Hand-Control Models with a Speed Coil

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Case I. Motor fails to operate (on any speed).

Step 1. Check to ensure proper voltage. Inspect all battery connection, trolling motor plug (if installed), and any butt splice connections in battery leadwire for corrosion and security.

Step 2. Check to see if lower unit runs.

- **A.** Connect battery lead wire to battery.
- **B.** Disconnect the black battery leadwire from the switch and connect it directly to the black brush lead.
- **C.** Disconnect the red battery leadwire from the switch and touch it directly to the red brush lead.
  - **C-1.** If motor does run, proceed to **Step 3**.
  - **C-2.** If motor does not run, a problem exists in the lower unit. Check the lower unit for voltage at the brushes, water damage, brushes not making proper contact, or an open or shorted armature. Repair as needed and test motor for proper operation.

Step. 3 Speed switch is defective. Replace the speed switch. Test motor for proper operation.

Case II. Motor operates on some speeds, not on others.

Step 1. Check to see if all wires are securely attached to the proper switch terminals.

Step 2. Check speed coil functionality. (There is a video of this test in Service Videos/Motors Service Videos folder titled *Speed Coil Test.*)

- **A.** Connect battery lead wire to battery.
- **B.** Disconnect the black battery lead from the switch and connect it directly to the black brush lead.
- **C.** Disconnect the red battery lead from the switch and touch it to each colored speed coil wire at the switch terminals, one at a time. The motor should run as you make each connection.
- **D.** If the motor fails to run as you touch any of the colored speed coil wires, the problem is either: (1) the speed coil is faulty and needs to be replaced; or (2) the speed coil jumper wire is not connected to the back of the brush plate (in the lower unit).
  - **D-1.** If the motor runs as you touch the red battery lead to some of the colored speed coil wires, but not all the speed coil wires, the speed coil is faulty and needs to be replaced.
  - **D-2.** If the motor runs as you touch the red battery lead to each speed coil wire, proceed to **Step 3**.

Step 3. Speed switch is defective. Replace Speed switch. Test motor for proper operation.

Case III. Motor works at all speed settings, but the customer is complaining that there is no variation between speeds.

Step 1. Perform an amp draw check while the motor is running in a water test tank.

- **A.** If the amps step up as the speed setting increases, the motor is performing as designed. (The increasing amp draw between speeds settings is not linear.)
- **B.** If the amp draw does not increase along with the speed settings check the amp draw of each speed directly through the speed coil:
  - **B-1.** Remove the control box cover. Disconnect wires at the switch from the wires to the lower unit.
  - **B-2.** With the lower unit still in a water test tank, connect -12 volts to the black motor/brush lead.
  - **B-3.** Connect +12 volts to each colored speed coil wire coming up through the motor tube from the lower unit. The motor will run (on the separate speed designations) as you make each connection. Note the amp draw as you test the different colored wires.
    - **a.** If the amp draw does not vary as you make the different connections (with the lower unit still in a water test tank) replace the front end bell/potted speed coil assembly.
    - **b.** If the amp draw does vary as you make the different connections, replace the 5-speed switch.