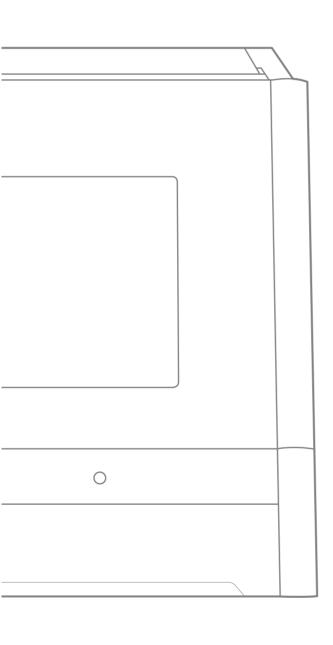


DWX-52D

User's Manual



- 1 Operation Screen
- 2 Milling
- 3 Maintenance
- 4 Troubleshooting

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Thank you very much for purchasing this product.

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Chapter 1 Operation Screen

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Displaying or Exiting VPanel

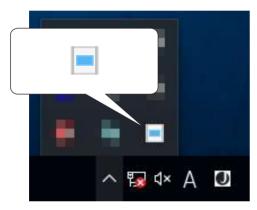
What Is VPanel?



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 11

Click [Start] - [All apps]. Then, from the [All apps] window, click [VPanel for DWX].

Windows 10

Click [Start] - [All apps] (or [All Programs]) - [VPanel for DWX] - [VPanel for DWX].

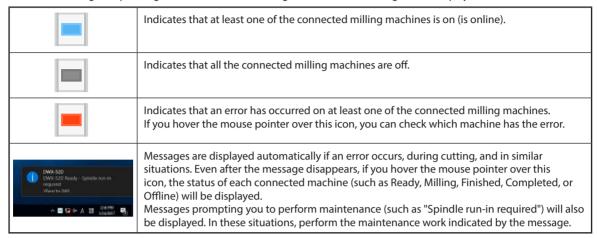
VPanel serves as resident software.

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.



Exiting VPanel

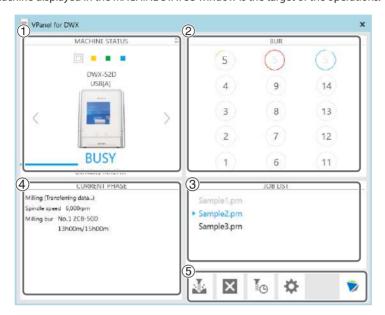


Right-click in the task tray and click [Exit].

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	Expla	nation		
				MACHINE STATUS A B DWX-52D USB[A] B READY O0h00m/00h00m	
		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 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.			
			■ (READY)	Milling data can be received.	
		A	□(BUSY)	Operation is in progress.	
			■ (ERROR)	An error has occurred.	
			- (PAUSE)	Operation is paused.	
	MACHINE		COVER)	The front cover is open.	
1	STATUS		(FINISH)	Milling is complete.	
			(OFFLINE)	No milling machines are connected.	
			■ (OFFLINE)	The power of the milling machine is off.	
		B		connected multiple machines, you can switch to a different rate by clicking its icon.	
	©	time, and the es	chine's operation status. A progress bar, the elapsed milling timated milling time are all displayed. 04h40m/14h07m d milling time ted milling time		
		0	list. You can also	olay the operating status of all the connected machines in a p select the machine to operate by clicking it in the displayed the previous display, click MACHINE STATUS MACHINE STATUS DOWN-520 USB(4) OON-ON-ON-ON-ON-ON-ON-ON-ON-ON-ON-ON-ON-	

No.	Display	Explanatio	n		
		switching mouse po replaceme by the len the end of	the current milli inter over the dis ent time of the m gth of the arc tha	unction (Intelligent Tool Cor ng bur with the set milling b splayed number to display th illing bur. The tool's remaini at surrounds the number. Wi ne arc color changes to yello anges to red.	our. Also, hover the ne name, work time, and ng service life is indicated nen the tool approaches
		Example	s than 75%	Example Usage: 75% or more (yellow graph)	Example Usage: 100% or more (red graph)
2	BUR	(5	5	5
				It is almost time to replace the milling bur.	It is past time to replace the milling bur.
		"Milling b	ur management"	dialog box	
		Milling bur manag	gement DWX-52D		×
		5	New bur 01<1>		- Constitution of the Cons
		l	_	Tool Control (ITC) Function Setti Replacement Time"	ngs"
3	JOB LIST	Displays th	ne data being mil	lled, the milling data in stand	by, and the milling progress.
1 (4) 1	CURRENT PHASE	Displays tl	A Milli	tus, spindle rotating speed, r ng (Transferring data) dle speed 6,000rpm ng bur No.1 ZCB-50D 13h00m/15h0	
	111702	A	Displays the st	atus of the connected mach	ine.
		B	Displays the sp	oindle rotating speed of the	connected machine.
		©	For example, "	ume and work situation of the 13h00m/15h00m" indicates 20m" is the replacement time	
	· (j.		Outputs the milling data. P. 41 "STEP 6: Outputting Milling Data and Starting Milling"		
	X	Cancels output of milling data and other functions.			
5	I _O	Allows for registration and selection of milling burs. P. 15 ""Milling bur management" Dialog Box"			
	₩	Display the settings window. P. 10 ""Settings" Tab" P. 11 ""Maintenance" Tab" P. 12 ""Mail" Tab" P. 13 ""VPanel" Tab"			
	7	Click this to	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.



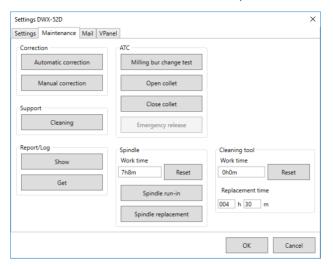
Display	Explanation
NC code with decimal point	Select how to interpret numbers in NC codes. With "Conventional," the unit is interpreted as millimeter (or inch) when there is a decimal point, and as 1/1000 millimeter (or 1/10000 inch) when there is no decimal point. With "Calculator," the unit is always 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. Initial setting: Conventional
Machine ID	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. Initial setting: A "Setup Guide" ("Connecting Multiple Units") Important To change an ID, be sure to follow the procedure explained in the "Setup Guide."
Version	VPanel: VPanel version Firmware: Connected machine's firmware version When more than one machine is connected, information for the machine selected in the top window is displayed.
Override	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. 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. Milling speed 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. Spindle speed 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. The override will return to 100% when the milling machine is turned OFF. 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. Setting an override does not let you perform operations beyond the machine's maximum or minimum speeds (rotation speeds).



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

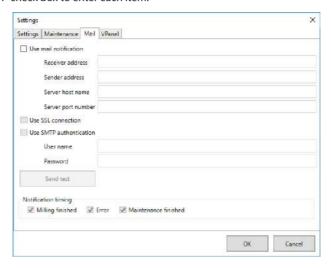
On this tab, you can perform operations related to maintenance, including automatic correction of the milling machine and system reporting. When more than one machine is connected, the machine selected in the top window becomes the target for the operations.



Display	Explanation	
Correction	Automatic correction/ Manual correction	Correct the ATC magazine position or the rotary axis position. Normally use [Automatic correction]. P. 56 "Correcting the Milling Machine" P. 14 ""Manual correction" Dialog Box"
Support	Cleaning	Click this button to open the "Cleaning" dialog box. P. 18 ""Cleaning" Dialog Box"
ATC	Milling bur change test Open collet/Close collet	Perform tests, maintenance, and other tasks related to operation with the ATC magazine. P. 52 "Periodic Maintenance" P. 51 "Care and Storage of Detection Pin and Automatic Correction Jig"
	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.
Spindle	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	
	Spindle replacement	Click this button to open the "Spindle replacement" dialog box. P. 53 "Replacing Consumable Parts"
Report	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.
Cleaning tool	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.



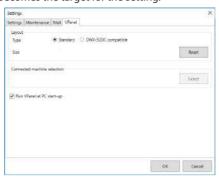
Display	Explanation
Receiver address	Enter the receiver's email address. You can enter multiple addresses by separating them with commas.
Sender address	Enter the sender's email address. Enter the email address being used on the computer on which VPanel is installed.
Server host name	Enter the name of the outgoing mail server (SMTP server name) for the email address entered for the sender's address.
Server port number	Enter the port number of the outgoing mail server for the email address entered for the sender's address.
Use SSL connection	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.
Use SMTP authentication User name / Password	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.
Send test	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. Subject: <machine name=""> Body: Test 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.</machine>
Notification timing	Notification emails will be sent for the items whose check boxes are selected.

