Foot-Control Cable Steer Models with a Speed Coil

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Case I. Motor fails to run

Step 1. Check battery connections, circuit breakers, trolling motor plug (if customer has installed a plug), and any butt splice connections in the battery leadwire.

Step 2. Remove the control box cover. Disconnect motor leads and connect 12 volts across red and black motor leads. (This applies to 12 or 24 volt models.)

- **A.** If motor does not run, the problem is in the motor lower unit. Disassemble and check lower unit for voltage at the brushes, water in lower unit, worn brushes, bad brush springs, or an open or shorted armature. Repair/replace parts as necessary.
- **B.** If motor does run, check speed selector switch connections and test speed selector switch for continuity across "A" terminal to terminals 1, 2, 3, etc… If switch tests okay, proceed to **Step 3**.
- **C.** Replace speed switch. Test motor for proper operation.

Step 3. If motor being serviced is not working in the CON position, go to **Step 4**.
If motor being serviced is not working in the MOM position, go to **Step 5**.

Step 4. With battery leads connected to power source and MOM/OFF/CON switch in the CON position, connect V.O.M. test leads across terminal block and battery (+) lead. V.O.M. should read battery voltage.

- **A.** If no voltage is noted, remove foot pedal base cover and check connections at MOM/OFF/CON switch.
- **B.** With switch in CON position, check MOM/OFF/CON switch for continuity across center terminal of switch to terminal connected to wire going to terminal block. If there is no continuity, replace MOM/OFF/CON switch. Test motor for proper operation.

Step 5. With the battery leads connected to power source and MOM/OFF/CON switch in the MOM position, connect V.O.M. test leads to terminal block on under side of foot pedal and to battery (+) leadwire or terminal "A" of 5-speed switch.

- **A.** With foot pedal momentary ON/OFF switch depressed, V.O.M. should read battery voltage.
- **B.** If no voltage is present, test foot pedal momentary ON/OFF switch for continuity with ON/OFF switch depressed**.**
  - **B-1.** If no continuity is noted, replace foot pedal ON/OFF switch. Test motor for proper operation.
  - **B-2.** If continuity is observed, go to **Step 6**.

Step 6. Check for voltage across battery (+) lead and white wire from MOM/OFF/CON switch.

- **A.** If no voltage is noted, remove foot pedal base cover and check connections at MOM/OFF/CON switch.
- **B.** Check MOM/OFF/CON switch for continuity across center terminal to momentary terminal (white wire), with switch in the MOM position.
- **C.** If no continuity, replace MOM/OFF/CON 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.** Remove the control box cover. Disconnect wires from the foot pedal from the wires to the lower unit.
- **B.** Connect -12 volts to the black motor/brush lead.
- **C.** Connect +12 volts to each colored speed coil wire coming up from the motor tube. The motor should run (on the separate speed designations) 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).
- **E.** If the motor runs as you touch the +12 volt 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.
- **F.** If the motor runs as you touch the +12 volt 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 from the foot pedal 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 endbell/potted speed coil assembly.
    - **b.** If the amp draw does vary as you make the different connections, replace the 5-speed switch.

Case IV. Motor runs fine, but steering is loose/soft or does not function.

Step 1. Remove control box cover and inspect cable conduit bracket where it attaches to the control box.

- **A.** If conduit bracket is loose or control box attach point is broken, repair/replace parts as needed.
- **B.** If conduit bracket and control box check out fine, inspect steering cables.
  - **B-1** Tighten steering cables by turning adjusting screw at foot pedal clockwise. Turn counter-clockwise to loosen steering cables.
  - **B-2** If steering cable core(s) are broken, replace steering cable assembly.
- **C.** Inspect screws at upper bearing race /pinion gear assembly. Screws may have backed out or sheared off. Replace parts, as needed. LocTite screws in place. (Later versions utilize an upper bearing race assembly with 4 screws, while earlier version just used 2 screws.)