

Multi Function Ultrasonic Scaler

# VIVA ace

VIVA ace Scaler Kit



## OPERATION MANUAL

Please read this OPERATION MANUAL carefully before use, and file for future reference.

Thank you for purchasing VIVA ace Scaler Kit.

Please read this Operation Manual and the VIVA ace Basic Set Operation Manual carefully before use for operating instructions and care and maintenance guidelines so that you can use it for many years to come through a correct use.

Keep this Operation Manual within easy reach of users for future reference.

## Contents

|   |           |   |           |
|---|-----------|---|-----------|
| <b>1. User and Indications for Use</b> .....  | <b>2</b>  | <b>7. Maintenance</b> .....             | <b>34</b> |
| <b>2. Precautions for handling and operation</b> .....                              | <b>2</b>  | 7-1 Replacing the O-ring .....          | 34        |
| <b>3. Package Contents</b> .....  | <b>5</b>  | 7-2 Periodical Maintenance Checks ..... | 35        |
| <b>4. Preparation for Use</b> .....   | <b>6</b>  | <b>8. Troubleshooting</b> .....         | <b>35</b> |
| 4-1 Connecting the Scaler Cord and VIVA ace Control Unit .....                      | 6         | 8-1 Problems and Solutions .....        | 35        |
| 4-2 Connecting and Disconnecting the Handpiece .....                                | 6         | <b>9. Specifications</b> .....          | <b>38</b> |
| 4-3 Mounting the Tip .....  | 7         | 9-1 Specifications.....                 | 38        |
| 4-4 Using the Tip Card.....   | 9         | 9-2 Classification of Equipment.....    | 38        |
| 4-5 Check before treatment .....  | 10        | 9-3 Operation Principle.....            | 38        |
| <b>5. Operation Procedure</b> .....   | <b>10</b> | 9-4 Symbol .....                        | 39        |
| <b>6. Post-use Maintenance</b> .....  | <b>10</b> | <b>10. After-sales Service</b> .....    | <b>39</b> |
| 6-1 Preparation for Maintenance .....   | 10        | 10-1 Warranty .....                     | 39        |
| 6-2 Maintenance for between each patient.....                                       | 12        | 10-2 Disposing Product .....            | 39        |
| 6-3 Maintenance after close .....   | 13        |   |           |
| 6-4 Sterilization .....   | 29        |   |           |
| 6-5 Maintenance of the Water Line of the Scaler Handpiece and the Scaler Cord ..... |           |   |           |
| (In case of Connecting the Control Unit) .....                                      | 31        |   |           |

Operation procedure of this product is introduced in a movie.

Check the following URL or the QR code.

URL

<http://www.nsk-dental.com/support/videos/>



\*This product is used by connecting to VIVA ace Basic Set.

# 1 User and Indications for Use

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User :

Dentist, Dental hygienist

Indications for Use :

The ultrasonic scaler is intended for use in dental applications such as scaling, root canal treatment, periodontal and cavity preparation by generating ultrasonic waves.

# 2 Precautions for handling and operation

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- Please read these precautions carefully and use only as intended or instructed.
- Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device.  
Safety instructions are classified as follows in accordance with the seriousness of the risk.

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

 **WARNING**

- Do not attempt to disassemble the product nor tamper with the mechanism except as recommended by NSK in this Operation Manual. This may result in an injury, electric shock or fire.
- Do not touch the connection of the Handpiece and the Scaler Cord. This could cause an electric shock.
- Do not allow any impact on to the product. Do not drop the product. It could cause an electric shock and damage.
- Do not use the product when the patient or the operator is using cardiac pacemakers as there is a danger that could affect the pacemaker.
- Keep away from explosive substances and flammable materials. Also, keep away from patients whom a flammable anesthetic (laughing gas) is administered as this may cause fire.
- Electromagnetic waves may cause malfunction of the product. Keep away from devices that generate electromagnetic waves. Turn off the product around ultrasonic generators (excluding the product) or electrode knife. Keep away from communication equipment or elevators that generate electromagnetic waves.
- Apply water for regular use. Insufficient supply of water may result in generation of heat and damage on the tooth surface.

