超音波研磨装置 / Ultrasonic Polisher

Sheenus ZERO

取扱説明書 / OPERATION MANUAL

日本語: P1 - P23 / English: P25 - P48 / French: P49 - P51

Thank you very much for your purchase of Sheenus ZERO ultrasonic polishing system. This product can be used to grind, polish, and mirror-finish various types of molds, from aluminum molds to cemented carbide molds. We also have a wide variety of tools available for all types of machining. Please read this manual carefully before use, and we hope you will enjoy using this product for many years to come. Please keep this manual in a place where the user can read it at all times.
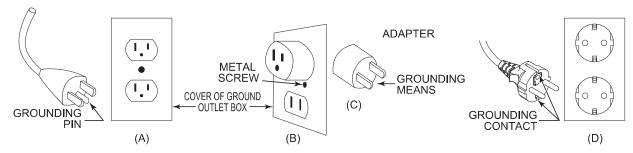
CONTENTS

1 Safety Precautions

■ Please read the operation manual thoroughly, make sure you understand all warnings and cautions prior to operating the system and only use the system in the manner intended.

■ These warnings and cautions are intended to avoid potential hazards that could result in personal injury or damage to the device. These are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
⚠ WARNING	A hazard that could result in bodily injury or damage to the device if the safety instructions are not properly followed.
⚠ CAUTION	A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.
NOTICE	Keep this manual in a safe place for future reference.

■ GROUNDING INSTRUCTIONS

● In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with a power cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

● Do not modify the plug provided-if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

● Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment grounding conductor. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

● Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

● Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

● (120V) This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in Sketch A in Figure (below). The tool has a grounding plug that looks like the plug illustrated in Sketch A in Figure (below). A temporary adapter, which looks like the adapter illustrated in Sketches B and C, may be used to connect this plug to a 2-pole receptacle as shown in Sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

● (240V) This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in sketch D in figure.

● NOTE: Adapter in (Figure B) is not for use in Canada.

● Use proper extension cord. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table (below) indicates the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

Ampere Rating		Volts	Total length of cord			
		120V 240V	7.5m (25ft.) 15m (50ft.)	15m (50ft.) 30m (100ft.)	30m (100ft.) 60m (200ft.)	45m (150ft.) 90m (300ft.)
More Than	Not More Than					
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

Use the table above for your correct voltage.

⚠ WARNING

- For safety reasons, wear protective gloves, goggles, and a dust-proof mask when using this product.
- Do not drop or impact the product. Strong impacts may result in deformation or damage.
- Do not modify or disassemble this product in any way that is not described in the instruction manual. This can have a significant impact on performance and safety. If the controller is disassembled, you may receive an electric shock due to the high voltage section inside. In the event of malfunction or repair, please contact the place of purchase for repair.
- Be sure to ground the grounding wire of the power cord before use. Failure to do so may result in a malfunction, fire or electric shock.
- Do not use this product in a room where there is a risk of explosion or near flammable materials. Especially if the tool is in contact with flammable materials for a long time in an oscillating state, it may ignite.
- Use the controller at room temperature in the range of 10 - 40°C (75 - 104ºF), with no condensation. Condensation may cause a short circuit or an electric shock.
- Avoid installing the controller in the vicinity of high temperature, high humidity, condensation, corrosive or explosive gases, flammable gases, salt damage, and direct sunlight. Failure to do so may result in a malfunction, fire or electric shock.
- The bottom of the controller also serves as a heat sink. Install it so that the space between it and the work desk is not blocked. A temperature increase can occur inside the controller, causing failure.
- If there is any dust or damage to the threaded part of the tool, handpiece, or tool mountings, normal oscillation will not be possible. It can also cause the handpiece to heat up.
- Make sure the tool is securely installed. If it is not secured firmly, it can cause a loss of power and heat in the handpiece.
- Even under normal conditions, the tool and tip holder will be heated by ultrasonic vibration. Grabbing it hard or pressing it against the skin may cause burns.
- If oil or other contaminants get into the handpiece, they may cause a failure. Do not pour abrasive oil or lubricate the handpiece.
- Do not touch the tool, tip holder or ultrasonic horn during ultrasonic vibration. Parts and tools may become hot, which could cause injury or burn.
- Damaged main power cord must be replaced with new cord as they may cause fires or electric shock due to a short circuit. Please contact us or your local distributor for details.

