

TIGERTEC

TIGERTEC

User's Quick **Manual**

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TIGERTEC

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TigerTec Inc.

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CONFIDENTIALITY STATEMENT

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SAFETY WARNINGS AND PRECAUTIONS

SAFETY FIRST

General Safety Warnings and Cautions

- ▶ Do not work on the routing table unless you have taken the proper training courses or a qualified operator is present to supervise.
- ▶ Read and make sure you understand the basic operation procedures described in this manual and you became familiar with the particularities of this machine before performing any work.
- ▶ Keep the work area as clean as possible. Cluttered areas invite injuries. Keep the work area well-lighted.
- ▶ Make sure anyone working on or around the equipment understands and, more importantly, follows all safety precautions. Sudden movement, loud noises, horseplay, etc. must be avoided; as such distractions may result in unsafe conditions.
- ▶ Keep children and visitors away. Children and visitors must never be allowed in the work area unsupervised.
- ▶ Keep your tools clean and when not in use, store them in a dry, secure location to prevent corrosion and loss.
- ▶ Use the right tool for the job. Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. Do not use a tool for a purpose for which it was not intended.
- ▶ Never attempt to use bushings to hold a smaller tool into a larger collet. Always use an appropriate collet that will match the bit shank you are planning to use.
- ▶ Dress properly. Do not wear loose clothing, suspenders, ties, or jewelry as they can be caught in moving parts. Non-skid, steel-toed footwear is recommended. Wear restrictive hair covering to contain long hair.
- ▶ If your work area is dusty or you work on material generating too much dust (like MDF for example) you must wear DUST MASK or respiration protection mask.



- ▶ Protect your eyes. Wear ANSI-approved impact safety goggles at all other times.
- ▶ Protect your hearing. Always wear hearing protection in noisy environments.
- ▶ Do not overreach. Keep proper footing and balance at all times. Do not reach over or across running machines.
- ▶ Never use your hands to hold down the small parts while cutting. If small parts can not be held down by vacuum, use double sided tape, glue, mechanical clamping systems or use other routing strategies (i.e. bridging, onion skin cutting).
- ▶ Stay alert. Watch what you are doing. Use common sense.
- ▶ When servicing, use only identical replacement parts and accessories.
Do not work on the router if you are under the influence of alcohol, drugs, or certain medications. Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking the drugs. If there is any doubt, do not work on the router.
- ▶ Always use dry, clean air. Use an air filter / dryer to prepare the compressed air for the machine. Use of moist, unfiltered air can damage the spindle bearings and the tool clamping and releasing chuck, and void the warranty.
- ▶ When performing maintenance work on the machine that involves disassembling different mechanical components, always lock out the incoming power supply to prevent other people from accidentally turning ON the system.
- ▶ Do not perform any electrical work on the machine, unless you are familiar with all the safety codes and regulations and you've taken all the necessary precautions to avoid electrical hazards.

SAFETY FIRST**Work Area Safety**

- ▶ It is important to always keep the work area clean. Oil, debris, or water on the floor can cause unsafe conditions. Be sure all work areas are free of hazardous obstructions.
- ▶ Return tools and other equipment to their proper storage place when finished using them.

SAFETY FIRST**Cutting Tool Safety**

- ▶ Cutting tools are very sharp and should be handled accordingly. Inspect tools before using and discard any defective tools. Failure to properly handle tools can result in serious injuries.
- ▶ It is advisable to invest from the beginning in a good quality, long life tool, rather than spend money and time fixing broken tools, which may result in serious injuries.

SAFETY FIRST**Installation Safety**

- ▶ An electrician must read and understand the electrical schematics prior to connecting the machine to the local power system. Connecting the wrong voltage power will void the warranty.
- ▶ Place all switches in the off position before connecting power. Always lock the main disconnect switch in the off position if the machine is left unattended. When the machine is installed, be sure that all motors rotate in the correct direction.



WARRANTY STATEMENT AND REPAIR POLICY

- TigerTec hereby warrants the electronics, motion controller, and motors of the computerized routing and engraving system, if properly handled under normal use and only for the purposes the router is designed for, to be free of defects in materials and workmanship for a period of three years from the date of purchase from TigerTec or Authorized TigerTec Distributor.
- If the electronics, motion controller, motors or any mechanical component of the system are found to be defective during the applicable warranty period in accordance with the following specific procedure TigerTec at its option, will either repair or replace the parts at no charge.
- All parts that are replaced shall become the property of TigerTec and must be returned upon request to the original shipping point, transportation charges prepaid, where they will be inspected by a TigerTec representative to determine the condition of the component and whether it was caused by accident, misuse, neglect, alteration, improper installation, repair or improper testing.
- If TigerTec elects to repair or replace such products, TigerTec shall have a reasonable time to make such repairs or replace such products and return them by Standard Ground Transportation to Purchaser. TigerTec will pay shipping charges on warranty replacement parts equal to normal parcel post or ground transportation on parts found defective by TigerTec inspection department.
- NOTE: If Purchaser chooses to employ a different transportation method other than Standard Ground, he / she will notify TigerTec of such change and will support the extra charges incurred with the special handling, such as air freight, expedite shipping, etc.
- This warranty does not include any damage to the routing system resulting from, but not limited to, shipping, accident, disaster, misuse, abuse, or any unauthorized modification of the product.
- Warranty does not apply to perishable tooling, hoses, seals, and bearings, whose life depends upon care and use, normally beyond TigerTec control.

- ▶ No responsibility for loss of machine time or work piece is expressed or implied. This warranty is valid to the original owner while in compliance with normal usage and the recommended maintenance as prescribed by the manufacturer. There is no implied warranty by TigerTec for fitness of purpose.
- ▶ The warranty for the routing motors, routing spindles, vacuum motors, vacuum pumps, and vacuum fans of the routing systems are covered by the manufactures of those products.
- ▶ Unauthorized work performed on TigerTec products may void TigerTec warranty.
- ▶ Notice of any claimed defect within the warranty period must be presented to TigerTec immediately upon the Purchaser discovering the defect and the right of inspection given to TigerTec while the product is in the claimed defective condition. Operation of the product must be suspended until written clearance is issued for continued operation provided that TigerTec upon receipt of a claimed defect will proceed without unreasonable delay to remedy any defect coming within the warranty which is found to exist.
- ▶ In no event will TigerTec be liable for consequential, special or indirect damages in any action, ever if TigerTec has been advised of the possibility of such damages. This warranty is the only warranty made by TigerTec respecting hardware products manufactured by it and can only be amended by a written instrument signed by an officer of TigerTec.
- ▶ TigerTec assumes no responsibility for repair or replacements of these items, but will, upon request, provide the manufacturers name and contact point.
- ▶ The foregoing limited warranties contained in this section are in lieu of, and TigerTec shall not be liable for, all other warranties, conditions and obligations, whether express or implied, including but not limited to the implied warranties of merchant ability and fitness for a particular purpose, except as provided herein. The foregoing shall constitute the exclusive remedies of the Purchaser for any breach, including fundamental breach, by TigerTec of its warranties, conditions and obligations here under whether in contract or in tort, or fundamental breach of this Agreement.

Limited Warranty Service Procedures and RMA forms

In case of warranty related claims, TigerTec shall, at its option, replace or repair, free of charge, any products covered by the warranty which shall be returned to TigerTec within the warranty period, and which upon examination by TigerTec plant, proves to be defective in material or workmanship and which is not caused by accident, misuse, neglect, alteration, improper installation, repair or improper testing. If TigerTec elects to repair or replace such products, they will be returned to the Purchaser using Standard Ground Transportation. If the Purchaser chooses a different shipping method, when filling in the appropriate fields in the RMA request form, please indicate clearly the name of the carrier, your account number and the type of requested service (i.e. Overnight, Saturday Delivery, etc). If an option other than Standard Ground Transportation is elected, the Purchaser will support the difference in cost between the Standard Delivery and the selected transportation method.

Warranty of third party suppliers parts

TigerTec guarantees that all machines shipped out from the factory are free from defects. However, continuous operation of the machine without proper maintenance or faulty operation would result to machine breakdown. To protect our customers against loss of production time, TigerTec offers limited warranty (as provided by third party suppliers) for the machine parts such as Spindles, terms Ex-Factory TigerTec (courier charges, duties and taxes, whenever applicable, on account of the customer).

Warranty for spindles is provided until 2000 hours or 12 month as prescribed by the Supplier. However, for defects caused by improper handling or operation, warranty may not be applied even within the duration of the warranty period, since warranty is applicable only to "manufacturing defects". Note that after the expiration of the warranty, all charges related to repairs are chargeable on the account of the customer. In cases where the parts are under warranty the customer will send the defective spindle to either our offices in Germany or in the United Arab Emirates, accompanied with a Return Material Authorization (RMA) Form choosing one of the following options:

01 •

Along with the defective spindle and RMA, the customer will make an advance payment, amount depending on the spindle configuration, to TigerTec return, the Customer will get an immediate replacement spindle (new or repaired) from the Replacement Spindle Pool. The advance will serve as a deposit for any repair charges, in case spindle is not covered by warranty. Deposit will be refunded to the customer, net of any applicable charges, upon confirmation that the spindle is covered by warranty or upon receipt of the costs estimate for the repair.

