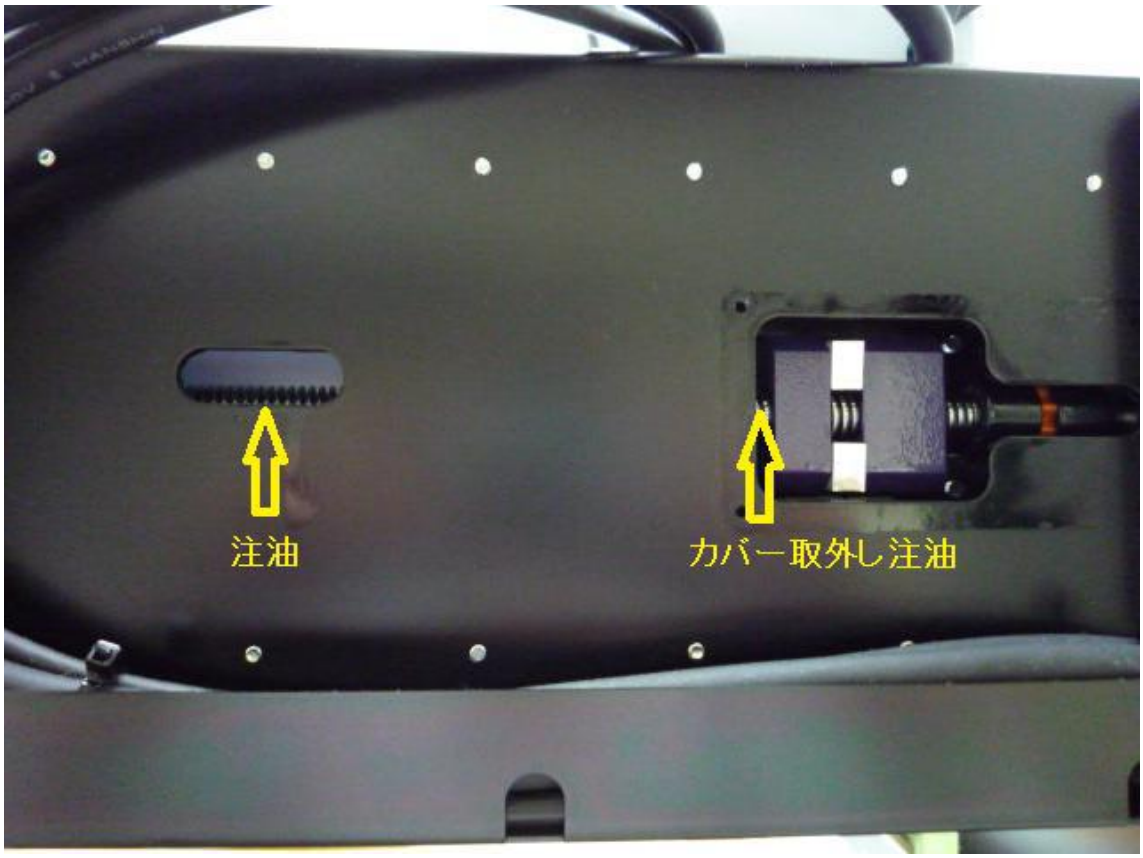
Version 1.1 – 9/30/2012

Maintenance Manual for Auto Lab

Lubricate

X axis

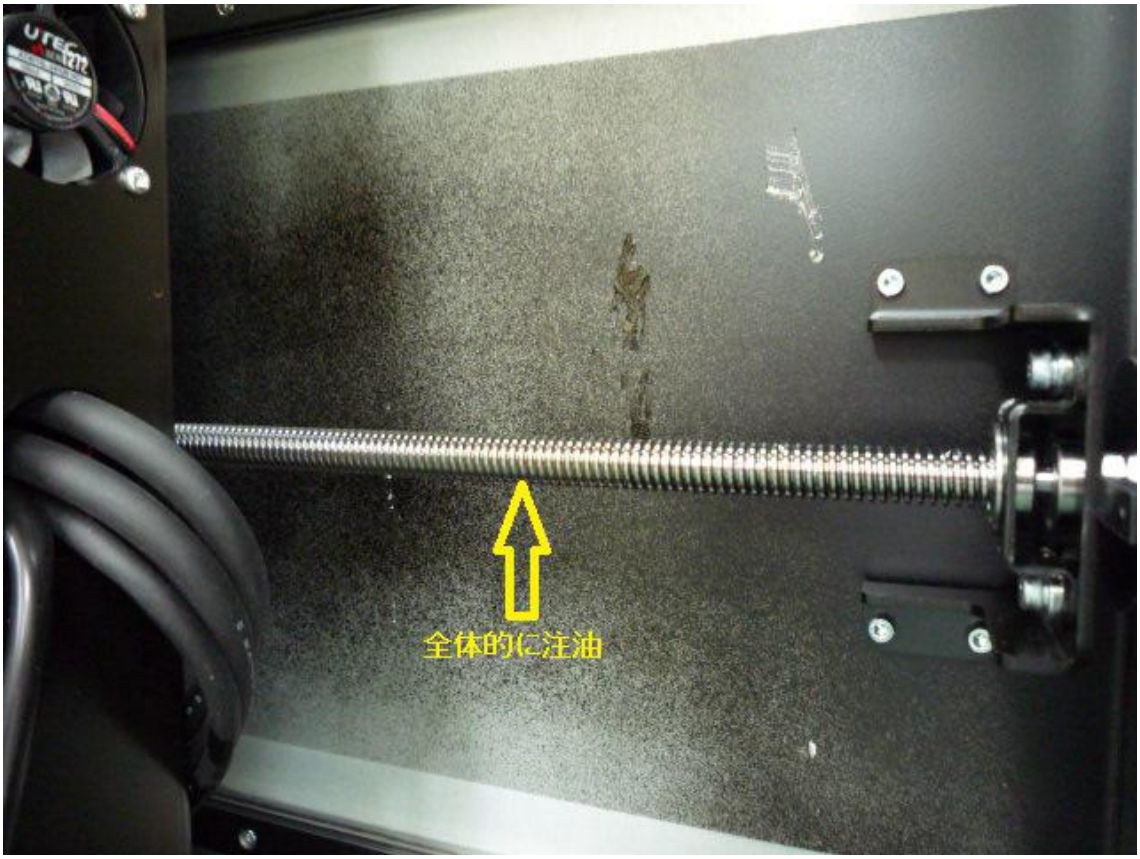
There are two locations for lubrication at the back side of the gantry as shown in the below picture. The left one (from the backside view) is a slot. You will reach X axis from this slot. At the right side of the gantry, you will see the service panel. When the panel is removed, you can reach the X axis also. Put the oil on X axis at either location.