 **CAUTION**

- When operating the product always consider the safety of the patient.
- Use only as indicated.
- The end user shall be responsible for any judgment that relates to the application of this product to a patient.
- Users are responsible for the operational control, maintenance and periodical maintenance check of this product.
- Operators and all others in the area must wear eye protection, a mask, and gloves when operating this product.
- Should the product function abnormally, cease operation immediately and contact your Authorized NSK Dealer.
- Do not turn the lighting of the Handpiece or Scaler Cord directly to the eyes of the patients or the operators. There is a danger that it may damage the eyes.
- Do not clean, immerse, or wipe with electrolyzed-oxidizing water (strong acidic water, super acidic water), strong acidic and strong alkaline liquid medicine, solvent containing chlorine, benzene, or thinner. (Reference : 6 Post-use Maintenance)

## Precautions for handling and operation

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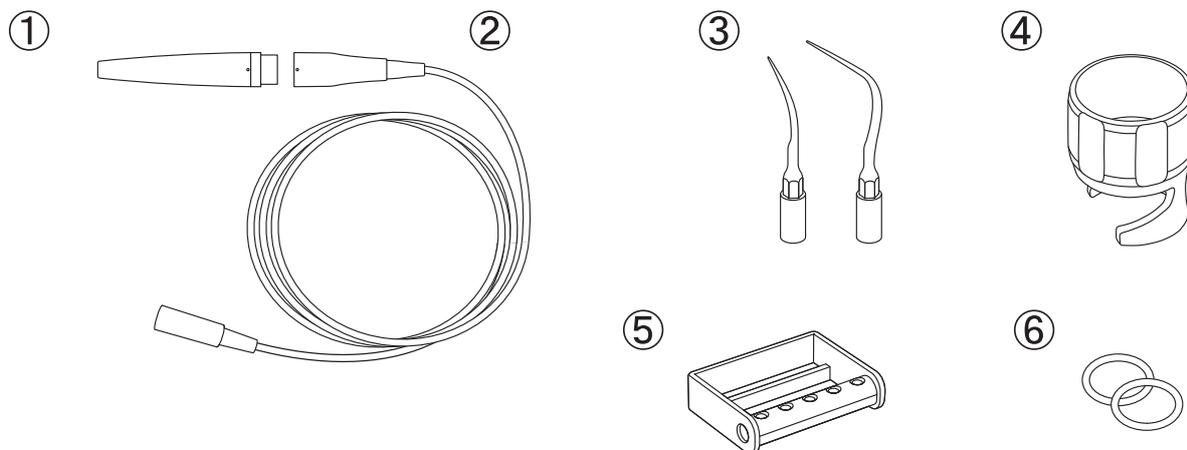
### CAUTION

- The Handpiece, Tip, Tip wrench, and Tip Holder are delivered in a non-sterile condition and must be autoclaved prior to use. (Reference : 6-4 Sterilization)
- Immediately wipe off any moisture, liquid medicine, solvent, or liquid disinfection on the Handpiece or the Scaler Cord after use. Failure to do so may cause discoloration and deformation.
- Perform regular function and maintenance checks. (Reference : 7-2 Periodical Maintenance Checks)
- If the product is not used for a long period, check for motor vibration, noise and overheating before using on a patient.
- Portable and mobile RF communications equipment may affect Medical Electrical equipment. Do not use RF equipment near the product.
- The temperature of the tip surface may reach up to 50 degrees depending on the condition of use. In that case, leave the tip until it cools down before using it again.

### NOTICE

- The Handpiece and Scaler Cord during operation could interfere with the computers, LAN cables in vicinity of use or could cause noise in radio receivers nearby.
- To avoid clinical downtime, it is recommended that a spare is kept on hand in case of a breakdown during surgery.
- Contact the Authorized NSK Dealer for repairing. The service staff of the company will take care of the product in accordance with the service manual.
- No special training is required for this device.
- EMC (Electromagnetic compatibility) has been evaluated with the VIVA ace Control Unit and conforms to the requirements.

### 3 Package Contents

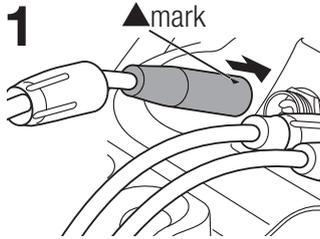
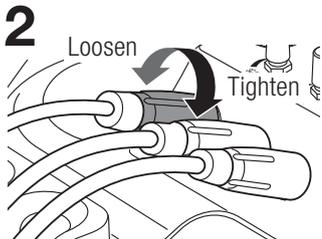
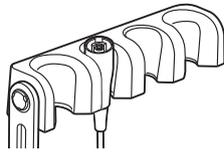


| No. | Part Name        | Order Code             | Quantity | Remarks                  |
|-----|------------------|------------------------|----------|--------------------------|
| 1   | Handpiece        | E351050                | 1        | Optic                    |
| 2   | Scaler Cord      | Z1140055               | 1        | Optic                    |
| 3   | Tip              | Refer to the Tip Guide | 2        | G6,G8                    |
| 4   | Tip Wrench       | Z221076                | 1        | CR-10                    |
| 5   | Tip Holder       | Z221A080               | 1        | -                        |
| 6   | O-ring           | D0310020080            | 2        | For Scaler Cord          |
| 7   | Cleaning Wire    | Z144095                | 1        | *Not in the illustration |
| 8   | Tip Card         | -                      | 1        | *Not in the illustration |
| 9   | Tip Guide        | -                      | 1        | *Not in the illustration |
| 10  | Power Guide      | -                      | 1        | *Not in the illustration |
| 11  | Operation Manual | -                      | 1        | *Not in the illustration |

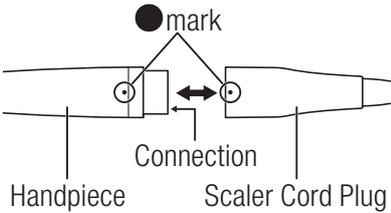
Please specify the order code listed above when purchasing the spare parts.

