

Micromotor

VIVA ace

VIVA ace Motor Kit



OPERATION MANUAL

Please read this OPERATION MANUAL carefully before use, and file for future reference.

Thank you for purchasing VIVA ace Motor Kit.

Please read this Operation Manual and the VIVA ace Basic Set Operation Manual carefully before use for operating instructions and care and maintenance guidelines so that you can use it for many years to come through a correct use.

Keep this Operation Manual within easy reach of users for future reference.

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Operation procedure of this product is introduced in a movie.

Check the following URL or the QR code.

URL

<http://www.nsk-dental.com/support/videos/>



*This product is used connecting to VIVA ace Basic Set.

1 User and Indications for Use

User : Dentist, Dental hygienist

Indications for use : The motor is intended for teeth and denture cutting, polishing and root canal treatment.

2 Precautions for handling and operation

- Please read these precautions carefully and use only as intended or instructed.
- Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device.
Safety instructions are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
 WARNING	Hazard that could result in serious injury or damage to the device if the safety instructions are not correctly followed.
 CAUTION	Hazard that could result in light or moderate injury or damage to the device if the safety instructions are not correctly followed.
NOTICE	General product specification information highlighted to avoid product malfunction and performance reduction.

WARNING

- Do not attempt to disassemble the product nor tamper with the mechanism except as recommended by NSK in this Operation Manual. This may result in an injury, electric shock or fire.
- Do not touch the connection (terminal section) of the Motor and the Motor Cord. This could cause an electric shock.
- Do not use the product when the patient or the operator is using cardiac pacemakers as there is a danger that could affect the pacemaker.
- Keep away from explosive substances and flammable materials. Also, keep away from patients whom a flammable anesthetic (laughing gas) is administered as this may cause fire.
- Electromagnetic waves may cause malfunction of the product. Keep away from devices that generate electromagnetic waves. Turn off the product around ultrasonic generators (excluding the product) or electrode knife. Keep away from communication equipment or elevators that generate electromagnetic waves.

Precautions for handling and operation

CAUTION

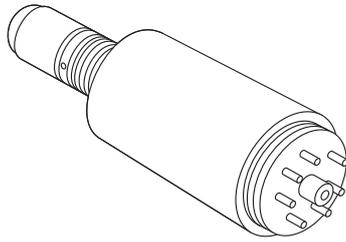
- When operating the product always consider the safety of the patient.
- Use only as indicated.
- Users are responsible for the operational control, maintenance and periodical maintenance checks of this product.
- Operators and all others in the area must wear eye protection, a mask, and gloves when operating this product.
- Should the product functions abnormally, cease operation immediately and contact your Authorized NSK Dealer.
- Do not turn the lighting of the motor directly to the eyes of the patients or the operators. There is a danger that it may damage the eyes.
- Do not clean, immerse, or wipe with electrolyzed-oxidizing water (strong acidic water, super acidic water), strong acidic and strong alkaline liquid medicine, solvent containing chlorine, benzene, or thinner.
(Reference : 6 Post-use Maintenance)
- The motor is delivered in a non-sterile condition and must be autoclaved prior to use.
(Reference : 6-4 Sterilization)
- Immediately wipe off any moisture, liquid medicine, solvent, or liquid disinfection on the Handpiece and Motor Cord after use. Failure to do so may cause discoloration and deformation.
- Check for motor vibration, noise and overheating. If any abnormalities are found do not use the motor and contact your Authorized NSK Dealer. (Reference : 4-4 Check before treatment)
- Avoid excessive load and long-time use because it could cause overheating.
- Do not allow any impact on to the product. Do not drop the product. It could cause damage.
- Perform regular function and maintenance checks. (Reference : 7-2 Periodical Maintenance Checks)
- If the product is not used for a long period, check for motor vibration, noise and overheating before using on a patient.
- Portable and mobile RF communications equipment may affect Medical Electrical equipment. Do not use RF equipment near the product.
- The temperature of the motor surface may reach up to 50 degrees depending on the condition of use. In that case, leave the motor until it cools down before using it again.

NOTICE

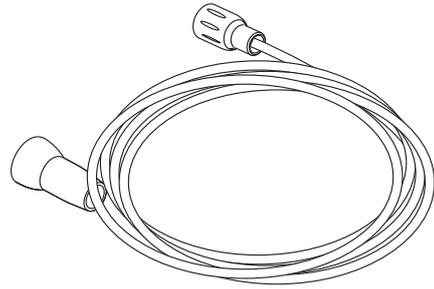
- The motor and Motor Cord during operation could interfere with the computers, LAN cables in vicinity of use or could cause noise in radio receivers nearby.
- To avoid clinical downtime, it is recommended that a spare is kept on hand in case of a breakdown during surgery.
- Contact the Authorized NSK Dealer for repairing. The service staff of the company will take care of the product in accordance with the service manual.
- No special training is required for this device.
- EMC (Electromagnetic compatibility) has been evaluated with the VIVA ace Control Unit and conforms to the requirements.

