

Nitro Plasma Cutter Instructions

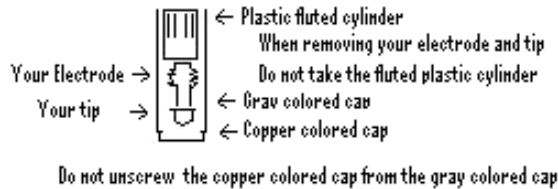
- **This Document is not intended as a self teaching tool. It is a teaching aid.**
 - **You must be trained and certified before using the Nitro.**
 - **Ensure you have signed out the Nitro at the monitor's desk before you start using it.**
 - **Purchase your metal, tips and electrodes prior to use.**
1. **Scrape grids** on the cutting bed to ensure there is no slag on grids. This is done to ensure your metal will lay flat on the grid and make good contact with the electrical ground.
 2. **Empty the waste drawer** located under the cutting bed. This is done to keep the unit clean and any pieces you cut out can be retrieved without sifting through excessive slag. Empty slag drawer on top of metal screen, shake screen so slag falls into barrel and put any metal scrap into proper dumpster.
 3. **Start computer:** Uncover Monitor and Keyboard. Turn on universal power strip, UPS (green light will come on). Turn on PC using the round button below Dell logo (blue light will come on). Check to be sure monitor is on. Select the Command n Cut program by double clicking the icon on the screen.
 4. **Turn on the Nitro Torch Head:** Turn on Nitro via power strip (box) which is located below the keyboard (green light will come on). Set Test/On/Normal switch, located in the center of the power strip, to Normal.
 5. **Reposition the torch head** to place metal on grid: When the torch head reaches the top or bottom it will chatter. Approach these positions slowly and stop when you hear the chatter. **Don't strip the gears.** Using the keyboard "plus key" (+/=), raise the torch head carefully to the highest position. Using the keyboard "Left and Right Arrows" and the "Back and Forward Arrows" move the torch head to the rear of the gantry.

Note: The "minus key" (-/_) lowers torch head.
 6. **Place metal on grid:** Ensure that your metal plate is positioned in the lower left corner touching the "L" bracket and that the bottom and/or the left sides are touching the elevated stops.
 7. **Carefully position the torch head to "Home" or "Zero",** the forward left hand corner of the cutting bed. At the end of its travel, the machine will screech. Approach the screech point slowly. Once you hear the screech **STOP - Do not "over screech"**. (Using arrows move the torch head until it is full forward and to full left.)

If you do not Zero the torch it will start cutting in the incorrect location.

Install Tip and Electrode: You may want to lightly sand your tip and your electrode (top and bottom) to ensure good electrical contact.

- Ensure torch tip is UP
- Remove Torch Cap (gray and copper colored) and plastic cylinder from torch head (see drawing below). Take care that the fluted cylinder doesn't fall when removing the Torch Cap.
- Install your tip, your electrode, plastic cylinder (flutes up) and cap (see drawing below)



Screw on cap – finger tight then back off approximately 1/32 turn –
!!!!!!! DO NOT OVER TIGHTEN !!!!!!!

8. Plug in – flash memory stick. On the computer screen, select: File > Open (open the file to be cut).
9. Once file is open follow the setup below:

Command and Cut Application Set up

Set “**Torch Speed**” between 96 and 114 inches/min (window is located on top tool bar). A faster speed will result in less slag. Use a slower speed for high detail cuts. Too fast, may not cut through the metal.

Set “**Travel Speed**” to 120 inches/min (window is located on top tool bar). Too fast a speed, risk over shooting the next cut. Too slow and cutting will take much longer.

Click on “Edit>Settings” Match the settings below.

Pierce Delay	=	700
Lead Out	=	0
Stand Off	=	0.22
Acceleration	=	30
Flame Out	=	Blank
Lead Out	=	Blank
Torch	=	Blank
Plasma Torch Settings		
Dwell Delay	=	30
Purge Idle	=	0

Oxy Torch settings	
Preheat Delay	1000
Table Setup (check mark)	
	800 dpi
	4x4

Click on Save > OK to return to main screen.

Check the control box on the right of the main screen. Be sure the Plunge and AVC are on, each having a check mark.

10. Turn Torch On (Hypertherm box or Welder)

At rear of Hypertherm box, turn the switch clock wise to vertical position (white line will be up and down). Verify that 3 green lights are lit on the front of the Hypertherm box.

If there is a **red lightning bolt** on the front something is wrong. Wait 30-40 seconds and pray it goes away. If not, possible causes could be: tip not in properly, air supply not on etc. If you can correct the problem do so.

