monport

ONYX

User Manual

Enjoy the Macgic of Laser

PREFACE

Welcome to the Monport Laser Family!

We are very excited to have you as one of our valued customers. It is recommended that you print out this manual to save time in the future and be sure to keep it close to your machine or computer, so you can have easy access while you design files or operate the machine.

This manual will help walk you through basic set-up of the machine.

Please be sure to read the manual in its entirety prior to operating the machine, this will ensure a better understanding of the machine and how it works. We understand that there can be a learning curve like with any new piece of machinery but, with some effort and patience you will be running your new laser with confidence and speed in no time!

If you do have any questions while reading the manual or setting up your machine, feel free to give us a call at +1 (213)554-8829 or email support@monportlaser.com and a member of our technical support team would be happy to answer your questions.

The Monport ONYX 55 laser is a machine that uses a carbon dioxide laser for cutting or engraving. Within the protective housing, the laser beam traverses three mirrors on a two-axis moving frame and is again reflected into the focusing optics for irradiation of the workpiece.

Definitions of Procedures

The Monport ONYX 55 laser is a machine that uses a carbon dioxide laser for cutting or engraving. Within the protective housing, the laser beam traverses three mirrors on a two-axis moving frame and is again reflected into the focusing optics for irradiation of the workpiece.

Operation

Operational procedures include programming the controller for the pattern to be cut or engraved, opening the housing to place the panel or material workpiece, closing the housing if possible, initiating the cutting process, opening the housing and removal of the finished workpiece. Because the machine can be used to cut panels that can exceed the dimension of the machine, the housing includes removable panels (pass-throughs).

Maintenance

Maintenance includes routine cleaning and emptying of the scrap tray. These procedures are performed with the machine off.

Service

Service includes initial installation and alignment, as well as repair when needed. Procedures during service may require the machine to be turned on. MONPORT recommends that only trained service personnel complete service or repair.

Fire Warning

Your laser system uses a high intensity beam of light that can generate extremely high temperatures when it comes into contact with the material being engraved, marked or cut. Some materials are extremely flammable and can easily ignite and burst into open flame setting the machine afire. This open flame is very dangerous and has the potential to destroy not only the machine, but the building in which it is housed.

Experience shows that vector cutting with the laser has the most potential to create an open flame. Many materials are susceptible to igniting, but acrylic, in all its different forms, has been shown to be especially flammable when vector cutting with the laser.

Please read the following warnings and recommendations and follow them closely at all times!

Stay with the laser. Never operate the laser system while unattended.
Keep the area clear. Clean around the machine and keep the area free of clutter, combustible materials, explosives, or volatile solvents such as acetone, alcohol, or gasoline.
Be prepared with a fire extinguisher. Always keep a properly maintained and inspected fire extinguisher on hand. Monport recommends a Halotron fire extinguisher or a multi-purpose dry chemical fire extinguisher. The Halotron extinguishers are more expensive than a dry chemical, but offer certain advantages should you ever need to use an extinguisher. The Halotron extinguisher discharges a clean, easily removable substance that is not harmful to the mechanics or wiring of the laser system. The dry chemical extinguisher discharges a sticky, corrosive powder that is very difficult to clean up.
Use Air Assist. Always use the system's Air Assist feature when vector cutting.
Use caution when vector cutting. Many materials have the potential to suddenly burst into flames when cut with a laser – even materials that may be very familiar to the user. Always monitor the machine when it is operating.
Clean the laser. A buildup of cutting and engraving residue and debris is dangerous and can create a fire hazard in its own right. Keep your laser system clean and free of debris. Regularly clean underneath the Vector Cutting Table to clean any small pieces that have fallen through the grid.

CONTENTS

INTRODUCTION

1.1 General Information

This manual is the designated user guide for the installation, setup, safe operation, and maintenance of your desktop laser engraver. It is divided into six chapters covering general information, safety instructions, installation steps, operation instructions, maintenance procedures, and contact information.

1.2 Designated Use

TheONYX 55 is intended foruseengraving signsandotherconsumer productsonapplicablesubstrates.

This lasercan processawidevarietyofmaterials includingwoodand cork ,paperand cardboard ,most plastics ,glass ,clothand leather ,andstone .Itcanalsobe usedwith some speciallycoatedmetals .useof this system fornon-designated purposesormaterials isnotpermitted

Thesystemmustbeoperated ,maintained ,and repairedbypersonnelfamiliarwiththefeldofuseandthe dangersofthemachineand thematerial beingengraved including its reflectivity ,conductivity ,potentia forcreatingharmfulorcombustiblefumes ,etc.

Laser beams are dangerous .Themanufacturer and/or seller bear(s)no responsibility and assume(s) no liability for any improperuse of thisdevice orforanydamageor injuryarising from such use .The operator isobligedtousethisdesktop laserengraveronly inaccordancewith itsdesignated use ,theother instructions in itsmanuals ,andal lapplicable localandnationa llawsandregulations.

