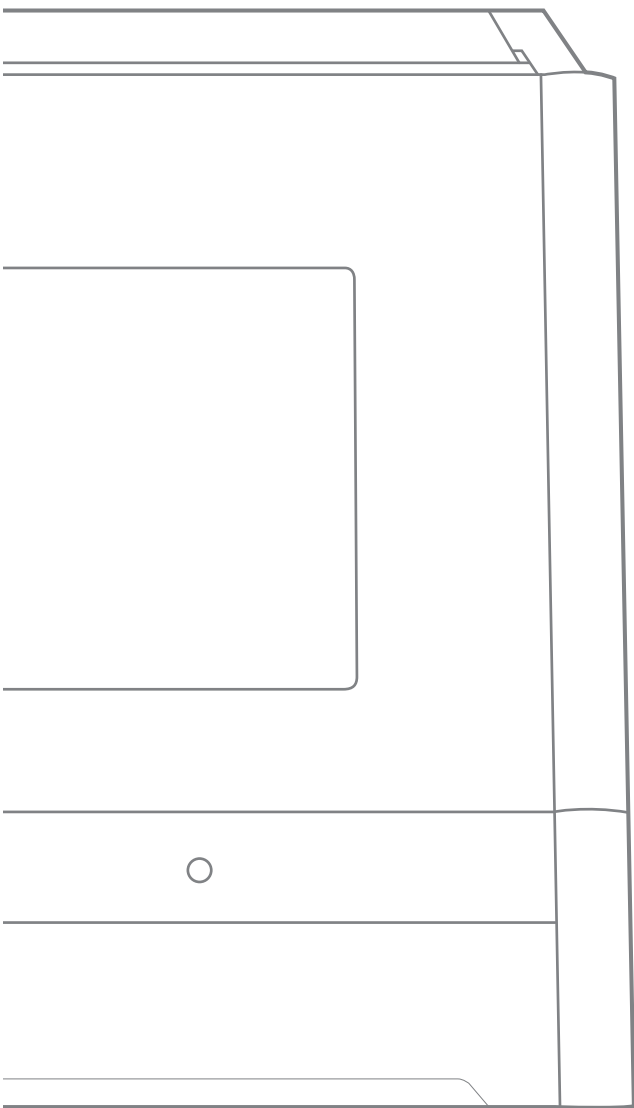


# ***DWX-52D***

## **User's Manual**



1 Operation Screen

2 Milling

3 Maintenance

4 Troubleshooting

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Thank you very much for purchasing this product.

- To ensure correct and safe usage with a full understanding of this product's performance, please be sure to read through this manual completely and store it in a safe location.
- At the time of purchase, verify that the provided warranty is affixed with the dealer's signature, address, and purchase date. Keep this warranty in a safe location.
- Unauthorized copying or transferal, in whole or in part, of this document is prohibited.
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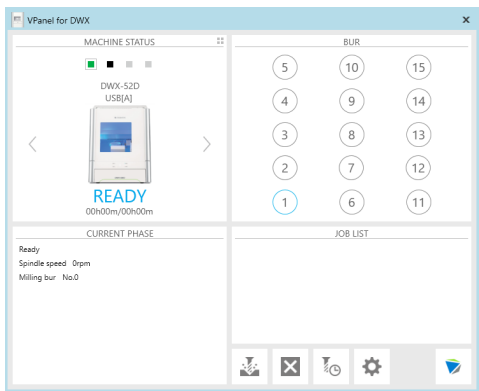
# Chapter 1 Operation Screen

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# Displaying or Exiting VPanel

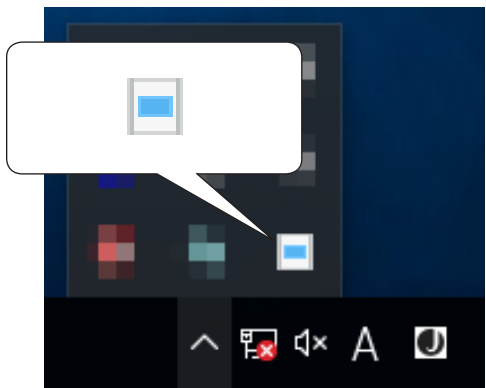
## What Is VPanel?




VPanel is an application that allows milling machine operation on a computer screen. It has functions for outputting cutting data, performing maintenance, and making various corrections. It also displays information such as the cutting machine status and errors.

➤ "Setup Guide" ("Installing the Software")

## Displaying VPanel



Click  (the VPanel icon) in the task tray on the desktop.


The top window of VPanel will appear. If you cannot find  in the task tray, start the program from the Windows [Start] screen (or the [Start] menu).

## Starting from the Windows [Start] Screen (or [Start] Menu)



### Windows 10 and 7

From the [Start] menu, click [All Apps] (or [All Programs]) then [VPanel for DWX]. Then click [VPanel for DWX].

### Windows 8.1

Click  on the [Start] screen. From the [Apps] screen, click the [VPanel for DWX] icon under [VPanel for DWX].




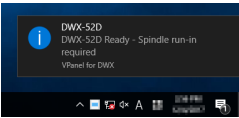
### VPanel serves as resident software.

VPanel works as resident software that is constantly working to manage the milling machine, send emails,\* and so on. It is recommended to configure the settings so that VPanel starts automatically when the computer starts. (➤ P. 10 "Settings" Tab) In addition, clicking  in the upper right of the top window will minimize the window to the task tray. The window will disappear from the screen, but the program will not be exited. While VPanel is running,  is constantly displayed in the task tray.

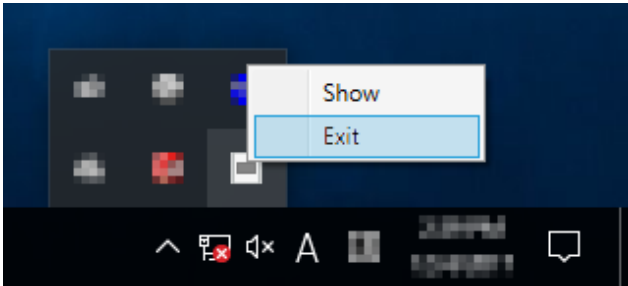
\* E-mails are sent to notify of milling completion or errors that occur. (➤ P. 12 "Mail" Tab)

VPanel Display in the Task Tray

When the VPanel icon is displayed in the task tray, the status of a connected milling machine is always monitored. The display of the VPanel icon changes depending on the status of the milling machine. The meanings of the displays are shown below.

	Indicates that at least one of the connected milling machines is on (is online).
	Indicates that all the connected milling machines are off.
	Indicates that an error has occurred on at least one of the connected milling machines. If you hover the mouse pointer over this icon, you can check which machine has the error.
	Messages are displayed automatically if an error occurs, during cutting, and in similar situations. Even after the message disappears, if you hover the mouse pointer over this icon, the status of each connected machine (such as Ready, Milling, Finished, Completed, or Offline) will be displayed. Messages prompting you to perform maintenance (such as "Spindle run-in required") will also be displayed. In these situations, perform the maintenance work indicated by the message.

Exiting VPanel

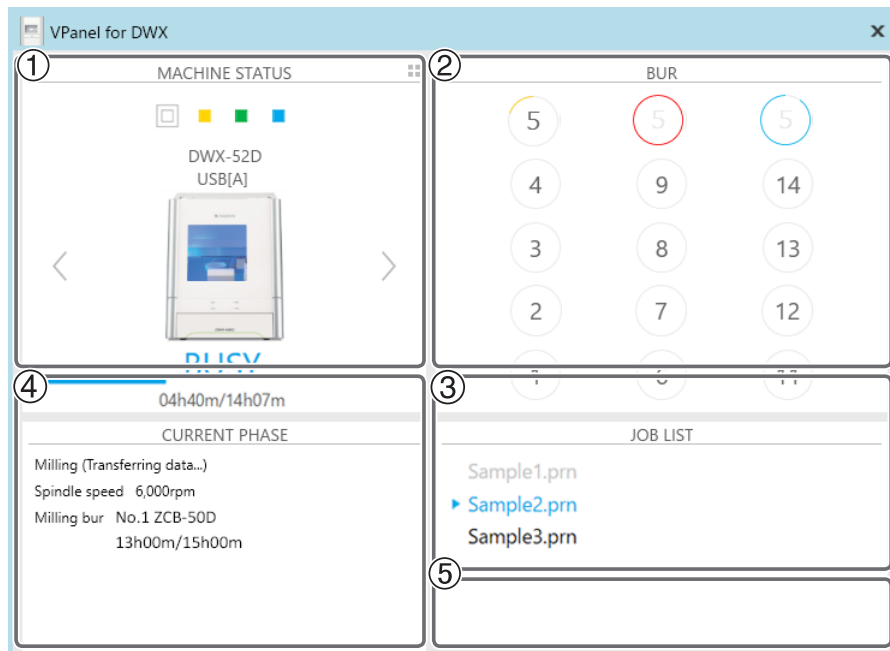


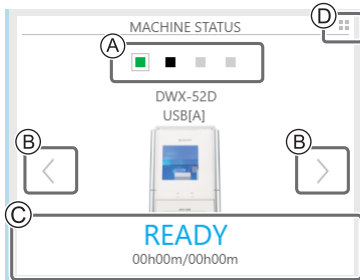
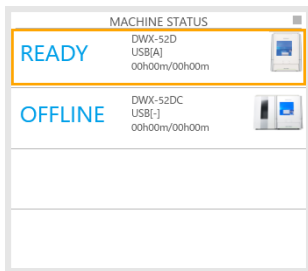
Right-click  in the task tray and click [Exit].

# VPanel Window and Functions




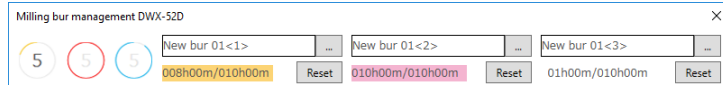





## Top Window

The top window displays the statuses of connected milling machines and an output list of milling data. When more than one machine is connected, the machine displayed in the MACHINE STATUS window is the target of the operations.



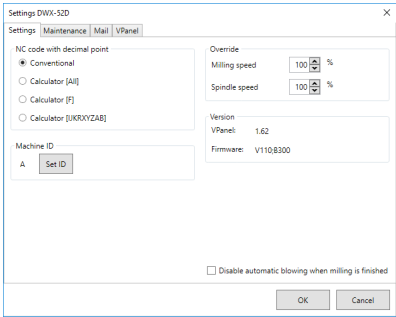
No.	Display	Explanation																
①	MACHINE STATUS																	
		<p>The connected machines are displayed with square icons (■). (In the above figure, four machines are connected.) Click a ■ icon to display the machine's ID and name below the icon. The IDs of machines whose power is turned off are shown with [-]. When you have connected multiple machines, you can switch to a different milling machine to operate by clicking its icon. If you click the icon of a connected milling machine, the status light of the milling machine will flash.</p>																
		<table><tr><td>■ (READY)</td><td>Milling data can be received.</td></tr><tr><td>□ (BUSY)</td><td>Operation is in progress.</td></tr><tr><td>■ (ERROR)</td><td>An error has occurred.</td></tr><tr><td>■ (PAUSE)</td><td>Operation is paused.</td></tr><tr><td>■ (COVER)</td><td>The front cover is open.</td></tr><tr><td>■ (FINISH)</td><td>Milling is complete.</td></tr><tr><td>■ (OFFLINE)</td><td>No milling machines are connected.</td></tr><tr><td>■ (OFFLINE)</td><td>The power of the milling machine is off.</td></tr></table>	■ (READY)	Milling data can be received.	□ (BUSY)	Operation is in progress.	■ (ERROR)	An error has occurred.	■ (PAUSE)	Operation is paused.	■ (COVER)	The front cover is open.	■ (FINISH)	Milling is complete.	■ (OFFLINE)	No milling machines are connected.	■ (OFFLINE)	The power of the milling machine is off.
		■ (READY)	Milling data can be received.															
		□ (BUSY)	Operation is in progress.															
		■ (ERROR)	An error has occurred.															
		■ (PAUSE)	Operation is paused.															
		■ (COVER)	The front cover is open.															
		■ (FINISH)	Milling is complete.															
		■ (OFFLINE)	No milling machines are connected.															
■ (OFFLINE)	The power of the milling machine is off.																	
(B)	When you have connected multiple machines, you can switch to a different machine to operate by clicking its icon.																	
(C)	Displays the machine's operation status. A progress bar, the elapsed milling time, and the estimated milling time are all displayed. <div><div>04h40m/14h07m</div><div>Elapsed milling time —</div><div>Estimated milling time —</div></div>																	
(D)	Click this to display the operating status of all the connected machines in a list. You can also select the machine to operate by clicking it in the displayed list. To return to the previous display, click ■.																	
																		



No.	Display	Explanation		
②	BUR	Displays the status of the function (Intelligent Tool Control) for automatically switching the current milling bur with the set milling bur. Also, hover the mouse pointer over the displayed number to display the name, work time, and replacement time of the milling bur. The tool's remaining service life is indicated by the length of the arc that surrounds the number. When the tool approaches the end of its service life, the arc color changes to yellow. When the service life is exceeded, the arc color changes to red.		
		Example Usage: less than 75% (green graph)	Example Usage: 75% or more (yellow graph)	Example Usage: 100% or more (red graph)
				
		It is almost time to replace the milling bur.		It is past time to replace the milling bur.
<div>"Milling bur management" dialog box</div> <div></div>				
⇨ P. 17 "Intelligent Tool Control (ITC) Function Settings"				
⇨ P. 45 "Milling Bur Replacement Time"				
③	JOB LIST	Displays the data being milled, the milling data in standby, and the milling progress.		
④	CURRENT PHASE	Displays the operation status, spindle rotating speed, milling time, etc. <div><div>Ⓐ Milling (Transferring data...)</div><div>Ⓑ Spindle speed 6,000rpm</div><div>Ⓒ Milling bur No.1 ZCB-50D 13h00m/15h00m</div></div>		
		<div>Ⓐ</div> <div>Displays the status of the connected machine.</div>		
		<div>Ⓑ</div> <div>Displays the spindle rotating speed of the connected machine.</div>		
		<div>Ⓒ</div> <div>Displays the name and work situation of the milling bur currently in use. For example, "13h00m/15h00m" indicates that "13h00m" is the work time and "15h00m" is the replacement time of the tool.</div>		
⑤		Outputs the milling data. <div>⇨ P. 40 "STEP 6: Outputting Milling Data and Starting Milling"</div>		
		Cancels output of milling data and other functions.		
		Allows for registration and selection of milling burs. <div>⇨ P. 15 ""Milling bur management" Dialog Box"</div>		
		Display the settings window. <div>⇨ P. 10 ""Settings" Tab"</div> <div>⇨ P. 11 ""Maintenance" Tab"</div> <div>⇨ P. 12 ""Mail" Tab"</div> <div>⇨ P. 13 ""VPanel" Tab"</div>		
		Click this to access the DGSHAPE Corporation website.		

## "Settings" Tab

On this tab, you can configure settings related to the machine IDs and NC codes. When more than one machine is connected, the machine selected in the top window becomes the target for the setting.



Display	Explanation
<b>NC code with decimal point</b>	<p>Select how to interpret numbers in NC codes.</p> <p>With "Conventional," the unit is interpreted as millimeter (or inch) when there is a decimal point, and as 1/1000 millimeter (or 1/10000 inch) when there is no decimal point.</p> <p>With "Calculator," the unit is always interpreted as millimeter (or inch) regardless of whether there is a decimal point. Select the scope of the application when selecting "Calculator." Select an appropriate setting according to your CAM or NC code.</p> <p>➤ Initial setting: Conventional</p>
<b>Machine ID</b>	<p>When multiple machines are connected to one computer, it's necessary to set IDs for the machines. Select the machine to use in the VPanel top window.</p> <p>➤ Initial setting: A</p> <p>☞ "Setup Guide" ("Connecting Multiple Units")</p> <hr/> <p><b>Important</b></p> <hr/> <p>To change an ID, be sure to follow the procedure explained in the "Setup Guide."</p>
<b>Version</b>	<p>VPanel: VPanel version</p> <p>Firmware: Connected machine's firmware version</p> <p>When more than one machine is connected, information for the machine selected in the top window is displayed.</p>
<b>Override</b>	<p>You can adjust the milling speed and the spindle speed. This is useful when you want to change settings such as the milling speed on the fly while monitoring the milling status. Overrides are specified in percentages.</p> <p>For example, if the milling data command sent from the computer is 10,000 rpm, setting the override to 150% will cause the rotation speed to be 15,000 rpm.</p> <p><b>Milling speed</b></p> <p>Allows adjustment of the milling bur movement speed when milling the workpiece. The speed specified by the command in the milling data is taken to be 100%. Inputting a large value will result in faster speeds. Inputting a small value will result in slower speeds.</p> <p><b>Spindle speed</b></p> <p>You can adjust the spindle speed during milling. The number of rotations specified by the command in the milling data is taken to be 100%. Inputting a large value will result in increased rotations. Inputting a small value will result in decreased rotations.</p> <p>➤ The override will return to 100% when the milling machine is turned OFF.</p> <p>➤ In the top window, the spindle speed is shown as the speed specified by the milling data command and not the speed after the override.</p> <p>➤ Setting an override does not let you perform operations beyond the machine's maximum or minimum speeds (rotation speeds).</p>

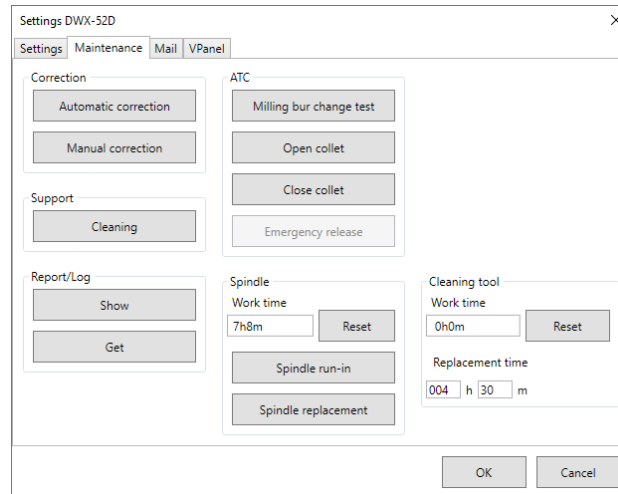
**Point**

Select the "Disable automatic blowing when milling is finished" check box to stop the automatic blowing function\*.

\*: This is a function that automatically blows air on the workpiece when milling is finished in order to blow off the milling waste.

## "Maintenance" Tab

On this tab, you can perform operations related to maintenance, including automatic correction of the milling machine and system reporting. When more than one machine is connected, the machine selected in the top window becomes the target for the operations.



Display	Explanation	
<b>Correction</b>	Automatic correction/ Manual correction	Correct the ATC magazine position or the rotary axis position. Normally use [Automatic correction]. ☞ P. 53 "Correcting the Milling Machine" ☞ P. 14 ""Manual correction" Dialog Box"
<b>Support</b>	Cleaning	Click this button to open the "Cleaning" dialog box. ☞ P. 18 ""Cleaning" Dialog Box"
<b>ATC</b>	Milling bur change test	Perform tests, maintenance, and other tasks related to operation with the ATC magazine. ☞ P. 50 "Periodic Maintenance" ☞ P. 49 "Care and Storage of Detection Pin and Automatic Correction Jig"
	Open collet/Close collet	
	Emergency release	This button is enabled when the power is turned on while the front cover is open. Use this function if the initial operations cannot be performed because, for example, the milling bur is caught on the workpiece.
<b>Spindle</b>	Reset	"Work time" displays the work time of the spindle. After replacing the spindle unit, click [Reset] to reset the value to 0.
	Spindle run-in	☞ P. 52 "Spindle Run-in (Warm-up)"
	Spindle replacement	Click this button to open the "Spindle replacement" dialog box. ☞ P. 51 "Replacing Consumable Parts"
<b>Report</b>	Display	Display the firmware version, the total operating hours, and the error dialog box.
	Get	Obtain a file in which the information of the various logs is collected.
<b>Cleaning tool</b>	Reset	"Work time" displays the work time of the cleaning tool. After replacing the cleaning tool, click "Reset" to reset the value to 0. You can use "Replacement time" to set the replacement time of the cleaning tool.

## "Mail" Tab

Settings on this tab can be configured so that a notification email is sent when milling finishes, when an error occurs, or when maintenance is complete. When more than one machine is connected, all of the machines become the targets for the settings. Select the "Use mail notification" check box to enter each item.

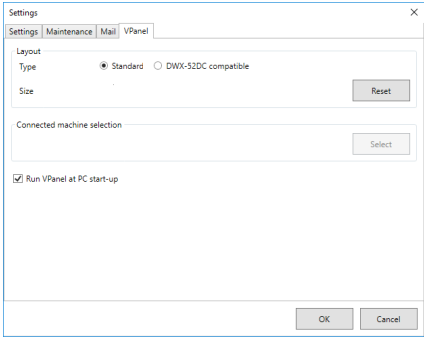
Display	Explanation
<b>Receiver address</b>	Enter the receiver's email address. You can enter multiple addresses by separating them with commas.
<b>Sender address</b>	Enter the sender's email address. Enter the email address being used on the computer on which VPanel is installed.
<b>Server host name</b>	Enter the name of the outgoing mail server (SMTP server name) for the email address entered for the sender's address.
<b>Server port number</b>	Enter the port number of the outgoing mail server for the email address entered for the sender's address.
<b>Use SSL connection</b>	Select this check box to use a security-protected connection (SSL). Select or clear this check box according to the settings of the outgoing mail server for the email address entered for the sender's address.
<b>Use SMTP authentication User name / Password</b>	Select this check box to perform authentication before sending emails. Input the user name and password for authentication. Select or clear this check box according to the settings of the outgoing mail server for the email address entered for the sender's address.
<b>Send test</b>	Click [Send test] to send a test email. If the following email is received at the address specified with "Receiver address," the configuration of the settings is complete. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Subject: &lt;Machine name&gt; Body: Test</div> If the sending of the email fails, the message "The email could not be sent." will be displayed. Check the content in the input fields again.
<b>Notification timing</b>	Notification emails will be sent for the items whose check boxes are selected.

