DGSHAPE

ZS-53DC

Spindle Unit Replacement Instructions

⚠**WARNING** **Before performing replacement work, switch off the machine's power switch and pull out the power cord from the machine.**
Attempting such operations while the machine is connected to a power source may result in injury or electrical shock.

⚠**CAUTION** **Be sure to perform operations as specified by these instructions, and never touch any area not specified in the instructions.**
Sudden movement of the machine may cause injury or burns.

⚠**CAUTION** **Do not touch the spindle unit or the surrounding areas immediately after milling has ended.**
Doing so may result in burns.

⚠**CAUTION** **Remove the milling tool before performing replacement work.**
Contact with the blade may cause injury.

R2-230331
FA03889

https://www.dgshape.com/

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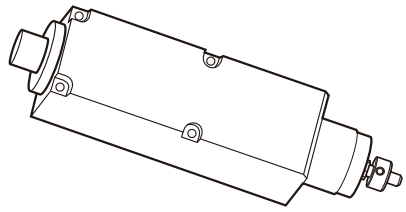
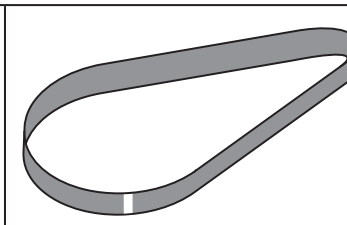
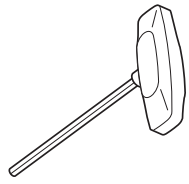
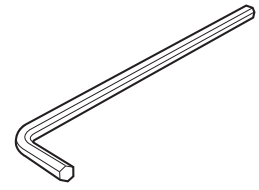
Included Items

The following items are included. Make sure they are all present and accounted for.

 Spindle unit (1)	 Belt (1)

Items to Prepare Yourself

Use the following included tools.

 T-shaped hexagonal screwdriver	 L-shaped hexagonal wrench

Replacing the Spindle Unit

1. Preparing for Replacement

❶ **Switch on the machine's power switch.**

❷ **If the milling bur is attached to the spindle unit, press the operation button on the machine, and then remove the milling bur from the spindle unit.**

❸ **Show VPanel.**

Click  (the VPanel icon) in the task tray. VPanel will appear.

If VPanel is not displayed correctly, see "Display and Notifications in the Task Tray" in the "VPanel for DWX User's Manual."

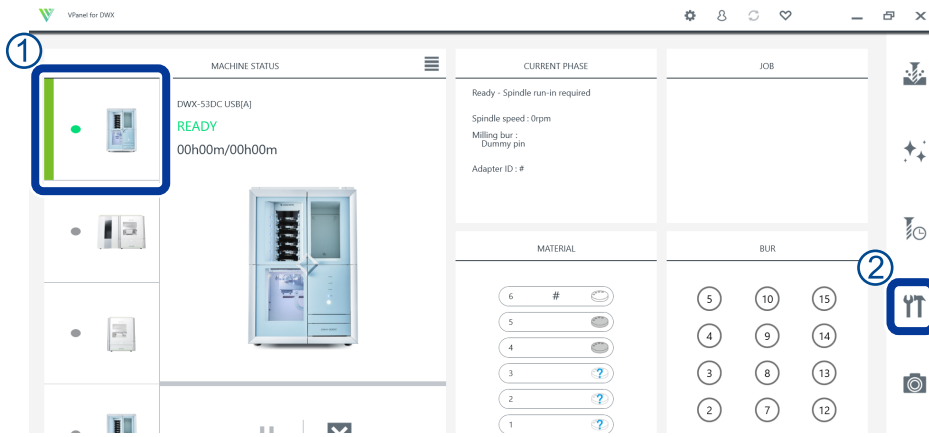
4 Select the machine whose spindle will be replaced.

① **In the top window of VPanel, select the machine to operate.**

When you have connected multiple machines, you can switch between the machines by clicking their icons.

② **Click** .

The [Settings] window is displayed.