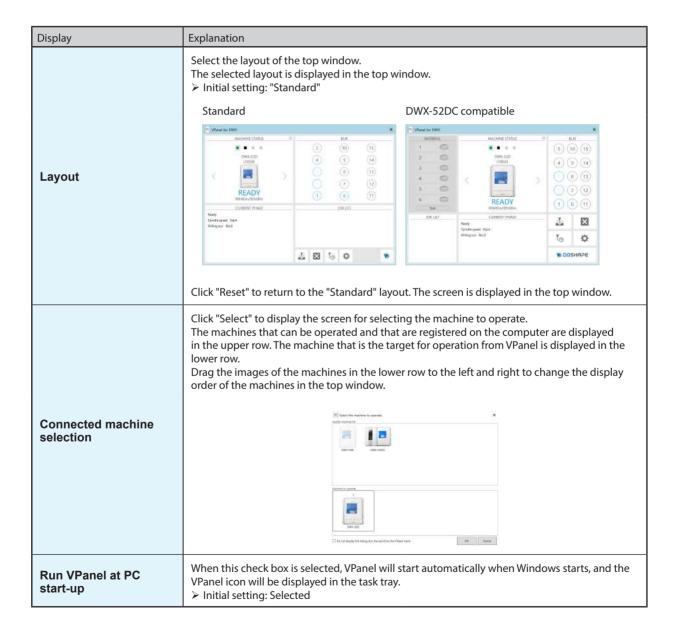
Important

- * 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.

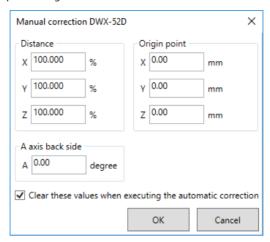




"Manual correction" Dialog Box

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.

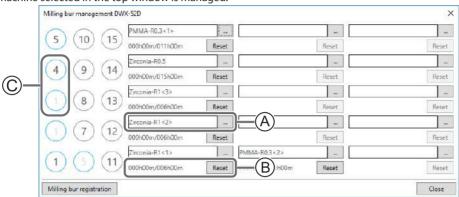
* Perform automatic correction before performing this correction.

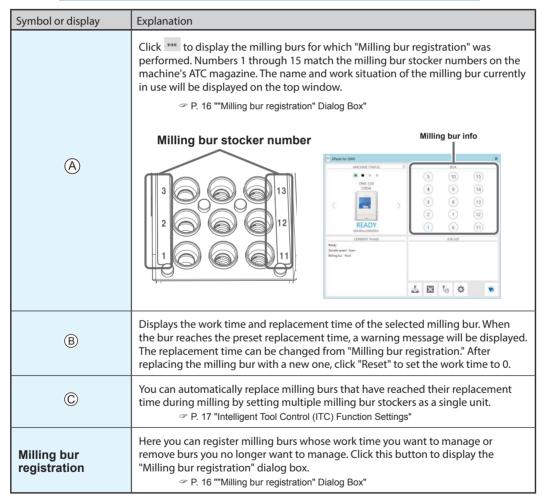


Display	Explanation
Distance	Correct moving distances in the X, Y, and Z directions. Set the correction value while considering the initial moving distance as 100.000%. > Initial setting: 100.000%
A axis back side	Correct the angle when the A axis is rotated 180 degrees. Set the correction value while 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

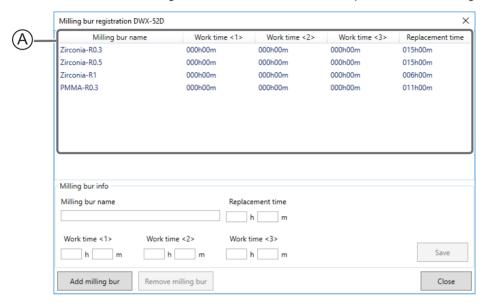
By selecting a milling bur to be used, the work time of the selected milling bur will be recorded automatically. In addition, when the bur reaches the preset replacement time, a warning message will be displayed. When more than one machine is connected, the machine selected in the top window is managed.





"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.



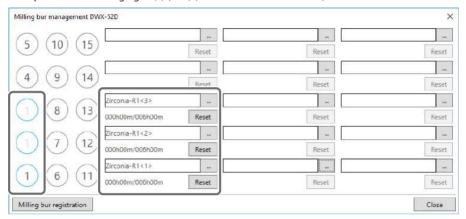
Display	planation	
A	Displays the names, work times, and replacement times of the registered milling burs. If you are using the Intelligent Tool Control function, the work time for the milling bur set as the second milling bur is displayed under Work time <2> and the work time for the milling bur set as the third milling bur is displayed under Work time <3>. P. 17 "Intelligent Tool Control (ITC) Function Settings"	
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.	
	Saves the edited content (the	existing content is overwritten).
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.	

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.

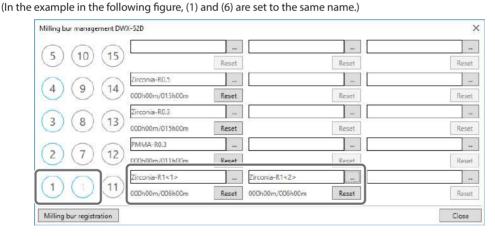
When setting three milling burs as a single unit

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.)



When setting two milling burs as a single unit

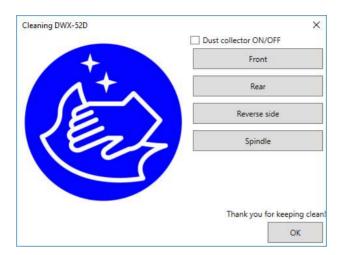
Set milling burs with the same name in the milling bur stocker.



"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. 50 "Cleaning after Milling Finishes"



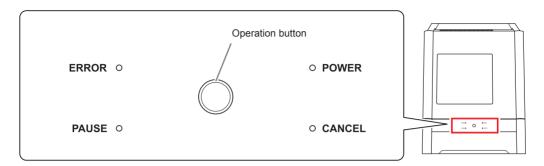
Display	Explanation
Dust collector ON/OFF	Turns the dust collector ON/OFF. (For dust collectors with a linking function and connected to the expansion port with a linking cable.) For details on the dust collector, see the DWX-52D "Setup Guide."
Front	Moves the rotary axis unit to the front. Use this 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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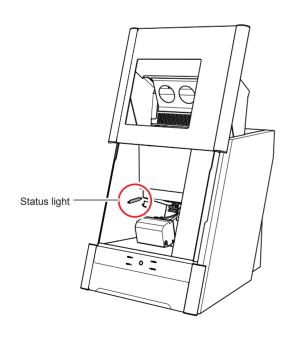
Using/Reading the Built-In Panel

Using/Reading the Built-In Panel



ERROR	Flashes when an error has occurred.	
PAUSE	Lights when operation is paused.	
POWER	Lights when the power is turned on.	
CANCEL	Flashes when data is being cancelled and during the initial operations. Milling data received while this light is flashing will be cancelled.	
Operation button Pressing this button during milling will pause or restart the machine. Pressing and holding this button during milling will abort milling or clear some of the 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



Blue	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.
White	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.
Yellow	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.
Red	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.
Off	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



Close the front cover.

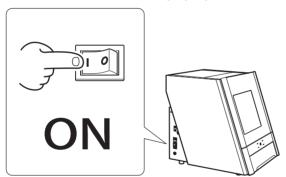


2 Switch on the machine's power switch.

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.

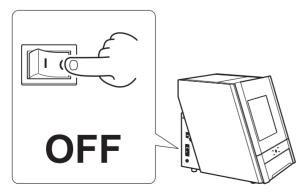


Switching the Power Off

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. 37 "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

Туре		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 ø5.9 ± 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 Roland DG Corporation dealer or visit our website (https://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.



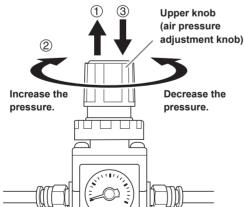
When CAM data is sent to the machine, it automatically adjusts the air pressure to match the workpiece to mill.

Procedure

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

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.

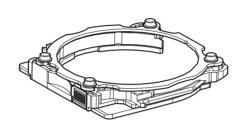
Starting Milling

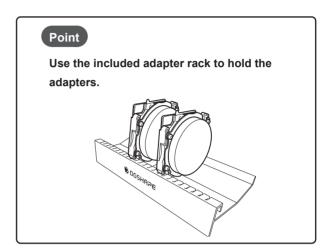
STEP 1: Attaching a Workpiece to the Adapter

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

- P. 24 "For Disk Workpieces"
- P. 27 "For Pin-type Workpieces"

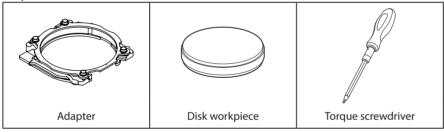
Workpieces can be attached to any adapter.