### Important

- \* It may be impossible to send emails because of the settings of software such as security software. If emails cannot be sent, check the settings of the security software being used as anti-virus software or for a similar purpose.
- \* For detailed information about the email settings, consult your network administrator.
- \* VPanel does not support SMTP over SSL (SMTPs).

"VPanel" Tab

On this tab, you can set the automatic starting of VPanel and the layout of the top window. When more than one machine is connected, the machine selected in the top window becomes the target for the setting.



Display	Explanation
Layout	<p>Select the layout of the top window. The selected layout is displayed in the top window. ➤ Initial setting: "Standard"</p> <div><div>Standard</div><div>DWX-52DC compatible</div></div> <p>Click "Reset" to return to the "Standard" layout. The screen is displayed in the top window.</p>
Connected machine selection	<p>Click "Select" to display the screen for selecting the machine to operate. The machines that can be operated and that are registered on the computer are displayed in the upper row. The machine that is the target for operation from VPanel is displayed in the lower row. Drag the images of the machines in the lower row to the left and right to change the display order of the machines in the top window.</p> <div></div>
Run VPanel at PC start-up	<p>When this check box is selected, VPanel will start automatically when Windows starts, and the VPanel icon will be displayed in the task tray. ➤ Initial setting: Selected</p>

"Manual correction" Dialog Box

In this dialog box, you can perform manual correction of the milling machine. Perform correction to precisely adjust the accuracy. When more than one machine is connected, the machine selected in the top window becomes the target for correction.

\* Perform automatic correction before performing this correction.

Manual correction DWX-52D

Distance

X100.000%

Y100.000%

Z100.000%

Origin point

X0.00mm

Y0.00mm

Z0.00mm

A axis back side

A0.00degree

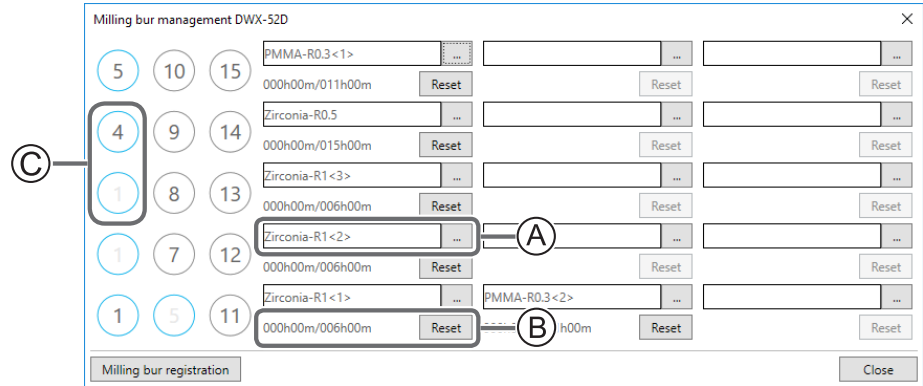
☒ Clear these values when executing the automatic correction


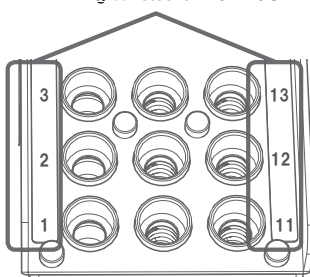
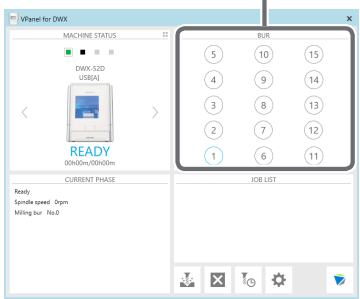
OKCancel

Display	Explanation
Distance	Correct moving distances in the X, Y, and Z directions. Set the correction value while considering the initial moving distance as 100.000%. ➤ Initial setting: 100.000%
A axis back side	Correct the angle when the A axis is rotated 180 degrees. Set the correction value while considering the initial setting as 0.00 degrees. ➤ Initial setting: 0.00 degrees
Origin point	Correct the origins of the X, Y, and Z axes. Set the correction value while considering the initial setting as 0.00 mm. ➤ Initial setting: 0.00 mm
Clear these values when executing the automatic correction	Select this check box to reset the values for "Distance," "Origin point," and "A axis back side" when performing automatic correction. ➤ Initial setting: Selected

# "Milling bur management" Dialog Box

By selecting a milling bur to be used, the work time of the selected milling bur will be recorded automatically. In addition, when the bur reaches the preset replacement time, a warning message will be displayed. When more than one machine is connected, the machine selected in the top window is managed.



Symbol or display	Explanation
<p><b>A</b></p>	<p>Click  to display the milling burs for which "Milling bur registration" was performed. Numbers 1 through 15 match the milling bur stocker numbers on the machine's ATC magazine. The name and work situation of the milling bur currently in use will be displayed on the top window.</p> <p>☞ P. 16 ""Milling bur registration" Dialog Box"</p> <div> <p><b>Milling bur stocker number</b></p>  <p><b>Milling bur info</b></p>  </div>
<p><b>B</b></p>	<p>Displays the work time and replacement time of the selected milling bur. When the bur reaches the preset replacement time, a warning message will be displayed. The replacement time can be changed from "Milling bur registration." After replacing the milling bur with a new one, click "Reset" to set the work time to 0.</p>
<p><b>C</b></p>	<p>You can automatically replace milling burs that have reached their replacement time during milling by setting multiple milling bur stockers as a single unit.</p> <p>☞ P. 17 "Intelligent Tool Control (ITC) Function Settings"</p>
<p><b>Milling bur registration</b></p>	<p>Here you can register milling burs whose work time you want to manage or remove burs you no longer want to manage. Click this button to display the "Milling bur registration" dialog box.</p> <p>☞ P. 16 ""Milling bur registration" Dialog Box"</p>

"Milling bur registration" Dialog Box

A milling bur's registration information can be changed in order to change the work time or the replacement time. When more than one machine is connected, the milling bur for the machine selected in the top window will be the target.

A

Milling bur registration DWX-52D

Milling bur name	Work time <1>	Work time <2>	Work time <3>	Replacement time
Zirconia-R0.3	000h00m	000h00m	000h00m	015h00m
Zirconia-R0.5	000h00m	000h00m	000h00m	015h00m
Zirconia-R1	000h00m	000h00m	000h00m	006h00m
PMMA-R0.3	000h00m	000h00m	000h00m	011h00m

Milling bur info

Milling bur name

Replacement time

h

m

Work time <1>

Work time <2>

Work time <3>

h

m

h

m

h

m

Save

Add milling bur

Remove milling bur

Close

Display	Explanation
A	<div>Displays the names, work times, and replacement times of the registered milling burs. If you are using the Intelligent Tool Control function, the work time for the milling bur set as the second milling bur is displayed under Work time &lt;2&gt; and the work time for the milling bur set as the third milling bur is displayed under Work time &lt;3&gt;.</div> <div>P. 17 "Intelligent Tool Control (ITC) Function Settings"</div>
Milling bur info	Allows the milling bur name, work time, and replacement time of the milling bur selected in the list to be edited. Because replacement times depend on the type of milling bur or workpiece as well as the milling conditions, adjust the replacement time value as necessary.
	<div>Save</div> <div>Saves the edited content (the existing content is overwritten).</div>
Add milling bur	Registers additional milling burs. You can register up to 20 milling burs.
Remove milling bur	Removes the milling bur selected in the list.

16

Chapter 1 Operation Screen



## Intelligent Tool Control (ITC) Function Settings

This machine is equipped with an Intelligent Tool Control (ITC) function. If you set the ITC function, when the milling bur being used approaches its replacement time, it is automatically switched with the next milling bur. This makes it possible to continue milling for a long time without any loss in milling quality. Use this dialog box to group together the milling burs that will be switched automatically. Register milling burs with the same name to set them as a single unit. For milling burs that are the same type, you can set a maximum of three milling burs and a minimum of two milling burs.

### When setting three milling burs as a single unit

Set three milling burs with the same name in the milling bur stocker.

(In the example in the following figure, (1) to (3) are set to the same name.)

The screenshot shows the 'Milling bur management DWX-52D' dialog box. On the left, there is a grid of 15 circular buttons numbered 1 to 15. Buttons 1, 1, and 1 are highlighted with a blue border. In the center, there is a list of three entries, each with a name, a code, and a 'Reset' button. The first entry is 'Zirconia-R1<3>' with code '000h00m/006h00m'. The second entry is 'Zirconia-R1<2>' with code '000h00m/006h00m'. The third entry is 'Zirconia-R1<1>' with code '000h00m/006h00m'. At the bottom left is a 'Milling bur registration' button, and at the bottom right is a 'Close' button.

### When setting two milling burs as a single unit

Set milling burs with the same name in the milling bur stocker.

(In the example in the following figure, (1) and (6) are set to the same name.)

The screenshot shows the 'Milling bur management DWX-52D' dialog box. On the left, there is a grid of 15 circular buttons numbered 1 to 15. Buttons 1 and 1 are highlighted with a blue border. In the center, there is a list of six entries, each with a name, a code, and a 'Reset' button. The first entry is 'Zirconia-R0.5' with code '000h00m/015h00m'. The second entry is 'Zirconia-R0.3' with code '000h00m/015h00m'. The third entry is 'PMMA-R0.3' with code '000h00m/011h00m'. The fourth entry is 'Zirconia-R1<1>' with code '000h00m/006h00m'. The fifth entry is 'Zirconia-R1<2>' with code '000h00m/006h00m'. The sixth entry is 'Zirconia-R1<3>' with code '000h00m/006h00m'. At the bottom left is a 'Milling bur registration' button, and at the bottom right is a 'Close' button.

"Cleaning" Dialog Box

Use this dialog box when you clean the machine. You can use it to perform operations such as moving the rotary axis unit and the spindle. To verify the operation, place the mouse pointer over the button to switch the VPanel illustration.

☞ P. 48 "Cleaning after Milling Finishes"



Display	Explanation
Dust collector ON/OFF	Turns the dust collector ON/OFF. (For dust collectors with a linking function and connected to the expansion port with a linking cable.) For details on the dust collector, see the DWX-52D "Setup Guide."
Front	Moves the rotary axis unit to the front. Use this function when cleaning the rotary axis unit.
Rear	Moves the rotary axis unit to the back. Use this function when cleaning the back of the milling area.
Reverse side	Turns the clamp over. Use this function when cleaning the back side of the clamp.
Spindle	Moves the spindle unit to a location where it is visible. Use this function when cleaning around the spindle unit.

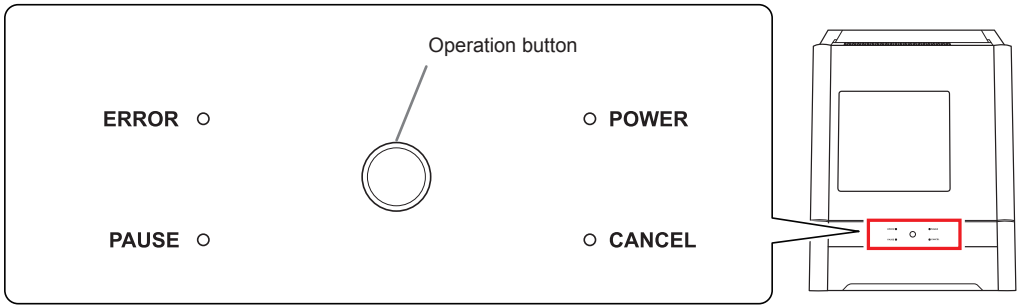
# Chapter 2 Milling

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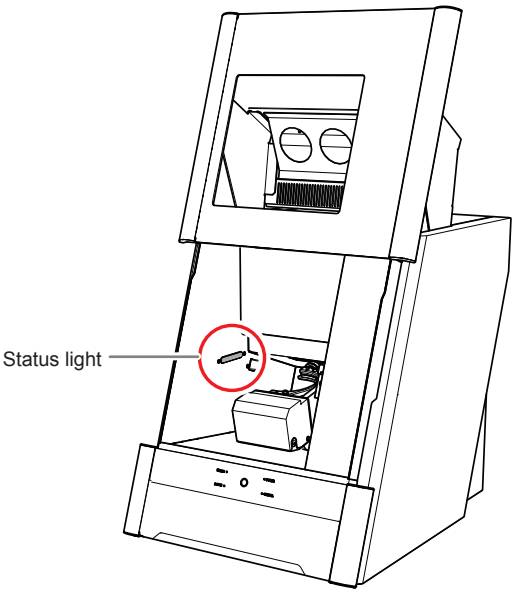
# Using/Reading the Built-In Panel

## Using/Reading the Built-In Panel



<b>ERROR</b>	Flashes when an error has occurred.
<b>PAUSE</b>	Lights when operation is paused.
<b>POWER</b>	Lights when the power is turned on.
<b>CANCEL</b>	Flashes when data is being cancelled and during the initial operations. Milling data received while this light is flashing will be cancelled.
<b>Operation button</b>	Pressing this button during milling will pause or restart the machine. Pressing and holding this button during milling will abort milling or clear some errors. Pressing this button in standby will rotate the rotary axis position 180 degrees. Flashes during the initial operations, during spindle rotation, and during similar operations. The button will light when the machine is on and in any other status.

## Statuses Indicated by Status Light Color



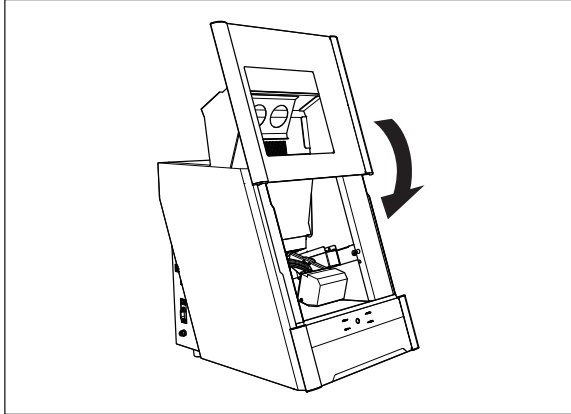
<b>Blue</b>	The machine is in standby or is performing the initial operations. The light will turn off if no operation is performed for 30 seconds when in standby, causing the machine to sleep.
<b>White</b>	When lit white, milling is being performed or has been paused, or the front cover is open. Also flashes in white when the dust collector is in standby.
<b>Yellow</b>	When lit in yellow, an error has occurred and the machine has been paused. Check the error details shown on VPanel. Press the operation button on the built-in panel to resume milling.
<b>Red</b>	When lit or flashing in red, an error has occurred and milling has been stopped. Milling cannot be resumed. Check the error details shown on VPanel. When lit in red, holding down the operation button on the built-in panel will cancel milling and return the machine to the ready status. When flashing in red, turn off the power and start the machine again.
<b>Off</b>	The light turns off when the machine is in the sleep state or the power is turned off.

# Switching the Power On or Off

## Switching the Power On

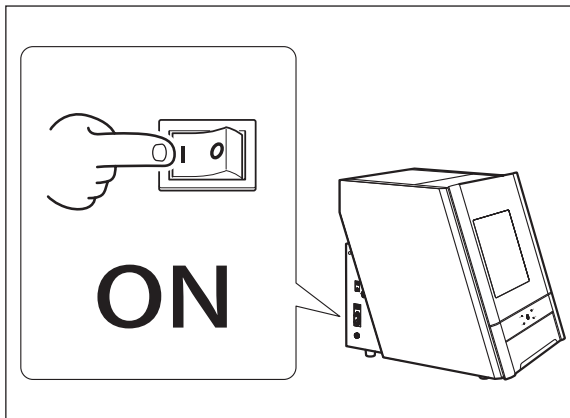
### Procedure

1



Close the front cover.

2



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

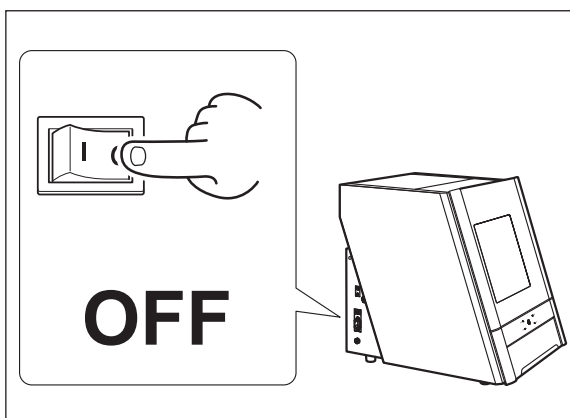
The machine starts the initial operations. When the status light stops flashing and remains steadily lit, initialization is complete.

### CAUTION

- Do not open the front cover during initial operation.
- The ionizer will not function properly if the machine is not grounded.

## Switching the Power Off

### Procedure



Switch off the machine's power switch.

# Preparing for Milling

## CAM Settings Necessary for Milling



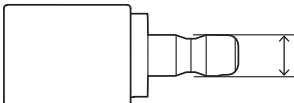
The settings shown below must be included in the milling data used by this machine.

Workpiece	Set the type of workpiece to use in milling. ☞ P. 22 "Preparing a Workpiece (Usable Workpieces)"
Milling bur	Set all the milling burs to use in milling. ☞ P. 22 "Preparing a Milling Bur (Usable Milling Burs)"
Milling bur stocker number	Set the number of the milling stocker in which the milling burs will be loaded. ☞ P. 36 "STEP 3: Loading the Milling Bur"

## Preparing a Workpiece (Usable Workpieces)

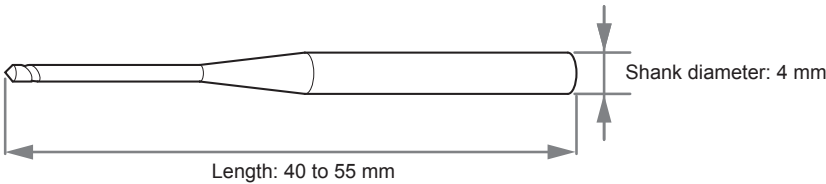
### Workpiece Materials

Zirconia, wax, PMMA, composite resin, PEEK, gypsum, glass-fiber-reinforced resin, and CoCr sintered metal

Type		Size
Disk type (with step)		Step section: 98.5 mm (diameter), 10 mm (height) Body section: 95 mm (diameter), 60 mm (height max.)
Pin type		Pin diameter: 6 mm  $\varnothing 5.9 \pm 0.02$

## Preparing a Milling Bur (Usable Milling Burs)

The figure below shows the size of usable milling burs.



\* The shape of the milling bur is merely an example. Select the milling bur that matches the application. Contact your authorized DGSHAPE Corporation dealer or visit our website (<http://www.dgshape.com/>) to purchase milling burs.

## Cleaning Tool

You can use the included cleaning tool to clean milling waste away from the machine.

\* When using the cleaning tool, you have to configure CAM settings in the same manner as for milling burs.

### Materials for Which the Cleaning Tool Is Effective

Zirconia, composite resin, and CoCr sintered metal



## Compressed Air (Setting the Regulator)

**⚠ WARNING** Turn the air pressure adjustment knob slowly and carefully. Otherwise, the machine may move suddenly, posing a risk of injury.

### MEMO

When CAM data is sent to the machine, it automatically adjusts the air pressure to match the workpiece to mill.

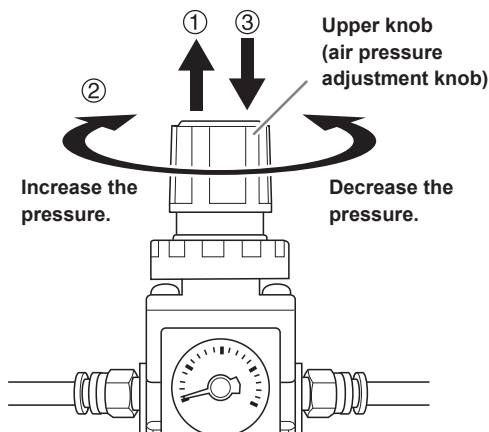
### Procedure

**1** Pull up on the upper knob (the air pressure adjustment knob).

**2** Slowly turn the upper knob to adjust the pressure to 0.2 MPa.

When the supply of air starts, the air starts to flow and the pressure drops. When the pressure has dropped, adjust the regulator to have an appropriate value again. (Air is supplied when the spindle rotates and when the milling bur is replaced.)

**3** Push down on the upper knob.



### IMPORTANT!

Be sure to configure the regulator to 0.2 MPa. Anything higher may result in a malfunction. If the pressure is too low, the desired results will not be obtained.

# Starting Milling

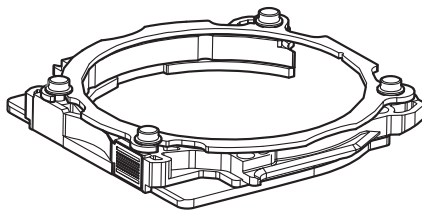
## STEP 1: Attaching a Workpiece to the Adapter

The mounting method differs depending on the workpiece type and size.

