Rupert Burger – laser cutting (operator) training:

Switch on a laser pc machine:

Open cypcut and G3 program (compressor).

Cypcut - cnc - switch on chiller and laser.

Go mark 6.

G3 program - Switch on when logged in.

open Gas bottles.

New part - new file

nest - part - add parts (from server)

Desktop-100k for the file (job to cut - jobcard).

Select job(s) and open file.

right click on each on each job(s), that has been added and click edit.

Select all parts with left mouse button and make sure it is selected.

Yellow and purple lines is engraving (no need for compensate or leadline).

Home - compensate

outer width and inner width always the same.

NOTE!!! I took out the compensate sizes we used as it is company info.

compensate list:	
Mild steel:	**Stainless steel:**
1mm -	**1mm -**
2mm –	**2mm -**
3mm –	**3mm -**
4.5mm -	**4.5mm -**
5mm -	**5mm -**
6mm -	**6mm -**
8mm -	**8mm -**
10mm -	
12mm -	
16mm -	
20mm -	

Stainless steel: (I was told to use this layers for all other materials also cutted except mild steel as it had it's own layers)

leadline:

lead in length - always half of your plate thickness. Never smaller than 3mm

Microjoint:

If any parts is 100 x 100 or smaller then put microjoint on. Do not put a microjoint on 16mm or 20mm plate parts.

MS microjoints: 1mm - 1.9mm

SS microjoints: 0.7mm - 1mm

Nesting after compensate, leadline (Just green lines), microjoint (only on some parts), cooling points.

Nest:

Parameter:

Parts gap: Always half of part(s) thickness and +2. Never less than 3mm.

Plate margin: Always half of part(s) thickness and +1. Never less than 3mm.

Nest strategy:

Rotation angle: free rotation (I used to see what rotation could put most parts on a plate).

Nest Direction: Always from bottom to top or left to right. Depends on how to get most parts on a plate.

Select parts: All parts in library (as added to cut).

Select Plates: Standard plates and put inlength and width.

Before start cutting: Always shutter on and frame to check if all parts will fit and set mark before start cutting and put shutter off. (shutter is the laser)

Drawing: draw (menu bar on top).

if jobcard says OD & ID, it's a washer (it's round).

if jobcard says no OD and ID, it's a rectangle (a block)

Select drawing part lines (green lines) and home and scale (option in home - menu bar).

Make sure when scale that lock is on.

Also when scale OD and ID, just select 1 part not both for different sizes.

Select all parts again. Center align both parts.

Make sure inner part is inner and outer part is outer. You can also click on sort on top menu bar.

When done with the drawing, click file and save.

After save, new file and clear and then same as always. Select file(s) (jobcards) that has been draw, then click and select all parts with compensate, leadline, microjoint, cooling point and nest. (if not done that comensate, leadline, etc in drawing).

Always before start curring, select the right layer for the thickness and material.

Also check the nozzle before cutting on plate with nozzole and layer always with new plate, select calibrate and when excellent (on plate), go marker. remember to click enter, escape and then exit in calibrate.

When cutting 8-20mm MS or 6-8mm SS always add cooling points or select parts and manual auto cooling.

When someone is uploading or removing material on laser bed, always have layer on, so machine can't move or cut.

Always make sure the green line is inside the white line.

When startup the machine in morning or when machine was rebooted, select all the parts that was been cutted and make them white and click on the "X". Also the same with mark 6 and cnc switched on.

When cutting a full plate, and busy upload a full plate (3000 x 1500) on bed take the machine head to the back and left to the max.

Another way of select the last cutting part, right click on last cutted part and click go location with shutter on and pause and go forward or backward until new part is on then go back to last part end.

When changing gat (o2) bottles, do not cut and on computer blow (option) after close gas bottle. So the dirty air can come out.

Tape shot - laser allignment; put the biggest single nozzle on to the lowest single nozzle and do a tape shot.

To change allignment when it's out get a ellenkey that fit 100% (3mm on machine I am working on).

Right side - turn slowly right to go forward and slowly left to go backwards.

Left side - turn slowly right to go right and turn slowlu left to go left.

Make sure allignment is100% center,

Remember NOT TO TOUCH THE NOZZLE OR LASER BUTTON while testing to see the allignment with seletape.

When start cutting, always check that the piercing go through plate. The thicker the plate the more piercing there will be.

If plastic is still on plates (SS plates), open layer and put defilm on, before start cutting the parts.

Note and remember - always read the jobcard(s)drawing(s), sometimes there are different compensate or leadline or microjoints a client spesific want for his parts.

Always click home and select "zero ref" to choose from where to start cut. for example: bottom left or right, top left or right or center. Center is usually the best option if cutting a round offcut plate.

Always make sure before cutting to see that engraving lines is purple or yellow and not green. Also make sure the leadlines is not on a part, but inner or outer.

Green = cut

White = not cut

purple/yellow - engraving

Always when pc machine is switched on or rebooted, to origin pc, after put on cnc options and mark 6. Also origin pc when switch off pc with head to the bottom left and blow option (oz) with gas closed.

Note: Always cut a test piece by drawing made manually with compensate, leadline and auto cooling point from 12mm and bigger plates. 35 x 35 rectangle to check that plates is cutting smooth with the layer selected and nozzle also.

In layer - Don't go too much lower or higher in focus and gas pressure. It can damage a part cutting. 0.1 - 0.3 max.

When machine head is going into the bed after not checked where it's cutting or calibrate, Do never start from there, go to pc and hold the emergency butoon for 10 seconds and then touch nozzle.

Another way for that is to go origin. The machine will go up slowly and then go to it;s origin position.

EX worker (over phone conversation)

When a machine keep saying "tip touch" then go origin, also do tape shot and remember to not press button, while my finger is still on nozzle and tape.

Also if parts isn't cutting nice and smooth, then first check bottom lens with medical gloves and always close the lens tray's so there won't go any air into the inside of the head.

BCS 100:

click 1, follow instructions on what is beinmg told under (servo calibration) and then when it's done click 2, (capacitance calabration) and repeat step 1 (click 1).

As a screen open on system in BCS100 "set right mechanic param, jog z to middle of travel range, then move the laserhead +/- middle from bottom or top with height." and then start.

As soon as screen 1 is done, then a screen in BCS100 will open and says "jog laserhead close to sheet, keep machine tool no vibration" then enter again (height of nozzle this time close to a sheet plate on bed.)

As soon as screen 2 is done, another screen will open in BCS100 and says "1, confirm servo, capacitance calibration and origin have executed.

2. confirm there is sheet below laser head to follow" and this time make sure the laser head is maxed height (top)and enter again.

then let the machine do it's thing. Do not touch or close the BCS100.

Once that is done, go marker and start and make sure shutter (laser light)is switched off and carry on with the cutting.

If a alarm error code (BCS100 follow timeout) appear, click focus origin (bottom left), go marker and start.

Any parts that has been cut with numbers or letters inside a part should use a s/s layer and it will look much smoother and nicer and you can see the difference in the inside part.

To fix something manually on the laser machine pc, go to file, click import, click LXD, select the part or job and open it, click the part onto the black background, and select the part needed to make a change.

Laser machine layer setups: on both machines:

Was not showed or even test to learn me. Zero experience in this and this is the most important step when a new layer is actually needed.

Something I add on: If I ever had the chance to work in a laser cutting company again, I really need to learn how to set up layers as well. I feel this is very very important.