3 Package Contents

①



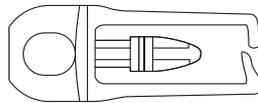
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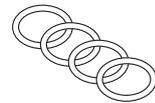
③



④



⑤



No.	Part Name	Order Code	Quantity	Remarks
1	Motor	E1040051	1	-
2	Motor Cord	E1040070	1	-
3	Motor Cap	20001300	1	-
4	Protection Plug	10001595	1	-
5	O-ring Set	Y1003728	1	Spare for replacement for Motor inserting part (Black 3 pieces, Blue 1 piece)
6	Operation Manual	-	1	*Not in the illustration.

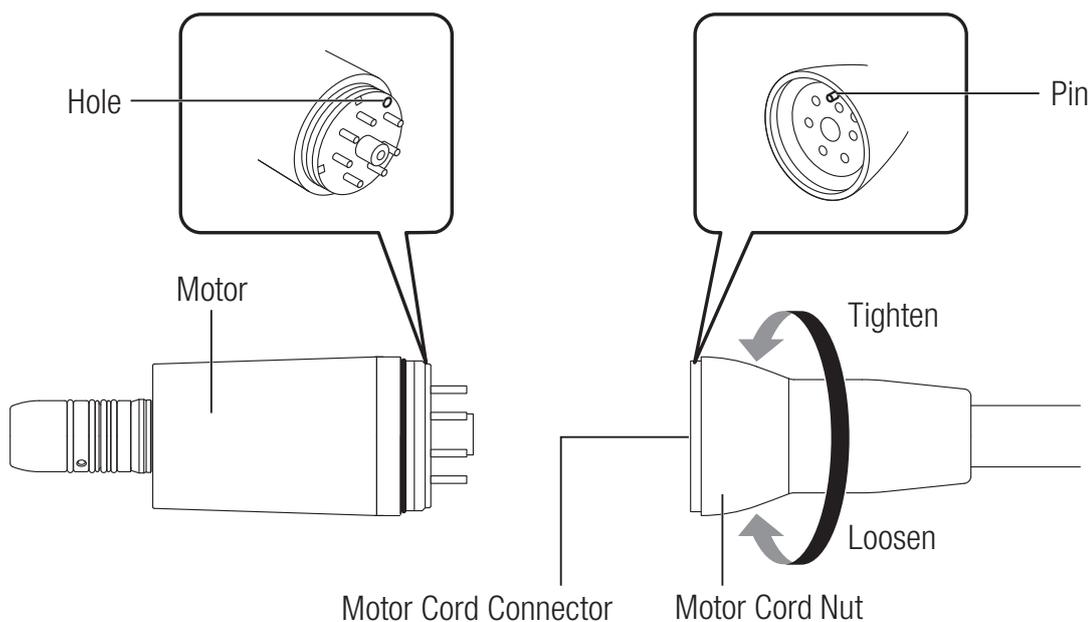
Please specify the order code listed above when purchasing the spare parts.

4 Preparation for Use

4-1 Connecting and Disconnecting the Motor Cord and the Motor

<Connection>

Aligning the hole on the back of the Motor and the pin on the Motor Cord Connector, insert the pin straight into the hole and tighten the Motor Cord Nut firmly.

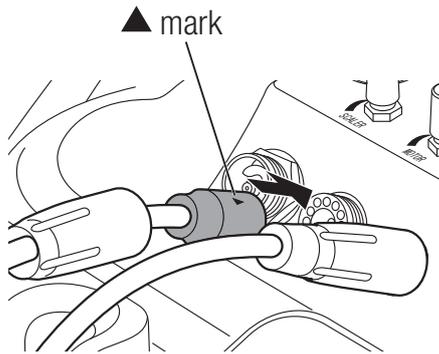


<Disconnection>

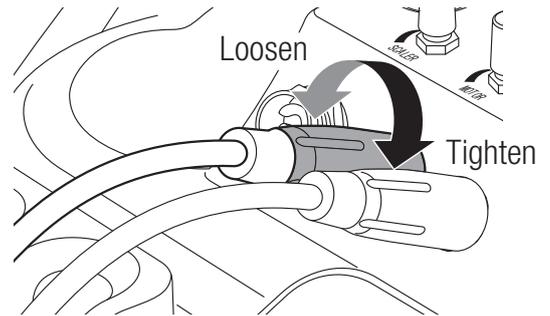
Loosen the Motor Cord nut. Gently separate the motor from the cord.

