

endo @ class

Manual



saeyang

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1. Product Overview

1-1. Indications for Use

Endo a Class is a new generation of motor specially designed for use with Ni-Ti files. This motor should be used by only authorized dentists. For optimal performance, read this manual thoroughly before use.

1-2. Classification of Product

- Type of protection against electric shock :
 - Class 2 Equipment
- Degree of protection against electric shock :
 - Type B Applied Part 
- Not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitric oxide.
- Continuous Operation

▲ 1-3. Precautions for Safe Handling and Operation

- For safety, read and understand "Safety Precautions" thoroughly before use.
- Not only will these precautions help you use the product safely, but they will prevent harm to you and others. They are classified according to degree of danger, damage or seriousness.

▲ Classification	Degree of Danger, Damage or Seriousness
▲ Danger	Indicates a potentially hazardous situation which could result in serious injury or damage to the device.
▲ Warning	Indicates a potentially hazardous situation which could result in minor or moderate injury or damage to the device.
▲ Attention	Indicates instructions to be observed for safety.

2. Safety Precautions Before Using

Danger

The system may be subject to malfunction when used in the presence of electromagnetic interference. Do not locate the system in the vicinity of other devices that possibly emit electromagnetic interference.

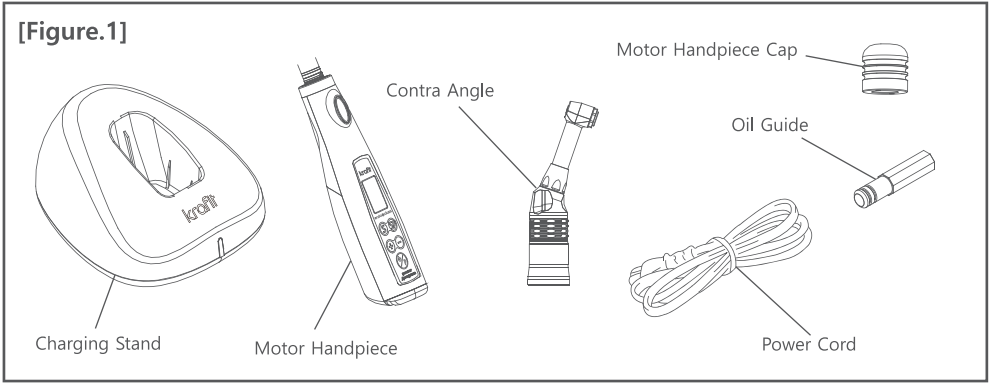
Warning

- Endo a Class Motor is designed for use by dental professionals only.
- Special care must be taken to maintain patient safety while in use.
- Read this user's manual thoroughly and understand functions of individual components completely before use.
- Make sure the product is in good working condition prior to use. If there is no any abnormal condition, continue to use the product.
- Before using the product, the test run must be performed to check if the product is working normally.
- If there is any abnormal condition, including excessive vibration, noise and heat while using the product, immediately turn off the power to stop using and contact your local dealer for repair.
- To prevent personal injury or product damage, it is required to check if the dental handpiece has been turned off before changing the file.
- Violent shocks, such as dropping the product, may cause product damage.
- Do not disassemble the charging stand and motor handpiece.
- Do not lubricate the motor handpiece. Lubrication may cause overheat and product damage.
- Both the motor handpiece and charging stand should not be sterilized.
- Before cleaning the product, be sure to turn off the power and then wipe the motor handpiece with a dry cloth.
- Do not use any organic solvent to clean motor handpiece and charging stand.
- Transport and storage conditions
The product must be transported and stored at temperature of -10~50°C, atmosphere pressure of 500~1060hpa, and humidity of 10~85%, If the conditions are not satisfied, the product may not work normally.

