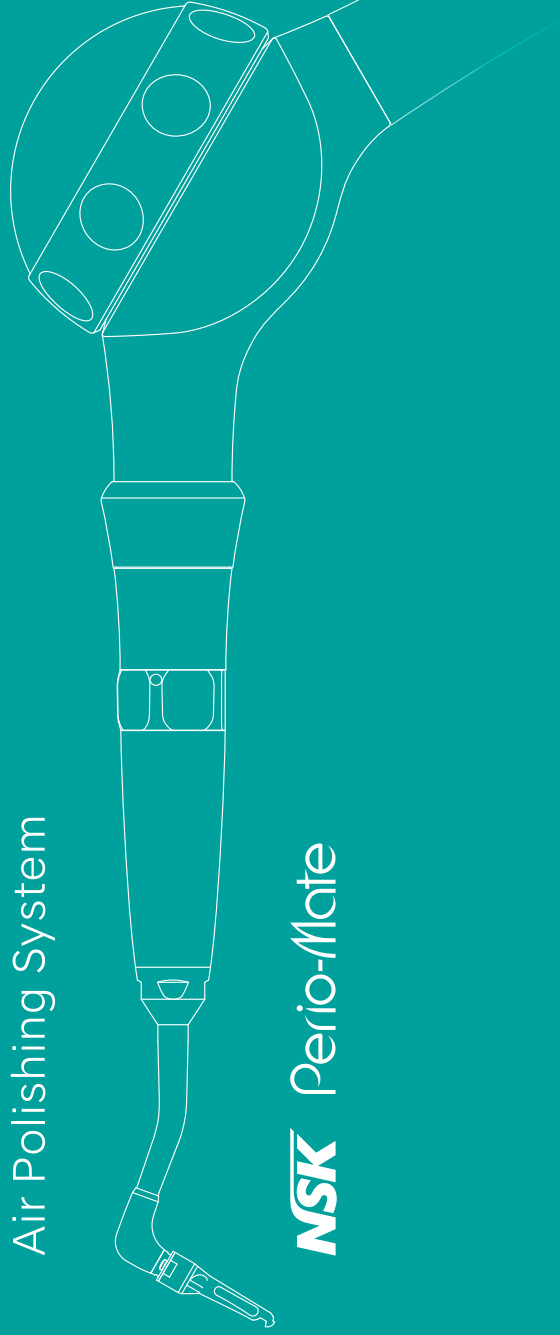


# OPERATION MANUAL

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

Air Polishing System



**NSK** Perio-Mate

**CE** MADE IN JAPAN OIM-DT0905EN | 000

Thank you for purchasing NSK Perio Mate.

This product is a handpiece for cleaning sub- and supragingival tooth surfaces.

Please read this Operation Manual carefully before use to become familiar with operation instructions and care & maintenance. Keep this Operation Manual for future reference.

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## 1 Features

- The 360°twist free swivel coupling enables comfortable and fatigueless operation even during prolonged procedures, allowing effortless access to difficult areas.

<Powder for cleaning the tooth surface>

- NSK Perio Mate Powder used in conjunction with Perio Mate can remove plaque and eliminate sub- and supragingival biofilm quickly and efficiently.
- The main ingredient of Perio Mate Powder is glycine, a type of amino acid.



## 2 User and Indications for Use

User: Dentist, Dental hygienist

Indications for Use: Perio Mate is for sub- and supragingival plaque removal. When applied subgingivally, it may be used to support periodontitis and periimplantitis therapy.

### 3 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**

- If any hypersensitivity such as eruption and dermatitis develops due to treatment using this product, stop using the product and seek medical attention.
- The Perio Mate system can be used in periodontal pockets. Therefore, attention is required for patients with emphysema. If emphysema develops due to treatment using this product, immediately stop using the product and seek medical attention.
- This instrument is for use by dentists or hygienists only.
- Do not use on the following patients
  - 1) Those with respiratory diseases.
  - 2) Those with pathologically deep periodontal pockets (6 mm or more) or mucosal lesion. Prolonged application of the spray to soft tissue or salivary glands may cause powder air to enter, which may cause emphysema.
  - 3) Those with severe ulcers in digestive organs.
  - 4) Those with hepatic dysfunction.
  - 5) Those with lung or cardiac disturbance or ventilatory impairment.
  - 6) Those with damage or abnormality in the oral cavity.
  - 7) Those with hyperemia, hemorrhage, or inflammation in the oral cavity.
  - 8) Those that tend to develop an inflammation or sores in the oral mucous membrane.
  - 9) Those with allergies.
  - 10) Depending on the patient's constitution, allergy symptoms or stomatitis may be caused in very rare cases. If such symptoms are detected, stop using the product immediately.
- Do not use Perio Mate with the patients listed below. When used in periodontal pockets for these patients, this product may develop bacillemia.
  - Patients with endocardial inflammation
  - Patients pregnant or lactating
  - Patients with a contagious illness or disease
  - Patients with an immune deficiency disease (neutropenia, granulocytopenia, agranulocytosis, diabetes, hemophilia)
  - Patients under irradiation treatment, chemotherapy, or administration of an antibiotic
- Use this product only for patients with healthy periodontal pockets for maintenance after treatment of a gum disease. When used for any patients other than those, this product may cause emphysema.
- Use this product only in periodontal pockets that meet the following conditions:
  - Periodontal pockets caused by a gum disease
  - Periodontal pockets of 6 mm or less
- Check the depth of periodontal pockets with a measurement probe or roentgenography before use.

