



The EU directive 93/42/EEC was applied in the design and production of this medical device.

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Specifications are subject to change without notice.

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OPERATION MANUAL

**NSK**



0197

BONE SURGERY MICRO SAW HANDPIECE

**SGR2-E/SGO2-E/SGT2-E**

Please read this Operation Manual carefully  
before use, and file for future reference

**MADE IN JAPAN**

OM-H0187E 001



Powerful Partners®

**CAUTION**

- Place the most priority for the safety of all patients.
- For professional use only. Do not make wrong use of the handpiece. This product is produced for bone surgery micro saw handpiece only. Do not use other usage.
- Check for vibration, noise and overheating outside the patient's oral cavity before use. If any abnormalities are found, stop using the handpiece immediately and contact your authorised dealer. Entering foreign materials into bearing may cause OVERHEATING.
- Do not attempt to disassemble the handpiece or tamper with the mechanism.
- Do not deliberately transform external spray nozzle.
- It is recommended that a spare handpiece be maintained for contingency.
- Sterilization is required, after you purchase and each patient.
- Should the handpiece function abnormally, cease operation immediately and return the handpiece to an authorised dealer for repair.
- Be sure to place the saw blade firmly into handpiece before use.
- Check that tube is not clogged or crashed before use.

- Do not allow any impact on to the handpiece. Do not drop the handpiece.
- Do not use bent, deformed or damaged blades. If those blades had been used, it may break or fly away.
- Always keep blade clean. Dirt or debris in a chuck could cause poor blade concentricity or low chuck retention force.
- Do NOT use blades other than NSK recommended. It may cause a malfunction or accident.
- Always use blades specified by NSK for your safety. (Option)
- Do not exceed the motor speed of 40,000min<sup>-1</sup>.
- Do not use the handpiece without mounting saw blade.
- Stop operation for 2 minutes after continuous use for 3 minutes approximately.
- Never move the chuck nut during use as this can cause injury.
- Be sure to replace the saw blade only after the Micromotor completely stops rotation. Do not tighten and/or loosen the blade excessively.
- Only connect with the standard motor according to ISO 3964.
- Be sure to remove the blade before detaching the handpiece from the Micromotor.
- Change the blade after every operation for safety.
- Do not apply excessive pressure (except Oscillating/Reciprocating direction) to the blade during operation.
- Always operate with water spray for cool down the blade.

- Immediately after use, the handpiece should be cleaned, lubricated and sterilized before blood, etc. dries inside the handpiece. If blood is left on the handpiece, it can become clotted and causing rust.
- Make sure that the blade is removed before cleaning, lubrication, sterilization, carrying and/or storage.
- Do not wipe nor immerse the handpiece and/or blades in acidic water or acidic solutions.
- Wear protection glasses or dust mask for your safety and health.
- If the handpiece has not been used for a long period, check for noise, vibration, and overheating before use.

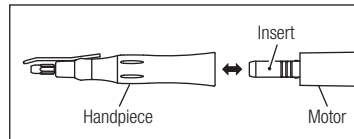
## 1. Features

- The built-in 3:1 speed reducer provides high torque.
- The chuck nut securely grips the blade.
- Optional NSK blade (6 Oscillating, 3 reciprocating and 2 sagittal) are available. D-shape shank (diameter Ø2.35) and U-cut hub can prevent dislocating of the pivotal point and allows better cutting.
- Irrigation tube can be equipped with external spray nozzle.
- It is repeatedly autoclavable at 135°C.

## 2. Connection of Handpiece and Motor

### 2-1 Connecting the Handpiece to the Micromotor

Simply push the handpiece directly onto the Micromotor. (Fig. 1)



\*Picture shows SGR2-E.

Fig. 1

### CAUTION

Check the connection is secure by gently pulling the handpiece and Micromotor.

### 2-2 Removing Handpiece from Motor

Hold the handpiece and Micromotor, and pull the handpiece direct from the Micromotor. (Fig. 1)

### CAUTION

- Note that only E-type Micromotors according to ISO 3964 can be connected.
- Connect and/or disconnect the handpiece without a blade inserted.
- Do not connect and/or disconnect the handpiece until the Micromotor is completely stopped.

## 3. Mount/Removal of Blade

Mount the NSK reciprocating / oscillating / sagittal Blades (option).

### 3-1 Mounting Blade

1) Loosen the Chuck Nut approximately 2-3 turns by hand.

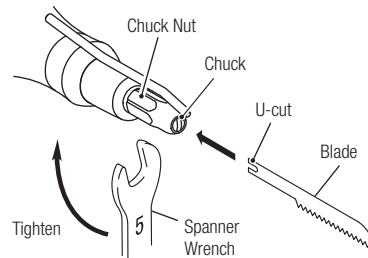
2) **SGR2-E, SGT2-E**

Align the blade and the chuck slit then insert the blade until it stops.

**SGO2-E**

Insert the D-shaped shank into the chuck, align shapes of the chuck and shank by turning lightly, and insert until it stops.

3) Tighten the Chuck Nut with the Spanner Wrench. (Fig. 2)



\*Picture shows SGR2-E.

