Treadmill Belt Speed Troubleshooting

The following instruction is designed for a product owner or technician to troubleshoot speed-related issues with residential treadmills.

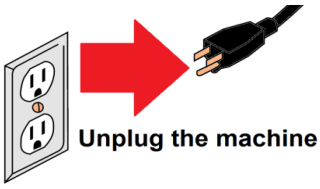
1. Confirm that the treadmill is on a dedicated circuit (i.e., it is the only appliance on the breaker) and that it is connected directly to the outlet—no extension cords, surge protectors, or splitters. Confirm that it is not connected to a GFCI outlet (see the Power Outlet section in this document).
2. Confirm that the chosen workout does not contain automatic speed control by the console—some workouts are programmed to automatically increase and decrease the speed of the belt.
3. Check the console software to ensure it is up to date with the latest version.
4. Remove the safety key and ensure the metal tab or magnets are clean. Ensure it is oriented correctly and insert it into the socket.
5. Ensure you are standing on the side rails and **not** the belt when you start a workout or press Go.
6. Apply power and verify that the running belt is properly aligned and tensioned. Instructions are available in the maintenance document "Treadmill Deck and Belt Guide".
7. **On models requiring periodic lubrication:** If the deck has not been lubricated with silicone oil in the past 3 months or 150 miles, complete the procedure now. Refer to the maintenance document "Treadmill Deck and Belt Guide" for instructions on how to check the deck and belt condition and how to apply silicone oil.
8. **T101-5 only (Serial number starts with TM734 or TM486):** The console can be susceptible to interference from cell phone signals. Consider not placing cell phones on the **lower** reading rack while using the treadmill. Applying an EMI Shielding Kit (part number ZMS4011056) to the Upper Control Board may improve performance. Installation instructions are available in the service bulletin "EMI Shielding Kit for Speed Issues".
9. Turn the treadmill off and disconnect the power cord. Stand on the side rail and use your foot to rotate the belt in the normal, forward direction. The belt should move freely, with no grinding, rubbing, or other abnormal noises. If it does not, something in the drive system is failed, worn, or out of adjustment and must be corrected.
10. **Some models:** Follow the procedure below to calibrate the speed sensor. *Important: Do not stand on the treadmill belt—stand on the side rails or the floor.*
    a. Hold Speed Down and Incline Up for about 3 seconds to access the Engineering Mode.
    b. Use the Speed Up or Down buttons to navigate to ENG2.
    c. Press Enter, and then press Start. The belt should begin moving automatically and increase speed on its own.
    d. When the belt stops and the console beeps 3 times, calibration is complete. If calibration takes more than 10 minutes to complete, the speed sensor may be mis-adjusted or faulty.
11. **T101 & TR3/TR5 only:** Follow the procedure below to verify that the speed sensor is reading accurately.
    a. Hold Speed Down and Incline Up for about 3 seconds to access the Engineering Mode.
    b. Use the Speed Up or Down buttons to navigate to ENG1.
    c. Press Enter.
    d. Step onto the running belt and place one hand on each side of the handlebars. Lean forward in a sled push stance. Push one foot backwards at a time to rotate the running belt. As you move the belt faster, the right display should show a number that increases—this is the output of the speed sensor.

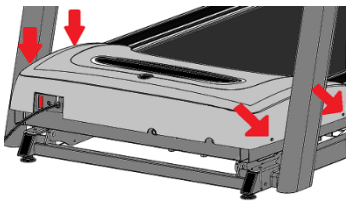
e. While standing on the side rails, press Speed Up to increase the number in the left display—this is the commanded speed signal. By setting the left display to the following values, the right display should read as indicated in the chart below:

Belt speed should change accordingly with the commanded speed. The right display should read out within 5% of these values and remain steady when the speed is not changing—remaining at 0 or fluctuating as little 10 points up or down could indicate that the speed sensor is out of adjustment, disconnected, or faulty.

TR5, TR3 TM1013, TM1012		**T101-05 TM486, TM743**	
Left	Right	Left	Right
1000	60	1000	82
2000	195	2000	216
3000	315	3000	337
4000	437	4000	459
5000	559	5000	580

<u>The next set of steps will require you to unplug the treadmill from the outlet and remove the motor cover.</u>

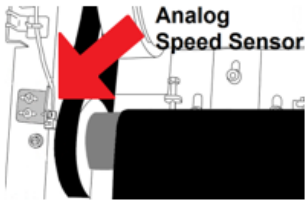




12. **On models with a digital speed sensor attached to the motor:** Ensure that the speed sensor is installed properly and has not been knocked out of alignment with the speed wheel. Use compressed/canned air to clean the internal parts of the speed sensor.

Watch the video "Treadmill Digital Speed Sensor Cleaning" on the Horizon Fitness YouTube page.