4-2 Connecting the Motor Cord and VIVA ace Control Unit

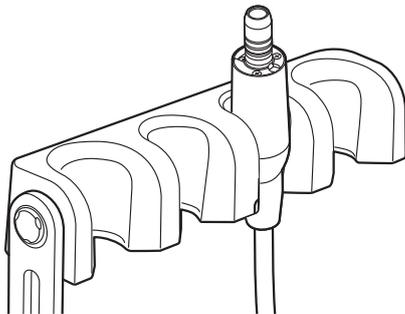
1 Aligning the ▲ mark of the Motor Cord plug and the shape of the terminal as shown below, insert the plug deep into the motor connector.



2 Turn the Plug Cover for tightening.



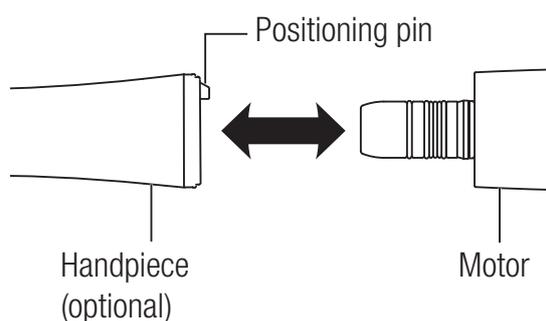
3 Put the Motor on the holder.



4-3 Connecting and Disconnecting the Handpiece (optional)

1 Insert the Handpiece straight into the Motor. When connecting an optic handpiece, turn the Handpiece either to the right or left until hearing a clicking sound securing the position.

2 Confirm that the Handpiece is connected firmly.



<Disconnecting>

Holding the front part of the Motor and the end part of the Handpiece, gently pull straight apart.

⚠ CAUTION

- Use the following handpiece.
 - ISO 3964 (EN 23964) compliant handpiece
 - 93/42/EEC compliant handpiece
- Connect/disconnect the Handpiece after the Motor has completely stopped.
- Adjust the speed within its allowable speed of the Handpiece (optional).
- Do not leave the lubricated Handpiece attached to the Motor. The oil may enter the Motor and cause a malfunction.
- Keep the lubricated Handpiece in a different place in a standing condition and attach it to the Motor before using it.
- Be careful not to get water into the Motor because it could cause a malfunction.

4-4 Check before treatment

Follow the Instruction manual for VIVA ace Basic Set. (Reference : 5-10 Check before treatment)

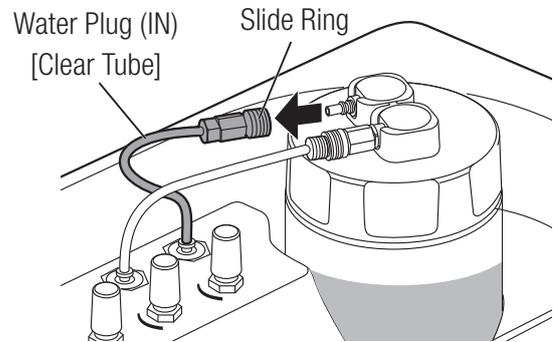
5 Operation Procedure

Follow the Operation Manual for VIVA ace Basic Set. (Reference : 6 Operation Procedure)

6 Post-use Maintenance

6-1 Preparation for Maintenance

- 1 Wear eye protection, a mask, and gloves to prevent infection.
- 2 Turn off the Power Switch of the Control Unit.
- 3 Remove the Water Plug (IN) [Clear Tube] while pulling the Slide Ring.
- 4 Remove the Water Plug (OUT) [Blue Tube] pressing the Slide Ring.
- 5 Dispose of the water in the Water Bottle and place the empty bottle again in the Control Unit.
- 6 Turn on the Power Switch of the Control Unit.
- 7 Maximize Motor Water Adjuster, activate the Motor to let out the water remaining in the Motor Cord.



⚠ CAUTION

- Do not clean, immerse, or wipe with electrolyzed-oxidizing water (strong acidic water, super acidic water), strong acidic and strong alkaline liquid medicine, solvent containing chlorine, benzene, or thinner.
- Do not lubricate the Motor. It may cause overheating and a malfunction.

NOTICE

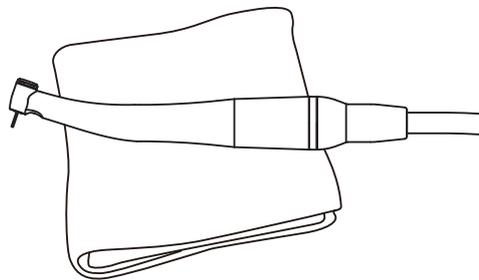
- Be sure to remove the Water Plug (IN) [Clear Tube] first.
- Note that if the Water Plug (OUT) [Blue Tube] is removed first, the water in the bottle may blow out for a moment.
- When the Water Bottle (IN) [Clear Tube] is removed, the air in the bottle bursts out and makes a noise. However, this is not a failure.