Fig. 2

### CAUTION

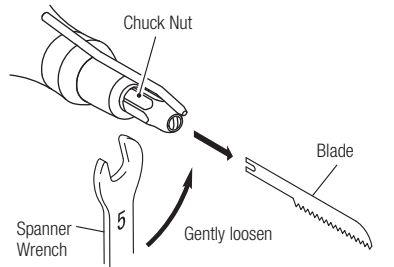
Check the blade is secure before use.

### 3-2 Removing Blade

Gently loosen the Chuck Nut with the Spanner Wrench. Loosen another 2-3 turns by hand and pull to remove the blade. Tighten the Chuck Nut lightly after removal. (Fig.3)

#### **CAUTION**

- Use only NSK reciprocating / oscillating / sagittal blades. (Option)
- Be sure to replace the saw blade only after the Micromotor completely stops rotation. Do not tighten and/or loosen the blade excessively.
- Do not tighten / loosen the Chuck Nut with tools other than the NSK Spanner Wrench provided.



\*Picture shows SGR2-E.

Fig. 3

## 4. Saw Blades (option)

NSK reciprocating / oscillating / sagittal Blades are available. Refer to the table for blade lengths in spec.

Product Name	Product	Code	Product Name	Product	Code
SGR-1 (10 pc./case)	Blade thickness 0.35mm	Y900072	SGO-4 (Single blade)	Blade thickness 0.3mm	H174041
SGR-2 (10 pc./case)	Blade thickness 0.35mm	Y900073	SGO-5 (Single blade)	Blade thickness 0.35mm	H174032
SGR-3 (10 pc./case)	Blade thickness 0.35mm	Y900074	SGO-6 (Single blade)	Blade thickness 0.35mm	H174042
SGO-1 (Single blade)	Blade thickness 0.3mm	H174034	SGT-1 (10 pc./case)	Blade thickness 0.35mm	Y900075
SGO-2 (Single blade)	Blade thickness 0.3mm	H174044	SGT-2 (10 pc./case)	Blade thickness 0.35mm	Y900076
SGO-3 (Single blade)	Blade thickness 0.3mm	H174031			

## 5. Maintenance

### CAUTION

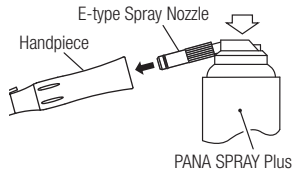
Immediately after use, the handpiece should be cleaned, lubricated and sterilized before blood, etc. dries inside the handpiece. If blood is left on the handpiece, it can become clotted and causing rust.

#### 5-1 Cleaning

Remove the blade from the handpiece. Insert an Irrigation Tube in an External Spray Nozzle firmly and wash away saline solution remaining behind in a nozzle with pure water.

#### 5-2 Lubrication

- 1) Push E-type Spray Nozzle attachment in to PANA SPRAY Plus nozzle until it is firmly seated.
- 2) Shake the can 3-4 times to adequately mix lubricant and propellant.
- 3) Insert the E-type Spray Nozzle in the rear of the handpiece. Spray the lubricant into the handpiece 2-3 times for 2-3 seconds each time until blood or foreign material is not visible in the discharging lubricant.



\*Picture shows SGR2-E. Fig. 4

### CAUTION

- Be sure to hold the handpiece firmly to prevent the handpiece from slipping out by the spray pressure when lubricating.
- Keep the PANA SPRAY Plus can upright.

#### 5-3 Sterilization

Steam autoclave is recommended.

##### Autoclave Procedure

- 1) Cleaning, or wipe off the handpiece with medicated solution (alcohol etc.).
  - 2) Insert into an autoclave pouch. Seal the pouch.
  - 3) Autoclavable up to max. 135°C.  
Ex.) Autoclave for 20 min. at 121°C or 15 min. at 132°C.
  - 4) Keep the handpiece in the autoclave pouch to keep it clean until you use it.
- \* Sterilization at 121°C for more than 15 minutes is recommended by EN13060 or EN ISO17665-1.



## CAUTION

- Sterilization is required first time you use and after each patient.
- Always place the handpiece in the center or upper shelf of the chamber, as the local temperature at the bottom of chamber could rise beyond the set value.
- Do not wipe nor immerse the handpiece and/or blades in acidic water or acidic solutions.

**ENGLISH** Specifications

Model	SGR2-E
Maximum allowable motor speed	40,000min <sup>-1</sup>
Maximum reciprocating frequency	12,600times/min (Max. motor rotation speed)
Chuck Type	Chuck Nut
Spray Type	External Spray
Gear Ratio	3:1 (Reduction)
Blade Type	Reciprocating blades
Stroke Length	1.8mm (Axial direction)

## ■ Accessories

- Spanner Wrench (5×8) 1 pc.
- External Spray Nozzle 1 pc.
- Operation Manual

## ■ Items required

- NSK reciprocating / oscillating / sagittal Blades  
(Refer to section 4. Saw Blades (option).)

Model	SGO2-E	SGT2-E
Maximum allowable motor speed	40,000min <sup>-1</sup>	40,000min <sup>-1</sup>
Maximum resipro speed	12,800times/min (Max. motor rotation speed)	12,600times/min (Max. motor rotation speed)
Chuck Type	Chuck Nut	Chuck Nut
Spray Type	External Spray	External Spray
Gear Ratio	3:1 (Reduction)	3:1 (Reduction)
Blade Type	Oscillating Blade	Sagittal blades
Blade oscillation angle	17° (Recipro)	3° (Recipro)

