

**NSK**

Endodontic Contra Angle Handpiece

**NLZ Endo**

OPERATION  
MANUAL

CE 0197 MADE IN JAPAN

OM-C0594E 001

## CAUTION

- This product is only for use with the “NLZ E” motor from NSK. Do not connect it to motors other than the NLZ E. Also, do not use this product with modes other than the Rotary Endo Mode and Reciprocating Endo Mode of the NLZ E. Doing so may exceed the allowed rotation speed, which can cause early gear deterioration, overheating, and damage to the file.
- When using the Reciprocating Endo Mode of the NLZ E, use a WaveOne<sup>®</sup> reciprocating file manufactured by the Dentsply Sirona Group. WaveOne<sup>®</sup> is a registered trademark of Dentsply Sirona Inc.

## 1. User and Indications for Use

User: Dental professionals



Indications for Use:

The NLZ motor system is intended for use by dental professionals in the performance of dental restoration, prophylaxis and endodontic procedures.

The NLZ Endo contra angle handpiece is intended for use by dental professionals in the performance of dental endodontic procedures.

## 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
 <b>WARNING</b>	Hazard that could result in serious injury or damage to the device if the safety instructions are not correctly followed.
 <b>CAUTION</b>	Hazard that could result in light or moderate injury or damage to the device if the safety instructions are not correctly followed.
<b>NOTICE</b>	General product specification information highlighted to avoid product malfunction and performance reduction.

## **WARNING**

- Immediately after a treatment (within 1 hour), perform maintenance and then store the handpiece. Failure to properly maintain the handpiece may lead to overheating, causing infection, burn injuries or product failure. (Refer to “7. Post-use Maintenance”)
- If blood infiltrates inside a handpiece, an automatic handpiece cleaning and lubrication system may not totally clean the internal handpiece components and may lead to blood coagulation inside the handpiece. Coagulated blood may cause handpiece failure and overheating, causing burn injuries. To avoid the risk, NSK recommends to immediately lubricate those handpieces with PANA SPRAY Plus.
- Depressing the Push Button while the handpiece is in rotation may lead to overheating, causing burn injuries or product failure. Avoid the push button to contact with any oral tissue.
- Keep any debris or other foreign materials away from inside the gear or the handpiece. Foreign materials remaining inside may lead to overheating, causing burn injuries or other accidents.
- Ball bearings, in time, will become worn and will require replacement. Be sure to inspect the handpiece before use (Refer to “6. Checking the Handpiece Before Each Use”). If abnormal vibration or noise are found, the bearings or other internal parts may require replacement. Damaged parts may lead to handpiece overheating causing burn injuries. If overheating is suspected, stop using the handpiece immediately and contact your Authorized NSK Dealer.

## CAUTION

- This product is only for use with the “NLZ E” motor from NSK. Do not connect it to motors other than the NLZ E. Also, do not use this product with modes other than the Rotary Endo Mode and Reciprocating Endo Mode of the NLZ E. Doing so may exceed the allowed rotation speed, which can cause premature gear deterioration, overheating, and damage to the file.
- Read this Operation Manual before use to fully understand the product functions and file for future reference.
- When operating the product always consider patient safety.
- Users are responsible for the operational control, maintenance and continual inspection of this product.
- Prior to clinical use, inspect the handpiece. Check for vibration, noise and overheating. If any abnormalities are found, stop using the handpiece immediately and contact your Authorized NSK Dealer. (Refer to “6. Checking the Handpiece Before Each Use”)
- Do not disassemble or alter the handpiece except as recommended by NSK in this Operation Manual.
- Do not allow any impact on to the product. Do not drop the product. Deformation may cause product failure.
- Operators and all others in the area must wear eye protection and a mask when operating this handpiece.
- Do not use files other than specified in “9. Specifications” as such burs may be accidentally released or break during rotation.
- Do not use file with problems listed below as the bur may break, seize up or disengage from the chuck.
  - Bent, deformed, worn, rusted, broken, deficient files.
  - Files which is cracked on the edge or axis.
  - Non-ISO (EN ISO) standard, or tampered files.