6-2 Maintenance for Between Each Patient

6-2-1 Cleaning and Disinfection of the outside of the Motor and the Motor Cord, and Replacing the Motor

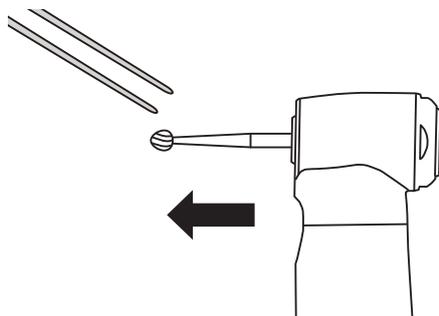
< Cleaning >

- 1** Remove the all debris on the surface of the Handpiece, Motor and the Motor Cord with a wipes (Minuten Wipes: ALPRO).

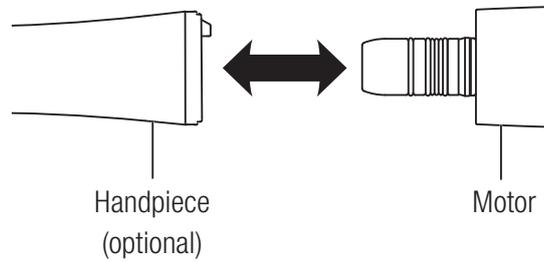


Minuten Wipes (ALPRO)

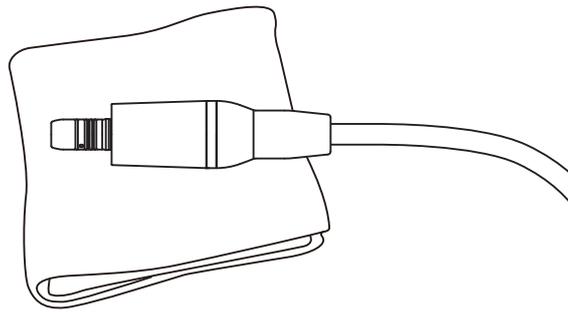
- 2** Remove the bur form the Handpiece with tweezers.
* Maintenance of the bur should be done in accordance with the operation manual issued by manufacturer.



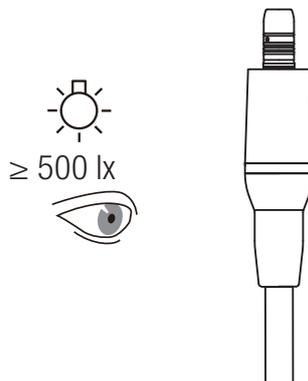
- 3** Remove the Handpiece from the Motor
 * Reference: "4-3 Connecting and Disconnecting the Handpiece (optional)".
 * Maintenance of the Handpiece should be done in accordance with its operation manual.



- 4** Wipe the debris on the surface of the Motor and the Motor cord using a cloth moistened with water.



- 5** Under appropriate lighting (500 lx or higher), inspect the Motor and the Motor cord for contamination.
 If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No.4.

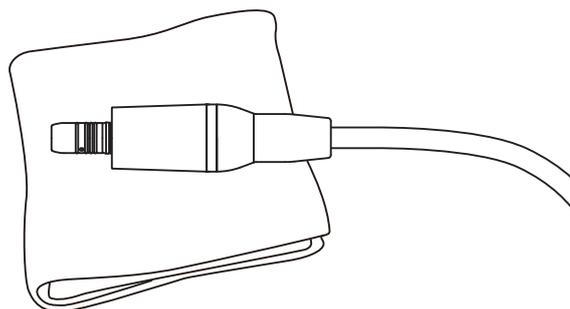


6-2-1

Cleaning and Disinfection of the outside of the Motor and the Motor Cord, and Replacing the Motor (Continued)

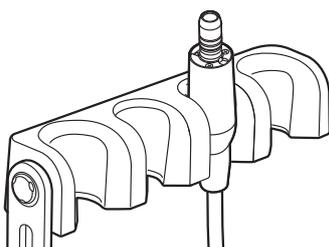
< Disinfection >

- 1 Wipe the surface of the Motor, the Motor Cord and the Holder of the Control Unit with the disinfectant wipes (Minuten Wipes: ALPRO).



Minuten Wipes (ALPRO)

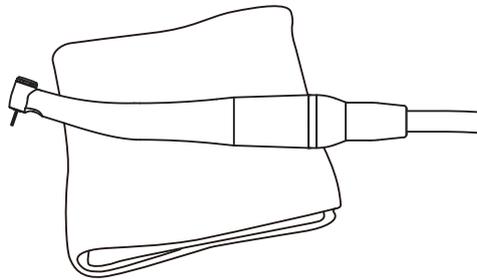
- 2 Disconnect the Motor from the Motor Cord, then attach a sterilized Motor and place it on the Holder.



* Be sure to sterilize a used Motor. Reference: "6-4 Sterilization".