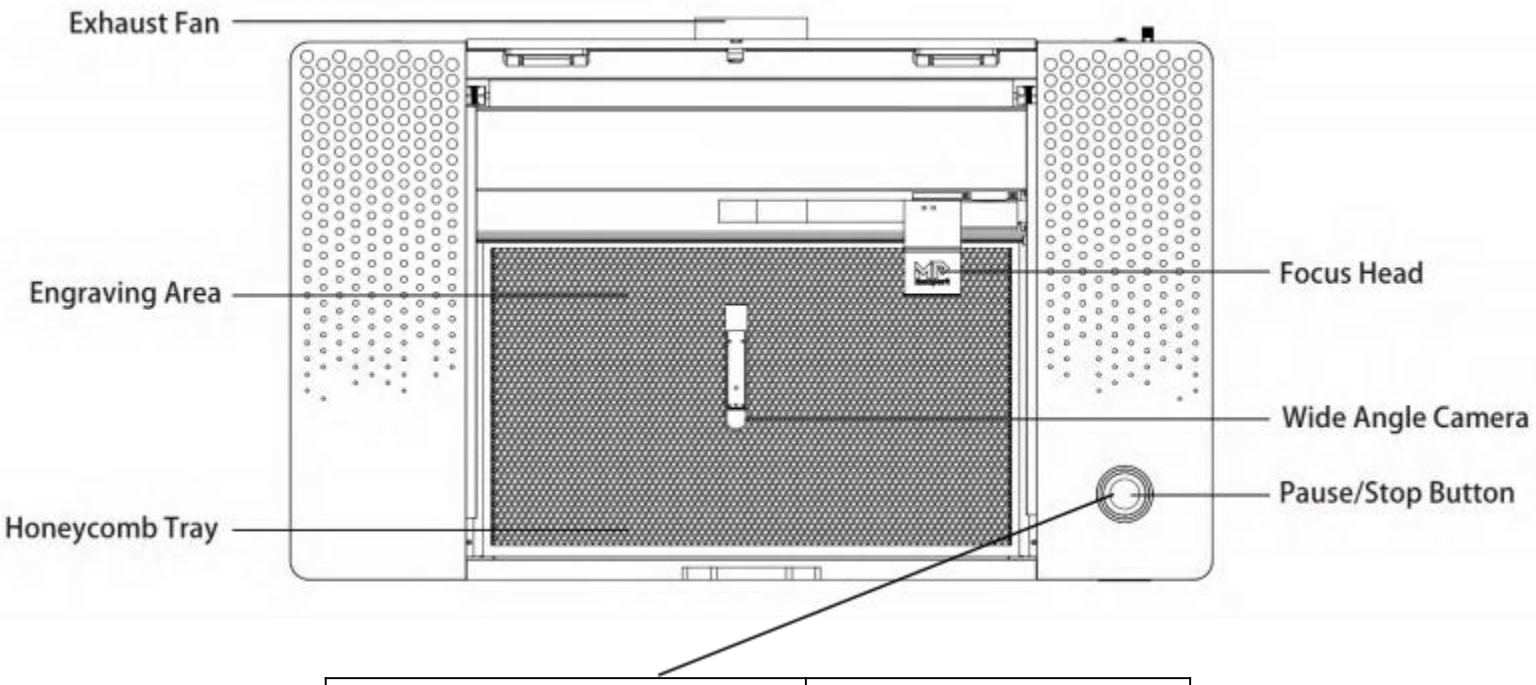
1.3 Technical Specifications

Model		ONYX 55	
Input Power		110–120 V~ 60 Hz	
Power Consumption		550 W	
Laser Power		MAX 55W	
Expected Service Life at <40% / 40–70% / >70% Power		11,000 / 10,000 / 8,000 hr.	
Laser Wavelength		10.6 µm (10,600 nm)	
Laser Tube	**Diameter**	2.2 in.	5.5 cm
	Length	35 in.	90 cm
Mirror	**Diameter**	0.8 in.	20.5 mm
	Thickness	0.12 in.	3 mm
Focus Lens	**Diameter**	0.6 in.	15.5 mm
	Thickness	0.08 in.	2 mm
	Focal Length	2 in.	50.8 mm
Honeycomb Workbed Dimensions		22.5×13.2×0.9 in.	57.1×33.6×2.2 cm
Processing Area	**Standard** (L×W)	20.1×11.8 in.	510×300 mm
	Trayless (L×W)	13.7×8.2 in.	350×210 mm
	Rotary (L×D)	0–9.4×2.4–2.9 in.	0–240×7–65 mm
Front/Back Pass-Through Area (L×H)		14.1×0.28 in.	360×7 mm
Max. Processing Speed		19.6 ips	500 mm/s
Rec. Processing Acceleration	**X Axis**	196 ips²	5000 mm/s²
	Y Axis	118 ips²	3000 mm/s²
Max. Material Thickness	**Standard**	0.67 in.	1.7 cm
	Without Workbed	2 in.	5.1 cm
Max. Resolution		1000 dpi	
Min. Letter Size		0.04×0.04 in.	1×1 mm
Mainboard		Ruida 6442S (RDC6442S-B)	
Integrated Water Pump	**Capacity**	1.6 qt.	1.5 L
	Flow Rate	142 gph	540 L/hr.
Integrated Air Assist	**Port Diameter**	0.4 in.	10 mm
	Air Flow	18.8 cfm	533 L/min.
Integrated Digital Camera	**Max. Resolution**	5 MP	
	Field of View	20.1×11.8 in.	51×30 cm
	Accuracy	±0.04 in.	±1 mm
External Exhaust Fan	**Rated Power**	60 W	
	Port Diameter	5.9 in.	150 mm
	Air Flow	282/353 cfm	480/600 m³/hr.
Req. Operating Environment	**Humidity Range**	20–85%	
	Temp. Range	40–104°F	5–40°C
Compatible Operating Software		CADLaser, CorelLaser, LightBurn, RDWorks	
Dimensions		38.2×22.3×9.2 in.	97×56.5×23.4 cm
Net Weight		104 lb.	47 kg

1.4 Components

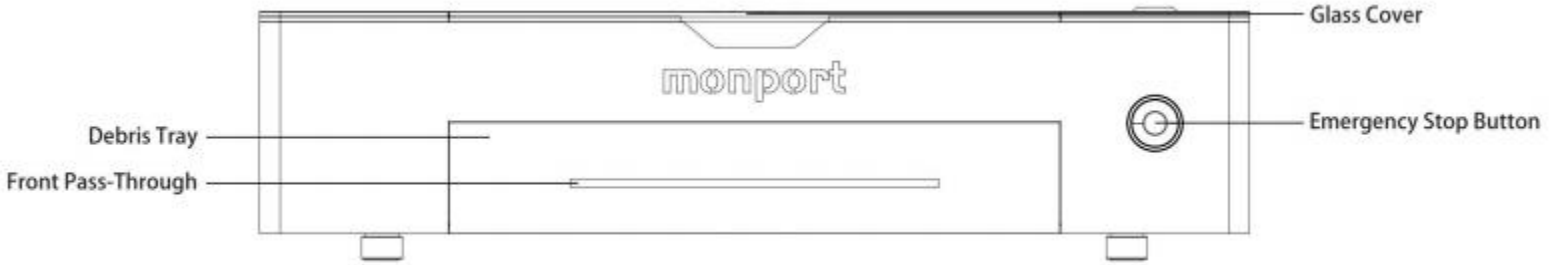
Here's a quick tour of parts you'll need to know:

Top View

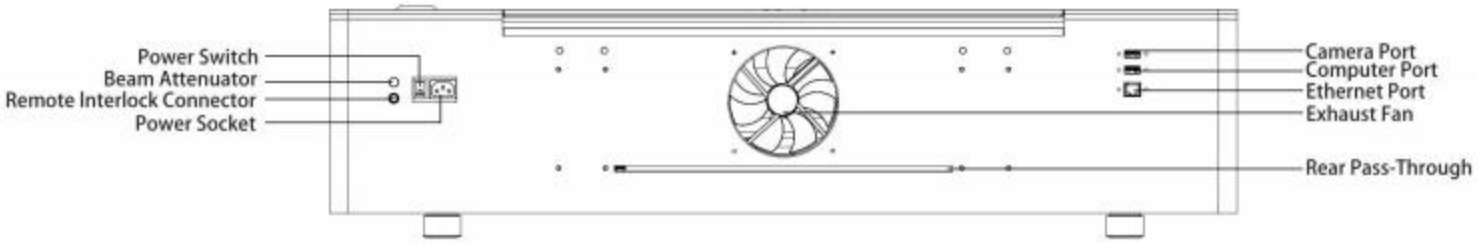


Button Color Status	Meaning
Green	Ready to Work
Blue	At Work
Red	Error or Malfunction

Front View



Rear View



SAFETY INFORMATION

2.1 Disclaimer

youronyxmaydiffersomewhatfrom those shown in thismanua ldue to options ,updates ,etc .please contactus ifyourengravingmachinecamewithan outdatedmanua lor ifyouhaveanyotherquestions.

The ONYX 55 is a Class IV Laser Product, or Class 4 as defined in International Standard IEC 60825-1.
The ONYX 55 complies with 21 CFR 1040.10 and 1040.11.
The output of the embedded laser is fully contained, except for the part of possible reflected low-power laser radiation which reaches at and could be coming out of the Front/Rear Pass-Through.

The laser cabinet has safety interlocks that turn the laser off if any access door is opened during operation, and no special precautions are necessary too perate the laser safely. Access doors are interlocked and can be opened without the use of a tool. Any interlocked door that is opened while the machine is operating will immediately stop the laser from firing.

Accesspanelsarenot interlocked and requirea toolforopeningor removal .Accesspanelsshould alwaysbe installedwhenthe laserisoperating Neveroperate the lasersystemwithanaccesspane removed

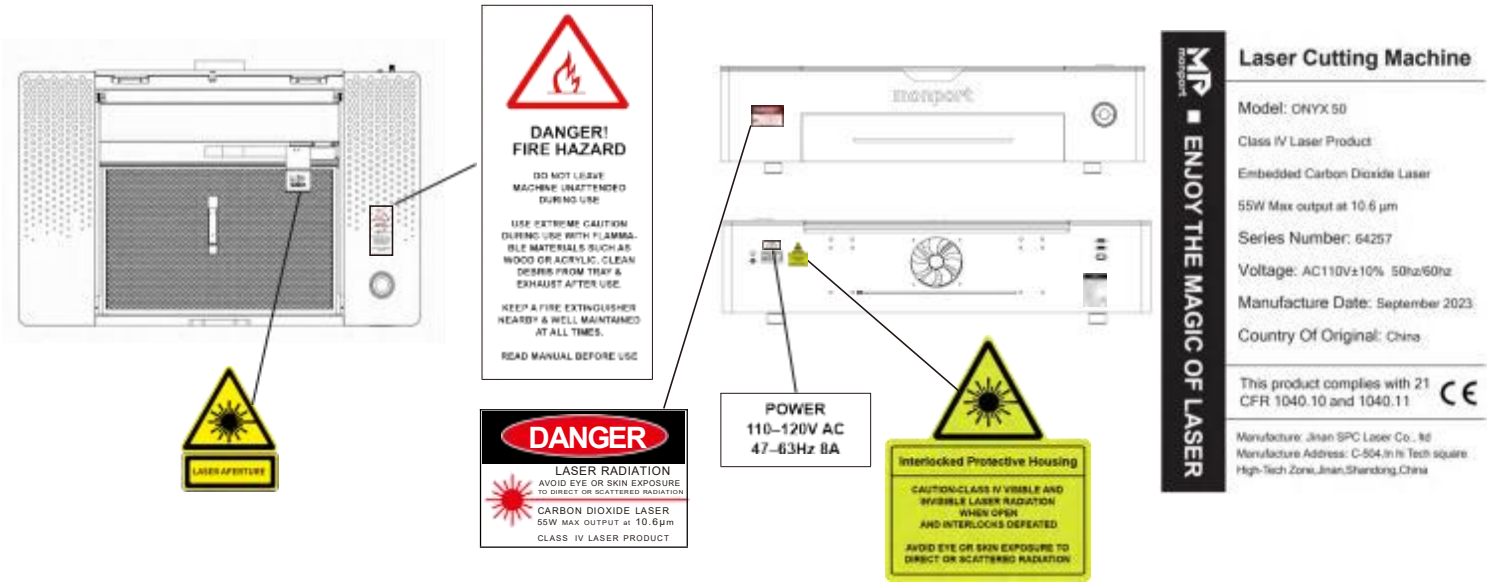
Thevisibleoutputbeamofthe LaserDiodepointer (RedDotpointer) isaccessibletotheoperator .while thisdeviceemploys thesametechnologyasthe familiar laserpen-pointers ,likethem it ispotentially hazardous if itsbeam isdirected into theeye.wehavemade everyeforttomakethe LaserDiode pointer(RedDotpointer)as safeaspossible .Itsbeampath is locatedwel linside thecabinet ,and under norma lconditions ,no hazardous levelsof laserradiationcan escape.