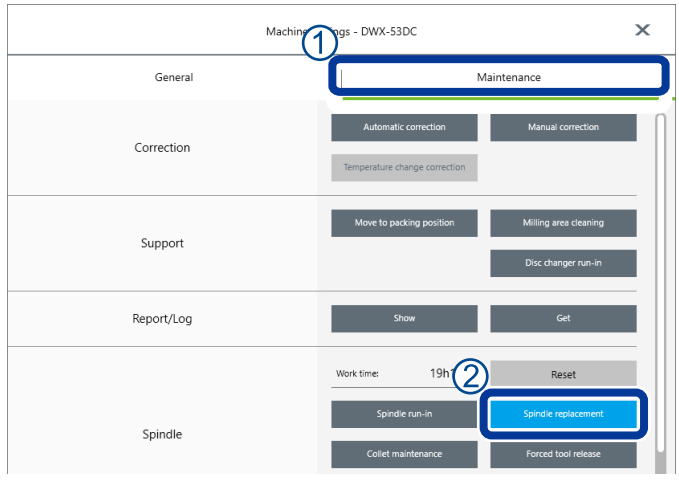


5 Adjust the spindle unit position.

① **Click the [Maintenance] tab.**

② **Click [Spindle replacement].**

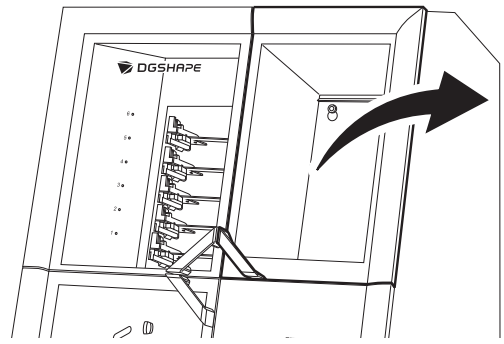
The spindle unit will move to the replacement position.



6 Once the above preparations have been completed, switch off the machine's power switch, and then pull out the power cord from the machine.

2. Removing the Spindle Unit

1 Open the tool area cover.

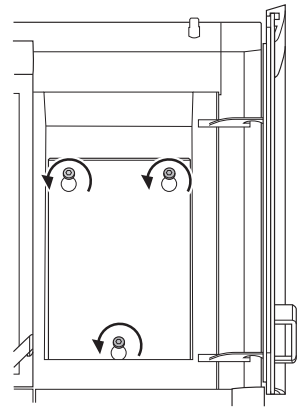


2 Remove the maintenance cover.

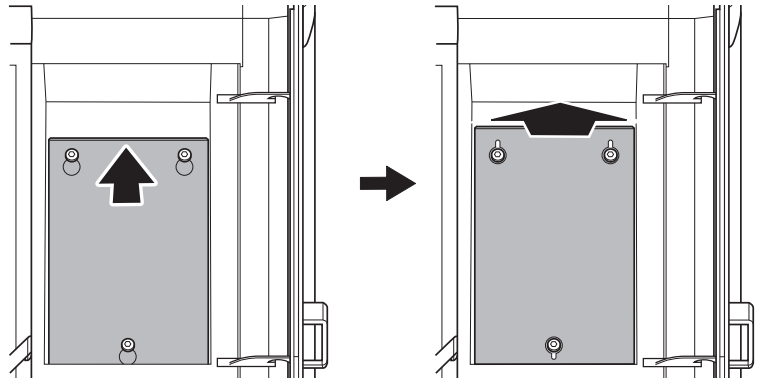
① **Loosen the screws securing the maintenance cover by about two rotations by hand.**

MEMO

To improve the efficiency of the work and to prevent the loss of the screws, just loosen them. It is not necessary to remove the screws.



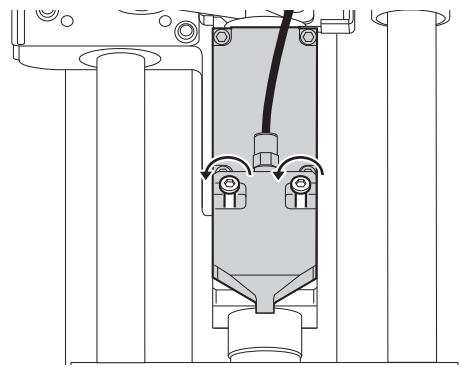
② **Lift up the maintenance cover until its holes are positioned so the screws can pass through them, and then pull the maintenance cover toward you to remove it.**



3 **Use the T-shaped hexagonal screwdriver to remove the air nozzle.**
While lightly pulling the air nozzle toward you by hand, loosen the screws evenly and remove the air nozzle and screws together.

