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OPERATION MANUAL

NSK

High Speed Air Turbine Handpiece

S-Max M

M500MHL
M600MHL

CE 97

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

MADE IN JAPAN

QM J66065

Motivating Partners

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Intended Use

This handpiece is designed only for dental treatment use.

⚠ Caution

- When operating the handpiece always consider the safety of the patient.
- Check for vibration, noise and overheating outside the patient's mouth. If any abnormalities are found do not operate. Contact authorized dealer for service.
- Should the handpiece not function normally, cease operation immediately and return the handpiece to your authorised NSK Dealer for service.
- Depressing the chuck push button system while the bur is rotating could result in OVERHEATING of the handpiece head. Caution must be exercised during use to keep cheek tissue away from the chuck push button system. Contact with soft tissue may cause the push button to depress and burn injury to the patient may occur.
- Avoid impact on the handpiece. Do not drop the handpiece.
- Do not exceed the optimum drive air pressure specified on the specification table.
- Refer to the Operation Manual of hose before connecting the handpiece.
- Do not attempt to disassemble the handpiece nor tamper with the mechanism.
- NSK never recommends the disassembly and repair of any NSK cartridge. There is NO EXCEPTION. In such a case a handpiece may perform abnormally (abnormal noise or abnormal vibration). Damage, failure or accidents are outside of our guarantee.

1. Specification

Model	M500MHL	M600MHL
Head Type	Miniature Head	Standard Head
Rotation Speed	380,000 - 450,000 min^{-1}	360,000 - 430,000 min^{-1}
Spray Type	Quattro	
Chuck Type	Push Button Chuck	
Bur Type	ISO 1797-1 Type3 ø1.59 - 1.60mm Short Shank Bur / Standard Bur	ISO 1797-1 Type3 ø1.59 - 1.60mm Standard Bur
Min. Chucking Length	9.0mm	10.5mm
Max. Bur Length	21mm	25mm
Max. Working Part Diameter	ø2mm	
Drive Air Pressure	0.25 MPa (2.5 kgf/cm^2) - 0.30 MPa (3.0 kgf/cm^2)	
Max. Air Consumption	45±5 NL/min	
Optic	Glass Rod	
Use Environment	Temperature: 0 - 40°C, Humidity: 30 - 75%, Atmospheric Pressure: 700 - 1,060 hPa	
Transport and Store Environment	Temperature: -10 - 50°C, Humidity: 10 - 85%, Atmospheric Pressure: 500 - 1,060 hPa	

* M500MHL / M600MHL have Morita 4H Type Joints.

2. Connection & Disconnection of the Handpiece

First make sure the manufacturer's coupling is firmly attached to the handpiece tubing and the drive air pressure is correct.

Connection (Fig. 1)
To connect the handpiece to the coupling align the handpiece to the coupling and push together (per the coupling manufacturers instructions).

Disconnection (Fig. 1)
Release the handpiece from the coupling (per the coupling manufacturers instructions) and remove the handpiece.

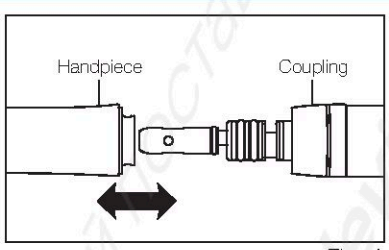


Fig. 1

3. Insertion & Removal of the Bur

⚠ Caution

- Do not use non-standard burs. The ISO standard shank diameter is ø1.59 - ø1.60mm.
- Do not use bent, worn, damaged, or non-concentric burs. Such burs can cause damage to the handpiece.
- Do not exceed the bur speed recommended by the bur manufacturer.
- Do not use long surgical burs. Do not use burs longer than 26mm.
- Always keep the bur shank clean. Entry of hard debris into the chuck via the bur shank could cause rotation slip and also prevent the bur from being securely located in the chuck.
- Fully depress the Push Button and insert the bur into the chuck until it is secure.
- Do not use short shank burs in Standard Head handpieces.

3-1 To Insert the Bur (Fig. 2)
Depress the Push Button and insert the bur into the chuck until it is secure. Release the button.

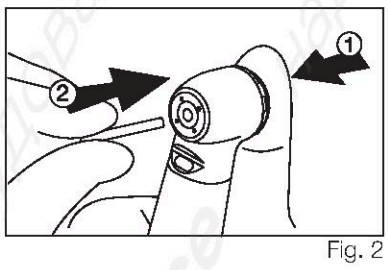


Fig. 2

3-2 To Remove the Bur (Fig. 3)
Stop the handpiece. Depress the Push Button firmly and remove the bur.

⚠ Caution

Test that the bur is secure by gently pulling and pushing the bur without depressing the Push Button.

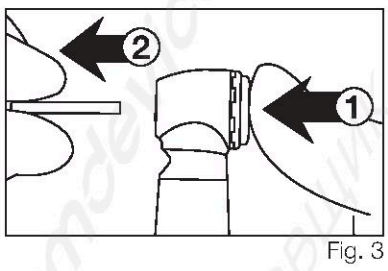


Fig. 3

4. Lubrication

Supply PANA SPRAY Plus or Care3 Plus after each use and/or before autoclaving.

■ PANA SPRAY Plus
1) Remove the bur from the handpiece.
2) Insert the Spray Nozzle into the Spray Port nozzle on the can.
3) Insert the Spray Nozzle in rear of the handpiece. Hold the handpiece and spray for approximately 2-3 seconds. Apply lubricant until it expels from the handpiece head for at least 2 seconds.

