Service Manual

FAQs

What is a Clutch-Brake?
A clutch-brake on a downrigger is essential. On a manual downrigger it allows the user to control the descent of the weight without cranking. Turn the crank handle or clutch knob slightly backward for a slow descent. Turn it further to increase the rate. Stop the weight by simply turning the handle forward again. Should the weight ever get hung up, the clutch system will slip and prevent the breakage of the unit.

What is Short Stop?
Short Stop is a Cannon exclusive feature that automatically stops the weight at the water's surface, preventing the lift motor from raising it into the pulley at the end of the boom. When the downrigger cable is in the water, a small electrical current flows between the cable and grounded metal boat components in the water. When the cable clears the water, the current flow stops. The short stop system senses this interruption and turns off the motor. The trolling weight insulator is used to break the cable contact to the water while the weight is still in the water. Stopping the weight at water level eliminates the cable strain caused by a bouncing weight or a weight hitting the boom end and it also keeps the weight from swinging into the boat hull. This feature comes on all Cannon electric downriggers and requires the boat to be properly grounded.

What is Positive Ion Control (PIC)?
This feature is based on the principle that applying a low voltage positive electrical field into the water where you're fishing will attract fish and increase your chances to catch more fish. Since fish are attracted by a slight positive charge and repelled by a strong positive or negative charge, generating and controlling the correct charge can be critical to the success of your fishing. With Cannon's exclusive Positive Ion Control you can change the natural negative field created by the grounded electrical system of your boat to a positive field. More information on how fish respond to electricity can be found in *The Secrets of Fishing with Electricity* by Ollie Rode.

What is blowback?
Simply stated, blowback is what happens to the downrigger weight when you pull it through the water behind your boat. As your speed increases, so does the horizontal distance between the weight and your downrigger. The faster you go, the farther the weight is behind you. The farther the weight is behind you, the shallower the weight is.

For example, if you are trolling @ 4 MPH with an 8 pound weight and you have 100' of cable in the water; the downrigger ball is actually at a depth of 80'.

What is the main advantage to using an electric downrigger?
The main advantage to running an electric downrigger is when it's time to bring the weight to the surface. Simply toggle the up switch and walk away – Cannon's exclusive short stop will automatically stop the lift motor when the weight hits the surface of the water. With manual downriggers, you manually raise the weight by turning a crank handle. Deep water fishing is when you will really appreciate an electric downrigger.

Why would I need a stainless steel spool?
Many saltwater anglers want to run monofilament or superline instead of cable. Plastic spools can break when spooled with these types of line, so all of Cannon's Tournament Series downriggers come with a stainless steel spool.

What are the advantages to having a downrigger spooled with monofilament?
First, cable tends to act like a long guitar string when it's pulled through the water, creating an audible hum that can spook fish. Mono runs silent when pulled through the water. Second, kingfish anglers like the ability to quickly cut their downrigger line if a fish makes a run toward it, to prevent them from losing it. It is much quicker and easier to cut mono than it is to cut braided stainless steel cable.

Will short stop and positive ion control function if I re-spool my Cannon downrigger with monofilament or braided line?
No, both of these features rely on the stainless steel cable to conduct an electrical current into water. Since monofilament and superlines will not conduct an electrical current these features will not function when the downrigger is re-spooled with them.

Positive Ion Control

The Positive Ion Control (PIC) system built into select Cannon Downriggers is based on the theory that game fish are attracted to the electronic signature of their prey. The PIC simulates this electronic signature to lure fish to the user. The PIC utilizes the drive train in the downrigger to pass the signal down the downrigger cable. There are two types available: Variable PIC, and Fixed PIC. The downriggers with variable PIC will have a PIC control knob on the back of the downrigger, which will allow you to adjust the PIC from .2V to 1.2V. The fixed PIC will always have an output of .55V.

<u>To check to see if the PIC feature is functioning correctly, follow the steps below:</u>
(NOTE: the use of steel cable is required – PIC will not function with monofilament or braided line as the cable.)

Step1. Using a VOM (multi-meter) set to take volt readings, touch the negative probe of the VOM to the power source negative. Touch the positive VOM probe to the downrigger cable. The reading should be .55V (on downriggers with fixed PIC) and will vary from .2V - 1.2V (with the adjustable PIC downriggers depending upon the position of the PIC control knob). If no reading is shown, proceed as to next step.

