Troubleshooting Guide

Please use this guide before calling or emailing for assistance. Other sources of assistance are a user forum at:
http://candcnc.com/support forum/
you will need to register, however it is free and has a wealth of information
Technical help can also be obtained directly from electronics manufacturer at:
https://www.candcnc.com/
903-364-2740 or 903-364-5849

Also tutorial videos are being added regularly at:
https://www.youtube.com/user/dhelfter/playlists

I: Table Problems

    a. computer will not communicate with control box
    b. software will not come out of E-Stop condition
    c. machine will not move with jog key
    d. one motor will not move/moves very rough
    e. switch not detected
    f. computer locks up when cutting

II: Plasma cutting Problems

    a. torch will not fire
    b. torch fires then shuts off
    c. torch does not cut through material
    d. torch pierces material then does not move
    e. torch pierces proceeds to move then raises up
    f. torch pierces proceeds to move then dives in to metal

III: Cut Quality Problems

    a. excessive dross
    b. excessive edge bevel
    c. excessive hole bevel
    d. holes out of round.

I: Table Problems

a. computer will no communicate with control box

possible cause:

1. verify control box is on, both bottom ac switch and front panel before attempting to start control program

2. verify green cat5 cable is attached to green port on side of control box and other end is attached to port on computer labeled "Bladerunner" not Ethernet.

b. software will not come out of reset.

possible cause:

1. estop button on machine is depressed, verify it is in the released position by gently twisting red button counter clockwise

2. very the x or y axis of gantry is not depressing there limit switch.

The two above checks can be performed by going to the diagnostics screen and viewing if any of these switches are active.

3. Very circular plug on side of machine attaching to control box plug is firmly connected. This plug handles all switch inputs.

c. machine will not move with jog keys.

possible cause:

1. very keyboard is attached to computer

2. depress the escape key then attempt to jog

d. One motor will not move or moves rough

possible cause:

1. Verify motor connections are secure, by first powering down control box via front panel off button. Then locate the motor plug for suspect motor on left hand side of control box, and using a small screwdriver verify all 4 screws in green plug are tight and wires are not broken. Install green plug firmly in to control box.

2. first powering down control box via front panel off button. Then locate the motor plug for suspect motor on left hand side of control box, remove plug. remove another plug and swap their locations. Power control box and attempt to jog, keeping in mind machine will move different than designed do to the fact different motors will be moving with different keys. It is advisable to swap motor 2 and 4 and 1 and 3 as sets.

If same motor still does not move or is rough, problem is with motor, if the swapped motor is now rough or does not move, problem is with motor driver in control box.

e. switch not detected
possible cause:

1. Very circular plug on side of machine attaching to control box plug is firmly connected. This plug handles all switch inputs.

2. Remove cover to suspect switch and loosen wires. On X, Y, and A switch twist wires together and using the diagnostics screen see if signal is sensed (dot next to the label on screen will illuminate) These are wired normally open.

On the two z home switches and the estop switch, disconnect wires from each other and check diagnostics screen. These are wired normally closed.

f. Computer locks up when cutting
possible cause:

1. electrical noise. Please verify:

work clamp is attached to material being cut

table frame is grounded to an isolated/dedicated ground rod within 10 feet of machine via a 8gauge or heavier cable.

plasma cutter is physically as far from control box and computer as possible.

Signal wires are not laying on or parallel to high power lines.

Control box and computer are being powered by the same physical outlet via a surge protector.

    2. Close all programs running in background when control program is started.

II: Plasma Cutting Problems
a. Torch will not fire
possible cause:

      1. Verify plasma cutter is turned on and has no error codes

      2. Verify there is no check in box on control screen for disable torch

      3. click torch on/off button on screen to turn torch on

at rear of plasma cutter is a small box labeled "sensor pwm" on it

will be a label "torch on" with an led under it. Is that lit? If so problem is with powermax unit or connection wire. If it is not then:

click button on screen to turn torch off

close control program

there is a short (18") usb cable from rear of computer going to black box
labeled "485 port hub" It will have its own 120volt ac power plug. Unplug
it, also unplug the usb cable. DO NOT unplug the blue cat 5 cable

Count to 10.

plug 120volt power plug back in

plug usb cable back in to computer

wait 5 seconds

top right corner of box should have two red leds. If it does, start control program and take out of reset and again attempt to fire torch.
If it does not contact LDR or Candcnc as the plugin is either corrupt or the port hub is faulty.