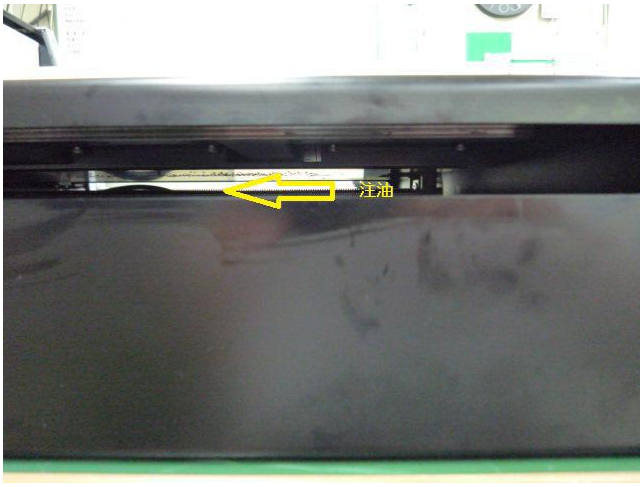
Y axis

There are two ways for reaching Y axis lead screw.

One is that you can lay the machine so that you will see the Y axis lead screw from the bottom side of the machine. Put the oil on Y axis lead screw.



Another way is that you will put the oil from the slit of the left side or right side of the machine. Long stick is necessary to reach Y axis lead screw.



Z axis

Move the milling head down prior to the lubrication for Z axis.