For Disk Workpieces

Required Items



IMPORTANT!

Do not loosen screws with a torque screwdriver with the sleeve (1) attached.

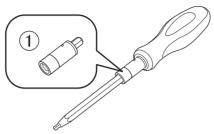
Doing so may damage the sleeve. Before loosening screws, remove the sleeve from the torque screwdriver.



IMPORTANT!

Before tightening a screw that has a specified tightening torque, be sure to attach a sleeve. Check the marking on the sleeve (1) and use a sleeve that matches the tightening torque value.

Failure to attach a sleeve will cause a torque in excess of the permitted amount to be applied, which may damage parts and materials.

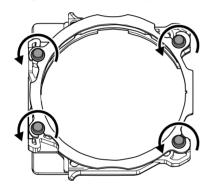


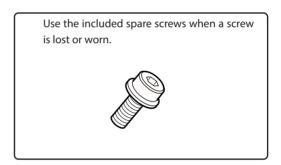
Procedure

Make sure that no sleeve is attached onto the torque screwdriver.

If a sleeve has been attached, remove it.

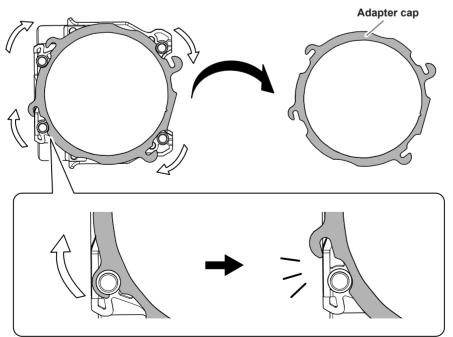
2 Use a torque screwdriver with the sleeve removed to loosen the adapter screws (in four locations), turning them approximately four times.



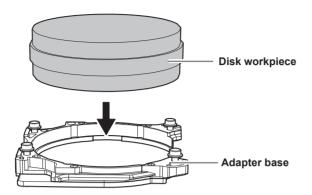


Remove the adapter cap.

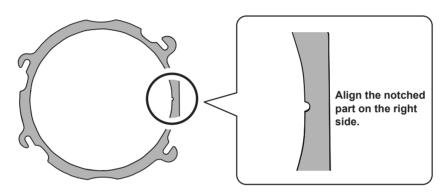
Turn the adapter cap in the direction of the arrows to remove it.



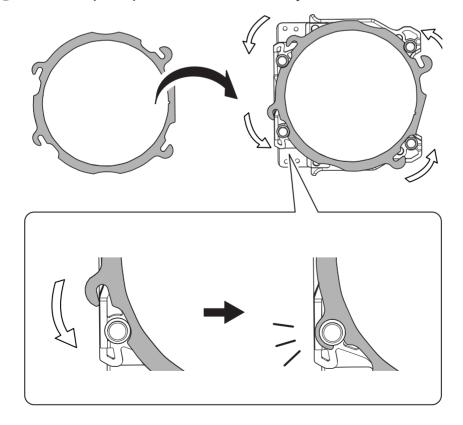
Set the disk workpiece into the adapter base.



- 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.



6 Attach a sleeve onto the torque screwdriver.

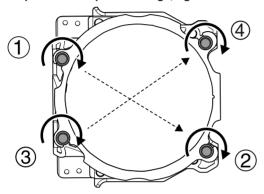


Use a torque screwdriver with the sleeve attached to tighten the screws in the positions shown in the figure (in four locations).

Tighten the screws until turning the handle of the torque screwdriver no longer turns the screw bit.

CAUTION

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

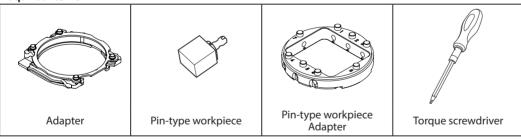


Attach the adapter to the machine.

P. 34 "STEP 2: Attaching the Adapter to the Machine"

For Pin-type Workpieces

Required Items



IMPORTANT!

Do not loosen screws with a torque screwdriver with the sleeve (1) attached.

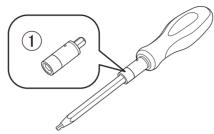
Doing so may damage the sleeve. Before loosening screws, remove the sleeve from the torque screwdriver.



IMPORTANT!

Before tightening a screw that has a specified tightening torque, be sure to attach a sleeve. Check the marking on the sleeve (1) and use a sleeve that matches the tightening torque value.

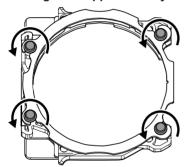
Failure to attach a sleeve will cause a torque in excess of the permitted amount to be applied, which may damage parts and materials.

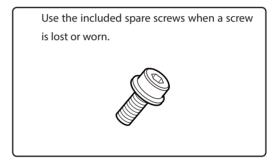


- Mount the pin-type workpiece adapter on the adapter.
- Make sure that no sleeve is attached onto the torque screwdriver.

If a sleeve has been attached, remove it.

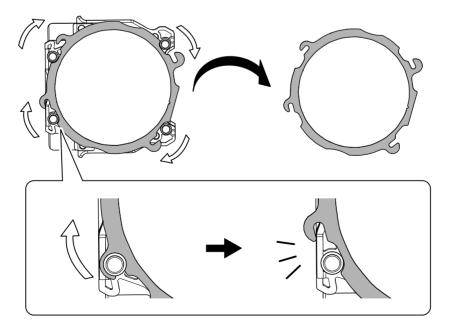
2 Use a torque screwdriver with the sleeve removed to loosen the adapter screws (in four locations), turning them approximately four times.



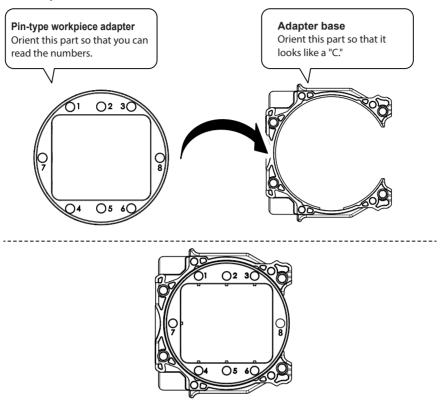


Remove the adapter cap.

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

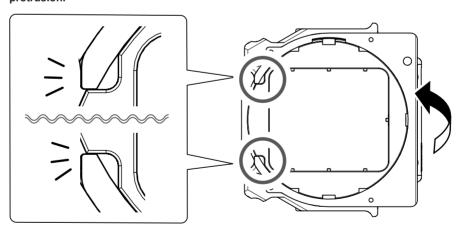


- Mount the pin-type workpiece adapter on the adapter base.
 - 1 Orient the pin-type workpiece adapter as shown in the following figure, and then mount this adapter on the adapter base.



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

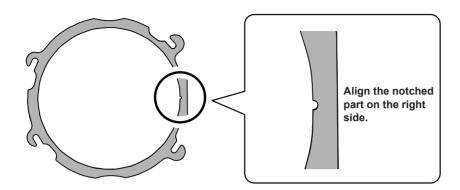
Align the recessed portion with the protrusion.



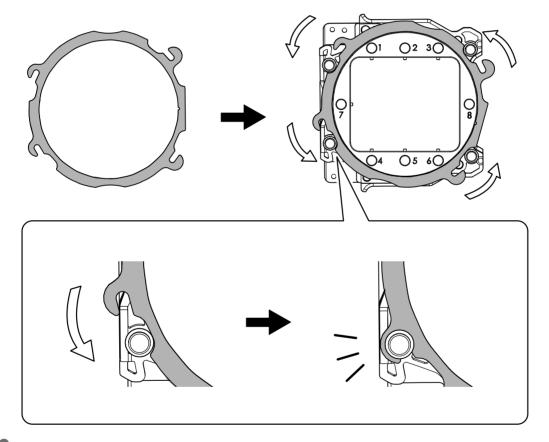
③ Check whether the pin-type workpiece adapter has been mounted on the adapter base without any gaps.

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

- 6 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.



6 Attach a sleeve onto the torque screwdriver.

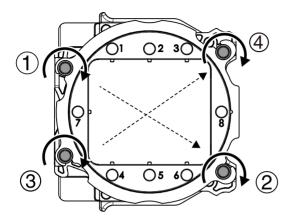




Use a torque screwdriver with the sleeve attached to tighten the screws in the positions shown in the figure (in four locations).

Tighten the screws until turning the handle of the torque screwdriver no longer turns the screw bit.

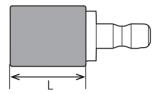
Also, to secure the adapter evenly, after tightening the screw in one location, tighten the screw that is oriented diagonally across from it.

