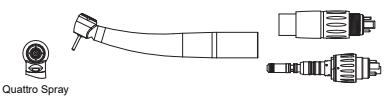
Dental High Speed Handpiece

Please read this operation manual carefully and save for future reference

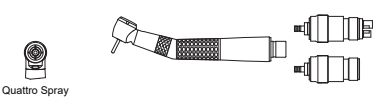
Date: 3/4/2023 Version: 1.04 NKS4-E12

1. Model

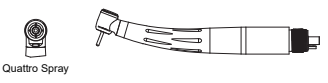
K9 - High speed fiber optic coupling handpiece series



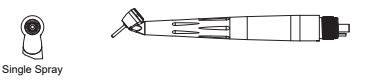
N8 - High speed coupling handpiece series



K1 - High speed push button 4 hole handpiece series



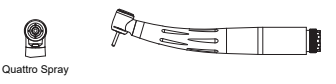
N5 - High speed 45° handpiece series



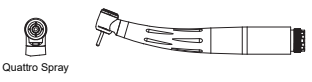
X3 - High speed wrench type 4 hole handpiece series



K6 - High speed push button 2 hole handpiece series



X2 - High speed wrench type 2 hole handpiece series



2. Specifications

	K9	X3	X2	K1	K6	N8	N5
Head	Super torque (T) / Standard (S) / Mini (M)						Mini (M)
Angle	19.5-20°	20°					45°
Chuck type	Push button / Wrench type						
Spray	4 points spray						Single
Holes	M6	M4	B2	M4	B2	M4 / B2	
Illumination	Fiber optic	/	/	/	/	/	/
Voltage	3.0~3.2V DC	/	/	/	/	/	/
Body material	Copper with chromium plating or titanium plating						
Connection	Coupling	/	/	/	/	Coupling	/
Bur size	φ1.59 ~ φ1.60mm × 16mm-21mm (diameter × length)						
Air pressure	0.20 ~ 0.25Mpa (M6/M4/B2)						
Speed	T: ⩾ 300,000rpm; S: ⩾ 360,000rpm; M: ⩾ 400,000rpm						
Water supply	95 ml/min (250Kpa); 95 ml/min (300Kpa); 95 ml/min (400Kpa)						
Air consumption	42 NL/min (250Kpa); 51 NL/min (300Kpa); 72 NL/min (400Kpa)						

3. Main Structure & Accessory List

No.	Part Name	Quantity	Remarks
1	Handpiece	1	Cartridge, Body, Coupling (Optional)
2	Head Cap Wrench	1	
3	Spray Nozzle	1	
4	Cleaning Needle	1	
5	O-ring Set	1	Included in the package for K9

4. User and Intended Use

User: Qualified Professionals
Intended Use: Dental Treatment

5. Precautions for Handling and Operation

1) Please read the instructions seriously, and operate the handpiece accordingly.
2) High speed turbine handpieces are intended for removing caries material, excess filling material, cavity and crown preparation, and restoration. The handpiece is specialized applied for oral therapy, others intention should be fully forbidden.
3) Improper use could cause potential hazards that could result in personal injury or damage to the device. Safety instructions are to avoid those and classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
⚠ **WARNING**	Hazard that could result in serious injury or damage to the device if the safety instructions are not correctly followed.
⚠ **CAUTION**	Hazard that could result in light or moderate injury or damage to the device if the safety instructions are not correctly followed.
NOTICE	General product specification information highlighted to avoid product malfunction and performance reduction.

⚠ CAUTION

- This product is specially for dental drilling and polishing with high speed burs. Please do not use it for other purpose.
- Users are responsible for the opeartional control, maintenance and continual inspection of this product.
- Perform regular function and maintenance checks, should the handpiece function abnormally, stop operation immediately and contact your Authorized Dealer.
- This product rotates with very high speed, please pay attention to safety, and do not touch a rotating bur.
- Please use qualified burs, do not use bent, worn, damaged or non-concentric burs. Otherwise, it may cause damage to the device or injury to the patient.
- Please keep the bur chuck clean, in order to avoid losing of chuck power or vibration cause by dirt.
- Do not exceed the air pressure recommended by manufacturer.
- Please keep the handpiece inside dry, in order to keep the product in good condition.
- Pressing the Push Button while the handpiece is in operation may cause overheating, serious technical damage and possible premature handpiece failure.
- During operation avoid contact with any oral tissue that may cause the Push Button to be pressed while the handpiece is in operation.
- Do not operate the handpiece without burs or tools, otherwise, serious damage will be caused.
- Please avoid any impact on the handpiece. Do not drop the handpiece.
- Do not use high acid water or sterilizing solutions to wipe, immerse or clean the product.