☞ P. 24 "For Disk Workpieces"

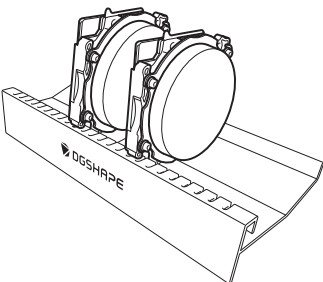
☞ P. 27 "For Pin-type Workpieces"

Workpieces can be attached to any adapter.



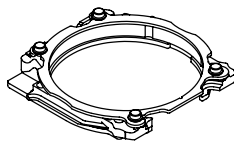


### Point

Use the included adapter rack to hold the adapters.



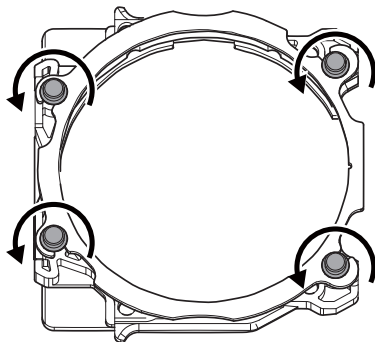
## For Disk Workpieces

### Required Items

		
Adapter	Disk workpiece	Torque screwdriver

## Procedure

- 1 Use a torque screwdriver to loosen the adapter screws, turning them approximately 4 times.  
(4 locations)



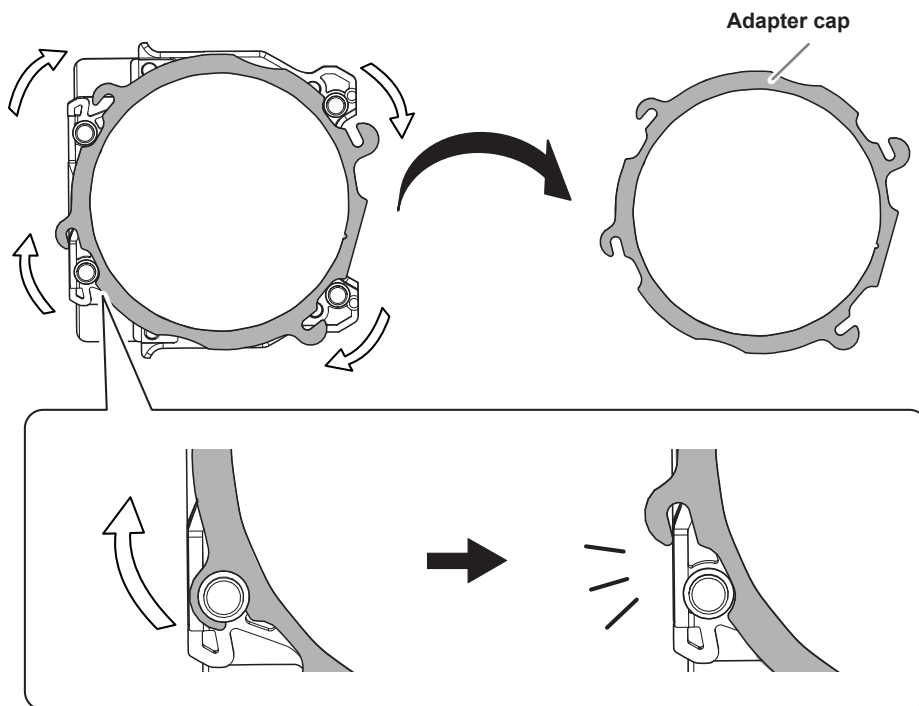
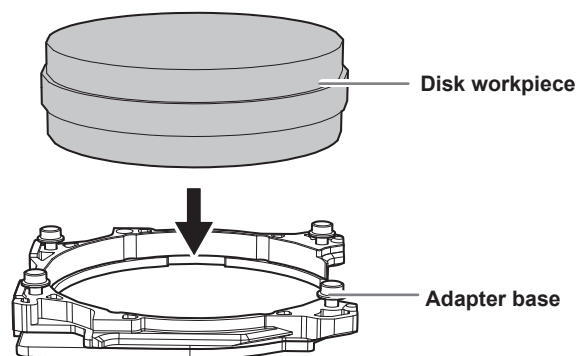
Use the included spare screws when a screw is lost or worn.





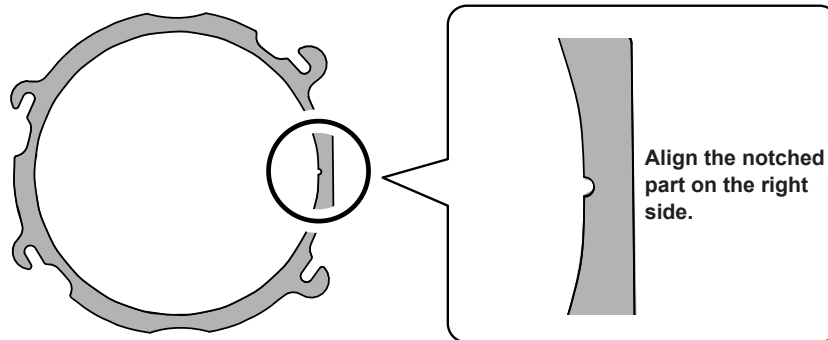
**2 Remove the adapter cap.**

Turn the adapter cap in the direction of the arrows to remove it.

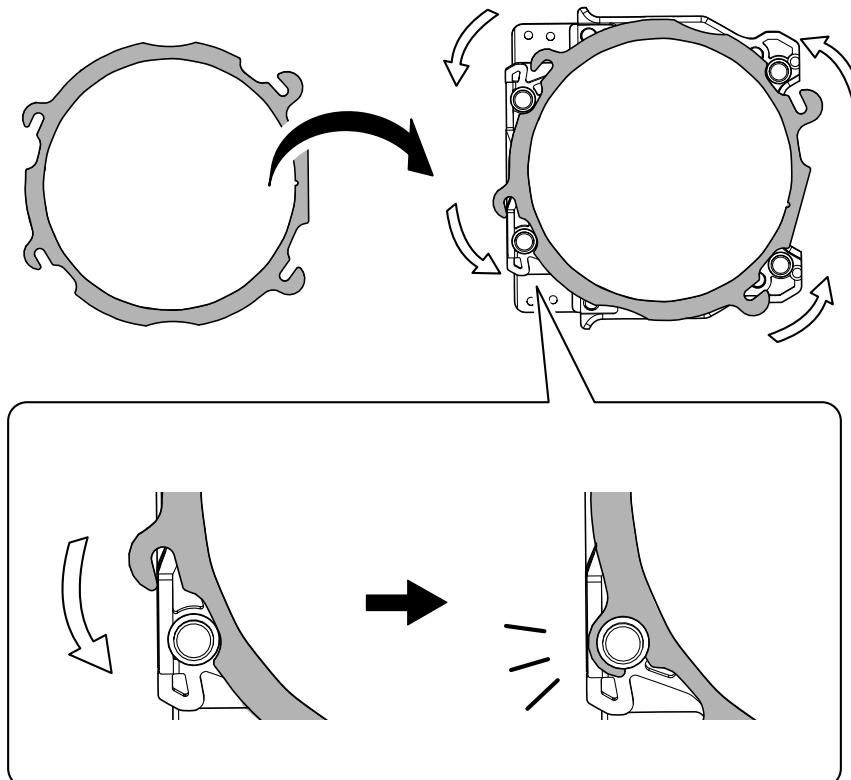
**3 Set the disk workpiece into the adapter base.**

**4 Attach the adapter cap.**

① Orient the adapter cap removed in step ② as shown in the following figure.



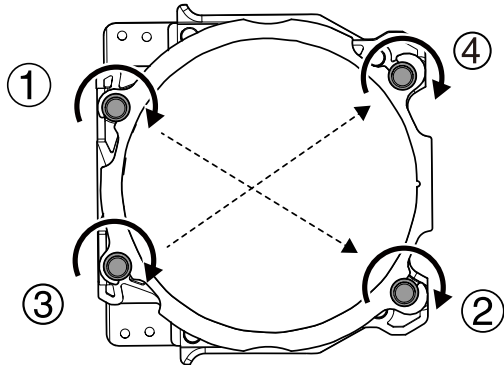
② Turn the adapter cap in the direction indicated by the arrows to attach it to the screws.



- 5** Use a torque screwdriver to tighten the screws in the positions shown in the figure. (4 locations)  
Tighten the screws until they click.

**CAUTION**

To prevent workpiece damage, tighten the screws in order across the diagonals.

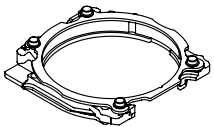

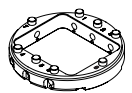



- 6** Attach the adapter to the machine.

☞ P. 33 "STEP 2: Attaching the Adapter to the Machine"

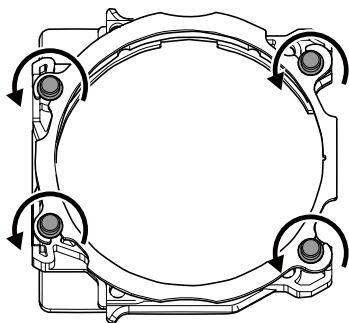
**For Pin-type Workpieces**

**Required Items**

			
Adapter	Pin-type workpiece	Pin-type workpiece Adapter	Torque screwdriver

**1. Mount the pin-type workpiece adapter on the adapter.**

- 1** Use a torque screwdriver to loosen the adapter screws, turning them approximately 4 times. (4 locations)

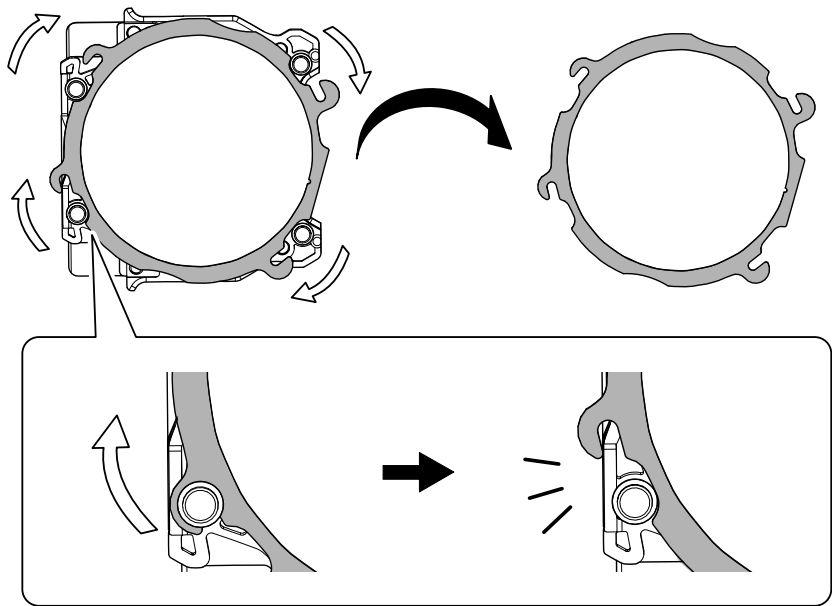


Use the included spare screws when a screw is lost or worn.



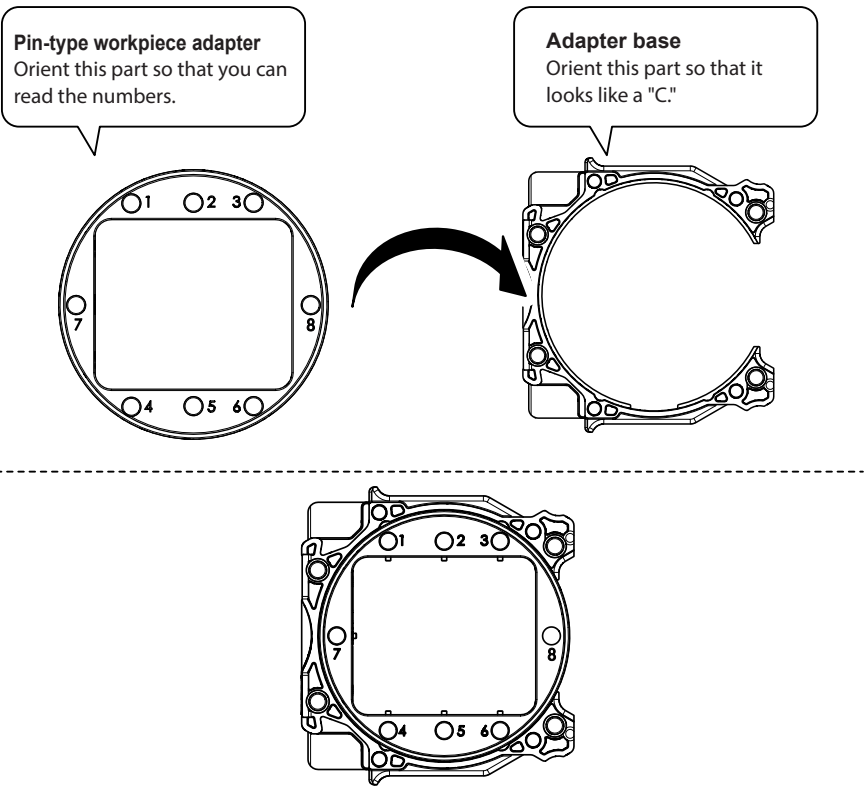
**2 Remove the adapter cap.**

Turn the adapter cap in the direction of the arrows to remove it.



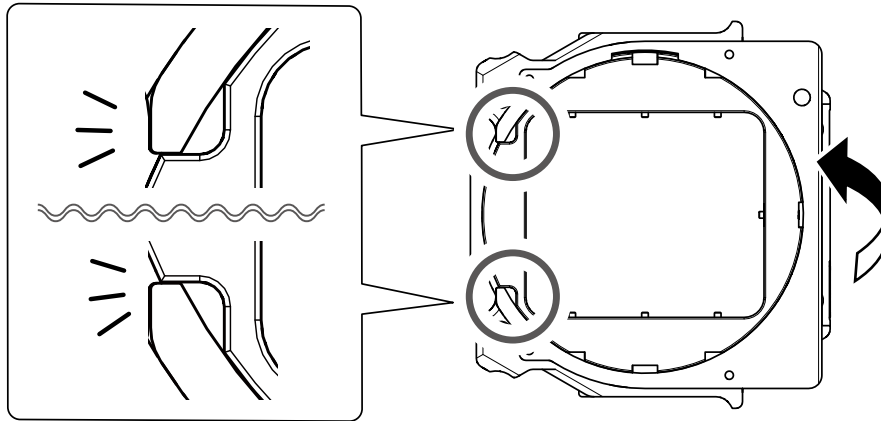
**3 Mount the pin-type workpiece adapter on the adapter base.**

① Orient the pin-type workpiece adapter as shown in the following figure, and then mount this adapter on the adapter base.



- ② Turn over the assembly prepared in step ①, and then align it with the positions shown in the figure.

Align the recessed portion with the protrusion.

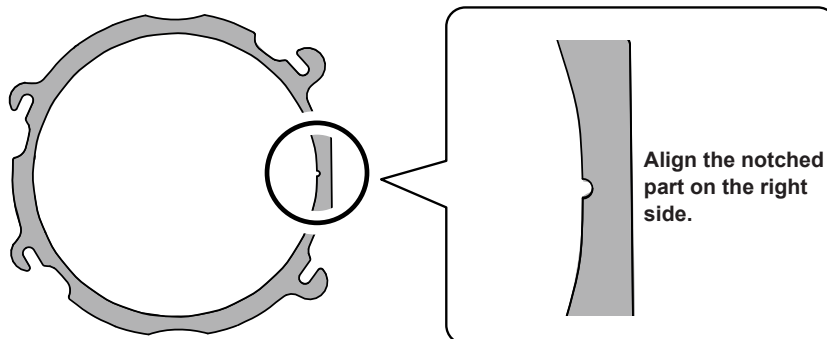


- ③ Check whether the pin-type workpiece adapter has been mounted on the adapter base without any gaps.

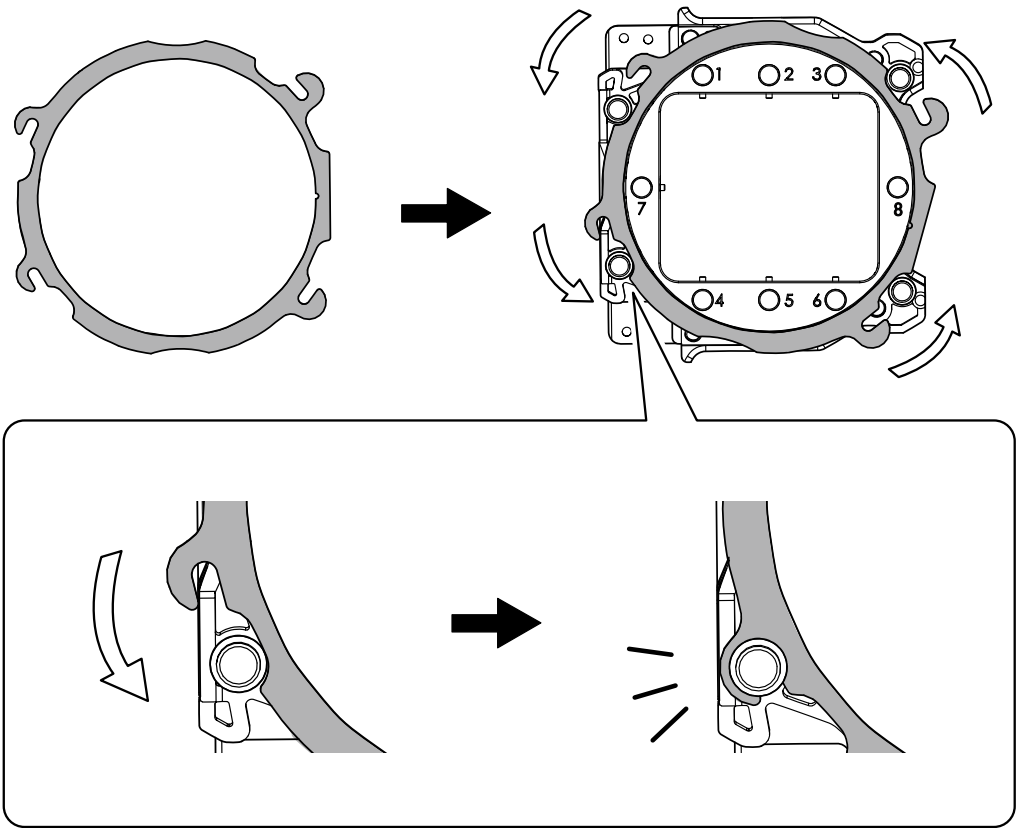
If the adapter wobbles, check the position in step ② again.

- ④ Attach the adapter cap.

- ① Orient the adapter cap removed in step ② as shown in the following figure.



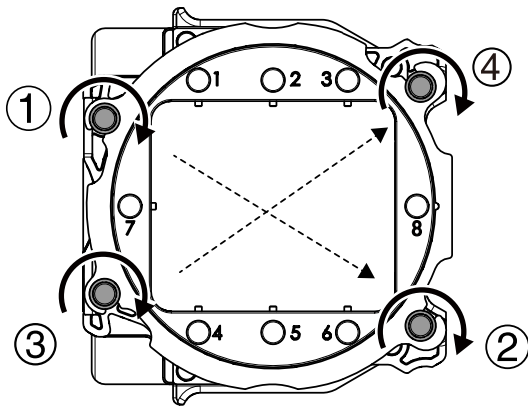
② Turn the adapter cap in the direction indicated by the arrows to attach it to the screws.



⑤ Use a torque screwdriver to tighten the screws in the positions shown in the figure. (4 locations)

Tighten the screws until they click.

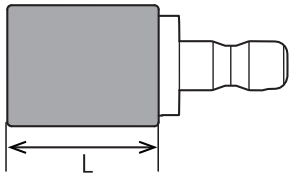
Also, to secure the adapter evenly, after tightening the screw in one location, tighten the screw that is oriented diagonally across from it.



2. Mount the workpiece on the pin-type workpiece adapter.

Mounting layout examples

The figure shows examples of the maximum number of workpieces that can be attached according to size. It also shows the layouts of these workpieces. Workpiece sizes are limited by the number of workpieces mounted in the machine, and the number of mountable workpieces is limited by the size of the workpieces mounted in the machine.

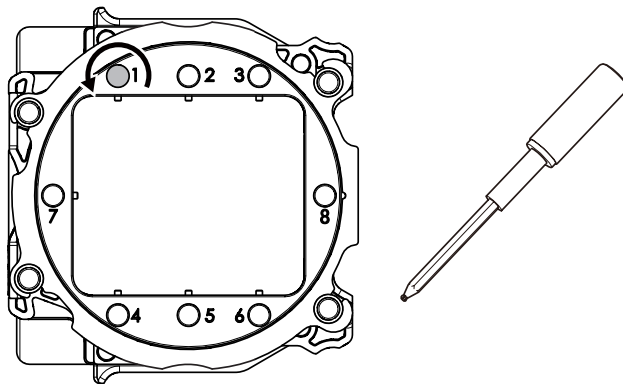


<b><math>L \leq 20\text{ mm}</math></b>	A top-down view of a circular frame containing 8 numbered pins (1-8) around the perimeter. Six small rectangular workpieces are arranged in a 2x3 grid in the center of the frame.
<b><math>20\text{ mm} &lt; L \leq 50\text{ mm}</math></b>	A top-down view of a circular frame containing 8 numbered pins (1-8) around the perimeter. Three vertical rectangular workpieces are arranged side-by-side in the center of the frame.
<b><math>50\text{ mm} &lt; L</math></b>	A top-down view of a circular frame containing 8 numbered pins (1-8) around the perimeter. One large horizontal rectangular workpiece is centered within the frame.

- 1 Use a torque screwdriver to loosen the screws holding the pin-type workpiece in position.