MEMO

- A fall-prevention washer is attached to each air nozzle mounting screw.
  When the screws are removed from the air nozzle, the fall-prevention washers are also removed, so do not remove the screws from the air nozzle.
- Move the air nozzle to a position where it will not impede the replacement work with the air hose connected.

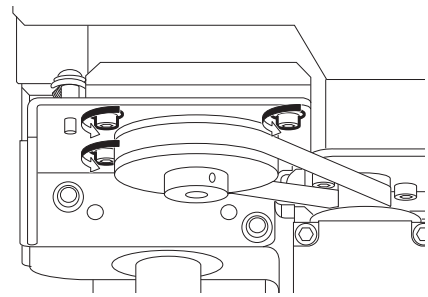


4 **Remove the belt from the motor pulley.**

① **Use the T-shaped hexagonal screwdriver to loosen the three screws securing the motor stay by about one rotation.**

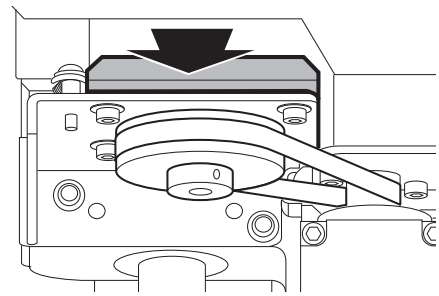
Important

A spring that automatically adjusts the tension of the belt is attached to the motor stay, so do not remove these screws.



② **While pushing the motor stay to the back by hand, remove the belt from the motor pulley.**

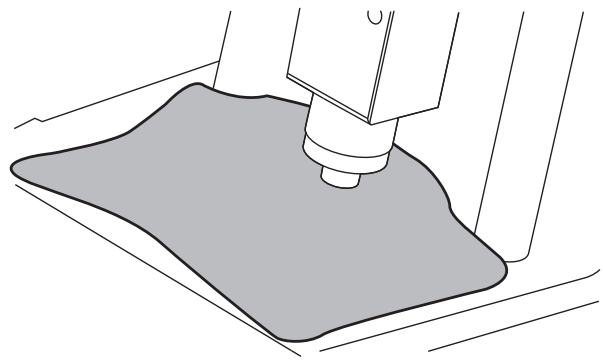
When you push the motor stay to the back, the belt loosens.



5 **Remove the spindle unit.**

① **Place a rag over the hole where the spindle unit drops.**

Place the rag to prevent screws from falling into the machine.

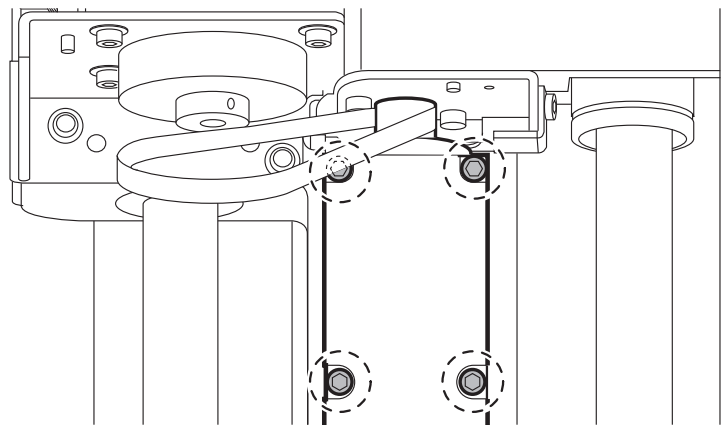


② **Use the T-shaped hexagonal screwdriver to remove the four screws securing the spindle unit.**

Remove the screws one at a time by hand to prevent them from falling into the machine.

