Tuff Tread

502 W. Montgomery STE 120
Willis, TX 77378
PH: (800)827-2017   FAX: (888)898-8974
www.TuffTread.com

Calibration & Setup
For 4600PR, 4600PRC and 4600HRT Models

NOTE: After you begin either of the calibration processes or the advanced parameter setup process, you must complete the process by pressing ENTER repeatedly until the lights go out and the treadmill enters normal mode. If you exit the process by shutting down the power or pulling the stop magnet, your settings will not be saved.

Short Cuts: Hold down the UP, FASTER and PROGRAM buttons to skip speed calibration and move into grade calibration. Keep holding UP, FASTER and PROGRAM to advance to the "Advanced Parameter Setup", and then to "Factory Test Mode."

Speed Calibration

1. Hold down the UP, FASTER and PROGRAM buttons until "SPd CAL" is displayed, then release.

2. Press POWER to start the speed calibration by setting the minimum speed.

3. Use the FASTER and SLOWER buttons to adjust the speed of the treadmill to 0.5 mph. The upper left window will display a PWM value that can be used to approximate the correct speed, but this number can vary widely. Start with the number 26 in the upper left window, then count the belt revolutions to set the speed correctly. Count the belt revolutions by watching for the belt seam, or put a piece of masking tape or a chalk mark on the belt. 0.5 mph is equal to 4 belt revolutions per minute.

4. Press ENTER to proceed to the maximum speed setting.

5. Use the FASTER and SLOWER buttons to adjust the speed of the treadmill to 12 mph. The upper left window will display a PWM value that can be used to approximate the correct speed, but this number can vary widely. Start with the number 173 in the upper left window, then count the belt revolutions to set the speed correctly. Count the belt revolutions by watching for the belt seam, or put a piece of masking tape or a chalk mark on the belt. 12 mph is equal to 94 belt revolutions per minute.

6. Press ENTER to proceed to the mid-point speed setting.

7. Use the FASTER and SLOWER buttons to adjust the speed of the treadmill to 5.5 mph. The upper left window will display a PWM value that can be used to approximate the correct speed, but this number can vary widely. Start with the number 85 in the upper left window, then count the belt revolutions to set the speed correctly. Count the belt revolutions by watching for the belt seam, or put a piece of masking tape or a chalk mark on the belt. 5.5 mph is equal to 43 belt revolutions per minute.

8. Press ENTER to save the settings and complete the speed calibration process.

The speed calibration process is complete. If the board was previously calibrated, the treadmill will return to the idle state – ready for normal operation. If the board has never been calibrated before, the display will automatically proceed to incline calibration.

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Short Cuts: Hold down the UP, FASTER and PROGRAM buttons to skip speed calibration and move into grade calibration. Keep holding UP, FASTER and PROGRAM to advance to the "Advanced Parameter Setup", and then to "Factory Test Mode."

Grade Calibration

1. Hold down UP, FASTER and PROGRAM buttons until "Grd CAL" is displayed then release.

2. Press POWER to begin the grade calibration process and set the maximum grade. The treadmill will incline all the way up and stop.

3. Press ENTER to save the setting and proceed to the minimum grade setting. The treadmill will decline all the way down and stop.

4. Press ENTER to save the settings and proceed to the potentiometer test.

5. If everything is working properly "PASS" should be displayed in the "Time" window.

6. Press ENTER to save the settings and complete the grade calibration process.

Grade calibration process is complete. The treadmill will return to the idle state – ready for normal operation.

Note: The "Calories/Mets/Watts" window will display the lift motor potentiometer voltages. This number should go up and down smoothly. If the pot reads erratically during the calibration process, "PF" (pot failure) will be displayed in the "Time" window.

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Advanced Parameter Setup
For ST4600PR, 4600PRC and 4600HRT Models

NOTE: The Advanced Parameter Setup process is **not required** to calibrate or re-calibrate a display board. Some of the settings are useful for customizing your treadmill display or behavior. After you begin the advanced parameter setup process, you must complete the process by pressing ENTER repeatedly until the lights go out and the treadmill enters normal mode. If you exit the process by shutting down the power or pulling the stop magnet, your settings will not be saved.

Shortcut to set security code and to view mileage and hours meter:
While the lights are off, press and hold the SLOWER and DOWN buttons for 4 seconds to enter P11 – Secure Startup, then press ENTER to advance to the odometer and hour meter.

Parameters:

To enter the parameter setup mode, press and hold UP, FASTER, and PROGRAM until the display shows P1 in the top left corner, then release. To continue to the factory test, keep the UP, FASTER, and PROGRAM buttons held down.

P1 – Units
  1. Use UP or DOWN to toggle the units between metric and English
  2. Set Distance/Pulse window to "br1" for English (miles).
  3. Set Distance/Pulse window to "S1" for Metric.
  4. Press ENTER to save the setting and proceed to the next parameter.

P2 – Max Calibration Grade
  1. Use the UP and DOWN buttons to set Distance/Pulse window to "15.0".
  2. Press ENTER to save and proceed.

P3 – Maximum Grade
  1. Use the UP and DOWN buttons to set Distance/Pulse window to "15.0".
  2. Press ENTER to save and proceed.

P4 – Minimum Speed
  1. Use the UP and DOWN buttons to set Distance/Pulse window to "0.5".
  2. Press ENTER to save and proceed.

P5 – Maximum Speed
  1. Use the UP and DOWN buttons to set Distance/Pulse window to "12".
  2. Press ENTER to save and proceed.

P6 – Midpoint Speed
  1. Use the UP and DOWN buttons to set Distance/Pulse window to " 5.5".
  2. Press ENTER to save and proceed.