Safety Precautions

⚠ CAUTION

- The operating environment for this product is 10 - 40°C (75 - 104ºF),, humidity is 30 - 75% RH,, and air pressure is 700 - 1,060 hPa. Also, use the controller in a non-condensing environment. If used beyond this range, it may cause malfunctions or damage.
- Store the product in a place where the temperature is between 10 - 50°C, degrees Celsius, the humidity is between 30 - 75% RH, the air pressure is between 500 and 1,060 hPa, and there is no dust, sulfur or salt air. When installing the controller, provide a space of 10 cm behind the controller to allow for smooth insertion and removal of the power cord in the event of an emergency.
- Before starting to use the product, please inspect it in advance and make sure that there is nothing wrong. If you notice any abnormality, contact your dealer for repair.
- If the tool, tip holder or handpiece becomes hot or if a strange noise occurs suddenly during use, stop using it immediately and check the entire system. If the tool is damaged, do not continue to use it and replace it with a new tool.

NOTICE

- This product uses an ultrasonic oscillator. The proximity of computers and LAN cables may affect them. Also, if there is a radio receiver nearby, there may be noise.
- When in use, if the operation sounds peculiar to ultrasonic vibration is generated. We recommend that you wear earplugs.
- Set the power switch to OFF after use. Also, unplug the power cord when not in use for long periods of time.
- The user is responsible for operation and maintenance.

2 Product Information

2-1 Bundled items

After opening the package, please check that the contents of "Table - 1 List of Contents " are inorder.
In the unlikely event that any of the contents of the package are inadequate, please contact " 8 － 2
Contact for inquiries " or the dealer from whom you purchased the product.
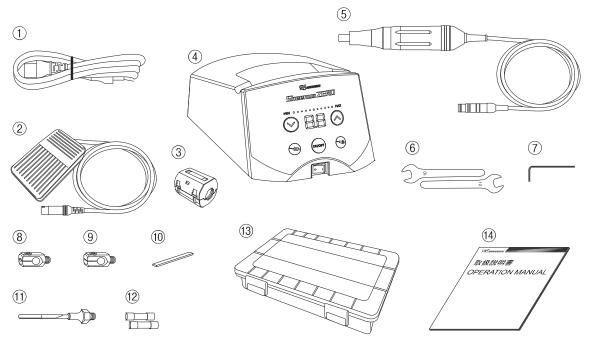

Table - 1 List of Contents

| No.	Name	Product Number	Quantity	Note
①	Main power cord	-	1	2m
②	Foot switch	8103	1	FC-24
③	Ferrite Core	-	1	-
④	Controller	7778 (120V)	1	-
		7779 (230V)		
⑤	Handpiece	7780	1	Cord 3m
⑥	Wrench	-	2	10mm
⑦	Hexagon wrench	-	1	2.5mm
⑧	Tip holder	60902	1	For 3.0mm dia
⑨	Tip holder	60922	1	For flat t = 1.0mm
⑩	Ceramic fiber grindstone #800	60519	1	Flat 6 x 50mm t=1
⑪	Electroplated diamond file #200	60101	1	Flat taper 4 x 50mm t=0.4
⑫	Fuse	-	2	T1.6AH 250V
⑬	Tool case	-	1	-
⑭	Operation manual	-	1	-
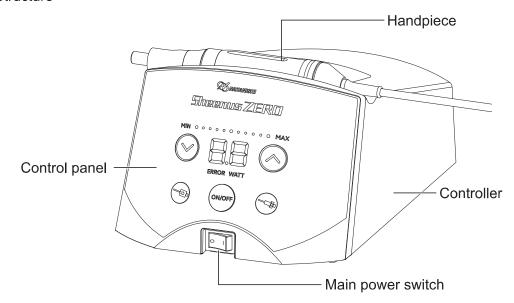
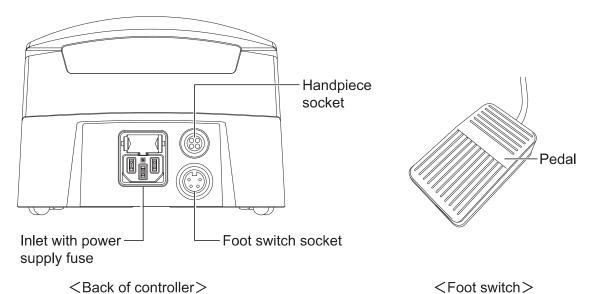 The above items are included in the "standard set". When purchasing a controller, only 1, 4, 12 and 14 are included in the package.
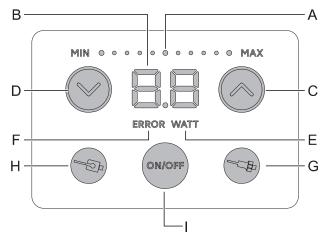
Product Information