Attention

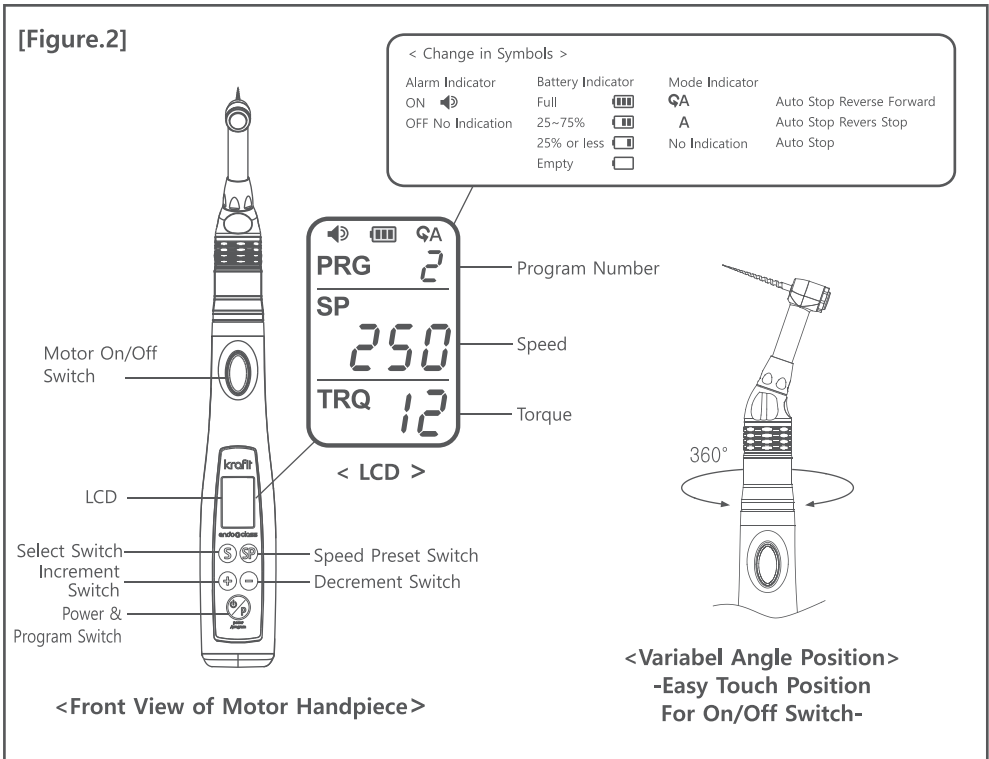
- For the follow up service and spare parts, please contact your local dealer.
- Ensure that the product is not exposed to dust, sulfur or salt.
- Use the recommended files only.

3. Product Components

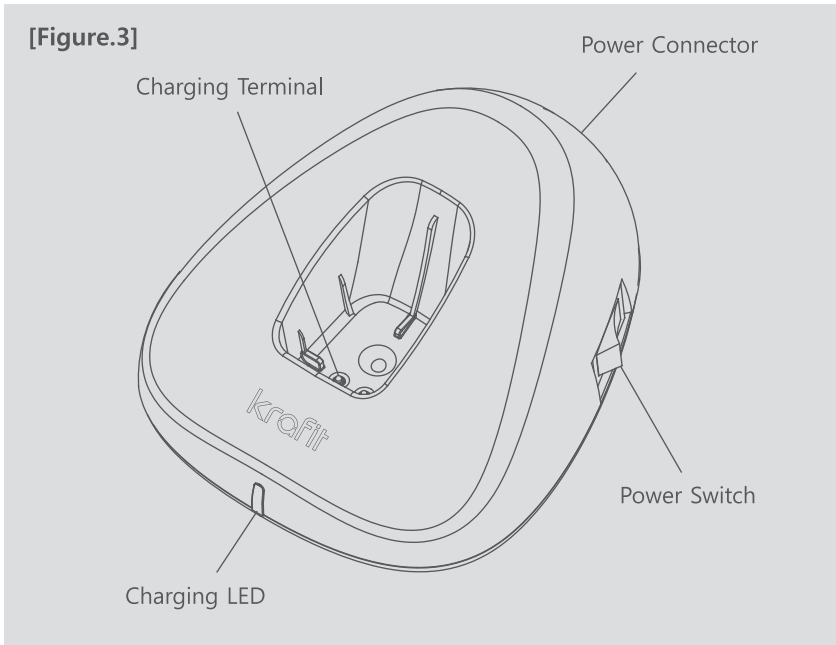


4. Component Name and Function

4-1. Motor Handpiece



4-2. Charging Stand



5. Operation

5-1. Switches (see Figure. 2)

1) Power & Program Switch

- To turn it on, press and hold the switch for longer than 1 second when the power is off.
- To turn it off, press and hold the switch for longer than 1 second while the power is on.
- The steps of 1 → 2 → 3 → 4 → 1 are repeated whenever the switch is pressed.