## CAUTION

- When using the Reciprocating Endo Mode of the NLZ E, use a WaveOne<sup>®</sup> reciprocating file manufactured by the Dentsply Sirona Group.
- Always keep the file shank of the file clean. Debris in the chuck could cause poor file concentricity or low chuck retention force.
- Always insert the file all the way into the chuck. If insertion is insufficient, premature failure of the handpiece head bearings, or accidental release of the file, may occur.
- Do not exceed Max. File Length shown in “9. Specifications”.
- Do not exceed the file speed recommended by the file manufacturer.
- Always follow the instructions provided by the file manufacturer.
- Should the handpiece function abnormally during use, stop using the handpiece immediately and contact your Authorized NSK Dealer.
- Do not use the following fluids to wipe, immerse or clean the product; strong/super acid water, strong acid/alkaline chemicals, chlorinecontaining solutions, solvents such as benzine or thinner.
- The handpiece is delivered in a non-sterile condition and perform steam sterilization prior to use.
- Perform regular function and maintenance checks. (Refer to “8. Periodical Maintenance Checks”)
- If the handpiece has not been used for a long period, rotate the handpiece and check for noise, vibration and overheating before use.
- To avoid clinical downtime it is recommended that a spare be kept on hand in case of a breakdown during treatment.
- U.S. Federal law restricts this device to be used by or on the order of a licensed dental professional.

### 3. Accessory List

No.	Part Name	Quantity
1	E-Type Spray Nozzle	1

### 4. Connecting and Disconnecting the Handpiece from the Motor

#### 4-1 Connecting

- 1) Insert the handpiece direct into the motor (Fig. 1).
- 2) Confirm that the handpiece is securely connected to the motor.

#### 4-2 Disconnecting

Hold the motor and the handpiece, then pull apart.

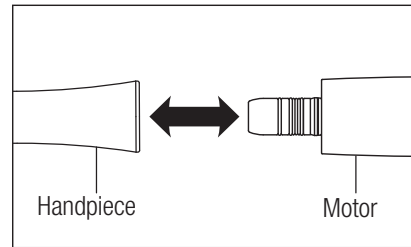


Fig. 1

 **CAUTION**

- This product is only for use with the “NLZ E” motor from NSK. Do not connect it to motors other than the NLZ E. Also, do not use this product with modes other than the Rotary Endo Mode and Reciprocating Endo Mode of the NLZ E. Doing so may exceed the allowed rotation speed, which can cause premature gear deterioration, overheating, and damage to the file.
- Do not connect or disconnect the handpiece until the motor has completely stopped.



## 5. Inserting and Removing the File

### 5-1 Inserting the File (Fig. 2)

- 1) Insert the file until it is correctly secured in place.
- 2) Depress the Push Button and insert the file into the chuck until the file “notch” mechanism engages. Release the button.
- 3) Confirm that the file is secure by gently pulling and pushing the file without depressing the Push Button.

### 5-2 Removing the File (Fig. 3)

Depress the Push Button to open the chuck (1) and, while the chuck is open, remove the file (2).

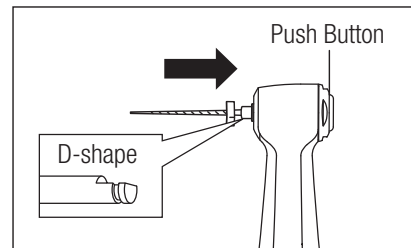


Fig. 2

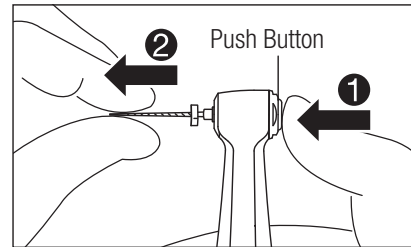


Fig. 3

## CAUTION

- Do not use files other than specified in “9. Specifications” as such files may be accidentally released or break during rotation.
- When using the Reciprocating Endo Mode of the NLZ E, use a WaveOne<sup>®</sup> reciprocating file manufactured by the Dentsply Sirona Group.
- Do not use files with problems listed below as the file may break, seize up or disengage from the chuck.
  - Bent, deformed, worn, rusted, broken, deficient file.
  - File which is cracked on the edge or axis.
  - Non-ISO (EN ISO) standard, or tampered file.
- Insert a sterilized file and always keep the file shank clean. When changing the file, make sure that the handpiece head is clean. Debris in the chuck could cause infection, heating, poor file concentricity or low chuck retention force.
- Always insert the file all the way into the chuck. If insertion is insufficient, premature failure of the handpiece head bearings, or accidental release of the file, may occur.
- Do not exceed Max. File Length shown in “9. Specifications”.
- Always follow the instructions provided by the file manufacturer.
- Do not exceed the file speed recommended by the file manufacturer.
- Do not insert or remove the file until rotation has completely stopped.
- Do not apply excess pressure to the file as it may break or bend and become difficult to remove.

## 6. Checking the Handpiece Before Each Use

Follow the check procedure below before use. If any abnormalities are found, stop using the handpiece immediately and contact your Authorized NSK Dealer.