- Use Perio Mate Powder as cleaning powder. If other powder is used, the Perio Mate Nozzle Tip will be damaged and it will increase the risk of damaging substantia ossea and dentine or causing emphysema. We shall assume no liability for any failures caused by the use of other powder.
- During use, both the operator and the assistant should always wear protective glasses and protective face masks. Also, continuously vacuum and collect ejected powder during use. In case any powder gets in the eyes wash out immediately with copious amount of water and consult an ophthalmologist.
- Set supply air pressure at hand to 0.3 - 0.4 MPa (3.0 - 4.0 kgf/cm<sup>2</sup>). If this product is used with incorrect pressure, the operator, assistant or patient may be injured due to a damaged Powder Case Cover.
- The Nozzle Tip is a single use product. Do not reuse or re-sterilize it since it may be damaged or contaminated.
- Make sure that the Nozzle Tip package is not open or damaged before use. If the package is open or damaged, do not use that Nozzle Tip as it may be damaged or contaminated.
- Follow the use-by date on the Nozzle Tip package. If the use-by date has lapsed, do not use that Nozzle Tip as it may be damaged or contaminated.

 **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.
- The end user shall be responsible for any judgment that relates to the application of this product to a patient.
- 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.
- This product is a precision instrument. Do not allow any impact on to the product. Do not drop the product. Even the slightest impact may damage and deform the product.
- Should the product function abnormally, cease operation immediately and contact your Authorized NSK Dealer.
- Be very careful to avoid cleaning powder entering a patient's mucosal areas (eyes, nose etc) other than the oral cavity. Also, protect the face with a towel, etc., or protective glasses, etc., to prevent entry of cleaning powder into eyes.  
\*If the patient wears contact lenses, have the patient wear safety glasses or remove his/her contact lenses before treatment.
- Make sure the compressed air supply is dry and clean. Water or oil content mixed in the air may cause internal solidification of the cleaning powder.
- Securely attach the Powder Case Cap. Do not open the Powder Case Cap during use. The Powder Cap and internal powder may be ejected since pressure is high in the Powder Case.
- Before connecting the Powder Case to the Handpiece Hose, be sure to blow off water remaining on the Hose connection with dry air. Residual moisture may enter the supply air, leading to internal solidification of the cleaning powder.
- If too much cleaning powder is put into the Powder Case, the proper amount of powder may not be sprayed immediately after the start of use.
- The Perio Mate Powder has the property of easily scattering because of its fine particles. Fill the chamber slowly and be careful to prevent the powder from scattering.
- Powder stored for a long while in opened packages can attract moisture and the powder may clog in the Nozzle, etc. Make sure to use new dry powder. Securely close the lid of the Perio Mate Powder container after filling the powder.
- Apply Vaseline, etc., to the patient's lips to prevent drying or chapping at the corners of the mouth.
- Do not use high acid water or sterilizing solutions to wipe, immerse or clean the product.

- Perform regular function and maintenance checks.
- If the device has not been used for a long time, check that it functions correctly and safely before using it on a patient.
- U.S. Federal law restricts this device to sale by or on the order of a licensed physician.

## 4 Correspondence Coupling

Joint Type	Model
NSK PHATELUS Coupling, MACH Coupling	PER-PTL-P
KaVo® MULTiflex®, MULTiflex® LUX Coupling Type	PER-KV-P
W&H® Roto Quick® Coupling Type	PER-WH-P
Bien-Air® Unifix®, Unifix® L Coupling Type	PER-BA-P
Sirona® Quick Coupling Type	PER-SR-P
ISO 9168 Type2 (Midwest 4-hole) Joint	PER-M4-P
ISO 9168 Type1 (Borden 2-hole) Joint	PER-B2-P

KaVo® and MULTiflex® are registered trademarks of Kaltenbach & Voigt GmbH & Co., Germany.

Sirona® is a registered trademark of Sirona Dental System GmbH, Germany.

W&H® and Roto Quick® are registered trademarks of W&H dentalwerk Burmoos GmbH, Austria.

Bien-Air® and Unifix® are registered trademarks of Bien-Air Dental S.A., Switzerland.

## 5 Package Contents

Handpiece	1 Set
Powder Case (With Powder Case Cap)	1 Set
Perio Mate Nozzle Tip	40 pcs.
Perio Mate Powder	1
Maintenance Kit	
Cleaning File (For Nozzle tip, For Internal Nozzle)	1
Cleaning Wire (S) (For the root of the Nozzle)	1
Cleaning Wire (L) (for other uses)	1
Cleaning Brush	1
Perio Mate Tip Remover	1
Ring Wrench	1
Turbine Oil	1
Blower Nozzle	1
(The shape varies depending on the Joint Type.)	

Spare parts

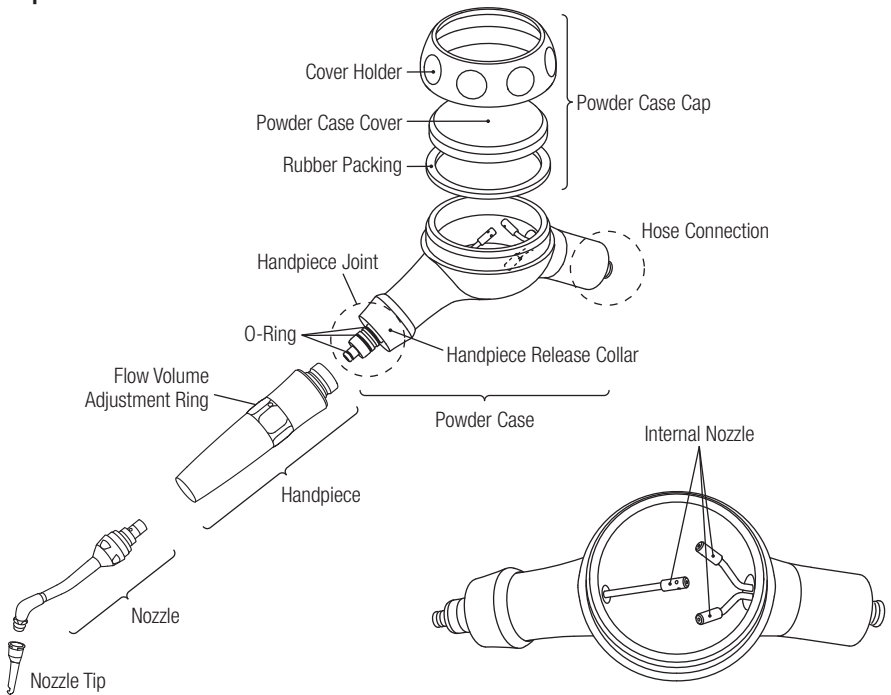
O-Ring (Handpiece End)	1 Set
O-Ring (Coupling End) (NSK PHATELUS coupling ONLY)	1 Set



### CAUTION

- The Nozzle, Handpiece, Powder Case, and Blower Nozzle cannot be used for NSK Prophy-Mate neo.