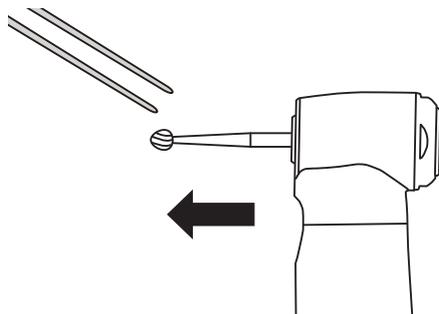
6-3 Maintenance After Close**6-3-1 Cleaning and Disinfection of the outside of the Motor and the Motor Cord****< Cleaning >**

- 1** Remove the all debris on the surface of the Handpiece, Motor and the Motor Cord with a wipes (Minuten Wipes: ALPRO).



Minuten Wipes (ALPRO)

- 2** Remove the bur form the Handpiece with tweezers.
* Maintenance of the bur should be done in accordance with the operation manual issued by manufacturer.

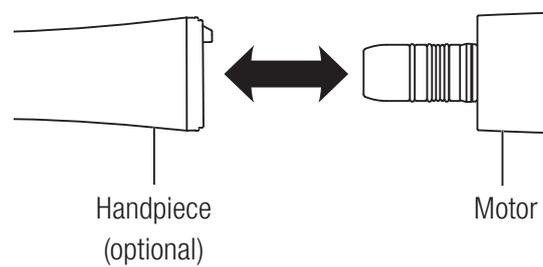


6-3-1

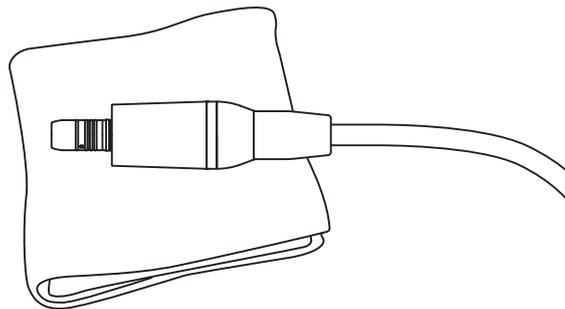
Cleaning and Disinfection of the outside of the Motor and the Motor Cord (Continued)

< Cleaning (Continued) >

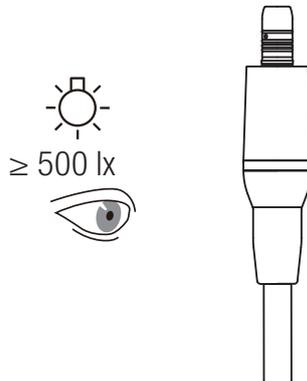
- 3** Remove the Handpiece from the Motor
* Reference: "4-3 Connecting and Disconnecting the Handpiece (optional)".
* Maintenance of the Handpiece should be done in accordance with its operation manual



- 4** Wipe the debris on the surface of the Motor and the Motor cord with a cloth moistened with water.

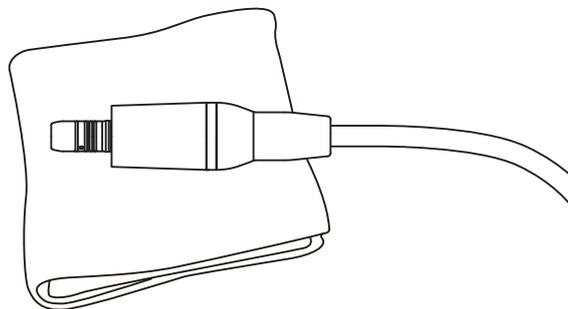


- 5** Under appropriate lighting (500 lx or higher), inspect the Motor and the Motor cord for contamination.
If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No.4.



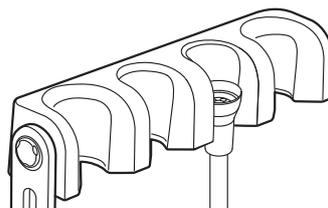
< Disinfection >

- 1** Wipe the surface of the Motor, the Motor Cord and the Holder of the Control Unit with the disinfectant wipes (Minuten Wipes: ALPRO).



Minuten Wipes (ALPRO)

- 2** Disconnect the Motor from the Motor Cord.
Motor Cord: Place the Holder of the Control Unit.
Motor: Proceed to section "6-4 Sterilization"



6-4 Sterilization

CAUTION

- Follow local rules, regulations, and guidelines regarding the reprocessing of devices.
- Do not autoclave the product with other instruments even when it is in a pouch. This is to prevent possible discoloration and damage to the product from chemical residue on other instruments.
- Be sure to use sterilizers that can perform sterilization up to 135°C. In some sterilizers, the chamber temperature may exceed 135°C. Do not use these sterilizers as failure of the product could occur. Contact the sterilizer manufacturer for detailed information about cycle temperatures.
- Keep the product in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt and sulphur.
- Do not touch the product immediately after autoclaving as it will be very hot and must remain in a sterile condition.
- Autoclave sterilization is recommended for the product. The validity of other sterilization methods (such as plasma sterilization or EOG sterilization) is not confirmed.
- Immediately after sterilization is complete (within 1 hour), remove the Motor from the sterilizer. Failure to do so may cause corrosion.