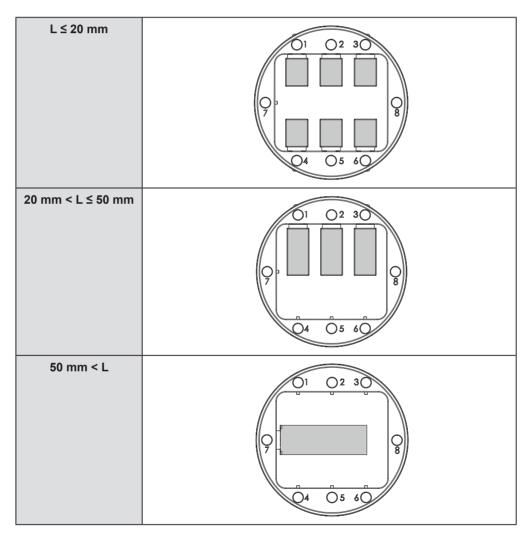


2. Mount the workpiece on the pin-type workpiece adapter.

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.





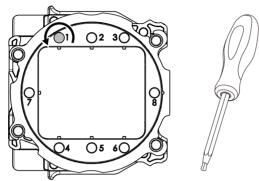
Make sure that no sleeve is attached onto the torque screwdriver.

If a sleeve has been attached, remove it.

Use a torque screwdriver with the sleeve removed to loosen the screw at the mounting position for the pin-type workpiece.

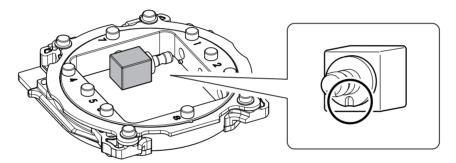
MEMO

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



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.

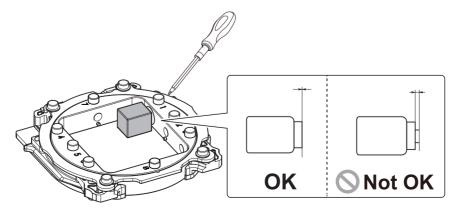


Attach a sleeve onto the torque screwdriver.



Use a torque screwdriver with the sleeve attached to tighten the screw.

Tighten the screws until turning the handle of the torque screwdriver no longer turns the screw bit.



STEP 2: Attaching the Adapter to the Machine

For Pin-type Workpieces

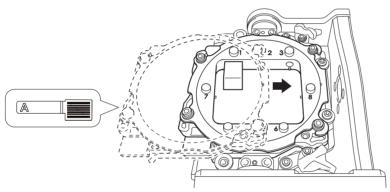
Procedure

Switch on the machine's power switch.

Once initialization completes, open the front cover.

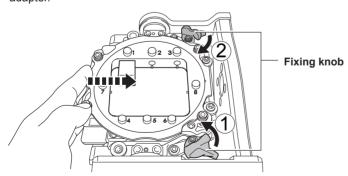


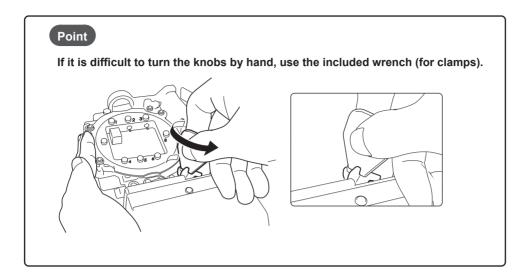
3 Orient the parts as shown in the figure, and then insert the adapter into the clamp.



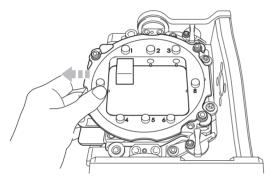
Secure the adapter.

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





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

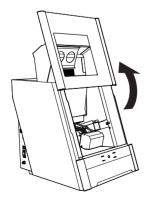


6 Close the front cover.

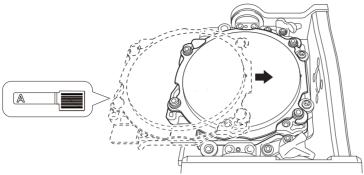
For Disk Workpieces

Procedure

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

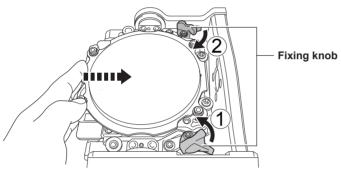


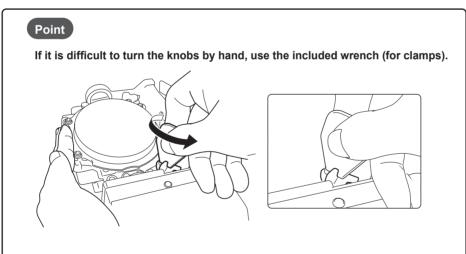
3 Orient the parts as shown in the figure, and then insert the adapter into the clamp.



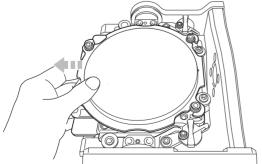
Secure the adapter.

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



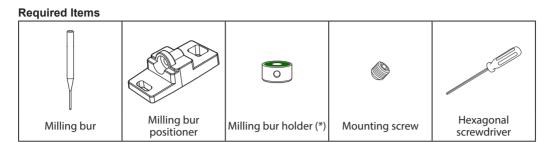


Lightly tug on the adapter to check that it does not come loose.



6 Close the front cover.

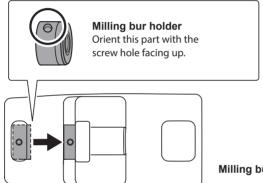
STEP 3: Loading the Milling Bur



^{*} The milling bur holder for the ZS-4D cannot be used. Exercise caution.

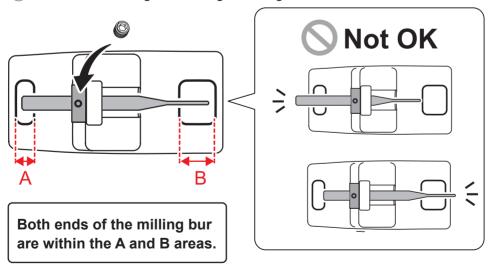
Procedure

- 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.



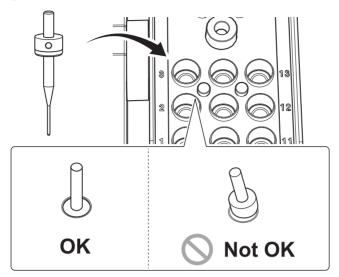
Milling bur positioner

- 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. 39 "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

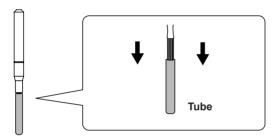


^{*} The milling bur holder for the ZS-4D cannot be used. Exercise caution.

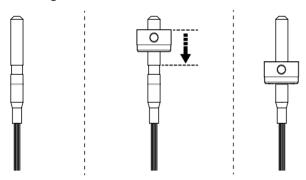
Procedure

Remove the cleaning tool tube.

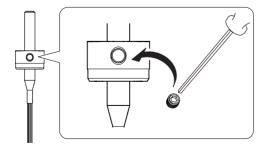
To prevent the bristles from being pulled off, grasp the cleaning tool tube gently and pull it down slowly.



Align the top edge of the milling bur holder with the top of the indentation at roughly the middle of the cleaning tool.



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



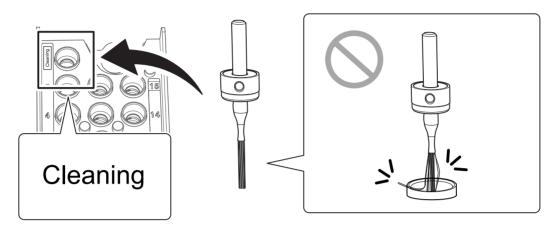


Load the cleaning tool in the "Cleaning" stocker.

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 Roland DG Corporation dealer or visit our website (https://www.dgshape.com/) to purchase items.

P. 72 "Replacing the Cleaning Tool"

STEP 5: Checking the Regulator Settings



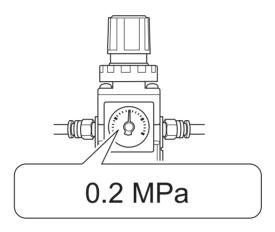
When CAM data is sent to the machine, it automatically adjusts the air pressure to match the workpiece to mill.

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 Roland DG Corporation dealer or visit our website (https://www.dgshape.com/).

MARNING 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



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 J.

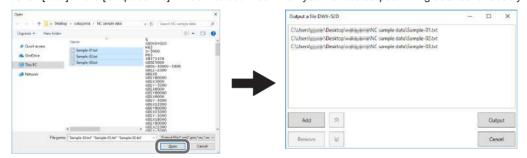
The [Open] dialog box will appear.



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.