## 4 Preparation for Use

### 4-1 Connecting the Scaler Cord and VIVA ace Control Unit

| No.      | Action  | Fig.   |
|----------|---|--|
| <b>1</b> | Aligning the ▲ mark of the Scaler Cord plug and the shape of the terminal as shown below, insert the plug deep into the Scaler connector. | <b>1</b>   |
| <b>2</b> | Turn the Plug Cover for tightening.   | <b>2</b>  |
| <b>3</b> | Put the Scaler Cord plug on the holder.   | <b>3</b>   |

### 4-2 Connecting and Disconnecting the Handpiece

| Action   | Fig.   |
|--|--|
| <p><b>&lt;Connecting&gt;</b></p> <p>Align the ● mark on the Handpiece and the ● mark on the Scaler Cord Plug and push straight in.</p> |  |
| <p><b>&lt;Disconnecting&gt;</b></p> <p>Holding the Handpiece and Scaler Cord Plug, pull straight apart.</p>                            |  |

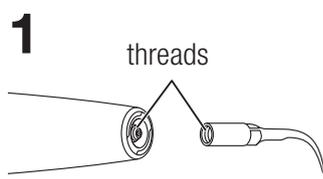
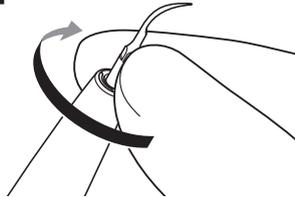
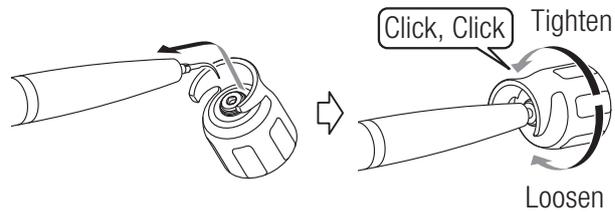
#### WARNING

- Do not touch the connection (terminal section) of the Handpiece and the Scaler Cord. This could cause an electric shock.

**! CAUTION**

- Insert the Handpiece firmly to the end of the Scaler Cord.
- Do not connect Handpieces other than the attached Handpiece.
- Remove the Tip before disconnecting the Handpiece to prevent injuries.
- When connecting/disconnecting the Handpiece, be careful not to twist the Handpiece and the Scaler Cord. The terminal at the connection could break and cause a failure.

**4-3 Mounting the Tip**

| No.      | Action  | Fig.   |
|----------|---|--|
| <b>1</b> | Make sure that there is no dirt on the threads of the Handpiece and the Tip.  | <b>1</b>  <b>2</b>  |
| <b>2</b> | First, lightly tighten the Tip with hand.   |  |
| <b>3</b> | Get the hole of the Tip Wrench through the Tip, align the square part of the Tip and insert firmly. Then tighten the Tip Wrench tight enough until hearing a clicking sound. Loosen it when removing the Tip. | <b>3</b>   |

**! WARNING**

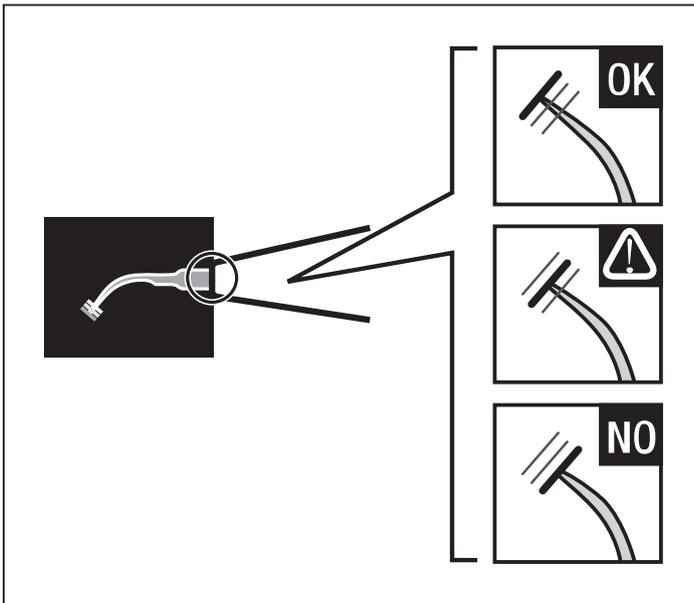
- Be careful not to touch the gum, mucous membrane, or the skin directly with the Tip to prevent injuries and burns.
- Be sure to use genuine Tips manufactured by NSK. Use of other products may cause problems listed below and unexpected accidents.
  - Vibration problem caused by use of improper screws.
  - Accidental ingestion caused by breakage of Tips manufactured by other companies.
  - Handpiece breakage or early abrasion of the threads.