Overall Structure

Handpiece

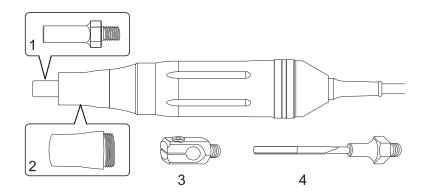Control panel

Controller

Main power switch

Handpiece socket

Pedal

Inlet with power supply fuse

Foot switch socket

＜Back of controller＞

＜Foot switch＞

30

Control panel

No.	indication	name	function
A	MIN ○○○○○○○○○○○ MAX	Power level indicator	Displays the power level.
B	8.8	Indicator	Displays the amplitude, WATT, and ERROR values. Indication display of amplitude The maximum amplitude is displayed in 50 divisions. Please use this as a guide for processing.
C	(∧)	UP key	Increase the power level. Pressing and holding the UP key raises the output level continuously.
D	(∨)	DOWN key	Reduce the power level. Pressing and holding down the DOWN key allows you to continuously lower the Power level.
E	WATT	WATT	This is displayed when W units are set. (See "6 − 4 Setting the amplitude display and WATT Display")
F	ERROR	ERROR	This is displayed in case of an error.
G	(tool icon)	UNCLAMP Key	UNCLAMP mode setting When using an integrated tool, set it to UNCLAMP mode.
H	(tool icon)	CLAMP Key	CLAMP mode setting Set to CLAMP mode when using the tip holder with the tip in place.
I	ON/OFF	ON / OFF Key	Start and stop the handpiece.

Product Information

Handpiece

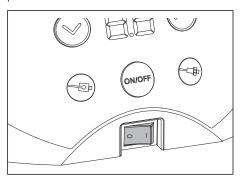| No.	name	Note
1	Test horn	A test horn is installed at the end of the handpiece at the factory. This test horn is used to check if the ultrasonic vibration is properly output from the handpiece. When using the handpiece, remove the test horn and install the No. 3 and No. 4 tools before use.
2	Protector sleeve	The protector sleeve prevents direct contact with the tool connection. Always make sure that the protector sleeve is installed before using the handpiece, as using the handpiece without it may result in burns.
3	Tip holder	This is the holder to which the special tip tool is attached.
4	One piece tool (M6 x 0.9)	The One piece tool (M6 x 0.9) is used directly on the handpiece.
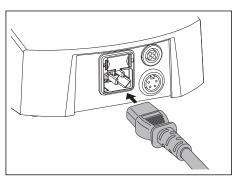
3 Preparation before use

3–1 Connecting the main power cord

1 Make sure the main power switch is in the OFF position.

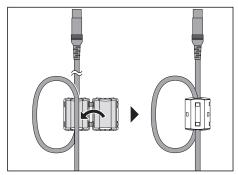**2** Insert the main power cord into the Inlet with power supply fuse. Then plug it into a commercial power outlet.
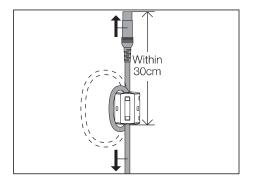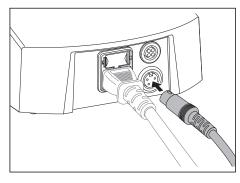

3–2 Connecting the foot switch

1 Insert the cord into the open ferrite core as shown below. Carefully close the ferrite core, taking care not to interfere with the cord (you will hear a snapping sound and two locks). (The part must be securely closed).

3 When using a foot switch, insert the foot switch plug into the foot switch socket with the plug in place.

2 Pull the cord so that it does not sag and adjust the position of the ferrite core so that it is within 30 cm of the end of the cord.
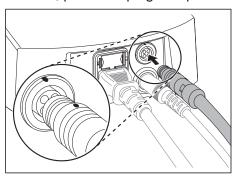

Within 30cm

⚠ CAUTION

- When using a foot switch, the attached ferrite core must be attached. If it is used without being attached, electrical noise (mainly electromagnetic waves) may cause adverse effects such as malfunction on other adjacent equipment.
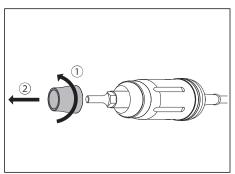
Preparation before use

3–3 Connecting the handpiece

Align the plug of the handpiece with the handpiece socket on the back of the controller, and insert it firmly into the socket until you hear a click. Pull lightly to make sure it doesn't come off.
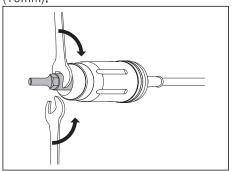To remove it, pinch the plug and pull it straight out.