P1 : Forward / P2 : Reverse Reciproc / P3 : Forward Reciproc / P4 : Reverse

- Preset values (speed, torque) are displayed whenever each program is changed.

2) Motor On/Off Switch

- Pressing this switch will run the handpiece while it is not running.
- Press this switch to stop the handpiece while it is running.

3) Speed Preset Switch

Program	Initial Preset Value	Settable Preset Values
Forward	140, 240, 300, 400, 500	140,190,20,270,300,330,360,400,450,500
Reverse Reciproc	2, 4, 6, 8,10(0)	1 ~ 10(0)
Forward Reciproc	2, 4, 6, 8,10(0)	1 ~ 10(0)
Reverse	2, 4, 6, 8,10(0)	1 ~ 10(0)

※ Reciproc speed table

Preset	Speed	Reciproc mode (repeats per second)
1	140	3
2	190	4
3	240	5
4	270	6
5	300	7
6	330	8
7	360	9
8	400	1
9	450	11
10(0)	500	12

4) Select Switch

This switch is used to change or select a menu item and there is a difference in menu item selection between when the handpiece is running and when it is not running.



When the handpiece is not running :

- Select items : Speed → Torque → Run Mode → Speed

When the handpiece is running :

- Select items : Speed → Torque → Speed

* The signal of the selected item blinks with the exclusion of the speed.

- Auto Stop Reverse Forward (ASRF) :  and **A** blinks
- Auto Stop Reverse Stop (ASRS) : **A** blinks
- Auto Stop :  blinks

5) Increment / Decrement Switches

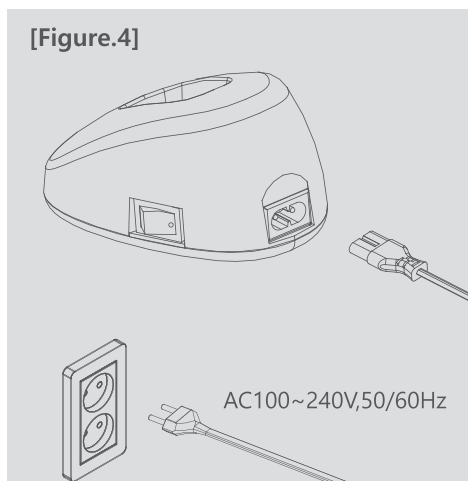
- Increase or decrease the torque value or speed selected by the selection switch.
- Change the operation mode selected by the selection switch.

5-2. How to Charge Battery (see Figure.3)

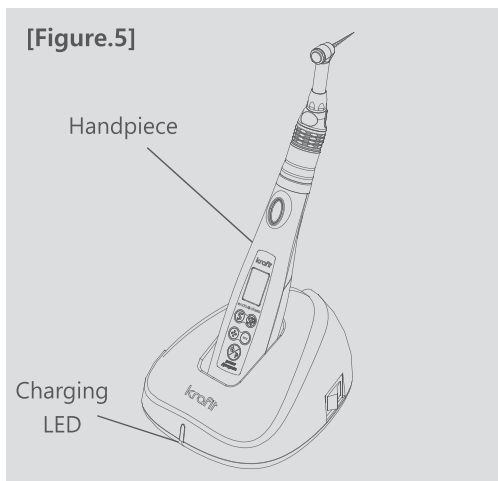
The battery must be fully charged according to the following instructions.

- 1) First of all, check if the voltage shown on the product corresponds to the local main power supply voltage before connecting to the power supply (the input power of Endo a Class is 100~240V).
- 2) Surely insert the power cord into the power connector at the rear of the charging stand and then connect the power cord to a power outlet(see **Figure. 4**).
- 3) After turning on the power switch, make sure that charging LED turns green (see **Figure.5**).
- 4) Put the handpiece into the charging stand to charge before the first use (when the handpiece is put into the charging stand, the charging LED is changed to yellow from green to indicate the unit is in charge. With a buzzer sound at the same time the handpiece is put, the handpiece LCD is turned on to show the battery charge level).