02 •

Upon receipt of the defective spindle, TigerTec will send the defective spindle to the Supplier who will conduct series of test for the spindle. After the evaluation or testing, the Supplier will send TigerTec with the confirmation if it would be covered by warranty, if not, with the estimated costs of repair. As per experience with the suppliers, it would take an average of 7–10 days before the confirmation or estimate be issued by the Supplier. If defect is covered by warranty, the supplier will repair it and send it back to TigerTec who will return to the customer immediately upon receipt. As per experience, the repair would take an average of 1 month. Shipping time after the repair works must also be considered.

Spindles which are out of the warranty period may be replaced or repaired separately.



ATTENTION:

An RMA request form is attached at the Appendix section of this manual.

Copy this form, fill in all fields and fax it back to TigerTec. Upon receiving your request, TigerTec will issue an RMA number and will contact you either by phone, return fax or e-mail to inform you about this number which should be then written down on the RMA request form you initially faxed to TigerTec. A copy of this completed form should be included with the shipment. This RMA number should be also clearly marked on the shipping label and on all accompanying documents (packing lists).

We strongly recommend reading and understanding the RMA request form entirely, and by signing it you agree to the terms and conditions listed in there.

**This RMA number should be prominently displayed on the outside of the return package and on the accompanying packing list.
Customer assumes cost of control unit shipment to point of service.**

CNC machines purchased directly from TigerTec:

Warranty Service may be obtained by first contacting the TigerTec service department at phone **+86-18560168108** or fax **+86-531-67800878-8029** to schedule services or obtain a Return Materials Authorization (RMA) number.

CNC machines purchased directly from TigerTec dealers, you can contact with them directly or you can also send e mails to: **info@tigertecnc.com.cn**

/// System Information Sheet ///

Please fill this form when you receive this manual and fax it to the corresponding destination according to your region (see contact details below).

Machine Model:		
Serial No:		
Date of Installation:		
Customer Name (or Contact Person):		
Company:		
Address/ City / Country:		
Phone:		
Fax:		
(Extension No)		
Mobiles :		
Email:		
WWW:		
Production field:		
Software & CAD/CAM (brand and version):		
Materials being processed on the machine:		

You can also send e-mails to: support@tigertecnc.com.cn or info@tigertecnc.com.cn

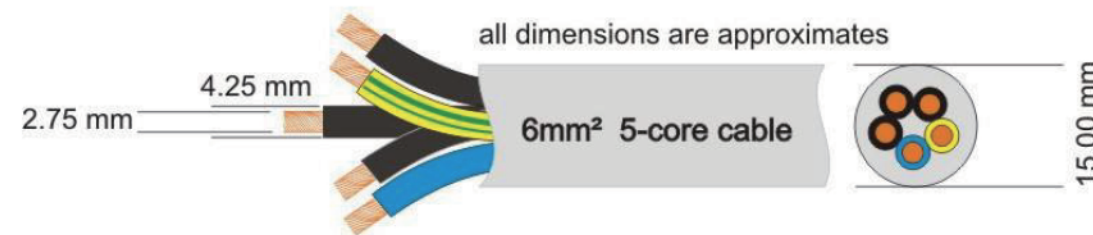


Pre Installation Requirements

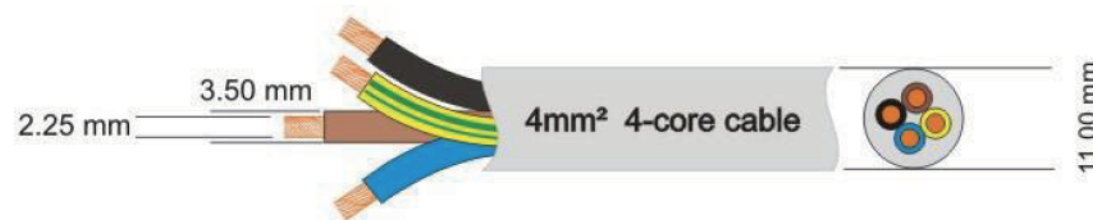
We assume here that your machine is equipped with ATC spindles (Automatic Tool Changer).

Electrical:

- ① 380 VAC, 3Ph, 50/60Hz voltage connections (or 1X230 VAC according to your system configuration)
- ② Standard Earth point (zero voltage) made according to the ISO specifics
- ③ 6mm² 5-core cable (Main power cable – from machine to the circuit breaker)



- ④ 4mm² 4-core cable (from Vacuum pump to circuit breaker)



Air connection

You need compressed air to be:

- Refrigerated dry air – able to supply 20 CFM of air
- Clean (filter < 0.1 μm), oil free, water free
- Pressure not less than 6 bar

For manual spindles, normal air compressors can be used but with use of micro filter at the compressor end supply point.

Trainee:

- Trainee with previous knowledge of Windows and 3D relief designing is preferred
- Trainee should have good command of English language.

Work Space Environment:

- Dust free environment recommended, to minimize maintenance and cleaning time
- Air conditioned work spaces is also recommended
- Layout to be as recommended below:

For system dimensions, please refer to the following table of Length (L) and Width (W) and locate the correct values according to your model:



Forklift: you need fork lift for unloading the machine off the truck. This forklift should be:

- Robust / Long arms forklift is needed
- Able to lift 7 tons of weight (or more) according to system model.

Manpower:

You may need 2–3 helpers during lifting and grounding the machine.

FORKLIFT GUIDE

1 UNPACKING AND MACHINE IDENTIFICATIONS

All TigerTec machines are shipped assembled and secured to a wooden pallet.

- 01 Unpack all items that shipped with your machine. Check the items against the packing slip to be sure nothing was left out. Notify TigerTec immediately if you are missing any pieces of your shipment.
- 02 Forklift must be centered at the side of the machine.

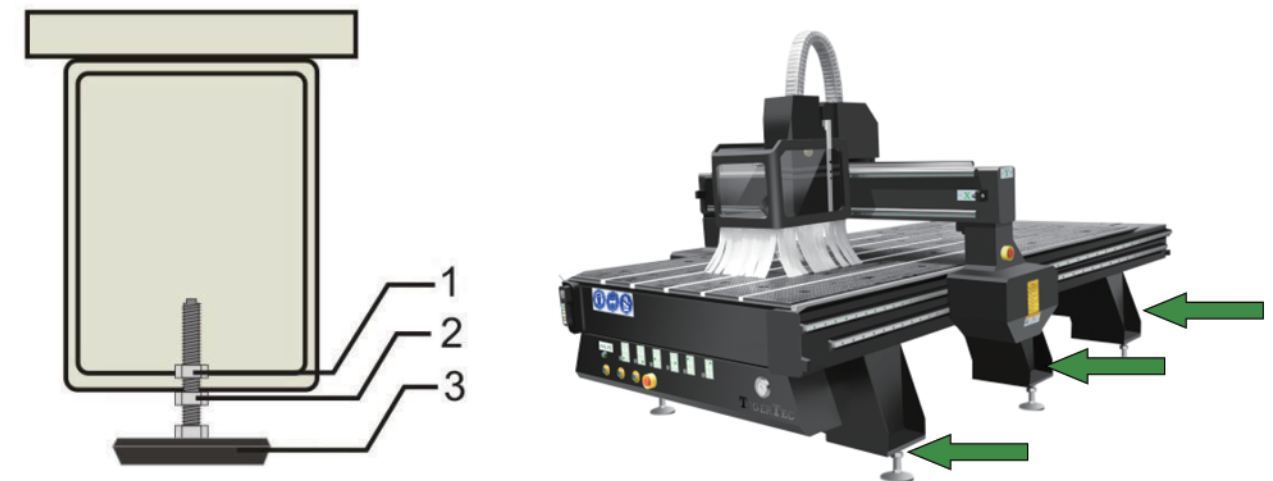


WARNING: DO NOT LIFT OR MOVE MACHINE USING GANTRY

Depending on machine size — SEE QUOTE FOR MACHINE WEIGHT NOTE:
Forklift capacity must be adequate to safely lift the machine.
It is recommended to have Fork Lift Extensions to better support load.

- 03 Care must be taken not to damage the valves on the front of the machine. Slowly move in close to the machine.
- 04 Forklift your machine up from the floor and remove the wooden pallet.
leveling your machine

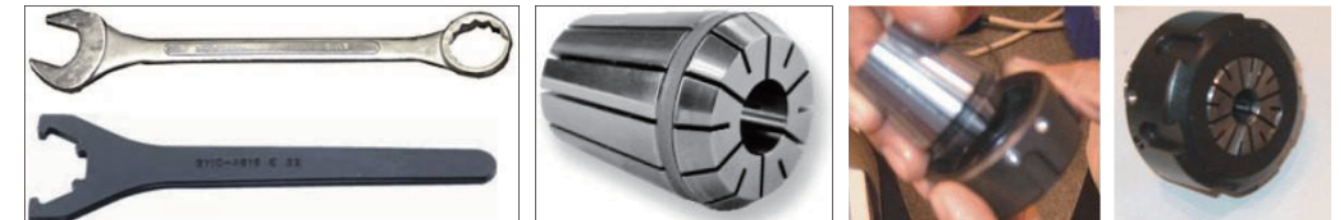
You need to do this step once you can power your machine, so that you will be able to move the axes to check the balance at every position.