## Component Names



## 6 Operation

### WARNING

- Avoid prolonged continuous use, and allow the patient to rinse at appropriate times.
- Never impact the Powder Case and Powder Case Cap as this may cause the Powder Case or Powder Case Cap to scratch or crack.
- Never take the Perio Mate apart during operation. Never pull the Handpiece Release Collar or the coupling release during operation. Attempting to do this may cause components of the Perio Mate to unexpectedly detach and the Perio Mate Powder to scatter.
- Do not open the Powder Case Cap while using the Perio Mate. Powder may scatter.
- Use this product by setting the pressure to 0.3 - 0.4 MPa (3.0 - 4.0 kgf/cm<sup>2</sup>). Using the product at an excessive pressure increases the risk of causing emphysema.
- Thoroughly dry the Perio Mate and all its components inside and out before use. Insufficient drying may cause clogging of powder.

### CAUTION

- Be very careful to avoid Perio Mate Powder entering patient's mucosal areas (eyes, nose etc) other than the oral cavity. Also, protect the face with a towel, etc., or protective glasses, etc., to prevent entry of powder into eyes.
- If chemicals, oils, etc, adhere to the Powder Case Cover, wipe them off immediately as they could cause damage.

## 6-1 Air Pressure setting

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

\*For Multi Gauge information refer to Option Parts List.

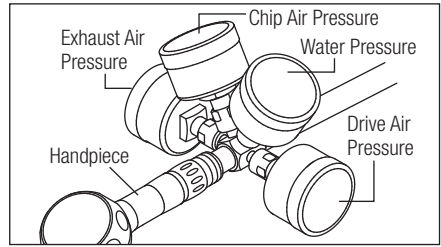


Fig. 1



### WARNING

- Do not exceed the optimum pressure specified on the specification table.
- Excess air pressure could cause the Powder Case and Powder Case Cap to crack or fracture, which could lead to injury.



### CAUTION

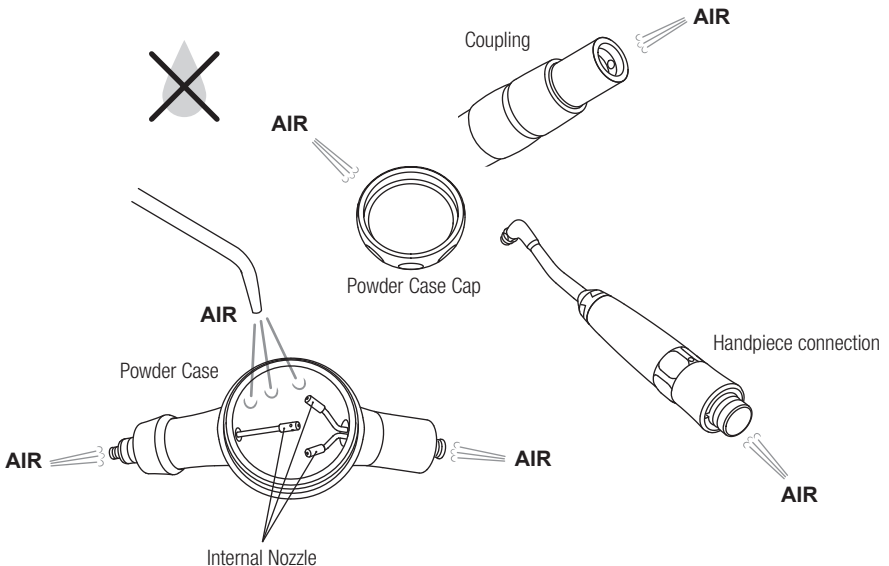
- Make sure the compressed air supply is dry and clean. Water or oil content mixed in the air may cause internal solidification of the cleaning powder.

## 6-2 Connecting the Powder Case to the Handpiece Hose



### CAUTION

- Before connecting each part, thoroughly dry the Coupling, Handpiece, Hose Joint section of the Powder Case, inside of the Powder Case, and Nozzle. Also, perform idle running with air alone to expel any internal water.



Connect the hose to the Powder Case.

-PER-PTL-P

Designed for when NSK FM-CL (B2/B3), PTL-CL-LED (6 pins), or PTL-CL-FV (5 Hole) coupling is used. Insert each coupling into the Hose Connection of the Powder Case.

-PER-M4-P, PER-B2-P

Used when the hose of Midwest 4 Hole (M4) or Borden 2 Hole (B2) is used. Align each pipe at the Hose Connection of the Powder Case with the ports in the hose. Carefully insert the pipe straight into the hose until it stops and securely tighten the Hose Nut.

-PER-KV-P, PER-WH-P, PER-BA-P, PER-SR-P

Used when KaVo®, W&H®, Bien-Air® or Sirona® coupling etc., is used. Check with the instruction manual of the coupling you have and connect Perio Mate accordingly.

### 6-3 Connecting the Handpiece to the Powder Case

Pull back the Handpiece Release Collar on the Powder Case and push the handpiece straight on to the connection. Release the Handpiece Release Collar once the handpiece is in place. (Fig. 2)  
Once connected gently pull handpiece to ensure it is securely connected.