2. Torch fires then shuts off
possible cause:
1. Electrical noise. Run same program with torch disabled box checked, and watch the torch on indicator on the sensor pwm box. If it stays illuminated red while torch is suppose to be on, but does not when torch is on, issue is electrical noise from plasma cutter. See above for grounding.
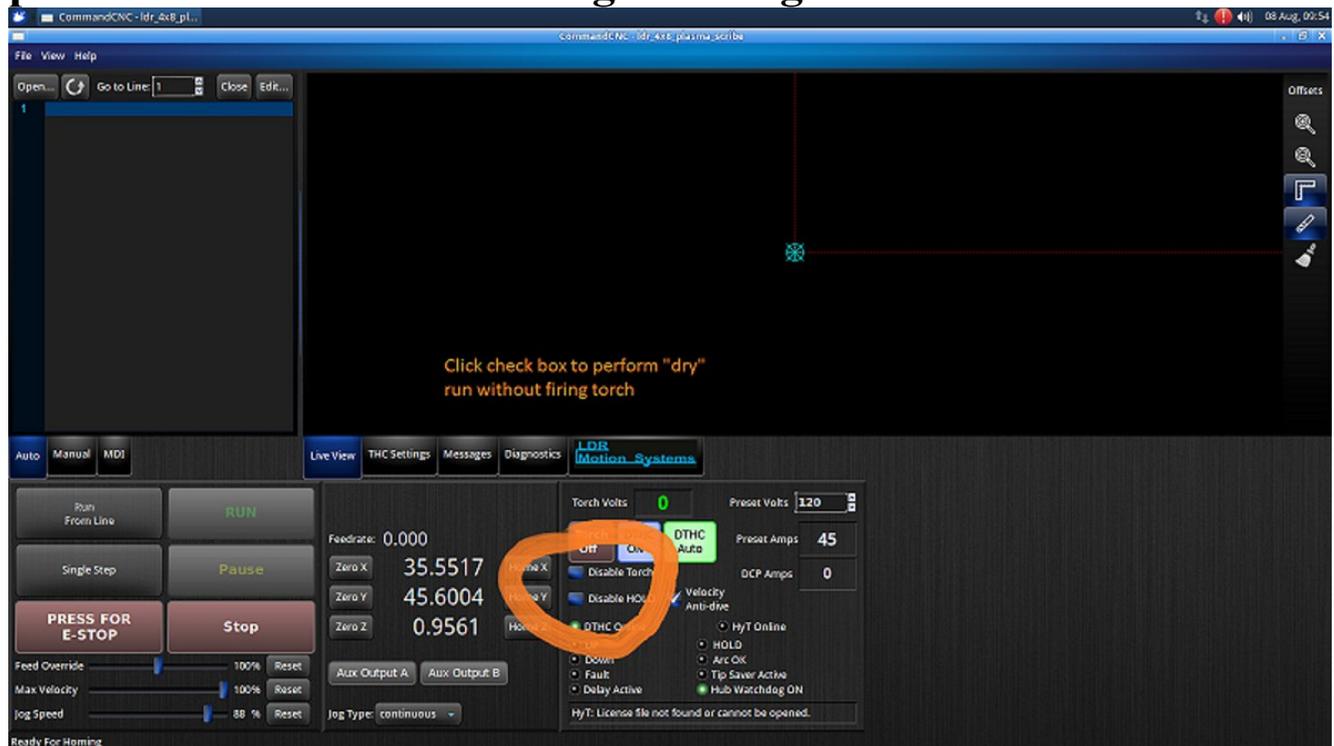
3. Pierce delay to long. Verify pierce delay is correct as per Hypertherm manual for material you are cutting with amperage you have machine set to.

c. torch does not cut through material.
possible cause:

1. cutting to high. Verify torch is proper work distance from plate based on the Hypertherm cut chart for that material and consumables. The best way to do this is to cut with dthc off (set in to manual mode then turned off) If torch now cuts through material, dthc was raising torch to far, lower preset volts.