3–4 Tool installation

1 A test horn is attached to the handpiece when it is shipped. Turn the protector sleeve and remove it.
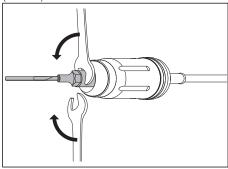

2 Remove the test horn using the two wrenches (10mm).
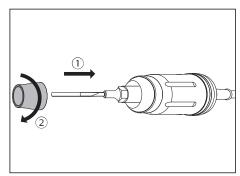

■ One piece tool (M6 x 0.9)

1 Attach the One piece tool (M6 x 0.9) to the handpiece and tighten firmly using two wrenches (10mm).
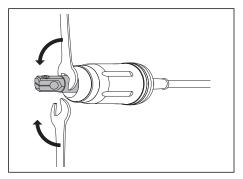

2 Insert the protector sleeve into the handpiece and turn it to install it.
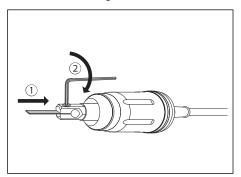
■ Ceramic fiber grindstone, tip type
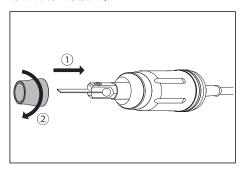
1 Attach the tip holder to the handpiece and tighten firmly with two wrenches (10mm).

2 Insert the ceramic fiber grindstone wheel and tip into the tip holder and tighten the set screw firmly with the attached hexagon wrench.

3 Insert the potector sleeve into the handpiece and turn it to install it.

⚠ CAUTION

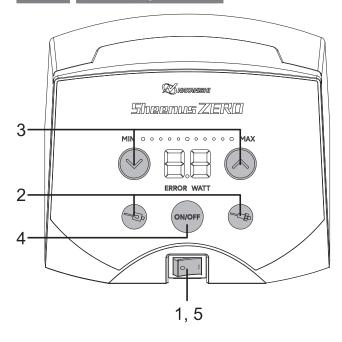● If the tool and tip holder are loosely tightened, not only does it not produce enough vibration, but it can also cause abnormal noise and abnormal heat generation. Be very careful to make sure it is securely tightened.

4 How to use

1 Power ON
The LED on the control panel lights up.

2 Mode Selection
The LED of the selected key lights up.

UNCLAMP mode

CLAMP mode

3 Power level adjustment
Press and hold down the key
to activate the key repeat function.

UP key   DOWN key

1, 5

4 Startup / Stop
You can start and stop the program in one of the following two ways

(1) Manual ON / OFF	(2) When using the foot switch
ON/OFF Press the ON / OFF key to activate and Stop.	It is activated by pressing the pedal. Release the pedal to stop. (See "6 – 5 Setting the foot switch")
If it is started by the ON / OFF key, it can only be stopped by the ON / OFF key.	If activated by a footswitch, it can only be stopped by a footswitch.

The ON / OFF key and the LED on the handpiece light up when starting up.
As long as the LED is on, it is vibrating.

5 Power off

⚠ CAUTION

- When using the tip holder, be sure to use it in CLAMP mode.
- When using the One piece tool , it can be used in UNCLAMP or CLAMP mode (low power).
- The thread of the One piece tool is M6 x 0.9. Do not install screws of different size.
- Setting the WATT display (see "6–4 Setting the amplitude display and WATT Display."), use 8W or less for continuous use.
- Using the handpiece at high power can cause the tool and tip holder to become very hot, which can cause handpiece failure and injury.
- Do not plug or unplug the handpiece and foot switch while the foot switch is depressed. Failure to do so may result in failure or malfunction.

4-2 | The essentials of ultrasonic finishing operations

■ Basic usage

The basic way to use the tool is to place it on the surface and press down lightly while sliding it. The figure below shows the direction of ultrasonic vibration and the effective sliding direction pattern. The ultrasonic vibration greatly reduces the resistance to machining, which is more effective in getting the tool to bite the surface of the workpiece and the tool rather than the machining pressure.

Do not press down on the tool more than necessary and be careful to ensure that the tool touches the work surface.