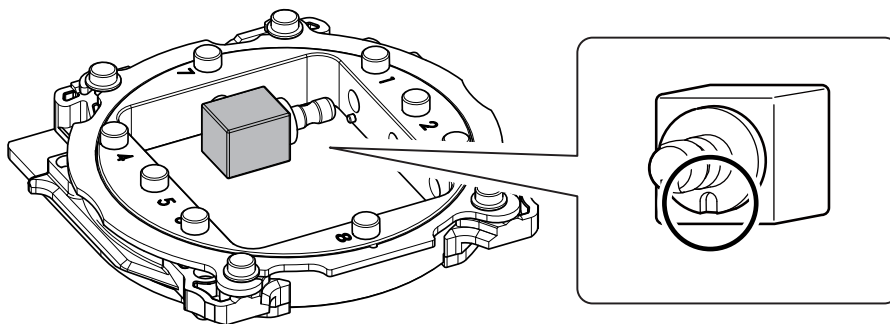
**MEMO**

Use the included spare screws when a screw is lost or worn.



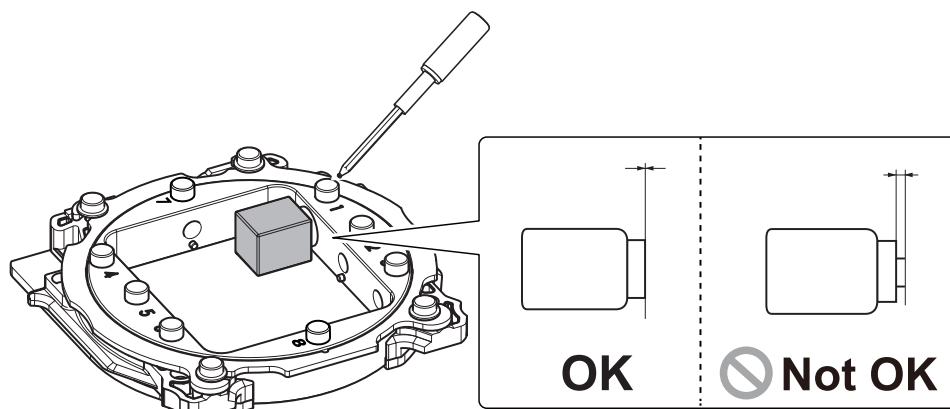
- 2 Mount the pin-type workpiece on the pin-type workpiece adapter.

Make sure the recessed portion of the pin-type workpiece is oriented downward, align the protrusion of the pin-type workpiece adapter with this recessed portion, and then insert the workpiece all the way in.



- 3 Tighten the screws using a torque screwdriver.

Tighten the screws until they click.



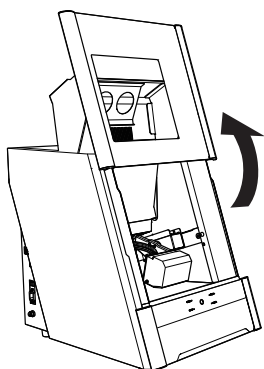


## STEP 2: Attaching the Adapter to the Machine

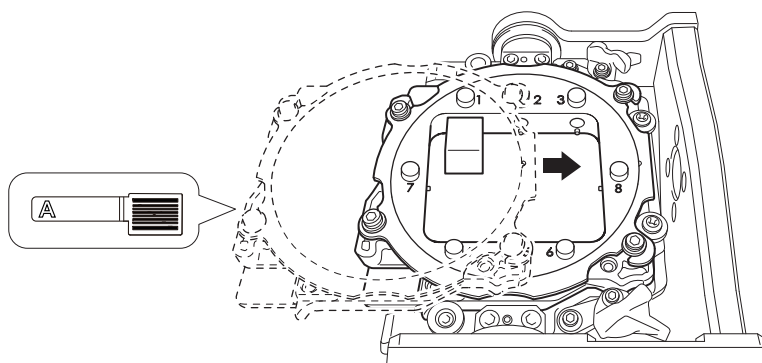
### For Pin-type Workpieces

#### Procedure

- 1 Switch on the machine's power switch.  
☞ P. 21 "Switching the Power On"
- 2 Once initialization completes, open the front cover.

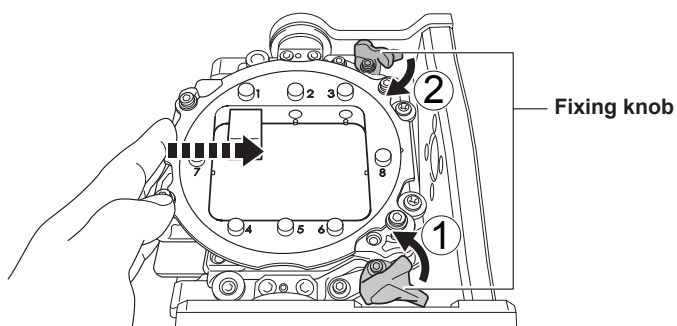


- 3 Orient the parts as shown in the figure, and then insert the adapter into the clamp.



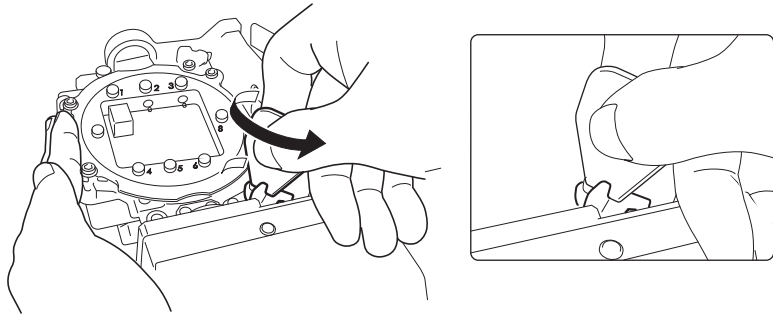
- 4 Secure the adapter.

As shown in the figure, turn the fixing knobs (in two locations) in the directions of the arrows while pressing in on the adapter.

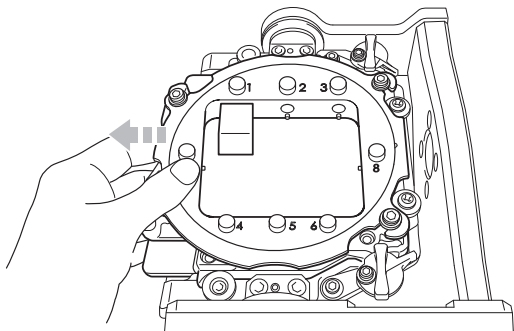


**Point**

If it is difficult to turn the knobs by hand, use the included wrench (for clamps).



- 5** Lightly tug on the adapter to check that it does not come loose.



- 6** Close the front cover.

---

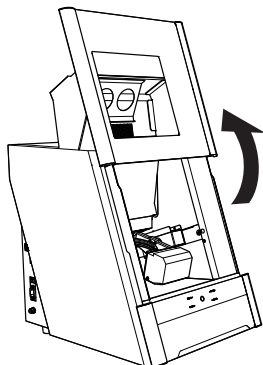
**For Disk Workpieces**

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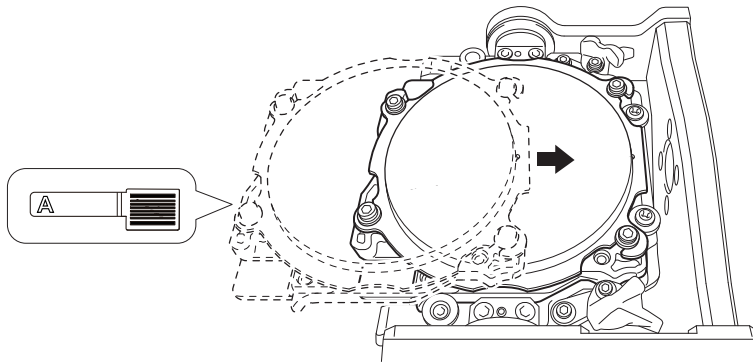
**Procedure**

---

- 1** Switch on the machine's power switch.  
☞ P. 21 "Switching the Power On"
- 2** Once initialization completes, open the front cover.

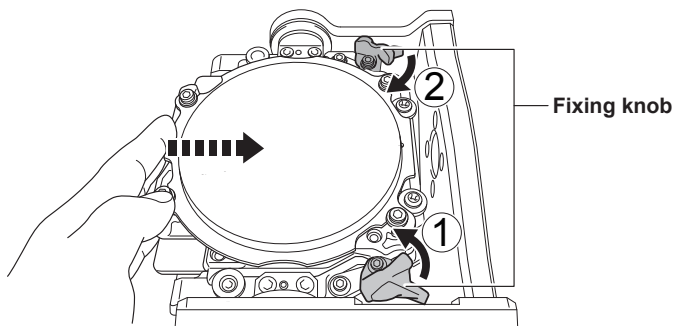


- 3 Orient the parts as shown in the figure, and then insert the adapter into the clamp.



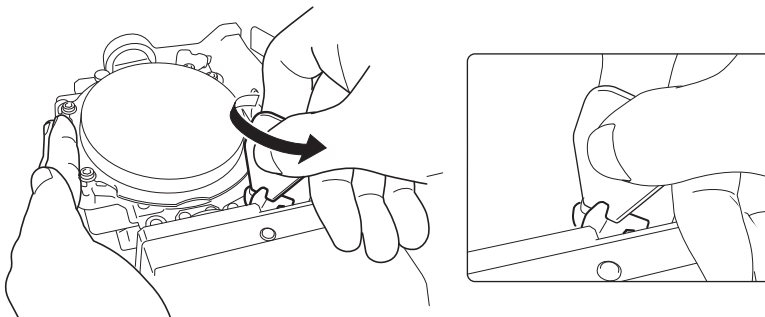
- 4 Secure the adapter.

As shown in the figure, turn the fixing knobs (in two locations) in the directions of the arrows while pressing in on the adapter.

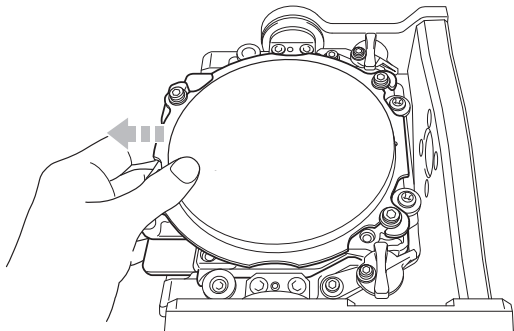


**Point**

If it is difficult to turn the knobs by hand, use the included wrench (for clamps).




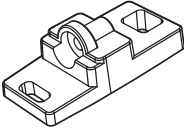


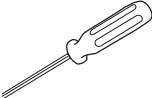
- 5 Lightly tug on the adapter to check that it does not come loose.



- 6 Close the front cover.

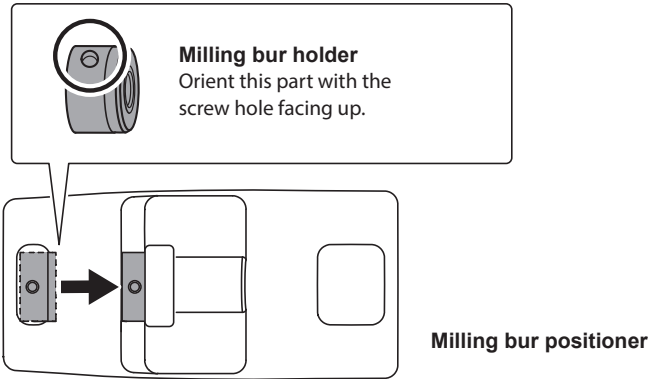
STEP 3: Loading the Milling Bur

Required Items

 Milling bur	 Milling bur positioner	 Milling bur holder	 Mounting screw	 Hexagonal screwdriver
---	--	---	---	---

Procedure

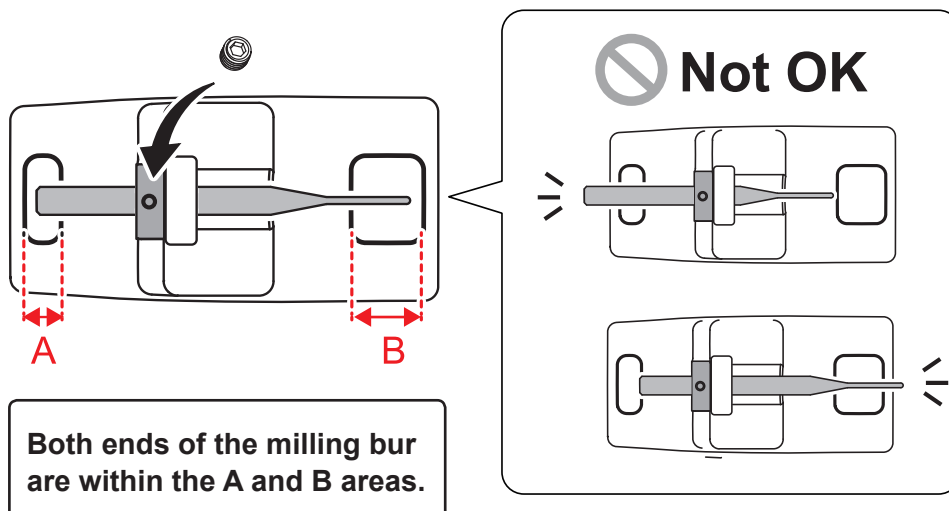
- 1 Attach the milling bur holder to the milling bur positioner.
- ① Orient the milling bur holder as shown in the figure, and then insert and attach the milling bur holder so that it reaches the back of the hole.



② Slide the milling bur through the milling bur holder, and determine the proper position.

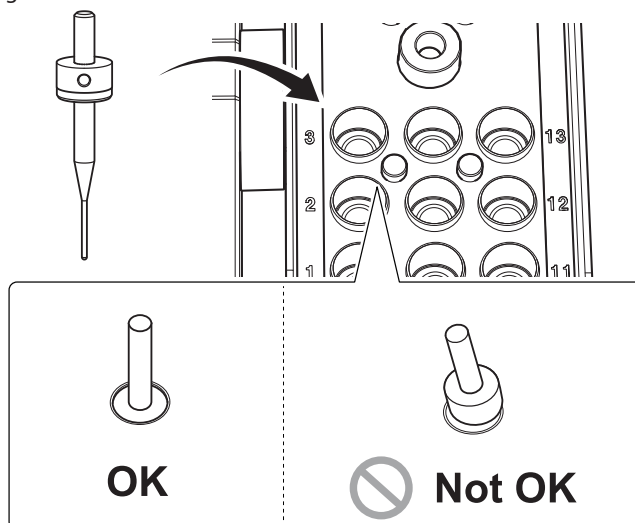
Insert the milling bur as shown in the figure and make sure that both ends are within the areas of the milling bur positioner holes.

③ Secure the mounting screw using the hexagonal screwdriver.



② Set the milling bur in the ATC magazine.

Firmly insert it as far as possible. Up to 15 milling burs can be set. The milling bur stocker numbers are shown on the surface of the magazine.



**CAUTION**

The "Cleaning" stocker is dedicated for the cleaning tool. Do not set milling burs in this stocker.

☞ P. 38 "STEP 4: Loading the Cleaning Tool"




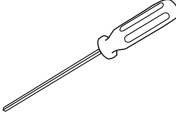
**STEP 4: Loading the Cleaning Tool**

If you are not using the cleaning tool, proceed to the next step.

**Materials for Which the Cleaning Tool Is Effective**

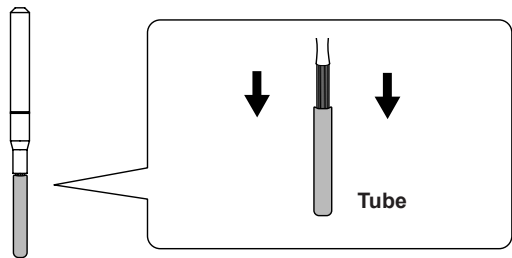
Zirconia, composite resin, and CoCr sintered metal

**Required Items**

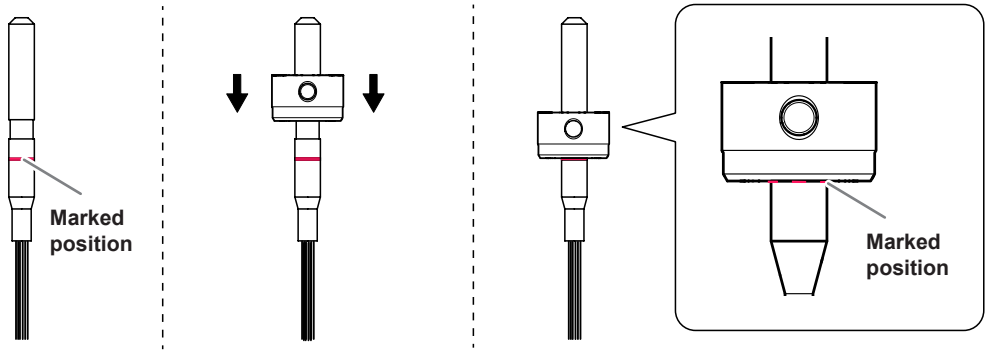
			
Cleaning tool	Milling bur holder	Mounting screw	Hexagonal screwdriver

**Procedure**

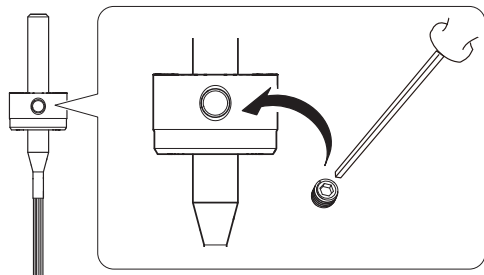
- 1 Remove the cleaning tool tube.**  
To prevent the bristles from being pulled off, grasp the cleaning tool tube gently and pull it down slowly.



- 2 Attach the milling bur holder to the cleaning tool, aligning the milling bur holder with the marked position on the cleaning tool.**



- 3 Use the mounting screw to fix the milling bur holder in place.

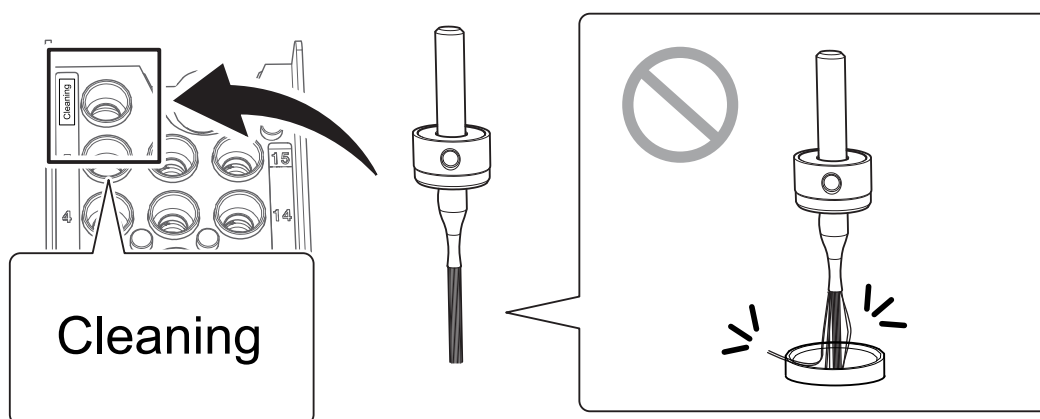


- 4 Load the cleaning tool in the "Cleaning" stocker.

Insert the cleaning tool slowly into the stocker from directly above in order to prevent the bristles from getting caught on the stocker and spreading out.

#### CAUTION

Do not needlessly insert or remove the cleaning tool.



#### Replacing the cleaning tool

If the bristles of the cleaning tool spread out, the cleaning tool will not be as effective in removing the milling waste. If the bristles have spread out, replace the cleaning tool with a new one. Contact your authorized DGSHAPE Corporation dealer or visit our website (<http://www.dgshape.com/>) to purchase items.

☞ P. 65 "Replacing the Cleaning Tool"

## STEP 5: Checking the Regulator Settings

### MEMO

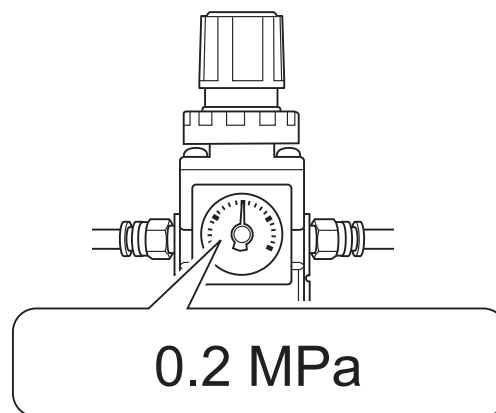
When CAM data is sent to the machine, it automatically adjusts the air pressure to match the workpiece to mill.

### Procedure

**Check that the pressure of the compressed air has been set to 0.2 MPa.**

If it has not been set to 0.2 MPa, set the pressure again.

☞ P. 23 "Compressed Air (Setting the Regulator)"



## STEP 6: Outputting Milling Data and Starting Milling

\* You can also use commercial CAM software to output milling data. For information on compatible CAM software, contact your authorized DGSHAPE Corporation dealer or visit our website (<http://www.dgshape.com/>).

### **WARNING**

**Be sure to turn on the dust collector.**

Milling waste and workpieces are flammable and toxic.