Leveling feet assembly consists of:

- 1 Locking nut
- 2 Leveling (adjustment) nut
- 3 Hard rubber feet

How to mount a tool in the spindles



1 You need to use the two wrenches supplied by TigerTec in your tool box:

- Collet nut wrench – black color – called also "Spanner Wrench"
- A normal open end wrench
- Collet and tool (same diameter)
- Remove the collet nut from your spindle by using these 2 wrenches.

Spindle Brand	Spindle Power	Collet Size	Wrench Size
GS	1.5KW	ER16	25, 17–19
GS	2.2KW	ER20	19–22,27–30
HSD	1.5/3KW	ER25	ER25, 27–30
HSD	4.5/6/7/9.5KW	ER32	ER32, 30–32

2 Use specified collets suitable for your spindle (it will be one of ER16, ER20, ER25 or ER32 and this will be supplied also inside the tool box according to what spindle is installed in your machine).

3 Insert the collet inside the collet nut.

4 Mount the nut by hand to the spindle – don't tight.

5 Now insert your tool (the diameter which matches the collet you are using).

6 Never to use loose collet or mismatched diameters of collet and tool.

7 Tight by hand till the maximum you can rotate (be careful ...tool is sharp!)

8 Use the wrenches to tighten more until the tool is mounted properly.

COLLETING GUIDELINES

WRONG!

This picture shows an improper assembly. Notice the gap and angle of the collet in relation to the nut. The collet is not flush to the end of the collet nut. Correct this assembly before using.

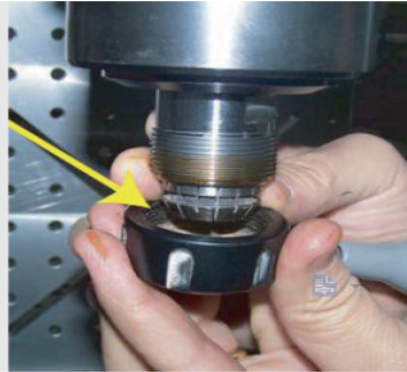


RIGHT!

The picture above is how your collet nut assembly should look: the end of the collet is flush with the bottom surface of the collet nut. You will hear and feel a “SNAP” as the collet properly goes into the collet nut. Once it is assembled, then “SCREW” the nut onto the threaded spindle end

DO NOT PUSH THE COLLET INTO THE SPINDLE AT ANY TIME!

Only the proper assembly should be screwed onto the spindle.





FOR TOOLCHANGE AND FIXED COLLET SPINDLES:
ONLY USE TOOLHOLDERS, COLLET NUTS AND TOOLS THAT ARE BALANCED TO MEET OR EXCEED THE MAX RATED SPEED OF THE SPINDLE

THE SPINDLE WILL BE DAMAGED IF UNBALANCED EQUIPMENT IS USED!



INSTALL CNC ROUTER

4.1 CHECK THE MACHINE

When you get machine, please check the package to confirm whether there are some damages of the machine. Then open the crates to take off the plastic cover of the machine and clean the anti-rusty oil on the linear and rack pinions. You can put engine oil on the linear, rack pinion and ball screw for lubricating before use machine.

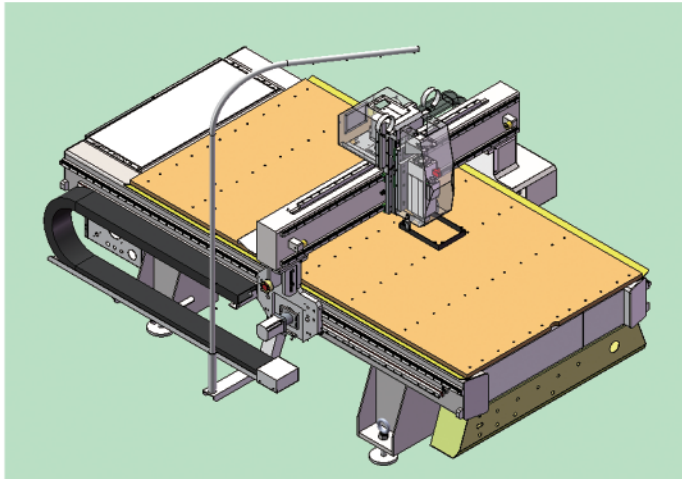
If you are happy to help the factory to improve and give your idea to the factory, please fill the form with the manual and send back to the factory. We will be appreciated. Our e-mail: info@tigertecnc.com.cn or support@tigertecnc.com.cn

4.2 INSTALL THE MACHINE.

Please install level feet for machine before using. If the ground is not flat, please adjust the feet to level machine to avoid the vibration when you run machine. Level the machine can help the machine to improve the performance and lifetime.

Connect machine with power. Please check voltage of the machine (see the plate at the back side of the machine) and your factory power to avoid any mistake. If any mistake, it is easy to burn machine or hurt the operator.

The TigerTec AD series router is powered by 220 or 380 Volts AC. Unless specially requested the electronics require 3 phase power. Please check the power again before you switch on the power to avoid any mistakes

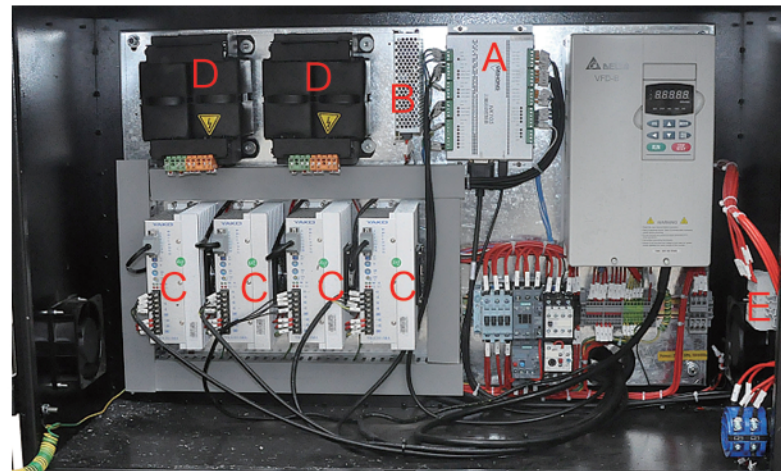


The Electronics are housed in the large controller box as shown in figure. Please double check the power of the machine before you turn on the power. You should ground the machine to the floor before switch on the electricity.

When unpacking the machine avoid twisting the cable carrier that guides the cables to the motors.

Open the controller box with the key provided. The electronics will now be exposed and components identified in the photo.

- A** Controller Board.
- B** 24Volt PSU.
- C** Stepper Driver.
- D** Transformer
- E** 220 or 380 Volt Input.



4.3 CONNECT THE POWER CABLE TO THE MACHINE CONTROL CABINET

Connect the cables as the label listed. Don't make mistakes, otherwise the machine can not run correctly. Before connect power to machine, check the control cabinet wiring connections, if any of the wires disconnected or loosing, please connect it or contact the manufacturer or TigerTec dealers for help.

4.4 CONNECT THE CNC ROUTER TO YOUR FACTORY POWER

4.5 ABOUT CONTROLLER

For controller detailed information, please read the manual we sent along with the machine.



NOTES ON THE G-CODE FILE

- ▶ The controller will recognise files with the extension.nc,.cnc,or,.txt.
- ▶ If a part requires multiple tools it is best to output a different file for each part.
- ▶ If the G-code file references a tool number higher than T10 then the controller will give an error at the start of the file. M6 T1 to M6 T10 are allowed.
- ▶ In general it is best to remove T commands by telling the CAM package that the machine is not a tool changer machine, or insuring that the Tool number does not exceed 10.
- ▶ G92 is the Axis presetting command, when this command is encountered in the G-code file the X-Y-Z zero position is set at the position the machine is in at that time.
- ▶ In general it is best to remove this from the G-code file, or if it is in the G-code file, make sure the machine is at the origin before you press start.
- ▶ The controller will recognise G54 to G59 offset commands.
- ▶ See the NK105 manual for more details on these commands.

ACCELERATION SET

Under the menu Process Params, there is a sub menu called Acceleration Set.

This menu has three parameters that control the acceleration and cutting motion of the machine.

The Defaults for these parameters are:

- Jerk-310
- Single Axis Acc -50
- Max Cycle Acc -100

A low Max Cycle Acc will result in arcs that move in a jerky motion or at a slow speed.

MACHINE LUBRICATION

5.1 LUBRICATING THE X-Y RACK AND PINION

Lubrication is important with rack and pinion gearing systems. A thin film of grease should always be present on the minimize metal to metal contact.

5.2 LUBRICATING THE X-Y-Z RAILS

The rail carriage bearings are sealed and protected with wipers. The rails should be Lithium Based Grease: lightly oiled to allow smooth operation. Avoid a build up of debris on the rails by blowing them off with air, or wiping them down with a rag.

5.3 LUBRICATING Z BALLSCREW

The Z axis uses a ballscrew and ballnut instead of a Rack and Pinion. The ballnut has a nipple for applying lubrication to the mechanism.

Lithium grease is pumped into the lubrication point with the application gun provided with the machine.