- 1) Check the Head Cap is firmly tightened.
- 2) Insert the file.
- 3) Set the rotation speed to  $1,000 \text{ min}^{-1}$  (Rotary Endo Mode, gear ratio 6:1,  $1,000 \text{ min}^{-1}$ ) and rotate the handpiece for about 1 minute. During rotation, check for abnormalities such as abnormal rotation, vibration, noise.
- 4) After the handpiece rotation has completely stopped, touch the handpiece head to confirm the head is NOT heating abnormally (Fig. 4).

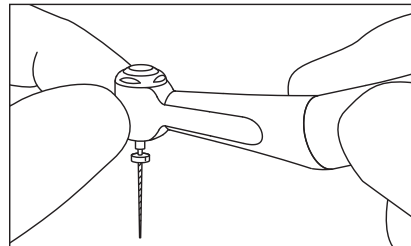


Fig. 4

### CAUTION

- To avoid injury, keep your hands away from the file during rotation.

## 7. Post-use Maintenance

After each patient maintain the product as follows.

### **WARNING**

- Immediately after a treatment (within 1 hour), perform maintenance and then store the handpiece. Failure to properly maintain the handpiece may cause infection, product failure, overheating leading to burn injuries.

### **CAUTION**

- Follow local rules, regulations, and guidelines regarding the reprocessing of devices.
- Perform the following cleaning and disinfecting quickly after treatment (within 1 hour) to remove any residue.
- Steam sterilization is recommended for the product. The validity of other sterilization methods (such as plasma sterilization or EOG sterilization) is not confirmed.

## 7-1 Cleaning at point-of use

### CAUTION

- Do not use the following fluids to wipe, immerse or clean the product; strong/super acid water, strong acid/alkaline chemicals, chlorinecontaining solutions, solvents such as benzine or thinner.
- Do not immerse the product in disinfectant or perform cleaning with an ultrasonic washer. Doing so may cause product failure.

- 1) Always wear protective gloves, a mask, and protective goggles for safety purposes and to minimize the risk of infection (Fig. 5).
- 2) Remove the file (Fig. 6).

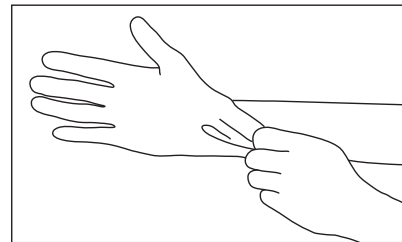


Fig. 5

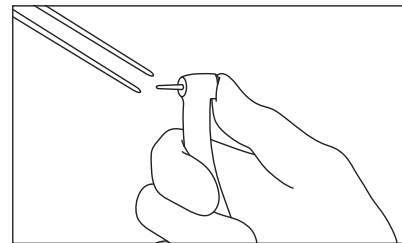


Fig. 6

3) Wipe the exterior of the handpiece clean using a cloth moistened with disinfectant or ethanol with a concentration of 60-90% (Fig. 7).

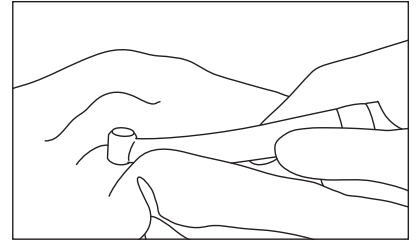


Fig. 7

- 4) Remove the handpiece from the motor (Fig. 8).  
5) Carry the handpiece to the decontamination area.

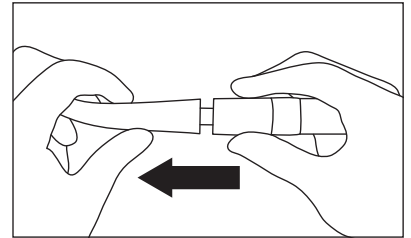


Fig. 8

## 7-2 Cleaning, Disinfecting, and Drying

Perform cleaning, disinfecting, and drying using either the manual or automatic method.

### Manual Method (Cleaning, Disinfecting, and Drying the Exterior)

- 1) Clean the exterior of the handpiece under running water using a soft (non-metallic) brush (Fig. 9, 10).

(Wash the whole exterior with a toothbrush for 15 seconds and around the bur insertion hole for another 15 seconds with an interdental brush.) (Water temperature 38°C or less, drinking water level of water quality recommended)

After cleaning the handpiece, confirm that it is clean under appropriate lighting (500 Lux or higher).

If the handpiece is still dirty, repeat the procedure.