NOTICE

- NSK recommends Class B sterilizer as stated in EN 13060.
- For details, confirm to the manufacturer's of the sterilizer operation manuals.

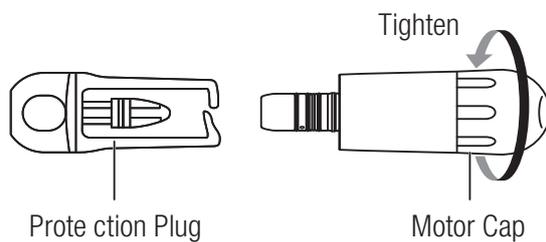
Apply autoclave sterilization for the following products. After each patient treatment, sterilize the products as follow.

Autoclavable equipment: Motor, Motor Cap, Protection Plug,

< Preparation before sterilization >

1 Tighten the Motor Cap to the connection part of the Motor Cord and place the Protection Plug in the insert part of the Motor.

2 Insert the Motor with the Protection Plug and the Motor Cap to the sterilization pouch that conform to ISO 11607-1 and seal the pouch.



< Sterilization >

Autoclave the Motor. Conduct autoclave sterilization as follow.

Type	Gravity Displacement		Pre-Vacuum (Dynamic Air Removal)
Temperature	121°C (0 / +4°C)	132°C (0 / +4°C)	134°C (0 / +4°C)
Full Cycle Time	20 min. or longer	15 min or longer	3-18 min
Drying Time	30 min or longer	30 min or longer	30 min or longer

Store the product in a place where it is kept clean and keep it in a sterilization pouch until it is used next.

Post-use Maintenance

6-5 Maintenance of the Water Line for the Motor and the Motor Cord

Cleaning and Disinfection should be done in the cleaning tank.

CAUTION

- Be sure to perform Cleaning and Disinfection the "6-3 Maintenance after Close (Cleaning and Disinfection of the outside of the Motor and the Motor Cord)" before "6-5 Maintenance of the Water Line for the Motor and the Motor Cord".

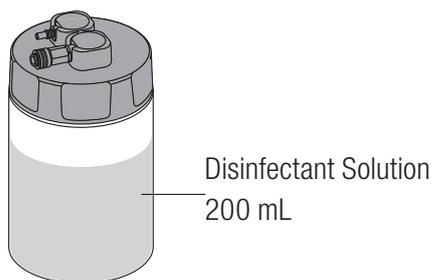
6-5-1 Preparation of the Water Line before Disinfection

Disinfect with Alpro Bilpron (ALPRO) (undiluted) is recommended as maintenance once or twice week.

- 1 Put 200 mL of disinfectant solution in the Water Bottle. Tightly close the Water Bottle lid and place the Water Bottle in the Control Unit.

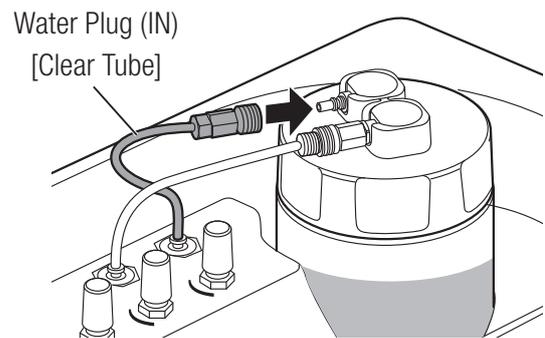
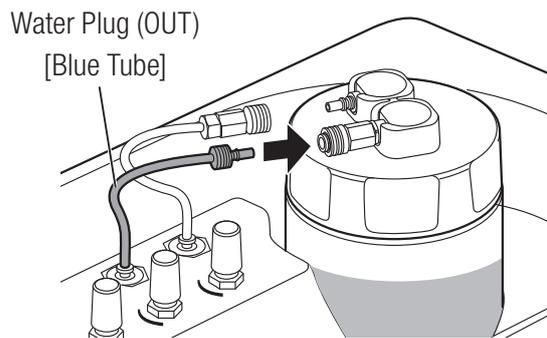
* For details, confirm the operation manual issued by manufacturer.

Disinfectant Solution: Alpro Bilpron (ALPRO) (undiluted)



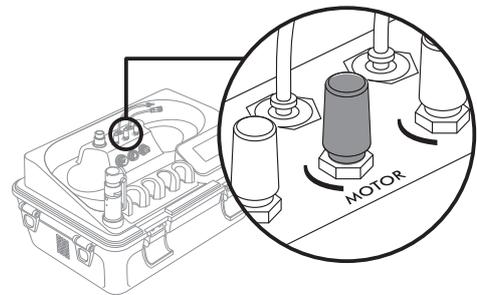
- When there is not enough disinfectant solution, turn off the Power Switch of the Control Unit, take out the Water Bottle, and add disinfectant solution.