Step 2. Contact the positive probe of the VOM to the reel shaft that is visible underneath the drag knob while touching the negative VOM probe to the negative side of the power supply. If there now is a voltage reading (at the acceptable parameters stated in previous step) check the set screw to make sure it is making good contact with the downrigger cable.

- **A.** If there is no voltage reading - remove the motor housing cover. Touch the positive VOM probe to the green wire that is running to either the motor (low speed downriggers) or gear case cover (high speed downriggers) while touching the negative VOM probe to the power source negative.
  - **A-1.** If there is a voltage reading now - check the set screw to make sure it is making good contact with the reel shaft.
  - **A-2.** If still no voltage reading, replace control board.

Short Stop in Electric Downriggers

The short stop feature in electric downriggers is designed to automatically retrieve the flash weight, shutting off the motor when the weight comes out of the water. The downrigger must be grounded to the boat for this feature to function. It accomplishes this by using the downrigger cable as the ground in the power supply. The user momentarily lifts "up" on the switch, engaging the motor. (The switch automatically defaults/returns back to the neutral position.) The ground is being picked from the boat through the water and to the downrigger cable. Plastic insulators are used where the weight attaches to the downrigger cable acting as an endpoint for ground. When the insulators come to the top of the water level, they cut off the ground to the motor, and the motor shuts off automatically.

To check to see if the shortstop feature is functioning correctly, follow the steps below:
(NOTE: the use of steel cable is required – Short Stop will not function with monofilament or braided line as the cable.)

Step 1. Take a jumper wire from the negative of the power source to which the downrigger is attached, and make contact with the downrigger cable on the spool.

Step2. Momentarily lift "up" on the control switch to activate the downrigger. (The switch should return back to the neutral position.) The downrigger should continue to run automatically until contact is lost with the jumper wire on the downrigger cable.

Step 3. If it does not work in the way described in **Step 2**, remove the motor housing cover and make contact using the negative jumper wire from the power source with green wire coming from the circuit board and running to the motor (low speed downriggers) or to the gear case cover (high speed downriggers). While making contact, momentarily lift "up" on the switch to activate the motor. The motor should continue to run as long as contact with the jumper wire is maintained. If it works at this point perform the following checks:

- **A.** Check the green wire for good contact.
- **B.** Check the reel set screw for good contact with the reel shaft.
- **C.** Check the reel set screw for good contact with the downrigger cable. The first three wraps of downrigger cable go over the set screw to ensure good contact and performance.

Step 4. If the short stop still does not function, replace the control board.

IntelliTroll & Speed-N-Temp Systems

The Cannon IntelliTroll system & Speed-N-Temp (S-N-T) system and are designed to provide information of "true" underwater conditions. They will track the lure depth, lure speed, and water temperature. The S-N-T also tracks light density. (IntelliTroll replaced the S-N-T system, but both are now obsolete.)

The IntelliTroll system consisted of a sensor and a monitor. The information on the monitor is supplied by the sensor which is on the downrigger cable above the weight. The IntelliTroll sensor can be used with the Digi-Troll 5 and Digi-Troll 10 models. It will display the information on the LCD screen of those downriggers. The IntelliTroll is also compatible with both Digi-Troll 5 and Digi-Troll 10 models when used with CannonLink and select Humminbird Fishing Systems (1100, 900, 800, 700 or Matrix series). The IntelliTroll system is not compatible with the Mag20DT downrigger, however.

The S-N-T system consisted of a sensor unit and monitor. (The monitor displays the information provided by the sensor.) The sensor is attached to the downrigger cable just above the weight. The S-N-T sensor unit can be used without the monitor when used in conjunction with a Cannon Mag20DT downrigger, a CannonLink, and select Humminbird Fishing Systems (1100, 900, 800, 700 or Matrix series). The sensor will send underwater conditions information to be displayed on the Humminbird screen. The S-N-T systems are not compatible with downriggers made after 2010.

