



This technical instruction goes with machines, it is also the instructional document which makes sure you' re correct using. Please read it carefully and keep it well. Please operate the machine according to this instruction, if any problems or questions, please contact us freely. In order to bring the superior function of our machine into play, and ensure the safety of the user, please read this instruction carefully before installation and operating. Then you can have acknowledge in details about what should be paid attention to, and the parameters of installation and operation, inspection of the abnormality and daily your BLUE ELEPHAN BLUE ELEPHAN maintenance rules etc. It is our target to make the customers satisfactory.

cooperation.

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I Unpacking Inspection

Before sending, all the parts of CNC router are inspected strictly and packaged carefully. However, damages may occur during transportation process due to various factors. Please check the following items before

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unpacking. Inform the distributor or us if any abnormity:

- 1. Make sure that the machine is not be damaged or distorted during the transportation process.
- 2. After open the package, check whether the spare parts are the same with the packing list.
- 3. Check whether the specification you ordered fits the machine's nameplate (voltage and KVA)
- 4. Check whether there is any abnormity or foreign material in the machine.

II Safety Notice

This chapter mainly introduces the machine usage notice; the user must read this carefully to avoid the suddenness.

- 2.1 The machine should put on the balanced table, adjust the fundus to make sure the machine can't shake and keep it horizontal.
- 2.2 Please use the appointed voltage according to the instruction, connect power and put through the grounding wire.
- 2.3 Please do not connect many electronic products on one outlet to avoid overburden.
- 2.4 The engraving machine is high speed working machine; the main spindle speed can reach to 24000RPM. So the operator should wear work clothes and hat, forbidden to wear gloves.
- 2.5 When the machine is working, the operator should keep distance with it. Forbidden to touch the cutter and other motorial parts.
- 2.6 Make sure the electric power is off when clean the machine. Do not clean it with the liquid or the spray, but the dry dust cloth and meanwhile with slushing oil.
- 2.7 when checking the machine faults Please make sure the power is off.
- 2.8 Do not use this machine near water, for example: near the bathtub, the bison, and the launder of the kitchen, wet floor, or swimming pool and so on.

2.9 Do not put this machine on the unstable truck, shelf or tables. Otherwise it may fall down and cause the machine damage or the hurt of people.

- 2.10 Only the electric variety on the nameplate can be used in this machine. If you are not familiar with the electric variety in your place, please ask the vender or the local bureau of supplying electricity.
- 2.11 Triangle plug (ground wire) is available for this machine. This just for ground wire type plug use and this is the safety device. If you cannot use this kind of plug, please ask the electrician for help. But do not discard the safety device.
- 2.12 Do not put anything on the electrical power cable, and do not put the cable in the place that someone

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2.13 Do not make the receptacle or the branch wires afford over-voltage, or there may fire hazard and electric shock.

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- 2.14 Please don't put anything into the aperture or put thing in the machine, or else may get an electronic shock, on fire or other danger caused by dangerous pressure or short circuit.,
- 2.15 In order to avoid getting an electric shock, please do not disassemble this machine. If it needs repairing, please take it to the qualified repairing center. Disassembly of this machine may bring the electric or some other dangers. The incorrect reassembly may cause electric shock in the future using (unless operation under the instruction of professional engineers).
- 2.16 Under the following conditions, you need to pull the plug out from the receptacle, and consign the repairing work to the qualified repairing center:

A. when the cable and the plug are broken.

B. if some liquid inflow the machine.

- C. if this machine is rained or watered.
- D. if operation is done as what the instruction says, but this machine cannot work, you can only adjust the controlling part of this machine. Otherwise if you adjust other parts incorrectly, you may cause damage of this machine. As to the complex work, you had better ask the qualified worker for help, which can make the machine work orderly.
- E. if this machine falls down to the floor from the high position or the body of the machine are broken.
- F. if obvious changes of the machine's function occur.
- 2. 17 Avoid using the machine when it thunders. Or it can cause faraway electric shock. The transportation, installation and maintenance make the machine operate well.

III Control system introduction

Mach3 install

Please connect the Mach 3 card to computer with USB cable.



Then



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👌 Mach3 Setup



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Welcome

Welcome to the installer for Mach3 Version: 3.043.066.

It is strongly recommended that you exit all Windows programs before continuing with this installation.

If you have any other programs running, please click Cancel, close the programs, and run this setup again.