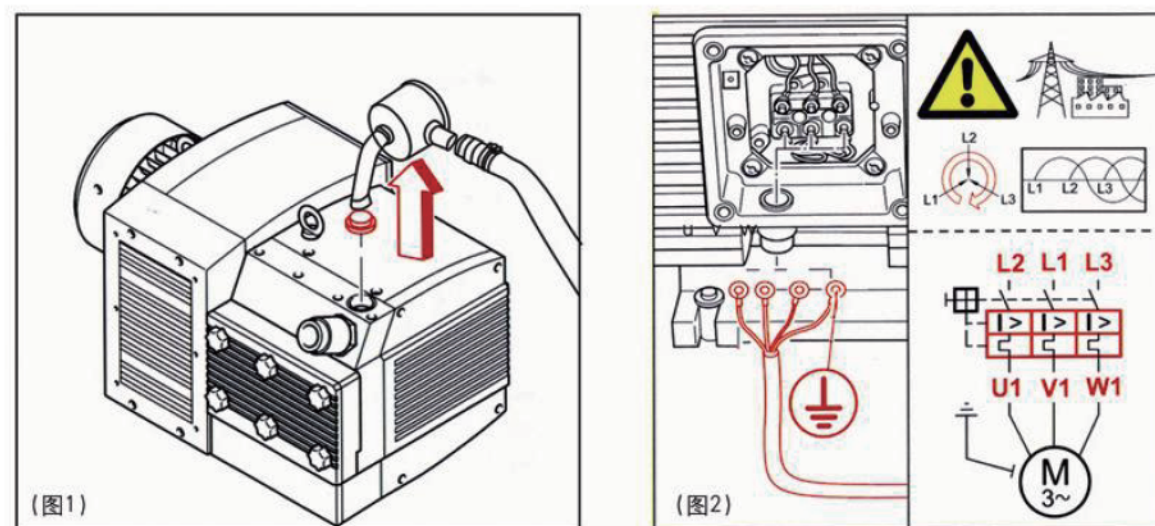
5.4 RECOMMENDED LUBRICANTS.

Lithium Based Grease: lightly oiled to allow Alvania Grease No. 2(Shell) operation. Avoid a or Equivalent.

Oil: Vactra No. 2s(mobile) Tonner Oil or Equivalent.

1.5 INSTALL THE VACUUM PUMP

Vacuum pump is working separately from machine, there is a wire connection label on vacuum, it shows how to connect power cables to vacuum, normally, all the vacuum pump are 3 phases with 380V or 220 V. If vacuum working well but no pressure, please exchange either two power cables to adjust the vacuum rotating direction.



There are some switches in from of machine, the switchs are for vacuum. If switch some of them on, the correct labeled area will be in use.

1.6 INSTALL DUST COLLECTOR

- ① Take out the dust collector from the carton and install it.
- ② Connect the tube with the dust collector and hood on the machine.
- ③ Connect the dust collector with power. And check the motor run clockwise or anticlockwise rotation.



1.7 INSTALL AIR COMPRESSOR

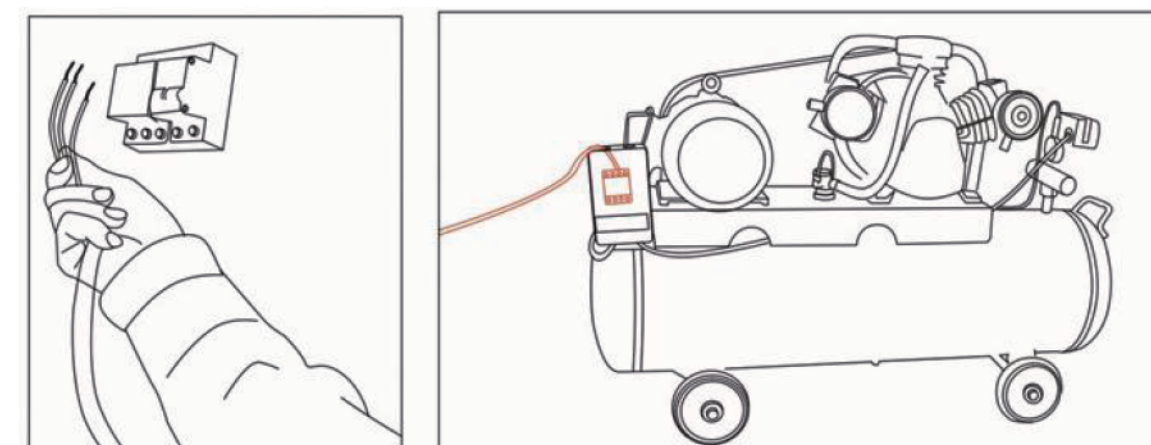
Air compressor:

Volume flow: $\geq 0.3\text{m}^3/\text{min}$

Rated discharge pressure: 0.8MPa.

Power: $\geq 3\text{KW}$

- ① Take out the air compressor from the package and connect the air tube with the machine.
- ② Connect the air compressor with the power.



When everything is ready, switch on machine (the main switch is in front of machine control cabinet), then press the green button on top of control cabinet. If no power comes, release the emergency stop buttons. There are three emergency stop buttons, one is on top of control cabinet, the other two are on two sides of machine gantry.

TROUBLE SHOOTING

Chapter VI Setting parameters

Mode No.	Process Area			Accuracy	Weight	Foot Print (WXLXH)		
	X	Y	Z					
TR203B	600mm	900mm	150mm	± 0.05mm/m	400KGS	1200mm	1700mm	1200mm
	23.6"	35.4"	5.9"			47.2"	66.9"	47.2"
TR404AD	1200mm	2460mm	200mm	± 0.05mm/m	900KGS	2024mm	3300mm	1950mm
	48.8"	96.9"	7.9"			79.7"	129.9"	77"
TR408B	1200mm	2460mm	200mm	± 0.05mm/m	1700KGS	2224mm	3800mm	1950mm
	59.1"	118.1"	7.9"			87.6"	149.6"	77"
TR408AD	1240mm	2460mm	200mm	± 0.05mm/m	1400KGS	2024mm	3300mm	1950mm
	48.8"	96.9"	7.9"			79.7"	129.9"	77"
TR510AD	1550mm	3050mm	200mm	± 0.05mm/m	1700KGS	2224mm	3800mm	1950mm
	59.1"	118.1"	7.9"			87.6"	149.6"	77"
TR710AD	2000mm	3000mm	200mm	± 0.05mm/m	2000KGS	2724mm	3800mm	1950mm
	78.7"	118.1"	7.9"			107.2"	149.6"	77"
TR712AD	2000mm	6000mm	200mm	± 0.05mm/m	2200KGS	2724mm	4800mm	1950mm
	78.7"	157.5"	7.9"			107.2"	189"	77"

FEEDBACK REPORT

CNC router		Model No.		Serial No.	
		Receive Time		Feedback Time	
1	Delivery time				
2	Packing				
3	Machine Condition				
4	Application				
5	Suggestion				
6	Photo after Installation				

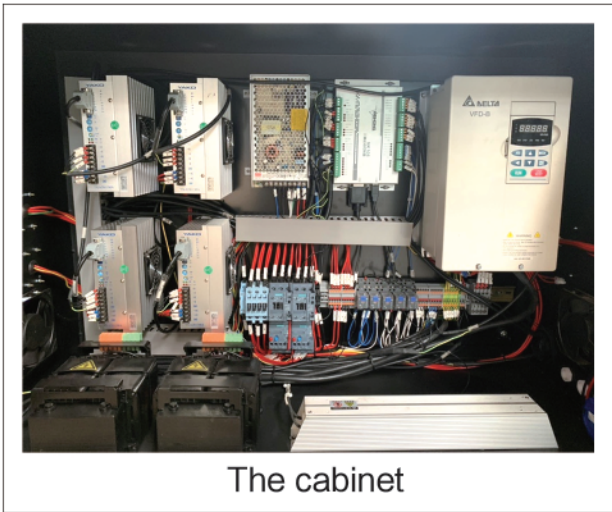
Remarks: Your feedback is very important for our growth!