Following is a list of available parts for the now obsolete S-N-T units:

9400011	RF antenna for Speed and Temp Sensor unit.
2321003	battery cover
2379003	o-ring for battery cover
2230550C	antenna clip for sensor
3882710	Speed-N-Temp antenna repair kit
2389005C	Sensor unit

Troubleshooting the IntelliTroll & Speed-N-Temp Systems

IntelliTroll & Speed-N-Temp systems cannot be repaired if the failure is of a systemic nature. In these cases, you will not be able to perform a repair since most of the parts are obsolete. However, there are many instances where improper set up of the device is the root cause of the problem. Before returning the device, check the following possible causes of the issue:

(Troubleshooting IntelliTroll & S-N-T – continued)

Step1. We recommend the use of the coated cable provided with the IntelliTroll or S-N-T system. It will improve the signal quality from the sensor unit and allow it to work at greater depths. The coated cable, when used, must be stripped of its coating on the first 5 feet of cable when mounting on the reel of an electric downrigger. If your downrigger has either PIC or short stop features, the bare cable must pass directly over the top of the set screw during the first 3 wraps on the reel so that these systems will function. It also requires stripping some of the coated cable off where you mount the sensor unit as well as at the weight.

Step 2. We recommend grounding the power source of the Speed-N-Temp system to the boat. It will perform at its best when everything in the boat is sharing the same ground.

Step 3. We recommend that the Speed-N-Temp system uses its own power source separate from the downrigger. This will lessen the likelihood of interference interrupting the signal from the sensor unit.

Step 4. A weak battery in the sensor unit will degrade the signal strength and potentially cause failures. The battery life is approximately 200 hours. If left on standby mode, it will last about 2 months. It is better to disconnect the battery when you will not be using the unit for an extended period of time.

Step 5. If the complaint from a customer is that the speed reading is inaccurate, ensure that the rubber cover on the terminator isn't sliding up and blocking the water flow in front of the sensor. (Tape the cover down.)

Testing Downrigger Switches

3-pin Switches

Step 1. Using a VOM (multi-meter) set to check for continuity, touch the VOM probes to the pins on the back of the switch that have purple and white wires connected. While making contact, press down on the switch. VOM should show continuity.

Step 2. Touch the VOM probes to the pins on the back of the switch that have the white and blue wires. When making contact, press up on the switch. VOM should show continuity.

Step 3. If either step fails to indicate continuity, replace the switch.

4-pin Switches

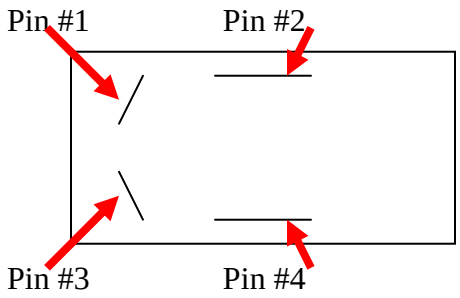
Step 1. Refer to picture below. Using a VOM (multi-meter) set to check for continuity, touch one probe to Pin #1 and the other probe to Pin #4. Actuate the switch to the "up" position. VOM should indicate continuity.

Step 2. Touch VOM probe to Pin #2 and the other probe to Pin #3. Actuate the switch to the "up" position. VOM should indicate continuity.

Step 3. Touch VOM probe to Pin #1 and the other probe to Pin #4. Actuate the switch to the "down" position. VOM should indicate continuity.

Step 4. Touch VOM probe to Pin #3 and the other probe to Pin #4. Actuate the switch to the "down" position. VOM should indicate continuity.

Step 5. Replace switch if continuity is not observed as indicated above.



Rear view of 4-pin switch

Trouble-Shooting Manual (hand-cranked) Downriggers

Case I. 3-digit meter does not keep accurate count of cable deployed.

Step 1. The amount and type of cable on the reel affects the counter's accuracy. Changing the stainless steel cable length or replacing the cable with monofilament or braided line will affect the amount of line released with each reel rotation.

Step 2. Check position of meter to make sure that it lines up correctly with the reel gear.

Step 3. Check gears on both reel and meter to make sure that all teeth are intact.

Step 4. Check to ensure the correct meter is installed and it counts correctly. For "English" counters, 1 revolution of the counter shaft equals 1 foot on the counter. For metric counters, 10 revolutions of the counter shaft equals 1 meter.

A. English and metric counters have different reel gears and counter gears.

B. High-speed models have different reels, reel gears, and counter gears.

Case II. Reel seems to slip in downrigger, won't retrieve properly.

Step 1. Check set screw in reel to make sure that it is set correctly into the reel shaft hole.

Step 2. Check clutch pad to see if pad is worn smooth and no longer functional.

Step 3. Check reel for cracks.

Case III. Handle when turned backwards does not release weight.

Step 1. Check the dog ratchet to see if it worn / no longer keying into gear.