Otherwise, click Next to continue.

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EP	Email: manager@elephant-cne Mach3 Setup Installing Mach3 Please wait	EPHANT Jinan Blue Mobile: 0086-15	Elephant CNC Ma	Achinery Co.,Ltd Web: www.elephant-cne.com
	Installing Files Seeking			
EP	HANT BI	Wait a moment	B <u>C</u> ancel	ELEPHANT

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BLUE ELEPHANT NT 5 mach3 will appear on your PC screen. after installation, BLUE









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Mach3Mill.xml	
You will see .please select "Replace the file in the destin • 替换或跳过文件 ~ × 正在将 1 个项目从 3 axis card mk3 config 复制到 Mach3 目标已包含一个名为"Mach3Mill.xml"的文件	BLUE ELEPHANI
✓ 替换目标中的文件(R)	
ラ 跳过该文件(S)	
□ 比较两个文件的信息(C)	
◇ 简略信息	

Ok the Mach 3 software install have finish.

After that . We have finished the setting of mach3. Run mach3 and try to control each axis move to see if every axis direction is right and move smoothly. Here my advice . For Mach 3.

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J



You can use mouse to press the key to move axis.



Some times, we will use certain distance jog, like we want to move spindle down 1mm by 1mm, now we will use step function. There are three Jog mode.: Cont -- step -- MPG. So we can click Jog Mode button to change the mode. And when we use step mode, we can input "1" into Cycle Jog Step and enter . And then press Z- to see what will happen ;)

Cycle Jog S	Step	1.0000
Jog Mode		
HDC Avia	Cont.	Step WPG



Test go home function. Each axis has its limited switch. when machine move to each axis switch, that place is the mechanical original point. For mach3, please press this button (if it not go home, please contact us.)

REE	Zero X	-186.8469	Scale +1.0000
AL	Zero Y	-117.9594	Scale +1.0000
LHO	Zero Z	-390.0344	Scale +1.0000
ŇE	Zero 4	+0.0000	Radius Correct
OFFL	INE GO	TO Z To Go Machine Coord's	Soft Limits

After Ref all home, X Y Z will become zero, if not , please press the right button to make them to be zero. Then we will test soft limits, before that, we need to check if our each travel setting is right.

Revers	Soft Max 1000.00	Soft Min	Slow Z 1.00	Home	Home	Auto Z	Speed %
*	1000.00	0.00	1.00	0 0000	1		
500 N				0.0000			30
	2000.00	0.00	1.00	0.0000	X	4	30
X	0.00	-100.00	1.00	0.0000	X	4	50
X	100.00	-100.00	1.00	0.0000	X	-	50
×	100.00	-100.00	1.00	0.0000	X	4	20
X	100.00	-100.00	1.00	0.0000	X	4	20
	X X X x x	0.00 100.00 100.00 100.00 100.00 100.00	0.00 -100.00 100.00 -100.00 100.00 -100.00 100.00 -100.00 100.00 -100.00 100.00 -100.00	0.00 -100.00 1.00 100.00 -100.00 1.00 100.00 -100.00 1.00 100.00 -100.00 1.00 100.00 -100.00 1.00	Image: Constraint of the state of	Image: Constraint of the state of	Image: Constraint of the second sec

Like the picture showing, if your machine (1020 model) X can go +1000mm travel. So we should set soft Max 1000mm, Y can go +1000mm travel. So we should set soft Max 2000mm, Z can go -100mm travel. So we should set soft Min -100mm,

Then we need to press this soft limits button first before (avoid each axis movement to be over the travel zone) when test this function. Then try to move x to right, it will stop when x axis number is 1000, so soft limits works. Other axis is same way to test.



Then we will test spindle. Check if spindle speed shows 24000, and then switch spindle button on control box (in fact, it is power on inverter). And wait some seconds until inverter display show 400HZ. Then we can press spindle CW F5 to let spindle run. We can speed up and down y click up arrow and down arrow, also green column. If spindle doesn't work, please see if inverter is power on and show 400hz first, and refer to --VII The Judgment of Machine Fault and Resolvent



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Set Mach3 by yourself(ANVANCE).

Of course. You can make your own setting if you know mach3 very well.

Then there will be some major setting introduction here :

1. Motor output setting:

There are 4 important signal need to set. X Y Z A axis. You will see as follows . If you want X Y Z work. You should enable it. Notice only for A, If you choose A axis (here should be 4 driver. Not 3, it is the the real A axis.) please enable it.