Important

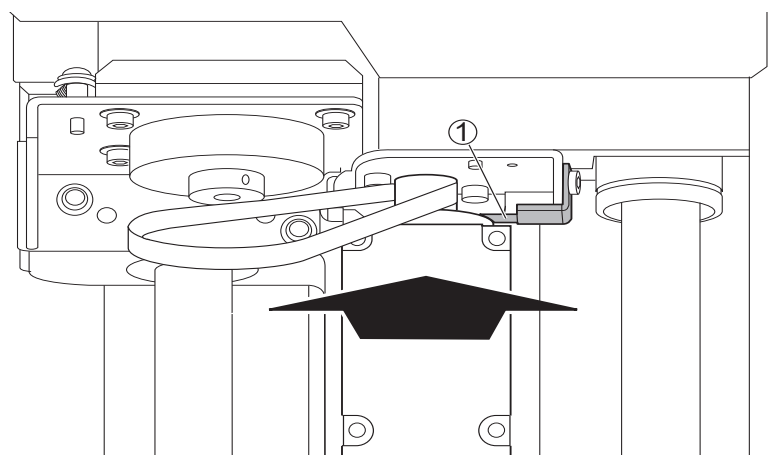
The protrusions and edges inside the machine may lead to injury if you place your hands inside. If you drop screws inside the machine, use a tool to pick them up.
If the dropped screws are not visible or have dropped somewhere they cannot be reached, contact your authorized Roland DG Corporation dealer.



③ **Slowly pull the spindle unit and belt toward you to remove them.**

Important

When removing the parts, make sure that the spindle unit does not come into contact with the conductive plate (①).



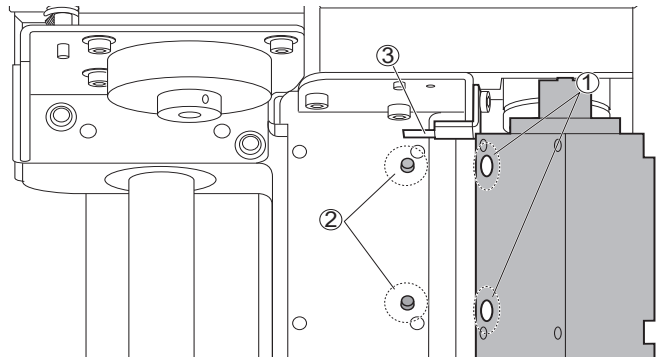
3. Attaching the Spindle Unit

1 Attach the spindle unit.

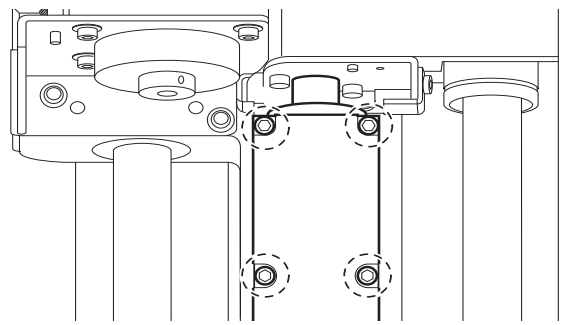
① **Fit the holes (①) on the back of the spindle unit onto the pins (②) on the machine.**

Important

Make sure the spindle unit does not come into contact with the conductive plate (③).



② **Use the T-shaped hexagonal screwdriver to tighten the four screws to secure the spindle unit.**



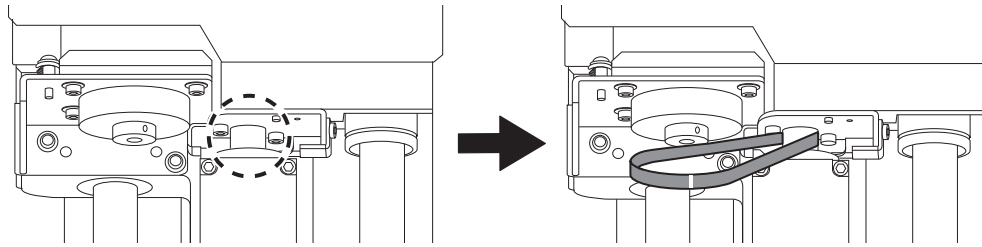
③ **Remove the rag placed over the hole where the spindle unit drops.**

❷ Attach the new belt.