Step 2. Check to make sure that when handle is turned backwards, it does start to turn off and to release the clutch.

Step 3. Check under the clutch cover to make sure that clutch parts and pad are not stuck together and not releasing properly.

Case IV. Downrigger emits a humming noise when in use.

Step 1. Downrigger cable being pulled through the water emits an audible hum. This is normal and not a defect. (For this reason some anglers choose to use monofilament instead of cable.)

Breakdown Procedure for Manual Downriggers

This is the procedure for breaking down the various hand-cranked downriggers produced by Cannon. There will be some variations to the procedure, as Cannon has been produced for many years, with minor changes being made in the design. This procedure will hold true for most. Some of the more obvious steps such as boom removal and rod holder removal have been left off the procedure as self-explanatory.

Step 1. Remove the handle by turning it counter-clockwise. The anti-reverse dog will not let the handle turn backwards. It will just turn off the ratchet shaft.
(NOTE: some of the earlier models used an acorn nut to hold the handle in place. This would have to be removed to take the handle off.)

Step 2. Remove the handle crank spring, bearing races and bearing from the ratchet shaft.

Step 3. Remove the clutch cover from the other side of the downrigger. The anti-reverse dog and anti reverse dog spring will come off with the cover. This will also expose the brake plate, clutch pad, and ratchet brake plate.

Step 4. Remove the downrigger cable from the reel. You will need to spool it onto something (another reel) so that you can put it back on when finished. You will want to make sure that there is some tension on the wire as you are putting it onto the other spool, so that it does not backlash.

Step 5. Loosen the set screw in the reel. It will be located at the center of the reel. There are two holes in the center of the reel itself. One hole is used for the set screw and so it threaded inside, and the other is used to line up the set screw with the reel shaft. The set screw does not need to be removed, just loosened enough so that it clears the reel shaft.
(NOTE: on earlier versions of the Unitroll HP & Easi-Troll HP models there were two plastic sleeves that enlarged the reel diameter to give it the quicker retrieval rate. They are held together by two screws that will need to be removed so that you can get to the set screw in the reel).

Step 6. Pull the reel shaft, brake plate, clutch pad, and ratchet brake plate out of the downrigger.

Step 7. Push the reel shaft out of the frame from either side.

Step 8. Push the counter, if one is in place, away from the spool. It will just slide clear, as the gear fits into the notch.

Step 9. Remove the reel from the frame.

This completes the procedure.

Troubleshooting Standard Electric Downriggers

Case I. 3-digit meter does not keep accurate count of cable deployed.

Step 1. The amount and type of cable on the reel affects the counter's accuracy. Changing the stainless steel cable length or replacing the cable with monofilament or braided line will affect the amount of line released with each reel rotation.

Step 2. Check position of meter to make sure that it lines up correctly with the reel gear.

Step 3. Check gears on both reel and meter to make sure that all teeth are intact.

Step 4. Check to ensure the correct meter is installed and it counts correctly. For "English" counters, 1 revolution of the counter shaft equals 1 foot on the counter. For metric counters, 10 revolutions of the counter shaft equals 1 meter.

- **A.** English and metric counters have different reel gears and counter gears.
- **B.** High-speed models have different reels, reel gears, and counter gears.

Case II. Short stop does not function.

Step 1. Not all electric downriggers have shortstop. To determine if the downrigger has short stop in it, check to see if it has a control board, and if it does, check it to see if it is one that has short stop.

Step 2. Check short stop as described in section titled "**Shortstop in Electric Downriggers**". If determined to be a failure in the control board, replace the board.

Case III. Downrigger does not run.

Step 1. Make sure polarity to the motor is correct. Downriggers with control boards will not operate when polarity is reversed.

Step 2. Check switch as described in section titled "**Testing Downrigger Switches**". If switch is determined to be faulty, replace the switch.

Step 3. Make sure power is getting to the board through the circuit breaker. If not, replace circuit breaker.

Step 4. Run power directly at the motor, bypassing the control board. If the motor does not run with 12 volts applied directly to it, replace the motor.

Step 5. If all steps above pass testing, replace the control board.

Case IV. Positive Ion Control (PIC) does not function.

Step 1. Not all electric downriggers have PIC built into them. Make sure the downrigger has a control board, and if so, make sure the board is one that supplies PIC.

Step 2. Check PIC as described in section titled "**Positive Ion Control**". Replace board, if necessary.

Case V. The battery power cables are cracked or flaking.