### **WARNING**

**Never use a vacuum cleaner to clean up milling waste.**

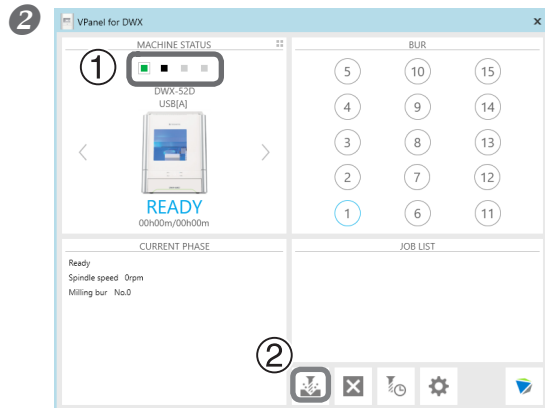
Taking up fine cuttings using an ordinary vacuum cleaner may result in fire or explosion.




## Procedure

### 1 Check the settings of the milling data.

☞ P. 22 "CAM Settings Necessary for Milling"



Open the [Output a file] dialog box.

① In the top window of VPanel, select the machine to operate.  
When multiple machines are connected, click  under MACHINE STATUS to switch between machines.

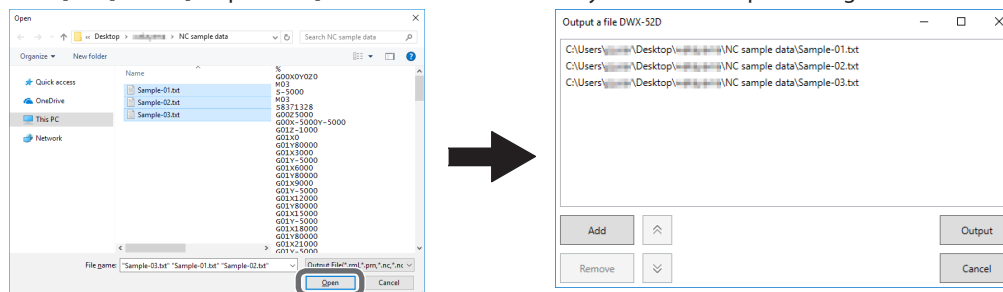
② Click .

The [Open] dialog box will appear.

### 3 Select the milling data, and click "Open."

The selected milling data is displayed in the data list of the [Output a file] window.

Click [Add] in the [Output a file] window to add files when you want to output milling data continuously.



### 4 Verify that the workpiece and the milling bur are set in the milling machine.

☞ P. 36 "STEP 3: Loading the Milling Bur"

### 5 Click "Output."

#### MEMO

#### Changing the data list order

You can change the output order by selecting the milling data in the data list and clicking  or . (The milling data is output from the top of the data list.)

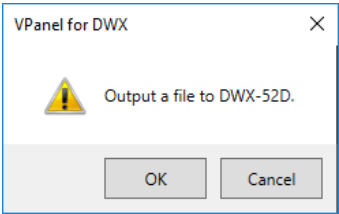
#### Removing milling data from the data list

To remove milling data from the output list, select the milling data in the data list and click [Remove].

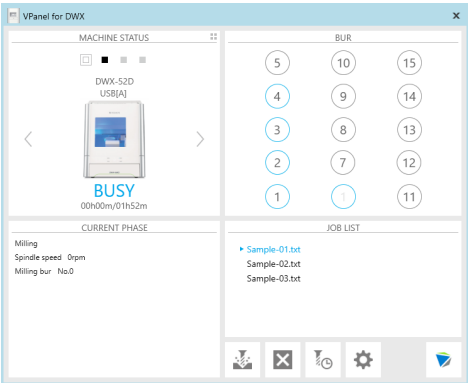
#### Adding milling data by dragging and dropping

You can add milling data to the data list by dragging the data to the top window or the [Output a file] window.

6 Click [OK].



The output milling data is displayed in the JOB LIST of the top window, and then milling starts. A sound will be emitted when milling has finished.



CAUTION

Do not open the front cover during milling.

To ensure safety, opening the front cover while milling is in progress will cause the machine to make an emergency stop.

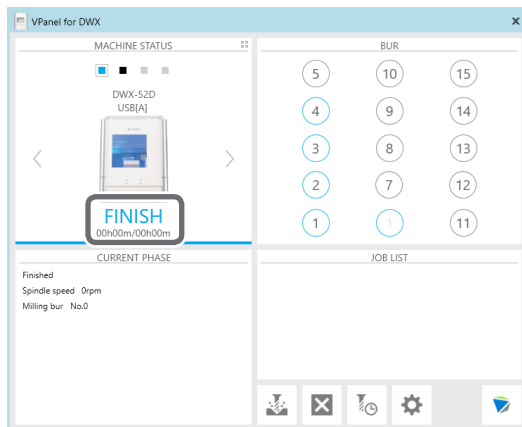
☞ P. 80 "Responding to Error Messages"

## STEP 7: Removing the Adapter from the Machine

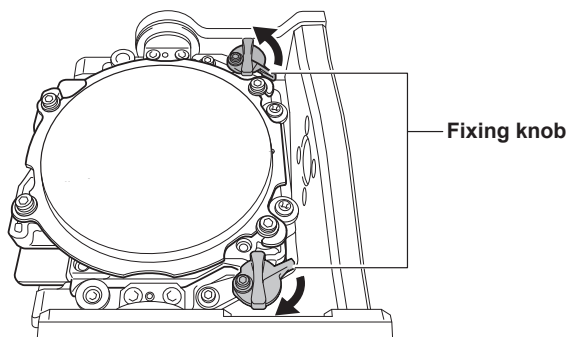
- ⚠ WARNING** Do not pull the adapter with excessive force when removing it.  
Doing so may result in injury arising from your hand or arm hitting something.

### Procedure

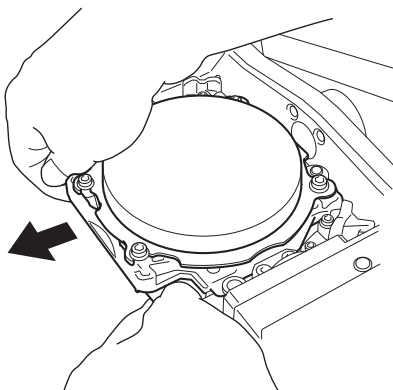
- 1 Check that milling is finished.



- 2 Open the front cover.
- 3 Turn the fixing knobs (in two locations) in the directions of the arrows to release the locks.



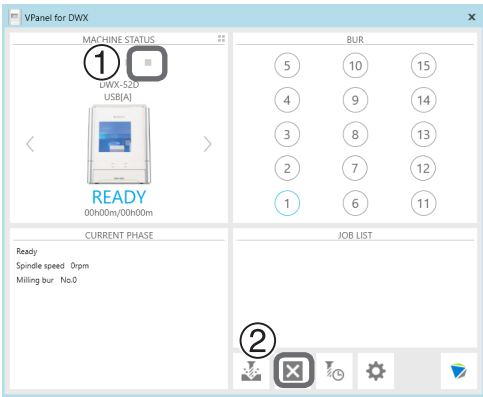
- 4 Remove the adapter from the clamp.  
Hold the adapter with both hands and pull it out slowly. Exercise caution to avoid striking the inside of the machine with your hands or other body parts when pulling out this part.



Aborting Output


Procedure

- 1

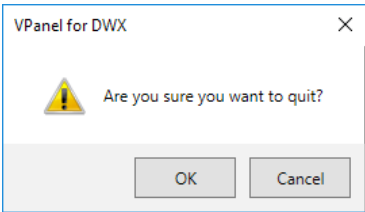

- 1

 In the top window of VPanel, select the machine for which output will be aborted.  

2

 Click  .

- 2


- The message shown in the figure will be displayed. To abort output, click [OK]. Click [Cancel] to not abort the output.

Removing Milling Data in Standby from the Output List

Procedure

- 1

 In the top window of VPanel, select the machine whose output list you want to edit.
- 2

 Right-click the milling data to remove from the output list, and then click [Remove].  
Only milling data in standby can be removed (milling data in the second or following positions from the top of the output list).

## Automatically Switching Out the Worn Milling Bur (Intelligent Tool Control)

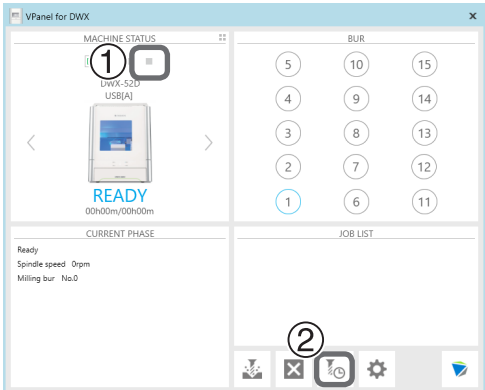
During milling, the milling bur wears out and may need to be replaced.

If you want to have the worn milling bur switched out automatically during milling, use Intelligent Tool Control.


Intelligent Tool Control is a function for consecutively using three milling burs that are all the same type. When a milling bur reaches its replacement time, it is automatically switched with a milling bur that has not been used. Therefore, milling can be continued for a long time without any loss in milling quality.

### Procedure

**1**



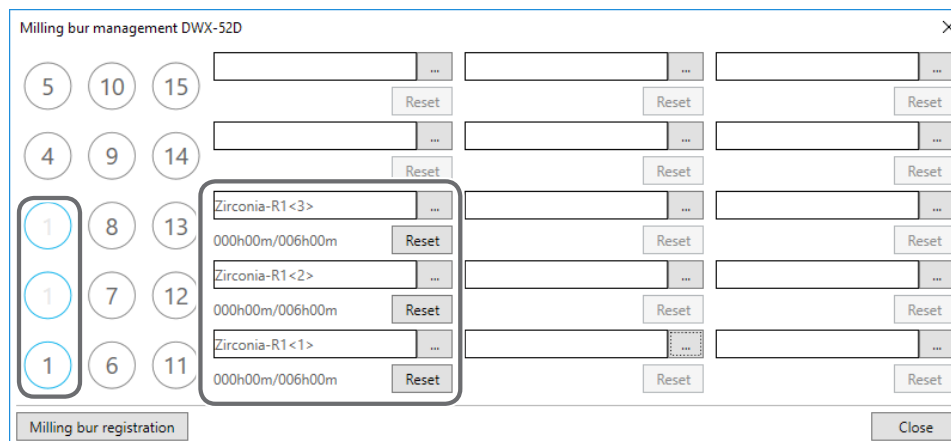
**1** In the top window of VPanel, select the machine for which you want to set Intelligent Tool Control.

**2** Click .

The "Milling bur management" dialog box is displayed.

- 2** Set the milling burs that you want to use Intelligent Tool Control to switch between automatically into multiple milling bur stockers (two or three locations).

Milling burs with the same name are set as a single unit. When the milling bur in use reaches its replacement time, it is automatically switched with the next milling bur.



### Milling Bur Replacement Time

#### ***When all the milling burs are new***

The milling bur with the smaller milling bur stocker number in the combination is used first.

Example: If Intelligent Tool Control is set to the combination of stocker 1, stocker 2, and stocker 3, stocker 1 is used.

#### ***When at least one milling bur has been used but has not reached its replacement time***

Among the milling burs that have not reached their replacement times, the milling bur with the longer work time is given priority when determining which milling bur to use.

#### ***When all the milling burs have reached their replacement times***

The milling bur with the shorter work time is given priority when determining which milling bur to use.

# Chapter 3 Maintenance

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Cleaning the Milling Bur/Adapter .....	49
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Retightening the Collet.....	59
Regulator Maintenance (Emptying the Drain).....	62
Regulator Maintenance (Cleaning the Bowl) .....	63
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# Maintenance Precautions

## Maintenance Precautions

### **WARNING**

**Never use a pneumatic blower.**

This machine is not compatible with pneumatic blowers. Milling waste may get inside the machine and cause fire or electrical shock.

### **WARNING**

**Never use a solvent such as gasoline, alcohol, or thinner to perform cleaning.**

Doing so may result in fire.

### **WARNING**

**Never use a vacuum cleaner to clean up milling waste.**

Taking up fine cuttings using an ordinary vacuum cleaner may result in fire or explosion.

### **WARNING**

**Do not touch the spindle unit or the surrounding areas immediately after milling has ended.**

Doing so may result in burns.

### **CAUTION**

**Be careful around the milling tool.**

The milling tool is sharp. Broken milling tools are also dangerous. To avoid injury, exercise caution.

- This machine is a precision device. Carry out daily care and maintenance.
- Carefully clean away cutting waste. Operating the machine with cutting waste present may cause a malfunction.
- Never install the machine in an environment where silicone substances (oil, grease, sprays, etc.) are present. Doing so may cause poor switch contact or ionizer damage.
- Never lubricate any location not specified in this manual.

# Daily Maintenance

## Cleaning after Milling Finishes

After milling finishes, clean the milling area using the included brush or the dust collector. Also clean the milling bur.

### MEMO

When the machine is in the standby state, opening the front cover and pressing the operation button will turn on the dust collector. (For dust collectors with a linking function and connected to the expansion port with a linking cable.)

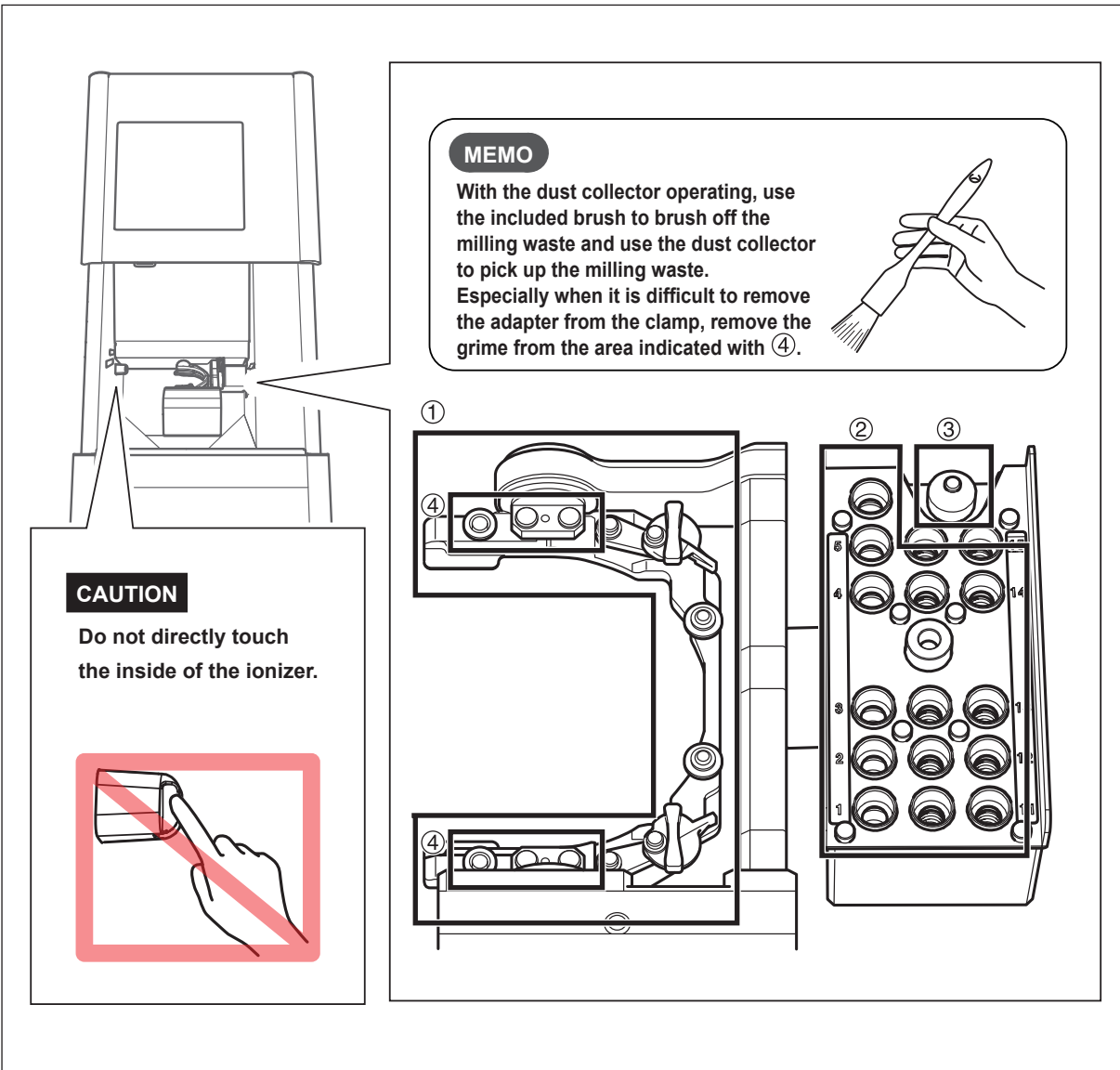
For details on the dust collector, see the DWX-52D "Setup Guide."

### Procedure

#### 1 Clean the inside of the machine.

Use the "Cleaning" dialog box in VPanel to clean the rotary axis unit.

Clean off any milling waste around areas ① to ④ in the following figure, as milling waste in these areas may affect the milling results. ⇐ P. 18 ""Cleaning" Dialog Box"

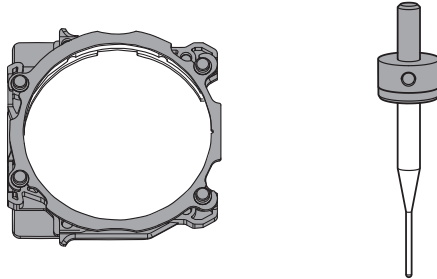




## Cleaning the Milling Bur/Adapter

Use the included cloth for care to wipe off any dirt from the portion indicated in the figure.

... Part to be wiped

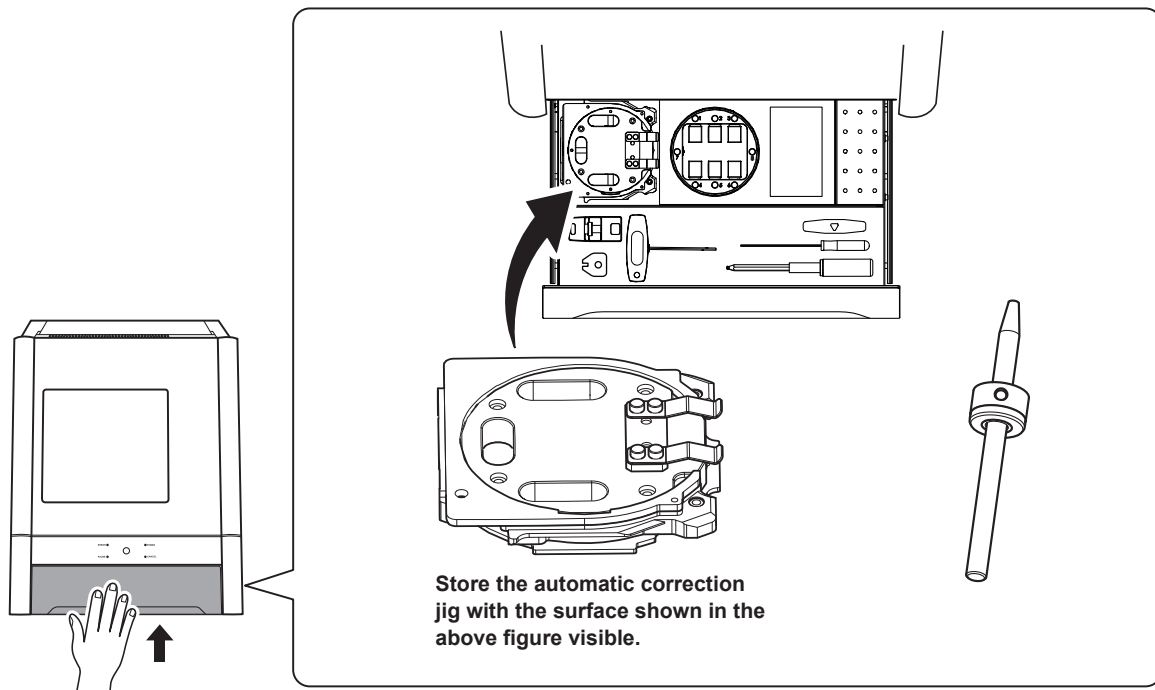


## Care and Storage of Detection Pin and Automatic Correction Jig

For automatic correction, use the detection pin and the automatic correction jig. The presence of rust, scratches, or grime on the detection pin or the automatic correction jig makes accurate detection impossible, which in turn may make it impossible to perform milling as intended and may even damage the machine.

### Care and Storage

- Before use, wipe the machine clean using a dry, clean cloth (which is included with the product) and make sure that the machine is free of rust, scratches, and grime.
- Store the detection pin and the automatic correction jig in the storage compartment.



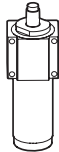
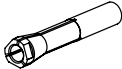


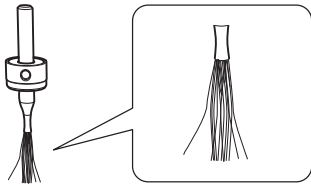
# Periodic Maintenance

## Situations Requiring Maintenance

When installing the machine	➡	P. 52 "Spindle Run-in (Warm-up)"
When replacing the spindle unit		P. 53 "Correcting the Milling Machine"
When the machine has not been used for a prolonged period	➡	P. 52 "Spindle Run-in (Warm-up)"
Before milling on days when the ambient temperature is low		
When moving the machine to a different installation site	➡	P. 53 "Correcting the Milling Machine"
When the milling position is misaligned		
When symptoms such as a hole in the Z direction occur		
Once a month	➡	P. 59 "Retightening the Collet"
When the working time of the spindle exceeds 200 hours		
When water or dust accumulates on the regulator	➡	P. 62 "Regulator Maintenance (Emptying the Drain)"
When it is difficult to remove the adapter from the clamp	➡	P. 48 "Cleaning after Milling Finishes"

## Replacing Consumable Parts

Contact your authorized DGSHAPE Corporation dealer or visit our website (<http://www.dgshape.com/>) to purchase items.

