

P53

Smart Milling Machine



Maintenance Manual



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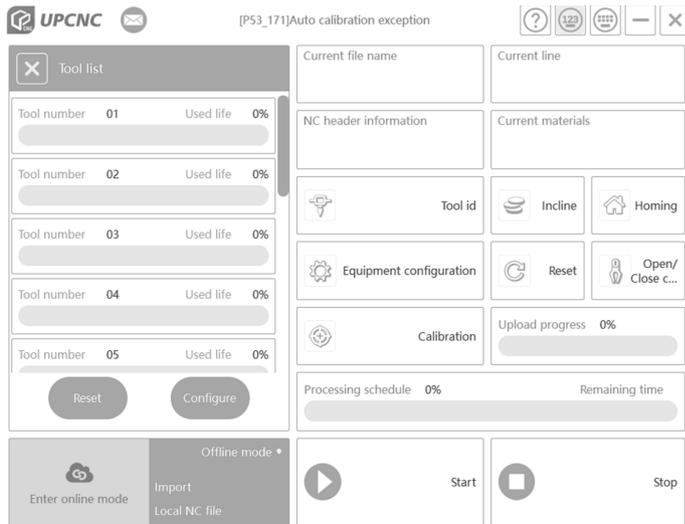
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01 /Check the tools lifespan

Maintenance period: before milling everyday

Steps:

1、 Check milling tools used time in [Tools List] on UPCNC software main interface, which is easy to manage the tools lifespan and change them in time.



Abnormal situation:

Reaching the lifespan of the tools may cause situations such as tools breaking, edge chipping, tooth sit-in error, rough surface and small lines on the internal and external side of the restoration.

02 /check the pressure regulating filter

Maintenance period: before milling everyday

What to check: if there is liquid inside the pressure regulating filter Pressure regulating filter:

Installed on the right side of the milling machine, if not using compressed air dryer with 3 filters, there may deposit water at the bottom of the pressure regulating filter.

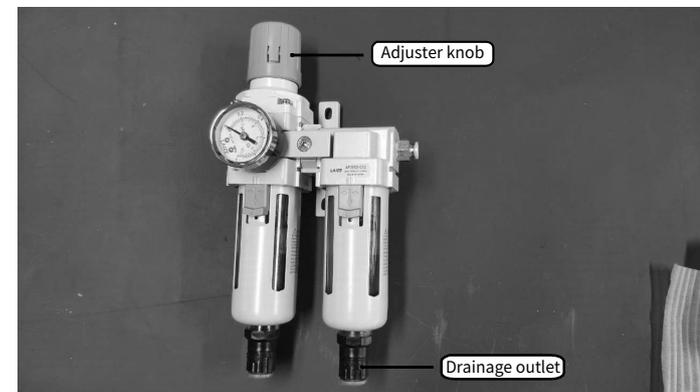
Observe the water capacity of the filter, it can not be over 1/3, if over 1/3, the following steps must be done to drain the water.

Steps:

2.1 Pull out the air tube of the outlet end of the filter easily by compressing the quick coupling end, please do not use brute force to do it.

2.2 Slowly turn on the air pressure switch, you will hear the air flow coming out from the outlet end and the water of the filter bottom will drain from the drainage outlet of the bottom.

2.3 Turn off the air pressure switch after the water is empty, insert the air tube of the outlet end back to the quick coupling and turn on the switch.



Abnormal situation:

The liquid of the filter will enter the inside of the spindle to cause the abnormal status of the milling machine.

03/clean the dusts of the chamber

Maintenance period: after finishing milling everyday

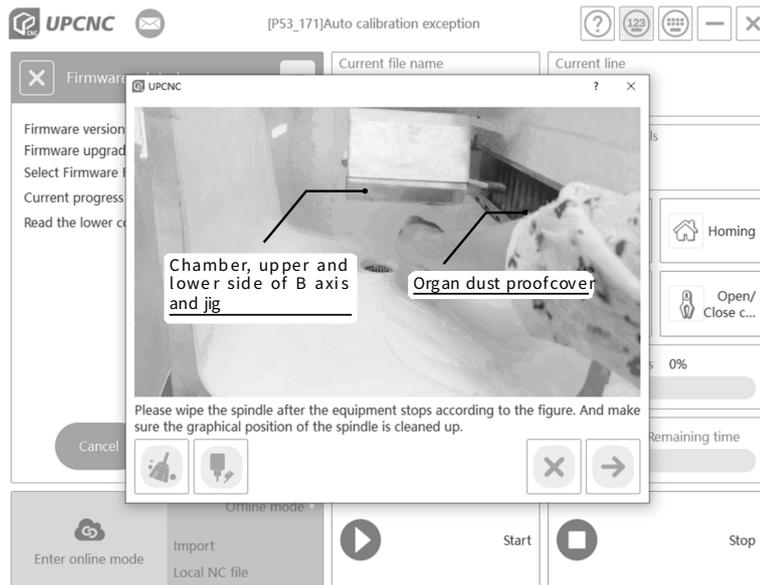
Tools: dust vacuum and little brush Steps:

3.1Open UPCNC main interface

3.2Click calibrate button

3.3Click [Clean] icon and the jig will move to the cleaning position

3.4Use the little brush to clean the deposit dusts which are difficult to clean first, then use the dust vacuum to clean the other areas. (Note: the main cleaning areas are as the following diagram indicated, tools library, front and back side of the rotating axis, dust proof cover surface



Abnormal situation:

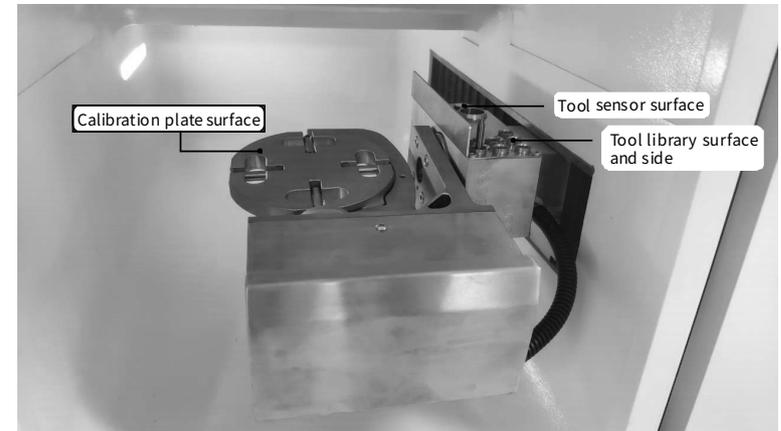
May cause the milling machine failure if does not clean the dusts in time

04/calibration

Calibration period: Once every week

Tools: little brush, auto calibration plate, calibration tool and clean cloth.

Steps: Calibrate as per the operation of the P53 user manual



Abnormal situation:

If doesn't calibrate for a long time, it may cause edge chipping, tooth sit- in error, or lines on the internal and external surface, etc.

Note 1: The areas marked on the diagram need to clean with careful, or it may cause inaccurate calibration and affect the precision.

Note 2: If the milling result has lines or edge chipping, please calibrate in advance instead of 1 week period.

05/chuck maintenance

Maintenance period: every 1 month

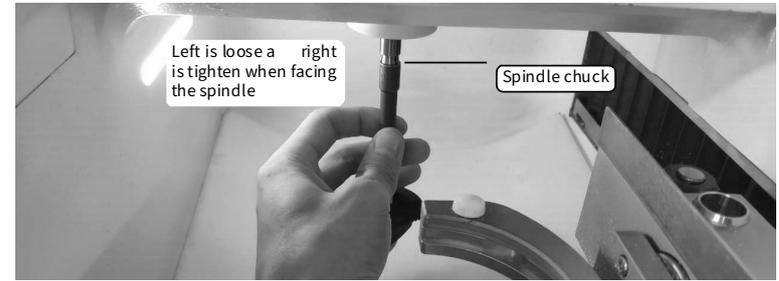
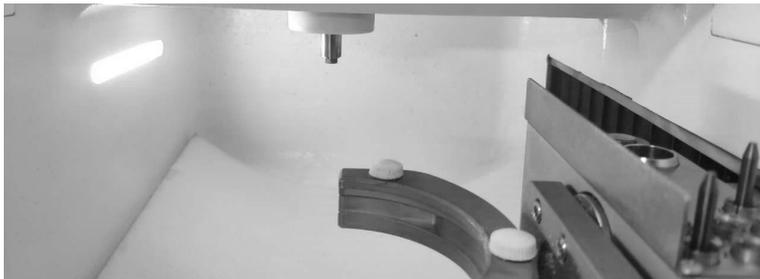
Tools: calibration tool, T type chuck spanner (locking force is $0.6N^*M$), alcohol, clean cloth.

Steps:

5.1 Open UPCNC, click calibrate button, then click , the icon of diagram 7  will pop up, the spindle will move to the place where diagram 5 shows.

5.2 Click [Clean] icon and click [Open Chuck]. Steps to clean the chuck:

- (1) Open UPCNC
- (2) Click calibrate
- (3) Clean the chuck manually, the milling machine will be running automatically and the spindle will move to the middle position
- (4) Click [Loose/clamp] icon after the milling machine stops running ;
- (5) Use the chuck spanner to loose the chuck counter-clockwise
- (6) Use clean cloth and alcohol to scrub the conical hole surface of the chuck and the inner hole of the spindle, make sure no dusts and residue water remain.
- (7) Use the chuck spanner to install back the chuck and click [Loose/ clamp].
(Locking force= $0.6N^*M$)



Abnormal situation:

Dirty or loose chuck will affect the milling result directly.

06/Clean the dust vacuum

Maintenance period:

- (1) Clean the dust bag once every week
- (2) Change the dust bag once every 3-6 months
- (3) Check and change the carbon brush once every 300 hour

Tools: little brush, dust vacuum, dust-free paper, rust remover and lubricating grease.