Step 1. Replace with newer style battery cables. The kit for the replacement is p/n 3993200 and will include both battery cable and motor cable.

Breakdown Procedure for High Speed Electric Downriggers

(units prior to the redesigned 2011 downriggers)

(The later models do not require special steps for applying sealant, just ensure the gaskets are not damaged and tighten screws down evenly.)

Step 1. Remove the screws around the motor cover and remove the motor cover from the motor housing.

Step 2. At this point, switches, circuit breakers, control boards, and input and output ports can all be replaced. These items are usually held in place by a lock nut on the outside of the housing, or a boot that has a nut attached to it. All parts that protrude from the outside of the motor housing are sealed using Dow Corning® 795 sealant to keep the water out.

Step 3. Remove the gear case cover from the inside of the downrigger case.

Step 4. Unplug and remove the motor.

Step 5. Remove the downrigger cable from the reel, spooling it onto something that will prevent backlash so that you can put spool it back on when finished.

Step 6. Remove the brake knob from the frame on the right hand side of the downrigger, and also remove the bearing and bearing races from underneath the brake knob from the drive shaft.

Step 7. Slide the 3-digit counter away from the spool, if applicable, so that it is no longer in contact with the reel counter gear.

Step 8. Loosen the set screw in the center inside the reel. There are two holes: one is used to line up the set screw; the other is tapped to take the set screw. The set screw does not have to be removed, just loosened enough so that the reel shaft and drive shaft are free. When re-assembling the downrigger, make sure that you line up the hole in the reel shaft with the hole for the set screw. The set screw must pass into the hole correctly so that the downrigger does not slip.

Step 9. Push on the drive shaft from the right hand side of the downrigger so that it comes out of the gear case on the left hand side. Once clear of the gear case, pull the drive shaft, worm gear, clutch pad, and clutch plate out of the downrigger.

Step 10. There are three screws along the bottom of the motor housing that attach the housing to the frame. Remove those screws, and pry the housing from the frame. It is sealed as well to keep water out, so there will be resistance.

Step 11. To remove the reel, push out the reel shaft. If not free, you will need to loosen the set screw more so that it clears the reel shaft. Once the set screw is clear, lift the reel out of the frame. This completes the procedure.

NOTE: We recommend the use of Dow Corning® 795 sealant to keep the water out. (795 comes in black and white.) Also, the gear will have to have grease packed in to prevent friction. We recommend that you run the motor forwards and backwards to allow the grease to set.

Breakdown Procedure for Low Speed Electric Downriggers

(units prior to the redesigned 2011 downriggers)

Step 1. Remove the screws around the motor cover, and pry the motor cover off the motor housing.

Step 2. Along the bottom of the motor cover, there are 3 bolts that hold the motor housing onto the frame of the downrigger. Remove those screws, and pry the motor housing cover off the frame.

Step 3. To remove the motor from the motor housing, there are three screws on the outside of the motor housing that anchor it in place. Remove those screws, and unplug the motor wires from the either the switch or the circuit board, whichever applies.

Step 4. To remove the switch or the circuit breaker, loosen the switch boot or the circuit breaker boot nuts on the outside of the housing cover. These are also sealed, so will have some resistance.

Step 5. The circuit board, if one is inside the downrigger, is sometimes held in place with two-sided tape. Others just float inside unsecured.

Step 6. To remove the reel from the downrigger frame, remove the brake knob, bearing race washers, and bearing race from the right side of the downrigger.

Step 7. Remove the downrigger cable from the reel, spooling it onto something that will prevent backlash so that you can put it back on when finished.

Step 8. Slide the 3-digit counter away from the spool, so that it is no longer in contact with the reel counter gear.

Step 9. Loosen the set screw in the center inside the reel. There are two holes. One is used to line up the set screw, the other is tapped to accept the set screw. The set screw does not have to be removed, just loosened enough so that the reel shaft and drive shaft are free. When re-assembling the downrigger, make sure that you line up the hole in the reel shaft with the hole for the set screw. The set screw must pass into the hole correctly so that the downrigger does not slip.

Step 10. Pull out the drive shaft, plates, and clutch pad from the frame of the downrigger.

Step 11. Push out the reel shaft from the frame.

Step 12. Remove the reel from the inside of the frame of the downrigger.

This completes the procedure.

NOTE: Upon re-assembly, we recommend the use of Dow Corning® 795 sealant to preserve the watertight seal of the downrigger. (795 comes in black and white.)