Part name	Replacement time/Guideline
 Spindle unit	<p><b>When the working time of the spindle exceeds 2,000 hours (with slight variation depending on the work situation).</b></p> <p>You can use VPanel to view the working time of the spindle.</p> <p>For information on how to perform replacement, refer to the replacement instruction manual included with the part.</p> <p>☞ P. 11 "Maintenance" Tab</p> <p>*The replacement spindle unit comes with a collet and belt.</p>
 Collet	<p><b>If the collet is deformed.</b></p> <p>If an overload error or other error occurs, the collet may be deformed.</p> <p>For information on how to perform replacement, refer to the replacement instruction manual included with the part.</p>
 Spindle belt	<p><b>If the spindle belt is worn.</b></p> <p>For information on how to perform replacement, refer to the replacement instruction manual included with the part.</p>
 Cleaning tool	<p><b>If the brush bristles have spread out.</b></p> <p>* The milling bur holder is not included with optional products.</p> <p>☞ P. 65 "Replacing the Cleaning Tool"</p> 

## Spindle Run-in (Warm-up)

Spindle run-in (warm-up) may be required to stabilize the rotation of the spindle.

### Situations Requiring This Work

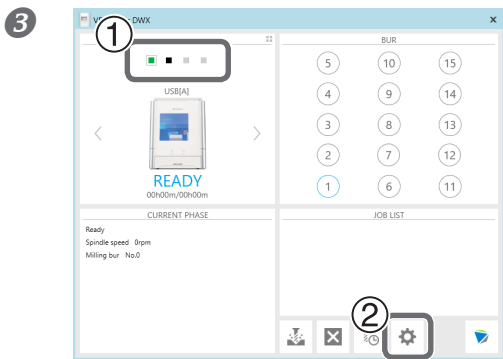
- When installing the machine
- When replacing the spindle unit
- When the machine has not been used for a prolonged period
- Before use on days when the ambient temperature is low

### Procedure


1 Close the front cover and turn on the power.

2 Show VPanel.

➤ P. 5 "Displaying or Exiting VPanel"

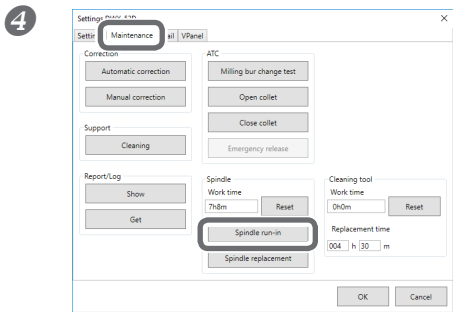


1 In the top window of VPanel, select the machine to operate.

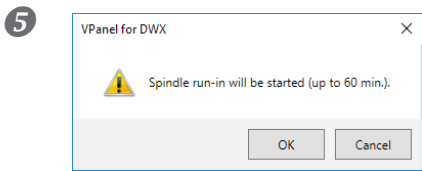
When multiple machines are connected, click  under MACHINE STATUS to switch between machines.

2 Click .

The [Settings] dialog box will appear.



Click the "Maintenance" tab, and then click [Spindle run-in].



Click [OK].

Run-in will begin.

When the operation complete message is displayed, the operation is complete.

# Correcting the Milling Machine

The accuracy of the milling machine may change if it is used for a long period of time or the surrounding environment changes. Performing automatic correction will correct the ATC magazine and rotary axis positions.

## Situations Requiring This Work

- When installing the machine
- When replacing the spindle unit
- When the milling position is misaligned
- When symptoms such as a level difference or a hole in the Z direction occur in the milling results

### Required Items

		
Detection pin	Automatic correction jig	Cloth for care

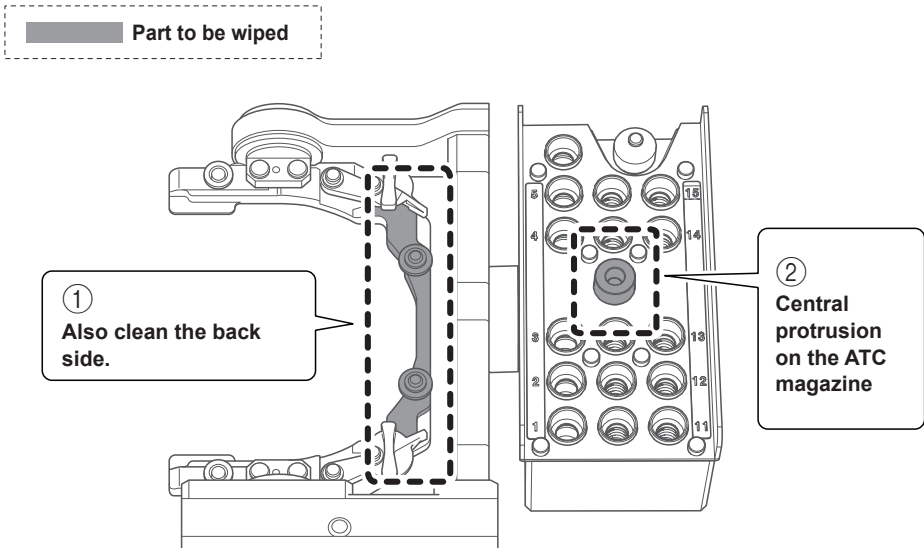
## 1. Install the detection pin.

### ① Clean off any milling waste around the clamp.

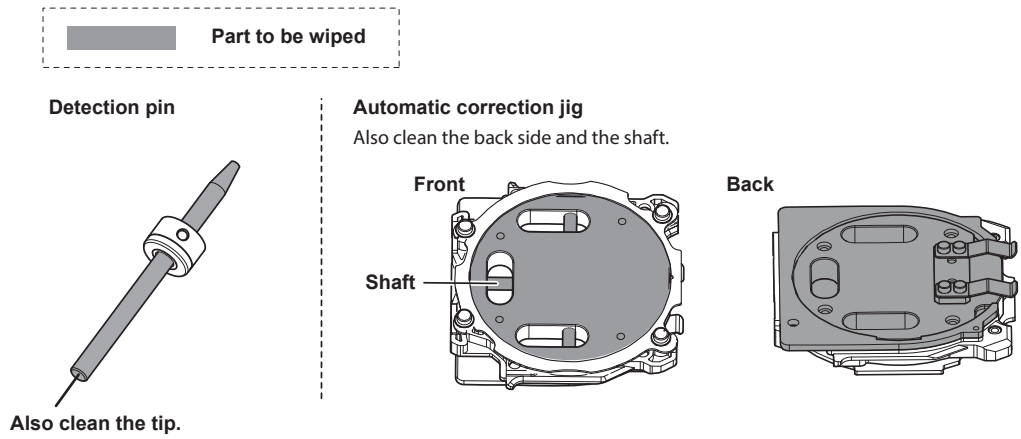
☞ P. 48 "Cleaning after Milling Finishes"

### ② Use the included cloth for care to clean the parts indicated with ① and ② in the following figure.

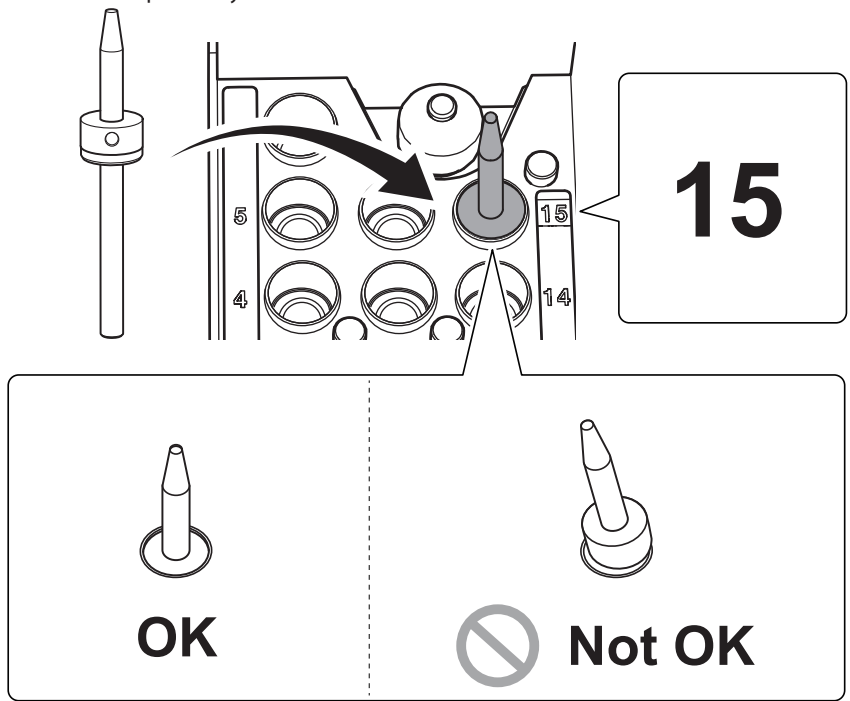
If any dirt is present in these locations, it may not be possible to perform the correction properly.



- 3 Use the included cloth for care to clean the automatic correction jig and the detection pin.**  
If any dirt is present in these locations, it may not be possible to perform the correction properly.

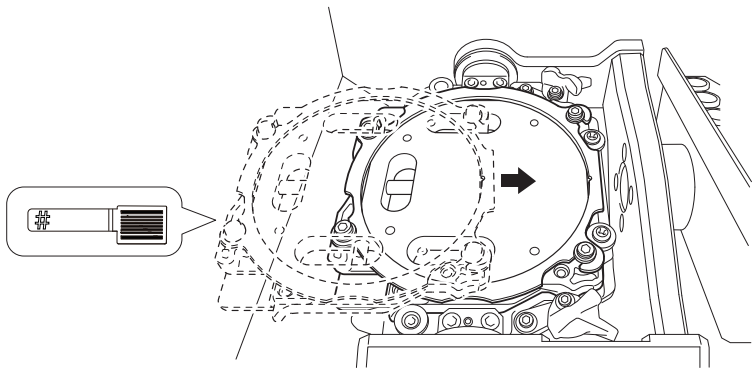


- 4 Load the detection pin in the ATC magazine's number 15 position.**  
Insert the detection pin firmly.



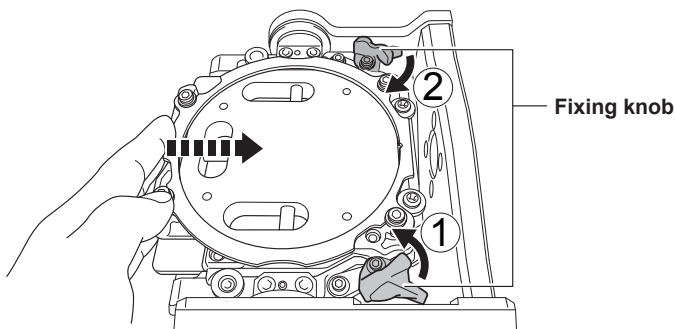
## 2. Attach the automatic correction jig.

- ① Orient the parts as shown in the figure, and then insert the automatic correction jig into the clamp.



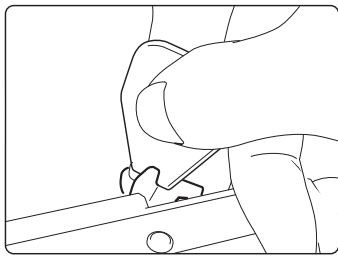
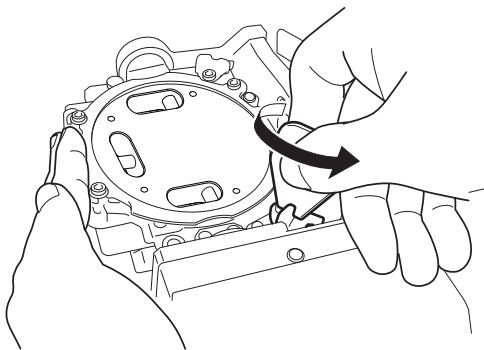
- ② Secure the automatic correction jig.

As shown in the figure, turn the fixing knobs (in two locations) in the directions of the arrows while pressing in on the automatic correction jig.

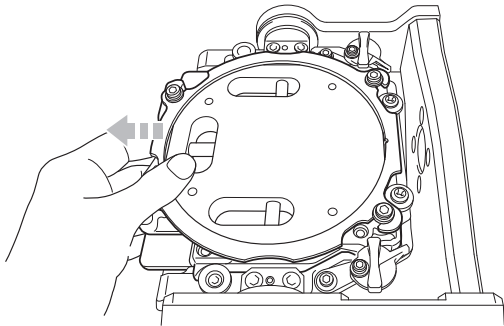


**Point**

If it is difficult to turn the knobs by hand, use the included wrench.



- 3 Lightly tug on the automatic correction jig to check that it does not come loose.

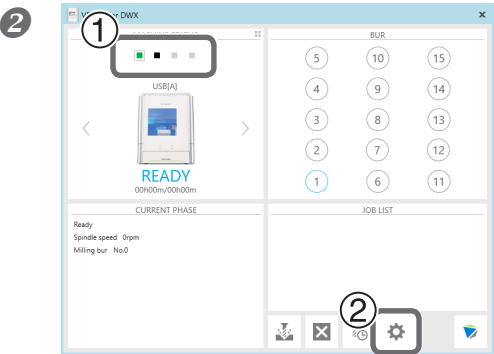


- 4 Close the front cover.


### 3. Perform automatic correction.

- 1 Show VPanel.

☞ P. 5 "Displaying or Exiting VPanel"

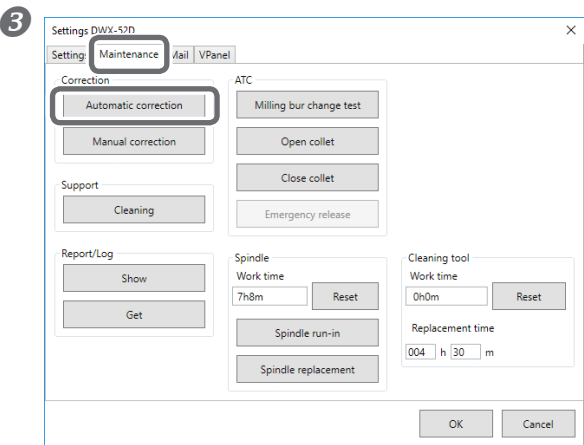


Open the [Settings] dialog box.

① In the top window of VPanel, select the machine to operate. When multiple machines are connected, click  under MACHINE STATUS to switch between machines.

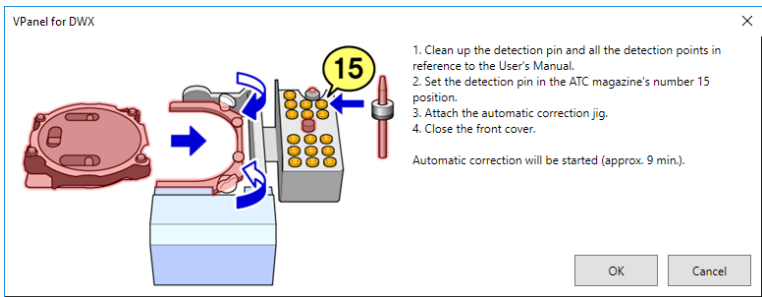
② Click .

The [Settings] dialog box will appear.

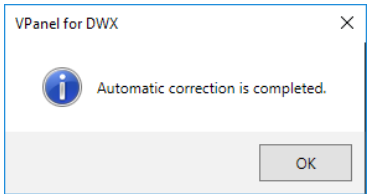


Click the [Maintenance] tab, and then click [Automatic correction].





- ① Make sure that the work displayed on the screen is complete.
- ② Click [OK].



Automatic correction starts.  
Automatic correction is complete once the screen in the figure is displayed.  
Click [OK].

4. Remove the detection pin and the automatic correction jig.

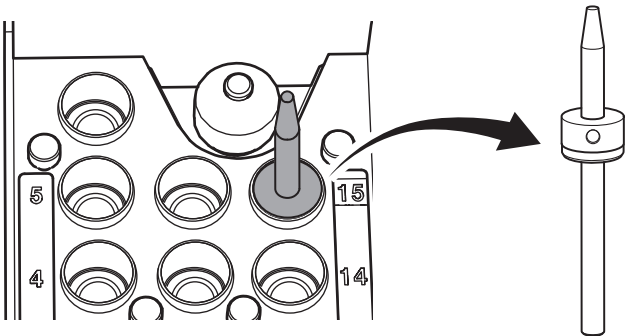
After removing the detection pin and the automatic correction jig, clean them, and then store them in the storage compartment.

☞ P. 49 "Care and Storage of Detection Pin and Automatic Correction Jig"

Detection pin

Procedure

Open the front cover and remove the detection pin.



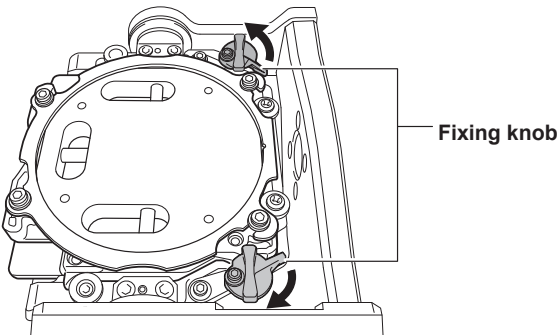
Automatic correction jig

CAUTION

Do not pull the adapter with excessive force when removing it.  
Doing so may result in injury arising from your hand or arm hitting something.

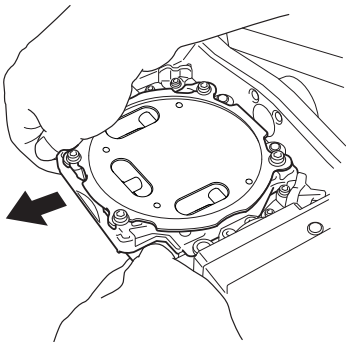
Procedure

- 1 Turn the fixing knobs (in two locations) in the directions of the arrows to release the locks.



- 2 Remove the automatic correction jig.

Hold the adapter with both hands and pull it out slowly.  
Exercise caution to avoid striking the inside of the machine with your hands or other body parts when pulling out this part.



# Retightening the Collet

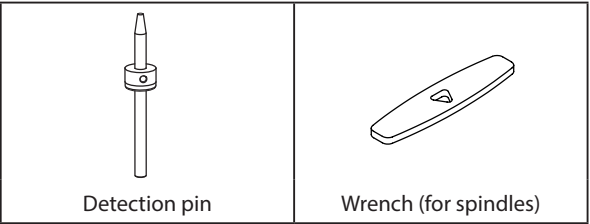
Continuous milling will cause the collet to become loose, making it easy for the milling bur to come off. Periodically retighten the collet.

## Recommended Interval for This Work

- Once a month, or when the total work time of the spindle exceeds 200 hours (with slight variation depending on the work situation).

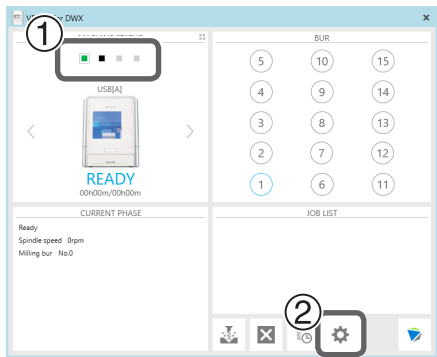
➤ P. 11 "Maintenance" Tab

## Required Items




## Procedure

1



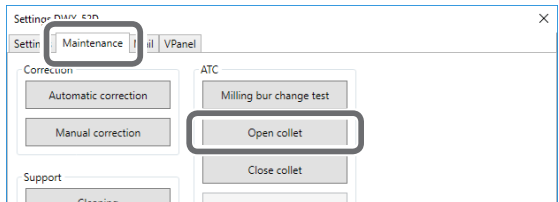
Open the [Settings] dialog box.

① In the top window of VPanel, select the machine to operate. When multiple machines are connected, click  under MACHINE STATUS to switch between machines.

② Click .

The [Settings] dialog box will appear.

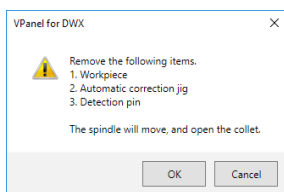
2



Click the "Maintenance" tab, and then click [Open collet].

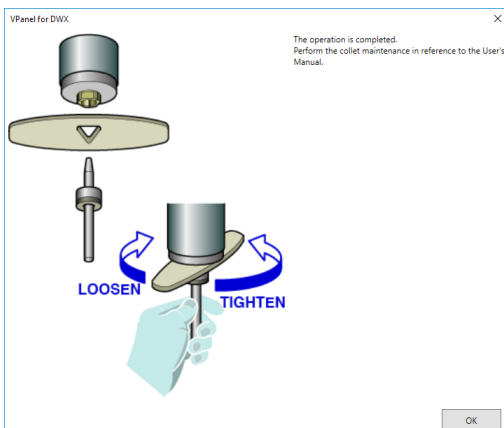
Open the collet.

3



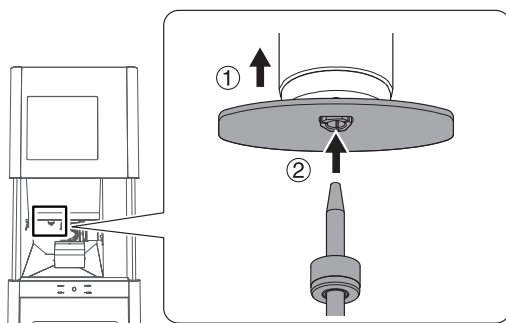
When the screen shown in the image on the left is displayed, click [OK].  
The spindle unit will move, which will open the collet.