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

P. 37 "STEP 3: Loading the Milling Bur"

G Click "Output."



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.)

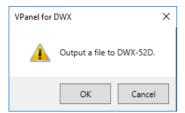
Removing milling data from the data list

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. 87 "Responding to Error Messages"

STEP 7: Removing the Adapter from the Machine

MARNING

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.

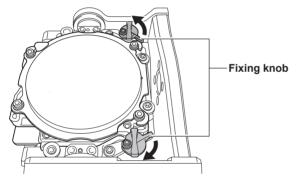
Procedure



Check that milling is finished.

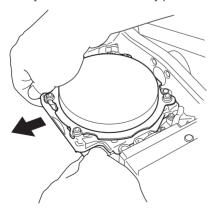


- Open the front cover.
- **3** Turn the fixing knobs (in two locations) in the directions of the arrows to release the locks.



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.



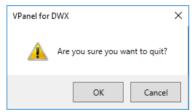
Aborting Output

Procedure

- Select the machine for which output will be aborted.
 - (1) In the top window of VPanel, select the machine for which output will be aborted.
 - ② Click 🛛 .



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



Removing Milling Data in Standby from the Output List

Procedure

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

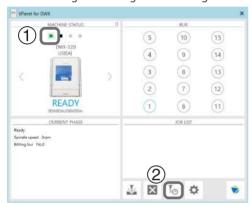
Procedure



Set Intelligent Tool Control.

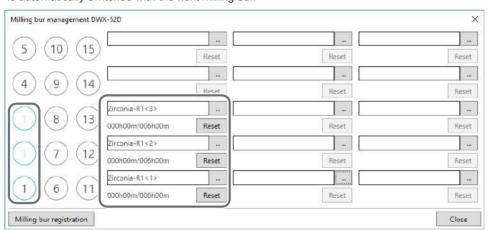
- 1 In the top window of VPanel, select the machine for which you want to set Intelligent Tool Control.
- 2 Click .

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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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.

MARNING 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.



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."

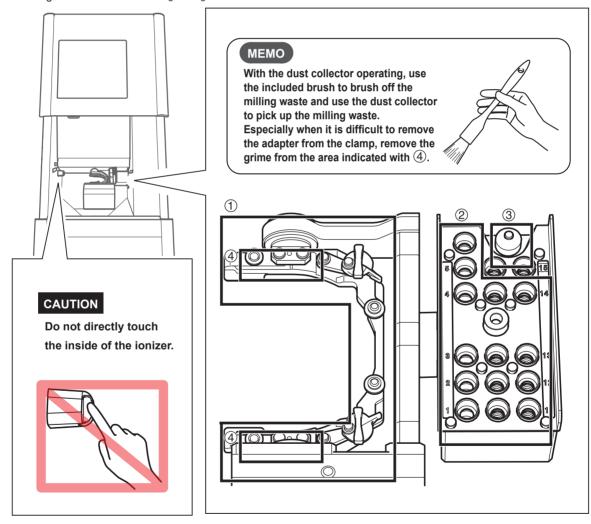
Procedure



Clean the inside of the machine.

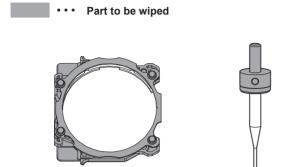
Use the "Cleaning" dialog box in VPanel to clean the rotary axis unit.

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.

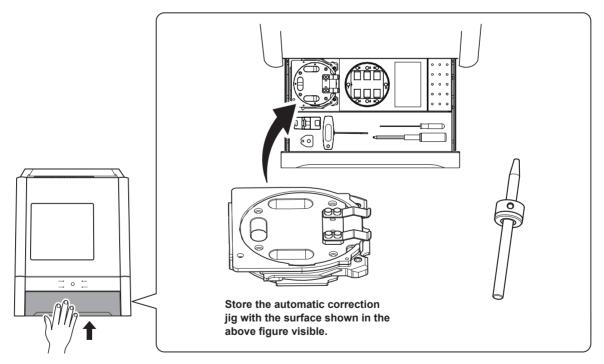


Care and Storage of Detection Pin and Automatic Correction Jig

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.

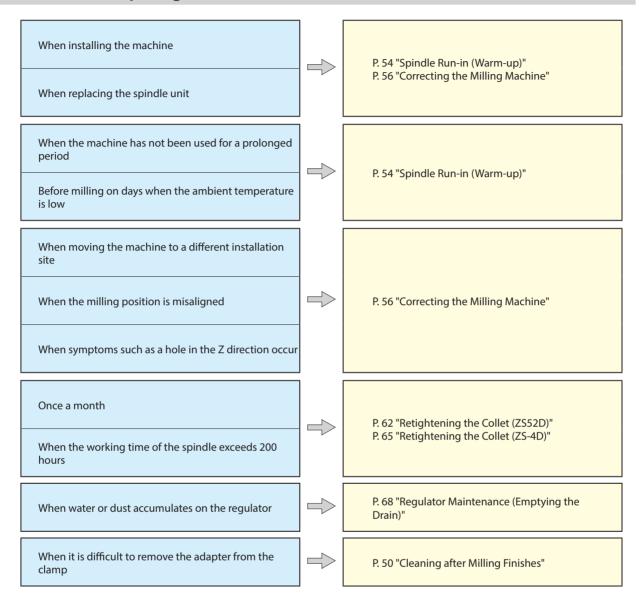
Care and Storage

- 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



Replacing Consumable Parts

Contact your authorized Roland DG Corporation dealer or visit our website (https://www.dgshape.com/) to purchase items.

Part name	Replacement time/Guideline
	When the working time of the spindle exceeds 2,000 hours (with slight
Spindle unit	variation depending on the work situation).
	You can use VPanel to view the working time of the spindle.
	For information on how to perform replacement, refer to the replacement instruction manual
	included with the part. © P. 11 ""Maintenance" Tab"
	*The replacement spindle unit comes with a collet and belt.
	* The ZS-52D and ZS-4D are not compatible. Exercise caution to ensure the correct spindle
	type is used.
	If the collet is deformed.
Collet	If an overload error or other error occurs, the collet may be deformed.
	For information on how to perform replacement, refer to the replacement instruction manual
	included with the part.
	*The included collet is the ZC-52D, which is not compatible with other collets. Exercise caution
	to ensure the correct collet type is used.
	If the spindle belt is worn.
	For information on how to perform replacement, refer to the replacement instruction manual
	included with the part.
Spindle belt	included with the part.
Cleaning tool	If the brush bristles have spread out. * The milling bur holder is not included with optional products. P. 72 "Replacing the Cleaning Tool"

Spindle Run-in (Warm-up)

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

Situations Requiring This Work

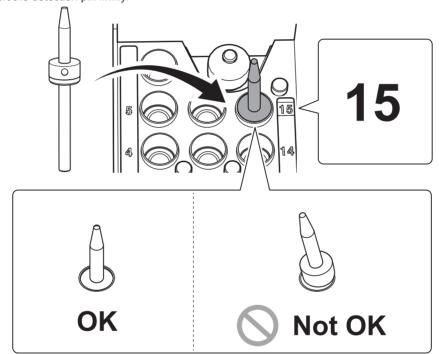
- > When installing the machine
- > When replacing the spindle unit
- > When the machine has not been used for a prolonged period
- > Before use on days when the ambient temperature is low

Procedure



Close the front cover and turn on the power.

When the initial operations finish, open the cover and load the detection pin in the ATC magazine's number 15 position. Insert the detection pin firmly.





Show VPanel.

P. 5 "Displaying or Exiting VPanel"

- 3 Open the [Settings] dialog box.
 - 1 1 In the top window of VPanel, select the machine to operate.

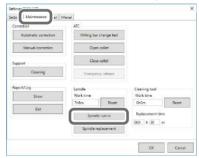
When multiple machines are connected, click under MACHINE STATUS to switch between machines.

② ② Click 🌣.

The [Settings] dialog box will appear.



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



6 Click [OK].

Run-in will begin.



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

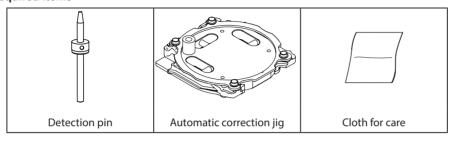
Correcting the Milling Machine

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

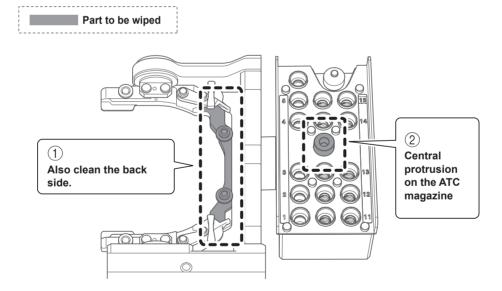
Required Items



Install the detection pin.

