

**NSK**

Air Motor

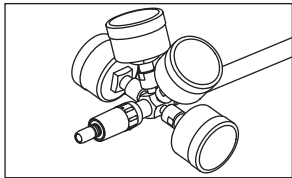
# FX204 / FX204m FX205 / FX205m

FX204 M4 / FX204m M4 / FX204 B2 / FX204m B2  
FX205 M4 / FX205m M4 / FX205 B2 / FX205m B2

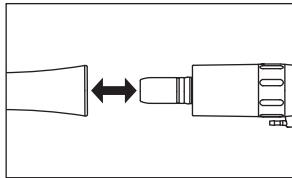
OPERATION  
MANUAL

**CE** 0197 MADE IN JAPAN

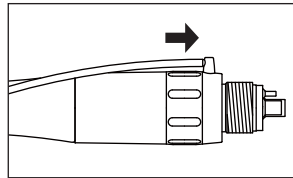
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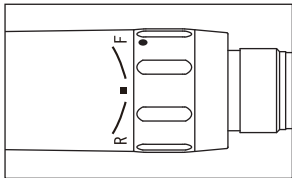
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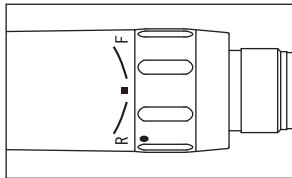
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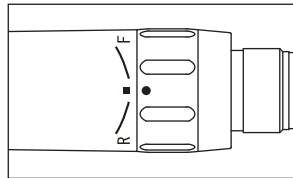
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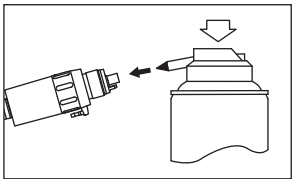
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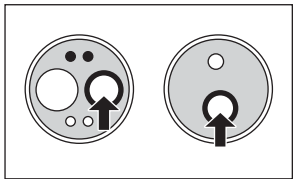
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## 1. User and Intended Use

User : Qualified Professionals

Intended Use : Dental 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
 <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.

### CAUTION

- Read this Operation Manual before use to fully understand the product functions and file for future reference.
- When operating the product always consider the safety of the patient.
- This product does not consider patient's age, gender nor physical condition.
- This product does not consider operator's age, gender nor physical condition.
- Users are responsible for the operational control, maintenance and continual inspection of this product.
- Do not attempt to disassemble the product nor tamper with the mechanism except as recommend by NSK in this Operation Manual.
- Do not allow any impact on to the product. Do not drop the product.
- Operators and all others in the area must wear eye protection and a mask when operating this motor.
- Should the product function abnormally, cease operation

immediately and contact your Authorized NSK Dealer.

- Do not use high acid water or sterilizing solutions to wipe, immerse or clean the product.
- The products are delivered in a non-sterile condition and must be autoclaved prior to use.
- Perform regular function and maintenance checks.
- If the product is not used for a long period check it is functioning correctly before using on a patient.
- To avoid clinical downtime it is recommended that a spare be kept on hand in case of a breakdown during surgery.
- U.S. Federal law restricts this device to sale by or on the order of a licensed physician.

### 3. Setting of Air & Water Supply Pressure

Measure the supply pressure at the handpiece / hose connection point and set the pressure to the value specified on the specification table. (Fig. 1)

For Multi Gauge information refer to Option Parts List.

#### **WARNING**

- Do not exceed the optimum pressure specified on the specification table.

#### **CAUTION**

- Do not use air contaminated by dust, moisture and oil.

## 4. Connection & Disconnection of the Handpiece

### 4-1 Connection

- 1) Connect the handpiece direct to the motor. (Fig. 2)
- 2) Make sure the handpiece is firmly connected to the motor.

### 4-2 Disconnection

Hold the motor and the handpiece separately and disconnect with care.

**⚠ CAUTION**

- Disconnect the handpiece only after the motor has completely stopped rotating.

**5. Check before treatment**

Connect the handpiece to the motor and check for motor vibration, noise and overheating. If any abnormalities are found do not use the motor and contact your Authorized NSK Dealer.

**6. Water and Chip Air Supply to the Handpiece**

(FX205 M4/FX205m M4/FX205 B2/FX205m B2)

- 1) Insert the Spray Tube Attachment into the Spray Tube Nozzle.  
(Fig. 3)
- 2) Trim the tube to the desired length.
- 3) Insert the other end of the Spray Tube Attachment into the nozzle clamp on the Contra Angle or Straight handpiece.

**7. Forward / Reverse Rotation**

- 1) Forward Rotation : Turn the FWD/REV Change Ring to "F". (Fig. 4)
- 2) Reverse Rotation : Turn the FWD/REV Change Ring to "R". (Fig. 5)
- 3) When the FWD/REV Change Ring is positioned at the middle of "F" and "R" , the drive air is interrupted and the motor does not rotate. (Fig. 6)

\* F : Forward Rotation

R : Reverse Rotation

**8. Maintenance**

After each patient maintain the product as follows.

