90 to 95

Engineering Information

Applies to

TRM800.v2, P30

Issue Symptoms

The Machine Control has not sensed correct movement of the controls.
Errors 90 and 91 may be present when an Error 80 or 82 occurs.

Troubleshooting steps

Test the function of the machine control using the Keyboard Test in the Hardware Validation menu.
Use the troubleshooting steps for errors 80-83.
If these errors are present, record all of the information for this error and send this information to Precor Customer Support.

96, 97, 98

USB Stick Reading Errors

Applies to

Chrono

Issue Symptoms

The service test has attempted to access the USB memory stick and has detected on of the following:

- E96 – USB stick is not detected
- E97 – does not see a valid file or file structure
- E98 – does not see a valid setup.ini or program.ini data file

Note: These errors will only appear in the text string of the display. They will not be logged.

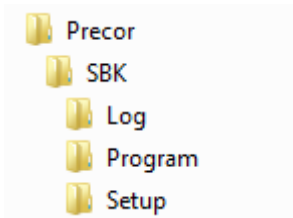
Troubleshooting steps:

E96

- 1 Verify the size and directory format of the USB stick – **limitation is 32GB and “FAT32” structure.**
- 2 Try another USB stick (or insert the current one into a separate console). If the USB stick is good, the console should be replaced.

E97

- 1 Verify the size and directory format of the USB stick – **limitation is 32GB and “FAT32” structure.**
- 2 Review the File structure and components within the directory on the stick. File structure should be:



- 3 Missing files or sub-directories are the most common reason for E97.

E98

- 1 Verify the size and directory format of the USB stick – **limitation is 32GB and “FAT32” structure.**
- 2 Review the program.ini or setup.ini non-commented lines. There may be a problem in the text files.
- 3 Edit or replace with unedited files.

LS

Speed Sensor Signal Missing

Applies to

9.23, 9.27

Issue Symptoms

This error is displayed in the display's TIME window when the drive motor speed signal is not received from the speed sensor for eight consecutive seconds. When the LS error occurs, all drive motor and lift motor motion is halted and the display is blanked except for the error display. The treadmill utilizes a reed switch and two magnets in the drive roller pulley as a speed sensing system.

The most likely causes for this are the speed sensor wiring having an intermittent or open connection, an intermittent or defective reed switch, or bad drive motor brushes. Least likely but possible is a bad upper PCA.

Troubleshooting steps

- 1 Check the reed switch wiring and connection to the lower PCA.
- 2 Check the reed switch using an ohmmeter while rotating the drive pulley. The reed switch will close when a magnet passes in front of it.
- 3 Replace both drive motor brushes.
- 4 Substitute a known good upper PCA to determine if the upper PCA is bad.

ERR

EEPROM Problem

Applies to

9.23, 9.27

Issue Symptoms

This error is displayed in the display's TIME window when the EEPROM is damaged or unable to retrieve or store data. When the Err error occurs, all drive motor and lift motor motion is halted and the display is blanked except for the error display. This error indicates an upper PCA problem when they are consistently displayed. Failures causing these error messages to be displayed are rare.

Troubleshooting steps

- 1 If the error message is consistently displayed when the unit is powered up, the upper PCA should be replaced. It is possible to see one of these messages displayed intermittently due to external causes. If the input AC significantly dips during the power up test sequence, the test could fail resulting in one of these messages being displayed. Treadmills operating on non-independent AC circuits may see these messages displayed on an intermittent basis.

E2

Lift Error

Applies to

9.23, 9.27

Issue Symptoms

This error is displayed in the display's TIME window indicating an incline problem. This error will occur if the incline is unable to move or if the incline position potentiometer is not functioning. When the E2 error occurs, all drive motor and lift motor motion is halted and the display is blanked except for the error display.

Troubleshooting steps

- 1 Refer to the sections for error 40 and error 42 above.

E4

Incomplete Initialization

Applies to

9.23, 9.27

Description

This error is displayed in the display's TIME window indicating an incomplete upper PCA to lower PCA initialization has occurred. When the E4 error occurs, all drive motor and lift motor motion is halted and the display is blanked except for the error display.

Troubleshooting steps

1. Run the initialization program per procedures of the 9.23, 9.27 service manual.