Modify the face of the tool as necessary to get a better bite. It is useful to correct the tool by using a diamond file/sandpaper to create weak vibrations in the tool.

Use the side of the tool	Use the tool at an angle	Use the end face of the tool
Beware of tool bites. ↙↗ = direction of vibration ⟵ = direction of sliding 	The best angle is about 30° . 	Use it while correcting the tool surface.

■ Optimal tip length

When using the tip holder with a tip in between, use it within the range of optimum length as shown in the table below.

Also, please note that it may not vibrate normally due to a defective (or loose) tip holder or tip installation.

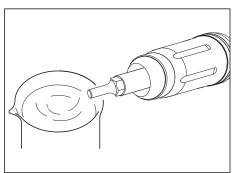| Tools for Sheenus ZERO	Cross-sectional dimensions (mm)	Optimum length (mm)
Ceramic fiber grindstone	4 x 1.0	10 - 50
	6 x 1.0	
	φ3	

■ How to use lapping brass tips

When using the lapping brass tips, select the CLAMP mode and adjust the output to the extent that the protection circuit (see "9 – 3 Protection circuitry ") is not activated. If the output value is too high, it may stop due to overload.
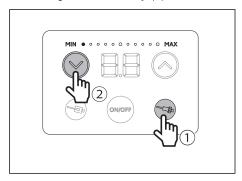
How to use

A simple method of confirming vibration using a test horn
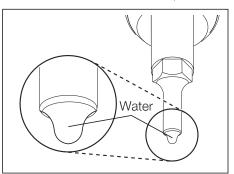
1 Prepare a small amount of water and attach the test horn securely.
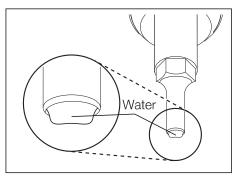
2 Select the UNCLAMP mode (1) and set the output to MIN using the DOWN key (2).
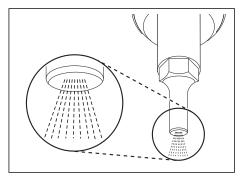
3 With the ON / OFF key in the OFF position, put a small amount of water on the tip of the test horn.

4 Turn the ON / OFF key to ON. It can be confirmed that water is attracted by the ultrasonic vibration.

5 Gradually raise the UP key to MAX and the water will be vaporized by ultrasonic vibration.
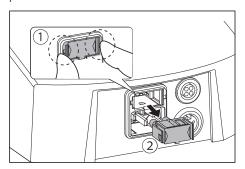
If the operation can be verified in this way, the transducer is working properly.
If no vibration is output or the vapor is not sufficiently high in UNCLAMP mode, tighten the test horn again to check. (See "7 – 2 Failure causes and countermeasures")

5 Maintenance
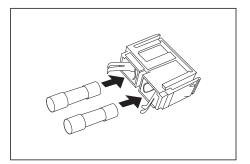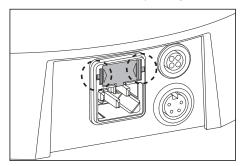
1   The fuse box is set in a Inlet with power supply fuse. Push the claws on both sides of the cap inward and pull it out.

3   Push the claws of the cap firmly into the inlet box.

2   Two fuses are used. When replacing them, replace both with the specified fuses.

⚠ WARNING

- When replacing the fuses, turn off the controller's power switch and then unplug the power cord from the power fused inlet.
- Use fuses specified by us.   Designated fuses T1.6AH 250V

5-2   Care
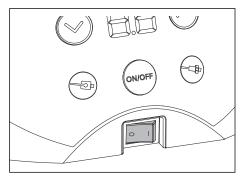
When the controller and handpiece are dirty, wipe them up well with a dry cloth.

English

6 Setup

Various settings can be made for your use from below.

6-1 User setting operations
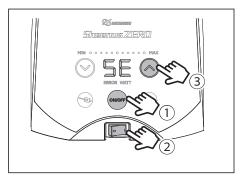
1 Set the Main power switch to OFF.

2 While holding down the ON / OFF key (1), turn on the Main power switch (2).
Press the UP key (3) during the 2 seconds when " 5E" is displayed.
With a "beep" sound, "o3"*1 will appear on the display.

3 Press the UP key to select the item you want to set. The display unit will display the following order*2: " o3" → "b2" → "PO" → "FO" → "H 1" → "o3" → ... When the settings are complete, turn the power off and then on again to complete the settings.


