

# Tooth Cleaning Handpiece PROPHY-MATE

OPERATION MANUAL

OM-T0108E Rev.A



The EU directive 93/42/EEC was applied in the design and production of this medical device.  
0197

Thank you for purchasing NSK tooth Cleaning Handpiece, Prophy-Mate. Read this Operation Manual carefully before use, and file for future reference.

## ⚠ WARNING

- This is for dentists and dental hygienists use only.
- Do not use on the following patients.
  - 1) Those who require restriction on sodium intake. (hypernatremia, gestoses)
  - 2) Those with grave ulcers in digestive organs.
  - 3) Those with hepatic disfunction.
  - 4) Those with lung or cardiac disfunction.
  - 5) Those with damage or abnormality in oral cavity.
  - 6) Those with hyperemia, hemorrhage, or inflammation in the oral cavity.
  - 7) Those who tend to develop inflammation in the oral mucous membrane.
  - 8) Those with allergies.
  - 9) Those with contact lenses.
- Do not use a powder case cover if it has cracks or deep scratches in it. Such cover might break by the applied air pressure, and fragments would fly.
- Do not hit or impact the powder case cover.
- Set the air pressure at the handpiece hose connector at 0.25 - 0.35 MPa (2.5 - 3.5 kgf/cm<sup>2</sup>).
- Do not expose the powder case cover to Organic Solvents, etc, because it may break.
- Powder case cover is a consumption article. It will deteriorate by ultraviolet rays, or by other environment factors. Replace the powder case cover every six months.
- Take the powder case cover and rubber packing once a week, and clean the clung powder. When doing this, check the powder case cover that it has no cracks or deep scratches on it.

## ⚠ CAUTION

- Do not jet directly onto the oral soft tissues or subgingiva.
- Use clean and dry air all the time. Moist air could cause the powder to solidify and clog the powder passage.
- Do not lubricate Prophy-Mate. Use the supplied bottle of oil only to the O-rings.
- Prophy-Mate is autoclavable, but do not autoclave the plastic powder case cover.
- Care should be exercised to prevent the scattered powder from entering the patient's other mucous membranes than oral, such as eyes and nose.
- Tighten the powder case cover securely. Do not open it while in use.
- Use NSK powder only. In case a trouble takes place with use of other powders, NSK shall not be held liable to the incident and consequences.
- Fill one pack of powder in the powder case for each patient. In case some amount of the powder is left in the powder case unused, discard it.
- Do not use the powder remained in the pack unused for an extended period of time, to avoid clogging of the device by the moistened powder.
- When Prophy-Mate is disconnected from the coupling or from the handpiece hose, wipe water from its connecting end and from the hose. Moist powder could cause the powder passage to clog.
- To store after use, remove powder from the powder case and clean its interior.
- Remove oil, chemicals and other harmful materials from the plastic powder case cover as soon as they are found. such may cause the cover to break in time.

### 1. Type of PROPHY-MATE

Handpiece Type	Hose Connection Type	Model
Short Type	<b>NSK</b> PHATELUS or MACH Coupling	PM - PTL - S
	<b>NSK</b> QD-J Coupling	PM - QD - S
	ISO 4-hole Joint	PM - M4 - S
	ISO 2-hole or 3-hole Joint	PM - B2 - S
	KaVo® MULTIflex® or MULTIflex® LUX Coupling	PM - KV - S
	W&H® Roto Quick® Coupling	PM - WH - S
	Bien-Air® Unifix® or Unifix® L Coupling	PM - BA - S
	Sirona® Quick Coupling	PM - SR - S
Long Type	<b>NSK</b> PHATELUS or MACH Coupling	PM - PTL - L
	<b>NSK</b> QD-J Coupling	PM - QD - L
	ISO 4-hole Joint	PM - M4 - L
	ISO 2-hole or 3-hole Joint	PM - B2 - L
	KaVo® MULTIflex® or MULTIflex® LUX Coupling	PM - KV - L
	W&H® Roto Quick® Coupling	PM - WH - L
	Bien-Air® Unifix® or Unifix® L Coupling	PM - BA - L
	Sirona® Quick Coupling	PM - SR - L

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Bien-Air® and Unifix® are registered trademarks of Bien-Air Dental S.A., Switzerland.  
Sirona® is a registered trademark of Sirona Dental Systems GmbH, Germany.

