 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.

OM-T0277E 004 2012.04.20 10 ⑩

# Ti-MaxX

Solid Titanium  
High Speed Handpieces

Operation Manual





**NSK** premium

**EN**

<b>Use Environment</b>	Temperature : 0 - 40°C , Humidity: 30 - 75 % , Atmospheric Pressure: 700 - 1,060 hPa
<b>Store and Transportation Environment</b>	Temperature : -10 - 50°C , Humidity: 10 - 85% , Atmospheric Pressure: 500 - 1,060 hPa

**FR**

<b>Environnement d'utilisation</b>	Température : 0 - 40°C , Luftfeuchtigkeit: 30 - 75 % , Atmosphärischer Luftdruck: 700 - 1.060 hPa
<b>Transport et environnement de stockage</b>	Température : -10 - 50°C , Luftfeuchtigkeit: 10 - 85 % , Atmosphärischer Luftdruck: 500 - 1.060 hPa

**DE**

<b>Benutzungsumgebung</b>	Température : 0 - 40°C , Humidité: 30 - 75 % , Pression atmosphérique: 700 - 1.060 hPa
<b>Transport und Lagerung</b>	Température : -10 - 50°C , Humidité: 10 - 85 % , Pression atmosphérique: 500 - 1.060 hPa

**ES**

<b>Entorno de uso</b>	Temperatura: 0 - 40°C, Humedad: 30 - 75%RH, Presión atmosférica: 700 - 1.060hPa
<b>Transporte y entorno de almacenamiento</b>	Temperatura: -10 - 50°C, Humedad: 10 - 85%RH, Presión atmosférica: 500 - 1.060hPa

**IT**

<b>Ambiente di utilizzo</b>	Temperatura: 0 - 40°C, Umidità: 30 - 75%UR, Pressione atmosferica: 700 - 1.060hPa
<b>Trasporto e ambiente di stoccaggio</b>	Temperatura: -10 - 50°C, Umidità: 10 - 85%UR, Pressione atmosferica: 500 - 1.060hPa

**EN**

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**DE**

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Thank you for purchasing this powerful NSK handpiece. Please read this operation manual carefully before use.

 **Caution**

- When operating the handpiece always consider the safety of the patient.
- The handpiece is designed only for dental clinical use.
- Do not attempt to disassemble the handpiece nor tamper with the mechanism.
- Check for vibration, noise and overheating outside the patient's mouth. If any abnormalities are found do not operate. Contact your authorized NSK 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 Push Button 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 push button. Contact with soft tissue may cause the Push Button to depress and injury to the patient may occur.
- Avoid impact on the handpiece. Do not drop the handpiece.

**⚠ Caution**

- Do not operate the handpiece without first inserting a bur or test-bur into the chuck.
- Remove the bur only after the handpiece has completely stopped rotating.
- Do not look into LED light directly.
- When abnormalities are in LED (dark, do not light on or flashing or so), contact dealer to repair.  
(X500WLED/X500BLED/M600WLED/M600BLED/X700WLED/X700BLED)
- This product is classified as Class 1 LED Product. (X500WLED/X500BLED/X600WLED/X600BLED/X700WLED/X700BLED)
- Use a power source which meets the following requirements.  
(X500WLED/X500BLED/X600WLED/X600BLED/X700WLED/X700BLED)
  - 1.The electricity supply of the power source is below 15W both under normal and single failure conditions.
  - 2.The power source uses a SELV circuit for electricity supply.
  - 3.The output voltage of the power source is within the range recommended by the manufacturer of this product.