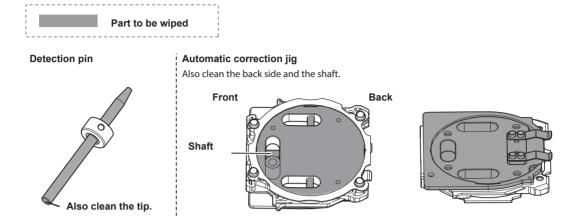
Clean off any milling waste around the clamp.

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.

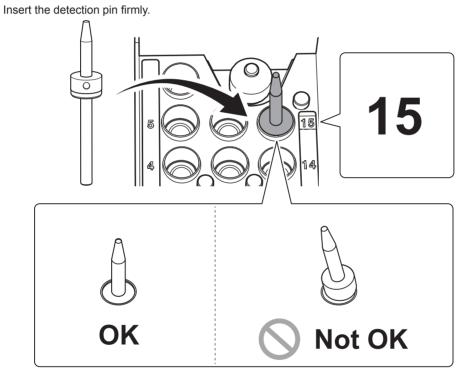


Use the included cloth for care to clean the automatic correction jig and the detection pin.

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

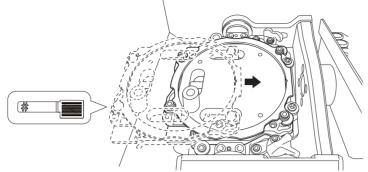


② Load the detection pin in the ATC magazine's number 15 position.



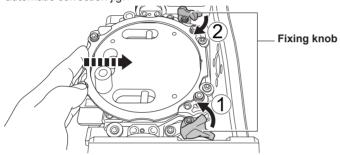
2. Attach the automatic correction jig.

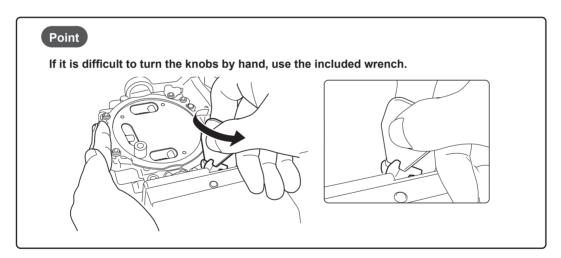
Orient the parts as shown in the figure, and then insert the automatic correction jig into the clamp.



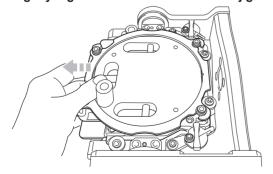
Secure the automatic correction jig.

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.





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



Close the front cover.

- 3. Perform automatic correction.
- **1** Show VPanel.

P. 5 "Displaying or Exiting VPanel"

- 2 Open the [Settings] dialog box.
 - (1) In the top window of VPanel, select the machine to operate.

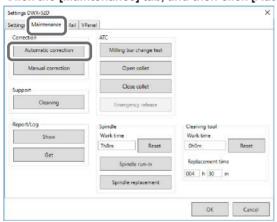
When multiple machines are connected, click under MACHINE STATUS to switch between machines.

2 Click .

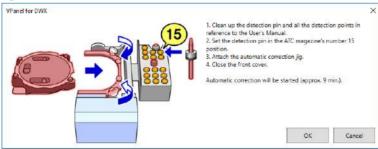
The [Settings] dialog box will appear.



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



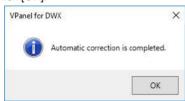
- (1) Make sure that the work displayed on the screen is complete.
- 2 Click [OK].



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.

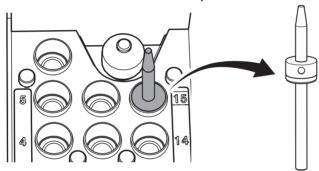
After removing the detection pin and the automatic correction jig, clean them, and then store them in the storage compartment.

P. 51 "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

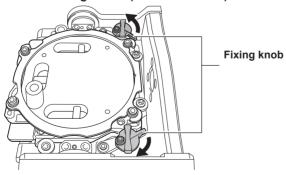
Do not pull the adapter with excessive force when removing it.

Doing so may result in injury arising from your hand or arm hitting something.

Procedure

0

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

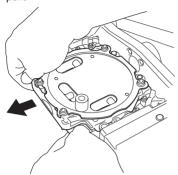


2

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.



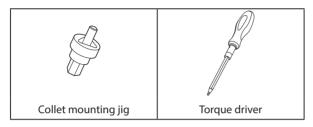
Retightening the Collet (ZS52D)

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



IMPORTANT!

Do not loosen screws with a torque screwdriver with the sleeve (1) attached.

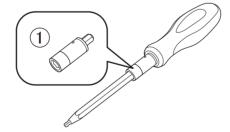
Doing so may damage the sleeve. Before loosening screws, remove the sleeve from the torque screwdriver.



IMPORTANT!

Before tightening a screw that has a specified tightening torque, be sure to attach a sleeve. Check the marking on the sleeve (1) and use a sleeve that matches the tightening torque value.

Failure to attach a sleeve will cause a torque in excess of the permitted amount to be applied, which may damage parts and materials.



Procedure

- 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.



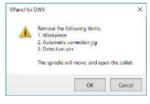
Click the "Maintenance" tab, and then click [Open collet].

Open the collet.



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

The spindle unit will move, which will open the collet.



If an instruction appears after the spindle unit moves, click [OK].

- 6 Attach the collet attach- detachment jig to the torque driver.
 - 1) Remove the torque screwdriver's bit.
 - (2) Make sure that a sleeve is attached.

If no sleeve has been attached, attach one.

3 Attach the collet attaching/detaching jig onto the torque screwdriver with the sleeve attached.

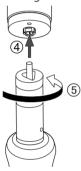


4 With the collet attaching/detaching jig attached onto the torque screwdriver with the sleeve attached, insert the collet attaching/detaching jig into the collet.

Fit the collet into the triangular depression of this jig.

5 Tighten the collet with the torque screwdriver.

Tighten the screws until turning the handle of the torque screwdriver no longer turns the screw bit.



- 6 Close the front cover.
- Click the "Maintenance" tab, and then click [Close collet].

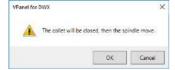
Close the collet.

The window shown in figure appears.



Click [OK].

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



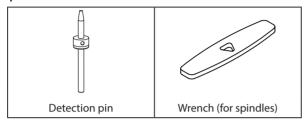
Retightening the Collet (ZS-4D)

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).

Required Items



Procedure

- Open the [Settings] dialog box.
 - $\ensuremath{\textcircled{1}}$ In the top window of VPanel, select the machine to operate.

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

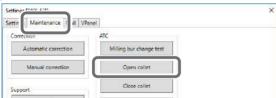
② Click 🌣.

The [Settings] dialog box will appear.



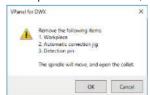
② Click the "Maintenance" tab, and then click [Open collet].

Open the collet.



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

The spindle unit will move, which will open the collet.



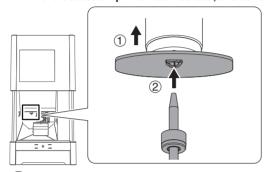
- If an instruction appears after the spindle unit moves, click [OK].
- 6 Retighten the collet.
 - 1) Fit the wrench onto the collet.
 - (2) Insert the detection pin all the way into the collet.

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

CAUTION

Use the included wrench and keep the detection pin inserted.

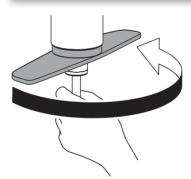
If the detection pin is not inserted, the collet may be deformed, resulting in lower milling accuracy.



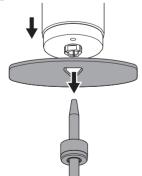
3 Tighten the collet with the wrench while holding the detection pin.

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.

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

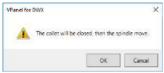
Close the collet.

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.

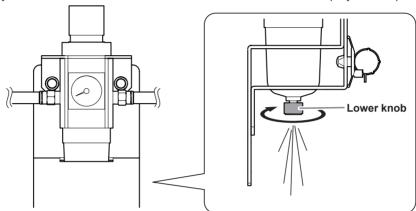
Situations Requiring This Work

- When drainage builds up
- · When the bowl becomes dirty

Procedure

Loosen the lower knob little by little.

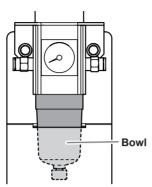
Material may spray out of the drain at this time. Use a cloth or the like to catch the spray and keep it from scattering.



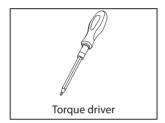
After the drain empties, retighten the lower knob.

Regulator Maintenance (Cleaning the Bowl)

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



Required Items



IMPORTANT!