### 2. Standard Packaging Content (for PHATELUS Coupling)

- Prophy-Mate handpiece ... 1 (PM-S or PM-L)
- Nozzle ... 1
- Powder case ... 1
- Powder case cover ... 3 (3 colors. Use one of them)
- Cleaning wire ... 1
- Cleaning file ... 1
- Cleaning brush ... 1
- Cleaning powder ... 10 packs
- O-rings (Handpiece end) ... 1 set
- O-rings (Coupling end) ... 1 set
- Nozzle wrench ... 1
- Oil ... 1
- Blower Nozzle ... 1

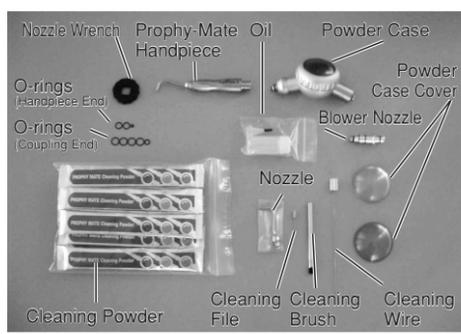


Fig.1

### 3. Caution before use

This product is for jetting powder. It may clog by moist air or by water. Do not use at the delivery system which air pressure may increase rapidly when it clogged.

■ How to check the air pressure of the delivery system.

- ① Check if the air pressure of the delivery system will not increase extraordinary (0.4MPa (4.0kgf/cm<sup>2</sup>)), when you cover the tip of the syringe.
- ② In case of extraordinary increase, check the regulator just before the delivery system.
- ③ In case if there is no regulator connected, install the regulator with diaphragm valve (The regulator which the air pressure will not increase in case the downstream air flow has stopped.)

### 4. Operation

#### (1) Air Pressure

Set the air pressure at the handpiece hose connection at 0.25 - 0.35 MPa (2.5 - 3.5 kgf/cm<sup>2</sup>).

#### ⚠ CAUTION

Higher air pressure could cause the plastic powder case cover to crack or fracture.

#### (2) Connecting Powder Case to Handpiece Hose

Connect the Powder Case to the handpiece hose as follows:

- **NSK Swivel Coupling type Powder Case (PM-PTL, PM-QD)**  
Connect FM-CL (2,3,4-hole), PTL-CL-4HV (6-pin), or PTL-CL-FV (5-hole), or QD-J coupling to the handpiece hose. In case you have any of these couplings mounted on the handpiece hose, you can just simply click the Prophy-Mate handpiece to the coupling. (Fig. 2)
- **4-Hole, 3-Hole, or 2-Hole type Powder Case (PM-M4, PM-B2)**  
Connect the powder case directly to the corresponding handpiece hose. Fasten the hose nut tightly.(Fig. 3)
- **Use with Other Handpiece Manufacturers' Coupling (PM-KV, PM-WH, PM-BA, PM-SR)**  
Check with the instruction manual of the coupling you have, and mount Prophy-Mate accordingly.

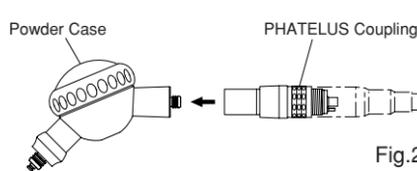


Fig.2

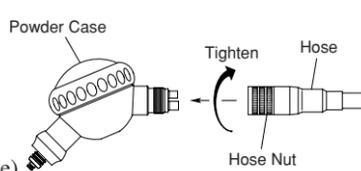


Fig.3



Fig.4

#### (3) Mounting Handpiece to Powder Case

Slide back the handpiece release ring on the powder case joint and hold. Insert the handpiece into the powder case joint, and release the ring. (Fig. 4)

#### (4) Filling Cleaning Powder

Unscrew the powder case cap and remove. Break a seal of the cleaning powder pack, and fill whole pack of powder in the powder case. (Fig. 5)  
Recap the powder case cap securely. (Fig. 6)



Fig.5

#### ⚠ CAUTION

- Do not use the left-over powder or the powder in the pack opened days ago. They could get moist and cause clogging of the powder passage.
- Use only the NSK Cleaning Powder. Other manufacturer's powder may be of different grain size, and may cause the powder passage to clog.