*1 "o3" is displayed only when it is first set up.
After the second time, "oO", "o 1", "o2", "o3", "o5", "oR", or "oA", which are stored by the "memory function", will be displayed.

*2 Display order "o3" → "b2" → "PO" → "FO" → "H 1" → "o3" → ... is displayed only at the initial setting.From the second time onwards, the settings are retained by the "memory function".

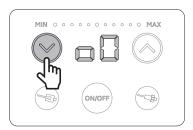|			
oO	6-2 Setting the forced stop time when not in use	FO	6-5 Setting the foot switch
bO	6-3 Setting of notification volume	HO	6-6 Setting the handpiece heat protection function
PO	6-4 Setting the amplitude display and WATT Display		

NOTICE

- Memory function
  When the power is turned off and then on again, the settings before the power was turned off are retained. (For mode settings, return to CLAMP mode (low output).
- Pressing the foot switch does not activate the controller during the 6−1 User setting operations.

6-2   Setting the forced stop time when not in use

This function forces the handpiece to stop if the handpiece has been left unused with the ON / OFF key turned on.

Press the DOWN key to change the setting value.

The Indicator shows the following order
"o0" → "o1" → "o2" → "o3" → "o5" → "oA" → "o0" → ...
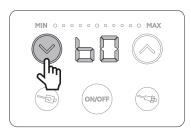
o0	No setup time	o3	3 minutes. (factory setting)
o1	one minute	o5	5 minutes.
o2	2 minutes.	oA	10 minutes.

6-3   Setting the notification volume

Press the DOWN key to change the setting value.
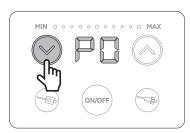
The Indicator shows the following order
"b0" → "b1" → "b2" → "b0" →...

b0	No sound.
b1	Notification tone.
b2	Loud notification (default setting)

6-4   Setting the amplitude display and WATT display
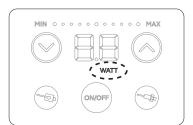
The LED display can be switched between "Amplitude" and "WATT".

Press the DOWN key to change the setting value.

The Indicator shows the following order
"P0" → "P1" → "P2" → "P0" → ...

P0	Amplitude display (default setting)
P1	Displayed in 1W increments
P2	Displayed in 0.1W increments
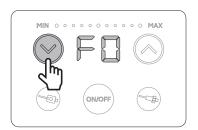
The "WATT" will be displayed when the "P1" and "P2" are set to display in W units.

Setup

6-5 | Setting the foot switch

The setting can be changed from pressing the foot switch to start (ON) or release to stop (OFF), to pressing the foot switch to start (ON) or pressing it again to stop (OFF).

Press the DOWN key to change the setting value.
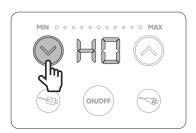
The Indicator shows the following order
"F0" → "F1" → "F0" → ...

FO	Motion operation (depressing the foot switch turns ON and releasing the foot switch turns OFF) (factory default setting)
F1	Alternate operation (press the foot switch to start up, press it again to stop off)

6-6 | Setting the handpiece heat protection function

The heat protection function can be set to work if an abnormal heat is detected on the tip of the tool.

Press the DOWN key to change the setting value.
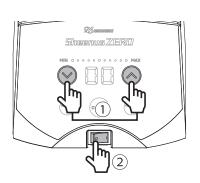
The Indicator shows the following order
"H0" → "H1" → "H0" → ...

HO	unprotected
H1	Protected (default setting)

6-7 | Initializing Settings

You can restore the factory default settings.

While pressing the UP key and the DOWN key (1) at the same time, turn on the power switch (2). Release the UP key and DOWN key after "beep" and a beep sounds to initialize the user settings. The output display is set to MIN and the unit starts in normal mode.

Factory Default Settings

Forced stop time when not in use	o3	3 minutes.
Notification volume	b2	Notification Sound Loud
Amplitude display and WATT display	P0	amplitude indication
Foot switch	FO	Motion operation (depressing the foot switch turns ON and releasing it turns OFF)
handpiece heat protection function	H1	protected species

7 Trouble-shooting

7-1 Error code

If a problem occurs with the product, an error code will be displayed on the display unit on the operation panel.