6. Contraindications

Use with caution in the following patients:
1) Hemophiliacs.
2) Patients or doctors with pacemakers.
3) The patients with heart disease, pregnant women and young children.

7. Connection & Disconnection of the Handpiece

N5/K1/K6/X3/X2

7-1 Connection (Fig. 1)
Insert the B2 / M4 handpiece into the corresponding tubing (❶) and screw it tightly (❷) .
7-2 Disconnection (Fig. 1)
Loose the screw (❶) and remove the handpiece from the tubing (❷) .

Fig. 1



Fig. 2

K9/N8

7-3 Connection
1) Screw the coupler to the handpiece tubing (Fig. 1), insert the handpiece into the Coupling (Fig. 3).
2) Make sure the handpiece is firmly connected to the coupling.
7-4 Disconnection
Pull back the Retention Lock Ring and remove the handpiece from the Coupling (Fig. 3).

Fig. 3

⚠ CAUTION

- Do not connect or disconnect the handpiece while it is working, handpiece must be fixed before operation.

8. Insertion & Removal of the Bur

8-1 Push Button Type
1) Insert the bur into the chuck and press the push button to open the chuck with another hand (Fig. 4).
2) Fully insert the bur into the chuck until it stops then release the push button.
3) Ensure that the bur is secure by gently pulling the bur without pressing the push button.
4) Press the push button to open the chuck and remove the bur.
8-2 Key Type
1) Pull back the knurled knob then mount the chuck wrench onto the handpiece head as shown in (Fig. 5).
2) Push the knob into the head then turn the knob about 1/4 turn counter-clockwise.
3) Insert the bur into the chuck and turn the knob about 1/4 clockwise until it stops.
4) Remove the chuck wrench out of the head by pulling back the knurled knob and releasing the wrench.
5) Ensure that the bur is secure by gently pulling and pushing the bur.
6) To remove the bur, follow the procedure a and b stated above.

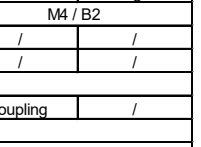


Fig. 4

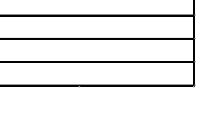


Fig. 5

NOTICE

- Grip the handpiece while placing your thumb on the center of push button will be easier to open the chuck with less force.

⚠ CAUTION

- Always insert the bur all the way into the chuck.
- Remove the bur only after the handpiece has completely stopped rotating.
- Always keep the bur shank clean. If the debris went into the chuck via the bur shank could cause the bur rotation slip and also prevent the bur from being securely chuck.
- Do not exceed the bur speed recommended by the bur manufacturer.
- Do not exceed maximum bur length recommended by the handpiece manufacturer.
- Do not apply excess pressure to the bur as it may break or bend or become difficult to remove.
- Do not use burs with problems listed below as the bur may break, seize up or disengage from the chuck.
  - Bent, deformed, anisomerous (worn), rusted, broken, deficient bur.
  - Non-ISO standard, or tampered bur.

9. Cartridge Replacement

1) Insert the test bur inside.
2) Use the correct wrench tool on the head cap then turn counter-clockwise to loosen and remove the cap.
3) Gently push the bur to lever the cartridge, O-ring and washer out from the head.
4) Remove the O-ring and the washer beneath it from the head cap with tweezers (Fig. 6).
5) Spray lubrication oil to the head and clean the interior.
6) Wipe the spray oil over the head interior.
7) Attach a new washer and O-ring on the head cap (Fig. 7).
8) Inser a new washer into the head (Fig. 8).
9) Make sure that the O-ring is correctly located on the cartridge (Fig. 9).
10) Carefully insert the new cartridge into the head (Fig. 10).
11) Completely insert the cartridge until the cartridge end face aligns with the end face of the handpiece head (Fig. 11). Or insert the cartridge by aligning the pin on the cartridge with the slot on the head (Fig. 12).
12) Tighten the head cap with the correct wrench tool.