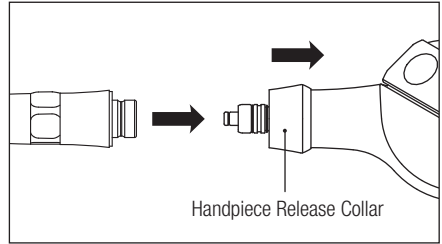


Fig. 2

### 6-4 Check before treatment

Before use, check by operating the device away from a patient. If any abnormality is detected such as vibration, sound or other during checking, or when using, stop use immediately and contact the Authorized NSK Dealer.

### 6-5 Powder filling

Remove the Powder Case Cap and fill the Perio Mate Powder to the position marked 'Max' in the Powder Case. (Approx. 10 g of powder can be filled.) (Fig. 3)

Securely close the Perio Mate Powder container lid.

Securely close the Powder Case Cap. (Fig. 4)

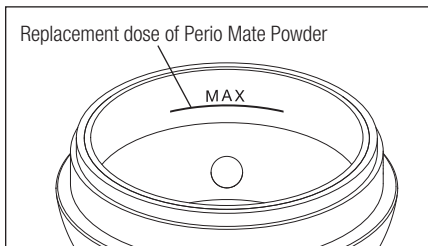


Fig. 3

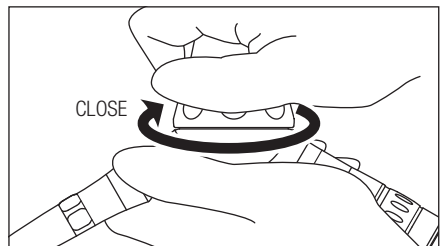


Fig. 4

\*For Perio Mate Powder information refer to Spare Parts List.





## CAUTION

- If excess cleaning powder is put into the Powder Chamber, the correct amount of powder may not be sprayed immediately after the start of use.
- The Perio Mate Powder has the property of easily scattering because of its fine particles. Perform filling slowly and be careful to prevent the powder from scattering.
- Do not use any powder stored for a long while in opened packages. Do not use leftover powder. Using such powder may cause clogging of the nozzle.
- Use only Perio Mate Powder. Other powders have different particle sizes and will clog and not perform as expected. Using other powders may also cause significant damage to the Nozzle Tip.
- Always securely close the container lid of the Perio Mate Powder. Failure to do so will attract moisture which may cause clogging.
- Use Perio Mate Powder as cleaning powder. If other powder is used, the Perio Mate Nozzle Tip will be damaged and it will increase the risk of damaging substantia ossea and dentine or causing emphysema. NSK shall assume no liability for any failures caused by the use of other powders.
- If powder adheres to the Powder Case and/or the threaded portion of Powder Case Cap, clean it immediately or it will become difficult to close the Cap.

## 6-6 Operation

- 1) Attach the Nozzle Tip to the Nozzle of the Perio Mate Handpiece.
- 2) After filling the powder, spray it into a spittoon, etc., for one second and confirm that powder is mixed with water and air, and spraying is appropriately performed.
- 3) Insert the Nozzle Tip into a periodontal pocket by 3 mm or more. (Fig. 6)  
If the Nozzle Tip is inserted less than 3 mm, powder may not be sprayed into the periodontal pocket efficiently.
- 4) Start operation. Spray powder in the same periodontal pocket for up to 5 seconds or on the same tooth for up to 20 seconds. Do not spray longer than this specified time.
- 5) After treatment, remove the Nozzle Tip from the Perio Mate Handpiece using the Nozzle Tip Remover and dispose of it. (Fig. 7)

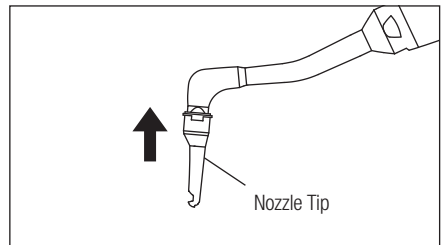


Fig. 5

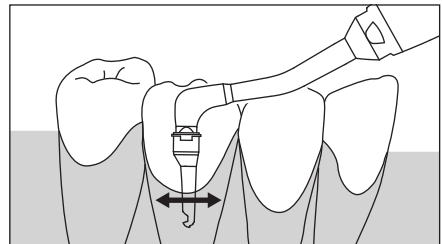


Fig. 6

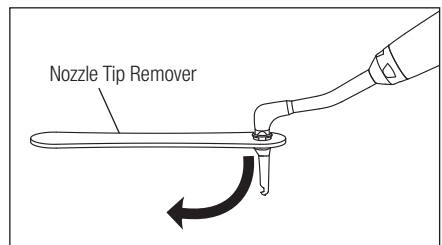


Fig. 7

## NOTICE

- The powder spray volume can be adjusted with the Flow Volume Adjustment Ring (Fig. 8). Start by setting it to Min. then adjust according to the application and patient condition.
- After adjusting the powder spray amount with the Flow Volume Adjustment Ring, clogging may occur due to the powder condition. (for example, when moisture is contained) In such a case, the problem may be resolved by again setting the Flow Volume Adjustment Ring to Max, then adjusting down.
- Securely insert the Tip all the way by referring to the Fig. 9. If the Tip is inserted incorrectly, the Nozzle Tip will come off and accidental ingestion may result.