Another important point is dir low part. If you find your x axis move at wrong direction. (like if you press X + , it should move to left direction.) you can change \checkmark to be \times . Then the direction will be reversed.

Note : you can find more details in the USB board manual

Mach3 X, Y, Z, A Axis config as shown below: (Config => Ports and Pins) 1.11.



Enco Port Setup	oder/MPG's and Axis Sel	ection	Spin Motor O	udle Setup utputs	 Input Signal	Mill 0	ptions Dutput Signals
Signal	Enabled	Step Pin#	Dir Pin#	Dir LowAc	Step Low	Step Port	Dir Port
X Axis	4	2	3	4	4	1	1
Y Axis	4	4	5	4	4	1	1
Z Axis	4	6	7		4	1	1
A Axis	4	8	9		4	1	1
B Axis	×	0	0	*	X	0	o CI
C Axis	*	0EF	0	× []	X	OTE	0
Spindle	42	1	0	4	X Q	1	1

2. Motor tuning setup as shown below: (Config => Motor Tuning)



if you click x . It will show x axis status.
If it is 1605 ballscrew, it should be 640, if it is 2510 ballscrew, it should be 320 .
It will be different from every machine. Usually, you can set only 6000 or so at first using period, and you can try higher speed afterwards.
We usually set 400-800
Please click it after you change any setting .

4) mach3 using

First. We will load G code file of tool path, which we make by ucancam or artcam or typ3 and so on. Mach3 can accept G code file (for example : tap , nc format)

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Secondly. We will put the material we want to engraving on, and hold it tightly with clamping. Thirdly, we will install tool bits and set the working orignal point. Then, we can let machine work.



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- 1) Lock
- 2) Power on
- 3) Emergency button
- 4) *
- 5) *
- 6) Fan
- 7) Inverter
- 8) Driver

9) 24v Power for driver

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- 10) 24v Power for system
- 11) Relays
- 12) Fuse
- 13) Filter (For driver)
- 14) Mach3 card
- 15) Main power input (1ph)
- 16) PE

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Attention : * button spare.

Attachment introduction

- 1. Power cable
- 2. CD

3. Parallel port cable (or USB cable or DSP handheld with cable)

4. Water pump 1 set (or 2 sets for tool bits cooling if you choose this function)

5. Tool box 6. Tool bits

- 7. Spare switches
- 8. Bending kit
- 9. Wrench for spindle

Files in the CD you can refer to;

A. mach3 install: (Software Installation and Usage)

ELEPHANT B. mach3 setting: (you can choose the setting file according to your control box option) C: machine teaching video We take some video about how to use mach3 to control machine to

work. And hope it help some CNC router beginners to know how to use machine quickly.

D: mach3 teaching video: you can learn more about mach3 in this part

- E: manual: you can find inverter manual, breakout board manual machine using manual in this file.
- F: auto tool zero setting: please read the introduction careful.



1). Put the CNC Router on a plane surface, then adjust the feet of the machine.



2)Fix the dust pipe bracket to the Z spindle and the side of lathe bracket. There are screws in the point of connection, taking off the screw and fixed the bracket on. (if choose dust collector)




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Email: manager@elephant-cnc.com Normal Engine oil 01i:

Before first use the machine ,we need let the slider and the ball screw get oil . After first use, we need every day press the Manual lubrication pump once before start work .



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How to connect and use the dust collector system

- 1. A connects with B
- A connects with C 2.
- D connects with E, C,I 3.
- F connects with E, C,I 4.
- G connects with H 5.
- The motor connects with lines, energizing and begin to use. 6.

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1,Pour water into the vacuum pump. But you should avoid too much water in the pump.
 (remember: after you have poured the water, 15 minutes later, then you turn on the power)

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Attention

1), before use the vacuum pump, please adds water to the tank.

Here are steps, please open the high water level valve, then add water until the water outflow from it. Close high water level valve. Please power on of the motor about 15 minutes later, wait for the pump is full of water. The pump must be full of water.

2), every day, please check the water of the tank before work.

3), regular cleaning of the water tank. Every 2 months to clean up the water tank. Open low level water valve let water outflow. Rinse several times.

4), regular cleaning the filter . every week.

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Pump for spindle water cooling

If your spindle is water cooling, you should do like this. 1, Find the box of the pump.