- 2** Insert the Water Plug (OUT) [Blue Tube] and the Water Plug (IN) [Clear Tube] to the lid until hearing a clicking sound.



- 3** Turn on the Power Switch of the Control Unit.

- 4** Maximize the Motor Water Adjuster.



6-5-2

Disinfection of the Water Line of the Motor and the Motor Cord

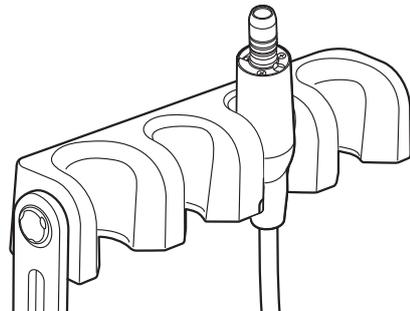
1 Push the MOTOR Key.
Turn ON the SPRAY Key to irrigation.

2 Hold the Motor and the Motor Cord in the cleaning tank.



3 Press the ON/OFF Key for 2 seconds and activate for 10 seconds or more to confirm that the disinfectant solution comes out from the tip of the Motor.

4 Place the Motor and the Motor Cord on the Holder of the Control Unit state for a night (at least 12 hours).



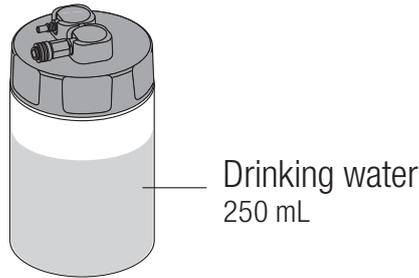
CAUTION

- Disinfectant solution remains in the Water Line by letting the solution out from the tip of the Motor.
- It takes 12 hours to complete the disinfection after disinfectant solution remain on the Water Line of the Motor and the Motor Cord.

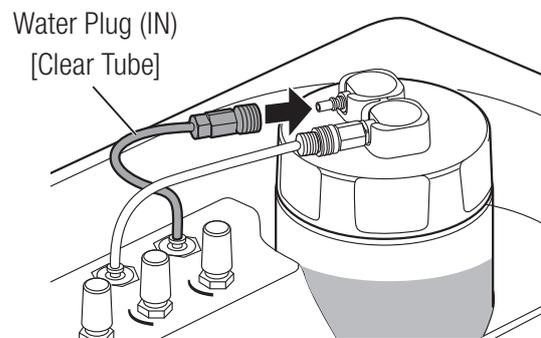
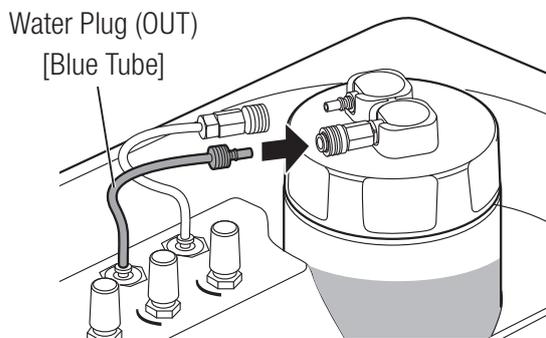
6-5-3

Rinsing of Water Line of the Motor and the Motor Cord after Disinfection

- 1 Put 250 mL of drinking water in the Water Bottle. Tightly close the Water Bottle Lid and place the Water Bottle in the Control Unit.



- 2 Insert the Water Plug (OUT) [Blue Tube] and the Water Plug (IN) [Clear Tube] to the lid until hearing a clicking sound.

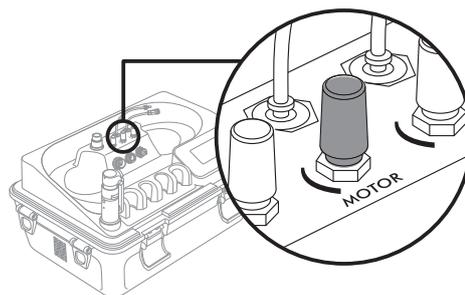


6-5-3

Rinsing of Water Line of the Motor and the Motor Cord after Disinfection (Continued)

3 Turn on the Power Switch of the Control Unit.

4 Maximize the Motor Water Adjuster



5 Push the MOTOR Key.
Turn ON the SPRAY Key to irrigation.

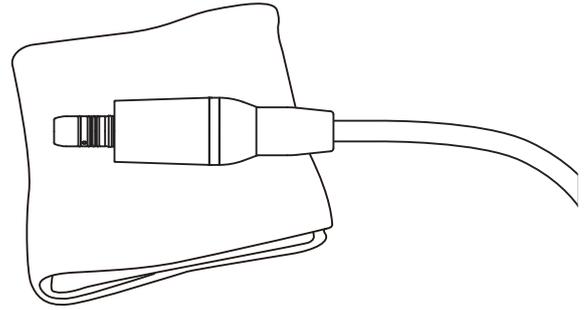
6 Hold the Motor and the Motor Cord in the cleaning tank.