1 Stop the operation at once.

2 Press the ON / OFF key, or step on the footswitch again or turn it back on and see if the error is resolved.

3 If the error appears again, please refer to the following table for solutions.

error code	Error Description	how to deal with it
00	system error	Please send it to us.
01	Amplifier error (overcurrent/heat)	Check for loose One piece tool, tip holder and tip. If it's loose, tighten it firmly.
03	handpiece overload error	Do not put excessive load on the tool.
05	Excessive input voltage	Please send it to us.
06	Under Input Voltage	Please send it to us.
07	Amplitude feedback residual voltage error	Please send it to us.
08	Handpiece fever abnormality	Check for loose One piece tool, tip holder and tip. If it's loose, tighten it firmly.
09	Start frequency confirmation error	Please send it to us.
10	resonance frequency search timeout (This is an error if the resonant frequency of the integral tool, tip holder, or tip that is installed is not found.)	Check for loose One piece tool, tip holder and tip. If it's loose, tighten it firmly..
11	frequency pull-back anomaly (This is an error when the resonance frequency changes significantly during operation.)	Check for loose One piece tool, tip holder and tip. If it's loose, tighten it firmly.
12	memory failure	Please send it to us.
13	Forced deactivation when not in use	The factory default setting is "3 minutes". (See "6-2 Setting the Forced Stop Time When Not in Use".)
14	Excessive amplitude of the oscillator feedback signal	Please send it to us.

Trouble-shooting

Failure causes and countermeasures

A malfunction? If you think that this is the case, please check the following again before you call for repairs.

symptoms	checklist	cause	countermeasure
No vibration.	The control panel is not illuminated.	Main power cord is not plugged in.	Plug the main power cord into an outlet.
		The main power switch is in the OFF position.	Turn the main power switch to the ON position.
		Main power cord breakage.	Replace the main power cord.
		Faulty main power switch.	Please send it to us.
		Fuses are blown.	Replace the fuses. If it gets disconnected again for unknown reasons, please send it to us.
	The LED on the ON / OFF key does not light up.	The ON / OFF key is in the OFF position.	Turn the ON / OFF key to ON.
		The handpiece plug is not fully connected to the Handpiece socket.	Make sure the handpiece plug is securely connected to the handpiece socket.
		Faulty foot switch.	Please send it to us.
		Disconnection of the output cord.	
	The LED on the ON / OFF key is on.	Defects in the ultrasonic transducer or controller.	
The vibration stopped while I was working.	The ERROR LED is lit .	An abnormal load has triggered the protective function.	Do not apply more than necessary working pressure to the tip tool.
		The output level of the UP key is high.	Use the DOWN key to lower it slightly.
		Abnormal heat generation triggered the handpiece heat protection function.	Turn the main power switch off and let it cool for a while.
		Loose tools.	Retighten the tool.
		Tool edge damage or bending.	Replace the tool.

symptoms	checklist	cause	countermeasure
The vibration is weak.	The LED on the ON / OFF key is on.	No standard tools are used.	Replace it with a standard tool.
		Loose tools.	Retighten the tool.
		The Power level indicator is in the minimum position.	Adjust the UP and DOWN keys to the output appropriate for your work.
		UNCLAMP key / CLAMP key is in CLAMP mode.	Set to UNCLAMP mode.
Strange noises or sudden heat buildup in the handpiece.	The LED on the ON / OFF key or the LED for ERROR is on.	Loose tools.	Retighten the tool.
		Broken or bent tools.	Replace the tool.
		No standard tools are used.	Replace it with a standard tool.
		Tip holder is used in UNCLAMP mode.	Set to CLAMP mode.
		When using the clamping tool, the mounting length is not correct.	Adjust the length.
No vibration when using the foot switch.	The LED on the ON / OFF key does not light up.	The foot switch is not plugged in properly.	Make sure the foot switch is plugged in correctly.
		The handpiece plug is not fully connected to the Handpiece socket.	Connect the plug of the handpiece to the handpiece connection socket securely.
		Faulty foot switch.	Please send it to us.
		Disconnection of the output cord.	
		Defects in the ultrasonic transducer or controller.	
	The LED on the ON / OFF key or the LED for ERROR is on.	Defects in the ultrasonic transducer or controller.	

English

8 After-sales service

8-1 Warranty

We provide a limited warranty for our products. We will repair or replace the products if the cause of failure is due to the following manufactures defects. Please contact us or your local distributor for details.
(1) Defect in manufacturing.
(2) Any shortage of components in the package.
(3) Where damaged components are found when initially opening the package.
(This shall not apply if the damage was caused by the negligence of a customer.)

8-2 Contact for inquiries

To ensure that you can purchase and use our products with confidence, we are happy to answer any questions you may have about our products.
Please contact our "Contact Us" for information on how to use the product you purchased, maintenance after purchase, malfunctions, etc.