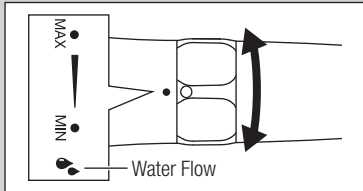


Fig. 8

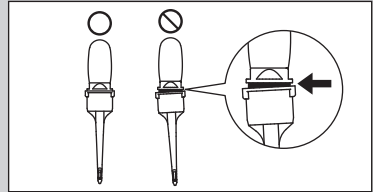


Fig. 9



## WARNING

- The Nozzle Tip is a single use product. Do not reuse or re-sterilize the tip since it may be damaged or contaminated. If the Nozzle Tip is reused, sufficient performance may not be exerted due to nozzle deformation during removal, or accidental ingestion may result due to detachment of the Nozzle Tip during use.
- Do not use this product in the same area immediately after scaling treatment of a tooth surface in a periodontal pocket.
- Do not insert the Nozzle Tip into the same periodontal pocket during the same treatment more than once.
- Powder should be sprayed for 5 seconds at maximum in the same periodontal pocket (20 seconds at maximum for one tooth). Never spray powder longer than this specified time.
- Do not strongly force the Nozzle Tip into a periodontal pocket.
- Make sure to use Perio Mate Powder.
- Do not spray powder while the Nozzle Tip end is located at the bottom of a periodontal pocket. Emphysema may be caused.
- Never spray powder toward a human body. Spray only toward a tooth surface.
- Do not use the Nozzle Tip in any places other than periodontal pockets.
- If the hose swells or air or powder leaks from connections between the Powder Case and Handpiece, during use, immediately stop use.
- Do not use a deformed or damaged Nozzle Tip. It may detach during use.
- Excessive air pressure supply may cause emphysema. Make sure the air pressure is correctly set, as specified. Set the spray air pressure to the extent that the spray slightly flows out from the periodontal pocket, even at maximum. Adjust the spray air pressure within an adequate supply air pressure while checking the patient's condition.
- Use the product while spraying water.
- Make sure to use sufficient evacuation vacuum to prevent a patient from ingesting a large amount of powder. Avoid continuous use for a long period of time and allow the patient to rinse out the mouth as necessary.

  
**CAUTION**

- Even after the foot control pedal is released, powder may still come out until the air pressure in the Powder Case is expelled. After each operation, vacuum excess powder until the powder ejection stops in order to prevent it from entering the oral cavity of the patient.
- Make sure the compressed air supply is dry and clean. Water or oil content mixed in the air may cause internal solidification of the cleaning powder.
- Use only drinkable water for supply water.

**■ Operation without Nozzle Tip**

Perio Mate can also perform cleaning of supragingival tooth surfaces or around marginal gingiva. Remove the Nozzle Tip from the Perio Mate Handpiece and perform cleaning. During operation, use the Nozzle around 10mm away from the tooth surface at angles of 30 to 60 degrees. (Fig. 10) Do not spray powder directly to the oral mucosa and do not insert the Nozzle into periodontal pockets.

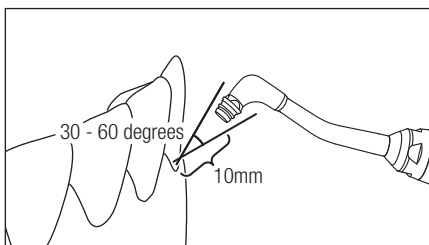


Fig. 10

  
**WARNING**

- When using Perio Mate without the Nozzle Tip, avoid use on the oral mucosa.

## 7 Care After Use

After each patient maintain the product as follows.

  
**WARNING**

- If organic solvents, etc., adhere to the Powder Case Cap, this may result in damage.
- The Powder Case Cover will deteriorate over time under the influence of ultra violet rays and other environmental factors and is therefore considered a consumable item. Replace the powder case cover every six months.
- Make sure to perform 7-1 Discard of Perio Mate Powder - 7-4 Lubrication after each use. If powder remains in the Powder Case or Handpiece, it will solidify which may cause clogging.
- Remove the Powder Case Cover and Rubber Packing from the Cover Holder once a week to remove powder caught in the clearance. Check that there are no cracks or scratches on the Powder Case Cover at that time.
- Never use the Powder Case Cover with cracks or scratches. If used in such a condition damage and injury may result from any broken pieces.



## CAUTION

- In case of failure, make sure to contact your Authorized NSK Dealer for repairs.
- After use always thoroughly remove powder from the product then perform cleaning, washing and sterilization. Ensure the instrument is totally dry for storage.
- Make sure to perform Ultrasonic Cleaning once a week to prevent clogging of powder. (See 8-1 Ultrasonic Cleaning.)
- Never lubricate Perio Mate. (However, lubricate the O-rings and Flow Volume Adjustment Ring with the supplied turbine oil. (See 7-4 Lubrication.)

## 7-1 Discard of Perio Mate Powder

- 1) Open the powder case cap, and remove the remaining cleaning powder. (Fig. 11)

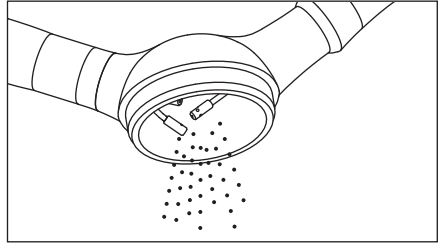


Fig. 11

- 2) Perform idle running with air alone to discharge water and powder in the Nozzle. (Fig. 12)

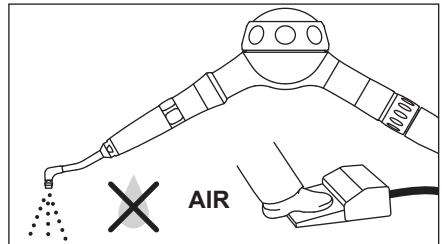


Fig. 12

- 3) Blow off the powder remaining in the powder case with air. (Fig. 13)
- 4) Wipe the Nozzle and handpiece with a soft cloth saturated in alcohol to remove saliva and other physical contamination.