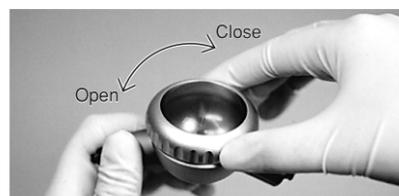


Fig.6

#### (5) Jetting Powder

Aim the nozzle at the cuspidor, and jet for 3 seconds to verify that the powder jets uniformly. And use on the patient. Use with the nozzle 5 - 10 mm away from the tooth surface.

#### ⚠ CAUTION

- Do not jet the powder directly to the oral soft tissues, gum or subgingiva.
- Always use the high volume evacuator to prevent the patient from swallowing the powder. Use intermittently and have the patient wash his or her mouth as often as needed.

## 5. Care After Use

- ① Unscrew the powder case cap, and completely empty the powder case.
- ② Slide back the handpiece release ring, and remove the handpiece from the powder case.
- ③ Wipe saliva and debris off the handpiece with alcohol-immersed cloth.
- ④ Remove the powder case from the coupling, or from the handpiece hose (4-, 3-, or 2-hole type).
- ⑤ Remove the O-ring from the powder case cap, plastic powder case cover, and thin gasket. Clean the powder case cover, O-ring, thin gasket and the serrated powder case cover ring. (Figs. 7 and 8)
- ⑥ Clean the powder case body with the supplied brush. (Fig. 9)



Fig.7



Fig.8



Fig.9

## 6. Sterilization

The manufacturer recommends autoclaving.  
Autoclave sterilization required after each patient as noted below.

- ① Disassemble Prophy-Mate into the following components.
  - Powder case and handpiece.
  - Powder case into the powder case body and the powder case cap.
  - Powder case cap into the O-ring, powder case cover, thin gasket and serrated cover ring.
  - Handpiece into the handpiece body and nozzle.
- ② Place them in an autoclave pouch, and seal.  
Do not autoclave the plastic dome, O-ring and gasket of the powder case cover.
- ③ Autoclavable up to a max. 135°C.  
ex.) Autoclave for 20 min. at 121°C, or 15 min. at 132°C.  
\* Sterilization at 121°C for more than 15 minutes is recommended by EN13060 or EN554.  
\* Performing sterilization according to our instruction has minimal effect on the instruments. Life span is generally determined by wear and damage due to use.
- ④ Prior to use, open the pouch and assemble the nozzle into the handpiece, and the handpiece into the powder case.  
Assemble the powder case cover. Fill powder in the powder case and assemble the powder case cover to the powder case.

### CAUTION

- Skip dry cycle if the chamber temperature could exceed 135°C (275°F).
- Place the pouch in the central or top tray, as the local temperature at the chamber bottom could exceed the set temperature.
- Do not sterilize with other instruments that are not completely cleaned from the chemicals.  
Chemical vapors could set on the Prophy-Mate components and cause them to discolor or malfunction.