[Figure.4]



[Figure.5]



⚠ Warning

If there is no a buzzer sound or LCD is not turned on even after the handpiece is put into the charging stand, immediately stop using the unit and contact your near local dealer or service center for repair.

▲ Attention

- 1) When the charging LED is not turned on even after the power switch is turned on, there must be surely a problem in the charging stand circuit. In that case, contact your local dealer or service center for repair.
- 2) If the handpiece's charging terminal is dirty and contaminated, the handpiece will not be charged properly or will be troubled. It is surely required, therefore, to eliminate dirt completely before charging the handpiece.
- 3) Inserting the power cord or pressing the power switch too strongly may result in damage to the power connector, switch or circuit, to which careful attention must be paid.
- 4) Do not use the unit from other manufacturers with the charging stand of Endo a Class, and do not put substances, such as metal pieces, cable or liquid, into the charging stand because they may result in damage to the circuit or overheating and catching fire.
- 5) While the battery is in charge, there may be a likelihood of overheating at the rear of the handpiece, but the overheating is slight and transient and thus does not have any problem. If the handpiece is continuously put into and removed from the charging stand for a short time, it will not be fully charged with some overheat on the battery cover. Once the handpiece is put into the charging stand, therefore, do not remove the handpiece from the charging stand until it is fully charged.
- 6) The completely drained battery can not be charged, so it must be replaced with the new battery.
- 7) The battery temperature is continuously detected while the battery is charging. Avoid charging the battery in the location being exposed to an excessively high level of temperature change (under direct sunlight, near the window or heater). Install the charging stand in the area where the change in temperature is slight, in addition to less humidity.
- 8) The battery will not be charged when :
 - Battery temperature is excessively low or high.
 - Battery is fully charged.
 - Battery is damaged.
- 7) Surely use only Endo a Class's own charging stand to charge the handpiece.

5-3. Operation Modes

* Endo a Class can be set to operate in the following three modes, in order to protect the teeth of files from being damaged or broken down


Auto Stop Reverse Forward

When the motor handpiece is overloaded, it stops running immediately and runs in reserve direction until the overload is solved. After the overload is solved, the handpiece starts and runs again in forward direction.

Auto Stop Reverse Stop

When the motor handpiece is overloaded, it stops running immediately and runs in reserve direction until the overload is solved. After the overload is solved, the handpiece stops running.

No Indication Auto Stop

When the motor handpiece is overloaded, it stops running. If you need to run the motor handpiece in forward direction, press the on/off switch. 

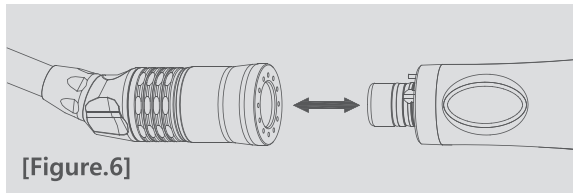
Warning

- If the amount of charge remaining in the battery gets too low, the actual load may not reach the preset torque value. In this case, the Auto Reverse function does not work.
- When the battery is overheated by using the motor handpiece continuously, the error message is automatically displayed to protect the circuit. Then, it is necessary to place the motor handpiece in a cool place for a while.

5-4. Program Memory Function

- The unit has the 4-memory functions for the user that make it possible for the user to set, memorize and recall the user's own speed, torque, gear ratio and operation modes.

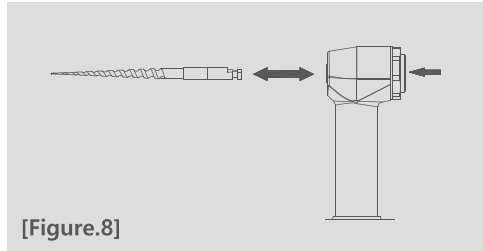
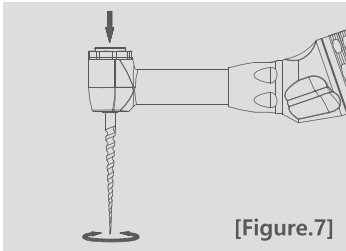
5-5. How to Connect and Disconnect the Contra Angle Attachment



⚠ Attention

- The contra angle attachment must be replaced surely after turning off the power.
- Do not use any contra angle attachment from other manufacturers with this unit.
- Check if the contra angle attachment is surely connected to the motor handpiece before operation.