① Insert the belt through the gap at the upper portion of the spindle unit.

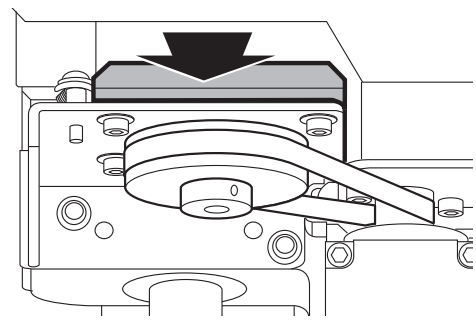
MEMO

Make sure the white line is on the outside of the belt when attaching it.



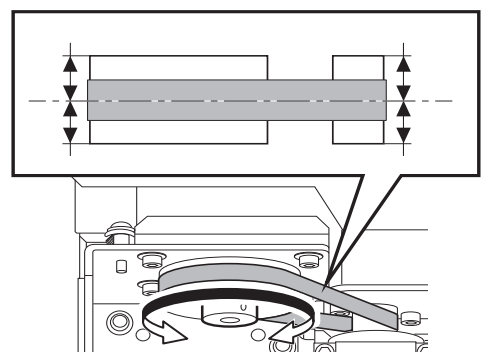
② While pushing the motor stay to the back by hand, attach the belt to the motor pulley.

Push the motor stay to the back, and then attach the belt.

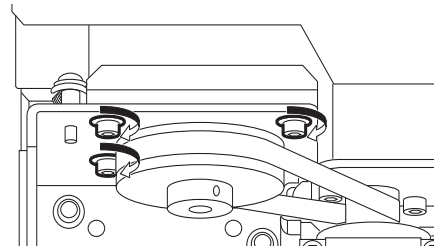


③ Adjust the belt position.

Rotate the motor pulley to the left or right by hand to adjust the belt so it comes to the center of the pulley.



3 **Use the T-shaped hexagonal screwdriver to tighten the three screws, securing the motor stay.**

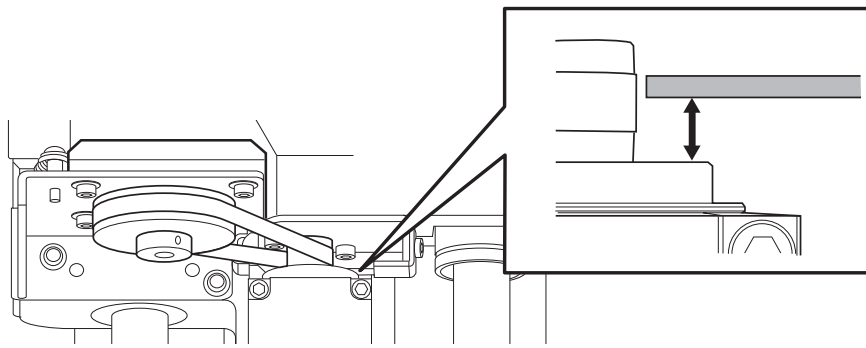


4 **Check the gap between the conductive plate and the spindle unit.**
Check the following items.

- **The spindle unit and the conductive plate are not in contact with each other.**
- **The spindle unit and conductive plate do not come into contact with each other or produce abnormal noise when the motor pulley is rotated by hand.**
- **The gap between the conductive plate and the spindle unit is 0.7 mm (27.55 mil) or less.**
  (For your reference, the conductive plate is 0.2 mm [7.87 mil] thick.)