4



When the screen shown in the image on the left is displayed, click [OK].

5



**Retighten the collet.**

① Fit the wrench onto the collet.

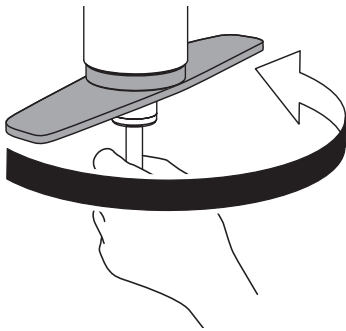
② Insert the detection pin all the way into the collet.

If the detection pin cannot be inserted, repeat the operations in steps ② to ④.

### CAUTION

Use the included wrench and keep the detection pin inserted.

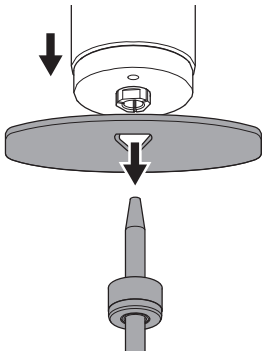
If the detection pin is not inserted, the collet may be deformed, resulting in lower milling accuracy.



③ Tighten the collet with the wrench while holding the detection pin.

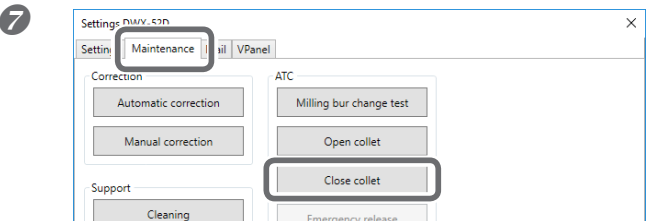
**MEMO**

Tightening is sufficient once the wrench and the tip of the spindle unit (the shaded portion in the figure on the left) begin to rotate together.



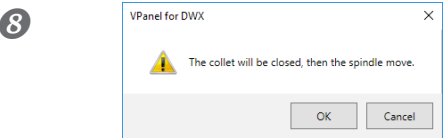
④ Remove the detection pin and the wrench.

⑥ Close the front cover.



Click the "Maintenance" tab, and then click [Close collet].

Close the collet.  
The window shown in figure appears.



Click [OK].

The procedure is complete if the spindle unit moves and "The operation is completed." is displayed.

## Regulator Maintenance (Emptying the Drain)

The regulator is equipped with a filter that becomes filled with drainage (moisture and dust) over time. Periodically empty the drain.

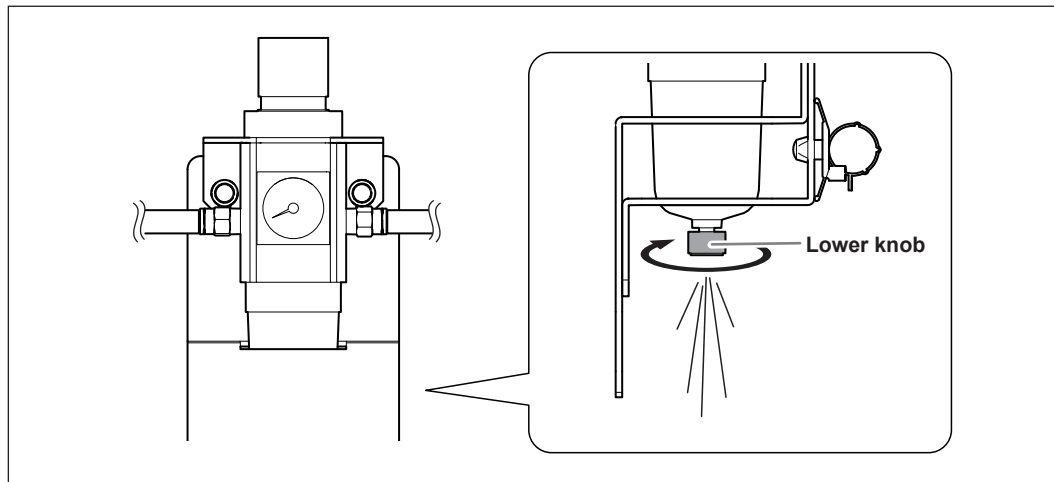
### Situations Requiring This Work

- When drainage builds up
- When the bowl becomes dirty

### Procedure

**1 Loosen the lower knob little by little.**

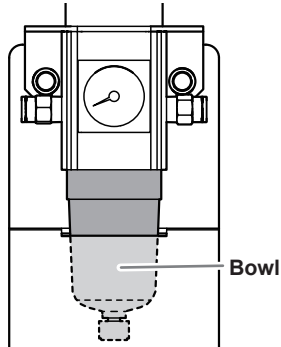
Material may spray out of the drain at this time. Use a cloth or the like to catch the spray and keep it from scattering.



**2 After the drain empties, retighten the lower knob.**

## Regulator Maintenance (Cleaning the Bowl)

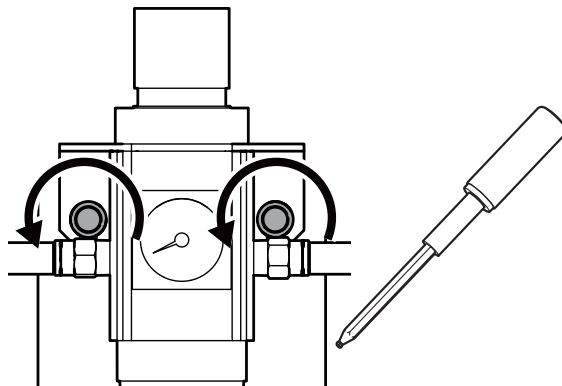
If the inside of the bowl becomes dirty, remove and wash the bowl.



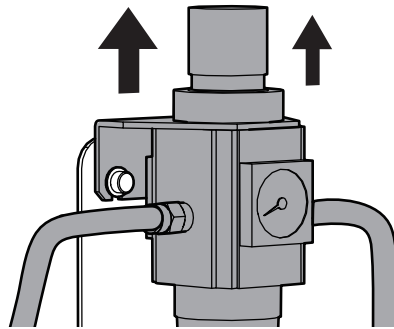
### Procedure

- ⚠ WARNING** Be sure to bleed off the air pressure before removing the regulator bowl.  
 Failure to do so may result in a rupture or components flying off.
- ⚠ WARNING** Before removing or attaching the regulator and before performing maintenance, make sure that the bowl is securely attached.  
 If the bowl is not properly attached, it may come flying off when compressed air is supplied.
- ⚠ WARNING** Clean the regulator bowl using a neutral detergent. Never use solvents such as gasoline, alcohol, or thinner.  
 Using solvents may degrade the bowl and may result in a rupture.

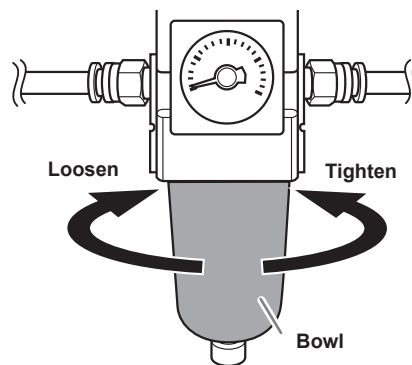
- 1 Stop the supply of compressed air.
- 2 Use a torque screwdriver to loosen the screws in the locations shown in the following figure by about 3 turns. (2 locations)



- 3** Remove the regulator.



- 4** Remove the bowl from the regulator.




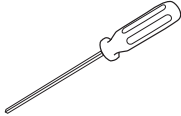


- 5** Wash the bowl using a neutral detergent.
- 6** After making sure that the bowl is completely dry, retighten the bowl.
- 7** Attach the regulator to the machine.



## Replacing the Cleaning Tool

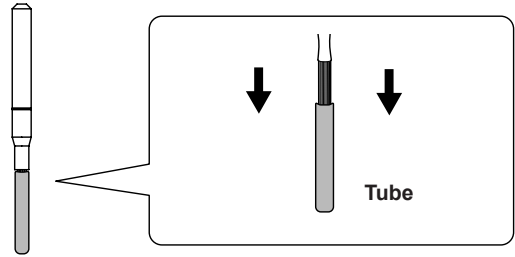
### Required Items

Optional item	Main unit accessories		
 Cleaning tool	 Milling bur holder	 Mounting screw	 Hexagonal screwdriver

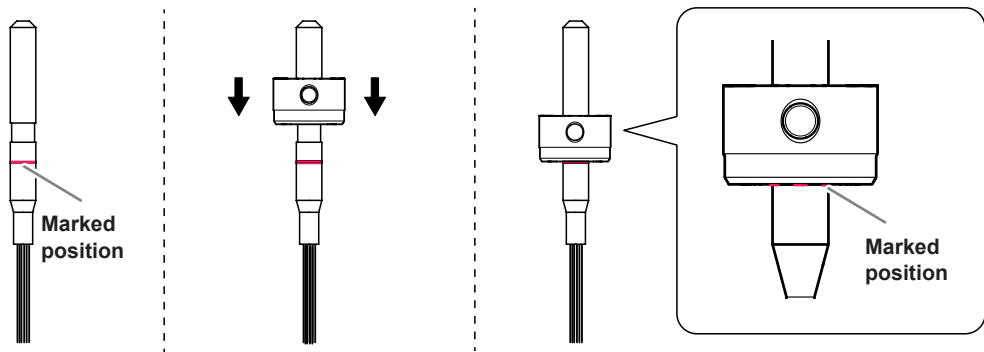
### Procedure

**1** Remove the cleaning tool tube.

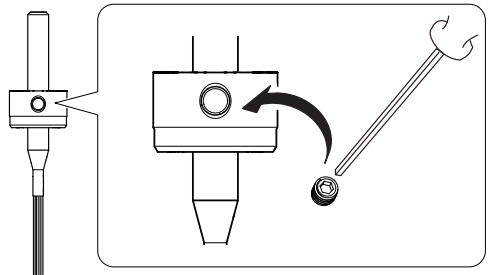
To prevent the bristles from being pulled off, grasp the cleaning tool tube gently and pull it down slowly.



**2** Attach the milling bur holder to the cleaning tool, aligning the milling bur holder with the marked position on the cleaning tool.



**3** Use the mounting screw to fix the milling bur holder in place.



# Chapter 4 Troubleshooting

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# Machine Trouble

## Initial Operations Are Not Performed or Fail

Is the front cover open?	→	Keep the front cover closed during startup. For safety, the initial operations are not performed if a cover is open when the machine starts.	—
Is the milling bur caught on anything?	→	The milling bur attached to the spindle unit may fail to perform the initial operations if it is caught on the work-piece or rotary axis unit. Try to detach the milling bur using the emergency release function in VPanel.	P.11
Is anything caught on the spindle unit or rotary axis unit?	→	Open the maintenance cover and make sure that no workpiece or milling waste is caught on these units.	—

## The Operation Button Does Not Respond

Is the front cover open?	→	This machine restricts some operations when the front cover is open. Close the cover.	—
Are you wearing gloves?	→	The operation button will not respond if you are wearing gloves. Operate the button with a bare hand.	—

## VPanel Does Not Recognize the Machine

Is the cable connected?	→	Make sure that the cables are connected. Refer to the "Setup Guide" ("Connecting the Cable") to perform the work.	—
Is the driver installed correctly?	→	If the connection to the computer is not made according to the procedure described, the driver will not be installed correctly. VPanel will not function normally if the driver is not configured correctly. Check again to ensure that the connection was made using the correct procedure.	P.73
Did you verify the connection procedure when connecting more than one machine?	→	There is a possibility that the connection procedure was performed incorrectly. Make sure that connections were performed correctly. Refer to the "Setup Guide" ("Connecting Multiple Units") to perform the work.	—
Was the machine ID changed?	→	If the machine's ID has been changed, restart VPanel.	P.5

No Data Is Being Output to the Machine, or the Machine Will Not Operate Even Though Data Is Being Output

Is the front cover open?	⇒	If the front cover is open, the machine will not start milling even if milling data is being received. Close all of the covers and press the operation button to start milling.	—
Does VPanel recognize the machine?	⇒	Verify that a message other than "OFFLINE" is shown in VPanel.	—
If multiple machines are connected, is the correct machine selected?	⇒	Select the machine to output milling data to on the VPanel screen.	—
Is operation paused?	⇒	Operation is paused if the PAUSE LED is lit. When the machine is paused, milling stops and some operations are restricted. Pressing the operation button of the machine will cancel the pausing of operations. Holding down the operation button will abort milling.	—
Is initialization or a data cancel in progress?	⇒	Milling data received during the initial operations or during a data cancel will be cancelled. Make sure to output milling data after confirming that the machine is in the standby status.	—
Is the milling data correct?	⇒	Check the milling data.	—
Has an error occurred?	⇒	The ERROR LED will flash if an error occurs. A description of the error is displayed in VPanel.	P.80

The Computer Shuts Down When Connecting Multiple Machines

Are machines with the same ID connected to the computer at the same time?	⇒	Connecting more than one machine with the same ID to a computer at the same time may cause the computer to shut down. If the computer shuts down, turn off the power of all connected machines, and then disconnect the USB cables from the computer. Restart the computer, and then start VPanel. If VPanel will not start, reinstall it. After that, configure the settings so that no machines are assigned the same ID. Refer to the "Setup Guide" ("Connecting Multiple Units") to perform the work.	—
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## The Spindle Does Not Rotate

Is the spindle belt damaged or disconnected?



Check inside the maintenance cover. If the spindle belt is damaged, replace it.

P.51

## The Ionizer Is Ineffective (Milling Waste Collects around the Milling Area)

Is the workpiece being milled a PMMA workpiece?



The ionizer (static electricity eliminator) is only effective with PMMA. It has no effect on zirconia and wax workpieces.

—

Is there milling waste around the ionizer?



If milling waste is found, clean the area with a dust collector. The ionizer's effectiveness will decrease if milling waste is present. Do not touch the inside of the ionizer.

P.48

Is the machine grounded?



Ground the unit with the ground wire. The ionizer will not function properly if the machine is not grounded.

—

## Compressed Air Does Not Come Out

Does the operation require compressed air?



Compressed air is only supplied during some operations, such as when the spindle is rotating or when replacing the milling bur.

—

Is the regulator properly connected and are the pressure settings correctly configured?



Check the connection. Check that the pressure has been set to 0.2 MPa. If the set pressure of the regulator is zero, compressed air will not be supplied.

P.23

Is the knob at the bottom of the regulator open?



The compressed air will escape if the knob at the bottom of the regulator is open.

P.62

## Automatic Correction Fails

Is the automatic correction jig, detection pin, or ATC magazine dirty?	→	Clean away any grime on the automatic correction jig, the detection pin, and the ATC magazine. These items being dirty due to a buildup of milling waste or the like may impede correct sensor operation, making detection impossible.	P.53
Is the automatic correction jig properly attached?	→	Verify that the automatic correction jig is properly attached.	P.52 P.54
Is the detection pin properly attached?	→	Verify that the detection pin is properly attached. Check the position of the milling bur holder on the detection pin. Refer to the "Setup Guide" ("Dimensional Drawings" (Detection Pin Dimensions)).	P.53

## The Milling Bur Management Information Was Lost

Was the machine name (printer name) changed?	→	Milling bur info is saved per machine name (printer name). Before changing the machine name (printer name), make sure to record the milling bur info separately. Milling bur info can be recovered by returning the machine name (printer name) to the original name.	—
--	---	---	---

## The Cleaning Tool Is Not Effective

Is the cleaning tool effective for the workpiece being milled?	→	The cleaning tool is effective for the following workpieces. Zirconia, composite resin, and CoCr sintered metal	P.38
Is the milling bur holder installed in the correct position?	→	The position in which to install the holder to the cleaning tool differs from the position in which to install the milling bur. Install the milling bur holder in the correct position.	P.38
Have the bristles of the cleaning tool spread out?	→	If the cleaning tool bristles spread out, the tool's effectiveness at removing milling waste will be reduced. If the bristles have spread out, replace the cleaning tool with a new one.	P.51
Is the detection pin properly attached?	→	The cleaning tool uses the length of the detection pin as a reference. Check the position of the milling bur holder on the detection pin. Refer to the "Setup Guide" ("Dimensional Drawings" (Detection Pin Dimensions)). If the milling bur holder is not installed in the correct position, install the milling bur holder in the correct position, and then perform the automatic correction.	Setup Guide

## The Adapter Rattles

Is the adapter properly attached?	→	Follow the instructions and attach the adapter again.	P.33
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# Milling Quality Problems

## The Milled Surface Is Not Attractive

Is the workpiece firmly secured in place?	→	Check the mounting condition of the workpiece. If the workpiece is not mounted on the machine correctly, the workpiece may come loose during milling and may become misaligned.	P.24
Is the milling bur worn?	→	If the same milling bur is used for milling for a long period of time, it will become worn and affect milling results. Try replacing the milling bur with a new one. The work time of the milling bur can also be managed in VPanel.	P.15
Are the milling conditions too strict?	→	Strict milling conditions may affect milling results. Review the CAM milling conditions.	—
Is the adapter properly attached?		Review the mounting condition of the adapter. If the adapter is not properly attached, it may come loose during milling and may become misaligned.	P.33

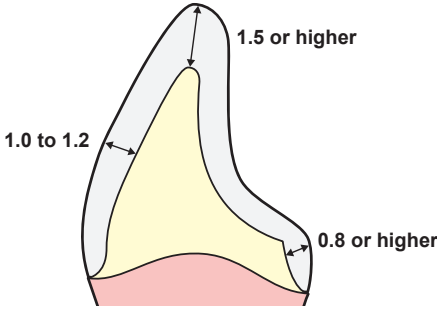
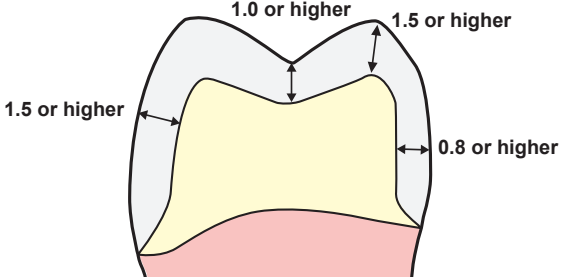
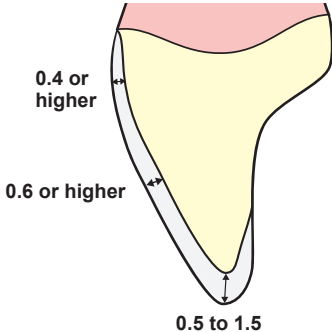
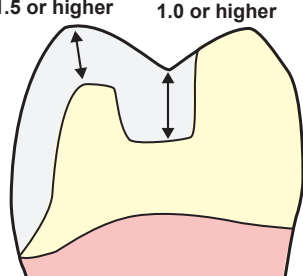
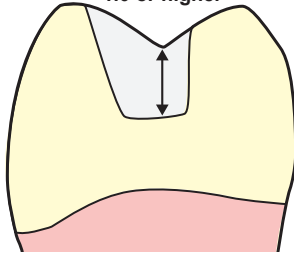
## There Is a Line of Level Difference in the Milling Results

Is the machine out of correction?	→	The origin point may become out of position due to prolonged use or relocating the machine, which can result in a line of level difference. Perform automatic correction. If the expected results cannot be obtained even after performing automatic correction, perform manual correction. With manual correction, changing the Y value in Origin point may improve the situation.	P.53
Are the CAM milling conditions correct?	→	Depending on the milling conditions, a line of level difference may occur. Review the CAM milling conditions.	—

## Chipping Occurs (Edges of Milling Products Become Chipped)

Is the installation base of the machine secure?	→	The vibration from milling can shake the installation base. Install the machine in a stable location.	—
Is the workpiece firmly secured in place?	→	Check the mounting condition of the workpiece. If the workpiece is not mounted on the machine correctly, the workpiece may come loose during milling and may become misaligned.	P.24
Is the milling bur worn?	→	If the same milling bur is used for milling for a long period of time, it will become worn and affect milling results. Try replacing the milling bur with a new one. The work time of the milling bur can also be managed in VPanel.	P.15
Are the milling conditions too strict?	→	Strict milling conditions may affect milling results. Review the CAM milling conditions.	—
Is the adapter properly attached?	→	Review the mounting condition of the adapter. If the adapter is not properly attached, it may come loose during milling and may become misaligned.	P.33
Is the thickness specified in the CAD data excessively thin?	→	If the specified thickness is excessively thin, chipping is likely to occur. Review the shape specified in the CAD data.	—

Recommended CAD data thickness values  
Unit: mm

Front tooth crown		Molar tooth crown	
			
Veneer	Onlay	Inlay	
			

A Hole Opens in the Milling Results

Do the milling bur diameter and stocker number match the CAM settings?	→	Check the CAM's milling bur settings.	—
Is the machine out of correction?	→	The origin point may become out of position due to prolonged use or relocating the machine, which can affect milling results. Perform automatic correction. If the expected results cannot be obtained even after performing automatic correction, perform manual correction. With manual correction, changing the Z value in the + direction in Origin point may improve the situation.	P.53
Are the milling conditions too strict?	→	Strict milling conditions may affect milling results. Review the CAM milling conditions.	—

The Dimensions of the Milling Results Do Not Match

Does the milling bur diameter match the CAM settings? Is the CAM shrinkage factor setting appropriate for the workpiece?	→	Check the CAM settings.	—
Do the settings of the sintering program match the workpiece?	→	Check the sintering program settings to see if they match the manufacturer's workpiece being used.	—



# Installation Problems

## Installing the Driver Separately

With this machine, you can also install the driver, software, and electronic-format manuals all at once. To install them all at once, see the "Setup Guide" ("Installing the Software").

