Electrical Troubleshooting

Bowflex 3, 5 and 7 Series Treadmills

Nautilus International SA

"Changing the game in health and fitness"™

Service and Manufacturing Modes

Metric or English units selection

Units selection is a user preference and should therefore be easily accessible to the user, and clearly described in the owner's manual.

In order to set up the console for English or Metric units, do the following:

1. Press and hold the Enter/Cooldown button for 3 seconds while in sleep mode.
2. The beeper will sound once and the current units (Eng or Si) will be shown in the left {Multi-Function} display.
3. Continue holding the Enter/Cooldown button. After 3 seconds, the new units (Si or Eng) will be shown in the left {Multi-Function} display.
4. Release the Enter/Cooldown button. After 2 seconds, the new units will be saved, the beeper will sound twice and the unit will enter sleep mode.

Run-time Error Codes

Error Message	Location of Indication	Cause of Error	Result
Err OS	Incline/Speed display	Over Speed	Pulls belt relay
Err LS	Incline/Speed display	Loss of speed sensor	Slows belt to a controlled stop
Lub bELt	Incline/Speed display	250 miles of travel since last display; time for belt/deck maint.	Displays message at wake-up; cleared by user.

- **"Err OS"**
  If an Over Speed error occurs, the belt relay will be pulled, "Err" will be shown in the left {Time} display and "OS" will be shown in the right {Multi-Function} display.
- **"Err LS"**
  If a Loss of Speed sensor signal is detected, the belt will be driven to a controlled stop, "Err" will be shown in the left {Time} display and "LS" will be shown in the right {Multi-Function} display.
- **"Lub bELt"**
  The lubricate belt message will be displayed for each 250 miles of belt travel. The message "Lub bELt" will be shown in the left and right displays upon waking up from sleep mode and will remain there until any key is pressed. Once any key is pressed, the weight menu is activated.

Diagnostic Mode Specification

This section describes features hidden from the user.

Hidden Menus

To enter Hidden Menus selection, press the Enter/Cooldown and Power keys for 3 seconds while in sleep mode. The text “CAL” will appear on the left {Multi-Function} display indicating the Calibration option. To run the Speed and Incline Calibration, press the Start/Pause key or to select another hidden menu, use the Incline Arrow keys to cycle through the other available options (Configuration Parameters, Production Test and Initialize NVRAM).

Speed and Incline Calibration

To enter the Speed and Incline Calibration, press and hold the Enter/Cooldown and Power keys for 3 seconds while in sleep mode until the text “CAL” appears on the left {Multi-Function} display. Release the Enter/Cooldown and Power keys. Press the Start/Pause key to begin the Calibration process. [The treadmill owner may also access the automatic speed calibration by following these instructions (as described in the owner’s manual): Press the Emergency Stop key and hold (or pull safety pin). Press the Incline Up and Incline Down keys and hold. Release Emergency Stop key (or replace safety pin). You will hear a beep. Release the Incline Up and Incline Down keys. The unit will then continue as shown below.] The max speed value will appear in the left {Time} display and the max incline value will appear in the right {Multi-Function} display. The max speed will be followed by either an “E” for English units or ‘n’ for Metric units. Pressing the Incline Up, Incline Down or Start/Pause key will toggle the units between English and Metric. Modifying units will change the max speed to the correct units. (If display shows 12.0E, it will toggle to “19.2n” representing a max speed of 19.2 KPH and metric units.) Pressing the Enter/Cooldown key saves changes to the units value. Next, the text “CAL”, “PrES”, “Strt” will be repeatedly shown in the left {Time & Multi-Function} displays. Pressing the Start/Pause key begins the calibration process. Pressing the Power key will exit automatic calibration.

Automatic Speed and Incline Calibration

The Incline display {None} will show current elevation potentiometer counts, the right {Multi-Function} display will show the current incline voltage, the left {Time} display will show the current PWM counts and the Speed display will show the actual speed. (Note: the Trimline model only had 3 displays. On this model, the Multi-Function display will show the current incline voltage. The current elevation potentiometer counts will not be displayed.) The Automatic Speed and Incline Calibration will run simultaneously. The treadmill will automatically run to the maximum grade position, save the value then run to the minimum grade position. (If the treadmill is wired for a reversed feedback potentiometer, the software will automatically adjust for this.) The speed calibration will calibrate at the minimum speed (0.5 MPH or 0.8 KPH), half of maximum speed and at maximum speed. Once calibration is complete, the belt will stop and the text “CAL”, “PASS” will continuously be shown in the left {Time & Multi-Function} display (if no errors occurred). Press the Power key to exit automatic calibration.