Do not loosen screws with a torque screwdriver with the sleeve (1) attached.

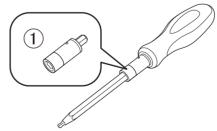
Doing so may damage the sleeve. Before loosening screws, remove the sleeve from the torque screwdriver.



IMPORTANT!

Before tightening a screw that has a specified tightening torque, be sure to attach a sleeve. Check the marking on the sleeve (1) and use a sleeve that matches the tightening torque value.

Failure to attach a sleeve will cause a torque in excess of the permitted amount to be applied, which may damage parts and materials.



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.

MARNING 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.

MARNING Clean the regulator bowl using a neutral detergent. Never use solvents such as gasoline,

alcohol, or thinner.

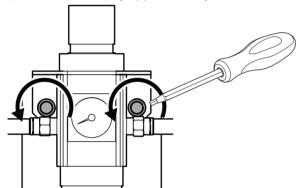
Using solvents may degrade the bowl and may result in a rupture.

Stop the supply of compressed air.

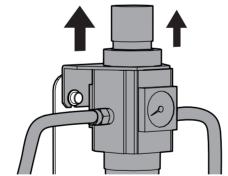
Make sure that no sleeve is attached onto the torque screwdriver.

If a sleeve has been attached, remove it.

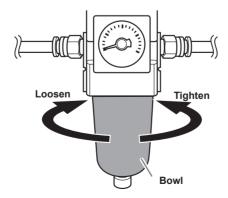
Use a torque screwdriver with the sleeve removed to loosen the screws shown in the following figure (in two locations) by approximately three turns.



Remove the regulator.



Remove the bowl from the regulator.

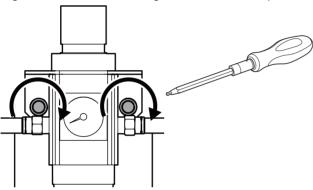


- **6** Wash the bowl using a neutral detergent.
- After making sure that the bowl is completely dry, retighten the bowl.
- **8** Attach the regulator to the machine.
- Attach a sleeve onto the torque screwdriver.



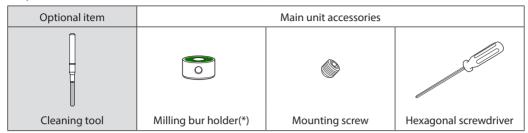
Use a torque screwdriver with the sleeve attached to tighten the screws shown in the following figure (in two locations).

Tighten the screws until turning the handle of the torque screwdriver no longer turns the screw bit.



Replacing the Cleaning Tool

Required Items

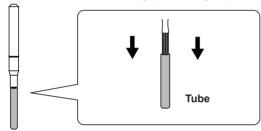


^{*} The milling bur holder for the ZS-4D cannot be used. Exercise caution.

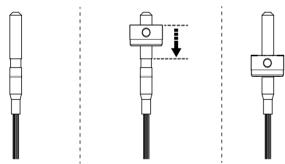
Procedure

Remove the cleaning tool tube.

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

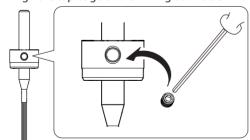


Align the top edge of the milling bur holder with the top of the indentation at roughly the middle of the cleaning tool.



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

Align the top edge of the milling bur holder with the top of the indentation at roughly the middle of the cleaning tool.



Chapter 4 Troubleshooting

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Machine Trouble

Initial Operations Are Not Performed or Fail

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.

The operation button will not respond if you are wearing gloves. Operate the button with a bare hand.

VPanel Does Not Recognize the Machine

Make sure that the cables are connected. \Rightarrow Is the cable connected? Refer to the "Setup Guide" ("Connecting the Cable") to perform the work. 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 Is the driver installed correctly? P.80 the driver is not configured correctly. Check again to ensure that the connection was made using the correct procedure. There is a possibility that the connection procedure was Did you verify the connection performed incorrectly. Make sure that connections were procedure when connecting more performed correctly. than one machine? 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

	1		
Is the front cover open?		If the front cover is open, the machine will not start mill- ing 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.87

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.

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.53

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.50

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.68

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.56

Is the automatic correction jig properly attached?



Verify that the automatic correction jig is properly attached.

P.54 P.57

Is the detection pin properly

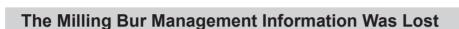


Verify that the detection pin is properly attached. Check the position of the milling bur holder on the detection Refer to the "Setup Guide" ("Dimensional Drawings"

(Detection Pin Dimensions)).

P.56

attached?



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 workpiec-Zirconia, composite resin, and CoCr sintered metal

P.39

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

P.39

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

P.53

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.34

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.34

There Is a Line of Level Difference in the Milling Results

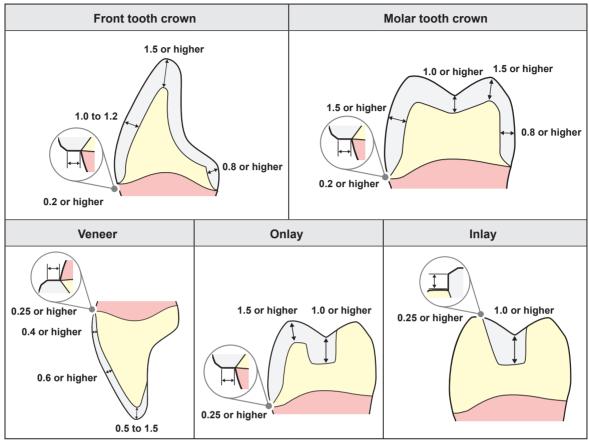
Is the machine out of correction?	The origin point may become out of position due to prolonged use or relocating the machine, which can result in a line of level difference. Perform automatic correction. If the expected results cannot be obtained even after performing automatic correction, perform manual correction. With manual correction, changing the Y value in Origin point may improve the situation.	P.56
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)

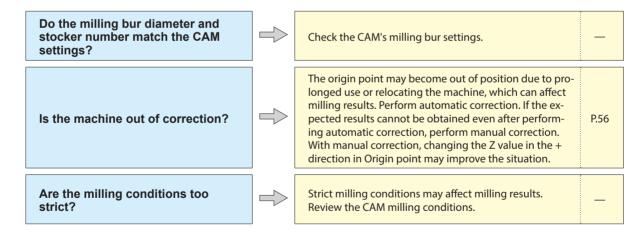
Is the installation base of the machine secure?	The vibration from milling can shake the installation base. Install the machine in a stable location.	_
Is the workpiece firmly secured in place?	Check the mounting condition of the workpiece. If the workpiece is not mounted on the machine correctly, the 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.34
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



A Hole Opens in the Milling Results



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 and software all at once. To install them all at once, see the "Setup Guide" ("Installing the Software").

Procedure

- Before installation, confirm that the machine and the computer are not connected with the USB cable.
- Log on to Windows as the computer's administrator (or as an "Administrators" account).
- 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.

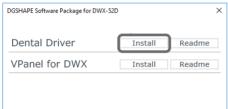
If the driver is not installed or if it has been uninstalled, go to step 4.

Click [Custom Install].



If the driver is already installed, uninstall it.

G Click [Install] for the "Dental Driver."



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

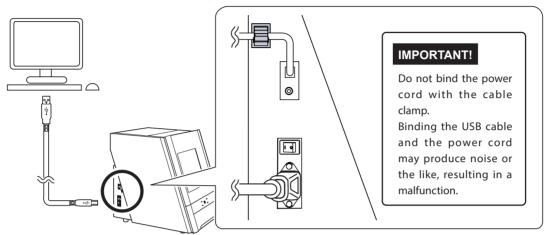


- Follow the on-screen instructions to proceed with the installation.
- $oldsymbol{\emptyset}$ When the installation finishes, click imes on the setup menu, and then remove the DGSHAPE Software Package CD.
- **9** Turn on the power to the machine.



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.

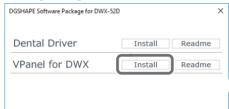
Installing the Software Separately

- Log on to Windows as the computer's administrator (or as an "Administrators" account).
- 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.
- Click [Custom Install].



Click [Install] for "VPanel for DWX."



- Follow the on-screen instructions to proceed with the installation.
- $m{6}$ When the installation finishes, click imes on the setup menu.
- Remove the DGSHAPE Software Package CD.

With this machine, you can also install the driver and software 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.)

Procedure A

- Connect the machine to the computer with the USB cable and turn on the machine.
- Click [Desktop].
- 3 Display [Devices and Printers].

Windows 11

- (1) Click [Start] [All apps] [Windows Tools].
- 2 Click [Control Panel].
- (3) Click [View devices and printers].