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
[Refer to 2.3 Laser Safety Instructions for more details]

2.2 General Safety Instructions

The cover'sviewingwindownaturallyabsorbsmost reflectedbeamsfromthehigh infrared laserbut it is **NOT** Otherwiseprotectedagainst it .protective eyewearshould **ALWAYS** be usedby **EVERYONE** present when the laser is active .such eyewearshouldbe at leastoD6 atthe lasersmainwavelength of 10.6 microns.

. youronyx50shouldcomewithwarning labels inthe following locations:



Ifanyofthese labels ismissing ,llegible ,orbecomesdamaged ,itmustbereplaced.

. use this laserengraving device only in accordancewith al lapplicable loca land nationa llaw sand regulations.

n theunited states ,the safe use of Lasers (z136) standardspublished by theAmerican National standards Institute do not havetheforceoflaw ,butadherence to itsprovisionsmaybe required by some companiesor loca lauthoritiestominimize risk and liability .I nparticula ritma yb enecessar yin commercialsettingsto formallydesignatea lasersafetyofficer ,topostwarningsigns inareaswith active lasers ,andtodocumentthatal loperatorsoflaserequipmenthavebeenproperlytrained.

. use this device only in accordance with this instruction manual and the manual for the engraving software includedwith it . only allow this device to be installed , operate d, maintained repaired ,etc.byotherswho havealso readandunderstoodbothmanuals .Ensure thatthismanualand thesoftwaremanua lareboth includedwith thisdevice if it isevergiven orsold toa thirdparty.

. **DO NOT** leave this device unattended during operation . observe the device throughoutoperation and, if anything seems to be operating strangely , immediately cut off **ALL** Power to themachine and contact eitherour customer service oryour dedicated repair service .similarly ,ensurethedevice is **FULLY** turnedoffaftereachuse.

. **DO NOT** allowminors , untraine dpersonne l, orpersonn elsufferi ngfr omphysi calormental impairment thatwouldaffecttheirabilitytofollowthismanualand the softwaremanua lto install ,operate, maintain ,or repairthisdevice.

. Anyuntrainedpersonnelwhomightbenearthedevicewhile it is inoperation **MUST** be informed that it isdangerousandfully instructedonhowtoavoid injuryduring itsuse.

. Always keep a fire extinguisher ,water hose , orother flame retardant system nearby incaseofaccidents .Ensure that the loca lfiredepartment'sphone number is clearlydisplayed nearby .I nthecaseofafir e,cutelectric alpowerbeforedousingthe flame .Familiarizeyourselfwit hth ecorrec trang eforyourextinguisherbefor euse. Take care not to use the extinguishertoo close to the flame, as its highpressure canproduceblowback

2.3 Laser Safety Instructions

Theonyx50usesan invisible **CLASS 4 LASER**, the strongestandmost dangerous classof laseravailable forpublicuse .usedormodifedwithoutcare ,itcancauseseriouslypropertydamageandsever epersonal injury includingbutnot limitedtothefollowing

- The laserwil leasilyburnnearbycombustiblematerials

someworkingmaterialsmayproduce radiationorharmfu lgasesduringprocessing

Directexposuretothe laserwil lcausebodilyharm includingseriousburnsandirreparable eyedamage

Assuch

- **DO NOT** modify or disable this device's provided safety features except as specifically instructed elsewhere in thismanual .DO notmodifyordisassemblethe laser anddo not use the laser if ithas beenmodifedordisassembledbyanyoneexcepttrainedandskilledprofessionas .Do notactivatethe laserwithout itsfocus lens .Dangerous radiation exposureand other injurymay resultfrom theuseof adjusted ,modified ,orotherwise incompatibleequipment.
- **NEVER** leaveanypartofthepolaropenduringoperationexcept(whenneeded)thepass-throughdoors. Never interferewith the laserbeam ,donotplaceany partofyourbody inanypartofthe laserpath during operation ,and never attempt to viewthe laserdirectly .when using the pass-through doors or otherwise risking exposure tothe laser beam ,takemeasures toprotectyourself from potentially reflected laserbeams includingtheuseofpersonalprotectiveequipment.
- **DO NOT** lookorallowothersto lookdirectlyattheactive laserevenwhenthecoverisclosed.Theviewin window naturally absorbsmost reflectedbeams from the high infrared laserbut is **NOT** otherwise protected against it. **EVERYONE** nearbyduringuse shouldweareye protection speciallydesigned to flterthe specifcwavelengthofyourengraver's laserwithanoptica ldensity(OD)of6orgreater .Donot stareorallowothersto starecontinuouslyattheactive laserevenwhenusingprotectiveeyewear
- **ONLY** usethisengraver ifitsautomaticshutoffsareworkingproperly.Neverdisableanyoftheseshutoffs exceptasspecifcally instructed elsewhere inthismanual .whenyoufirstgetthisengraverand ifyou subsequentlynoticeany problems ,testthem (see below)beforeundertaking anyotherwork .DO not continueuse iftheshutoffsdonotoccur.Turnoffthedeviceandcontacttechnica lsupportoryourrepair service
- **ONLY** Use thisengraverinaflatandstable location.usingitonanunstablesurfaceoratatiltedposition maycause the lasertodeviatefrom its intendedpathorpermanentlydamage interna lcomponentsof thedevice.
- **DO NOT** ever under **ANY** circumstancesusethis laserengraverifthewatercoolingsystem isnotworking properly .Alwaysvisually confirm thatwater isflowingthrough theentire system before turningon the lasertube .Immediatelysto pus eifthewatercoolin gsystemmalfunction s. Ifthesyst empauses operationbecause thecoolanthas reached itsmaximumtemperatureof122F (50) ,allowat least thirtyminutesforthesystem tocoo lbefore resumingoperation.
- **DO NOT** usegenericcoolantorantifreezeinyourcoolingwater,astheymayleavecorrosive residuesand solidify insideyourhosesandpiping ,causingmalfunctionsand evenexplosions .usecustom laser-safe formulationsoruseand storeyourengraver inaclimate-controlledarea.
- **DO NOT** leavepotentiallycombustible,lammable,explosive,orcorrosivematerialsbelowthe laseror nearbywheretheymightbeexposedtothedirectorreflected laserbeam.

- **DO NOT** UseorleavesensitiveEMlequipmentnearby.Ensuretheareaaroundthe laserisfreeofstrong electromagnetic interferenceduringanyuse.
- **ONLY** Use thismachineforworkingthematerialsdescribed intheMaterialsafetysectionofthismanual The lasersettingsandengravingprocessmustbeproperlyadjustedfor specifcmaterials.
- Ensurethearea iskeptfreeofotherairbornepollutants,asthesemightposeasimilar riskofreflection combustion ,etc.

2.4 Electrical Safety Instructions

- **ONLY** Use thisdevicewitha compatible ,stable,andgroundedpowersupplywith less than5%fluctuation in itsvoltage .Do notusewithanungrounded3to2prongadapter Thedevice'sgroundingshouldbecheckedregularlyforanydamagetothe lineor loose connections.
- **DO NOT** connectotherdevicestothe samecircuit,asthe lasersystemmay require itsfullamperage.DO notusewithstandardextensioncordsorpowerstrips .useonlysurgeprotectors ratedover2000J.
- Theworkareaaroundthis laserengravingdeviceshouldbekeptdry,wellventilated,andenvironmentally controlled to keep the ambient temperature between40-104F (5-40°c) .Forbes tresult s,keepthe temperatureat75F(25c)orbelow .Theambienthumidity shouldbebetween20-85%.
- Adjustment ,maintenance ,and repairoftheelectrica lcomponentsofthisdevicemust bedone **ONLY** bytrainedandskilledprofessionalstoavoidfiresandothermalfunctions ,includingpotentia lradiation exposurefromdamagetothe lasercomponents .Becausespecializedtechniquesarerequiredfortesting theelectricalcomponentsofthismarkingsystem ,it isrecommended such testingonlybedonebythe manufacturer ,seller ,orrepairservice.
- unlessotherwisespecifed **ONLY** Undertakeadjustment,maintenance,and repairofthisdevicewhen it isturnedoff ,disconnectedfrom itspowersupply ,andfullycooled.