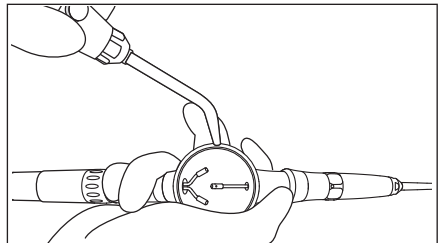


Fig. 13

## 7-2 Removal of powder from the Powder Case, Handpiece and Nozzle

- 1) Remove the Powder Case from the hose.
- 2) Pull back the Handpiece Release Collar and remove the handpiece.
- 3) Insert the Nozzle into the Ring Wrench and loosen the Nozzle. Remove the Nozzle from the Handpiece. (Fig. 14)
- 4) Fit the supplied Blower Nozzle to the coupling and attach to the handpiece. Run idle with no water more than 5 sec. to clear lines. (Fig. 15)

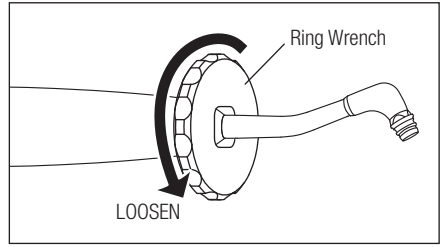


Fig. 14

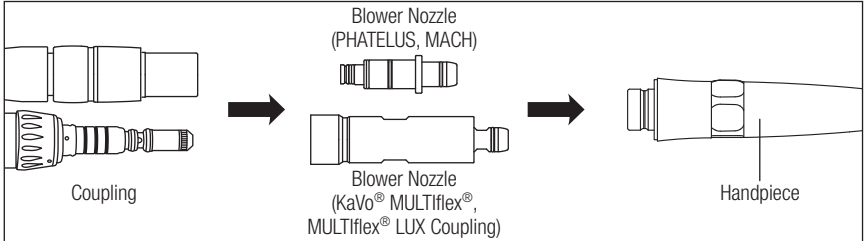


Fig. 15

\*The Blower Nozzle in the product package depends on the joint type you purchase. Do not use a blower nozzle other than the supplied blower nozzle.

- 5) Connect the Blower Nozzle to the Nozzle end (Fig. 16) and idle with air alone. Residual powder in the Nozzle will be discharged.

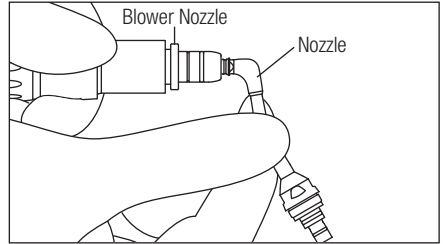


Fig. 16

### CAUTION

- When idling, hold the Nozzle and Handpiece tight and be careful not to allow the Nozzle to be ejected by air pressure.
- When idling, stop water supply and idle with air alone.

## 7-3 Cleaning and washing

- 1) Remove powder from the Handpiece and Powder Case connections and the Adjustment Ring section.  
Clean the inside of the Handpiece connection with the supplied cleaning brush. (Fig. 17: Left)  
Clean the Powder Case connections with the supplied cleaning brush in the same way. (Fig. 17: Right)

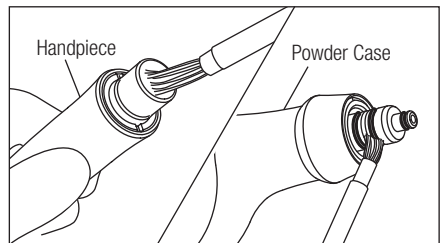


Fig. 17

\*If powder adheres to the O-ring section, remove the O-rings, and carefully clean the O-rings and grooves. (Fig. 18)

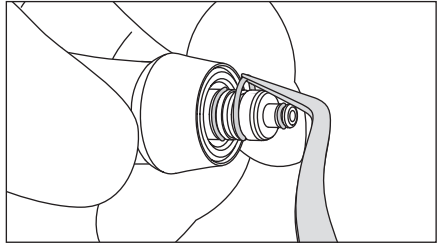


Fig. 18

2) Remove the Rubber Packing and disassemble the Powder Case Cap. (Fig. 19)

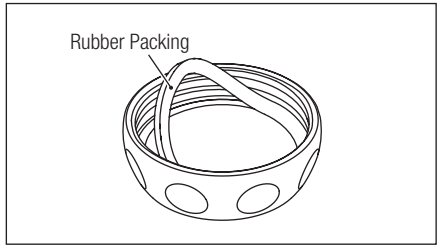


Fig. 19

3) Wash away the Perio Mate Powder adhering to the inside of the Powder Case/Powder Case Cap under running water. (Fig. 20)

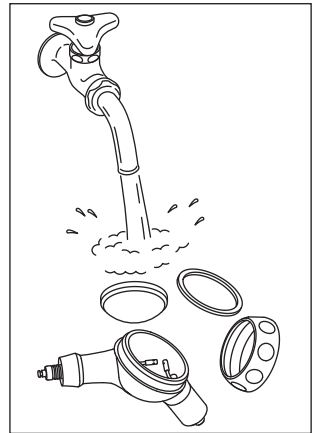


Fig. 20

4) Blow water off the Powder Case Cover, Rubber Packing, and the Cover Holder by air and dry. Then, assemble.



**CAUTION**

- If cleaning powder remains in the Powder Case, powder will solidify, and clogging may occur.
- Do not immerse the Powder Case or the Handpiece, with residual powder, into water. The powder will solidify, and clogging may occur.

## 7-4 Lubrication

- 1) Dry the O-ring section of the Powder Case and the Adjustment Ring section, apply a drop of the supplied turbine oil and rub it in with your finger, etc. (Fig. 21, 22)

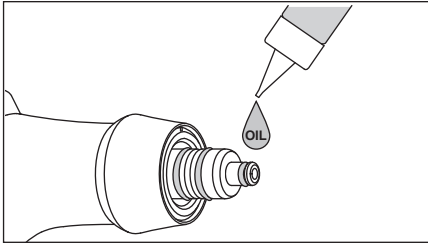


Fig. 21

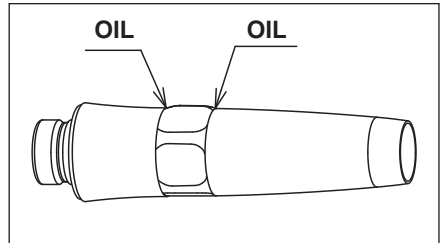


Fig. 22


- 2) Perform autoclave sterilization.



