Tuff Tread

502 W. Montgomery STE 120
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Calibration Instructions
Version 1.9 Display Board

NOTE: After you begin either of the calibration processes or the advanced parameter setup process, you must complete the process by pressing STOP 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 FASTER and SLOWER buttons to skip speed calibration and move into grade calibration. Keep holding the FASTER and SLOWER buttons to advance to the "Advanced Parameter Setup", and then to "Factory Test Mode."

Grade Calibration

1. Hold down the FASTER and SLOWER buttons until "Grd CAL" is displayed then release.
2. Press STOP to begin the grade calibration process. The treadmill will incline all the way up and stop.
3. Press STOP to enter the setting into memory and proceed to the decline calibration. The treadmill will decline all the way down and stop.
4. Press STOP to enter the settings into memory and complete the grade calibration process.
5. If everything is working properly "PASS" should be displayed in the Time Window.
6. Press STOP.

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

NOTE: The "Calories" 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.

Please continue with speed calibration, which is detailed on the next page.

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

Speed Calibration

1. Hold down the FASTER and SLOWER buttons until "SPd CAL" is displayed, then release.
2. Press STOP to begin the speed calibration process.
3. Use the FASTER or 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 25 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. 0.5 mph is equal to 4.5 belt revolutions per minute on a 117" belt (Treadmill serial numbers 500 to 802). 0.5 mph is equal to 4 belt revolutions per minute on a 135" belt (Treadmill serial numbers 10001 and higher).
4. Press STOP to enter the setting into memory and proceed to the high-end speed calibration.
5. Use the FASTER and SLOWER buttons to adjust the speed of the treadmill to 10 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 143 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. 10 mph is equal to 90 belt revolutions per minute on a 117" belt (Treadmill serial numbers 500 to 802). 10 mph is equal to 78 belt revolutions per minute on a 135" belt (Treadmill serial numbers 10001 and higher).
6. Press STOP to enter the setting into memory and proceed to the mid-range speed calibration.
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 84 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. 5.5 mph is equal to 50 belt revolutions per minute on a 117" belt (Treadmill serial numbers 500 to 802). 5.5 mph is equal to 43 belt revolutions per minute on a 135" belt (Treadmill serial numbers 10001 and higher).
8. Press STOP to enter the setting into memory and complete the speed calibration.

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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Advanced Parameter Setup
Version 1.9 Display Board

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 STOP 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 turn the security code on or off:
While the lights are off, press and hold the SLOWER and DOWN buttons for 4 seconds to enter P9 – Secure Startup, then use the UP or DOWN button to turn the code use on or off. Press STOP repeatedly until the display lights go out and the display enters the idle state.

Parameters:

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

P1 – Units
1. Use UP or DOWN to toggle the units between metric and English
2. Set the "Distance" window to "br1" for English (miles).
3. Set the "Distance" window to "S1" for Metric (kilometers).
4. Press the STOP button to store the setting in memory and proceed to the next parameter.

P2 – Maximum Calibration Grade
1. Use the UP and DOWN buttons to set the "Distance" window to "15".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P3 – Maximum Display Grade
1. Use the UP and DOWN buttons to set the "Distance" window to "15".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P4 – Minimum Speed
1. Use the UP and DOWN buttons to set the "Distance" window to "0.5".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P5 – Maximum Speed
1. Use the UP and DOWN buttons to set the "Distance" window to "10".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

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P6 – Mid-Point Speed
1. Use the UP and DOWN buttons to set the "Distance" window to "5.5".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P7 – Roller Diameter (inches)
1. Use the UP and DOWN buttons to set the "Time" window to "2.470".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P8 – Max Correction Factor
1. Use the UP and DOWN buttons to set the "Distance" window to "0".
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P9 – Security Code (On or Off)
Setting this parameter to ON requires the startup key sequence (DOWN, STOP, 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 or DOWN button to toggle the secure startup on or off.
2. Press the STOP button to store the setting in memory and proceed to the next parameter.

P10 – Odometer
1. Displays the odometer in the "Distance" window.
2. Press the STOP button to proceed to the next parameter.

P11 – Hour Meter
1. Displays the hours of usage in the "Speed" window.
2. Press the STOP button to proceed to the next parameter.

P12 – Factory Code
1. Displays a series of codes in the "Distance", "Speed", and "Incline" windows that are used by the service technicians at the factory to trouble shoot the treadmill by phone.
2. Press the STOP button to complete the parameter setting process.

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 FASTER and SLOWER buttons until "TEST" is displayed, then release.

2. Press STOP to begin the test process.

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 STOP to proceed to the next test.

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 STOP to proceed to the next test.

5. The third test is the full segment test. Every LED on the board should be lit. Press STOP to proceed to the next test.

6. The fourth test is the Push Button test. The "Time" window displays S1. Press each button in the following order: STOP, FASTER, SLOWER, UP, DOWN. If a beep does not sound 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 STOP to advance from this test.

7. The fifth test is the incline test. Press the UP button to verify that the treadmill moves up. Press the DOWN button to verify that the treadmill moves down. The number shown is the reading from the incline potentiometer sensor. Press STOP to proceed to the next test.

8. The sixth test is the speed test. The "Distance" window should display "50" and the belt should move. Press the UP or DOWN button to modify the value and verify that the belt speed changes. Press STOP to proceed to the next test.

9. The seventh test is the EEPROM test. The test occurs automatically and the results are displayed. Press STOP to proceed to the next test.

10. The eighth 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.

The 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.