## Ti-MaxX Performance specifications

Model	X500L	X500	X600L	X650L	X600	X700L	X700
Head Type	Miniature Head		Standard Head		Torque Head		
Rotation Speed	390,000 ~ 450,000min <sup>-1</sup>		380,000 ~ 440,000min <sup>-1</sup>		300,000 ~ 360,000min <sup>-1</sup>		
Drive Air Pressure	0.25MPa (2.5kgf/cm <sup>2</sup> ) ~0.3MPa (3.0kgf/cm <sup>2</sup> )						
Chuck Type	Push Button Chuck						
Burs	Size: ISO1797-1 Type3 ø1.59~1.60						
	Friction Grip Short Shank			Friction Grip Standard Shank			
Optics	Cellular Glass Rod	—	Cellular Glass Rod	—	Cellular Glass Rod	—	
Head Size <small>Diameter x Height</small>	ø10.3 x 11.7 mm		ø11.2 x 13.6 mm		ø13.2 x 13.6 mm		

## Ti-MaxX Performance specifications

Model	X500KL/X500SL X500WL/X500BL	X500WLED X500BLED	X500K	X600KL/X650KL/X600SL X600WL/X600BL	X600WLED X600BLED	X600K	X700KL/X700SL X700WL/X700BL	X700WLED X700BLED	X700K
Head Type	Miniature Head			Standard Head			Torque Head		
Rotation Speed	390,000 ~ 450,000min <sup>-1</sup>			380,000 ~ 440,000min <sup>-1</sup>			300,000 ~ 360,000min <sup>-1</sup>		
Drive Air Pressure	0.25MPa (2.5kgf/cm <sup>2</sup> ) ~0.3MPa (3.0kgf/cm <sup>2</sup> )								
Chuck Type	Push Button Chuck								
Burs	Size: ISO1797-1 Type3 ø1.59~1.60								
	Friction Grip Short Shank			Friction Grip Standard Shank					
Optics	Cellular Glass Rod	White LED	—	Cellular Glass Rod	White LED	—	Cellular Glass Rod	White LED	—
Voltage	—	AC/DC 3.3V ± 0.05V	—	—	AC/DC 3.3V ± 0.05V	—	—	AC/DC 3.3V ± 0.05V	—
Activate Voltage	—	3.0~4.0V	—	—	3.0~4.0V	—	—	3.0~4.0V	—
Consumption current	—	0.38A Typical (3.3V)	—	—	0.38A Typical (3.3V)	—	—	0.38A Typical (3.3V)	—
Head Size Diameter x Height	ø10.3 x 11.7 mm			ø11.2 x 13.6 mm			ø13.2 x 13.6 mm		

## Ti-MaxX Connection / Disconnection to the Coupling

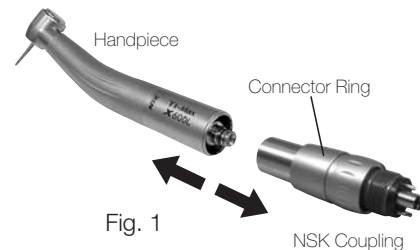


Fig. 1

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.

**NSK COUPLING** : Pull back Connector Ring to release the handpiece.

## Ti-MaxX Insertion & Removal of the bur

### TO INSERT THE BUR (Fig. 2)

Depress the Push Button and insert the bur into the chuck until it is secure. Release the button.

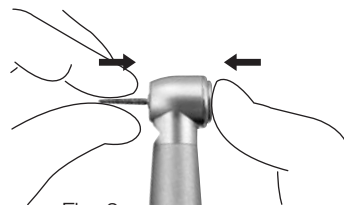


Fig. 2

### TO REMOVE THE BUR (Fig. 3)

Stop the handpiece. Depress the Push Button firmly and remove the bur.

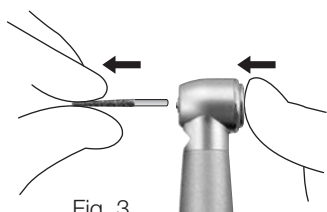


Fig. 3

### Caution

Test that the bur is secure by gently pulling and pushing the bur without depressing the Push Button. This action can also increase the chuck retention power. If removing the bur becomes difficult, depress the Push Button, grip the bur with fine pliers and gently remove the bur.