Operating requirements:

- (1) Must ensure the vacuum keep on working when the milling machine is milling zirconia to reduce the impact of the dusts to the milling chamber. The dust vacuum needs to clean and maintain regularly to ensure the working efficiency.
- (2) There is a dust bag in the dust vacuum, in the general situation, open the dust vacuum when in rough milling to generate the negative pressure to avoid the dusts to enter the milling chamber.

Steps:

- (1) Turn off the vacuum switch
- (2) Open the two fasteners of the vacuum side
- (3) Take out the dust bag to clean it
- (4) Put back the dust bag and lock the 2 fasteners

Abnormal situation:

If doesn't clean for a long time, it may cause the decrease of the efficiency

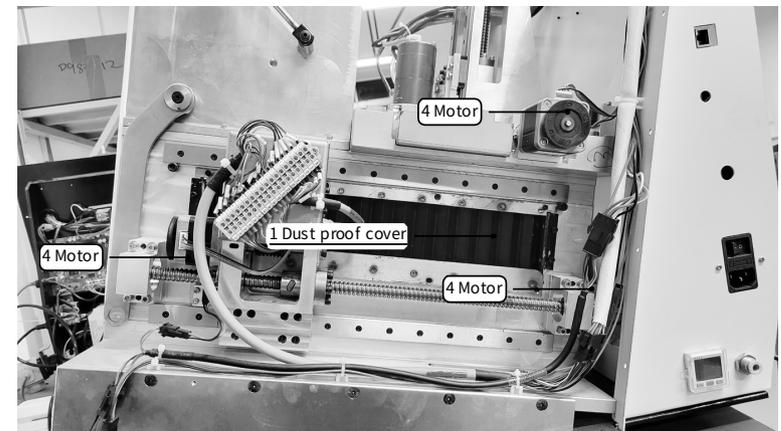
07/Y axis,Z axis,linear guide, ball screw and ATC motor areas maintenance

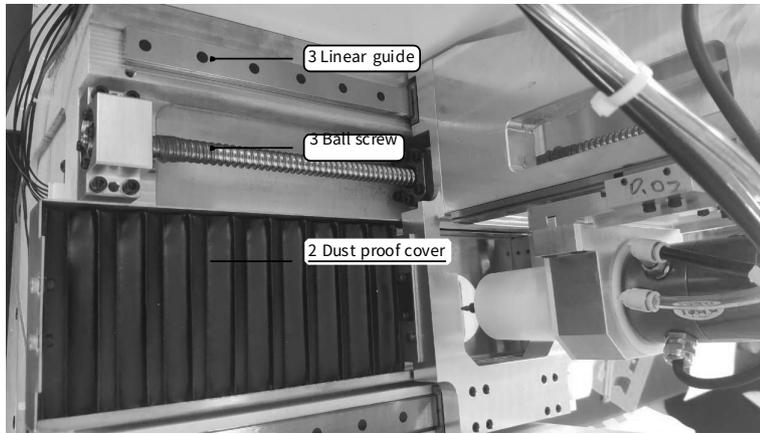
Maintenance period: every 1 year

Tools: little brush, dust vacuum, clean cloth, rust remover, lubricating grease and anti-rust oil.

Steps:

- (1) Remove the right side cover and top cover of the milling machine case when facing the machine
- (2) Use the little brush to clean the surrounding deposit dusts marked in 1 of the following diagram 8 and use the vacuum to clean it up.
- (3) Use rust remover to spray on the linear guide and ball screw areas of X axis, Y axis, Z axis marked in 3 on the following diagram 9, then use clean cloth to wipe up, at last use the little brush to smear the lubricating grease on the ball screw and anti-rust oil on the linear guide evenly.
- (4) Use little brush to clean the motor areas marked in 4 on the diagram 8.
- (5) Install the right side cover and top cover, maintenance complete.





08/spindle maintenance

Run the running-in program

- A.First installation of the milling machine
- B.First use after storing for a long time
- C.Operation period: every two weeks

Detail steps

- A.Clean the chuck of spindle and milling chamber (detail steps can refer to the maintenance manual)
- B.Put the milling tools on the tools library, no needs to put the material blank
- C.Open UPCNC software and then import the NC file of running-in program
- D.After finishes, the normal milling can be carried out

Use notice

- A.Storage environment temperature: $20\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$, humidity $\leq 85\%$, the longest storage time is 3 months
- B.Prohibit to stop the axis by force with any mechanical ways
- C.Prohibit to blow the outlet of the spindle with spray gun to avoid the dusts to enter the spindle
- D.If the spindle chuck is broken, must use the original chuck from the manufacturer for replacement, please do not use those from other spindles manufacturer, or it will affect the precision of the spindle
- E.If the spindle is abnormal, please contact us for repair

Abnormal situation

Decrease the lifespan of the spindle