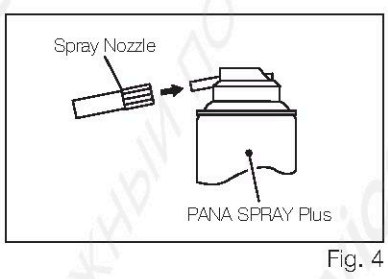


Fig. 4

⚠ Caution

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

■ Care3 Plus
When using NSK Care3 Plus automatic handpiece cleaning and lubrication system, refer to the Care3 System instructions.

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5. Sterilization

All handpieces can be autoclavable up to Max.135°C.

All handpieces can be cleaned and disinfected with a Thermo-Disinfector.

Autoclave sterilization is recommended.
Sterilization is required first time you use and after each patient as noted below.

■ Autoclave Procedure:

1) Scrub dirt and debris from the handpiece, and wipe clean with alcohol-immersed cotton swab or cloth. Do not use a wire brush.
2) Lubricate with PANA SPRAY Plus/Care3 Plus. Refer to 4. Lubrication.
3) Insert into an autoclave pouch. Seal the pouch.
4) Autoclavable up to a max. 135°C.
   ex.) Autoclave for 20 min. at 121°C, or 15 min. at 132°C.
5) 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

- Do not autoclave the handpiece with other instruments even when it is in a pouch. This is to prevent possible discoloration and damage to the handpiece from chemical residue on other instruments.
- If the sterilizer chamber temperature may exceed 135°C during the dry cycle then delete the dry cycle.
- Do not heat or cool the handpiece too quickly. Rapid change in temperature could cause damage to the handpiece.
- Do not use high acid water or sterilizing solutions to wipe, immerse or clean the handpiece.
- Keep the handpiece in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt and sulphur.
- Do not touch the handpiece immediately after autoclaving as it will be very hot and must remain in a sterile condition.
- Autoclave sterilization is recommended for the handpiece. The validity of other sterilization methods is not confirmed.

6. Cleaning the cellular glass optic rod

Wipe clean the cellular glass optic rod exit point (Fig. 5) with an alcohol-immersed cotton swab. Remove all debris and oil.

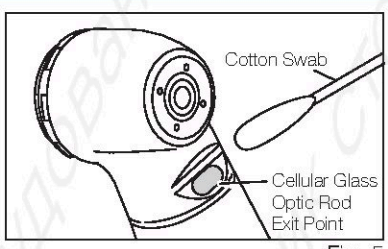


Fig. 5

⚠ Caution

Do not use a sharp tool to clean the cellular glass optic rod. It could damage the glass and reduce the light transmission. If illumination becomes dim please contact your dealer.

7. Replacing the Turbine Cartridge

7-1 Remove the turbine cartridge from the handpiece

1) Insert a bur into the chuck.
2) Locate the head cap wrench tool on the head cap then turn the wrench counter-clockwise. Remove the cap.
3) Use the bur to gently lever the entire turbine cartridge out of the head.
4) Remove debris from inside the empty head.

7-2 Insert a new NSK turbine cartridge

1) Gently insert the new NSK turbine cartridge into the head section, always making certain that the turbine cartridge locating pin is aligned in the slot inside the head.
2) Use fingers to screw the head cap back into place and then use the cap wrench to further tighten until the cap is securely in place.

Optional Cartridge : SX-MU03 (Cartridge for Miniature head) Order No. P1001250
SX-SU03 (Cartridge for Standard head) Order No. P1002250

⚠ Caution

- Use only the genuine NSK-manufactured turbine cartridge. Do not use repaired or re-built NSK turbine cartridge. Non-conformance to this shall immediately void the manufacturer's warranty, and the manufacturer shall have no liability to the user and the patient for any incident that may arise from use of such turbine cartridge.
- The head cap screw thread is very fine. To prevent damage to the thread always first tighten the handpiece head cap using fingers, then secure with the head cap wrench.
- Make sure that the two O-rings (Fig. 7) are correctly located on the cartridge.

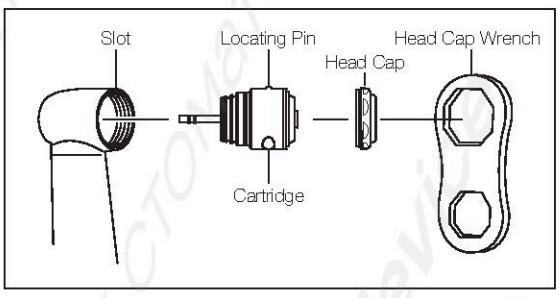


Fig. 6

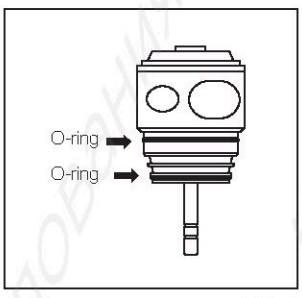


Fig. 7

8. Cleaning of Spray Ports

When Spray Ports are clogged, or spray does not exit evenly from each port, clean the ports as follows:

1) Remove the Cartridge.
2) Insert the Cleaning Wire straight into the Spray Port. (Fig. 8)
3) Remove the debris.

⚠ Caution

Do not blow the air into Clean Head Hole.

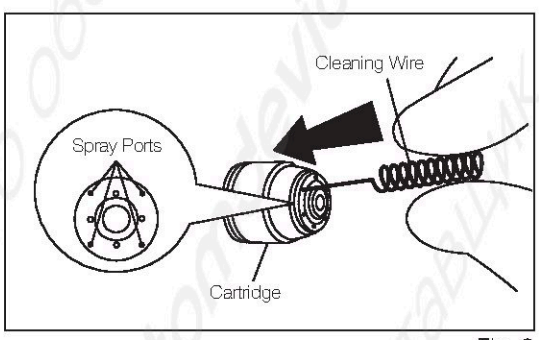


Fig. 8

9. Disposing Product

Consult with dealer from whom you purchased it about waste disposal.

CE 0197 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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