Troubleshooting Digi-Troll 5/Digi-Troll10 Control Boards

This procedure will allow you to test communication between the control board and keypad, between the control board and communication cables, and between the control board and antenna for IntelliTroll system**. This procedure will not prove that the board is defective for output to the motor.** To check the board communications out completely, you will need a p/n 019634 Relay Cable and an IntelliTroll sensor unit. If either is not available, you will not be able to test the communications between the board and the Comm (communication) Harness ports or the antenna for the sensor unit.

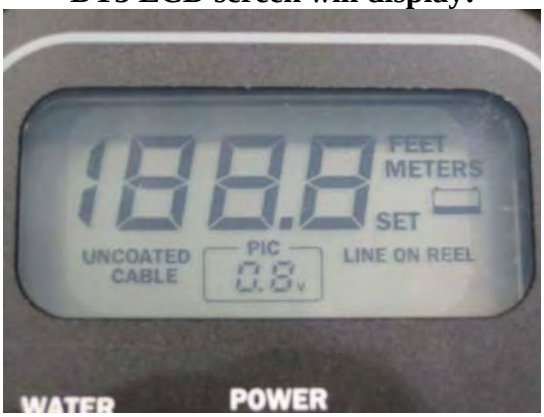
Step 1. Attach both ends of the p/n 019634 Relay cable to both comm ports on the downrigger. (One is male, the other is female.) If you do not have p/n 019634 relay cable, you would skip this step. (NOTE: Without the relay cable you cannot check the connection between board and comm harness.)

A. Attach the downrigger to 12 volts.

Step 2. This test will check the LCD screen segments.

A. Press and continue holding down these five keypad buttons in this sequence: Water Zero, Auto Up, Down, Menu, Power

DT5 LCD screen will display:



DT10 LCD screen will display:

B. For DT10 models, press the "RUN" button, and the downrigger will go into test function as shown below. This is testing the line segments of the LCD.

C. For both/either models, press the "UP" button. The downrigger will go into diagnostic screen test mode where it checks every LCD segment individually. (Press "UP" on the keypad if you wish to skip this step.)

D. Replace the control board if any LCD segment is missing.

E. Once the procedure is complete (or skipped) "1" will appear on the LCD screen.

Step 3. The next test will check the communication between keypad and board.

A. Press the buttons in the order given below. (The LCD display will prompt you as to which buttons to press. For example; 1= Water Zero)

For the DT5, press in order as follows:

1) Water Zero
2) Power
3) Menu
4) Auto Up
5) Up
6) Down

For the DT10, press as follows:

1) Water Zero
2) Power
3) Menu
4) Select
5) Auto Up
6) Run
7) Up
8) Down

B. If while pressing any of the prompted buttons, the LCD doesn't prompt you to push the next button in the sequence then the keypad is not communicating properly with the control board. Replace the keypad.

Step 4. Test the PIC next using a multi-meter.

A. The LCD will display ".2v" after the previous test if the communication between the control board and the keypad is working properly.

B. Using a multi-meter set to test for volts, touch the negative probe to -12 volts of your power source. Touch the positive probe to the steel cable on the downrigger. Your voltmeter should read .2 volts.

C. Press the "UP" button on the keypad. The LCD will display "1.2v". Check for proper voltage with multi-meter as described above.

D. If your multi-meter does not display the correct readings, replace the control board.

E. Press the "Down" button on the keypad to proceed to the next step.

Step 5. The Comm Cable communication to the control board will now self-check automatically. If you do not have a p/n 019634 Relay Cable attached, the display will read "bAd". Without a p/n 019634 Relay Cable, you cannot check the board for comm cable communication, and this will end the procedure.

A. If there is a p/n 019634 Relay Cable attached, and if the comm harness is good, "PROBE" will be displayed on the lower portion of the LCD screen. If there is a problem, it will display "bAd". Replace, as necessary.

B. This completes the procedure if you do not have an IntelliTroll sensor unit available.

Step 6. To test the communication between IntelliTroll antenna and the control board, you will need to have a Cannon IntelliTroll sensor. Hold the sensor by the antenna pick up location at the front of the downrigger (where the antenna pick-up screw is located).