2. Cutting to fast. Verify you are cutting at the best quality settings speed for given material and amperage used.

3. Air pressure to low. Verify you maintain a minimum of 90 psi at inlet to plasma unit WHILE torch is flowing air. This must be checked via a pressure gauge at rear of plasma cutter.

d. Torch pierces metal then does not move.
possible cause:

1. Pierce delay to long. Verify you are using proper pierce delay for given material and amperage setting.

2. No arc ok signal to computer. Verify an arc ok signal is seen by computer by firing torch on good clean material with torch .15" away from material, watch the arc ok indicator on the control screen and verify it is illuminating when torch fires. If it is not, turn torch button off, and by using the test button on rear of sensor pwm (one labeled arc ok test) depress and hold button while watching screen and verify arc ok illuminates. If it does issue is with plasma cutter arc ok output.

e. Torch pierces material, proceeds to move and raises up

possible cause:

     1. Dthc preset volts set incorrectly. Verify volts are set for material being cut at amperage you are cutting based on test cuts or plasma cutter manual. Voltage needs to be lowered
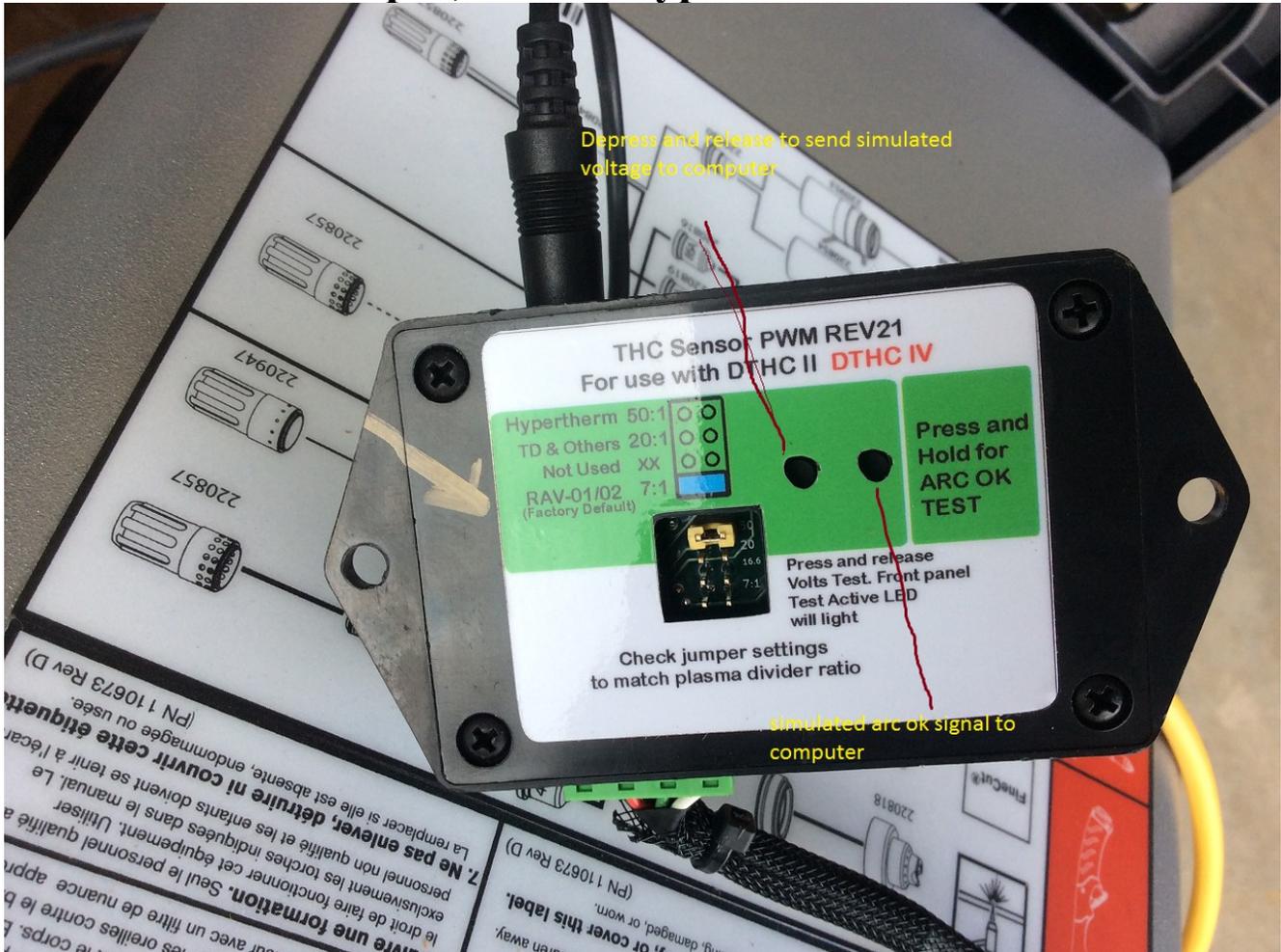
     2. Dthc receiving no feedback voltage or incorrect voltage. locate the sensor pwm module, on back side depress and release the recessed test button located closest to middle of box. On computer screen in the torch volts box it should display 123-127 volts. If it does system from sensor pwm back to computer is working. Depress button again to remove from test mode. Next remove the divided voltage jack from sensor pwm box using a digital volt meter set to dc volts locate the positive probe on silver tip and negative probe between two black rings. Have assistant fire plasma cutter with torch off the metal at least 2 inches. The volt meter should read 1/50th of actual volts (approximately 3.8-4 volts) if it does not issue is with plasma cutter's divided output, contact hyperherm tech.