5-7. How to Insert and Remove the File



- 1) Lightly turn and insert the file into the chuck while pressing and holding the button.
- 2) Make sure the file is properly inserted into the chuck by lightly pulling the file while not pressing the button.
- 3) Remove the file while pressing the button.

⚠ Attention


- Surely turn off the power to insert and remove the file.
- After inserting the file, check if it is properly inserted into the chuck by lightly pulling it by hand.
- Always clean the contact point of the file before insertion. If it is not inserted properly due to dirt, clean and insert the file again.
- Use the file not in excess of the file's recommended speed limit.

5-7. Buzzer Setting

Endo a Class can be set to select the On/Off of the buzzer sound that is made when the preset torque is reached (but the run key sound is always made).

- 1) Turn off the power while the buzzer is on and press the power switch while pressing the selection switch to turn off the buzzer.
- 2) Turn off the power while the buzzer is off and press the power switch while pressing the selection switch to turn the buzzer on.

Change in Symbols
Alarm Indicator

ON 

OFF No Indication

6. Error Messages

The following error messages displayed on the LCD will help you easily find out the cause of errors.

Error Code	Error	Cause	Solution
E1	The preset torque is exceeded.	<ul style="list-style-type: none"> - When the motor handpiece is locked. - When the load exceeding the preset torque is imposed. 	<ul style="list-style-type: none"> - Check if the angle portion is locked. - Increase the preset torque value.
E2	Battery voltage is excessively high.	<ul style="list-style-type: none"> - When battery type is different. - When the circuit is defective. 	<ul style="list-style-type: none"> - Replace the battery. - Contact the local service center for repair.
E3	Battery current detecting error is occurring.	<ul style="list-style-type: none"> - When electric current is excessively low even in the run mode or when the current is excessively high during operation. 	<ul style="list-style-type: none"> - Contact the local service center for repair.
E4	Battery voltage is too low while charging.	<ul style="list-style-type: none"> - When the voltage is low 10 minutes after charging. 	<ul style="list-style-type: none"> - Replace the battery.
E5	Battery voltage is too high while charging.	<ul style="list-style-type: none"> - When the voltage is high 10 minutes after charging. 	<ul style="list-style-type: none"> - Replace the battery. - Contact the local service center for repair.
E6	Battery temperature is excessively high.	<ul style="list-style-type: none"> - When battery temperature is abnormally high. 	<ul style="list-style-type: none"> - Replace the battery. - Contact the local service center for repair.
E7	Motor driver circuit is defective.	<ul style="list-style-type: none"> - When the circuit part is damaged. 	<ul style="list-style-type: none"> - Contact the local service center for repair.

▲ Attention

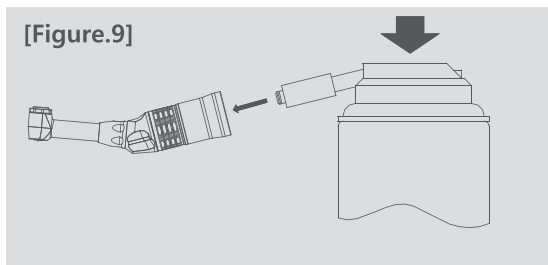
Every error message is cleared by pressing the motor on/off switch, and the unit then returns to standby mode.

7. Cleaning, Maintenance and Repair

7-1. Maintenance and Repair of Contra Angle

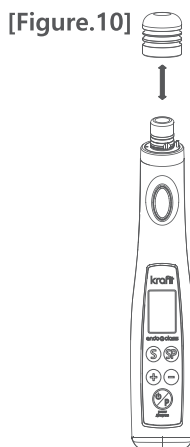
Only the contra angle attachment of Endo a Class is allowed to be lubricated. The lubrication is needed after each use and before sterilization.

- 1) Lubricate once a day or before sterilization.
- 2) Insert the spray nozzle into the inserting part of the contra angle as shown in Figure. 9, and spray five times.



