

## Testing motors in the field

### Physical tests:

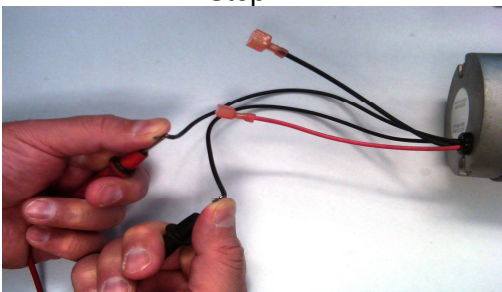
- 1) The motor should turn easily. Only a slight pulsing should be noticed caused by the magnetic components.
- 2) Some brushes may make some noise. Maybe a “squeaking” at lower speeds or a slight “whining” at higher speeds. Although it’s not common, this does not indicate a bad motor. On motors with serviceable brushes, often changing the positions, or swapping the brushes from one side to the other may eliminate the noise. Loud whining or vibrations may indicate a bad bearing, in which case the motor should be replaced.
- 3) Inspect the motor for a “burnt” smell. Look for dark liquid or tar-like substance forming around mating surfaces. These would indicate extreme overheating. The motor should be replaced.

### Electrical tests:

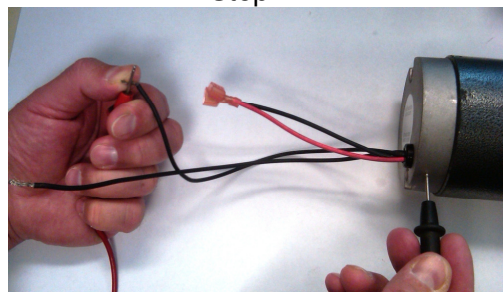
Set the meter to measure resistance (ohms,  $\Omega$ )

- 1) Connecting the meter leads across the two black wires for the thermal switch, you should measure a short (0 or close to 0 ohms).
- 2) Connect one meter lead to either wire from the thermal switch, and the other meter lead to any bare metal of the motor housing. You should get a measurement of an open circuit (infinite ohms).
- 3) Connect the meter leads to the black and red wires (motor power).  
 Short frame motors (GT300,400,500): You should get a measurement between 15-30 ohms.  
 Long frame motors (GT710): You should get a measurement between 30-50 ohms.  
 All motors: Over time carbon can build up which will make the resistance between the red and black wires rise. However, if you get a measurement well above the given values, the motor may be bad.  
 It’s also a good idea to check this reading several times, each time turning the motor shaft to a different position to check for inconsistencies. You should get the same reading regardless of the motor’s position.
- 4) Connect one meter lead to either the red or black wires (motor power), the other meter lead to any bare metal of the motor housing. You should get a measurement of an open circuit (infinite ohms).

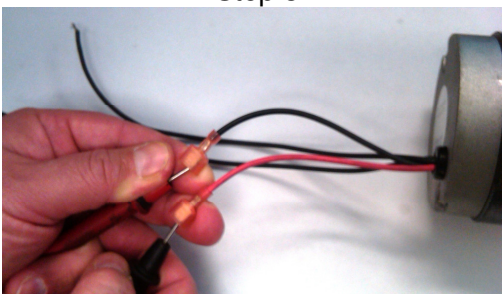
Step 1



Step 2



Step 3



Step 4