## 7. Troubleshooting

Trouble	Check item	Probable Cause	Remedy
No air or powder exits from nozzle.	Remove the handpiece. Supply air, and air and powder exit from the handpiece joint section of the powder case.	Handpiece is clogged.	Remove the nozzle with the nozzle wrench. Clean the nozzle and the handpiece with the supplied wire and the cleaning file. (Figs. 10, 11, 12) Do not forcibly wiggle the cleaning file in the nozzle. If you still have a problem after the above steps, perform ultrasonic cleaning (see the procedure of ■ Ultrasonic Cleaning). If this does not solve the problem, contact the dealer for service.
	Remove the handpiece. Supply air. Neither powder nor air exits from the handpiece joint section of the powder case.	Powder case is clogged.	Insert the cleaning wire into the hole in the center of the handpiece joint section all the way until it stops in the hole. Insert the cleaning file into four small holes in the tubing section extended into the powder case from the handpiece joint section. (Fig. 13) If you still have a problem after the above steps, perform ultrasonic cleaning (see the procedure of ■ Ultrasonic Cleaning). If this does not solve the problem, contact the dealer for service.
Air and powder exit from the nozzle, but not in sufficient power.	Powder is partially solidified in the powdercase.	Powder that has been left unused was used.	Change with new powder.
		Water invaded into the drive air passage.	Change the O-rings at the coupling end of the powder case. (Figs. 14 and 15) Check the quality of drive air. Drain the air filter and air compressor.
	Powder is partially solidified in the handpiece entrance or in the powder case, blocking the passage.	Air passage is partially blocked by the powder solidified by water.	Remove the nozzle with the nozzle wrench. Clean the nozzle, handpiece and powder case with the supplied wire, brush and the cleaning file. (Figs. 10, 11, 12) Do not forcibly wiggle the cleaning file in the nozzle. Carefully insert the cleaning file, until it stops, into the orifices of the two air jet heads. Each head is built with a one-way valve to prevent the powder from flowing back into the supply air line. Damage by cleaning file could fail this safety system. (Figs.16,17,18) If you still have a problem after the above steps, perform ultrasonic cleaning (see the procedure of ■ Ultrasonic Cleaning). Dry them completely for next use.
Water leaks from the handpiece joint at the powder case.	Check the O-ring at the joint.	O-ring is damaged.	Change O-rings. (Fig. 19)
Handpiece hardly swivels.	Check O-rings used at the handpiece swivel.	Cleaning powder accumulated in the O-ring groove, making the handpiece swivel extremely resistive.	Remove the O-rings. Brush the powder off the O-ring grooves and joint. Clean the O-rings. Put them back on the joint. Lightly apply lubricant on the O-rings for swiveling. (Figs. 20 and 21)

### ■ Ultrasonic Cleaning

- ① Disassemble Prophy-Mate and clean it up by following the instructions of "4.Care After Use"
- ② Insert the nozzle wrench over the nozzle, unscrew the nozzle nut, and remove. Clean the nozzle. (Fig.22)

### CAUTION

When you attach the nozzle, screw the nozzle nut by hand until it fits, then tighten it up with the nozzle wrench

- ③ Perform ultrasonic cleaning on the handpiece, the powder case, the nozzle with warm water (40-60°C).
- ④ Blow off water by using syringe after cleaning up.
- ⑤ Blow air out after attaching the powder case and the handpiece hose without the powder case cover.  
This dries up the inside of the blower nozzle. Dry them completely for next use.

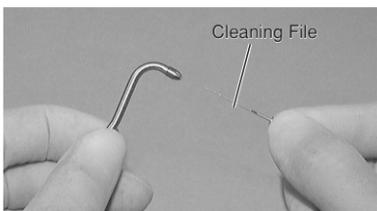


Fig.10

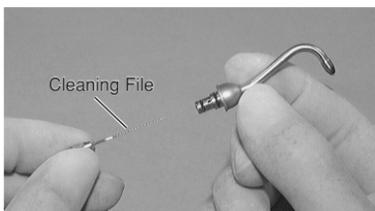


Fig.11

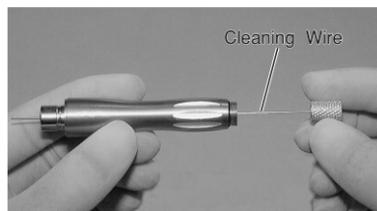


Fig.12

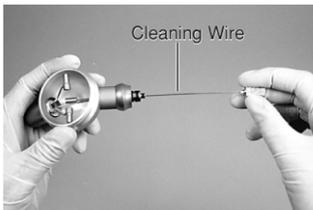


Fig.13

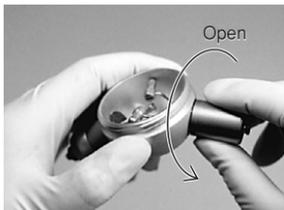


Fig.14



Fig.15



Fig.16

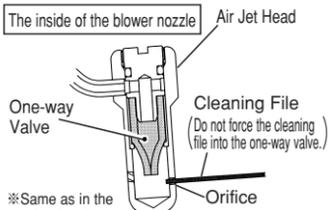


Fig.17



Fig.18



Fig.19



Fig.20



Fig.21

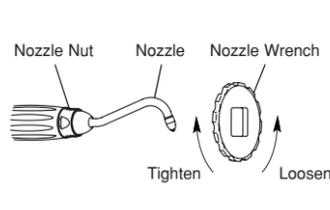


Fig.22

※ Specifications may be changed without notice.

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