Contact Us

● For U.S. Market

Company Name	: **NSK America Corp.**
	Industrial Div.
Business Hours	: 8:00 to 17:00 (CST)
	(closed Saturday, Sunday and Public Holidays)
U.S. Toll Free No.	: +1 800 585 4675
Telephone No.	: +1 847 843 7664
Fax No.	: +1 847 843 7622
Website	: www.nskamericacorp.com

● For Other Markets

Company Name	: **NAKANISHI INC.**
Business Hours	: 8:00 to 17:00 (JST)
	(closed Saturday, Sunday and Public Holidays)
Telephone No.	: +81 289 64 3520
e-mail	: webmaster-ie@nsk-nakanishi.co.jp

8-3 Product disposal

When disposal of products is necessary, follow the instructions from your local government agency for proper disposal of industrial components.

9 Specifications

9-1 Specifications

Controller

Model	Sheenus ZERO Controller (NE330)
Oscillation frequency	19kHz - 29kHz
frequency control	auto-tracking system
Outputs	45W (max) UNCLAMP mode
	20W (max) CLAMP mode
Output adjustment	21 steps variable
Rated input	100V AC - 240V 50/60Hz 42VA
Applicable Fuses	T1.6AH 250V
Overvoltage category	Category Ⅱ
Pollution degree	Class 2
Max. mains voltage fluctuation	+/-10%
External dimensions	W161 x D256 x H84mm
Weight	1.5kg

Handpiece

Model	US-50P
Cord length	3m
Weight	140g (excluding cord)
Noise Level at 1m distance	Less than 70dB (A)

Use, transportation and storage environment

	Temperature	Humidity	Air pressure
operating environment	10 - 40° C	30 - 75%	700 - 1,060 hPa
Transport and storage environment	-10 - 50° C	10 - 85%	500 - 1,060 hPa

Max. operation altitude	Less than 2,000m
This product is for indoor use only.	

9-2 Conformity standards

The products complies with the following overseas safety standards.

· North American Safety Standards (UL, CSA)	⚠ c us		
	UL 61010-1		
	CSA 61010-1		
· European Directive	CE	· United Kingdom Conformity Assessed	UK CA
Low Voltage Directive(2014/35/EU)	EN 61010-1	The Electrical Equipment (Safety) Regulations	EN 61010-1
EMC Directive(2014/30/EU)	EMS : EN 61000-6-2	Electromagnetic Compatibility Regulations	EMS : EN 61000-6-2
	EMI : EN 61000-6-4		EMI : EN 61000-6-4
RoHS Directive(2011/65/EU)		The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	

Specifications

■ Protection Features

· When output power of 20W or more in CLAMP mode or 45W or more in UNCLAMP mode is detected, the unit will stop operating for safety. (see "7 – 1 Error code"03")
· If the handpiece is pulled out of the connector during operation, it will stop.
· To prevent the handpiece from forgetting to turn it off, the handpiece will stop automatically if it is still unused when it is on. (see "7 – 1 Error code"13") (Time to stop can be changed by user settings. It can also be disabled. see "6 – 2 Setting the forced stop time when not in use")

⚠ CAUTION

● If the main power switch is turned on while stepping on the foot switch, it will be disabled for safety reasons. Release the foot switch because the indicator on the operation panel blinks and a notification sounds. The drive prohibit state is lifted and the unit can be used normally.
● The handpiece temperature rise is predicted from the output power and if the tool is found to be generating excessive heat, the handpiece heat protection function is activated, the display on the control panel flashes and an audible alarm sounds.
After that, it automatically suppresses the output and keeps the temperature from rising, allowing for continuous use. When the temperature drops, the indicator on the control panel stop blinking and the notification sound is automatically cancelled.
(You can also disable it through user settings. 6–6 Setting the handpiece heat protection function")

■ How to clear the error condition with the protection function

If the protection function is activated and the error is stopped, remove the cause of the activation of the protection circuitry and then clear the error state by performing the following operations
Press the ON / OFF key or step on the foot switch again. The ERROR LED goes off and the error state can be cleared.

⚠ Note, see Operating Instructions

CE Conforms to European Directives

UK CA United Kingdom Conformity Assessed

⚠ c us Conforms to North American Safety Standards (UL, CSA)

🚮 Disposal of products and accessories in accordance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE) (2012/19/EU)

SN serial number

♨ Caution, high temperature surface