It’s a little tricky. You can reach Z axis lead screw from the slit at the left side or right side of the cover panel as shown in the below picture. It’s not easy to remove this panel. So put the oil on the cotton swab and then put the oil on the lead screw from either slit.

Cleaning spindle motor and collet chuck

We will use the particular software for this maintenance work.
It is not Design Pro but the software is called Calibpro.

How to start Calibpro:
Close Design Pro software prior to this work.

Right click on Design Pro shortcut
and then select **Properties**.

Click **Find Target** to open the install folder.

You will see **Calibpro.exe** in the folder.
Double click to start Calibpro.

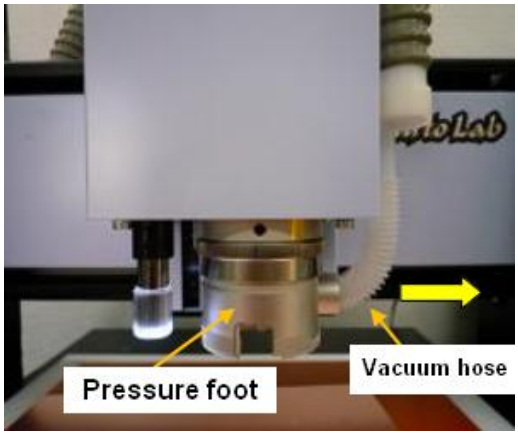
Calibpro screen is very similar to Design Pro.
Change **Application** to **CAM-Auto.**

Turn on the power switch of the Auto Lab.
Wait until the homing action is finished.
Click **Manual Operation** icon in CAM-Auto

Calibration dialog box will appear
as shown in the right picture.

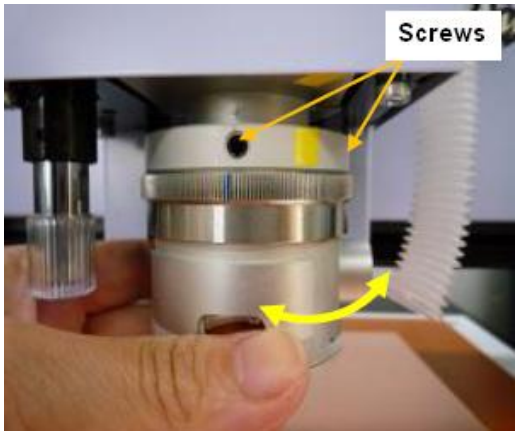
We recommend to move the head forward
in order to make it easy for the cleaning work.
For example, 115mm (4.5”) right and 200mm (8”) front,
from machine initial position.

Remove the pressure foot:
Disconnect the vacuum hose from the pressure foot.



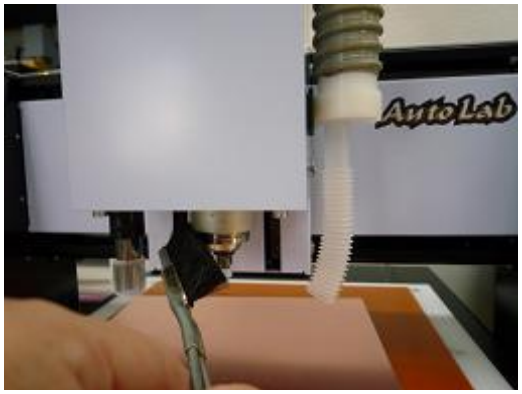
The pressure foot is fixed on the head assembly with 2 screws.:
Front side and right side

Loosen these screws using Allen key.
Pull the pressure foot downwards.



It's supposed to be very tight.
Shake the pressure foot in a way of the yellow arrow as shown in the right picture while pulling it down.

When the pressure foot is removed successfully, you will see the part of spindle motor, tool and collet.

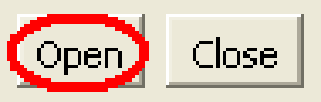


Clean the spindle motor and the surrounding area with brush.
You may use vacuum cleaner to remove chips and particles.