f. Torch pierces material, proceeds to move and dives down possible cause:

     1. Dthc preset volts set incorrectly. Verify volts are set for material being cut at amperage you are cutting based on test cuts or plasma cutter manual. Voltage needs to be raised.

     2. Dthc receiving no feedback voltage or incorrect voltage. locate the sensor pwm module, on back side depress and release the recessed test button located closest to middle of box. On computer screen in the torch volts box it should display 123-127 volts. If it does system from sensor pwm back to computer is working. Depress button again to remove from test mode. Next remove the divided voltage jack from sensor pwm box using a digital volt meter set to dc volts locate the positive probe on silver tip and negative probe between two black rings. Have

assistant fire plasma cutter with torch off the metal at least 2 inches. The volt meter should read 1/50th of actual volts (approximately 3.8-4 volts) if it does not issue is with plasma cutter's divided output, contact hyperherm tech.

III. Cut Quality Problems
a. excessive dross
possible cause:
      1. cutting to fast for given material and amperage
      2. cutting to slow for given material and amperage
      3. water level to close to plate
      4. consumables life expired
      5. excessive moisture in air line

6. low air pressure to plasma unit
7. poor work clamp

b. excessive edge bevel
possible cause:
1. First define bevel, if looking at edge of piece, front and back, and left and right are not mirrored images of each other, then torch is not perpendicular to material. Adjust torch
2. If bevel is mirrored and top of piece is smaller than bottom, cutting height is to high, lower preset volts
3. If bevel is mirrored and top of piece is larger than bottom, cutting height is to low, raise preset volts

c. excessive hole bevel
possible cause:
1. Cutting to fast. For best hole quality any hole under 1" should be cut at 50-60% recommended speed with DTHC off
2. To small of hole for material. Generally the hole diameter should be 1.5 to 2 times material thickness
3. Check for torch being perpendicular to material
4. Incorrect cut direction. Inside cuts should be done counterclockwise, and outside cuts clockwise.

d. holes out of round
possible cause: Mechanical issues or plasma issue
This information courtesy of Jim Colt from Hypertherm
start by mounting a pen with a felt tip and fine point in place of your torch.(you can use the scribe if you have one) Go through a test run, then carefully inspect the part to see if the same anomaly (flat spot) occurs. If the drawing on the part looks right, then the machine would appear to be okay, and you might be looking at a mechanical issue such as backlash.

To determine if this is the case, cut the part with the height control in manual mode and the torch at a fixed height. If the flat spot is minimized in this situation, then your likely problem is your height control. It's probably not moving from pierce height to cut height quickly enough, and may be cutting too high at the beginning of the cut. There are two ways to fix this. (1) Adjust your height control system; or (2) increase the length of your lead-in so the height control has more time to reach the proper position.

The third thing that could cause you to get a non-circular part are worn or damaged consumables. Inspect the nozzle and shield carefully following the instructions found in the Consumables Inspection section of your operator's manual. Look for small nicks, burn marks or plugged bleed holes. Also, make sure the center orifice is perfectly round and has sharp edges. If not, it is time to replace your nozzle and / or shield. The swirl ring and retaining cap can also affect cut quality in a directional manner. Replace them one at a time with new parts and try the cut again.

If the problem still isn't fixed, then my final piece of advice is to rotate the torch anywhere from 90 to 180 degrees. Try performing your cut again and then check to see if your flat spot has moved. If it did indeed move, the issue could be with your gas flow. It could be restricted or a leak could be occurring somewhere along the line.

Jim Colt