**8-1 Cleaning**

- 1) Remove dirt and debris from the product. Do not use a wire brush.
- 2) Wipe clean with alcohol-immersed cotton swab or cloth.



This icon denotes that the product can be washed via Thermo Disinfectant. (FX204m M4/FX204m B2/FX205m M4/FX205m B2)  
Refer to the Thermo-Disinfectant manual.

## CAUTION

- After washing with Thermo-Disinfector and prior to lubrication, dry the product until all internal moisture is thoroughly removed. Thermo-Disinfector moisture remaining inside the product could reduce the effect of lubrication and could cause corrosion inside of the product.
- To clean the product never use any solvent such as benzine or thinner.

### 8-2 Lubrication

#### ■ NSK PANA SPRAY Plus

Apply NSK PANA SPRAY Plus every time after each use and/or before autoclaving.

- 1) Remove the motor from the hose.
- 2) Mount the arrow-head spray nozzle tip into the spray can port. (Fig. 7)
- 3) Insert the Spray Nozzle into the Drive Air Port of the motor. Hold the motor and spray for approximately 2-3 seconds. Apply lubricant until it expels from the exhaust air part for at least 2 seconds. (Fig.8)

## CAUTION

- When applying spray be sure to hold the motor firmly to prevent the motor from slipping out of the hand due to the spray pressure.
- Hold the spray can upright.

#### ■ Lubrication Oil

- 1) Remove the motor from the hose.
- 2) Apply 1-2 drops of lubrication oil into the Drive Air Port shown in the Fig. 8.
- 3) Connect the motor to the hose. Operate the motor for about 10 seconds.

### 8-3 Sterilization

Sterilize the product by autoclave sterilization. Remove the handpiece after each patient and sterilize as noted below.

- 1) Insert into an autoclave pouch. Seal the pouch.
- 2) Autoclavable under the conditions below.  
Autoclave for more than 20 min. at 121°C, or 15 min. at 132°C, or

3 min. at 134°C.

- 3) The motor should remain in the autoclave pouch until required for use.

## CAUTION

- 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.
- Keep the product in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt and sulphur.
- Do not heat or cool the product too quickly. Rapid change in temperature could cause damage to the product.
- If the sterilizer chamber temperature may exceed 135°C during the dry cycle then delete the dry cycle.
- Autoclave sterilization is recommended for the product. The validity of other sterilization methods is not confirmed.
- Do not touch the product immediately after autoclaving as it will be very hot and must remain in a sterile condition.

## NOTICE

- NSK recommends Class B sterilizers as stated in EN13060.

## 9. Periodical Maintenance Checks

Perform periodical maintenance checks every three months, 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 for abnormalities such as abnormal rotation, vibration, noise, and overheating.

## 10. Symbol



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




This product can be washed via Thermo Disinfector.

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



 Manufacturer.

 Authorized representative in the European community.

 Caution: U.S. Federal law restricts this device to sale by or on the order of a licensed physician.

## 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. Option Parts List

Model	Order Code	Compatible Product
MG-4H Multi Gauge	Z109400	FX204 M4/FX204m M4 FX205 M4/FX205m M4
MG-2/3H Multi Gauge	Z109200	FX204 B2/FX204m B2 FX205 B2/FX205m B2

## 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.

## 14. Specifications

Model	FX204 M4	FX204m M4	FX204 B2	FX204m B2	FX205 M4	FX205m M4	FX205 B2	FX205m B2
Hose Connection Type	ISO 9168 Type 2 (Midwest 4 hole)		ISO 9168 Type 1 (Borden 2 hole)		ISO 9168 Type 2 (Midwest 4 hole)		ISO 9168 Type 1 (Borden 2 hole)	
Handpiece Connection Type	E Type ISO 3964							
Max. Rotation Speed	25,000min <sup>-1</sup>							
Breakdown Torque	2.0N·cm							
Drive Air Pressure	0.20 - 0.25MPa (2.0 - 2.5kgf/cm <sup>2</sup> )							
Air Consumption	50mL/min and more (0.25MPa)							
Water Pressure	-				0.10 - 0.25MPa (1.0 - 2.5kgf/cm <sup>2</sup> )			
Chip Air Pressure	0.15 - 0.25MPa (1.5 - 2.5kgf/cm <sup>2</sup> )		-		0.15 - 0.25MPa (1.5 - 2.5kgf/cm <sup>2</sup> )		-	
Coolant Water Supply	-				50mL/min and more (0.25MPa)			
Coolant Air Supply	1.5L/min and more (0.25MPa)							
Water Spray Type	No Spray				External Spray			
Use Environment	Temperature: 0-40°C (No Condensation), Humidity: 30-75%, Atmospheric Pressure: 700-1,060hPa							
Transportation and Store Environment	Temperature: -10-50°C, Humidity: 10-85%, Atmospheric Pressure: 500-1,060hPa							
Thermo Disinfector	-	○	-	○	-	○	-	○

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2013.02.20 02 ©



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