2.5 Material Safety Instructions

- usersofthis laserengravingmachine are responsible for confirming thatmaterials tobeprocessed canwithstand theheatofthe laserandwil lnotproduceanyemissionsorbyproductseitherharmfu lto peoplenearbyorinviolationoflocalornationa llawsorregulations .Inparticular,donotusethisdeviceto processpolyviny lchloride(pvc) ,tefon ,orotherhalogencontainingmaterialsunderanycircumstances.
- usersofthis laserengraverareresponsibleforensuringthateverypersonpresentduringoperationhas suffcientppEtoavoid the injuryfromtheemissionsandbyproductsofthematerialsbeingprocessed .In additionto theprotective lasereyeweardescribedabove,thismayrequiregoggles ,masksorrespirators, gloves ,andotherprotectiveouterclothing.
- **DO NOT** operate the laserwithout itsairassist.
- users ofthis laser engraverare responsibleforensuring thatotherwise safedustand debris created duringuse isfullycleanedafterwards .Dustallowedtobuilduponthesurfacesofthemainbayandthe trayunder it isa firehazardthatcaneasilybe ignitedbytheheatofthe laser.
- **DO NOT** everunderanycircumstances use this laserengraver if the exhaust system is notworking properly .Always ensure thatthe exhaust fan can removethedustandgas producedbythe engraving process in accordancewithalapplicable localand national lawsandregulations .Immediatelystopuse iftheexhaustfanorventpipemalfunctions.
- usersmustexercise specialcautionwhenworkingwith conductivematerialsasbuildupoftheirdust andambietparticlesmaydamageelectrica lcomponents,causeshortcircuits ,orproduceothereffects including refected laserradiation.

Thismachinecanbesafelyusedwiththefollowingmaterials

- cardboard
- ceramics,includingDishes,Tile,etc
- Glass
- Leather
- paper&paperboard
- some plastics
  - Nylon(polyamide,PA,etc.)
  - polyethylene(PE)andHigh-Densitypolyethylene(HDPE,PEHD,etc)
  - Biaxially-orientedpolyethyleneTerephthalate(Myar,polyester,etc.)
  - polyethyleneTerephthalateGlycol(PETG,PET-G,etc)
  - polyimide(pl,kapton,etc.)
  - polymethylMethacrylate(PMMA,Acrylic,plexigass,Lucite,etc)
  - polyoxymethylene(POM,Acetal,Delrin,etc.)
  - polypropylene(pp,etc)
  - styreneandAcrylonitrileButadienestyrene(ABS)
- Rubber
- stone,includingMarble,Granite,etc
- Textiles,includingcotton,suede,Felt,Hemp,etc.
- wood,includingcork,MDF,plywood,Balsa,Birch,cherry,oak,poplar,etc.

see4.4forrecommended parametersforthemostcommonlyengravedmaterials.

Thismachine **CANNOT** beusedwiththefollowingmaterialsorwith anymaterialswhich includethem:

- Artifcia lLeathercontainingHexavalentchromium(cr[v]),dueto itstoxicfumes
- Astatine,due to itstoxicfumes
- Berylliumoxide,due to itstoxic fumes
- Bromine,due to itstoxicfumes
- chlorine,includingpolyvinylButyral(PVB)andpolyvinylchloride(pvc,vinyl,cintra,etc),dueto itstoxic fumes
- Fluorine,includingpolytetrafluoroethylenes(Teflon,PTFE,etc.),dueto itstoxicfumes
- lodine,dueto itstoxic fumes
- Metals,dueto theirconductvityandreectivity
- phenolicResins,includingvariousformsofEPOXY,duetotheirtoxic fumes
- polycarbonate(pc,Lexan,etc),dueto its toxicfumes

Foral lothermaterials ,ifyouareunsureaboutitssafetyor laserabilitywiththisdevice ,seekoutitsmaterial safety data sheet (MSDS) . pay especia lattentio nt oinformatio nabou tsafet y, toxici ty,corrosiveness, reflectivity,andreaction(s)tohighheat.Alternatively,contactoursupportdepartmentforfurtherguidance.

INSTALLATION

3.1 Installation Overview

Acompleteworkingsystemconsistsofthe laserengravingmachine ,itsintegratedairassistandwaterpump its vent and exhaust fan , it scontr olcomput er, allapplica bleconnect ioncab les and theinterlock connector .The cabinetcan receivedesigns andcommandsfrom the controlcomputer directlyfrom its USBcable orethernetcable .Itca nals ostor esomedesignfleso nitsow ncircuitboar d.Thedesignscan beappliedtoatsurfaces restingonthe honeycombworkbedorto roundsurfacessupportedon oneof theprovided rotarydevices .userscan confgureotheradditionalaccessories (such asafumeextractor) to suittheirneeds.

useonlythe hardware ,wiring ,andpower sources thatcamewith orarecompatiblewith thisdevice .Installingequipmentthatyourdevice isnotdesigned toworkwithcan lead to poor performance ,shortened service time ,increasedmaintenanc ecost s,property damage ,andpersona linjury.

pleasenotethe specifcrequirementsofyoursystem's installation .Everycustomermustunderstandthese notesbefore installation toexecutea propersetup andachieve safe laserperformance .Ifyouhav eany installationquestionsorproblems,contactourtechniciansandcustomersupportteam.

Anyauxiliaryequipmentmustbeadjustedto thebasemachine .Queriesmaybedirectedtothedealeror manufacturerofsuchequipment.

3.2 Location Selection

Beforeyou instal lyourengraver ,selectan appropriate location for itsuse .Besurethat itmeetsal lofthe requirementsdiscussed in thesafety Informationabove.

The location should bestable ,leve l,dr y,an dclimat econtrolledtoensur eanambienttemperatureof 40-104F (5-40°c) and an ambient humidityof20-85% .I nparticula r,th etemperatur ean dhumidity together shouldnot be close to the dew point .I ti sals oadvisabl et ous eawindowles sroo mo rto use blinds and/or curtainsto avoid exposure to the potentia laddition alheatofdirec tsunligh t.The location shouldbe freeofdust and other airborne pollutants andwel lventilatedenough to process anyfumesproduced by the engravingprocess inaccordancewith al lapplicable lawsand regulations. Depending on thematerials tobeprocessed ,thismay requireconstructionofadedicatedventilation system .I tshouldbeawayfromchildre n;combustible,lammabl e,explosiv e,orcorrosivematerials;and sensitive EM ldevices .The power cord should be plugged into a compatible and stable powersource via agrounded3-prongoutlet .Noother item should bedrawingcurrentfrom the samecircuit .There shouldbefirefightingequipmentnearbyand the loca lfiredepartment'sphonenumbershould beclearly displayed.

It ishighlyrecommendedtohaveextraspacenearbytoavoidplacinganyobjectonordirectlyadjacentto themachine ,whichcouldbecomeafireor laserhazard.

3.3 Unpacking Your Engraver

yournewonyx50arrives inawoodencratewith itsaccessories(includingthismanual)packaged insidethe mainbay.youshouldhaveplacedthecrateinaspaciousflatareaforunpacking ,ideallynearwhereyouplan tooperate themachinepermanently .useat leasttwopeopletomoveandadjusttheengraver'spositionto help keep it leve landavoidanysharporsuddenmovement.

Step 1 openthetopofthecrate .Removethehoneycombworkbedandsurroundingfoam insulation.

Step 2 carefully removetheotherpackagingandfoam insulationfromthesidesandsetthemaside .with atleastoneotherperson ,usethetwostrapsaroundtheengraverto lift itoutofthecrateandmove ittoa **flat** and **sturdy** tableorcountertop

Step 3 carefully remove thestrapsandplasticpackagingfrom around theengraver.

Step 4 open thecoverandconfirmthatyou have received al lofthe followingaccessories :TWO4-wheel rotaryaxeswiththeiraviatorconnectioncordsaductfan ,itswiredand remotecontrols ,anadapter ring,2 exhaust pipes ,and3 hose clamps ;fve3mm basswood ,cardboard ,and acrylicblanks ;a mainpowercord ;an Ethernetcable ;twousB cords ;ausB flashdrivewithengravingsoftware ;a storageboxwithcottonswabs ,tape ,2 rulers ,2 laserkeys ,the interlockconnector,the aluminum oxidebackingplateand setsofhexwrenches ,targetdiscs ,ando-rings andthismanual.

