

# Ti-Max S950L / S950

135°C : AUTOCLAVABLE

## OPERATION MANUAL

OM-T0213E

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

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

### ⚠ CAUTIONS IN HANDLING

Read these cautions carefully to correctly follow the intended use.

Safety instructions are intended to avoid potential hazards that could result in personal injuries or damages to the device. Safety instructions are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
<b>⚠ WARNING</b>	Existence of a hazard that could result in bodily injury or damage of the device, if the safety instructions are not followed.
<b>⚠ CAUTION</b>	Possibility of a hazard that could result in light or middle degree of bodily injury or damage of device, if the safety instructions are not followed.

### ⚠ WARNING

- Do not exceed the recommended air pressure at the back end of the scaler. Excessive air pressure might cause the scaler tip to accidentally break while in use.
- The oscillation of the tip could exceed 200 μm amplitude at the recommended air pressure. Caution is requested not to harm the patient.
- Do not use a tip on which rust is found. It may break while in use at where rust grew.

### ⚠ CAUTION

- Prior to each use, all instruments and accessories must be inspected for proper operation.
- The operators and all others in the area must always wear eye protection when operating the handpiece.
- When using the handpiece, protect surrounding patient tissue at all times.
- Before each use, be sure accessories are correctly attached to the instrument, because they could be thrown from the instrument, possibly causing serious injury.
- Follow sterilization recommendations. Steam sterilization without a dry cycle may severely shorten the useful life of the instrument.
- Before each use, be sure that tips are completely seated and locked in the instrument. If the instrument is activated without the tip completely seated, the tip may be thrown from the instrument.
- Do not use bent, rusty, or damaged tip.
- Do not exceed the recommended air pressure.
- Do not attempt to disassemble the handpiece nor tamper with the mechanism.
- The NSK Air Scaler emits a high-pitch sound during normal operation. Please wear ear protection during use as frequent exposure to this sound can cause hearing loss.

## 1. Features

- Titanium achieved lighter weight and better fit in hand.
- Titanium - better material to metal - allergic patients.
- High output and low noise scaler.
- Oscillation of the tip can be adjusted.
- Swivel coupler makes connect/disconnect quick and simple.
- Swivel couplers are same as for the NSK high speed air turbine handpieces.
- Donut - type light illuminates working area brilliantly. (S950L)
- Autoclavable at 135°C.

## 2. Specifications

Model	Max. Recommended Air Pressure	Air Consumption	Oscillation (Air Pressure adjuster ring at Level 3)	Weight	Lighting
S950L	0.28 MPa(2.9 kgf/cm <sup>2</sup> )	20 - 30 L/min	6,200 - 6,450Hz	59 g	Donut-type Lighting
S950				62 g	None

## 3. Installation and Supply Air Pressure

- Remove from the swivel coupling the NSK MACH-LITE, MACH, Phatelus, or MACH handpiece, and mount either air scaler. In case the supply air pressure at the swivel coupling is set at the recommended 0.28 MPa (2.9kgf/cm<sup>2</sup>), the air scaler is readily usable.
- Air pressure adjuster ring controls the oscillation. (Fig. 2)



Fig. 1



Fig. 2

### ⚠ WARNING

- Set the supply air pressure at 0.28 MPa (2.9kgf/cm<sup>2</sup>) at the connection where the scaler is connected to the handpiece hose, as shown by the arrow in Fig. 1. Higher air pressure may cause higher tip oscillation, which could damage the tooth surface and may cause pain to the patient. It also may shorten the tip life and premature failure or breakage of the tip.
- The amplitude may exceed 200 m, even at the recommended air pressure, care should be exercised not to harm the patient.

### ⚠ CAUTION

- It should be noted that the air scaler supply air pressure reads approximately 0.04 MPa (0.4 kgf/cm<sup>2</sup>) higher than the air turbine handpiece.
- When a non-fiber optic swivel coupling is used with S950L, the scaler cannot transmit light.

## 4. Use Dry, Clean Air.

Moisture and debris in drive air may cause the air scaler to malfunction. It is important to drain the air compressor on a regular basis, even though an air filter or heater is provided in the air line.

## 5. Scaler Tips

Three types of scaler tips as shown in Fig. 3 are supplied as accessory items. Typical applications are explained below:

- Type S1 ... Universal Type (Reorder number Z252-411)  
Curved surfaces, exposed anterior root surfaces, posterior teeth with excessive lingual tipping, etc.
- Type S2 ... Sickle Type (Reorder number: Z252-413)  
Mandibular anterior teeth, lingual surfaces, hard thick-walled calculus firmly adhered to a tooth, etc.
- Type S3 ... Perio Type (Reorder number: Z252-412)  
Subgingival and supragingival calculus, tar-like deposit, etc.