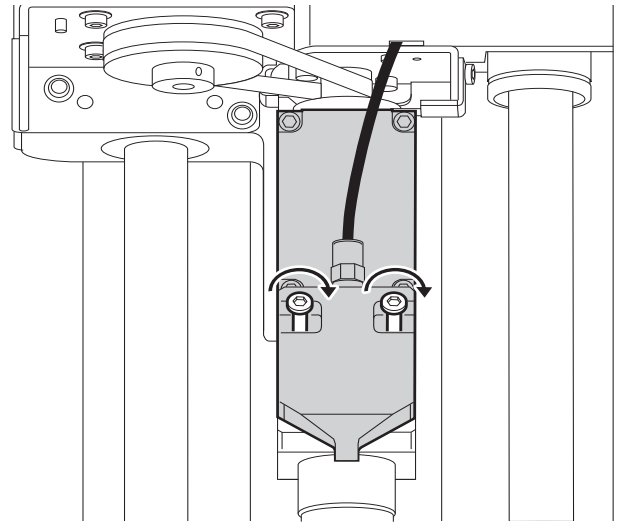
If it is necessary to adjust the gap between the conductive plate and the spindle unit, adjust the position of the conductive plate.

☞ "Adjusting the Position of the Conductive Plate"



5 Use the T-shaped hexagonal screwdriver to tighten the two screws and attach the air nozzle.

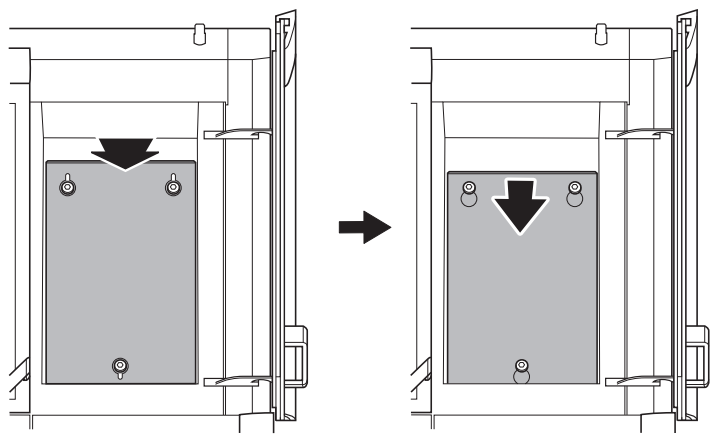
Alternately tighten the left and right screws little by little.



6 Attach the maintenance cover.

① **Pass the screws through the three holes on the maintenance cover to attach it.**

② **Slide the maintenance cover down.**



③ **Tighten the three screws by hand.**

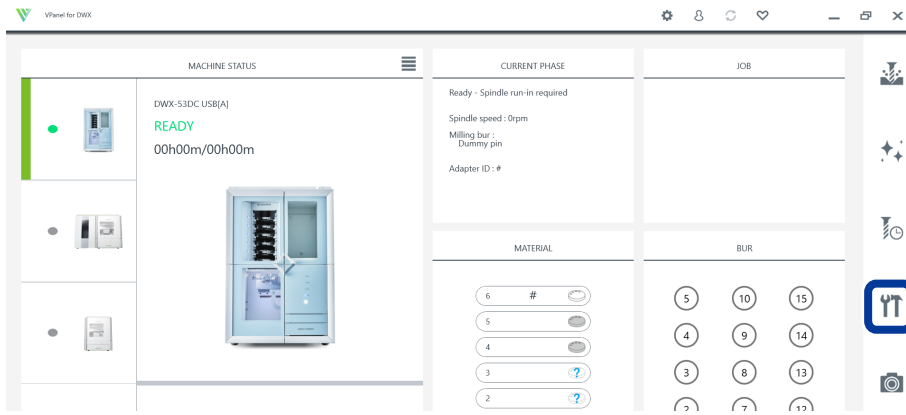
7 Close the tool area cover.