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P7 – Roller Diameter (inches)
1. Use the UP and DOWN buttons to set Time window to "2.500".
2. Press ENTER to save and proceed

P8 – PWM Correct
1. Use the UP and DOWN buttons to set Distance/Pulse window to "0".
2. Press ENTER. to save and proceed.

P9 – Pause Duration
This parameter sets the amount of time the unit will stay in the pause mode before automatically powering down. The default is 30 seconds.
1. Use FASTER or SLOWER Buttons to change the pause duration displayed in the Time window.
2. Press ENTER to save and proceed.

P10 – Secure Startup
Setting this parameter to ON requires the startup key sequence (DOWN, START, UP) to be entered after the POWER key is pressed to turn the unit on. Setting this parameter to OFF disables this feature.
1. Use the UP and DOWN buttons to toggle the secure startup on or off.
2. Press ENTER to save the setting and proceed to the next parameter.

P11 – Timeout
Use this setting to adjust the amount of time before the treadmill will automatically shut down without input. Default value is 30 seconds.
1. Use the UP and DOWN buttons to increase or decrease the value.
2. Press ENTER to save the setting and proceed to the next parameter.

P12 – Serial Communication
Some treadmills are set up for communicating to external devices via a serial connection. Use this setting to turn serial communication on or off. Default is off.
1. Use the UP and DOWN buttons to toggle serial communication on or off.
2. Press ENTER to save the setting and proceed to the next parameter.

P13 – Elevation Input
Use this setting to switch between "HEf" for Hall Effect Sensor input and "Pot" for standard potentiometer input. Default is "Pot"
1. Use the UP and DOWN buttons to switch between inputs.
2. Press ENTER to save the setting and proceed to the next parameter.

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P14 – Heart Rate Input
> Use this setting to switch between serial input and pulsed input. Default is serial input.
> 1. Use the UP and DOWN buttons to toggle this setting.
> 2. Press ENTER to save the setting and proceed to the next parameter.

P15 – Program Set
> **Factory setting**: Default is PS1. Call us before attempting to change this setting. In general, you should not change this from what it was set to at the factory.
> 1. Use the UP and DOWN buttons to toggle between PS1 and PS2.
> 2. Press ENTER to save the setting and proceed to the next parameter.

P16 – Acceleration
> Increasing this setting will cause the treadmill to accelerate at a slower rate. The default value for this setting is 0.
> 1. Use the UP and DOWN buttons to increase or decrease this value.
> 2. Press ENTER to save the setting and proceed to the next parameter.

P17 – Deceleration
> Increasing this setting will cause the treadmill to decelerate at a slower rate. The default value for this setting is 0.
> 1. Use the UP and DOWN buttons to increase or decrease this value.
> 2. Press ENTER to save the setting and proceed to the next parameter.

P18 – N/A
> This parameter is not used and will be skipped.

P19 – Odometer and Hour Meter
> 1. Displays the odometer and hours used in the large dot matrix window.
> 2. Press ENTER to save the setting and proceed to the next parameter.

Advanced Parameter Setup is complete. All display lights will go out, and the treadmill will return to the idle state – ready for normal operation.

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Factory Test
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The factory test mode is designed for testing at the production level, but may be useful for on-site debugging.

1. Hold down the UP, FASTER and PROGRAM buttons until "TEST" is displayed, then release.

2. Press POWER to start the test.

3. The first test is an individual segment test. Each segment is temporarily lit in every display. If two segments of one display come on at once or other abnormalities occur, there may be a problem with the board. Press ENTER to advance.

4. The second test is an individual display test. All segments of each display are lit together temporarily and each display is lit in sequence. If one display does not light completely or two or more displays light together there may be a problem with the board. Press ENTER to advance.

5. The third test is for the large LED in the center of the display. Each row of the large LED will light up in sequence from top to bottom. Press ENTER to advance.

6. The fourth test is also for the large LED in the center of the display. Each column of the large LED will light up in sequence from left to right. Press ENTER to advance.

7. The fifth test is the full segment test. Every LED on the board should be lit. Press ENTER to advance.

8. The sixth test is the Push Button test. The "Time" window displays S1. Press each button in the following order: UP, DOWN, POWER, START, PROGRAM, ENTER, SLOWER, and FASTER. If there is no beep for any button pushed, that button needs to be checked for proper connection. When pushing the button a click should be felt. If there is no click, the button needs to be replaced. It is not necessary to press ENTER to advance from this test.

9. The seventh test is the incline test. Press up to verify that the treadmill moves up. Press down to verify that the treadmill moves down. The number shown is the reading from the incline pot sensor. Press STOP to advance.

10. The eighth test is the speed test. The "Distance/Pulse" window should display "50" and the belt should move. Press UP or DOWN to modify the value and verify that the belt speed changes. Press STOP to advance.

11. The ninth test is for the 4600PRC or 4600 HRT (with contact heart rate) only. Verify that the heart is blinking in sync with the pulse light and that the heart rate reported is valid. Press ENTER to advance.

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12. The tenth test is the EEPROM test. The test occurs automatically and the results are displayed. Press ENTER to advance.

13. The eleventh test is the Watchdog test. If it passes, the board should reset to normal operation after one second. If it fails, the beeper will output a solid tone and the board will stay in this mode.

Test process is complete.

General Operation Failure Codes

1) The display will blink "PF" in the grade window if the pot reads erratically.

2) If the analog to digital converter on the processor fails, "CF" will be displayed in the grade window.

3) If at any time the EEPROM fails to record when a write is attempted, the message "EEPROM FAILURE" will be displayed.