THE INSTRUCTION OF THE CONTACTOR ' TROUBLESHOOTING

When the keypad show “Lv” alarm ,it means that the power supply’ s voltage is lower , so you can check the problem according to the following steps:

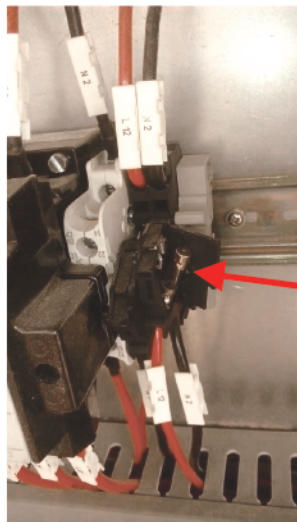


The keypad

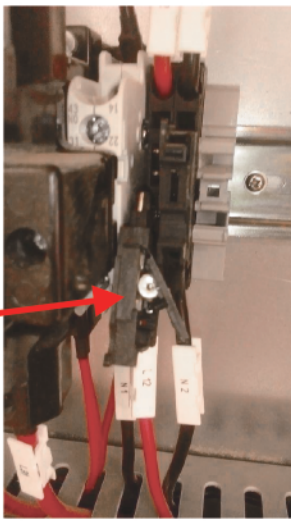


The cabinet

1 Turn off the power and check whether the two fuses are damaged.



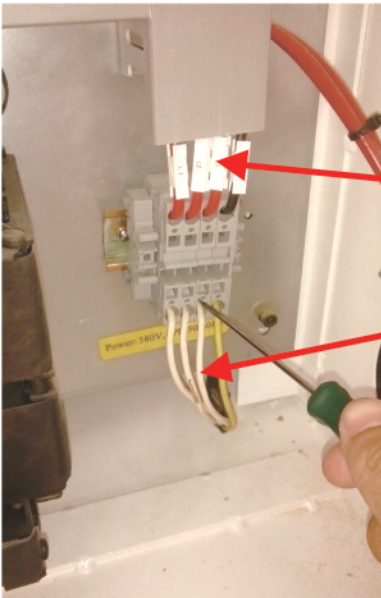
The two fuses



The fuse type: 10A/250V

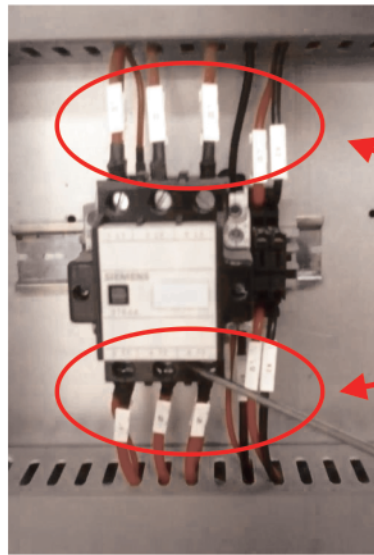
If the fuse is damaged ,you should change a new one ,the type of the fuse should be " 10A/250V " .

2 After turn off the power ,Checking whether the wires connect tightly , they can ' t be connected loose.



Make sure the three live lines and one null line connect tightly

- ③ After turn off the power ,Checking whether the wires connect with the contactor both tightly.



Make sure the wires both connect tightly

After checking according to the above steps,if the problem also happens, you can continue to check the problem refer to following steps:

- ④ Checking whether the voltage between any two of the three live line is (340V~420V), the voltage between any one of the three live line and the null line is (198V~242V).

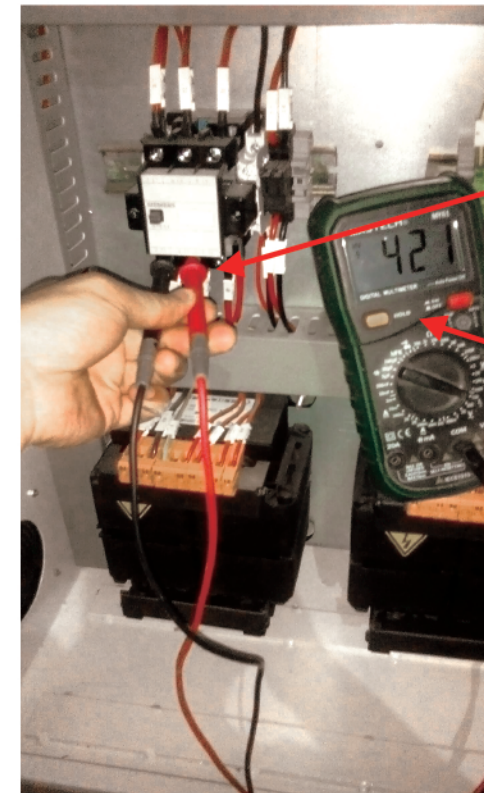


Make sure the wires are connect correctly

Multimeter

If the voltage between any two live lines is less than 340V, then you should turn off the power and check whether the live lines supplying the power are connect correctly; if the voltage between any one live line and the null line is beyond (198~242)V, you should turn off the power and check whether the null line supplying the power are connect correctly

- ⑤ Checking whether the voltage between any two of the three live line is (340V~420V).



Make sure the three wires are connect correctly

Multimeter

If the voltage is less than 340V, then you should turn off the power and check whether the wires are connect correctly.

After checking according to above steps , you can turn on the power and try to operate the machine again, maybe the problem won' t hanppen.

THE INSTRUCTION OF ADJUSTING THE CNC ROUTER

1 The problem when cutting materials



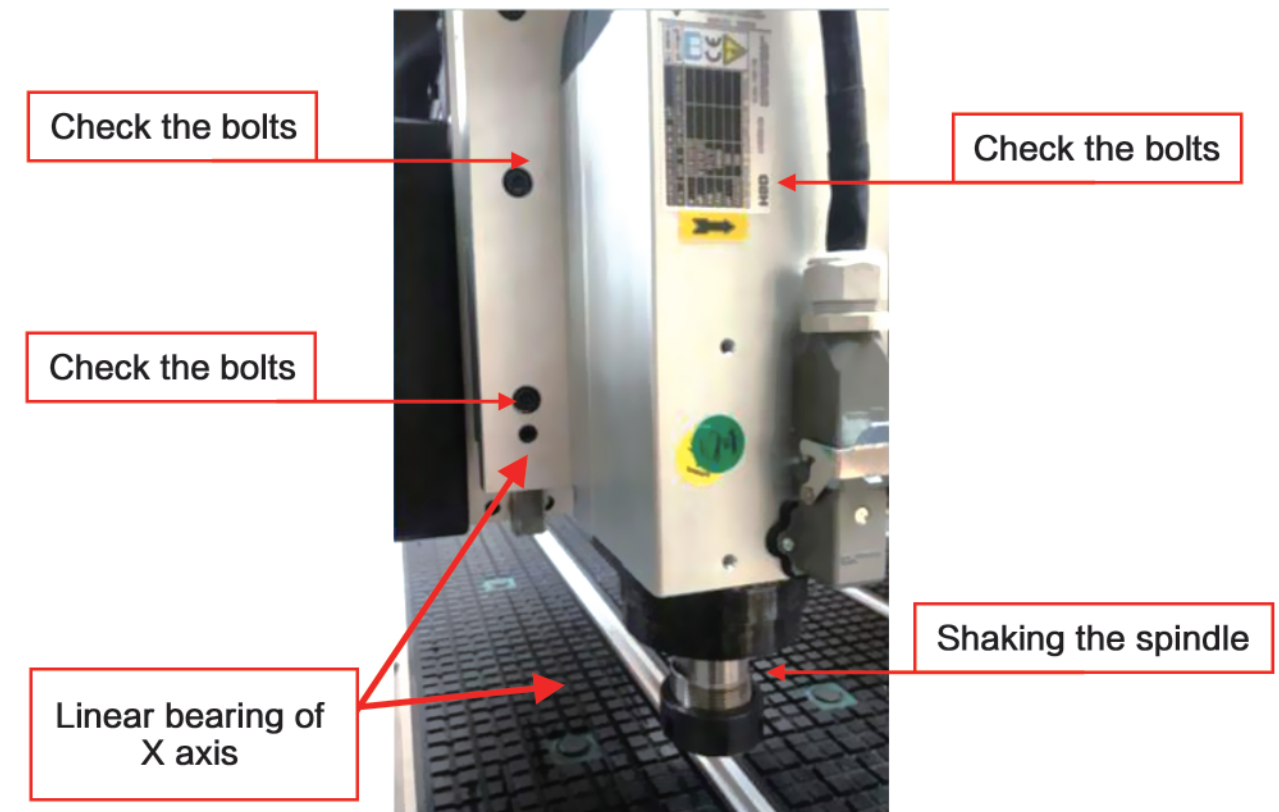
2 The reasons maybe cause the problem

There are two reasons maybe cause the problem: (1) Some mechanical parts don't assemble tightly, the assembling bolt maybe loosened. (2) The center line of the spindle isn't perpendicular to the worktable surface.

3 Checking whether the mechanical parts are assemble tightly.

① checking whether the spindle is assemble tightly.

You can check according to the following steps: Shaking the spindle by hand (refer to picture 1), then check whether the spindle is assembled tightly. If it is assembled loosen, you should find out the loosen bolts and tighten them.