Step 5 carefully removeany remaining interiorpackagingand stays—includingthe straparound the laser head—andsetthemaside.The lasertube isahighlyfragileobjectandshouldbehandleddelicately andas littleaspossible.

Step 6 pul loutthedebristray .Thehoneycombbedhas inchandmetricrulersonopposite sides .placethe oneyouprefertouse facingupandslide it into place .slidethetrayback inunderneath it

⚠ Never attempt to place or remove the honeycomb bed through the main cover. Always remove italongwith thedebristray instead.

Step 7 youmaykeepthepackaging incaseoffuture return but ,ifyoudisposeof itoranyaccessories ,be suretodoso incompliancewith applicablewastedisposalregulations.

3.4 Exhaust System Installation

Theprovidedductpipesextendtoatotallengthof164"(5m) .planouttheroutethattheywilltakefromyour engraver'sfantoadedicatedpurifieror—ifyourengravingfumesanddebriswil lnotbehazardousandmeet localand nationalair safety standards—toanywindoworexteriorvent .Generallyspeaking ,the straighter youcankeep thepipesbetweenyourengraverandtheiroutlet ,thebetteryoursystem'sventilationwil lbe andthe lessquicklydustanddebriswil lbuildupwithin thepipesovertime.

slide the two smal lhos eclamp sont oth esmalle rexhaustpip e.Attac hon een ddirectl yont oth erim surroundingthe exhaust fan behindthe laser .useascrewdriverto tighten oneofthe clampsaroundthis connection .Attachtheother end ofthe pipe to the inlet sideofthe60w duct fan usingthe provided adapter ring .Tighten thesecondclamparoundthisconnection.

slidethe largehoseclamponto the largerexhaustpipe.Attach oneendofthepipetotheoutletsideofthe ductfanandtightentheclamparoundthisconnection.Attachtheotherendofthepipetoafumeextractor orvent itintotheopenairoutsideyourworkarea.

connecttheductfantopower ,ideallyonaseparatecircuitfromtheonethatwil lbeusedtopowerthe laser itself .Turn itonandconfirm that itoperatesatbothspeeds.

⚠ **NEVER** Operatethe laseriftheexhaustsystem isnotremovingthefumesanddustproducedby yourmaterialsoutofyourworkarea .Always researchmaterialsbefore use and neveroperate the laseronanythatcan producecorrosive ,hazardous ,orevendeadlyfumes.

3.5 Main Power Connection

confirmthatthevoltageonthe labelabovethe laser'spowersocketmatches your loca lpowersupply .Insertthe interlockconnectorand powercord into theirsocketsonthe rearsideofthemachine .(Ifthe interlockconnectordoes notfit ,pul lback itsoutercasing ,align itsholeswiththepins ,and tryagain.) Connect the other end of the power cord directly to a grounded outlet or toasurgeprotector ratedover2000Jthatis itselfconnected toagrounded outlet .Do notconnecttheotherendtoany standardextensioncord ,power strip,orungroundedadapter .Forbestresults ,haveatrainedtechnicianverify thatyourpower supply has lessthan5%fuctuation and thatyouroutlet is properlygroundedwith less than5Q resistancealongthe line.

Poor grounding **WILL** causeequipmentfailureandcreateaseriouselectricalshockhazard.The manufacturerand/orsellerbear(s)no responsibilityand assume(s)no liabilityforanydamage accidents ,or injuriescausedbybadgroundingconnections.

3.6 Cooling System Inspection

Theprovidedwaterpump isessentia ltoyourengraver'sperformance and longevity .whenthis laser workswithoutaproperlymaintainedcooling system ,itsglass tube **WILL** Crackfromexcessheat.

openthecoverandconfirmthatthe plastictanktothe rightofyourmainbay isfull .The integratedwater pump should arrivewith about 1.6 quarts (1.5L) of coolant already in place .This should not require replacementduringthefirstyearofservice ,but refl it ifthe tankeverseemsbelowtwo-thirdsfu lbefore activation.

Flip theengraver'smain powerswitch ,andconfirmthatthecoolantbeginstoflowoutof itstank,through the lasertube ,andback intothetank.

3.7 Air Assist Inspection

yourairassistshouldalsoarrivepreinstalledandcorrectlywired .confirmthatpressurizedairbeginstoblow from the laserheadwhentheengraverisconnected to powerandturnedon.

Ifany tubingorwiringneedstobeadjustedorreconnected ,turnoffthemachineanddisconnect it frompowerbeforemakingany suchadjustment.

3.8 Control Computer Connection

yourcomputercomeswithacopyofRuidaTechnology'SRDworkssoftwareandadigita lcopyofitsofficial instructionmanual ,both locatedontheusB flashdiskprovidedwith theotheraccessories.you can also download a free copy of the most recent version of RDworks from our website at `www.monportlaser.com/pages/download-center` or from Ruida'sownwebsiteat `www.rdacs.com/en`· seethesoftwaremanua lfordetailsonthe requirementsforthecontrolcomputer

Toconfigureyourcontro lcomputerandsoftwarefortheonyx50,

1 . connectyourcomputertoth eengraverusingtheprovide dEthernetcableoroneoftheprovidedusB cables .usetheotherusBcabletoconnectyourcomputerto theportmarked"camera".

2 . connecttheusBflashdriv et o athirdportort oausBhubconnectedtoyourcompute r.Alternatively, moveal lof itsfilestoafolderonyourcomputer.

3 .Insta llandopenRDworksonyourcontr olcomputer.

4 .InRDworks,goto **Model** (ALT+M)onthemain toolbarandselect"RDC6442s"

5 . G Oto **File** (ALT+F)onthemain toolbarandselect **Vendor Settings**.Enterthedefaultpassword `rd8888`. selec **Open**.Load thefile `Manufacturer_parameters.RDVSet` fromtheusBorthefolderyoucreated onyourcomputer

6 . Goto **Config** (ALT+s)andselect **System Settings**.select **Import Soft Para**.Goto theusBoryourfolder and load the file `Software_parameter.cfg`.

7 onthesystemworkplatformontheupperrightsideofthemainscreen,changethetabfrom **Work** to **User**. select **Open**. Goto theusBoryourfolderand load thefile `User_parameters.RDUSet`.

8 .configurethecamerabygoingto **Laser Work** at the lower right and changing the **Position** from"curren `position" to"Absolutecoordinates"`.

9 . o nthecanvasTool stoolba r,clicktheunlabeledradioboxandenableth ecanvasfunctionandcontrols. clickon the unlabeledgear iconnearbyto openthe **Canvas Para Settings** submenu .select **Import Calibration** and go to the USB or your folder. Load the file `Camera_calibration_file.calx`.

Familiarizeyourselfwith the software's imagedesign featuresand lasercontro lsettingsbefore using itto operate the laser .Forhelpconfguringyourengraverforusewith LightBurnorotherengraving software, contactourcustomersupportteamforcompletedetails.

3.9 Interlock Testing

Becauseofthe riskofblindness ,burns ,andother injury from directexposure tothe invisibleengraving beam ,thisdeviceshutsoffthe laserautomaticallywhen partsofitsprotectivehousingareopened.

Cover Shutoffs (Interlock)

You should test that the cover shutoffs activate properly before conducting any otherworkon your machine .Turnon the engraverandductfan .confirmthat thecooling system ,airassist ,andexhaustfan haveactivated .placeapieceoflaserable scrapmateria lontotheworkbed ,insertand turnthe laserkey ,and close thecover .createor loadasimpledesignintoRDworksandbeginengraving.Takingcarenottoexpose yourselfto seeingorbeinghitbyanypossiblereflected laser light ,openthecoveras little aspossible .The laser shouldpauseautomaticallyandthen restartoncethe cover isclosed again .fthe lasercontinuesto engravethedesignwhilethecover israised ,theautomaticshutoffsarenotworkingandmustbe repaired before theengravercanbeused .Turnoffthemachineandcontactourtechnicalsupportteam.

Tray Shutoff (Interlock)

Afterensuringthatthecoverprotectionworks ,youshouldalsotestthatthetrayshutofactivates .perform the sameprocedureasbefore but ,insteadofopenin gth ecove r,ope nthedebristra y.Th elase rshould stopcompletely .fitcontinuestoengravethedesignwhilethedebristray isopen ,theautomaticshutoff is notworkingandmustbe repairedbeforetheengravercanbeused .Turnoffthemachineandcontactour technica lsupportteam.