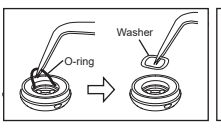


Fig. 6

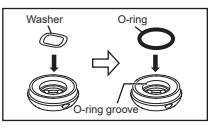


Fig. 7

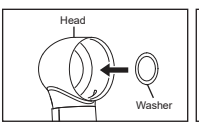


Fig. 8

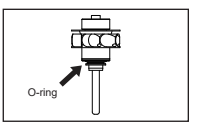


Fig. 9

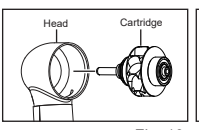


Fig. 10

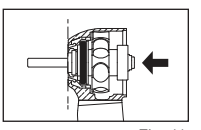


Fig. 11

⚠CAUTION

- Please take out and replace the old O-ring and wave gasket, when replacing cartridge.
- Depending on the condition of the handpiece, cartridge components may become rusty and disassembled, removal could be difficult. In this case, can use tweezers to remove any residue component.
- It is not recommeded to disassemble and repair the cartridge, unless it is performed by our authorized distributor. Otherwise a handpiece may perform abnormally (abnormal noise or abnormal vibration). Damage, failure or accidents are outside of our guarantee.
- Never use a sharp tool to attach a new O-ring as it may damage the O-ring.

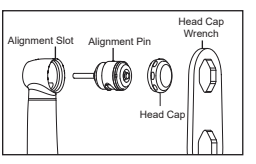


Fig. 12

10. Maintenance

After each patient, be sure to perform the maintenance as follows.

10-1 Preparation

1) Remove the bur form the chuck of the handpiece and disconnect the handpiece from the hose/coupling.
2) Place the handpiece used in the procedure in a designated container or tray.
3) Cover the container or tray with a lid or other appropriate covering to prevent contamination during transport.
4) Label the container or tray with the identification, the name of the procedure, and the date and time of the procedure.
5) Transport the container or tray to the sterilization area using a designated route that is separate from patient traffic.
6) Use gloves or other appropriate protective equipment when handling the container or tray.
7) Place the container or tray in the designated area for clean, lubrication and sterilization.

NOTICE

- In order to maximize the sterilize performance, immediately after use, the handpiece should be cleaned, lubricated and sterilized, better no more than 1 hour. If the blood remains on the external or internal surfaces it can become clotted and cause rust.

10-2 Handpiece External Surface Manual Cleaning

1) Rinse the handpiece with flowing water and brush for 3 minutes, remove dirt and debris from the surface.
2) Clean the external surface of the handpiece 3 times with non-dust cloth soaked in 75% alcohol and wipe the handpiece dry.

10-3 Cleaning Handpiece Water & Air Channel

1) Use the cleaning needle (supplied as accessory for the handpiece) to clean the spray holes, remove dirt and debris from inside and outside, especially when the spray holes are clogged, or spray does not exit evenly from the holes (Fig. 13).
2) Use a 50ml syringe to inject at least 400ml (8 times) 75% Ethyl Alcohol into the channel of the handpiece.
3) Use a high-pressure water gun to flush the channel of the handpiece with purified water (drinking water) for at least 3 mins.
4) Use a 50ml syringe to inject at least 400ml (8 times) air into the channel of the handpiece.
5) Take out the rubber pad, then take out the water filter with tweezers, clean the dirt with 3-way syringe or replace a new water filter (Fig. 14).

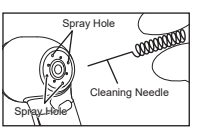


Fig. 13

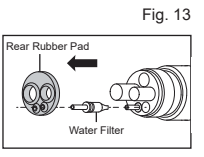


Fig. 14

10-4 Cleaning Fiber

1) Wipe the fiber with cotton swab dipped in alcohol for 5 times, wipe off the dirt (Fig. 15).
2) Dry the fiber surface with 3-way syringe or soft cloth.

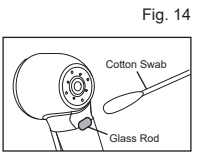


Fig. 15

NOTICE

- Do not use a sharp tool to clean the fiber fiber rod, it could damage the glass and reduce the light transmission.

⚠CAUTION

Patients, users or third parties could be infected by contaminated medical devices with manual cleaning.
- Only use disinfection procedures that are verified to be bactericidal, fungi□cidal and virucidal.
- If the disinfectants/disinfection procedures fail to meet the mandatory national requirements, perform a final sterilisation with the sterilisation parameters as described.

⚠CAUTION

- If water enters the handpiece, use 3-way syringe to blow air into the rear of the handpiece and remove the internal water and wipe the handpiece dry.
- Aways use a PH neutral detergent when washing the product in a Thermo Disinfector.
- To clean the product never use any solvent such as benzine or thinner.

10-5 Lubrication

Apply the lubrication process every time after each use or before autoclaving.