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Then.

A.





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Next.

F





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Ok,finish.



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Now ,we go to the machine .



Then connect the pump.



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T



Ok,finish.





Watering the water tank more and better. The spindle is cooled by water, so there is one water pump to offer running water through the spindle. Then there are two tubes is outside of the machine, one tube is installed on water pump, pump will get water into the tube and go through the spindle, then out from another tube. They are transparent pipe.



(a) If you choose metal engraving type. There will be second water pump (also need another water tank, please don't use same one with a) to cool the bits, we use orange color pipe. (b), there is a water jet beside spindle. You can see

Note :

 for water pump cooling spindle. The water is cyclic, so please add enough water and be careful about the temperature of water in the tank. If it become hot, please change cool water.
 For water pump cooling bits. The water is not cyclic, so it will need more water. Please be careful about the water in the tank to avoid the empty of water.

Here we offer a quick fitting connector with pump. So you can plug in or off the tube very easily when you want. This is the way you can refer to:



BLUE ELEPHANT UE ELEPHANT EPHAN **Connect to main power.**





Step 1 Click the button "Reset(1)" (Please use the lift button of the mouse)
Step 2 Click the button "REF ALL HOME (2)" (Please pay attention to the machine, all of the axis will
move to the Bottom left corner of the machine.)

Here is the way of setting tool bits on spindle.



How to use the table.

If you want to **cut** something, please do like this.



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Put calibrator on the surface of the workpiece . Tool just below

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Open the Mach 3 software . press "Auto Tool Zero" the spindle will down with slow speed .when the tool touch the calibrator, the spindle will move up, the set zero for Z axis is finish .



Attention: the calibrator just set Z axis zero point .x and y workpiece zero point please set manual . the calibrator just set Z axis zero point. the calibrator just set Z axis zero point.



Then you will see like this .

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BLUE ELEPHANT Email: <u>manager@elephant-cnc.com</u> Msch3 CNC Demo File Config Function Cfg's View Wizards Operator PlugIn Control Help	inan Blue Elephant CNC M Iobile: 0086-15064026772	achinery Co.,Ltd Web: <u>www.elephant-cne.com</u>
Program Run (Alt-1) MDI (Alt-2) Tool Path (Alt-4) Offsets (Alt-5)	Settings (Alt-6) Diagnostics (Alt-7) Mill>G15 G1 G10 G7 G40 G4 Zero +0.0000 +1.0(Zero +0.0000 scale +1.0(Zero +1.0(Zero +0.0000 scale +1.0(Zero +1.	MPG MODE Mode Velocity Only Step/Velocity +5 % Single Step MPG Feedrate 100.00 Shuttle Mode
File: No File Loaded.	Local units/line Los (Vizards) Tool Information Congeneration Tool 0 0 Dia. +0.0000 H +0.0000 Auto Tool Zero 1292.23 Remember Return apped 00:00 Jog ON/OFF Ctrl.Alt.J Units/Min 0.0(0) Units/Min 0.0(1) 0.0(10) Profile: Mach3Mill	Cycle Jog Step 1.0000 Jog Mode 0xx 9x We we 0xx 9x Slow Jog Rate 0xx Button Jog 0x+ We we 0xx We we 0xx
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You can use the key to move axis.

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1, Move the axis to the workpiece zero point(where you have to set .) . Like this:







V Notice and Maintenance

NOTICE:

As the machine is shipped by sea. it took long time. so when you run the spindle at first time. please let it run at low speed for a while. for example: 5000rpm for 5 minites, and then 10000rpm for 5 minites, then 15000rpm for 5 mins. 20000rpm for 5 mins. then 24000rpm at last. note: if you run the spindle at 24000rpm at first time. there will be a little noisy made by ball bearing , it will shorten the working life of spindle .

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5.1 CNC router maintenance

CNC router is a machine tool equipment, it has a certain running in period, it is better to use in the low speed in the first three months, Please use it intermittently and keep the motor not too hot, frequently clear the dust of the bearing of the ballscrew and lubricate it.

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5.2 The maintenance rules of CNC router machine:

It is necessary to clean impurity and apply oil during the daily use of engraving machine, or else the machine will work slowly and in disorder because of the long time working without cleaning the impurity and dust of the ballscrew, sliding block and inner of bearing.