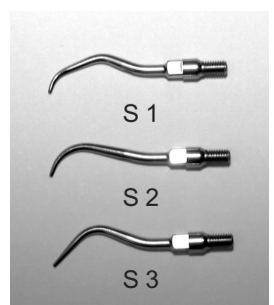


Fig. 3

To avoid rusting, dry it by air syringe, after removing from the scaler body immediately after use. The irrigant port and the threads need to be kept dry.

### ⚠ CAUTION

Tips may rust. Poor drying could cause the tips to rust, which may result in premature failure and injury.

## 6. Changing Tips

**Installation :** Screw in the tip until finger tight. (Fig. 4) Mount the supplied wrench tool over the tip, and align the square holes to mate with the counterpart on the tip. Turn the wrench firmly until two or three clicks are heard. (Fig. 5) The clicking, or tripping, takes place when the turning force exceeds the preset value. This wrench fastens the tip at the preset consistent force at all times.

**Removal :** Mount the wrench over the tip and turn it in the direction as shown in Fig. 5.



Fig. 4

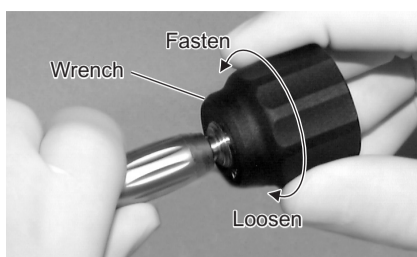


Fig. 5

### ⚠ WARNING

- Always use the wrench to securely tighten the tip. Loose tip may come off during use and cause injury.
- Do not use such tips as shown below. Tips are expendable items.
  - (1) Tips with worn and dull edges.
  - (2) Corroded or rusted tips.
  - (3) Deformed tips, as caused by impact or fall.
- Do not grind or polish for reuse.
- Watch out the sharp point.

## 7. Lubrication

Lubricate the scaler every three days. Use NSK Turbine Oil (Reorder number: Z016-112).

Remove the scaler from the swivel coupling, and supply 2-3 drops of oil to the drive air port of the handpiece as shown in Fig. 6. Connect to the swivel coupling and operate for 5 seconds.

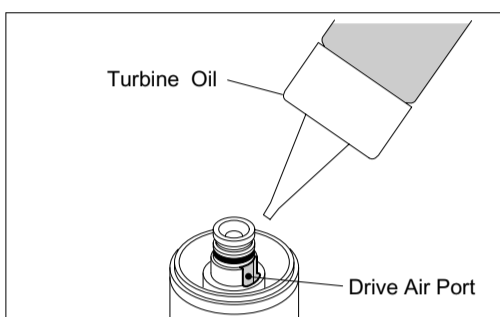


Fig. 6

### ⚠ CAUTION

Do not use a spray lubricant. Limited air discharge orifice size of the scaler forces the propellant pressure to build up inside, and the scaler may fly off.

## 8. Sterilization of Scaler

The manufacturer recommends Autoclave for sterilization.

### ■ Autoclaving Procedure

- ① Brush off debris and clean with alcohol-wet cloth. Do not use wire brush.
- ② Lubricate with turbine oil. See 7. Lubrication.
- ③ Place in an autoclaving pouch, and seal it.
- ④ Autoclave for 20 minutes at 121BC, or 15 minutes at 132BC.

### ⚠ CAUTION

- Skip dry cycle, if the chamber temperature is suspected to rise beyond 135BC during the dry cycle.
- Always, where possible, place the scaler in the middle or upper tray, as most sterilizer have heating elements in the bottom of the chamber and that local temperature may exceed 135BC.
- Do not sterilize the scaler mixed with other instruments if chemicals are not sufficiently removed from them. Chemicals could cause the plating to chip off and discolorate, or penetrate into the fiber bundles and to the internal components. Keep any chemicals off the sterilizer.
- Do not clean or wipe the scaler with highly oxidized or acid water or sterilizing solution.

## 9. Care of Fiber Bundles (S950L)

Carefully wipe debris off the end face of the fiber bundles with alcohol-soaked cotton swab. (Fig. 7)

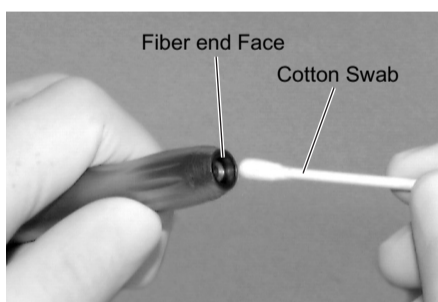


Fig. 7

### ⚠ CAUTION

Do not use a sharps or pointed tool. They may damage the fiber faces and reduce the light transmission efficiency.  
In case the light becomes dim due to fiber damage, send to the dealer you bought from for repair.

## 10. Warranty

NSK warrants its products to be free from defects in material and workmanship only. Trouble causes shall be determined by NSK. This warranty is voided if products are carelessly used or improperly maintained. Replacement parts are available for 7 years after discontinuance of the product.

Specifications may be changed without notice.

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