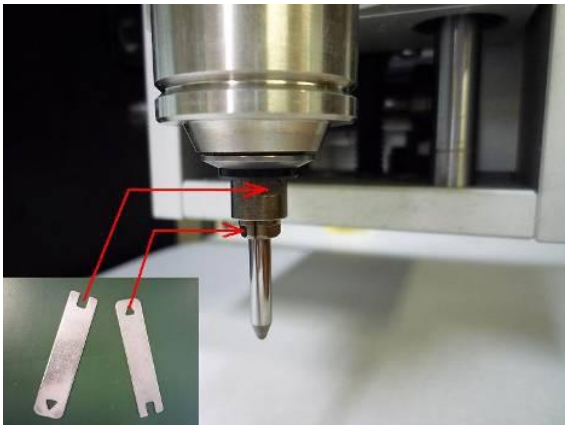
! CAUTION !
Never blow air at the spindle motor and collet chuck.

Also, clean inside the pressure foot

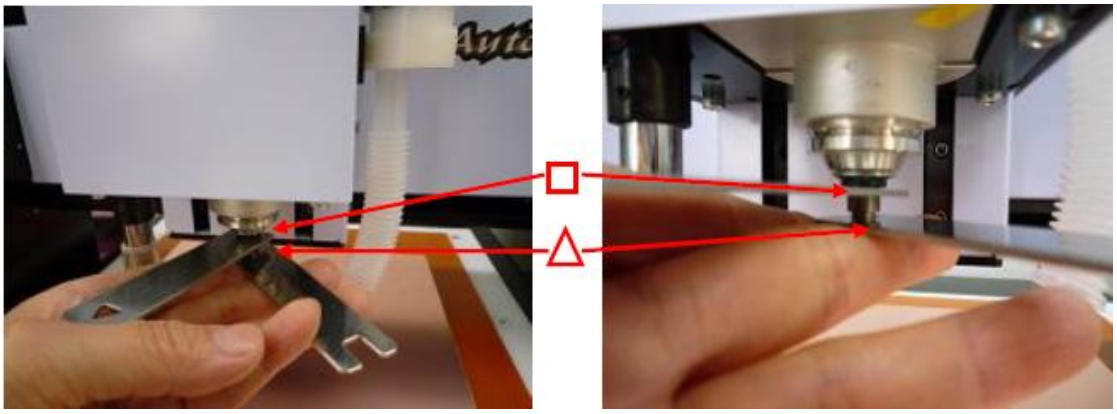
Remove and clean the collet chuck:



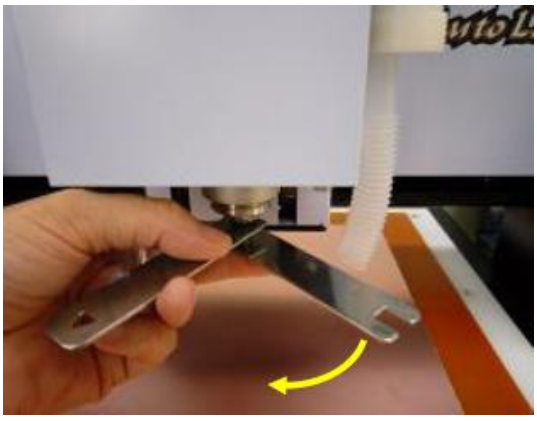
Back to the Calibpro software,
click **Open** to open the collet chuck.
At the open position, you can remove the tool from the collet chuck.
Insert the tool without ring instead of the tool with ring.



We will use the special wrenches which come with the machine.
The tool without ring makes it easier to work with the wrench and also it protects the collet from the irregular strength while working with the collet.
Using the special wrenches, apply rectangular jaw to the upper notch and the triangular hole to the bottom of the collet chuck as shown in the picture below.
It may be a little tricky because the collet chuck is still open and you have to hold the tool by one of your finger not to fall while you are working with the wrenches.