8 Connect the power cord, and then turn on the machine's power switch.

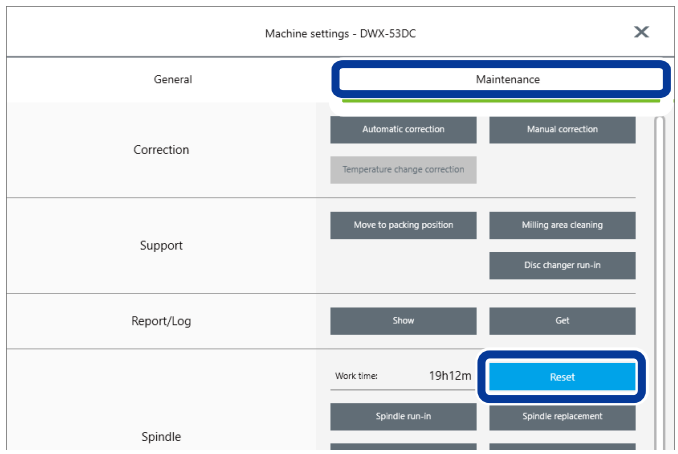
4. Operation after Replacing the Spindle Unit

1 Reset the work time of the spindle unit.

① **Display VPanel, and then click .**



② **Click the [Maintenance] tab, and then click [Reset].**



2 Run-in the spindle unit.

Failure to run-in the spindle unit may result in unstable spindle rotation. Refer to the milling machine User's Manual for instructions on how to perform the work.

☞ "User's Manual"

Check for abnormal noise during run-in.

If abnormal noise is generated, the conductive plate may be in contact with the spindle. Carry out the procedure in "Adjusting the Position of the Conductive Plate."

☞ "Adjusting the Position of the Conductive Plate"

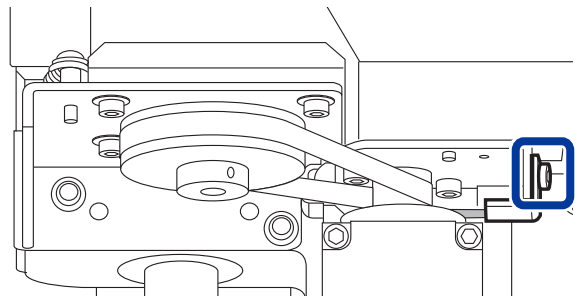
3 Perform automatic correction of the milling machine.

If automatic correction is not performed, the cutting results may be undesirable. Refer to the milling machine User's Manual for instructions on how to perform the work.

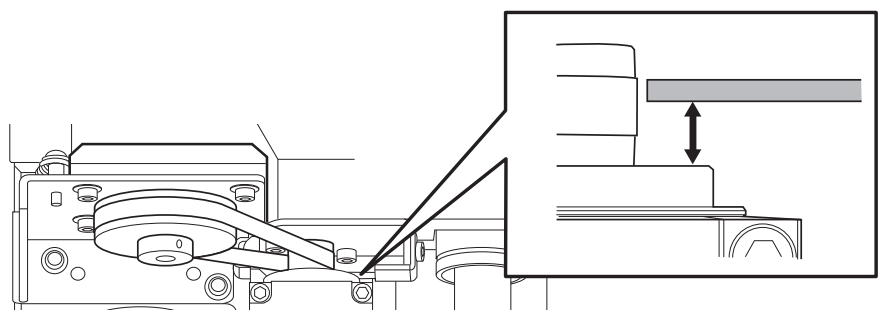
☞ "User's Manual"

Adjusting the Position of the Conductive Plate

1. **Use the hexagonal wrench to loosen the retaining screw.**



2. **Adjust the position of the conductive plate so the gap between the conductive plate and the spindle unit is 0.7 mm (27.55 mil) or less. (For your reference, the conductive plate is 0.2 mm [7.87 mil] thick.)**



3. **Prevent the conductive plate from moving by holding it down with your hand, and then use the hexagonal wrench to tighten the retaining screw.**

4. **Check the gap between the conductive plate and the spindle unit.**
   Check the following items. If there are no problems, the adjustment is finished. If problems still remain, go back to step 1 and perform the adjustment again.

   - **The spindle unit and the conductive plate are not in contact with each other.**
   - **The spindle unit and conductive plate do not come into contact with each other or produce abnormal noise when the motor pulley is rotated by hand.**
   - **The gap between the conductive plate and the spindle unit is 0.7 mm (27.55 mil) or less.**
     (For your reference, the conductive plate is 0.2 mm [7.87 mil] thick.)