◆ Lubrication for Handpiece with Coupler

K9/N8

1) Remove the bur from the handpiece and disconnect the coupler.
2) Insert the corrsponded spray nozzle into the spray port nozzle on the oil can.
3) Insert the spray nozzle into the rear of the handpiece. Hole the handpiece and spray for approximately 2~3 seconds. Apply lubricant until it expels from the handpiece head for at least 2 seconds (Fig. 16).

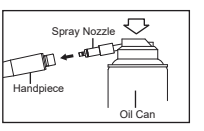


Fig. 16

◆ Lubrication for Normal Handpiece

N5/K1/K6/X3/X2

1) Remove the bur from the handpiece and remove handpiece from the hose.
2) Mount the tip nozzle into the spray can port .
3) Insert the tip nozzle into the drive air port of the handpiece (Fig. 17). 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. 18).

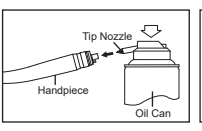


Fig. 17

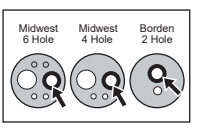


Fig. 18

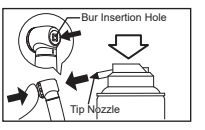


Fig. 19

⚠CAUTION

- Repeat the whole process when there is no any new dirt coming out from the head.
- Check the cartridge of the handpiece and make sure it rotates smoothly without any jerky movements or vibrations after the lubrication.
- 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.

◆ Lubrication for Chuck

Lubricate and clean the chuck once a week.
1) Mount the tip nozzle into the spray can.
2) Lubricate the chuck directly through the bur insertion hole (Fig. 19).

⚠CAUTION

- If the chuck is not regularly cleaned, the gripping force maybe weakended and the bur may be accidentally released while in operation.

10-6 Sterilization

Sterilisation in a steam steriliser (autoclave) in accordance with EN ISO 17665-1. Sterilization is required first time you use and after each patient as noted below.
Autoclave procedure:
1) Insert the handpiece into an atuoclave pouch and seal the pouch, mark the date of sterilization and the valid date.
2) Autoclavable up to a max. 135℃ (±2℃)
   Pressure:198 kPa ~ 205 kPa
   Sterilization Time: 3 minutes
   Drying Time: 16 minutes
3) The maximum reprocessing time: 200 times.

⚠CAUTION

- The pouch should be made of a medical-grade material that is durable, tear-resistant, and able to withstand high temperatures and pressure during sterilization such as composite membrane of PET/CPP.
- The material of the pouch should be transparent enough to check the interior contents cearly, in order to prevent any mistake.
- The pouch should be designed with a strong adhesive seal, ensuring that it remains airtight and watertight during sterilization.
- The pouch should have built-in indicators to confirm sterilization. These indicators may be color-changing or have a specific pattern or marking that indicates successful sterilization.

11. Transportation and Storage

Under the following conditions the recommended maximum storage time for a sterilized produce before next use will be three months, after that the product should be cleaned, lubricated and sterilized again. In the meanwhile, a periodical maintenance check should be performed for the head cap, rotation and collant water.
1) Temperature of storage: -10℃ to + 55℃
2) Humidity of storage: ≤93%
3) Temperature of operating: +10℃ to + 40℃
4) Air humidity of operating: ≤80%

CE Marking, signifyling compliance with European Medical Device Directive	EC REP Authorised representative in the European Community	Clss II Equipment	B Type Equipment
This product can be washed via Thermo Idsinfector	This product is Autoclavable up to Max. 135℃	Manufacturer	Date of Manufacturer
User Instruction	-10℃ 50℃ Transportation and storage condition (Temperature range)	10% 90% Transportation and storage condition (Humidity range)	860hPa 1060hPa Transportation and storage condition (Air pressure)

12. Warranty

We provide 1 year warranty service to the product, for material or product structure problems (bearing and other consumable parts are exclused). Other damages are not covered by this warranty. The factory has no responsibility to the following conditions:
1) The handpiece is not installed accoring to this instruction. The handpiece fall down or artificially damdaged.
2) Abnormal chemical, electrical damage. Or the handpiece fall down or artificially damdaged.
3) Over use or use this product for other purpose.
4) Abnormal air/water connection.
5) Damage cause by improper using, storing or maintaining.
6) Improper operation or unqualified person conduct unqualified repair to the handpiece.

13. Statement

All datas, picture and parameter in this instruction are only for referrence. Manufacturer reserves the right to change without change this.