If not - Do not use the machine, advise a monitor and ask that they advise a member knowledgeable about the machine.

!!! VERY IMPORTANT: ALWAYS HOME PLOT BEFORE CUTTING !!!

If you don't Home Plot to 0, 0, your cuts will be off and could cause damage to the machine. Home Plot (icon near top toolbar) Click on Home plot box On the bottom of the computer screen ensure the x, y coordinates are "0, 0".

Command Notes: Before you start cutting note the following:

The spacebar will toggle cutting on and off.

If a previously cut piece of metal is sticking up above your metal plate, stop the torch (spacebar) and remove the metal piece sticking up (be careful the piece could be very hot). If you don't remove the piece sticking up, the torch head could catch it, move your metal plate and/or damage the gantry.

Reversing to re-cut:

- *If a piece isn't cut all the way through, you can stop the torch (spacebar), reverse the torch head by pressing **R**,
- ***stop reverse by pressing the spacebar**,
- ***lower the torch** (use the minus key) to approximately 1/8 inch from the metal if it is higher,
- ***start the re-cut by pressing the spacebar.**

11. Start Cutting

- *The torch should be at "Zero" (full forward, full left and all the way up).
- *Turn on the exhaust fan.
- *Click on the Blue Arrow on the top toolbar (Run Plot) to start cutting
A window box will open noting:
Auto Plunge is set to **On**, AVC is set to **On**
- *Click OK (cutting will start)

12. Finish Cutting:

- ***After the torch stops cutting your piece and before the torch reaches 0,0** - press the spacebar.
- ***Inspect the piece** to ensure all cuts were made. If not you can press R to reverse the torch head. Once the torch reaches 0, 0 you cannot use the reverse function.

***If the piece is cut properly** - press the spacebar and the torch will move to the 0, 0 location.

13. Final Procedures.

Once torch is at 0, 0, **turn off the Hypertherm** – at rear of box turn switch counter clock wise. White line will be in the horizontal position.(Verify the green lights are off on the front of the Hypertherm.) It would seem prudent to have the power to the torch (400 volts and more amps than you care to deal with) off before installing or removing your electrode and your tip. **Remove the torch cap** to retrieve your tip and your electrode. *(Use care the cap can be very hot)*

Be certain that you leave the fluted plastic cylinder in the cap when removing your electrode and tip. Raise the torch head up and move to the back before removing metal pieces and scrap. Note: If you don't move the torch tip up and back you risk damaging the torch head when removing your scrap.

14. Final Cleaning:

Throw scrap away in the proper dumpster. Clean slag from grates. With exhaust fan on, use air hose to blow dust from gears box, rollers, gantry, computer, etc. Empty the waste drawer located under the cutting bed into proper waste containers outside the building.

15. Securing Torch Head:

Move torch head to an open slot. Lower the torch to the bottom of its travel between grates. If the torch is left up, it **will** free fall to the bottom when the computer is shut down. This may result in damage.

16. Turning off Computer:

- *Close application by clicking "X" in top right.
- *Save current plot? **No**.
- *Click on Safely Remove Hardware (bottom right of windows screen).
- *Click on your device and wait until message "Safe to remove hardware".
- *Remove your flash drive
- *Power down PC by selecting the start icon and "Turn Off Computer".
- *Turn off Nitro power strip (front of cart below keyboard)
- *When the computer has completely shut down, Turn off UPS
- *Turn off monitor.
- *Cover Monitor, Keyboard/mouse
- *Signoff the Nitro at the monitor's desk.

Troubleshooting

We would like to include a “Troubleshooting” section in this document. Therefore would you please note any problems or issues you have encountered using the Nitro and the troubleshooting steps that you have used to rectify the problem. Two examples are listed below.

Problem 1: Nitro skips a cut or does not cut all the way through the metal.

Stop the torch and clean slag off the tip. Wait 30 seconds. Reverse and try the cut again. If two recuts don't solve the problem, remove and clean or replace the electrode.

Problem2 : Torch fires before it reach the bottom.

Try to reverse and recut. If this fails, check to see if the cable going to the torch is hung up. Use compressed air hose on wall behind the Nitro to clean out gear and gear bar that raise and lower torch. Spray the gear and bar with dry lube usually found on computer cart. If all else fails try shutting down the cut (blue square at the top of the computer screen) and power down **everything** as if the power to the building had been cut off. Wait 30 seconds before starting over. When you start over you will need to use Edit Plot > Tools > Process Reorder to eliminate the sections of your pattern you have already cut.

Thanks are due to Lou Mancuso who penned the original version of this document and Avis Acton for her editing.

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