Maintenance methods:

- 1). Choose the lubricate oil: the mixture of the engine oil and cup grease, not too thick.
- 2). Lubricating parts: master screw, guide screw, sliding block and axletree of the spindles of X, Y, Z.
- 3). The process of lubricating: wipe of the impurity of the rack, axletree, master screw, guide rail, nut and the siding block of axletree before lubricating. If some are difficult to wipe off, you can use petrol to clean then fill the lubricating oil and makes speed gradually to test without material.
- 4). Lubricating period: it should depends on the working surroundings and the working time, generally wipe of the disintegrating slag everyday after work. And fill the oil of each parts per month then move fast to lubricate without processing any materials.
 -). Lubricating methods: use cup grease to fill sliding block, other parts can use oil pot to drip oil or use cloth to rub oil on.

5.3 The maintenance of vacuum. (Vacuum is optional)

- 5.31 In order to avoid the abrasion of the the impeller and pump body or locking of the impeller, make sure that the dust which go into the pump with the air and the water should be washed out through the washing pot which is in the bottom of pump cap.
- 5.32 If use hard water act as working fluid, the hard water should be intenerated, or wash the vacuum pump periodically.
- 5.33 Lubricate

In the average working circumstances, using 50HZ motor: after 20,000 hours working or after 3 years working, the disused grease and dirt between the axletrees and their accessories should be cleaned and the new lubricating oil should be added into. The newly added lubricating oil should take 50% space of the axletrees and 65% space of the axletrees cap.

If the working conditions is very wretched, the exchange period of oil should be shorten. 5.34 Exhaust

After drain away the air, open the water outlet of water tank to make the water outflow. And rotate the vacuum pump by manual drive, until there is no water to outflow. Incline the vacuum pump at 45 degree angle to drain away completely. In this case, the pump won't get breakage even if it is long-time no use or under the cold weather.

5.35 The methods of dealing with long—time pump off: if the pump has been discontinued using for more than 4 weeks, it should be drained according to method 3, after that, it should be taken anticorrosion treatment, that is to say, pure 1/2 L anticorrosive oil to the pump from the suction port or the vent, and then run the vacuum pump for a short time. If the impeller is locked after long-time discontinue use because of have using hard water, the vacuum pump should be inpoured with 10% oxalic acid for about 30 minutes.

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5.4 The maintenance of dust collector (Dust collector is optional) Frequently clean dust and pay more attention to oiling maintenance for the rotation part.

The rules of cutters operation VT.

6.1 Cutters operation :

- 6.11 All cutters of our series are designed in clockwise way.
 - 6.12 Must choose the collets in appropriate size. The collets that are uneven, damaged, not smooth enough or with taper inside, can not hold cutters tightly enough. To avoid the shank shaking, flying off or being twisted off, must change the bad collets immediately.
 - 6.13 The shank must be inserted in the collet with good osculation and be tightened tightly. After tighten the shank in collet, the surface of shank is uneven or there are dents in it, which indicates the shank slipped inside or there is deformation inside of collet. In this case, change the collet immediately.
 - Stop working with blunt cutters . Keep working with blunt cutters will increase twisting strength of the cutter, which will cause the cutter broken or even industrial accident when the strength exceeds the endurance of the cutter .
 - The working material even or curve can affect the useful life of cutters. Especially when 6.15 the cutting depth is deeper than the edge cutting depth, the part upper the edge will be touching the working ware. In this case , the temperature of the part upper the edge will increase heavily, which will cause the cutter deformed and broken or even facilities accident.
 - 6.16 Put on proper eye protecting device when operating.
 - 6.17 Keep body, clothes, hair, or other sundries away from the working material.

6.2 Choose the proper cutting speed

- 6.21 It is very important for cutters useful life and quality of cutting works to choose proper cutting speed according to different working materials. Work more quickly, better, and more safely with proper cutting speed.
- 6.22 Big cutters move slowly and continuously, in uniform and steady speed. Note : No pause during cutting .
- Impel the cutters with large diameter for several times to finish cutting, which will prolor 6.23FIE

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useful life of cutters and make operation more safely.

6.3 Cutters maintenance

- 6.31 Maintain the cutters clean. Use standard cleanser that is special for cutters to clean the filth and
 - impurity.
- 6.32 Smear an amount of machine oil on cutters surface to avoid rusting and damage.
- 6.33 In order to meet the demand of operation, milling process needs the particular equipments and skills. Forbid milling cutters or changing the shapes of cutters at random, or that will



PS 1MACH3-USB FAQ solutions

1. Because of the interference, MACH3 cannot find the USB card

Problem Description: control cards, when suddenly turn on the spindle, or for spindle speed adjustment.