### Procedure

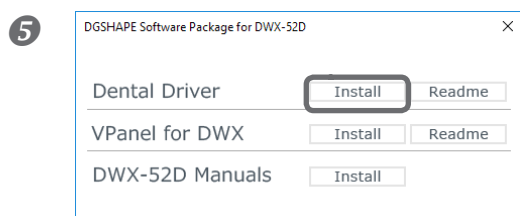
- 1 Before installation, confirm that the machine and the computer are not connected with the USB cable.
- 2 Log on to Windows as the computer's administrator (or as an "Administrators" account).
- 3 Insert the DGSHAPE Software Package CD into the computer's CD drive.  
When the automatic playback window appears, click [Run menu.exe]. If a [User Account Control] window appears, click [Allow] or [Yes], and then continue with the installation. The setup menu screen appears automatically.  
If the driver is already installed, uninstall it.

☞ P. 78 "Uninstalling the Driver"

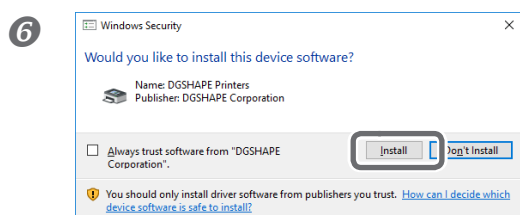
If the driver is not installed or if it has been uninstalled, go to step 4.



Click [Custom Install].

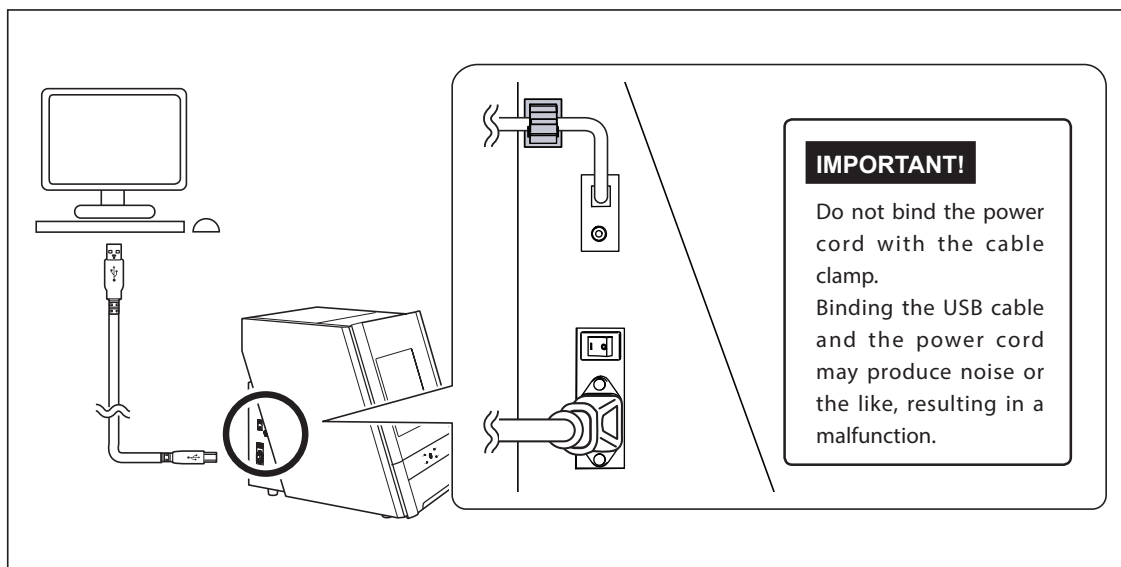


Click [Install] for the "Dental Driver."



When the window shown in the figure appears, click [Install].


- 7 Follow the on-screen instructions to proceed with the installation.
- 8 When the installation finishes, click **X** on the setup menu, and then remove the DGSHAPE Software Package CD.
- 9 Turn on the power to the machine.
- 10 **Connect the machine to the computer using the USB cable.**
  - If connecting more than one unit of this machine to a single computer, see the "Setup Guide" ("Connecting Multiple Units").
  - Use the included USB cable.
  - Do not use a USB hub. Connection may not be possible.
  - Secure the USB cable with a cable clamp.




The driver will be installed automatically.

## Installing the Software and the Electronic-format Manuals Separately

- 1 Log on to Windows as the computer's administrator (or as an "Administrators" account).
- 2 Insert the DGSHAPE Software Package CD into the computer's CD drive.  
When the automatic playback window appears, click [Run menu.exe]. If a [User Account Control] window appears, click [Allow] or [Yes], and then continue with the installation. The setup menu screen appears automatically.

- 3  Click [Custom Install].

- 4  Click [Install] for "VPanel for DWX" or "DWX52D-Manuals."

- 5 Follow the on-screen instructions to proceed with the installation.
- 6 When the installation finishes, click  on the setup menu.
- 7 Remove the DGSHAPE Software Package CD.

With this machine, you can also install the driver, software, and electronic-format manuals all at once. To install them all at once, see the "Setup Guide" ("Installing the Software").

## Driver Installation Is Impossible

If installation quits partway through or if VPanel does not recognize the machine, the driver may not have been installed correctly. In such cases, perform the following procedures. (If procedure A does not solve your problem, perform procedure B.)

---

### Windows 10 and 8.1 (Procedure A)

---

1. Connect the machine to the computer with the USB cable and turn on the machine.
  2. Click [Desktop].
  3. Right-click the [Start] button, and then click [Control Panel].
  4. Click [View devices and printers] or [Devices and Printers].
  5. Check that the model you are using is displayed under "Unspecified."
  6. Right-click the icon of the model you are using, and then click [Remove device].
  7. When the message "Are you sure you want to remove this device?" is displayed, click [Yes].
  8. Check that the icon for the model you are using is no longer displayed under "Unspecified."
  9. Temporarily disconnect the USB cable connecting the machine to the computer, and then reconnect these devices. If the printer icon for the machine you are using is displayed under "Printers," the driver has been successfully installed.
- If this does not solve the problem, perform the procedure under "Windows 10 and 8.1 (Procedure B)."

---

### Windows 10 and 8.1 (Procedure B)

---

1. Connect the machine to the computer with the USB cable and turn on the machine.
2. If the [Found New Hardware] message appears, click [Close] to close it. Disconnect any USB cables for printers or other such equipment other than this machine.
3. Click [Desktop].
4. Right-click the [Start] button, and then click [Device Manager].
5. If the [User Account Control] window appears, click [Continue]. [Device Manager] appears.
6. Click [Show hidden devices] from the [View] menu.
7. In the list, find [Printers] or [Other devices], and then double-click it. Under the selected item, click the name of the model you are using or [Unknown device].
8. Click [Uninstall] from the [Action] menu.
9. In the "Confirm Device Uninstall" window, click [OK]. Close [Device Manager].
10. Detach the USB cable from the computer, and then restart Windows.
11. Uninstall the driver. Carry out the steps from step 3 on P.78 "Uninstalling the Driver (Windows 10, 8.1)" to uninstall the driver.
12. Reinstall the driver again according to the procedure in the "Setup Guide" ("Installing the Software") or P.73 "Installing the Driver Separately."

---

### Windows 7 (Procedure A)

---

1. Connect the machine to the computer with the USB cable and turn on the machine.
2. From the [Start] menu, click [Devices and Printers].
3. Check that the model you are using is displayed under "Unspecified."
4. Right-click the icon of the model you are using, and then click [Troubleshoot].
5. When a screen is displayed with the message "Install a driver for this device," click [Apply this fix].
6. If a message is displayed asking you to "Set as default printer," click [Skip this fix].

7. When the message "Troubleshooting has completed" is displayed, click [Close the troubleshooter].

If the printer icon for the machine you are using is displayed under "Printers," the driver has been successfully installed.

If this does not solve the problem, perform the procedure under "Windows 7 (Procedure B)."

---

**Windows 7 (Procedure B)**

---

1. If the [Found New Hardware] message appears, click [Close] to close it.
2. From the [Start] menu, right-click [Computer]. Click [Properties].
3. Click [Device Manager]. The [User Account Control] window appears. Click [Continue]. [Device Manager] appears.
4. Click [Show hidden devices] from the [View] menu.
5. In the list, find [Other devices], and then double-click it. Under the selected item, click the name of the model you are using or [Unknown device].
6. Click [Uninstall] from the [Action] menu.
7. In the "Confirm Device Uninstall" window, select [Delete the driver software for this device.], and then click [OK]. Close [Device Manager].
8. Detach the USB cable from the computer, and then restart Windows.
9. Uninstall the driver. Carry out the steps from step 3 on P.78 "Uninstalling the Driver (Windows 7)" to uninstall the driver.
10. Reinstall the driver again according to the procedure in the "Setup Guide" ("Installing the Software") or P.73 "Installing the Driver Separately."

### Uninstalling the Driver

When uninstalling the driver, perform the following procedure.

---

#### Windows 10 and 8.1

---

\* If you uninstall the driver without following the procedure given below, you may not be able to reinstall the driver.

1. Turn off the machine and remove the cable connecting the machine to the computer.
2. Log on to Windows as the computer's administrator.
3. Click [Desktop].
4. Right-click the [Start] button, and then click [Control Panel].
5. Click [Uninstall a program] (or [Programs and Features]).
6. Select the driver of the machine to remove by clicking it, and then click [Uninstall].

If the [User Account Control] window appears, click [Allow].

7. The removal confirmation message will appear. Click [Yes].
8. Click [Start], and then click [Desktop].
9. Open Explorer, and then open the drive and folder containing the driver. (\*)
10. Double-click "SETUP64.EXE" (64-bit version) or "SETUP.EXE" (32-bit version).
11. If the [User Account Control] window appears, click [Allow]. The setup program for the driver starts.
12. Click [Uninstall]. Select the machine to remove, and then click [Start].
13. If it is necessary to restart your computer, a window prompting you to restart it will appear. Click [Yes].
14. After the computer has restarted, open Control Panel again, and then click [View devices and printers] or [Devices and Printers].
15. If you can see the icon of the machine to remove, right-click it and click [Remove device].

(\*) When using the CD-ROM, specify the folder as shown below. (This is assuming your CD-ROM drive is the D drive.)

D: \Drivers\WINX64 (64-bit versions)

D: \Drivers\WINX86 (32-bit versions)

If you're not using the DGSHAPE Software Package CD, go to the DGSHAPE Corporation website (<http://www.dgshape.com/>) and download the driver for the machine you want to remove, and then specify the folder where you want to extract the downloaded file.

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#### Windows 7

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\* If you uninstall the driver without following the procedure given below, you may not be able to reinstall the driver.

1. Before you start uninstalling the driver, unplug the USB cables from your computer.
2. Log on to Windows as the computer's administrator.
3. From the [Start] menu, click [Control Panel]. Click [Uninstall a program] (or [Programs and Features]).
4. Select the driver of the machine to remove by clicking it, and then click [Uninstall].
5. The removal confirmation message will appear. Click [Yes].
6. From the [Start] menu, select [All Programs], then [Accessories], then [Run], and then click [Browse].
7. Select the name of the drive or folder where the driver is located. (\*)
8. Select "SETUP64.EXE" (64-bit version) or "SETUP.EXE" (32-bit version) and click [Open], and then click [OK].
9. The [User Account Control] window will appear. Click [Allow].
10. The setup program for the driver starts.

11. Click [Uninstall] to select this operation. Select the machine to remove and click [Start].
12. If it is necessary to restart your computer, a window prompting you to restart it will appear. Click [Yes].
13. The uninstallation will be finished after the computer restarts.

(\*)

When using the CD-ROM, specify the folder as shown below. (This is assuming your CD-ROM drive is the D drive.)

D: \Drivers\WINX64 (64-bit versions)

D: \Drivers\WINX86 (32-bit versions)

If you're not using the DGSHAPE Software Package CD, go to the DGSHAPE Corporation website (<http://www.dgshape.com/>) and download the driver for the machine you want to remove, and then specify the folder where you want to extract the downloaded file.


## Uninstalling VPanel

When uninstalling VPanel, perform the following procedure.

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### Windows 10 and 8.1


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1. Exit VPanel. (Right-click  in the task tray and select "Exit.")
2. Right-click the [Start] button, and then click [Control Panel]. Click [Uninstall a program] (or [Programs and Features]).
3. Select "VPanel for DWX" and click [Uninstall].
4. Follow the on-screen instructions to uninstall the program.

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### Windows 7

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1. Exit VPanel. (Right-click  in the task tray and select "Exit.")
2. From the [Start] menu, click [Control Panel], and then click [Uninstall a program] (or [Programs and Features]).
3. Select "VPanel for DWX" and click [Uninstall].
4. Follow the on-screen instructions to uninstall the program.

# Responding to Error Messages

This section describes the error messages that may appear in VPanel and how to take action to remedy the problem. If the action described here does not correct the problem or if an error message not described here appears, contact your authorized DGSHAPE Corporation dealer.

Error number	Message	Situation/Error Cause	Action
1000-****	<b>The % limit switch is not found.</b> (% may be "X," "Y," "Z," "A," or "B.")	The operation may be inhibited by milling waste or an obstruction.	<ol style="list-style-type: none"> <li>1. Turn off the power.</li> <li>2. Remove any objects blocking operation of the machine and any accumulated milling waste.</li> <li>3. Turn on the power, and then restart operation.</li> </ol>
1006-****	<b>The % axis position has been shifted.</b> (% may be "X," "Y," "Z," "A," or "B.")	The motor position may have been lost.	<ol style="list-style-type: none"> <li>1. Remove any objects blocking operation of the machine and any accumulated milling waste.</li> <li>2. Press and hold the operation button on the built-in panel. This will clear the error.</li> </ol>
		The milling conditions may be excessively strict.	<ol style="list-style-type: none"> <li>1. Press and hold the operation button on the built-in panel. This will clear the error.</li> <li>2. Review the CAM settings and the shape specified in the CAD data.</li> </ol>
1017-0000	<b>The front cover was opened.</b>	The front cover was opened during spindle rotation. (For safety, the machine comes to an emergency stop if the front cover is opened while the spindle is rotating.)	<p><b>To continue milling</b> Press the operation button on the built-in panel to resume milling.</p> <p><b>To abort milling</b> Press and hold the built-in panel's operation button.</p> <p>Do not open the front cover while the spindle is rotating. Doing so may affect the milling results.</p>
101C-0000	<b>The milling bur sensor was not found.</b>	The operation may be inhibited by milling waste or an obstruction.	<ol style="list-style-type: none"> <li>1. Turn off the power.</li> <li>2. Remove any objects blocking operation of the machine and any accumulated milling waste.</li> <li>3. Turn on the power, and then restart operation.</li> </ol>
101D-****	<b>The % milling bur cannot be released.</b> (% may be "1" to "15.")	The returning of the milling bur failed. The inside of the collet or the ATC magazine might be dirty.	<ol style="list-style-type: none"> <li>1. Press and hold the operation button on the built-in panel. This will clear the error.</li> <li>2. Clicking "Open collet" in VPanel will open the collet. Remove the milling bur. ☞ P. 11 "Maintenance" Tab</li> <li>3. Clean the ATC magazine. ☞ P. 48 "Cleaning after Milling Finishes"</li> <li>4. Retighten the collet. ☞ P. 59 "Retightening the Collet"</li> </ol> <p>If the error occurs again even after you perform the above operations, the collet may be deformed. In this case, replace the collet.</p>
		The collet and milling bur are affixed together and cannot be separated. The inside of the collet might be dirty.	
101D-0010	<b>The cleaning tool cannot be released.</b>	The operation to return the cleaning tool failed. The inside of the collet or the ATC magazine might be dirty.	<ol style="list-style-type: none"> <li>1. Press and hold the operation button on the built-in panel.</li> <li>2. Perform "Open collet" in VPanel.</li> <li>3. Remove the cleaning tool.</li> <li>4. Clean the ATC magazine.</li> </ol>



Error number	Message	Situation/Error Cause	Action
101E-****	<b>The % milling bur might be broken.</b> (% may be "1" to "15.")	The milling bur might be broken.	1. Press and hold the operation button on the built-in panel to clear the error. 2. If the milling bur is broken, replace it with a new one. 3. If the position of the milling bur holder is not appropriate, correct the position. ☞ P. 36 "STEP 3: Loading the Milling Bur"
		The milling bur holder might be out of position.	
		The milling conditions may be excessively strict.	1. Press and hold the operation button on the built-in panel. This will clear the error. 2. Review the CAM settings and the shape specified in the CAD data.
		The collet may have worn out.	If the error occurs again even after you perform the above operations, the collet may have worn out, leading to a decrease in its retention capabilities. Replace the collet with a new one.
101F-****	<b>The % milling bur chucking has slipped out.</b> (% may be "1" to "15.")	The collet may have come loose.	1. Press and hold the operation button on the built-in panel to clear the error. 2. Retighten the collet. ☞ P. 59 "Retightening the Collet"
		The milling conditions may be excessively strict.	1. Press and hold the operation button on the built-in panel. This will clear the error. 2. Review the CAM settings and the shape specified in the CAD data.
		The collet may have worn out.	If the error occurs again even after you perform the above operations, the collet may have worn out, leading to a decrease in its retention capabilities. Replace the collet with a new one.
1020-**** 1021-****	<b>The % milling bur is too long.</b> <b>The % milling bur is too short.</b> (% may be "1" to "15.")	There is a possibility that the position of the milling bur holder is not correct.	Replace the milling bur with one of the appropriate length (40 to 55 mm). Also check the position of the milling bur holder. ☞ P. 36 "STEP 3: Loading the Milling Bur"
1022-****	<b>The % milling bur was not found.</b> (% may be "1" to "15.")	The milling bur has not been set or it may have been mounted on an incorrect stocker number.	1. Set the milling bur in the correct position.  <b>If the error occurred during milling</b> Close the front cover, and press the built-in panel's operation button. Milling will resume.
		There is a possibility that the ATC magazine is out of position.	Perform automatic correction. ☞ P. 53 "Correcting the Milling Machine"
		The collet may have worn out.	Replace the collet.  If the error occurs again even after you perform the above operations, replace the spindle unit with a new one.

Error number	Message	Situation/Error Cause	Action
1022-0010	The cleaning tool was not found.	The cleaning tool has not been set or it may have been set on an incorrect stocker number.	Set the cleaning tool in the correct position.  <b>If the error occurred during milling</b> Press the operation button on the built-in panel.  <b>If the error occurred while the machine was on standby</b> Press and hold the operation button on the built-in panel.
1023-0000	Milling data error. The number of parameters is incorrect.	There may be a problem with the milling data received from the computer.  <When using Intelligent Tool Control> When using CAM to select the stocker number, the stocker number set as the second or third milling bur in Intelligent Tool Control has been selected.	1. Press and hold the operation button on the built-in panel. This will clear the error. 2. Check the milling data.  If there are no problems with the milling data, restart the computer, and then perform milling again.  <When using Intelligent Tool Control> When using CAM to select the stocker number, do not select the stocker number set as the second or third milling bur in Intelligent Tool Control. P. 45 "Automatically Switching Out the Worn Milling Bur (Intelligent Tool Control)"
1024-0000	Milling data error. The parameter is out of range.		
1025-0000	Milling data error. A wrong command is detected.		
1026-0000	Milling data error. The address is not defined.		
1027-0000	Milling data error. The parameter is not defined.		
1028-0000	Milling data error. The operation cannot be executed.		
1029-0000	The spindle experienced an overload.	The spindle stopped under a large cutting load or due to a similar cause. The following are likely reasons. • The milling bur is worn. • A workpiece that cannot be cut by the machine is being used. • The cutting conditions are too strict.	1. Turn off the power. 2. Check the milling bur, the workpiece, and the CAM settings as well as the shape specified in the milling data. 3. Allow the machine to rest for some time before turning the power on because the motor may have overheated.
102A-0000	The spindle experienced overcurrent.		
102B-0000	The spindle motor temperature is too high.		
102D-0000	The spindle can not be turned.	The cable may be broken or the spindle unit may be defective.	Turn off the power and contact your authorized DGSHAPE Corporation dealer.
1030-0000	The dust collector is not working.	Make sure the dust collector is connected correctly and the power is on.	Turn the dust collector on, and then check the dust collector settings and the filter.

Error number	Message	Situation/Error Cause	Action
103B-0000	<b>The automatic correction is not yet finished.</b>	Automatic correction may not have been performed.	<ol style="list-style-type: none"> <li>1. Press and hold the operation button on the built-in panel. This will clear the error.</li> <li>2. Perform automatic correction.</li> </ol> ☞ P. 53 "Correcting the Milling Machine"
		Automatic correction may have been cancelled before it could finish.	
		Automatic correction may not have been performed after updating the firmware to a version that required automatic correction to be performed again.	
		The versions of VPanel and the machine's firmware may not match.	Download the latest versions of VPanel and the machine's firmware from the DGSHAPE Corporation website ( <a href="http://www.dgshape.com/">http://www.dgshape.com/</a> ), and then install these versions.
103D-0000	<b>Milling data error. The milling bur cannot reach the milling position.</b>	If the milling bur is too short, or if the angle of the A axis and B axis are too large, the milling bur may not reach the milling position in the Z direction.	<ol style="list-style-type: none"> <li>1. Press and hold the operation button on the built-in panel. This will clear the error.</li> <li>2. Review the milling bur length and the position of the milling bur holder.</li> </ol> ☞ P. 36 "STEP 3: Loading the Milling Bur" <ol style="list-style-type: none"> <li>3. Review the CAM settings and decrease the angles of the A axis and the B axis.</li> </ol>