7-2. Handling of Contra Angle

- When the motor handpiece is dirty or contaminated, carefully wipe off the dirt with a soft cloth saturated with rubbing alcohol.
- When the contra angle is detached to perform lubrication or sterilization and to charge the motor handpiece, the motor handpiece must be capped to prevent the motor handpiece from being contaminated with dirty materials (see Figure. 10).



▲ Attention

- Never lubricate the motor handpiece.
- Completely wipe off oil coming out from the contra angle before inserting it into the motor handpiece. In addition, the contra angle must be inserted after the oil is dried.
- It is recommended to use the spray can vertically.
- Do not use soluble liquids, such as benzene or thinner, when cleaning the motor handpiece.

7-3. How to Sterilize

Only the contra angle attachment of Endo a Class is allowed to be sterilized. It is recommended to sterilize the contra angle using the autoclave during or after treatment, according to the following procedures.

- 1) Clean the contra angle using a soft brush and then wipe out the dirt on its surface with a soft cloth(do not use a metal wire brush).
- 2) Lubricate the contra angle as specified in above Article 7-1.
- 3) Put the contra angle into the autoclave.
- 4) Set the temperature of the autoclave. (4 minutes at 132°C and drying 30 minutes)

▲ Attention

- Never sterilize the motor handpiece.
- Do not use soluble liquids, such as benzene or thinner, when cleaning.
- The device consists the durability of at least 250 sterilization cycles.

7-4. How to Change the Battery

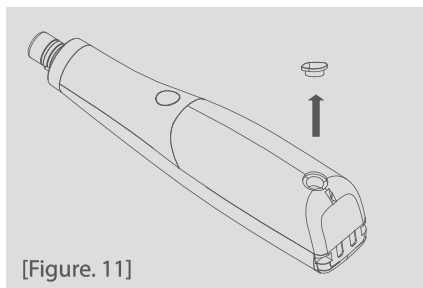
A nickel metal hydrogen rechargeable battery is used for Endo a Class and is rechargeable over 500 times, dependin on the user's operation methods and the motor handpiece's conditions. If the motor handpiece's overall operation time or rpm is reduced considerably, the battery life can be considered to be finished, due to the battery memory effect. When the battery life is finished, then contact your local dealer for battery replacement. Careful attention must be paid to the following precautions when replacing the battery.

▲ Attention

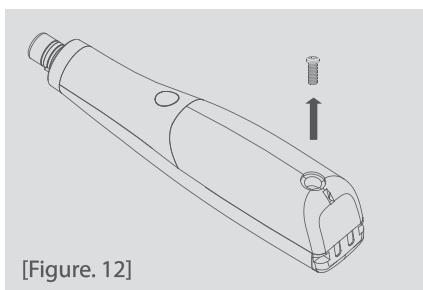
- Do not open any cover other than the battery cover.
- Make sure to use only the designated battery (AAA nickel metal hydrogen rechargeable battery, 1.2V standard - its specification varies depending on manufacturers).
- Do not use any non-rechargeable batteries, such as alkaline batteries and manganese batteries, that may result in explosion and gas emission during charging.
- If the liquid leaks or direct contact of the eyes with the liquid happens, immediately rinse the eyes with plenty of water and seek medical advice.
- In case of the battery replacement, only the designated batteries must be used and they must be both replaced at once : Otherwise, there may be liquid leakage or explosion.
- Do not replace the battery with wet hands because the battery terminal may be contaminated and corroded.

First of all, it is required to prepare in advance two appropriate sized screwdrivers (slot and cross screwdrivers) for replacing the battery.

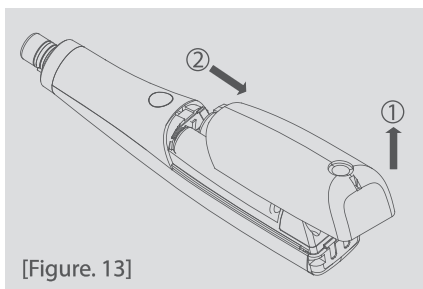
- 1) Surely turn off the power before replacing the battery.
- 2) Remove the rubber cover of the battery cover by using a slot screwdriver (see Figure.11).