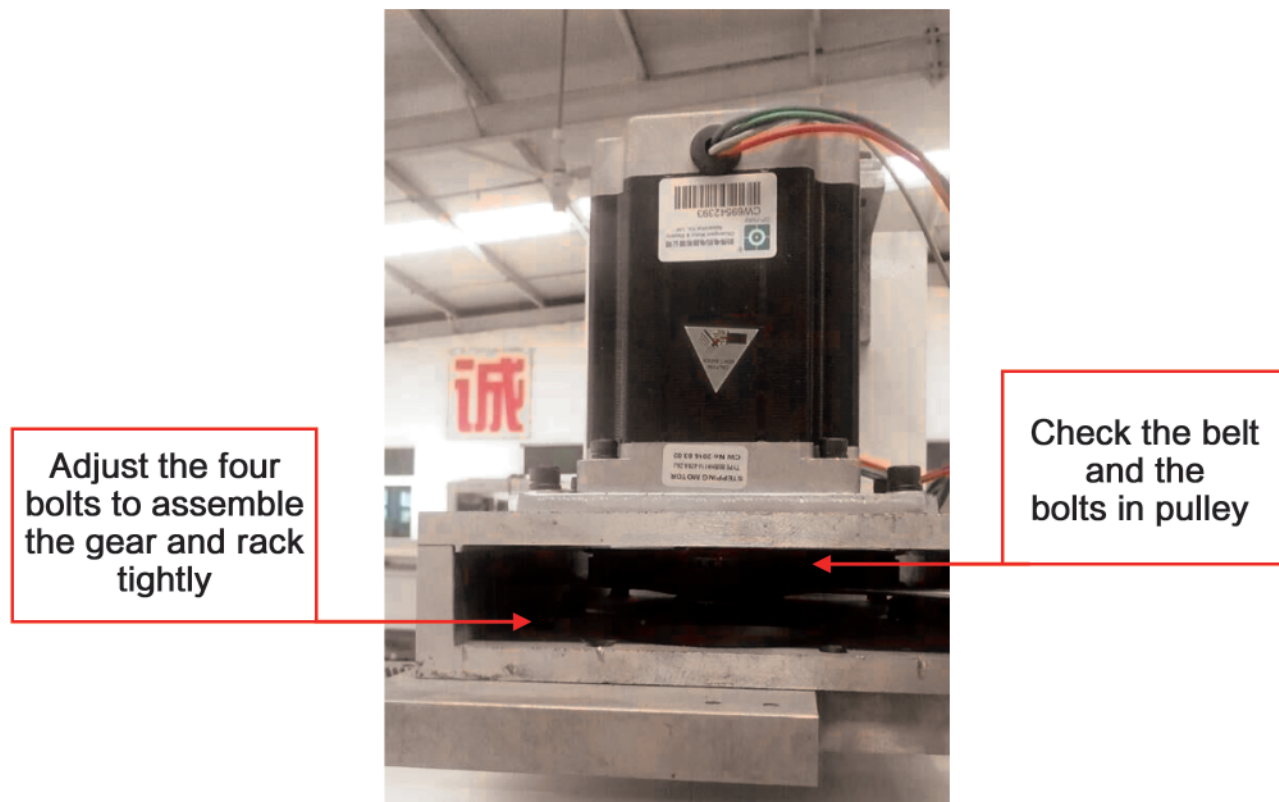


1 Checking the spindle

After you fasten the loosen bolts, you can shake the spindle again and check whether the X axis' linear bearing moving (refer to picture 1).

If it moving means that the X axis' gearbox doesn't assemble tightly and you should check the X axis' gearbox. You can check the gearbox as following steps:

- Check whether the belt in gearbox is fastened tightly, if it loosen you should fasten it (refer to picture 2).
- After fastening the belt, check whether the X axis' linear bearing can be moved when shaking the spindle. If it can be moved again you should adjust the four bolts fixed the gearbox to assemble the gear and rack tightly.

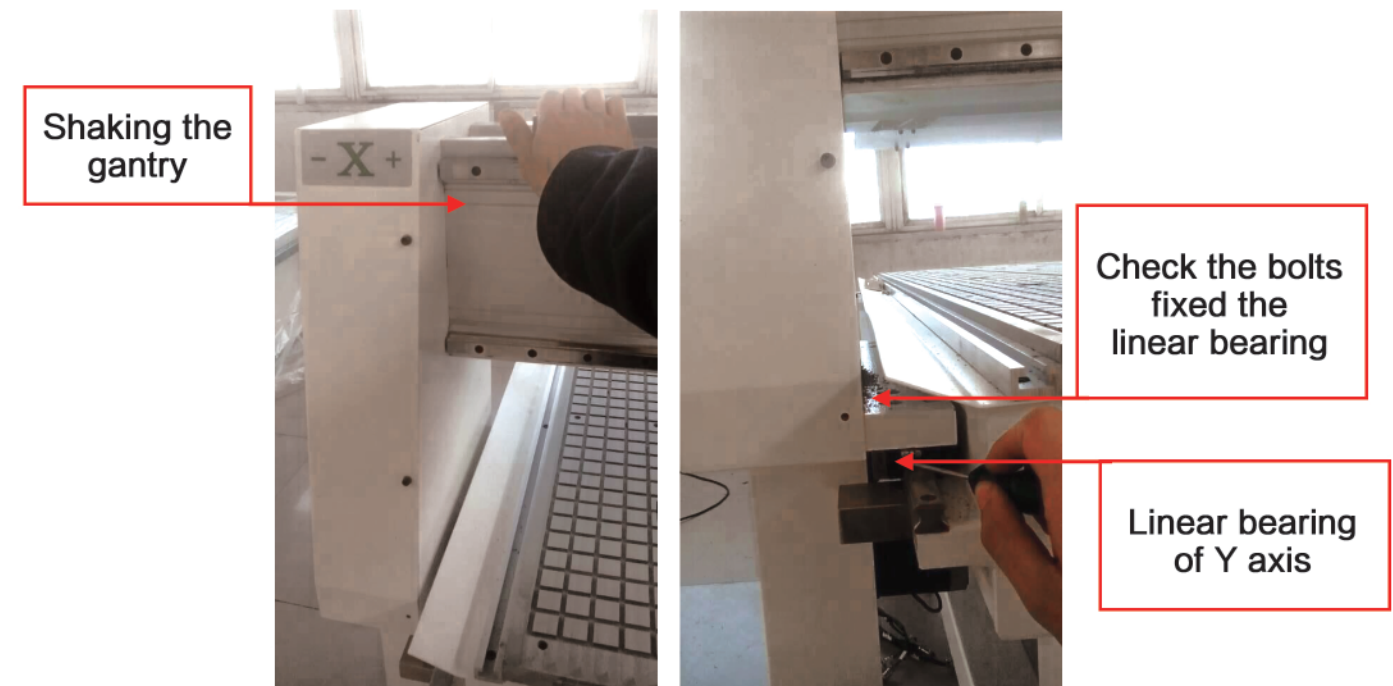


2 Checking X axis' gearbox

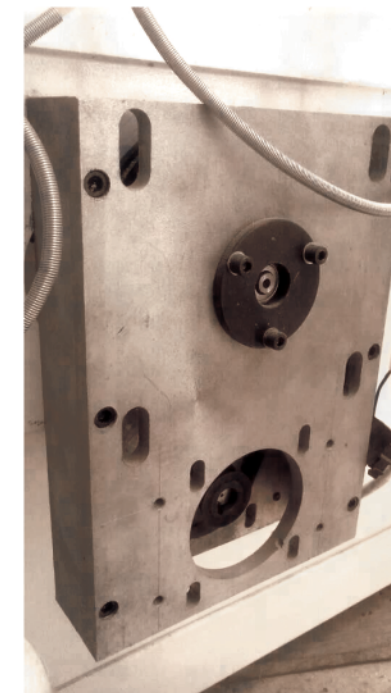
2 checking Y1 axis and Y2 axis

You can shake the both sides of the gantry to check whether the linear bearings of Y1 axis and Y2 axis are moving (refer to picture 3). If the linear bearing can be moved when you shake the gantry, you should check as following steps :

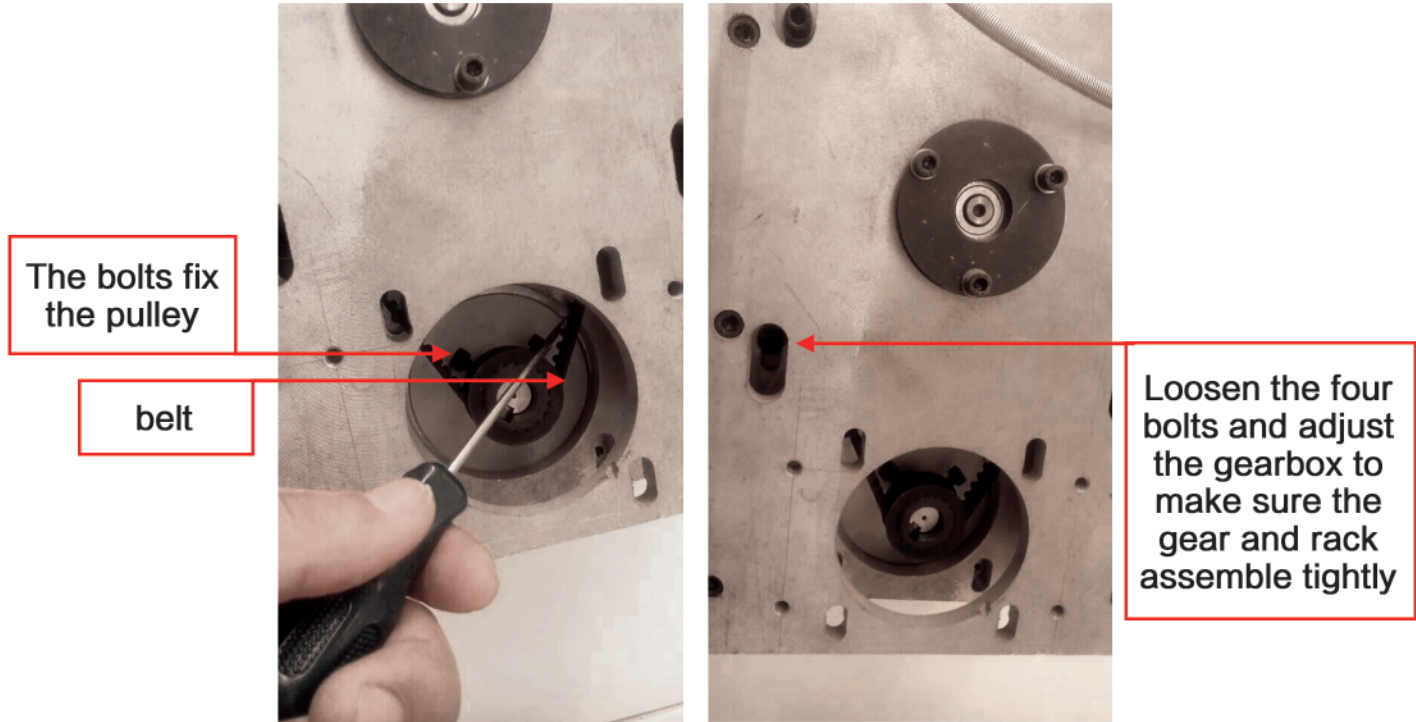
- check the bolts fixed the linear bearing (refer to picture 3) and make sure they are fastened tightly.
- Check the belt in the gearbox and make sure it is fastened tightly, if it loosens you should adjust the bolts fixed the motor to fasten the belt tightly (refer to picture 6).
Check the bolts in the pulley make sure they are fastened tightly (refer to picture 6).