Windows 10

- 1) Click [Start] [Settings].
- (2) Click [Devices].
- ③ Click [Devices and printers] under [Related settings] on the right side of the window.
- Check that the model you are using is displayed under [Unspecified].
- Right-click the icon of the model you are using, and then click [Remove device].
- When the message "Are you sure you want to remove this device?" is displayed, click [Yes].
- Check that the icon for the model you are using is no longer displayed under "Unspecified."
- 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 you could not solve your problem by following this procedure, perform the procedure under "Procedure B."

Procedure B

- Connect the machine to the computer with the USB cable and turn on the machine.
- 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.

- Glick [Desktop].
- Right-click the [Start] button, and then click [Device Manager].
- If the [User Account Control] window appears, click [Continue]. [Device Manager] appears.
- Click [Show hidden devices] from the [View] menu.
- 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].
- Click [Uninstall] from the [Action] menu.
- In the "Confirm Device Uninstall" window, click [OK]. Close [Device Manager].

- ${\color{red} {\rlap/ {\it U}}}$ Detach the USB cable from the computer, and then restart Windows.
- Uninstall the driver.

Carry out the steps from step 3 on P.85 "Uninstalling the Driver" to uninstall the driver.

Reinstall the driver again according to the procedure in the "Setup Guide" ("Installing the Software") or P.80 "Installing the Driver Separately."

Uninstalling the Driver

When uninstalling the driver, perform the following procedure.

- * If you uninstall the driver without following the procedure given below, you may not be able to reinstall the driver.
- Turn off the machine and remove the cable connecting the machine to the computer.
- Log on to Windows as the computer's administrator.
- Open the [Programs and Features] window.

Windows 11

- 1 From the [Start] menu, click [All apps] [Windows Tools].
- (2) Click [Control Panel].
- (3) Click [Uninstall a program].

Windows 10

- 1) From the [Start] menu, click [Windows System] [Control Panel].
- (2) Click [Uninstall a program].
- Select the driver of the machine to remove by clicking it, and then click [Uninstall].

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

- The removal confirmation message will appear. Click [Yes].
- **6** Open Explorer, and then open the drive and folder containing the driver. (*)
- Double-click "SETUP64.EXE" (64-bit version) or "SETUP.EXE" (32-bit version).
- If the [User Account Control] window appears, click [Allow]. The setup program for the driver starts.
- Olick [Uninstall]. Select the machine to remove, and then click [Start].
- If it is necessary to restart your computer, a window prompting you to restart it will appear. Click [Yes].
- After the computer has restarted, click [Start] [Settings].
- Click [Devices].

Click [Devices and printers] under [Related settings] on the right side of the window.

- B 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 (https://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.

- Open the [Programs and Features] window.

Windows 11

- 1) From the [Start] menu, click [All apps] [Windows Tools].
- 2 Click [Control Panel].
- ③ Click [Uninstall a program].

Windows 10

- 1) From the [Start] menu, click [Windows System] [Control Panel].
- 2 Click [Uninstall a program].
- 3 Select "VPanel for DWX" and click [Uninstall].

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

- If a message prompting you to confirm deletion appears, click [Yes].
- 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 Roland DG Corporation dealer.

Error number	Message	Situation/Error Cause	Action
1000-***	The % limit switch is not found. (% may be "X," "Y," "Z," "A," or "B.")	The operation may be inhibited by milling waste or an obstruction.	1. Turn off the power. 2. Remove any objects blocking operation of the machine and any accumulated milling waste. 3. Turn on the power, and then restart operation.
The % axis position has been shifted.	The motor position may have been lost.	Remove any objects blocking operation of the machine and any accumulated milling waste. Press and hold the operation button on the builtin panel. This will clear the error.	
1006-***	(% may be "X," "Y," "Z," "A," or "B.")	The milling conditions may be excessively strict.	Press and hold the operation button on the built- in panel. This will clear the error. Review the CAM settings and the shape specified in the CAD data.
		The front cover was opened during spindle rotation.	To continue milling Press the operation button on the built-in panel to resume milling.
1017-0000 The front cover was opened.	(For safety, the machine comes to an emergency stop if the front cover is opened while the spindle is	To abort milling Press and hold the built-in panel's operation button.	
		rotating.)	Do not open the front cover while the spindle is rotating. Doing so may affect the milling results.
101C-0000	The milling bur sensor was not found.	The operation may be inhibited by milling waste or an obstruction.	1. Turn off the power. 2. Remove any objects blocking operation of the machine and any accumulated milling waste. 3. Turn on the power, and then restart operation.
	The % milling bur	The returning of the milling bur failed. The inside of the collet or the ATC magazine might be dirty.	1. Press and hold the operation button on the built- in panel. This will clear the error. 2. Clicking "Open collet" in VPanel will open the collet. Remove the milling bur. P. 11 ""Maintenance" Tab" 3. Clean the ATC magazine.
cannot be released. (% may be "1" to "15.")	The collet and milling bur are affixed together and cannot be separated. The inside of the collet might be dirty.	 	
101D-0010	The cleaning tool cannot be released.	The operation to return the cleaning tool failed. The inside of the collet or the ATC magazine might be dirty.	1. Press and hold the operation button on the built-in panel. 2. Perform "Open collet" in VPanel. 3. Remove the cleaning tool. 4. Clean the ATC magazine.

Error number	Message	Situation/Error Cause	Action
	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	
	The % milling bur	The milling bur holder might be out of position.	one. 3. If the position of the milling bur holder is not appropriate, correct the position. P. 37 "STEP 3: Loading the Milling Bur"
101E-****	might be broken. (% may be "1" to "15.")	The milling conditions may be excessively strict.	Press and hold the operation button on the built-in panel. This will clear the error. 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.
The % milling bur chucking has slipped out. (% 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. 62 "Retightening the Collet (ZS52D)" P. 65 "Retightening the Collet (ZS-4D)"	
	bur chucking has slipped out. (% may be "1" to	The milling conditions may be excessively strict.	Press and hold the operation button on the built-in panel. This will clear the error. Review the CAM settings and the shape specified.
	13.)	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-***	The % milling bur is too long. The % milling bur is too short. (% 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. 37 "STEP 3: Loading the Milling Bur"
	The % milling bur was not found. (% may be "1" to "15.")	The milling bur has not been set or it may have been mounted on an incorrect stocker number.	Set the milling bur in the correct position. If the error occurred during milling Close the front cover, and press the built-in panel's operation button. Milling will resume.
1022-***		There is a possibility that the ATC magazine is out of position.	Perform automatic correction. P. 56 "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. If the error occurred during milling Press the operation button on the built-in panel. If the error occurred while the machine was on standby Press and hold the operation button on the built-in panel.	
1023-0000	Milling data error. The number of parameters is incorrect.			
1024-0000	Milling data error. The parameter is out of range.	There may be a problem with the milling data	Press and hold the operation button on the built- in panel. This will clear the error. Check the milling data.	
1025-0000	Milling data error. A wrong command is detected.	received from the computer. <when control="" intelligent="" tool="" using=""></when>	If there are no problems with the milling data, restart the computer, and then perform milling again.	
1026-0000	Milling data error. The address is not defined.	When using CAM to select the stocker number, the stocker number set as the second or third milling bur in Intelligent Tool Control	<when control="" intelligent="" tool="" using=""> 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. 46 "Automatically Switching Out the Worn Milling Bur (Intelligent Tool Control)"</when>	
1027-0000	Milling data error. The parameter is not defined.	has been selected.		
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	1. Turn off the power.	
102A-0000	The spindle experienced overcurrent.	following are likely reasons. The milling bur is worn. A workpiece that cannot be cut by the machine is	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	
102B-0000	The spindle motor temperature is too high.	being used. • The cutting conditions are too strict.	turning the power on because the motor may have overheated.	
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 Roland DG 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
		Automatic correction may not have been performed.	
The automatic correction is not yet finished.		Automatic correction may have been cancelled before it could finish.	1. Press and hold the operation button on the built-in panel. This will clear the error.
	correction is not yet	Automatic correction may not have been performed after updating the firmware to a version that required automatic correction to be performed again.	2. Perform automatic correction. P. 56 "Correcting the Milling Machine"
		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 (http://www.dgshape.com/), and then install these versions.
103D-0000	Milling data error. The milling bur cannot reach the milling position.	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.	 Press and hold the operation button on the built-in panel. This will clear the error. Review the milling bur length and the position of the milling bur holder. P. 37 "STEP 3: Loading the Milling Bur" Review the CAM settings and decrease the angles of the A axis and the B axis.
1061-0000	The collet cannot be closed. The milling bur is not gripped.	An attempt was made to close the collet with no milling bur gripped.	Update VPanel to the latest version. If the error occurs again even after updating the software, contact your authorized Roland DG Corporation dealer.



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