Calibration Error Codes

If calibration fails, an error code will be continuously shown in the left {Multi-Function} display and calibration will end. There are two calibration error codes which may be shown:

Indication Description

“CAL”, “FAIL”, “Err” “Spd” AutoCalibration runs 3 minutes or longer without completion.
“CAL”, “FAIL”, “Err”, “EL” Grade pot failure or Grade motor failure

If the Power key is pressed during auto-calibration, the belt and grade will stop moving and the unit will enter Sleep Mode. If the Start/Pause key is pressed during auto-calibration, the unit will pause auto-calibration and the left {Time & Multi-Function} display will show “CAL”, “StOP”, “ “,“PrES”, “Strt”. Press the Start/Pause to resume auto-calibration. If the Enter/Cooldown button is pressed while in auto-calibration pause mode, the unit will enter Manual Speed and Incline Calibration.

Speed and Incline Calibration - First Time Power-up (Boot Clear)

When treadmill boards are received from the manufacturer, they will be calibrated as follows:

Apply power to board. The text “boot” will appear in the left {Time} display and the text “Clr” will appear in the right {Multi-Function} display. (During this time, NVRAM will be initialized with default values.)

Next, the English/Metric Selection Screen will appear. The max speed value will appear in the left {Time} display and the max incline value will appear in the right {Multi-Function} display. The max speed will be followed by either an “E” for English or ‘n’ for Metric units. Press the Incline Up, Incline Down or Start/Reset key to toggle the units between English and Metric. Modifying units will change the max speed to the correct units (i.e. if display shows 12.0E, it will show 19.2n after the Incline Up key, Incline Down key or Start/Reset is pressed). Press the Enter/Cooldown key to save changes to the units value. Press the Start/Stop key to automatically begin the calibration process. If calibration is not run at this time, the treadmill will operate with default values, but actual speed and grade values may not be accurate. After each subsequent Power-down and Power-up, the message “boot Clr” will appear in the left and right {Time & Multi-Function} displays until calibration is performed and completed successfully. When calibration is complete, press the **Power** key to exit automatic calibration.

Configuration Parameters

To enter the Configuration Parameters menu, press and hold the Enter/Cooldown and Power keys for 3 seconds while in sleep mode until the text “CAL” appears in the left {Multi-Function} display. Release the Enter/Cooldown and Power keys. Use the Speed or Incline Arrow keys to scroll to the “ConF” selection. Press the Start/Pause key to begin configuring parameters. Use the Incline Arrow keys to begin scrolling through parameters. The following parameters may be modified: Maximum Speed, Maximum Incline, Maximum Weight, Units, Total Hours, Total Distance, Roller Diameter and Maximum Countdown Time. Use the Speed Arrow keys to change the value of modifiable parameters. Press Enter / Reset to save each new value. The text “Updt” will flash in the left {Multi-Function} display when the change is saved. Press the Power key to exit configuration. See the Initialize NVRAM section for instructions on selecting the default values for these parameters. [If new values are entered (and saved) for either Maximum Speed, Maximum Incline or Roller Diameter, the treadmill will be forced to run auto-calibration when the Power key is pressed.]

Maximum Speed

The text “SPd” will appear in the left {Time} display and the current maximum speed value (in mph or kph) will appear in the right {Multi-Function} display. Valid values are 6.0 - 12.0 mph (or 9.6 - 19.2 kph).

Maximum Incline

The text “Grd” will appear in the left {Time} display and the current maximum incline value (percent) will appear in the right {Multi-Function} display. Valid values are 10% - 15%.

Maximum Weight

The text “lbs” will appear in the left {Time} display and the current maximum weight (in pounds) will appear in the right {Multi-Function} display. Valid values are 50 - 400 lbs.

Total Hours

The text “hour” will appear in the left {Time} display. Total treadmill hours will appear in the right {Multi-Function} display. Total treadmill hours will be a number between 0 and 9999. The following key sequence will reset the total treadmill hours to zero: Speed Up, Speed Up, Start/Pause, Start/Pause, Speed Up and Speed Up. Pressing any key out of sequence will cancel the reset. For instance, if "Speed Up, Speed Up, Start/Pause, Start/Pause, Speed Up, Incline Up, Speed Up" is pressed, the reset will not occur. Each time a key is pressed "out of sequence", the reset is canceled and the sequence must be reentered. This "secret" sequence is not to be used by the treadmill owner. The sequence is intended to be used by authorized repair technicians only.

Total Distance

The text “dISt” will appear in the left {Time} display. The total treadmill miles will appear in the right {Multi-Function} display. Total treadmill miles will be a number between 0 and 9999. The following key sequence will reset the total treadmill miles to zero: Speed Up, Speed Up, Start/Pause, Start/Pause, Speed Up and Speed Up. Pressing any key out of sequence will cancel the reset. For instance, if "Speed Up, Speed Up, Start/Pause, Start/Pause, Speed Up, Incline Up, Speed Up" is pressed, the reset will not occur. Each time a key is pressed "out of sequence", the reset is canceled and the sequence must be reentered. This "secret" sequence is not to be used by the treadmill owner. It is intended to be used by authorized repair technicians only.