7 Press the ON/OFF Key for 2 seconds and activate for 10 seconds or more to confirm that drinking water comes out from the tip of the Motor.

- When there is not enough drinking water, turn off the Power Switch of the Control Unit, take out the Water Bottle, and add drinking water.

8 Wipe the surface of the Motor and the Motor Cord with the disinfectant wipes (Minuten Wipes: ALPRO).



Minuten Wipes: ALPRO

9 Disconnect the Motor from the Motor Cord then attach the sterilized Motor to the Motor Cord and place it on the Holder.

- Be sure to sterilize the rinsed Motor (Including Water Line) before use.
Reference: "6-4 Sterilization."

⚠ CAUTION

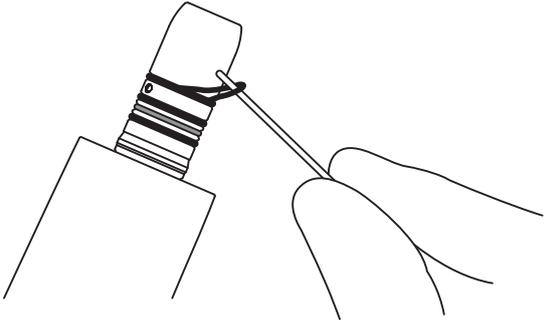
- After rinsing, be sure to sterilize the Motor. Reference: "6-4 Sterilization".

7 Maintenance

7-1 Replacing the O-ring

When the Handpiece does not come off easily or water or air leaks because of deterioration of the O-ring, replace the O-ring.

Take off the O-ring at the insert part of the Motor with a needle and fit a new O-ring in the O-ring groove.



* Refer to "3. Package Contents" to identify the replacement O-ring.

CAUTION

- There are four O-rings in total. The size of the blue one is different from the other ones. Refer to the illustration and place it in the correct position.
- Problems below could occur due to deterioration of the O-ring.
 - Water leakage, No water supply.
 - Air leakage, No air supply.
 - Generates Vibration.
 - The Handpiece cannot be connected/disconnected easily.

O-ring (Blue)

O-ring (Black)

7-2 Periodical Maintenance Checks

Every 3 months perform periodical maintenance checks, referring to the check sheet below. If any abnormalities are found, contact your Authorized NSK Dealer.

Points to check	Details
Rotation	Rotate the Motor and check if there is any abnormal vibration, noise, or generation of heat.

8 Troubleshooting

8-1 Problems and Solutions

When a problem is detected, check the following again before requesting a repair. If none of these is applicable or if the trouble is not remedied even after an action has been taken, a malfunction of this product is suspected. Contact your Authorized NSK Dealer.

Problem	Cause	Remedy
No rotation of the Motor	Insufficient connection of the Motor Cord	Check the connection.
No LED lighting	Blowout of LED	Contact your Authorized NSK Dealer.
Water leakage	Insufficient connection of the Motor Cord	Check the connection.

9 Specifications

9-1 Specifications

Model	NLX Plus
Rotation Speed	100 - 40,000 min ⁻¹
Maximum Torque	4.0N · cm
Dimension	DØ22 x H77 mm

	Temperature	Humidity	Pressure
Use environment	0 - 40°C	30 - 75%*	
Transportation and storage environment	-10 - 50°C	10 - 85%*	500 - 1060hPa

*No condensation.

9-2 Classification of Equipment

- Method of sterilization or disinfection recommended by the manufacturer:
Reference : 6-4 Sterilization
- Degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
Equipment NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
- Mode of operation:
Intermittent operation device (ON : 2 minutes, OFF : 3 minutes)

9-3 Symbol



This product is Autoclavable up to Max. 135°C.



Conforms to CE European Directive of “Medical device directive 93/42/EEC.”



Manufacturer.



Authorized representative in the European community.



Consult operation instructions.



Caution, Refer to attached instructions.

10 After-sales Service

10-1 Warranty

NSK products are warranted against manufacturing errors and defects in materials. NSK reserves the right to analyze and determine the cause of any problem. Warranty is voided should the product be not used correctly or for the intended purpose or has been tampered with by unqualified personnel or has had non NSK parts installed. Replacement parts are available for seven years beyond discontinuation of the model.

10-2 Disposing Product

In order to avoid the health risks of operators handling the disposal of medical equipment, as well as the risks of environmental contamination caused thereof, a surgeon or a dentist is required to confirm the equipment is sterile. Ask specialist firms who are licensed to dispose of specially controlled industrial wastes, to dispose the product for you.

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Specifications are subject to change without notice.

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