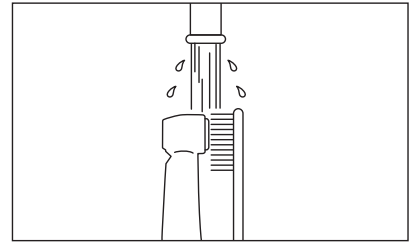


Fig. 9

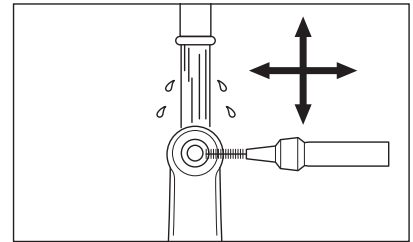


Fig. 10

- 2) Wipe the exterior of the handpiece clean using a cloth moistened with disinfectant or ethanol with a concentration of 60-90% (Fig. 11).

After cleaning and disinfecting, if the residual moisture is present, wipe off with dry cloth or blow it off with compressed air until there is no moisture in the interior and exterior.

When blowing off with compressed air, cover the handpiece with cloth to prevent scattering of water.

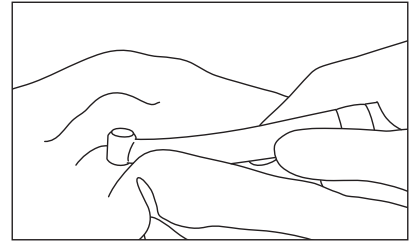


Fig. 11



## Automatic Method (Cleaning, Disinfecting, and Drying the Exterior and Interior)

Use a washer-disinfector that conforms to ISO 15883-1 to perform cleaning, disinfecting, and drying.

When using a washer-disinfector, follow the instructions given by the manufacturer of the washer-disinfector.

Miele® VARIO-TD mode is recommended.

(VARIO-TD mode: prewash 20 °C, main wash 55 °C, rinse 20 °C, disinfection >90 °C, drying )

Miele® is registered trademarks of Miele & Cie. GmbH & Co..

\*Wipe off a dirt on a part held by a handpiece holder using the cloth moistened with 60-90% ethanol or disinfectant.

After cleaning, disinfecting, and drying the handpiece, confirm that it is clean under appropriate lighting (500 Lux or higher).  
If the handpiece is still dirty, repeat the procedure.

### CAUTION

- Quickly remove the handpiece from the washer-disinfector after the cleaning, disinfecting and drying cycle is complete (within 1 hour).  
Failing to do so may cause corrosion.
- After washing with the washer-disinfector, prior to lubrication, dry the product until all internal moisture is completely removed.  
Washer-disinfector moisture remaining inside the product could reduce the effect of lubrication and could cause corrosion inside of the product.

### 7-3 Cleaning and Lubrication

Perform cleaning and lubrication using either the manual or automatic method.

#### Manual Method (Cleaning and Lubricating the Interior)

- 1) Attach an E-Type Spray Nozzle to the nozzle of the PANA SPRAY Plus.
- 2) Shake the can 3 or 4 times, and insert the E-Type spray nozzle into the rear of the handpiece while holding the head of the handpiece with a cloth etc..
- 3) Hold the handpiece, and spray for 2 or 3 seconds until oil comes out of the handpiece tip (Fig. 12).  
Repeat lubrication until foreign material stops coming out of the tip.

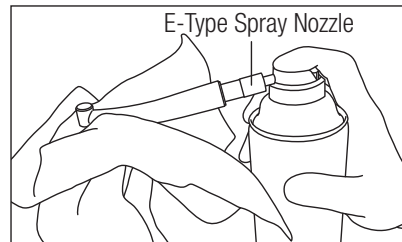


Fig. 12

## CAUTION

- Do not use sprays other than NSK PANA SPRAY Plus. Using sprays other than PANA SPRAY Plus may cause the handpiece to overheat.
- Hold the spray can upright.
- Firmly hold the handpiece to prevent it slipping when spray pressure is applied.
- Spray lubricant until it expels from the handpiece head.
- If you wish to purge excessive oil from inside the handpiece, rotate the handpiece for approx 15 seconds without a file. During the rotation, do not depress the push button, especially when using absorbent cloth to prevent oil from scattering. Depressing the push button during rotation may damage the chuck mechanism.