Maximum Countdown Time

The text “Cntd” (countdown) will appear in the left {Time} display and the current maximum countdown value (in minutes) will appear in the right {Multi-Function} display. Valid values are 5 - 99**.**

Contrast Adjustment (LCD console versions only)

The text “Cntr” (contrast) will appear in the Left-Center display and the current contrast value (1-15) for each of the three LCD displays will appear in the Incline, Speed, and Right-Center displays, representing contrast values for the Left, Right, and Center LCD displays, respectively. Use the Speed Up/Down buttons to adjust the contrast value, and the Incline Up/Down buttons to select which contrast value is being changed.

Production Test

To enter the Production Test, press and hold the Enter/Cooldown and Power keys for 3 seconds while in sleep mode until the text “CAL” appears on the left {Multi-Function} display. Release the Enter/Cooldown and Power keys. Use the Speed or Incline Arrow keys to scroll to the
“Prod” selection. Press the Start/Pause key to begin the Production Test.
The current software version number will be displayed in the right {Time} display while the EPROM checksum is calculated, then the checksum will appear in the left {Multi-Function} display for 3 seconds. Next, the display tests will begin. All of the segments on each custom LCD will be illuminated for 4 seconds. The displays will then clear and the 7-segment LCDs will light each of the 7 segments, and the decimal point, individually for ¼ of a second each. Next, each horizontal row in the profile matrix will be lit for ¼ of a second each, followed by each of the vertical columns , illuminating for a ¼ of a second each. Next, each segment of the manual track will light in sequence. Press the Scan/Select key to pause the automatic display sequence and enable manual display selection. Use the Speed Arrow keys to step forward (Speed Up) or backward (Speed Down) through the current display (segments, rows, columns or track). Press the Scan/Select key again to return to the automatic display sequence. The entire LCD test will then repeat until the Start/Pause key is pressed. After 2 seconds, the displays will then be cleared and the diagnostic testing will begin. The text “tSt “ will appear in the left {Time} display and the results of the diagnostic test will appear in the right {Multi-Function} display for 2 seconds.

Indication Description

“PASS” All tests were passed successfully
“Err1” RAM failure
“Err2” ROM failure
“Err4” NVRAM failure

Next, the key test will begin.

If the **Incline Up** key is pressed, " UP " is shown in the Multi-Function display.
If the **Incline Down** key is pressed, " dn " is shown in the Multi-Function display.
If the **Speed Up** key is pressed, "FASt” is shown in the Multi-Function display.
If the **Speed Down** key is pressed, " SLO" is shown in the Multi-Function display.
If the **Start/Pause** key is pressed, "Strt" is shown in the Multi-Function display.
If the **Enter/Cooldown** key is pressed, "Entr" is shown in the Multi-Function display.
If the **Scan/Select** key (Trimline model) is pressed, “SCAn” is shown in the Multi-Function display.
If the **Scan left** key is pressed, "ScnL" is shown in the left display.
If the **Scan right** key is pressed, "Scnr" is shown in the left display.
If the **Fan Power/Low** key is pressed, "Lo" is shown in the left display.
If the **Fan Medium** key is pressed, "nnEd" is shown in the left display.
If the **Fan High** key is pressed, "High" is shown in the left display.
If the **Speed 0** key pad key is pressed, " 0 " is shown in the left display.
If the **Speed 1** key pad key is pressed, " 1 " is shown in the left display.
If the **Speed 2** key pad key is pressed, " 2 " is shown in the left display.
If the **Speed 3** key pad key is pressed, " 3 " is shown in the left display.
If the **Speed 4** key pad key is pressed, " 4 " is shown in the left display.
If the **Speed 5** key pad key is pressed, " 5 " is shown in the left display.
If the **Speed 6** key pad key is pressed, " 6 " is shown in the left display.
If the **Speed 7** key pad key is pressed, " 7 " is shown in the left display.
If the **Speed 8** key pad key is pressed, " 8 " is shown in the left display.
If the **Speed 9** key pad key is pressed, " 9 " is shown in the left display.
If the **Incline 0** key pad key is pressed, " 0 " is shown in the left display.
If the **Incline 1** key pad key is pressed, " 1 " is shown in the left display.
If the **Incline 2** key pad key is pressed, " 2 " is shown in the left display.
If the **Incline 3** key pad key is pressed, " 3 " is shown in the left display.
If the **Incline 4** key pad key is pressed, " 4 " is shown in the left display.
If the **Incline 5** key pad key is pressed, " 5 " is shown in the left display.
If the **Incline 6** key pad key is pressed, " 6 " is shown in the left display.
If the **Incline 8** key pad key is pressed, " 8 " is shown in the left display.
If the **Incline 10** key pad key is pressed, " 10 " is shown in the left display.
If the **Incline 12** key pad key is pressed, " 12 " is shown in the left display.

A Pulse test will run simultaneously with the key test. Whenever a pulse (heart beat) is received by the Polar interface type heart rate receiver module, the “decimal point” of the 3rd digit of left {Time} display will blink. During this test, pulse will be displayed in the the left {Time} display, left justified. If no pulses are received, “----” will appear in the the left {Time} display.

Press the **Power** key to exit the Production Test.

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