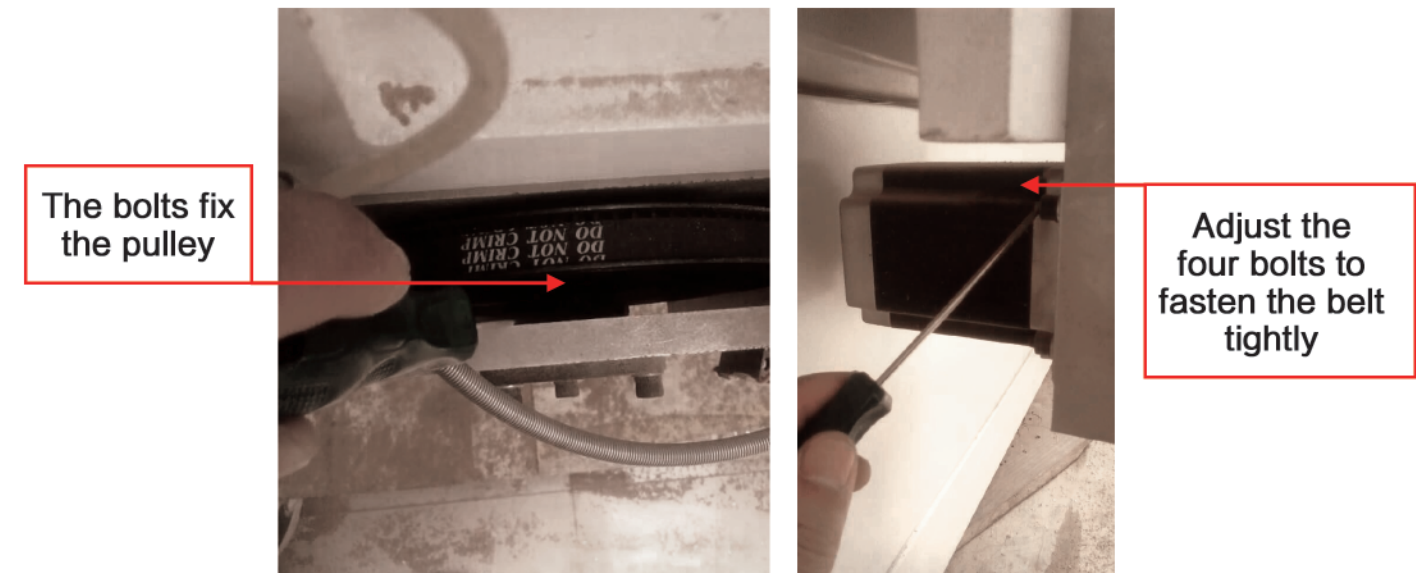
3 Checking Y axis



4 Gearbox of Y axis



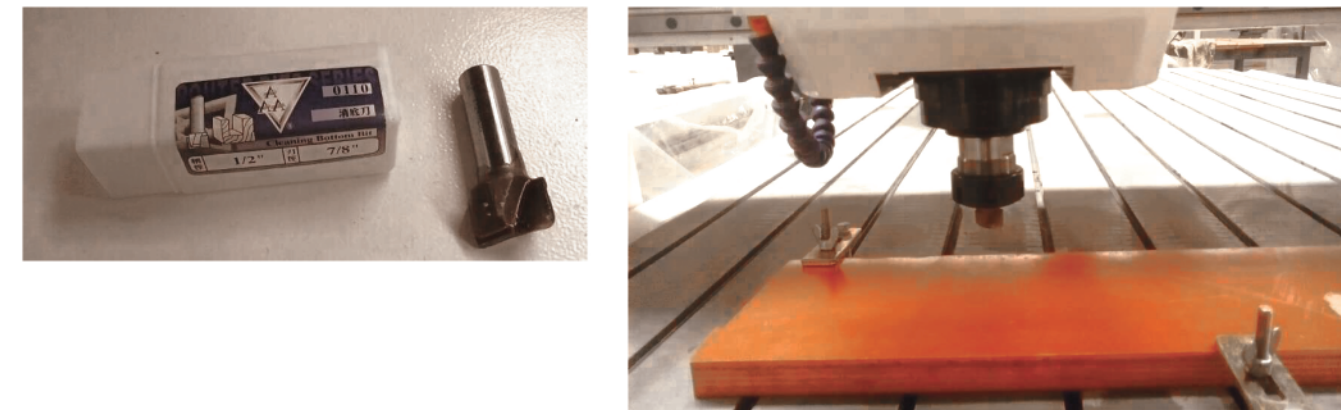
5 Gearbox of Y axis



6 Gearbox of Y axis

- 3 After fasten the belt , you can check whether the linear bearing can be moved when shaking the gantry by hand .If it can be moved you should loosen the bolts fixed the gearbox to make sure the gear and rack assemble tightly. (refer to picture 5)

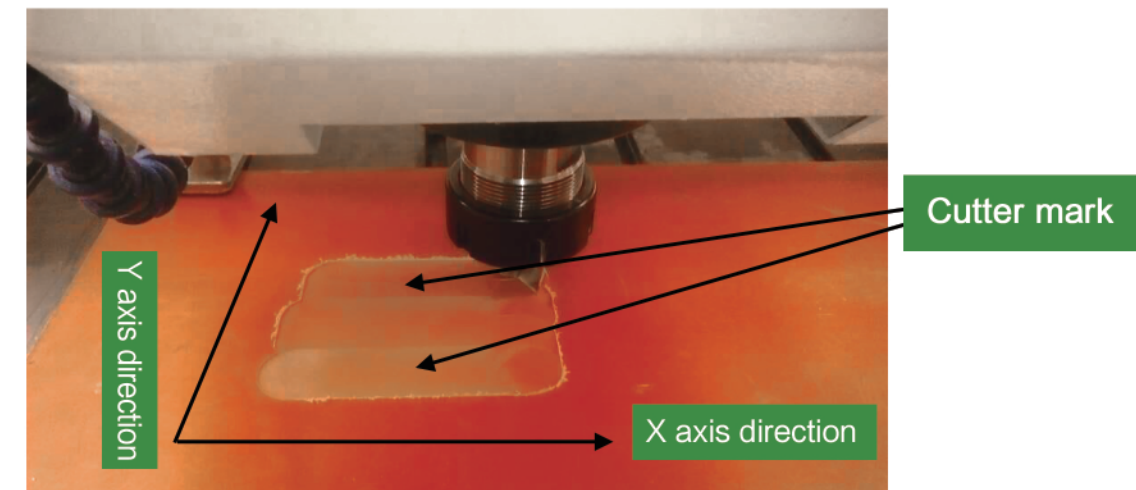
- 4 Checking whether the center line of the spindle is perpendicular to the worktable surface.