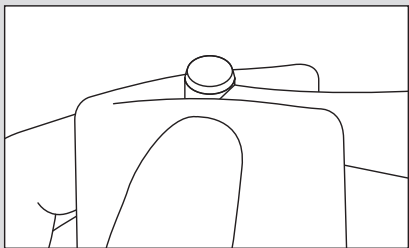


Fig. 13

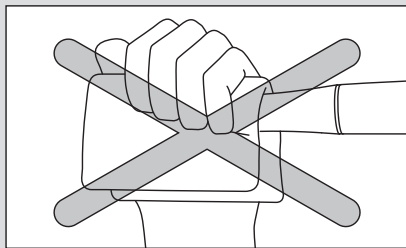


Fig. 14

## NOTICE

- NSK recommends the use of “Spray Mist Absorber” (Y900084) to prevent oil mist expelling out of the handpiece head.

### Automatic Method (Cleaning and Lubricating the Interior)

Use an NSK automatic lubrication system to perform lubrication.

For information on using an automatic lubrication system, see the instruction manual for the automatic lubrication system.

## WARNING

- If blood infiltrates inside a handpiece, an automatic handpiece cleaning and lubrication system may not totally clean the internal handpiece components and may lead to blood coagulation inside the handpiece. Coagulated blood may cause handpiece failure and overheating, causing burn injuries. To avoid the risk, NSK recommends to immediately lubricate those handpieces with PANA SPRAY Plus.

## 7-4 Packaging, Sterilizing, and Drying

- 1) Insert the handpiece into a sterilization pouch that conforms to ISO 11607-1, and seal the pouch.
- 2) Perform steam sterilization with the following conditions.

Type	Gravity Displacement	Pre-Vacuum (Dynamic Air Removal)
Temperature	134°C	134°C
Full Cycle Time	10 min.	3 min.
Drying Time	30 min.	30 min.

### CAUTION

- Follow local rules, regulations, and guidelines regarding the reprocessing of devices.
- Immediately after sterilization is complete (within 1 hour), remove the handpiece from the sterilizer. Failure to do so may cause corrosion.
- Do not perform steam sterilization on 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.

## **CAUTION**

- Clean and lubricate the handpiece prior to sterilizing. If blood remains on the internal surface it can become clotted and cause product failure.
- Do not heat or cool the product too quickly. Rapid change in temperature could cause damage to the product.
- To avoid product failure, do not use a sterilizer that exceeds a cycle temperature of 136°C, including the dry cycle. In some sterilizers, the chamber temperature may exceed 136°C. Contact the sterilizer manufacturer for detailed information about cycle temperatures.
- Do not touch the product immediately after steam sterilization as it will be very hot and must remain in a sterile condition.
- Steam sterilization is recommended for the product. The validity of other sterilization methods (such as plasma sterilization or EOG sterilization) is not confirmed.

## **NOTICE**

- NSK recommends Class B sterilizers as stated in EN 13060.

## 7-5 Storage

Store the product in a clean location without humidity.

### CAUTION

- Keep the product in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt and sulphur.
- Sterility is not guaranteed after the sterility retention period specified by the manufacturer and seller of the sterilization pouch has elapsed. If the sterility retention period has elapsed, perform sterilization again with a new sterilization pouch.

## 8. 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
Head cap is loose	Check that the Head Cap is firmly tightened.
Rotation	Rotate the handpiece and check for abnormalities such as abnormal rotation, vibration, noise, and overheating.

## 9. Specifications

Model	NLZ Endo
Connectable Motor	NLZ E
Max. Rotation Speed (Motor)	6,000min <sup>-1</sup>
Max. Rotation Speed (Handpiece)	1,000min <sup>-1</sup>
Gear Ratio	6 : 1 Reduction
File Type	ISO 1797-1 (EN ISO 1797-1) Type 1 ø 2.35 mm Engine File (Use a WaveOne <sup>®</sup> reciprocating file manufactured by the Dentsply Sirona Group when using the NLZ E Reciprocating Endo Mode.)
Chuck Length	9.3mm
Max. File Length	46mm
Max. Working Part Diameter	ø1.45mm
Use Environment	Temperature: 10 - 35°C, Humidity: 30 - 75% (No Condensation)
Transportation and Store Environment	Temperature -10 - 50°C, Humidity: 10 - 85%, Pressure: 500 - 1,060hPa



## 10. Symbol



This product can be sterilized in a steam sterilizer up to Max. 135°C.



This product can be washed via washer-disinfector.



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



Manufacturer.



Authorized representative in the European community.



Consult operation instructions.



GS1 DataMatrix for Unique Device Identifier.

## 11.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.

## 12.Spare Parts List

Model	Order Code
E-Type Spray Nozzle	Z019090

## 13.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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Issued Date: 2021.04.22 Printed Date: 2021.04.30 003 