This is theonly safetyfeature thatshouldever be circumvented .youwil lneed todisable this switch—locatedattheback rightsideofthemain baynearthe ammeter—whenengravingthickmaterialsorwhile usingthefrontpass-throughortherotaryaxes.Todoso ,removethedebristrayandtheworkbed .Movethe switch intoaclosedpositionand hold ittherebysidingthenearbymeta lbracketto theright .Neverleave the switch in this positionaftercompletingyourwork .Reenable theswitchbefore leavingtheworkarea

Rear Key (Interlock Connector)

Afterensuringthatthecoverandtrayinterlocksworkproperly ,youshouldtestthattherearkeyfunctions correctly .perform thesameprocedure as before but ,insteadofopening thecoverortray ,remove the interlockconnectorfrom itssocketbesidethepowerswitch.The lasershould stopcompletely .fitcontinues toengrave the designwithout the rear key in place ,the automatic shutoff is notworking andmustbe repairedbefore theengravercanbeused .Turnoffthemachineandcontactourtechnicalsupportteam.

Water Shutoff

Becauseofthedangerposed byanuncooled lasertube ,thisengraver also shutsoffthe laserautomatically whenitssensorsdonotdetectthecorrectwaterfow.Thiscanbetestedbycrimpingortyingthewaterhoses and attempting to firethe laser .Ifyouperfor mthi stes t,b ecarefulnottodamag eth ehose sthemselves and toonlybrieflyactivatethe laser .fthe laserdoesfire,theautomaticshutof isnotworkingandmustbe repairedbeforetheengravercan beused .Turnofthemachineandcontactourtechnica lsupportteam .If the laserdoesnotfire ,theautomaticshutoffisworkingcorrectly .Releasethetwohosesand runthewater systemforaminuteortwo ,checkingthatnodamageor leakshaveoccurred.

3.10 Security

Foryourown safety and thatof passersby , operators should keepthemachineoffbetween uses to preventunauthorized operation of themachine .only leave them in place if thework area itself is completelysecureand inaccessibletoanychildren.

OPERATION

4.1 Operation Overview

operate theonyx50only in accordancewith al lth einstruction sprovide di nthismanual. Failuretofollowtheproperguidelinesdetailedherecan resultinpropertydamageandpersonal injury.

Thissectionwil laddressonlysomeoftheoptionsandfeaturesprovidedbytheoperationsoftware .Before beginningto use themachine ,make sure thatyouhave read this entiremanual(particularly thesafety Information above) ,the separate softwaremanual , and anyand al lwarningsprovided on themachine itself

The ONYX 55 works by emitting a powerful laser beam from a glass tube filled with carbon dioxide (CO_2), nitrogen, and insulating gases; reflecting that beamoff three mirrors and through a lens; and using this focused light to etch designs into certain substrates. The active laser is invisible to the human eye. This device should never be used while any cover or access panel is open to avoid potentially permanent injury. When its pass-through is used, care should betaken to avoid possible reflective rays.

4.2 General Operation Instructions

Step 1 Create your design that youd like to engrave.youcando thisdirectly inyourengraving software oruseanyothergraphicsprogram.

Step 2 Turnonyourductfan andanyfumeextractororotherventilationequipment.

Step 3 Insertthe interlockconnector—ifyoudon'tnormally leave it inplace—and turnonyourengraver using its rearpowerswitch .putonyourprotective laserglassesandanyotherppEnecessary for yourmaterial .confirm that thecooling system ,airassist ,exhaustfan ,and internal lights have activated.

Step 4 confirm that your contro lcompute rhas aconnectio nt oth eNOY X50,directl ythroug hthe provided cablesorvia the internet .Loa dyourdesig nintoyou rengravingsoftware.

Step 5 confirm thethicknessofyourmateria lwiththeprovidedrulerandplace asamplepiece into the mainbay .Thestandard location is in thetop leftcorneroftheworkbed .Thiscanbechanged by movingeitheryourdesignortheoriginposition inyoursoftware .confirm thattherotaryswitch is flippeddown to itsstandard positionandthenclosethecover

Forpieces thicker than 0.67 inches (17mm) ,youwil lneedtoopenthe tray and remove the honeycombworkbed to provide theextra space .For pieces longerthan 20 inches (510mm), youshouldopen thepass-throughdoor.

DO NOT insertanythingthroughthepass-throughdoors otherthanyourmaterial .AS youwork ,confirm theventilationsystem is removingal ldustand fumes .Ifitcannot, ceaseuseofthepass-throughforthatmateria lunlesssuffcientppE iswornbyeveryone nearby

Forroundpieces ,youwil lneedtousea rotaryaxis (see§4.3below)

Step 6 Focus your laser using the **Offset** parameterinyoursoftware,locatedonthe **Test** tabofthesystem workplatontheupperrightsideofthemain interface .Forthe2-inchfocus lens,thisvaluewil lbe 17minusthethicknessofyourmateria linmm.pleas erefertoAttachment1fordetails.

Step 7 Adjustyour software's parameters to suit your project .whenworkingwith newmaterials, rememberthatyou should always startonthe lowendof likely settings .Iftheeffec ti snotyet strongenough,youcanalwaysrerunthedesignloopseveraltimesorrerun itwithmorepowerfu settingsunti lyoucreate theeffectthatyouwant.

Itis **NOT** recommendedtousethe laseratful lpower.Therecommendedmaximumpowersetting is70% ,asprolongeduseabovethatamountwil lshortenyourlaser'sservice life.Thethresholdfor the lowestsettingisaround 10%andthe lasermaynotfireatallwhensetlowerthan this.

To improve the laser's engraving orcutting effectwithout increasing its raw power ,increas ethe amount ofenergyperunitarea bydecreasing the speed parameter or increasingthenumber of loops .working too intensely ,however ,increase sth eris ko ffir ean dreduce simagequality especiallywithcoatedmaterials.

Resolutionshouldusuallybesetto500dotsperinch .Loweringyourimageresolutioncanbehelpful insomecases ,reducingfamingand increasingtheenergyofthepulse inawaythatimprovesthe qualityoftheresultant image insomematerialssuchassomeplastics

Step 8 Beginengravingyourdesignbyclicking the **Start** button in **Laser Work** on the lower right side of thesoftware'smain interface .watchforpossible issues likesparksorfiresusingthecameraview. Donotstarecontinuouslyattheactive laserevenththroughyourprotectiveeyewear .Beprepared toquicklyextinguishafireifnecessary .Ifanydustorfumesbegintobuildupwithinthemain bay, increasethe poweroftheductfanorpauseworkperiodicallytoallow ittocleartheair

you canpause and resumeworkbypressingthe **Start** buttonon the rightsideoftheengraver. oncethe laserhasstopped ,examine thequalityofyour frstrun .Adjustthe parameters inyour softwareas necessaryand beginyour realwork in a dfferent locationoronadifferent pieceof material .youcanalsousetheengraver's **Start** button to repeatyour lastdesignwithoutapplying anychanges.

fyourengraver stopsduring repetitiveengraving and cutting , th ecoolin gsystemma yhave reached122F(50)andautomaticallypausedwork .Resumeworkonlyafterthe systemhashad time to adequatelycool .fpossible ,use lowerpowersettingswhile reducing speedorincreasing thenumberoftimesyourdesign is processed.

Step 9 when you have finished your project ,closeyourengravin gsoftwar e.Allo wth ecoolin gand ventilation systemstocontinueto rununti ltheair in themainbay isclearandthe tubehassafely cooled .Turnoffthe engraverusingthe laserkeyand themainpower switchandthen turnoff the externa lfan .Forbest results ,fullyunplugyour engraveror turnoff its intermediary surge protector.

Step 10 open thecoverandremoveanydustordebrisbuildupfromtheworkbedandthevarioussurfaces withinthebay .Removethedebristray ,emptyandclean it ,and replace it.

4.3 Rotary Operation Instructions

Theonyx50comeswitharotaryaxisdevicetoengraveroundandcylindricalsurfaces.

Step 1 createyourdesignthatyoud like toengrave .youcandothisdirectlyinyourengravingsoftwareor useanyothergraphicsprogram.

Step 2 Remove the debris tray and the honeycombworkbed .setthem asidewhere theywill not be damagedorfal lover .Gentlymove the lasertubeandx-axisrai lforward .use thenearbybracketto holdthetray interlockswitchclosed.

Step 3 Flip the rotary switch up towards the backofthemain bay to deactivate they axismotorsand controlsignalsandactivatethe rotaryaviation socket.