- 3) Unscrew the battery cover using a cross screwdriver (see Figure 12).
- 4) Lift up the lower part of the battery cover(②) and move it toward the charging terminal(①) to remove the battery cover (see Figure. 13).



- 5) Remove the used battery.
- 6) Place the new battery in the compartment after checking the polarity on the battery.
- 7) Screw the battery cover using a cross screwdriver and insert the rubber cover
- 8) The new battery must be fully charged before initial use.



⚠ Attention

- Special care must be taken not to lose the screw and rubber cover.
- Avoid tightening the screw too strongly after replacing the battery.

8. Troubleshooting

Problem	Cause	Solution
LCD does not turn on.	- When the battery was completely drained. - When the motor handpiece was not used for a long time.	- If the battery was not completely drained, it must be charged again. If completely drained, however, replace with a new battery.
	- When the battery is not loaded.	- Place the battery in compartment.
Battery is not charged properly.	- When the battery is completely drained.	- Replace with a new battery.
	- When the battery temperature is too low.	- Reinstall the charging stand with battery in a proper place where the temperature is above 0°C
	- When the battery temperature is too high	- If the battery temperature is too high, the battery is not charged. If the battery is not charged with overheat, contact your local dealer for repair.
	- When the battery voltage is too high.	- Make sure that a nickel metal hydrogen rechargeable battery is used. If not, replace with the nickel metal hydrogen battery.
	- When the motor handpiece does not properly contact the charging stand.	- Properly place the motor handpiece in the charging stand.
	- When an error code is display.	- Check the error message.
Battery charging stand is not working (the charging stand's LED is not turned on).	- When the power cord is not connected to a power outlet.	- Surely connect the power cord to a power outlet.
	- When the power cord is not connected to a power connector.	- Connect the power cord to the power connector of the charging stand.
	- When the power switch is turned off.	- Turn in the power switch.
	- When the fuse is cut.	- Contact your near dealer.
Motor handpiece loaded on the charging stand is overheated.	- When the battery or the circuit of the motor handpiece is defective.	- Contact your local dealer for repair.
Motor handpiece is not rotating	-When dust comes into contra angle.	- Clean the contra angle or replace with a new contra angle.
The power of the motor handpiece is unusually weak.	-When the remaining voltage in the battery is too low.	- Charge the battery.

Problem	Cause	Solution
Auto/Reverse function is not working.	- When the remaining voltage in the battery is too low.	- Charge the battery.
The RPM of the motor handpiece is unusually reduced.	- When the remaining voltage in the battery is too low.	- Charge the battery.

9. Product Specifications

- **Motor Handpiece**
 - Battery type : Nickel Metal Hydrogen Battery (AAA size)
 - Input Voltage : 2.4 V
 - Rated Capacity : 1000mAH
 - Dimensions : 135 (W) x 27 (D) x 28 (H)
 - Weight : 150g
- **Charging Stand**
 - Input Power : AC 100~240 V, 11VA
 - Rated Current : 800mA
 - Output Voltage : DC 5V
 - Charging Time : Approx. 90min
 - Dimensions : 98 (W) x 115 (D) x 60 (H)
 - Weight : 160g
- **Contra Angle**
 - Coupling Type : SAEYANG'S own coupling type




10. Warranty

- All items of this unit are guaranteed for 12 months from the date of purchase.
- This guarantee expressly excludes any consequential failure or damage caused by neglect handling, incorrect fitting and misuse.

11. Product Disposal

- For the disposal of this product, please contact your local dealer.
- Even though the used battery can be recycled, the environmentally correct method for disposing of the used battery may vary between countries. It is recommended, therefore, to return the used battery to your local dealer.

■ Symbol

Symbol	Description
	The serial number that identifies the object.
	Manufacturer
	Caution / Warning
	General warning sign
	Refer to instruction manual
	Class II equipment
	Type B applied part
CE 1639	The official mark of Europe certificate.
R	Caution : Federal law restricts this device to sale by or on the order of a dentist.
	European certificated company which represents us.
	WEEE Mark
	Temperature limits.
	This way up.
	Keep dry.
	No hook.
	Handle with care.

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