



Replacing the Grade Actuator Motor

 **WARNING**

DANGEROUS VOLTAGES ARE PRESENT UNDER THE TREADMILL HOOD. EXERCISE CAUTION WHEN PERFORMING SERVICE TO THE ELECTRICAL COMPONENTS UNDER THE HOOD.

 **CAUTION**

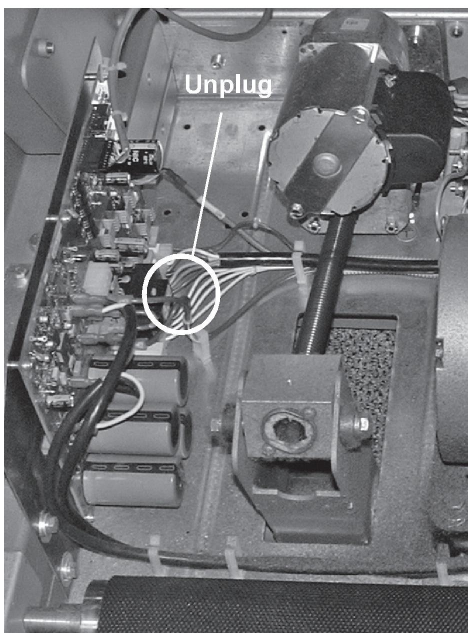
BEFORE REMOVING THE GRADE ACTUATOR MOTOR, PLACE TWO 5-INCH BLOCKS UNDER THE FRONT OF THE TREADMILL TO PREVENT IT FROM DROPPING WHEN YOU REMOVE THE MOTOR.

1.0 Remove the Treadmill Hood

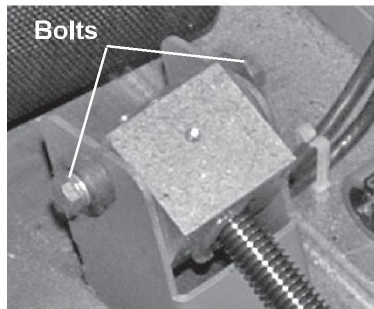
- 1.1 Place two (2) 5-inch (13 cm) blocks securely under the treadmill headframe.
- 1.2 Turn the treadmill circuit breaker off, and unplug the treadmill power cord.
- 1.3 Remove the six (6) screws on the treadmill hood.
- 1.4 Lift off the hood.

2.0 Remove the Grade Actuator Motor

- 2.1 Unplug P17 from the VSD board.



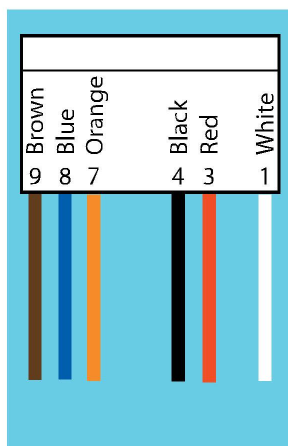
- 2.2 Remove the grade actuator ground wire using a 10-millimeter socket wrench.
- 2.3 Remove the two (2) 8-millimeter hex bolts and shoulder bushings that secure the swing arm to the grade nut block.



- 2.4 Remove the 3/8-inch hex bolt, washer, lock washer, and nut from the headframe mounting bracket, and remove the grade actuator motor. The bolt is located underneath the motor.
- 2.5 Withdraw the steel cylinder bushing from the bronze bearing.
- 2.6 Unscrew the grade block containing the actuator nut from the actuator drive screw.
- 2.7 Remove the two (2) 4-millimeter hex screws and lock washers securing the grade nut.

3.0 Install the Replacement Grade Actuator Motor

- 3.1 Lubricate and insert the steel cylinder bushing on the new actuator bronze bearing.
- 3.2 Mount the actuator grade motor onto the headframe bracket, and secure the motor with the 3/8-inch hex bolt, flat washer, lock washer, and nut.
- 3.3 Reinstall the ground wire using screw and star washer previously removed in Step 2.2.
- 3.4 Insert the black wire into pin 4 on P17, as shown below, and plug P17 onto the VSD board, lip-side up.



4.0 Zero the Grade Actuator Motor

- 4.1 Plug the Actuator cable into the VSD.
- 4.2 Plug the Power Cord into the outlet and turn the machine on.
- 4.3 On the console press the "INCLINE UP" key to 4% incline. The shaft on the Actuator will rotate for a short period of time. Wait until it stops.
NOTE: If console displays "Grade Limit Error", turn power off, then back on and repeat Step 4.3.
- 4.4 On the console press the "DECLINE DOWN" key to 0%. The shaft of the Actuator will rotate in the opposite direction. Wait until it stops.
- 4.5 Insert a new grade nut into the grade block, and secure it with the two (2) lock washers and 4-millimeter screws.
- 4.6 Thread the Grade Block Nut onto the Actuator shaft, until the tip of the shaft can barely be seen (two or three threads inside the block).
- 4.7 Lubricate the grade block, and secure it to the swing arm using the two (2) shoulder bushings and 8-millimeter screws. Tighten the screws until the bushings are flush.
Note: When installing the shoulder bushing, turn the bushings until the flat side of the bushings match the flat side of the mounting holes on the swing arm.
- 4.8 Press the "QUICK START" key, then "INCLINE INCREASE/DECREASE" keys to verify operation.

5.0 Reinstall the Treadmill Hood

- 5.1 Install the treadmill hood over the motor compartment.
- 5.2 Install the six (6) screws in the treadmill hood and tighten.
- 5.3 Plug the AC power cord into the treadmill, and turn on the treadmill circuit breaker switch.

Problems with the Drive Motor

The 3-phase AC drive motor is equipped with thermal protection circuitry. If you receive a "POWER LOSS" error that consistently reoccurs when the power is cycled to the treadmill, perform the steps below.

To verify if the thermal switch has opened:

- 1 Unplug P5 and P6 from the VSD board.
- 2 Ohm between the two wires and verify there is a short. If your reading shows an open circuit, the motor has overheated. Let the motor cool down for 60 minutes to allow the thermal switch to close. If the problem persists, replace the deck and walk belt.