Step 4 uncovertherotaryaviation socketandconnectoneofthe rotarycables .youwil lneedtopul lback itsouter sheathwhile aligningthe4 holes totheirpins .connectthe otherendofthecable to the motoroftherotaryyouwil lbeusing.

Step 5 placeyour rotaryaxis in theopenbay so that itsnumber labe li sinthefron tlef tcorneran dits supportframe islushwith the leftsideoftheopenbay.

Step 6 Gentlymove the lasertubeandx-axis railbackso that itsarrow labe lisproperlyaligned.

Alignthearrow labe lonthe lasertubecasingwiththearrow labelon the LEFTsideofthebay.

Step 7 placeyourobjectcarefullyontotherotaryaxisandmeasure thedistancefromtheuppersurfaceof the rotarybase totheuppersurfaceofyourobject.The **Offset** value forthe2-inch focus lenswill be86.2minusthisdistance inmm.

Followtheotherstepsaswith regularengraving .whenyouarefinished ,rememberto reenable thetray interlock.

4.4 Instructions for Specific Materials

The following instructions are suggestionsto help speed safeworkwitha rangeofmaterials .The user should researchthe specific safety andengraving requirementsoftheirspecifcmateria ltoavoid the risk offire ,hazardousdust ,corrosiveand poisonous fumes ,andotherpotentia lproblems .once theproduct is known to besafeorappropriateprotectiveequipmenthasbeensetup ,itcan behelpfu ltoengraveatest matrixofsmalboxesproducedatvarious speedand power settingstodiscoverthe idea lsettingsforyour design .Alternatively ,startwith lowpowerandfastspeed settingsand rerunyourdesignasmanytimesas needed ,usingprogressivelygreater laserintensity.please refertoAttachment2fordetails.

MAINTENANCE

5.1 Maintenance Overview

Theuseofproceduresotherthan thosespecifed hereinmay result inhazardous laserradiation exposure .Beforeanycleaningormaintenancework,alwaysswitchoffthedeviceanddisconnect itfrompower .Always keepthesystem clean ,aslammabledebris intheworkingandexhaust areas constitutes a fire hazard. **ONLY** allow trained and skilled professionalstomodify or disassemblethisdevice

The laser tube typically travels along the Y axis during engraving. The first mirror is fixed near the left end of the laser tube, the second mirror is fixed nearby, and the third mirror is attached to the laser head that travels along the X axis. The first and second mirrors are located within protective housing but, because dust is generated by the engraving process, the2ndmirrorswindow the3rdmiror,and **the focus lens require frequent cleaning.**

- cleanandcoolwateror laser-safecoolantmustbeprovidedtothesystematalltimes.confirmthetank isat leasttwo-thirdsfullbeforeandaftereachuse.
- Theworkbedmustbecleanedand thewastebinemptiedonadailybasis.
- The lensesofthe1stand2ndmirrorhousing,the3rdmirror,thefocuslens,andcameramustbechecked everydayandcleaned ifrequired
- Theexhaustsystemmustbecheckedeveryweekandcleaned if required.
- Theguide railsshouldbecleanedandubricatedatleasttwiceamonth.
- The airassistmustbecheckedeverymonthandcleaned ifrequired.
- Alothercomponentsofthe lasermachineshouldbecheckedeverymonthandcleanedwhererequired.

5.2 Cleaning

ALWAYS allowanyfluidused inanycleaningtodrycompletelybeforefurtheruseoftheengraver.

Cleaning the Camera, Mirrors, and Focus Lens

Take care to **NEVER** touch the surfaceofanyofthesewindows,mirrors,or lenseswithyourfinger. Avoid pressing hardenough tocausescratchesbygrindingdebris intothe lenses.

The 1st and 2ndmirrors are permanently alignedwithin a protective housing and should not require adjustmentorcleaning .The3rdmirrorandfocus lensareheldwithin the laserhead'sprotective shel

cleanthe lensesoftheprotective housing'swindowusing a laser-safemicrofiberclothoracotton swab doused inalcoholora laser-safe cleaningsolution .cleanwithgentlecircularmotions.

Toexpose the interior ofthe laserhead ,gently remove its shel lfrom themagnets that hold it inplace. cleanthe lensofthe3rdmirrorandboth sidesofthefocus lens inthe samewayasthe1stand2ndmirror's windows .Gently remove anyotherdustordebrisfromothercomponents insidethe laserheadandwipe the shel'sholescleanaswel lbefore carefully replacing it ,allowingthemagnetstograbholdandpul lit back intoplace.

clean thecamera lens in thesameway .Ifanypermanentspotsordebrisappearunderthecamera'sglass lens ,itcannotbewipedcleanandwi lrequire replacingthecamera itself .contactcustomeror technica supportfordetails.

Cleaning the Main Bay and Engraver

checkat leastonce a daywhetherdust has accumulated in themain engravingbay .I fs o,itmu stbe removed .The exactcleaning intervalandrequirementsstronglydependon thematerial beingprocessed andtheoperatingtimeofthedevice.

Acleanmachineguaranteesoptima lperformanceand reducesservicecosts ,aswel las reducingthe riskof fireor injury .cleantheviewingwindowwithmildcleansersanda lensorcottoncloth. **DO NOT** use paper towels as theycan scratch the acrylicand reduce the cover'sabilityto protectyoufrom laser radiation. clean the interiorofthemain baythoroughly ,removinganydebrisparticlesordeposits .papertowelsand windowcleanerare recommended.

when itisnecessarytocleanthe rightorleftsidesofthemainbaythoroughly,theplasticpanelsthatcover themcanbe removedforeasieraccess .Turnoffandunplugtheengraver .openthecoveranddisconnect alltheelectronic itemsoneach side .Removingthe leftpanel requiresunplugging its LED light .Removing the rightpanelrequires unplugging itsLED lightaswel lasthe inductionswitchandkey line.

Remove thefrontand rearscrewsand remove thepanels.Replace themusingthe samescrewsandthen restoretheelectricalconnections.

Cleaning the Cooling System

NEVER touch or adjust your engraver's water supply while your engraver is still connected to power.

yourcoolanttankshouldbe shieldedfromambientdustcreatedduringwork .Ifyourcoolanteverbecomes visiblydirty ,discontinuework .Thedebris in thewaterwil lreduce itscoolingefficiency ,canheatup itself andcan damage the cooling pipes .Remove the rightpane lfollowing the instructions above and use a basterorluidextractorto removethecontaminatedcoolant .fthecoolant isespeciallypolluted ,usea funnelto refil lthetankwithcleanwater ,return theengravertoworking order ,run the systemfora few minutes ,and then immediatelyextract thewateragain to removeother impuritiesfrom the line .use a funneto refl lthetankwithcleandistilledwateror laser-safecoolant ,resea lthe tank ,restor eth eright panel ,and resumeuse.

Ifyourcoolant remainsvisiblyclean atal ltimes ,it is stil lrecommendedthatyoucleanthewater tankat leastonceayearasa precaution ,replacingthe fluidasyoudo so.

5.3 Cooling System Maintenance

NEVER touch or adjust your engraver's water supply while your engraver is still connected to power.

In addition to the regularcleaning above ,check thatthe tank is at leasttwo-thirds fu lof coolantor

cleanwater beforeandafter eachuse .Ifthe tank ever begins to run low ,usea funne land tube to add more distilledwater or laser-safe coolantor remove the right paneland addthe fluid directlywith a funnel.

5.4 Laser Path Alignment

TheONYX 55goesthrough acomplete beam alignment beforeshippingand itsdesign should keepyour mirrors locked into theirproperpositionsatal ltimes .fyouwish totestthealignmentbyusingthe laser tomarkpiecesoftape along itspath to yourmaterial ,remembertoneverplacethetapedirectlyonany mirrorsor lenses ,toneveruse powerlevelsabove15%tomarkthetape ,andtoneverdisablethecover's interlockswitchesduringyourtesting

Ifyou everfind thatyourmirrorsareoutofalignment ,contactourtechnicalsupportteamtocorrectthe problem.

5.5 Rail Lubrication

Forbestresults ,cleanand lubricatetheengraver'sguiderailseverytwoweeks .Turnoffthe laserengraver. Gentlymovethe laserheadoutoftheway .wipeawayal ldustanddebrisalongthexandyaxis railswith adrycottonclothunti ltheyare shinyandclean .Dothesame tothezaxisscrews .Lubricatebothe rails andscrewswithwhite lithiumgrease .Gentlymovethe laserheadandxaxis to distributethe lubricant evenlyalongboth railsandraiseand lowerthebedtodistributethe lubricantevenlyalong thescrews.