2. In Constant velocity mode, In a straight line corner, walked out of mach3 is rounded.

BLUE ELEPHAN Initialization String G80f2000s10000 Motion Mode Constant Velocity Exact Stop

2.1.1 In general setting, please choose constant velocity mode

2.1.2 In general setting, choose "stop cv on angle>6 degree"

When drawing small circles, if the machine dithers, you can modify

6 degree into 12 degree. With this number become bigger, it moving faster when drawing. But straight line corner will be round.

Units.UE ELEPHANT Control Plasma Mode CV Dist Tolerance 180 G100 Adaptive NurbsCV Stop CV on angles > 6 Degrees Auto DDO Deservices



3. Mach3 back to origin point setting:

3.1nder Mach3 configure menu, open IO port/pin, then

/input menu xhome, yhome , zhome. set it Port# 1, Pin number :0,1,2,

Active low: Ticked.

Engine Configuration... Ports & Pins



Automated Setup of Inputs

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3.2 Open our driver: note mach3 /configure menu, open config plugins. Choose Ncpod. At homing menu please choose Single Stage/Dual stage.

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Optional Configs.	BLUEELLA
 ○ No Homing ④ Single Stage 	
C Dual Stage	

×

- 3.3 Connect the origin switch wire; make sure switch signal is right.
- 3.4 Mach3 main interface choose ref home.
- 3.5 Executive command, start to back origin point
- If after back to origin point, direction and Switch is opposite, please

EPHANT Enter Mach3 configure, Open home/Limit, Tick the Home neg of the corresponding axis

Motor Home/SoftLimits

			Entries	are in setup	units.			
Axis	Revers	Soft Max	Soft Min	Slow Z	Home	Home	Auto Z	Speed %
х	X	100	0	1	0.0000	X	4	20
Y	4	100	0	1	0.0000	4	4	20

4. How to adjust the spindle speed?

4.1 Connect the spindle control line like the picture showed.

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DCM, FWD belongs to Starting signal. Short circuit will start VFD. AVI, ACM are Analog voltage adjustment signal for spindle speed adjustment, 10V is VFD output Voltage

4.2. Mach3 work, click spindle F5, move slider for speed adjustment.



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4.3. Make sure that the speed not 0 now, if it is 0, Please input 10000 of spindle speed, and Enter. Check if the mach3 start signal is right.

4.4. If the spindle is not started, please make sure that connection is right

And VFD belong to analog voltage control

4.5 mach3 spindle start need to set 2 places

4.5.1 Set hardware port->Output port:

Engine Configuration ... Ports & Pins Encoder/MPG's Mill Options Spindle Setup Output Signals Motor Outputs Input Signals Port Setup and Axis Selection ×. Enabled Signal Port # Pin Number Active Low 28 22 Enable6 1 0 ELEPHANT 4 1 Output #1 1 0 E 4 1 Output #2 1 1 4 1 Output #3 1 5 1 1 1 Output #4 3 Please make sure that Output #1- Output #8 are ticked, other not. 4.5.2 Spindle setting: Engine Configuration... Ports & Pins Port Setup and Axis Selection Motor Outputs Input Si Spindle Setup Encoder/MPG's Relay Control Motor Control Special Functic 🔽 Disable Spindle Rel 🗸 Use Spindle Motor Outr 🗌 Use Spindle ✓ PWM Control Closed Loop Clockwise Output 1 Step/Dir Moto CCW (M4) Output 2 P 0.25 I EELEPHANT Output Signal #'s PWMBase Freq. 7500 Flood Mist Control 4.5.3 Tick Use spindle motor Output and PWM Control, and Clockwise Output set 1, CCW output set 2 4.5.4 Set Spindle Max Speed. Config menu ->Pulley selection Please set the Max Spindle speed into 24000

Current Pulley Min Speed Max Speed Ratio	BLUE ELEPHAN Email: <u>manager@elephant-cnc.com</u> Pulley Selection	Jinan E Mobile: 0	Blue Elephan 086-15064026772	nt CNC M	achinery Co.,Ltd Web: <u>www.elephant-cnc.com</u>
	Current Pulley	Min Speed	Max Speed	BLUE Ratio	T