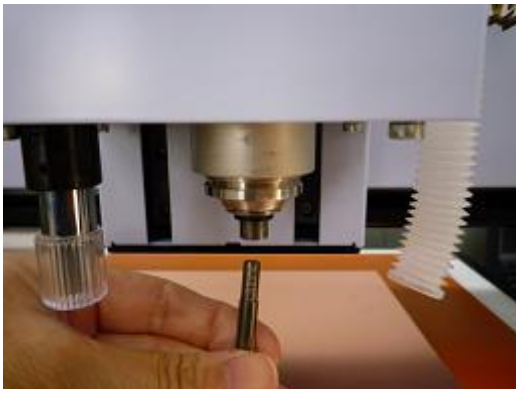


Holding the upper wrench,
turn another wrench clockwise
in a way of arrow as shown in the right picture.
The collet chuck is going to be loosen.



Once it is loosened, the collet chuck can be easily rotated with your fingers.

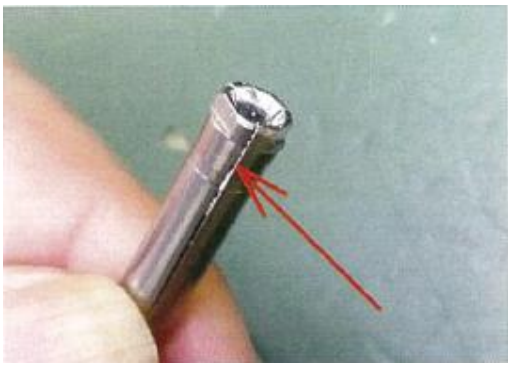
Loosen the collet further.
Finally you will remove the collet chuck from the spindle motor.



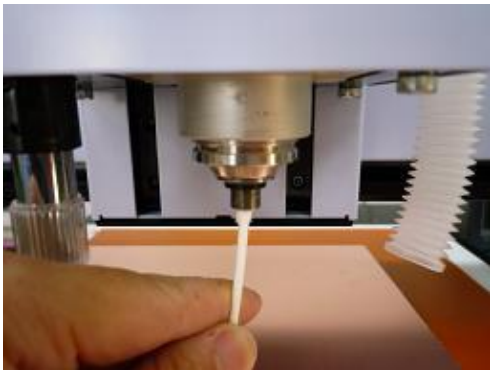
With small brush, clean the chips and particles from the inner surface of the collet chuck.

Apply small amount of alcohol on the cotton swab.
Wipe with it and remove the oil and grease from the inner and outer surface of the collet chuck.

Make sure that no chips and particles are left behind in the slit of the collet chuck.



Also, you need to clean the inner side of the spindle motor housing using brush and cotton swab with small amount of alcohol.



! CAUTION !
Never blow air at the spindle motor.

Now you will see everything is clean.

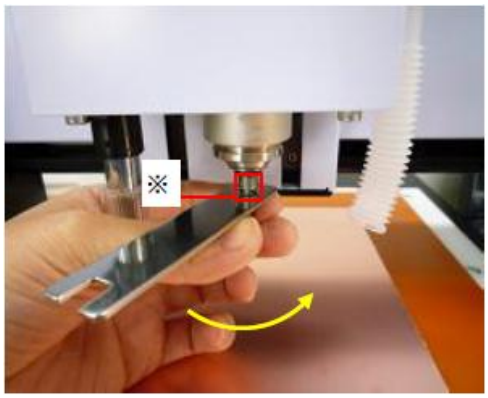
Install the collet chuck:
Insert the collet chuck into the spindle motor and then insert the tool without ring into the collet.

Turn the collet counter clockwise by your finger. It's going to be installed in the spindle motor.

When it becomes tight for hand tightening, use the triangular hole of the special wrench to rotate further.

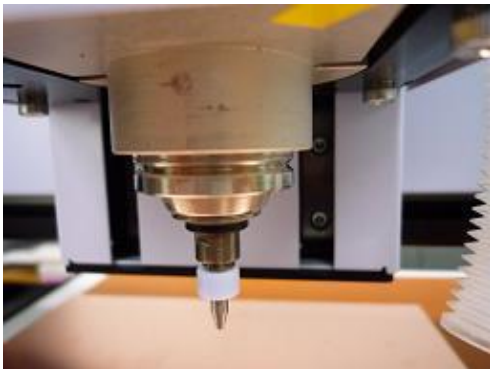
(It is not necessary to use another wrench with the rectangular jaw.)