### CAUTION

- If you fail to lubricate the O-ring section on the Handpiece side, the Joint section will be damaged and this may cause the Handpiece connection to be difficult to rotate. It may also cause water leakage.
- After autoclave sterilization, the Flow Volume Adjustment Ring can be difficult to rotate in some rare cases. However, it may return to the normal state once you rotate it. If the Adjustment Ring cannot rotate properly, contact your Authorized NSK Dealer.

## 8 Cleaning and Sterilization

 Only the handpiece can be washed via Thermo Disinfector.



### CAUTION

- Do not use the Thermo Disinfector for the Powder Case, Powder Case Cap and Nozzle.

### 8-1 Ultrasonic Cleaning



### CAUTION

- Make sure to perform Ultrasonic Cleaning once a week or after the remedy described in 10. Troubleshooting to prevent clogging of powder.

- 1) After disassembling, perform cleaning. (See 7-1 Discard of Perio Mate Powder - 7-3 Cleaning and Washing.)
- 2) Pass through the supplied Ring Wrench from the Nozzle end, loosen the Nozzle, and remove the Nozzle from the Handpiece.
- 3) Perform Ultrasonic Cleaning with hot water for the Handpiece, Powder Case and Nozzle.
- 4) After cleaning, blow waterdrops from all parts by air to dry them.
- 5) Reassemble the parts following the disassembly procedures in reverse.
- 6) Connect the Powder Case and Hose with the cover not attached and discharge air. This allows water in the Internal Nozzle to be discharged. Then thoroughly dry the inside.

**CAUTION**

- When attaching the Nozzle, lightly thread the Nozzle screw into the Handpiece by hand at first and then securely tighten it with the supplied Ring Wrench.
- After Ultrasonic Cleaning, blow remaining water from the inside with a syringe and sufficiently dry the parts before use.

## 8-2 Sterilization

Sterilize the product by autoclave sterilization. Remove the Nozzle Tip and dispose of powder after each patient and sterilize as noted below.

All parts of this product can be autoclaved.

### ■ Autoclave Procedure

- 1) Disassemble the product and clean it. (See 7-1 Discard of Perio Mate Powder - 7-4 Lubrication.)
- 2) Insert into an autoclave pouch. Seal the pouch.
- 3) 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.
- 4) Keep the product in the autoclave pouch to maintain sterility until it is used. To use, perform reassembly in reverse order to disassembly.

**CAUTION**

- The Nozzle Tip is a single use product. Do not reuse or re-sterilize it since it may be damaged or contaminated.
- Before use, thoroughly dry all parts.
- Remove the Powder Case Cap from the Powder Case, and then sterilize by autoclave. Sterilization with the Powder Case Cap attached may cause breakage of the Powder Case Cap.
- 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 from other instruments.
- If the sterilizer chamber temperature may exceed 135°C during the dry cycle then delete the dry cycle. Even in this case, sufficient drying of the product is required.
- Do not wipe with, or clean, or immerse in, high acid water or sterilizing solutions.
- 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.
- The product can be sterilized only by autoclave sterilization.
- 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.

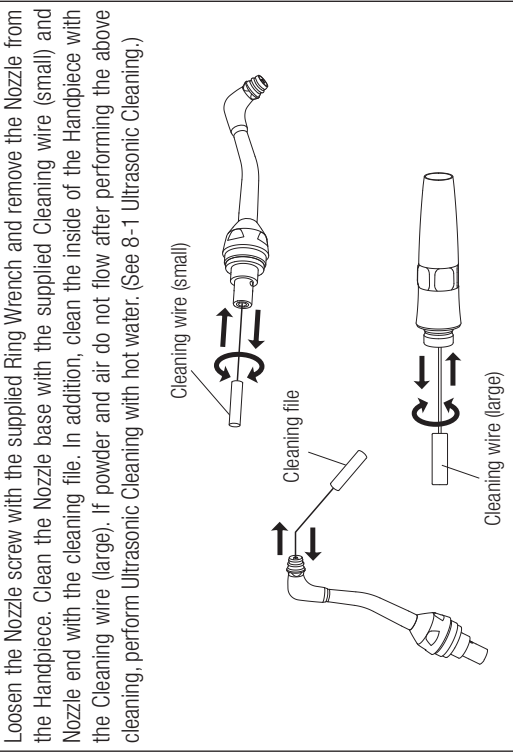


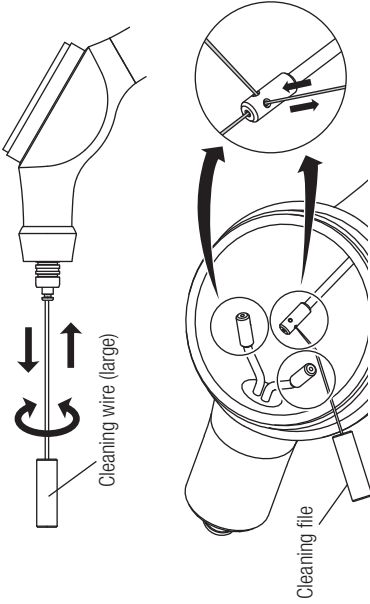
## 9 Periodical Maintenance Checks

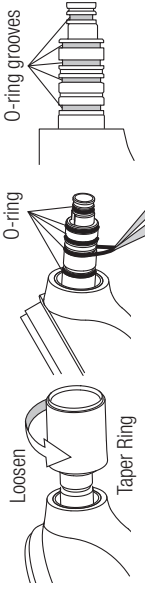
Perform periodical maintenance checks every three months, referring to the check sheet below. If any abnormalities are found, contact your Authorized NSK Dealer.

