Lasercutter Stugan

King Rabbit 80W (due to ageing of tube maximum power is is probably more like 60W)

The laser cutter is a slightly quirky machine that demands both knowledge and care to achieve proper results and continuous operation. If care and proper operation is neglected this can result in damage to the machine and fire hazard.

To be able to safely operate and properly make full use of the laser cutter, knowledge of the bits in the following list is essential. Its is a long list, but most items are quite simple and straightforward. Make notes as you learn about them. If you feel that all the points on this list are clear to you, then you have a full grasp of how to operate the laser safely and with good results. However, if anything is unclear, just ask away and someone can show you.

The machine is fantastic for so many reasons, and you can do so many different things with it. Lets keep it that way and see to that you get to have full use of it!

Basic hardware and Mechanics:

Parts - Gantry, cutting table, laser tube, laser head, rails, control panel

- Mirrors
- X and Y-axis
- Z-axis
- Lens and lensholder/mouthpiece
- Liquid cooler - water level, temperature
- Compressor
- Evacuation fan
- Safety Sensor
- Emergency Breaker

Machine controller:

- Speed Adjustment
- Power Adjustment
- Movement of laser XY axis
- Test (Area)
- Start/Pause and Stop

Running Machine:

- Uploading file
- Selecting file
- Setting area
- Setting Focus
- Deleting files

Checklist - Lid, fan, cooler compressor, fire hazard, number of files on laser

Lenses:

38,45,108mm

- Uses and differences
- Air nozzle extensions
- How to switch lens
- Focusing

Regular Maintenance:

- Empty waste tray
- Wipe cut table
- Check lens and Mirrors, clean if necessary (acetone, non-abrasive wipe such as microfibre or soft paper napkin, cue tips)

DO NOT USE RECYCLED TOILET PAPER OR SIMILAR FOR LENSES/MIRRORS, THEY CONTAIN SILICATE PARTICLES THAT SCRATCH THE SURFACES

- Keep area neat

- Checking mirror calibration (Painters tape over entry hole of laser head, and clear tape for the nozzle alignment is recommended, check opposite corners of cutting canvas)

Deeper Maintenance:

- Cleaning and lubing rails (wipe off old grease before applying new, as this contains abrasive particles)
- Washing knife table and honeycomb table
- Washing/cleaning inside of machine
- Calibration of mirrors (This takes a bit of knowledge and time. Painters tape for first three places, and clear tape for the nozzle alignment is recommended, as is patience and methodical approach)
- Cleaning of laser tube emitter **RESIDUE ON THIS WILL CAUSE DROP IN POWER AND HEATING OF THE TUBE**

Lasercut 5 Software:

- SoftDog hardware key and it's quirks
- Importing formats (dwg, dxf, ai ver.8, bmp)
- Checking file
- Basic tools (scale, move, align, flip)
- Array settings
- Layers/colors and their order
- Power and speed settings
- Setting laser origin
- Engraving closed vectors, power, speed, scan gap
- Engraving raster images (bmp), 600 dpi, 2-bit, dithered
- Exporting to machine (download over usb cable or usb memory)
- Double file jobs, output tick box

Checklist: Artifacts outside machine canvas, output order, power settings, origin

Material properties:

- Acrylic, mirrored acrylic <10mm
- Polycarbonate (PC) <3mm (Produces foul smell and residue, check ventilation and clean up properly afterwards)
- Polypropylene (PP) <3mm (Produces a lot of fine white residue in machine, please do proper check of lens, mirrors and if cut in quantity, laser tube emitter)
- MDF <8mm (depends on quality) (Produces a lot of tar residue on cutting table, please clean up before it dries up)
- Plywood <8mm (depends on quality)
- Wood, thickness and result varies on type
- Paper
- Cardboard (Highly flammable, observe machine at all times, and go fast)
- Balsa
- Leather (Smells like burnt hair)
- Latex (non-chlorinated)
- EVA-foam (May be combustible)
  Extruded polystyrene (EPS, XPS) <50mm (Highly flammable, observe machine at all times, and go fast)
- Laser ply (double material for two-color engraving)
- Laser rubber (stamp material) (Smells foul)
- Stone, ceramics, glass, anodized aluminium (**Engrave only!** May take experience to get good results)

NO GO MATERIALS

- Vinyl, vinyl decals, PVC **(NOT TO BE USED PRODUCES CHLORINE GAS, REALLY BAD FOR YOU AND MACHINE)**
- Fake leather, unless its known to be **non-chlorinated** PU (PolyUrethane). See above under Vinyl.
- Metals (The machine is not powerful enough, nor suited to either mark, engrave or cut metals, with the exception of anodized aluminium, see above)

General Rules:
Using the machine without proper knowledge is prohibited
Do NOT leave machine unattended when it is working (stay close and have a look at regular intervals)
Do not cut materials you do not know
Check lens and mirrors regularly
Check level of coolant and cooler temperature regularly
Do not run machine at 100% for prolonged times (>1 minute)
Clean up after you use the machine
If there is something not working properly, make note of it and let others know so it can be fixed
Material not marked is up for grabs, just check that you know what you are cutting
Replenish materials if you are able to do so

Known quirks:

- The laser has been known to, under non-active moments, to “ghost-travel”. The Y-axis starts moving slowly along, for no known reason. Just restart machine and it should be fine. A theory on this is is that it is the result on adjusting speed on the machine.
- When using LaserCut5 on the computer next to the laser, setting the speed under 10mm/s results in it crashing.

Tips:
Note the settings you are using for different materials for later use
Keep your personal ready-to-go laser cut files on a USB-stick
Do test cuts! Try on a small piece before endeavoring bigger jobs!
Google is your friend, and so are the other people in Stugan. If you have questions, need tips or want to try something not covered before, just holler at us via FB or other media.