5.6 Parts Replacement

Theengravershouldnotbemodifiedordisassembledbyanyoneexcepttrainedandskilledprofessionals but some consumablepartsmay require replacementafterprolongeduse .Be sureonlyto use identical orcompatible replacementpartswiththisengraver .contactyourvendororour technicians ifyou have any questions about fitment .using incompatible components is highly dangerous andwaives al lthe manufacturer's liabilityforanydamageor injurycaused.

5.7 Disposal Instructions

Electrica lproducts shouldnot bedisposedofwith household products .Inth eE Uanduk accordingto the EuropeanDirective 2012/19/Euforthedisposalofelectricalandelectronic equipmentand its implementation innationa llaw s,usedelectric alproductsmustbecolected separately and disposed ofatthecollectionpoints provided forthis purpose .Locations in Australia,canada and the united statesmay have similar regulations .contactyour local authoritiesordealerfordisposa land recyclingadvice.

CONTACT US

Thank you for choosing the ONYX 55!

MONPORT PROVIDES US-BASED TECH SUPPORT.

please restassuredthatmachinespurchasedfromanyplatformareeligibleforcomprehensiveand professionaltechnicalsupportthroughMonport'soffcia lafter-sales supportdepartment.

TEl:(812)351-0217
System: https://app.helpdesk.com/tickets/all

Note:pleasesubmittotheHelpdeskalongwithyourordernumberandadescriptionofthe issue ifyou haveanyquestionsaboutthemachine.

https://monportlaser.com

https://www.youtube.com/@monportlaser4648

https://www.facebook.com/groups/monportlaserofficial

https://www.instagram.com/monportlaserofficial

Attachment 1

These are the values for materials passed through or placed at the level of the workbed. For thicker materials, find their height relative to the bed's usual level, roughly 2¾ in. (70 mm) above the bottom of the laser's support legs. Save your changes by pressing Z− on the same tab.

Material Thickness		Offset Value
Inches	mm	
0	0.000	17.000
0.1	2.540	14.460
1/8	3.175	13.825
0.2	5.080	11.920
1/4	6.350	10.650
0.3	7.620	9.380
3/8	9.525	7.475
0.4	10.160	6.840
1/2	12.700	4.300
0.59	15.000	2.000

Attachment 2

Material		Acrylic	Basswood	Canvas	Cardboard	Leather	MDF	Rubber
Engraving	Power (W)	50%	50%	25%	45%	30%	40%	35%
	Speed (mm/s)	500	500	500	500	500	500	500
		100%	100%	100%	100%	100%	100%	100%
Cutting	Power (W)	90%	90%	60%	90%	90%	90%	/
	Speed (mm/s)	35	65	350	200	80	30	/
		7%	13%	70%	40%	16%	6%	/
Rec. Thickness (mm)		3	3	0.2	2	1.5	3	3
Resolution (dpi)		400	400	300	400	400	300	400

Ceramics

When engraving on ceramics, generally use moderate to high power. Using more loops rather than higher power and lower speed can help avoid cracking the material during work. Be mindful of the health risk posed by dust generated from ceramic engraving, especially for repetitive industrial applications. Depending on the material and the amount of work, a fan or even full ventilation system may be required to address the problem. Similarly, operators and others in the work area may need to use breathing PPE such as masks and respirators.

Leather

When engraving leather products, generally use low to moderate power at high speed. Be especially attentive to the possibility of fire, as well as the dust produced in repetitive applications.

Metal

Co2 laserengravers should not be used formarking , engraving,orcuttingmetal .Theyare best suited forworking coatings applied to ameta lbas e,a ndcaremu st betak enn ot toattemptwork onthe underlyingmeta litsel f.Avarietyofcoatingsspecialize dfo rco2engravingar eavailabl e,an dtheuser shouldfollow the instructionsprovidedasthe parametersvary from product to product andmeta lto metal .Generally ,workon aluminum coatingsshould bedonemorequickly at lowerpowerandworkon stee lcoatingscanbedonemoreslowlyathigherpower.

Glass

whenengravingglass ,generallyusehighpowerand lowspeed .Aswith ceramics ,itcanbehelpfulto run more loopsat lower settingstoavoidcracks.caremustbe takenwhen engraving fberglassand carbon bertoavoidcombinationsofsettingsthatproducea laser intensitygreatenoughtodamagethe structural integrityofitscomponentfibers ,producingblurrymarking .PPE shouldbeworn to avoidexposureofthe eyes ,nose,mouth ,andskin to thedustproducedbyworkingwith eithermaterial ,especiallyfor repetitive industrialapplications .clothingwornwhileworkingwithfiberglassshouldbewashedseparatelyafterwards.

Paper and Cardboard

whenengravingvariouspaperproducts ,generallyuse lowtomoderatepowerandfastspeed.Testsamples fromeachbatch ,asonlysmal lparameterdifferencescan separateeffectsthataretoo lightfromthosethat burnthroughthesubstrate .Aswith leather ,beespeciallyattentiveofthepossibilityoffire ,aswelasthe dustproduced inrepetitiveapplications.

Plastics

plasticsforengravingareavailable inmanydifferentcolorsandthicknessesandwithmanydifferentcoatings and surfaces .Themajorityofavailable plasticscan bewel lengraved and cutwith the laser .plasticswith amicroporoussurface seem togive thebestresult ,because less surfacemateria lneeds to be removed. whenengravingplastics ,generallyuse lowpowerandhighspeed settings .Markingandengravingwithtoo muchpowerorattoo lowaspeedcan concentratetoomuch energy ,causingtheplastictomelt .Among other problems ,thismayproduce poorengravingquality ,noxiousfumes ,and even fires .High resolution engravingcancause thesame problem ,somedium to lowresolutiondesignsshouldbepreferredformost plastics.

Rubber

Thevariouscompositionsand densities of rubbercause slightlyvaryingengravingdepth .Testingvarious settingson samplepiecesofyourspecifcrubber ishighlyrecommended forbest results .when engraving rubber ,generalyuseaconsistenthighpowersettingandcreateyoureffectsbyvarying the laser's speed. Microporousrubbermaterials requirea signifcantlyhigherspeedthanstandard rubber .Engravinganykind ofrubberproduces aconsiderableamountofdustandgas .Dependingontheamountofwork ,breathing PPEand/ora ful lventilationsystemmaybe requiredtoaddresstheproblem.

Stone

whenengravingvariouskindsofstone ,generallyusemoderatepowerandmoderatetofastspeed .Aswith ceramicsandglass ,bemindfu lofthedustcreated (especiallyfor repetitive industrialapplications)andtake similarmeasurestoensure thesafetyofusersandothers intheworkarea

Textiles

whenengravingtextiles likeclothandfleece ,generallyuse lowpowerand fast speed .Aswith leather ,be especiallyattentive to thepossibilityoffireanddust

Wood

Aswithrubber,there isahugevarietyofwoodsandtestingyourspecifcmaterialisessentialtogetthebest results .ngeneral ,woodwithconsistentgrainandcoloringengravesmoreevenly.knottedwoodproduces uneveneffects,while resinouswood producesgreateredgecontrast .somesoftwoods likebalsa ,cork ,and pineengravewel l(albeitwith lowcontrast)at lowormoderate powersettingsandhighspeed .others like frsuffer from unevenfbers thatproducea pooreffectatany settings .Hardwoods like cherryandoak engravewel lathigh powersettingsand lowspeed .Manufacturedwoodproductscanvaryfrom brandto brand ,mostlybasedon itsgluecompositionandabundance .MDFworkswel lbutcreatesdarkedgeswhen cut.

Inadditiontotheriskoffirewithanywoodproduct ,extracaremustbetakenwiththefumesfromtheglue used in plywoodandothermanufacturedwoods.someare toodangerous toworkwith atall ,whileothers requirecarefu lventilationandtheuseofbreathingppE forrepetitive industria lapplications .woodtoxicity shouldalso beexamined ,as thedustfromsomenatura lwoods includingoleanderandyewcanalsocause nausea andcardiacproblems inhigh enoughamounts.

Symbol Guide

The followingsymbolsare usedon thismachine's labelingor inthismanual:


These itemspresenta riskofseriouspropertydamageorpersonal injury.


These itemsaddresssimilarly seriousconcerns regardingthe laserbeam.


These itemsaddress similarlyseriousconcerns regardingelectricity.


These itemsaddresssimilarlyseriousconcernsregardingfire hazards.


Nearbyobjectspresentariskofpinchingorcrushing injury.


Thisproduct issold inconformitywithapplicable Eu regulations.