## Ti-MaxX Information about burs

- Do not use non-standard burs. The ISO standard shank diameter is  $\varnothing 1.59 - \varnothing 1.60$  mm.
- 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.
- 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 or Torque Head handpieces.
- Use short shank burs only in Mini Head handpieces.
- Do not use long surgical burs. Do not use burs longer than 26mm.

## Ti-MaxX Maintenance of the Clean Head System

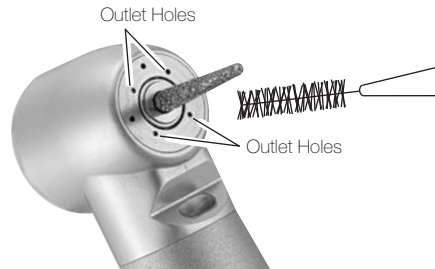


Fig. 4

To maintain effective performance of the NSK Clean Head System it is important before sterilization to clean the specific outlet holes located in the handpiece head. (Fig. 4)

Remove any debris in and around the outlet holes with the brush.

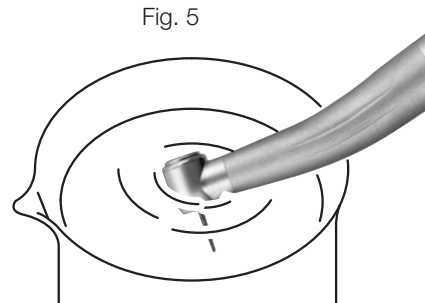


Fig. 5

Half fill a cup with clean water. Operate the handpiece and, while it is running, immerse half of the handpiece head in the water, (Fig. 5) Intermittently stop and start the handpiece in the water for about 5 seconds. While still running, remove the handpiece from the water. Stop the handpiece and wipe it dry. If debris remains, repeat the process until the area is clean.



### Notice

Use only clean water to maintain the Clean Head System.

## Ti-MaxX Automatic lubrication



NSK Care3 Plus



This handpiece can be washed via Thermo Disinfector.

Lubricate the handpiece **EACH TIME BEFORE AUTOCLAVING**  
Before lubrication, first clean the handpiece as previously described.

### **NSK Care3 Plus automatic handpiece lubrication system**

After cleaning the handpiece simply connect the handpiece to the correct adaptor and activate the Care3 System per the Care3 System instructions.

### **Other brands of automatic handpiece lubrication systems**

After cleaning the handpiece simply connect the handpiece to the correct adaptor and activate the System per the manufacturer's instructions.

## Ti-MaxX Manual lubrication

After cleaning the handpiece apply NSK PANA SPRAY Plus **BEFORE** autoclaving (Fig. 6). Make sure the **CORRECT** application nozzle is connected to the plastic valve at the top of the spray can. Firmly insert the Nozzle into the rear of the handpiece and activate the spray for 2-3 seconds until the spray exhausts from the handpiece head.

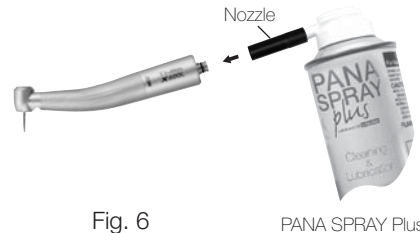


Fig. 6

PANA SPRAY Plus

### **Caution**

Always hold the NSK PANA SPRAY Plus can upright.  
The spray lubricant is delivered from the can, into the handpiece, under pressure. To prevent the handpiece from slipping from the Nozzle, always hold the handpiece securely to the Nozzle.  
Mount the arrow-head spray nozzle tip into the spray port and lubricate chuck directly thorough the hole for bur attachment once a week.



## Ti-MaxX Sterilization

Sterilization by steam generation autoclave is recommended.

Sterilization is required first time you use and after each patient.

### **Autoclave procedure**

Use a brush to scrub debris from the handpiece. DO NOT use a wire brush. Wipe clean with an alcohol-immersed cotton swab or cloth.

