It is important to note that there are several factors that affect the results of your machine's cutting and engraving. These factors include:

- Making sure the laser tube is properly leveled
- Having mirrors #1 and #2 properly aligned and firing towards the center
- Making sure the laser beam is exiting the nozzle towards the center (The level of the Laser Head and Mirror #3 can be adjusted if needed)
- Making sure the focusing of the laser is adequate (you should be getting a small sharp dot between .1mm - .3mm in diameter) on your material after you pulse the machine at 15% power
- Proper air assist (lower PSI between 8-13 is recommended for engraving while a 20+ PSI is recommended for more efficient cuts)
- Using a water chiller set at around (63-68F or 17-19C) also helps in maximizing efficiency, as it will maintain the laser tube in an adequate cool temperature producing a more efficient laser beam
- The focal length of the focal lens: A 1.5" focal length lens will allow better engraving quality, A 2" focal length lens will allow good engraving and cutting, 3" and 4" focal length lens are better suited for cutting thicker materials
- Proper software settings

Average Cutting settings for Baltic Birch Plywood of Various Thicknesses

Wattage	Parameter Settings	1/16 in	1/8 in	1/4in	1/2in	3/4in	1in	1.2 in	1.4 in
50w	Speed	15 mm/s	10 mm/s	5 mm/s	3 mm/s	N/A	N/A	N/A	N/A
	Power	20 %	26 %	37 %	47 %				
55w	Speed	17 mm/s	12 mm/s	5 mm/s	3 mm/s	N/A	N/A	N/A	N/A
	Power	20 %	25 %	35 %	46 %				
60w	Speed	16 mm/s	12 mm/s	6 mm/s	4 mm/s	2 mm/s	N/A	N/A	N/A
	Power	20 %	25 %	32 %	45 %	50 %			
80w	Speed	25 mm/s	12 mm/s	7 mm/s	5 mm/s	4 mm/s	3 mm/s	N/A	N/A
	Power	20 %	25 %	30 %	35 %	43 %	47 %		
100w	Speed	30 mm/s	15 mm/s	7 mm/s	6 mm/s	5 mm/s	4 mm/s	2 mm/s	N/A
	Power	20 %	25 %	28 %	35 %	40 %	45 %	55%	
130w	Speed	35 mm/s	16 mm/s	8 mm/s	7 mm/s	6 mm/s	5 mm/s	3 mm/s	2 mm/s
	Power	18 %	25 %	27 %	32 %	37 %	42 %	47 %	55 %
150w	Speed	40 mm/s	17 mm/s	9 mm/s	8 mm/s	7 mm/s	6 mm/s	4 mm/s	2 mm/s
	Power	18 %	24 %	26 %	30 %	35 %	40 %	45 %	52 %

Average Cutting settings for Plexiglass Acrylic of Various Thicknesses

Wattage	Parameter Settings	1/16 in	1/8 in	1/4in	1/2in	3/4in	1in	1.2 in	1.4 in
50w	Speed	20 mm/s	9 mm/s	4 mm/s	2 mm/s	N/A	N/A	N/A	N/A
	Power	20 %	25 %	45 %	50 %				
55w	Speed	20 mm/s	11 mm/s	4 mm/s	2 mm/s	N/A	N/A	N/A	N/A
	Power	20 %	25 %	44 %	49 %				
60w	Speed	20 mm/s	11 mm/s	5 mm/s	3 mm/s	2 mm/s	N/A	N/A	N/A
	Power	20 %	25 %	37 %	48 %	58 %			
80w	Speed	25 mm/s	12 mm/s	6 mm/s	4 mm/s	3 mm/s	1 mm/s	N/A	N/A