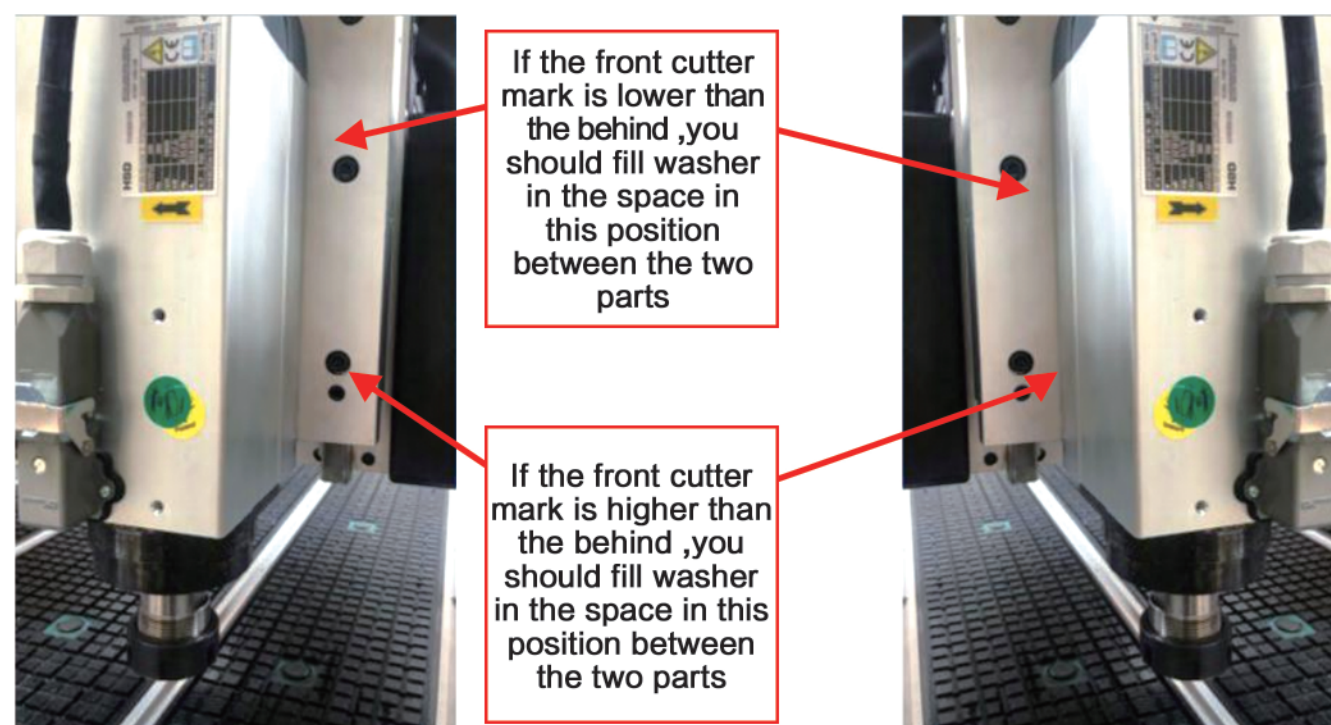
You can using cleaning bottom bit to milling a plane by manual ,then check whether the center line of the spindle is perpendicular to the worktable surface.

- 1 check the center line of spindle in X axis direction.

Milling a plane along X axis direction by manual(refer to picture 7), if the cutter mark isn' t smooth , you should adjust the space between the two parts (refer to picture 8) to make it smooth.



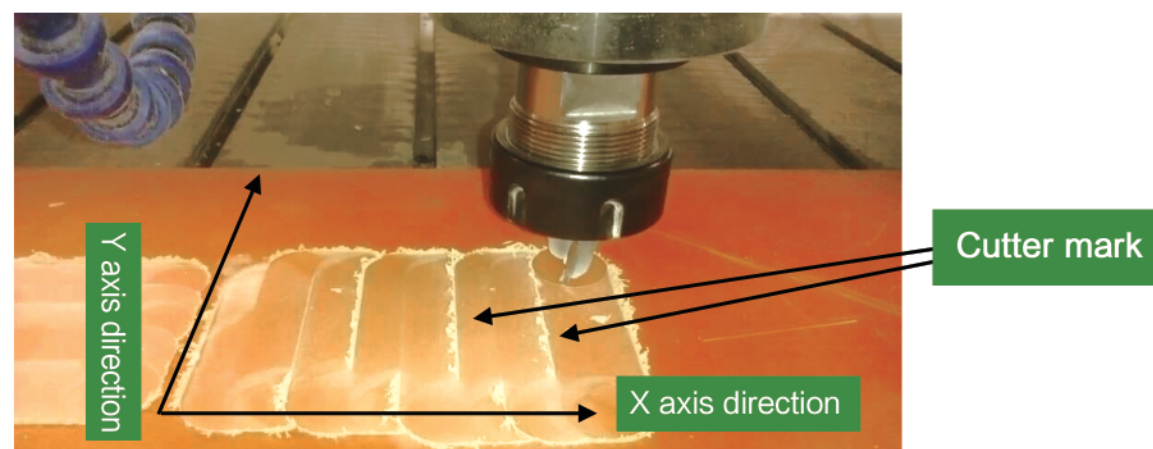
7 Milling a plane along X axis direction



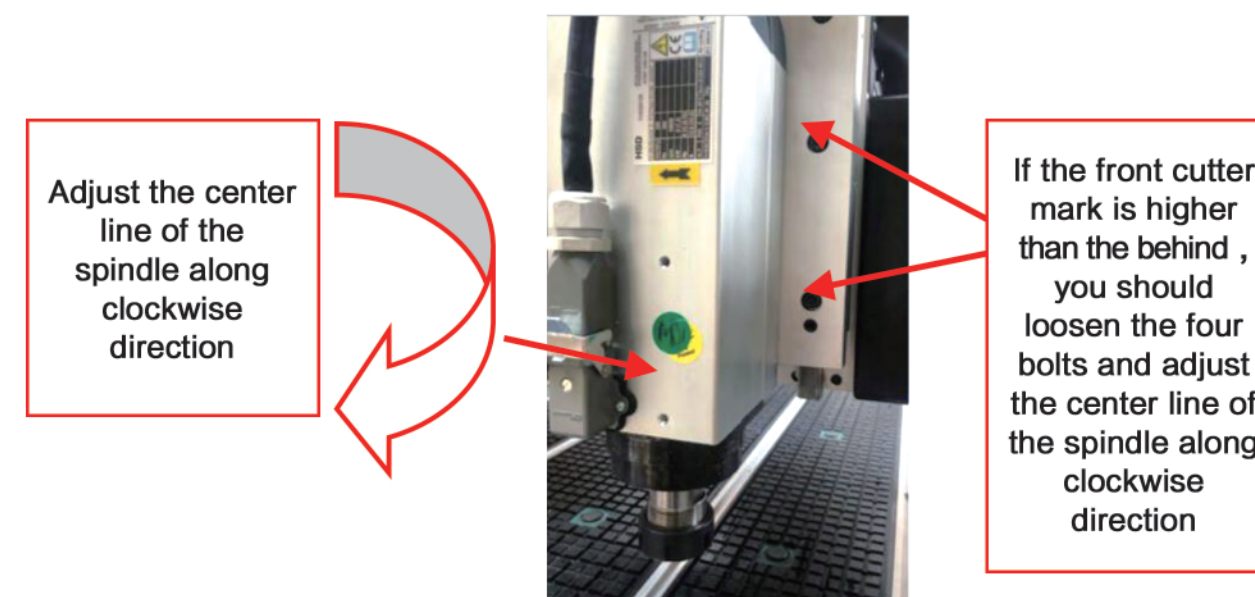
8 Adjust the spindle

2 check the center line of spindle in Y axis direction.

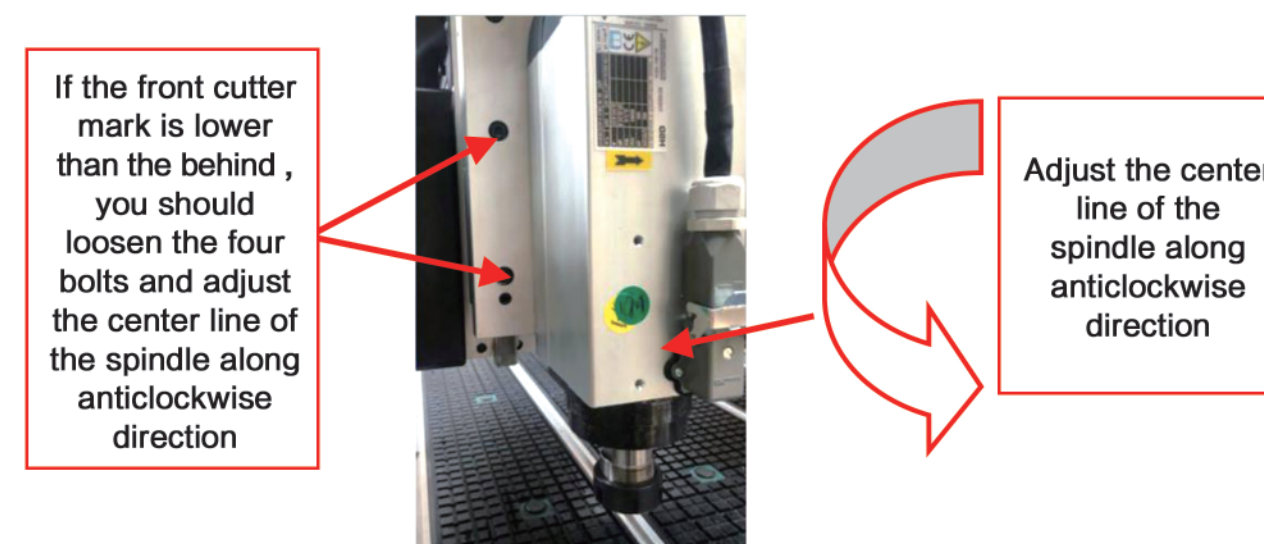
Milling a plane along Y axis direction by manual(refer to picture 9), if the cutter mark isn't smooth , you should adjust the center line of the spindle by loosening the bolts(refer to picture 10-11).



9 Milling a plane along Y axis direction



10 Adjust the spindle along clockwise direction



11 Adjust the spindle along anticlockwise direction

After checking and adjusting the machine, you can try to cut the material again and maybe the problem will not happen .