Lubricate the handpiece as previously described.  
(Refer to Lubrication)

Insert the handpiece into an autoclave pouch and seal the pouch.

Autoclavable up to a max. 135°C

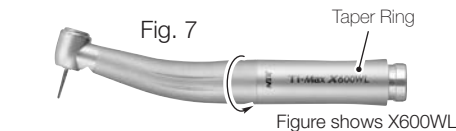
\*EN13060 4.6.3 recommends autoclaving for 3 minutes (minimum holding time) at 134°C or 15 minutes (minimum holding time) at 121°C. NSK recommends Class B or S sterilization.



### **Caution**

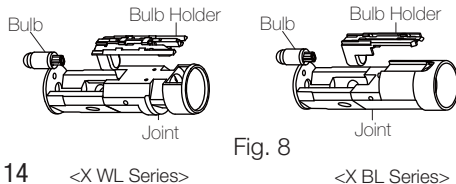
- Always place the handpiece in the center or upper shelf of the chamber, as the local temperature at the bottom of the chamber could rise beyond the level indicated on the autoclave.
- Do not heat or cool the handpiece quickly. Rapid change in temperature could damage the glass rod or subject other metals to abnormal stress.
- Do not wash, soak, or wipe off the handpiece with an oxidation potential solution (strong acid, superacid solution) or cold sterilization solution.
- The color may be slightly faded by repeated sterilization. (X650L)

## Ti-MaxX Replacing the optic illumination bulb (X WL, X BL Series)



Remove the handpiece from the coupling. Loosen and remove the taper ring. (Fig. 7). Pull out the joint then remove the bulb holder, then the bulb. Align the pins of the new bulb with the points in the bulb holder and insert the bulb. Place the bulb holder back into the joint. (Fig. 8). Firmly tighten the taper ring.

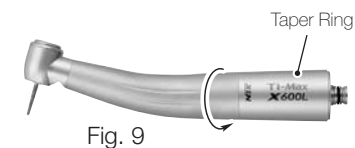
*Optional Bulb : TA Bulb (Pack of 3) Order No. Y900132*



### **Caution**

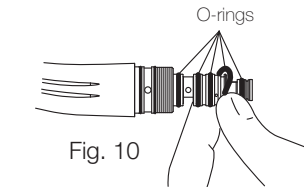
Do not touch the glass section of new bulb. Screw the taper ring tightly. A loose fitting taper ring could result in water and air leakage. It is easier to screw in the taper ring when the bulb holder is lightly pressed in by hand.

## Ti-MaxX Replacing the O-rings (X L, X Series)



Replace the O-rings if water is present in the exhaust air line. This is an indication of possible water leakage within the coupling. ALWAYS change the complete set of O-rings. Remove the handpiece from the coupling. Loosen and remove the taper ring at the rear of the handpiece. (Fig. 9) Gently remove each O-ring with your thumb. Insert the complete set of new O-rings in the correct grooves. (Fig. 10) Replace and firmly tighten the taper ring.

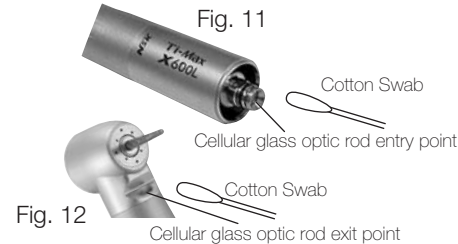
*Optional O-ring : PTL O-ring Set (Pack of 5) Order No. Y900580*



### **Caution**

Make certain that the taper ring is firmly tightened. If the taper ring is loose water and air leakage could occur.

## Ti-MaxX Cleaning the cellular glass optic rod (X L, X KL, X SL, X WL, X BL Series)



Wipe clean the Cellular glass optic rod entry point (Fig.11) and exit point (Fig. 12) with an alcohol-immersed cotton swab. Remove all debris and oil.

### **⚠ 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.

## Ti-MaxX Disposing product