13. **On models with an analog speed sensor on the front roller:** Closely examine the magnetic speed sensor on the front roller, beside the drive belt. Ensure it is adjusted so that the sensor is ¼"/5mm from the roller, and that the magnet passes as close to the center of the sensor as possible. You may need to remove or adjust a side rail to access the speed sensor.



14. Ensure that the drive belt (which connects the motor and front roller) is aligned and tensioned.
15. Closely examine the motor control board (MCB) for any visibly failed or burned components; replace the MCB if you notice any damage.

16. Ensure that all wire and cable connections are secure and firm.
17. Confirm that there is no damage to the console cable—for instance, pinched, kinked, or scratched insulation. You may need to remove the console cable from the frame to properly inspect it.
18. Refer to the troubleshooting document “Using Your Multi-Meter” to test the drive motor, console cable, and speed sensor cable.
19. **Some models:** When the treadmill is connected to power and you turn on the power switch, you should hear 1 or 2 “clicks” from relays closing inside the motor compartment. If you do not hear any clicks, there may be no power to the MCB, or the MCB may be faulty. When the safety key is removed or installed, there should also be a click from a relay.
20. **T101 & TR3/TR5 only**: If belt speed issues continue, disconnect the treadmill speed sensor. Disconnect power and remove the motor cover, if not already removed. Locate the 3-pin plug on the top of the MCB and disconnect it. Reinstall the motor cover, apply power, and test the treadmill. If the belt speed control begins working normally, the speed sensor is likely out of adjustment or faulty.
21. Check the condition of the motor commutator and brushes. Replace brushes if they are worn or damaged; follow the instructions below to stone the commutator, and as a last resort, replace the motor.

    Stoning the Commutator

    a. Remove the cap and brush covers from the motor and insert a commutator stone perpendicular to the commutator. (See the diagram below.)
    b. Use your other hand to spin the flywheel. This process removes carbon deposits from the commutator.
    c. Use compressed air to blow the deposits out of the motor.
    d. Replace the brush and cap and run the treadmill for 15 minutes at 3-5 mph.
    e. Inspect the commutator again and repeat the stoning process if necessary.

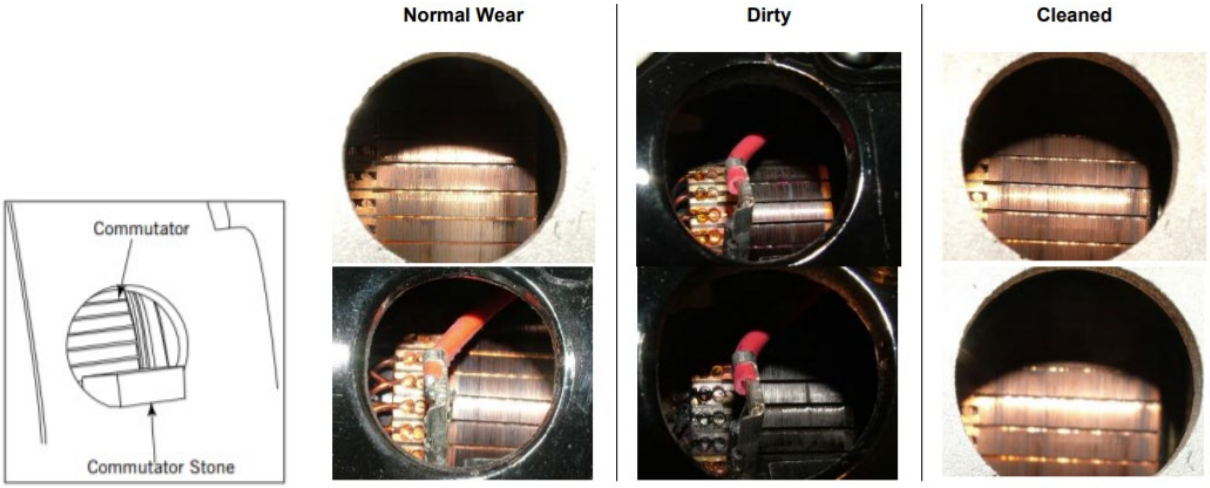


Image showing possible conditions of the commutator.

22. Reinstall the motor cover. Reconnect power, and test to verify the speed issues have been resolved.
23. **T101 & TR3/TR5 only**: If the belt stopped unexpectedly, can it be reproduced? If so, cause the belt to stop by whatever method causes the fault to occur. Without turning the power off, remove the motor cover and carefully examine the MCB. If there is a red LED illuminated on the MCB, it indicates that the motor was consuming too much power. This suggests that the belt and deck need to be lubricated or replaced, or the motor is failing.

Power Outlet

Do not use

GFCI 15A Outlet

OK

Standard 15A Outlet

OK

NEMA 5-20R 20A Outlet
(120V North America)