A. The DT5 display will show "SnT" until a signal is detected.

B. The DT10 display will show information provided by the sensor in the probe fields as shown below:

C. If the LCD does not go into the IntelliTroll screen ("SnT" / PROBE screen) then either the control board is not operating properly, the antenna is defective, or the IntelliTroll sensor is not functioning. (Make sure to check the battery in the sensor.)

Troubleshooting DigiTroll IV

Case I. DigiTroll IV does not count correctly (not showing the correct distance out).

Step 1. The amount and type of cable on the reel affects the counter's accuracy. Changing the stainless steel cable length or replacing the cable with monofilament or braided line will affect the amount of line released with each reel rotation and cause inaccurate readings. The cable needs to be either 200 or 400 feet in length. (Then set this number into the DTIV's menu system.)

Step 2. Check magnets in reel to see if both are in place. If customer is stating that it is only reading ½ the distance deployed, that would indicate one magnet is missing.

Step 3. Check to see that both magnets have same polarity. See the bulletin ***SBCN061107*** in the "Service Bulletin" section of the service CD. It is possible for magnets to be in backwards, especially if they have fallen out and customer put it back in. The south magnetic pole should be facing to the outside of the reel on both magnets.

Step 4. There is a magnetic sensor on the board that picks up the magnets as they pass by. Check to see if magnetic sensor on board is bent.

Case II. The DigiTroll IV does not function.

Step 1. Check power to the downrigger for voltage and correct polarity. Check all plug connections for corrosion or loose/missing pins.

Step 2. Check internal circuit breaker to make sure power is getting through to board.

Step 3. Check the keypad ON/OFF function.

A. Hook the downrigger to power. (The unit will make a beeping sound.)

B. Press the "ON/OFF" button once, at which time you should briefly hear a beep and then the LCD should display either "MAS" (master) or "SLAV" (slave). This indicates the "On" function is working correctly.

NOTE: if the beeping sound stays on continuously the control board is defective.

C. Press the "ON/OFF" button twice to turn the downrigger OFF. The downrigger should immediately shut down. If not, the key pad is faulty and should be replaced.

Step 4. Bypass circuit board and run power directly at motor to test motor.

Step 5. If all checks out, main power control board is bad, and would need to be replaced.

Case III. The display on the Digitroll IV is turning red.

Step 1. This indicates a failure in the control board. Replace control board.

Case IV. The DigiTroll IV is emitting continuous tone.

Step 1. This indicates a main power control board failure. Board would have to be replaced.

Case V. The DigiTroll IV has the older style master or slave boards made prior to 1997, and has experienced a board failure.

Step 1. The older style boards are no longer available. The downrigger control board would have to be replaced with the current style board, which serves as both master and slave.

Case VI. The battery power cables are cracked or flaking.

Step 1. Replace with newer style battery cables. The kit for the replacement is p/n 3993200 and will include both battery cable and motor cable.

Case VII. Replacing the keypad.

Step 1. Install a new lens (p/n 1497071) when replacing a keypad. Assuming that you have already opened the motor housing and removed the PCB, cut the ribbon of the keypad, use a thin edged tool (like a small putty knife) and work it around the edge of the keypad.

- **A.** Lift the keypad and push the lens out. Remove the old sealant from the edges including where the lens goes.
- **B.** Put down a thin line of sealant around the edges for the lens and place lens with protruding side facing down. Remove any residue. Put down a thin line of sealant on the edges of the motor housing where the key pad goes.
- **C.** Remove all the packing material protecting the key pad and its display. Put keypad ribbon through the ribbon opening and center key pad before pressing it down in place. No overlaps! (You only get one opportunity to set the key pad properly in its place. The alternative is to do it all over again with another key pad.)
- **D.** From the inside of the motor housing, put sealant around and between the ribbon to waterproof it. Let it sit for a few hours. (The reason for this is that so when you fold the ribbon where the PCB goes it does not force or lift the key pad - if it does, you will have to start all over again.)
- **E.** The next step is to install the PCB and plug the ribbon into the board.

Troubleshooting Mag 20DTF

CannonLink Downrigger Control allows the user to cycle up to six Mag 20DTF downriggers up and down, bottom track, raise and lower, monitor speed and temp (with Cannon Speed-N-Temp Sensor), and adjust PIC from Humminbird Fishing Systems (Matrix, 700, 900, and 1100 series). There were earlier Mag 20DT models (pre-2002) that are not compatible. (They can be detected by the absence of the antenna screw on the front end of the motor housing.) The older control board on these models, p/n 050249, lacks the software logic to work in conjunction with the CannonLink. However, it is possible to update the control board to p/n 3880265 to allow the older Mag 20 to work with the CannonLink.