Points to check	Details
Powder Case Cap	Check that there are no large/deep scratches.
Powder Spray	After filling the powder chamber, spray powder into a spittoon, etc., and confirm that powder has not leaked from connections other than the Nozzle Tip connection.
Water Spray	After filling the powder chamber, spray powder into a spittoon, etc., and confirm that water has not leaked from connections other than those of the Nozzle Tip connection.
Adjustment Ring	After filling the powder chamber, spray powder into a spittoon, etc., and confirm that powder spray amount changes when the Flow Volume Adjustment Ring is switched from Min. to Max.

## 10 Troubleshooting

Trouble	Check Item	Cause	Remedy
Air and powder do not come out. Or air and powder come out but the pressure is not strong enough and cleaning power is also weak.	When the Nozzle Tip is removed and air is supplied, air and powder come out from the Nozzle section. When the Handpiece is removed and air is supplied, air and powder come out from the Handpiece connection.	The inside of the Nozzle Tip is clogged with powder. The inside of the Handpiece is clogged with powder.	Replace the Nozzle Tip.  Loosen the Nozzle screw with the supplied Ring Wrench and remove the Nozzle from the Handpiece. Clean the Nozzle base with the supplied Cleaning wire (small) and Nozzle end with the cleaning file. In addition, clean the inside of the Handpiece with the Cleaning wire (large). If powder and air do not flow after performing the above cleaning, perform Ultrasonic Cleaning with hot water. (See 8-1 Ultrasonic Cleaning.)
			

	<p>When the Handpiece is removed and air is supplied, air and powder do not come out of the Powder Case.</p>	<p>The inside of the Powder Case is clogged with powder.</p>	<p>Insert the Cleaning wire (large) into the center hole on the end of the Handpiece section connection of the Powder Case while turning the Wire and clean the inside. In addition, clean the internal Nozzle in the Powder Case with the cleaning file. If powder and air do not flow after performing the above cleaning, perform Ultrasonic Cleaning with hot water. (See 8-1 Ultrasonic Cleaning.)</p> 
<p>Powder has partially solidified in the Handpiece or in some part in the Powder Case, reducing the passage width.</p>	<p>Powder has partially solidified with water, etc., in the middle of the air passage.</p>	<p>Clean with the supplied Cleaning wire or cleaning file (see the above figure) and blow air to remove the remaining powder inside. If the problem is not resolved, perform Ultrasonic Cleaning with hot water. Then, thoroughly dry the inside before use. (See 8-1 Ultrasonic Cleaning.)</p>	
<p>Powder has partially solidified in the Powder Case.</p>	<p>Powder has long been opened and exposed to air.</p>	<p>Replace powder with new powder.</p>	

		Water is mixed in supply air.	<p>If you use the model for PHATELUS coupling or MACH coupling, confirm that the O-ring is not damaged in the coupling joint section. If the O-ring is damaged, replace it. If your model is other than those for PHATELUS and MACH couplings, confirm the coupling for use.</p>  <p>Loosen Taper Ring</p> <p>O-ring</p> <p>O-ring grooves</p> <p>△ After O-ring replacement, securely tighten the Taper Ring. If tightening of the Taper Ring is not sufficient, the Powder Case may be ejected during use.</p> <p>Open the filter in the air supply circuit, and the drain in the compressor, and check that water has not accumulated.</p> <p>Replace the O-ring in the Handpiece joint section of the Powder Case, apply a drop of the supplied turbine oil and rub it in with your finger, etc. (See 7-3 Cleaning and Washing - 7-4 Lubrication.)</p> <p>Remove O-rings from the Handpiece joint section of the Powder Case and carefully remove the powder adhered to the grooves and O-rings with the supplied cleaning brush. Then, thoroughly wipe off the Handpiece joint section with a cloth soaked with alcohol. Install the O-rings, apply a drop of the supplied turbine oil and rub it in with your finger, etc. (See 7-3 Cleaning and Washing - 7-4 Lubrication.)</p>
Water leaks from between the Handpiece and Powder Case. It is difficult to rotate the connection between the Powder Case and Handpiece connections.	<p>Check the O-ring in the Handpiece joint section of the Powder Case.</p> <p>Check O-rings in the Powder Case and Handpiece joint section.</p>	<p>The O-ring is scratched.</p> <p>Powder is caught in the O-ring grooves and connection of the coupling section has become tight.</p>	

\*If the trouble is not resolved by any of the above remedies, contact your Authorized NSK Dealer for service repair.

## 11 Specifications

Model	Refer to 4. Correspondence Coupling
Hose connection type	Refer to 4. Correspondence Coupling
Air Pressure	0.3 - 0.4MPa (3.0 - 4.0 kgf/cm <sup>2</sup> )
Max. Consumption Air	17 NL/min
Supplied Water pressure	0.1 - 0.2MPa (1.0 - 2.0 kgf/cm <sup>2</sup> )
Supply Water Flow Rate	≥40ml/min
Use Environment	Temperature: 0 - 40°C, Humidity: 30 - 75%
Transportation and Store Environment	Temperature: -10 - 50°C, Humidity: 10 - 85%, Atmospheric Pressure: 500 - 1,060hPa

### PerioMate Powder

Use Environment	Temperature: 15 - 25°C, Humidity: 30 - 75%
Transportation and Store Environment	Temperature: 15 - 25°C, Humidity: 30 - 75%

## 12 Symbols



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



This product can be washed via Thermo Disinfector.



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



Manufacturer.



Authorized representative in the European community.



Do not reuse.



Use by



Batch Code

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

## 13 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.

## 14 Option Parts List

Model	Order Code	Note
MG-4H Multi Gauge	Z109400	PER-M4-P
MG-2/3H Multi Gauge	Z109200	PER-B2-P

## 15 Spare Parts List

Model	Order Code	Note
Perio Mate Powder	Y900938	2 Bottle Set (160g each)
Perio Mate Nozzle Tip	Y1002741	40 pcs/package
PTL O-Ring set	Y900580	PER-PTL-P
PM O-Ring set	Y900054	Handpiece joint section of the Powder Case

## 16 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.