5. How to do tools setting?

	Engine Configur Enc Port Setu	ation Ports & coder/MPG's p and Axis Sel	ection	Tool		O Change	
	Signal	Enabled	Port #		+0.	0000	
	Input #2	8	1	н	+0.0	0000	
	Input #3	8	1		Auto Tool	Zero	
	Input #4	8	1		Auto Tool I	Leio	
	Probe	4	1	Ren	nember	Return	
	Index	X	1	Elapsed		00:03	
	5.2Menu->Eo	lit button so	cript		Jog ON/OFF	Ctrl-Alt-J	I
EP	Click auto too	ol zero clea	ring	LEPHA	NT	F	LEPHAN





your size of machine. But This data is machine coordinate, not working coordinate

7.4. Press Software limit button, Open it. It will turn green

If it is working normally
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-===	清零 X	F+0.0000	缩放 +1.0000	JE ELEI
床原	清零 V	+0.0000	/ / / / / / / / / / / / / / / / / / / 	
医回机	清零 Z	-6.4938	缩放 +1.0000	
	清零人	+0.0000	半径修改 角度	
脱	机返	回原点 剩余距离 机器坐标	软极限	

8. How to set limit switch?

8.1 if you use origin switch as limit switch, then you only need to open our driver plugin, tick LimitEn and corresponding origin, no need other setting and corresponding origin, no need other setting. TTF.EI

XHC-USB-Motion-Card-Status & Config-V2.3.8.3

 Pod Powered On Pod in Pause Pod in Wait condition Probe Hit Limit or Estop hit 	Status Outputs Out1 Out2 Out2 Out3 Out4 Out5 Out5] V P1 - V P1 - V P1 - V P1 - V P1 - V P1 - V P1 -	BLUE	
Home Switches		P1- ₩ P1- ₩ P1-	BLUEE	LEPHANT

Generally speaking, A, B, C are rotation axis, no need limit.

8.2. If you got a special limit switch, and connect X++ and positive limit to the In8, you need to set it like below... Config - > hardware port: Input port please tick x++, set P1.8, and active low like the form below.

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Engine Configu	iration Ports &	& Pins	LE	_		E.ELEI
Er Port Set	ncoder/MPG's up and Axis Sel	ection	Spindle Motor Outp	: Setup uts	Input Signals	
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	
X ++	4	1	8	4	8	
X	8	1	0	4	X	
			B	1 12		

9. How to control feed speed when run G-code?

Setting page, change feed adjustment into 3000, open rapid control button, now the speed of go will be F3000

Program Run (Alt-1) MDI (Alt-2)	Tool Path (Alt-4) Offsets	(Alt-5) Settings	(Alt-6) Diagnostics (Alt-6)
Special Functions		Abs Coords	
Rapid Override Rate (Units/Min)		Velocity	Count
Rapid OvRd 4000.00	MPG 1	+0.00	+0.00
Single Step on input Activation4	MPG 2	+0.00	+0.00
Toggle	MPG 3	+0.00	+0.00
Auto Limit Override Auto LimitOverRide	<u>[</u>	PG Diagnostics	
Manual Limit Override	Encoder Position		

10. How to calculate Steps per?

Steps per is the number value that the machine move 1mm, unit is: pulse/mm Computational Formula: Screw drive: Steps per = (360 degree)/step angle*micro-stepping level/Screw lead Rack George

Rack Gear: Steps per= (360 degree)/step angle*micro-stepping levels/ transmission ratio/modulus*number of teeth*3.1415 Unknown parameter

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Email: manager@elephant-enc.comMobile: 0086-15064026772Web: www.elephant.cnc.comif steps per is 200 pulse/mm, ----Input, entermanual processing mode then input g0x300 (it means when you input pulse X value the distance itwill move300mm) moving actual distance we call it a. Here is theFormula: X/300=200/a.right steps per X=200*(300/a)

11. How to set velocity and acceleration velocity correctly

MACH3, Motor adjustment, please set velocity and like the form showed Generally, for stepper motor, value should be 100-500. For servo motor system, can be 400-1200 Acceleration velocity should be set right, It maybe cause problems, like machine dither, lose step.