	Power	18 %	25 %	35 %	45 %	55 %	60 %		
100w	Speed	25 mm/s	14 mm/s	6 mm/s	5 mm/s	4 mm/s	1 mm/s	N/A	N/A
	Power	18 %	25 %	33 %	43 %	53 %	58 %		
130w	Speed	30 mm/s	15 mm/s	7 mm/s	6 mm/s	5 mm/s	2 mm/s	1 mm/s	N/A
	Power	17 %	25 %	30 %	37 %	42 %	55 %	58 %	
150w	Speed	35 mm/s	16 mm/s	8 mm/s	7 mm/s	6 mm/s	3 mm/s	2 mm/s	1 mm/s
	Power	16 %	24 %	30 %	35 %	40 %	53 %	55 %	58 %

Average Cutting Settings for Leather of Various Thicknesses

Wattage	Parameter Settings	1/16 in	1/8 in	1/4in	1/2in
50w	Speed	20 mm/s	12 mm/s	3 mm/s	N/A
	Power	23 %	30 %	32 %	
55w	Speed	20 mm/s	12 mm/s	3 mm/s	N/A
	Power	23 %	30 %	32 %	
60w	Speed	20 mm/s	13 mm/s	4 mm/s	N/A
	Power	20 %	28 %	35 %	
80w	Speed	25 mm/s	18 mm/s	6 mm/s	4 mm/s
	Power	18 %	28 %	32 %	40 %
100w	Speed	35 mm/s	23 mm/s	8 mm/s	5 mm/s
	Power	18 %	25 %	30 %	38 %
130w	Speed	40 mm/s	25 mm/s	9 mm/s	6 mm/s
	Power	17 %	24 %	28 %	37 %
150w	Speed	45 mm/s	26 mm/s	10 mm/s	7 mm/s
	Power	17 %	23 %	27 %	35 %

Average Engraving Settings of Various Materials

Wattage	Parameter Settings	Clear Acrylic	Wood	Glass	Leather	Faux Leather	Tile/Stones
50w-55w	**Speed**	275 mm/s	150 mm/s	175 mm/s	350 mm/s	375 mm/s	125 mm/s
	Power	22 %	21 %	19 %	19 %	18 %	20 %
60w	**Speed**	300 mm/s	180 mm/s	200 mm/s	375 mm/s	400 mm/s	145 mm/s
	Power	20 %	20 %	19 %	17 %	16 %	19 %
80w	**Speed**	325 mm/s	200 mm/s	225 mm/s	400 mm/s	425 mm/s	145 mm/s
	Power	18 %	19 %	18 %	16 %	15 %	18 %
100w	**Speed**	350 mm/s	200 mm/s	250 mm/s	425 mm/s	450 mm/s	165 mm/s
	Power	15 %	18 %	18 %	16 %	15 %	18 %
130w	**Speed**	375 mm/s	225 mm/s	275 mm/s	450 mm/s	475 mm/s	185 mm/s
	Power	15 %	18 %	16 %	16 %	15 %	18 %
150w	**Speed**	375 mm/s	225 mm/s	275 mm/s	450 mm/s	475 mm/s	185 mm/s
	Power	15 %	18 %	16 %	16 %	15 %	18 %

These are the average settings to start off with and are focused on having low power settings. You would want to run sample tests first. Depending on your desired finish and look you will have to adjust the settings accordingly.

Remember there is a power/speed ratio correlation. The more you increase the speed the less power is focused on the area.

For example, if you want an engraving to look darker you don't always have to increase power, you can slow down the speed. The same goes for cutting, if you didn't get a good cut, you can reduce the speed. If you want to increase speed you will also have to slightly increase power. This power/speed ratio correlation is the fundamental basis of engraving and cutting.

We don't recommend surpassing 70% max power for any project. If your machine is well tuned and the software settings are correct you can get the desired cuts or engraving quality with no more than 50-60% max power. Running your machine above 70% max power or above 20 amps constantly, will shorten the lifespan of your laser tube.

It is important to note that using the machine constantly between 70%-99% max power will drastically reduce the lifespan of the laser tube

Never leave your machine unattended during operation