Case I. The counter on the Mag 20DTF is inaccurate.

Step 1. The amount and type of cable on the reel affects the counter's accuracy. Changing the stainless steel cable length or replacing the cable with monofilament or braided line will affect the amount of line released with each reel rotation.

Step 2. Check magnets in reel to see if both are in place. If customer is stating that it is only reading ½ the distance deployed, that would indicate one magnet is missing.

Step 3. Check to see that both magnets have same polarity. See the bulletin ***SBCN061107*** in the "Service Bulletin" section of the service CD. It is possible for magnets to be in backwards, especially if they have fallen out and customer put it back in.

Step 4. There is a magnetic sensor on the board that picks up the magnets as they pass by. Check to see if magnetic sensor on board is bent.

Case II. The short stop on my Mag 20DTF has stopped working.

Step 1. Mag 20DTF does not have short stop. This would indicate that customer bought downrigger used, and it was pre-programmed to stop by earlier owner. It would have to be programmed with a Humminbird and CannonLink system to make this function work once again.

Case III. The Mag 20DTF does not function.

Step 1. Check power to the downrigger for voltage and correct polarity. Check all plug connections for corrosion or loose/missing pins.

Step 2. Check switch according to test procedure for switches.

Step 3. Check internal circuit breaker to make sure power is getting through to board.

Step 4. Bypass circuit board and run power directly at motor to test motor.

Step 5. If all checks out, main power control board is bad, and would need to be replaced.

(Troubleshooting Mag 20DTF – continued)

Case IV. The Mag 20DTF is emitting continuous tone.

Step 1. This indicates a control board failure. Replace control board.

Case V. After installing a new board, the Mag 20DTF will only run up to around 17 foot and stop.

Step 1. The downrigger cannot find ground. To enable the downrigger to find ground, take the following steps:

- **A.** Push and hold switch down, and run down to around 35 feet.
- **B.** Take a ground wire from the power source that is operating the downrigger and touch and hold against the downrigger cable in reel, and push switch up and release switch. Unit should continue to run up by itself to "0". It should also start to slow down when it nears "0". When at "0", remove the ground wire away from downrigger cable, and unit should stop.

Case VI. The battery power cables are cracked or flaking.

Step 1. Replace with newer style battery cables. The kit for the replacement is p/n 3993200 and will include both battery cable and motor cable.

Upgrades and Conversions of Downriggers

It is possible to upgrade or convert downriggers from their original configuration. The conversions listed below, along with part numbers, will aid you in performing these conversions. The upgrades and conversions will *not* be covered under warranty or done at the expense of Cannon / Johnson Outdoors! If the conversion is performed by a Cannon ASC there is a 90-day warranty covered by Cannon / Johnson Outdoors.

Mini-Mag (no short stop or PIC) to Mini-Mag with short stop and PIC

Qty	Part Number	Description
1	3394001	control board
1	2286792	switch
1	020257	shortstop wire (green)
1	9340131	set screw
2	2200148	snap and insulators

Mag 10 no PIC or Shortstop to Mag 10 with shortstop and PIC

Qty	Part Number	Description
1	2286792	switch
2	2200148	snap and insulator
1	9340131	set screw
1	3394001	control board
1	020257	short stop wire
1	9370130	screw

DigiTroll II to Mag 10 with short stop and PIC

Qty	Part Number	Description
1	2286792	switch
2	2200148	snap and insulator
1	9340131	set screw
1	020257	shortstop wire (green)
1	3394001	control board

Converting counter from US to metric (or vice versa)

HS (high-speed) hand-cranked downriggers use a reel that is different from the standard reels. HS units have a retrieval rate 50% faster than the standard retrieve. Our counters (whether they are metric or US/English versions) will not work with both high-speed retrieval and standard retrieval speeds.

On hand-cranked downriggers, in some circumstances the only way to convert the counter system will be changing from a HS to a standard retrieve. You *will be "slowing" down the retrieve!* You will need to replace the counter, counter gear, and reel assembly (reel and reel gear). Refer to the appropriate parts list for the specific parts required. The Parts CD shows both US/English versions and metric version units.

On electric downriggers, you only need to replace the counter, counter gear, and reel gear. The exception is the DTIV which cannot be converted to metric!