It maybe cause problems, like machine dither, lose step.					
C	Speed	acceleration velocity(Step motor)	acceleration velocity (Servo Motor)		
	3000 and below	200	300		
	4000-6000	300	500		
	7000-8000	400	600		
	9000 and above	500	800		

12. Mach3 Control Output IO-M code

Activate Signal (OUTPUT5) Open Output port5 Deactivate Signal (OUTPUT5) Close Output 5 Please copy m200, m201 to c: mach3\macro\mach3mill In programming, input m200 open output 5, M201 close output 5 User can change OUTPUT5 into OUTPUT6, And then you can control other Output Port. In Mach3 diagnosis, If Output 5 is flashing, it shows that Output port opened



PS2 Electrical diagram

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为了增加抗干扰性,将该信号连接到机床地线(外壳)

4. INPUT: Limit switch : level power output Effective



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PS3There are some other common problem reason and solution. 3

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					-
	COMMON FAULT	REASON	JUDGEMENT	RESOLVENT	
	Main spindle running	1.short circuit or	1.using multimeter to	1.change three core wire of main	
	down	circuit obstruction	measure the on off of	spindle	
		2.transducer shows	circuit.	2.adjust transducer diameter;	
		exceptional,	2. see whether transducer	Change the transducer	
		transducer output	shows exceptionally;	3.change or maintain main spindle	
		exceptionally	measure whether there		
		3.main spindle fault	is voltage of fan-out		
			3.whether transducer		
			idling normally, load		
	TT		exceptionally		T
	One spindle doesn't	1. input and output	1. using multimeter to	1. change connecting signal line	AN
ł	rotate or more	circuit exceptionally	measure the onoff of	2. change the driver	
	spindles do not	2 driver fault	circuit.	3.fix screw tightly	
	rotate.	3.screw of connecting	2.whether the indicator	TTE	
	~	shaft is loose	twinkle or not;	BLU	
			exchange the two drivers to		
			test		
			3. the motor rotates but		
			the machine doesn't work		
	In disorder (motor	1.drive is hot	1. there is problem with	1. change the driver	
	fall out of	2.screw of connecting	driver because of long	2. fix screw tightly	
	synchronism) or	shaft is loose	time working.	3. fix ground wire hard	
	engraving	3. without ground wire or	2. the motor rotates but		
	disorderly.	poor electric	the machine doesn' t work		
		conduction.	3. there is static of		
			machine metal parts.		
	engraved size is	Machine diameter is not	1. Ncstudio user	1.consult manufacturer	N
	different from	correct.	2. DSP handhold user	2. consult manufacturer	
5	designed size		ALL	FFI	
	Material suction	1. the material is	1. to see whether the	1. change the board	
	strength is weak	turnup or uneven	material are turnup	2. to check whether there are little	
		2. vacuum suction is	2. to feel the suction by	water in the vacuum pump or the	
		weak	touching sucker mouth	water is too hot	
		3. Uneven table-board	3. there are air leak sound	3. use milling cutter to suck the	
		lead to air leak	around brims	table- board	
				Note: little cutters will be ok	

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E.	Do not work	Fluctuant voltage	There are mainly four cond	itions caused by fluctuant voltage.	
	momentarily	TR. CL	During Automatically worki	ing:	
	-	DIUL	1. the screen shows normal,	but the data stop to change, it is	
		DL	no use to press anywhere	DE	
			2. screen shows that "enter	ing the power down protecting status,	
			may because of unmatched v	voltage"	
			During manual operation:		
			3. screen shows that "enter	ing the power down protecting status,	
			may because of unmatched v	voltage"	
			4. the screen shows normal,	but the data stop to change, it is	
			no use to press anywhere		
			The above conditions all ma	ay occur when fluctuant voltage, be	
			similiar with power down p	rotection(power cut abruptly). There	
			will be a cue when small fl	uctuant voltage, and no cue when big	
	TT		fluctuant voltage. The abo	ove conditions all can be solved by	TT
	TANT		adjusting the voltage of o	control card at 5.3V.	AN 1
T	Transfinite work	This condition usually	After zero point user	Remake the right zero point can	
		caused by:	definition, X axis or Y	solve this problem	
		The numerical value of	axis exceed the limit	TTE	
	-	zero point "physics	position in some	BLUE	
		coordinate" +	direction.		
		"unprocessed files			
		dimension" exceed the			
		max. or minimum value of			
		limit position			
	Intermit abruptly	The limit position is	The system can start to	Make the limit position bigger than	
		smaller than the actual	work normally, but	the actual working area	
		working area	intermit after a short time		
			working		

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