You will feel it become heavier and you will see the section as shown with asterisk in the right picture starts rotating together with the collet chuck turning.



<u>From this point, turn the collet chuck together with the part of asterisk 180 degree more.</u>

Insert dummy tool with ring instead of tool without ring.



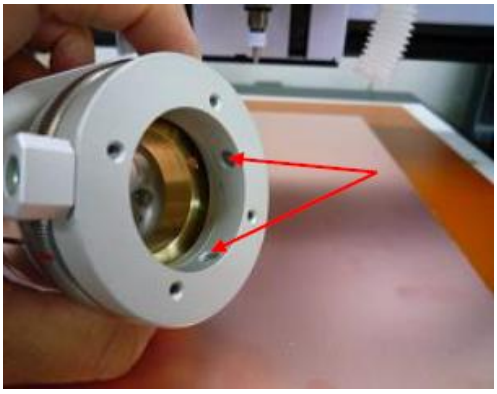
Back to Calibpro software,
click **Close** button to close the collet chuck.

Try to click **Open** and **Close** several times to make sure the collet chuck open and close properly.

Install the pressure foot:
Prior to install the pressure foot,
make sure the black donut shape rubber is put on the spindle motor assembly.

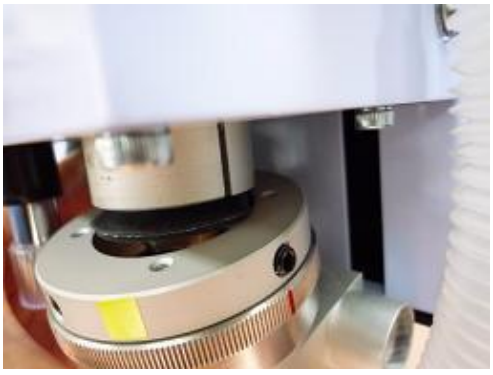
(Some of machines don't have this part.
In this case, please proceed the work.)

Make sure the set screws don't come out of the inner side of the pressure foot.

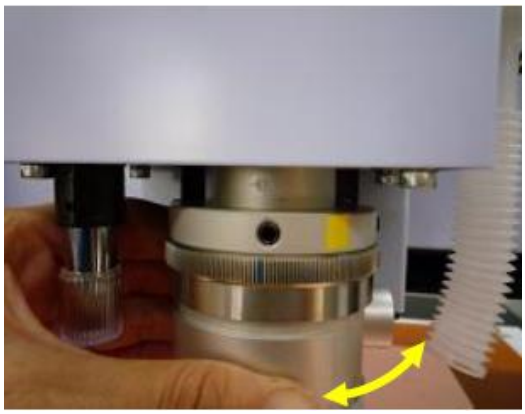


It may be a little tricky to install the pressure foot because the rubber would not be stowed into the foot.

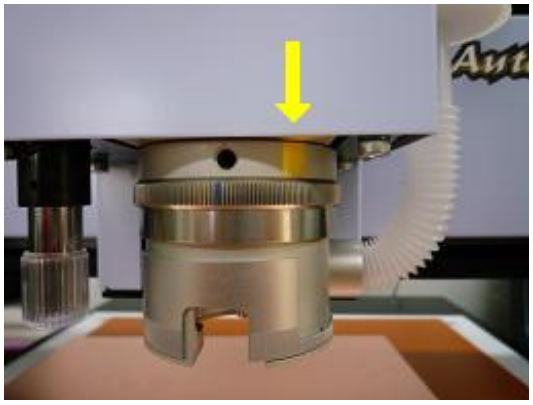
In this case, push the rubber from the back side with the inner of the pressure foot at first. (See the right picture)
Then raise the foot stowing the rubber into the foot.



Push up the pressure foot shaking it
left and right.



Finally when it reaches the top,
make sure the yellow label of the pressure
foot as shown in the right picture
meets another label on the head assembly.



Then secure the set screws of the foot
and attach the vacuum hose to the foot.

Close the screen of the Calibpro software.
The machine will make homing action when it is closed.