### CAUTION

- Pay attention to the Scaler Cord not to be twisted when tightening the Tip.
- Be careful of the pointed end of the Tip when replacing a Tip that is longer than the Tip Wrench.
- Do not use a Tip which has a crack, a bend, or rust. The Tip may snap during use.
- If the Tip Wrench is rotated at an angle, the threads may bend or vibration becomes insufficient.
- If installed with the Handpiece or the threads of the Tip having dirt on, abnormal sound or weakening/stopping of vibration may occur. Remove the dirt from the threads.
- Do not sharpen or change the angle of the Tip. It could cause abnormal sound, Tip breakage, or stopping of vibration during use.
- Tip is a wear item. When it is worn, abnormal sound, weakening/stopping of vibration or breakage may occur. When abnormal sound or vibration weakening is detected, replace the Tip with a new one.
- Tighten the Tip with attached Tip Wrench until hearing a clicking sound. If the tightening is not enough, it may cause abnormal sound or vibration weakening.
- When replacing the Tip, be sure to wear sterilized gloves and use a sterilized Tip, Handpiece, and Tip Wrench.
- Be sure to use the Tip at or under the maximum power written on the Tip Case or the Tip Power Guide. If it is used over the maximum power, a noise, breakage of the Tip, or damage to the tooth surface may occur.
- Other than the prosthesis removing Tip (metal crown and porcelain crown), do not contact anything to the prosthesis to prevent from coming off or being damaged.
- When connecting/disconnecting the Handpiece, be sure to remove the Tip to prevent injuries.
- If the Tip stops vibrating during use, take out the Handpiece from the patient's mouth and step on the foot control again. If the condition does not improve, check the connection of the Tip because there is a possibility that the Tip has become loose during use.
- If looseness of the Tip, a noise, or vibration weakening does not improve even after tightening the Tip with the Tip Wrench until hearing a clicking sound, the Tip Wrench might be worn. Replace the Tip Wrench after about one-year of use because it is a wear item.
- When using a file as a Tip to enlarge the root canal, ensure you understand its characteristics and the application area.

#### 4-4 Using the Tip Card

Measure the length of the Tip end by comparing with the corresponding Tip illustration and check the replacement time. It is recommended to replace the Tip when the length of the Tip becomes “Yellow Line: 1mm worn” for safe and efficient use.



Green Line : Not worn.  
(No replacement is needed.)

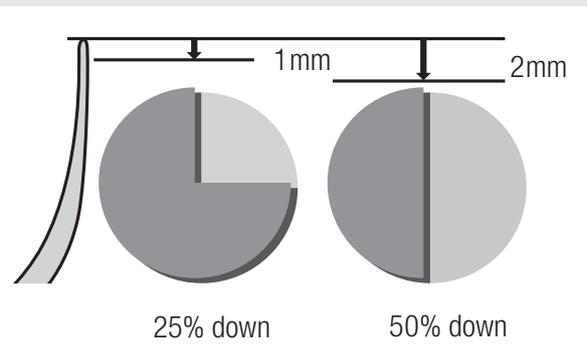
Yellow Line : 1mm worn.  
(Replacement is recommended.)

Red Line : 2mm worn.  
(Replacement is required.)

#### ! CAUTION

- Tip is a wear item, check the abrasion degree with the attached Tip Card and replace the Tip properly.
- Tip is a wear item, the tartar removal efficiency decreases by 25% when the Tip end is worn by 1mm, and 50% when the Tip end is worn by 2mm.

Also, the vibration condition may change and damage the tooth surface. Check the abrasion degree with the Tip Card regularly and replace the Tip with a new one early.



## Preparation for Use

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### 4-5 Check before treatment

Follow the instruction on operation manual for VIVA ace Basic Set. (Reference : 5-10 Check before treatment)

## 5 Operation Procedure

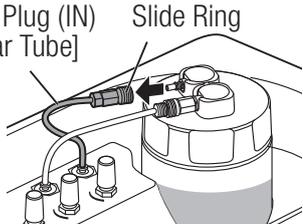
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Follow the instruction on the operation manual for VIVA ace Basic Set. (Reference : 6 Operation Procedure)

## 6 Post-use Maintenance

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### 6-1 Preparation for Maintenance

| No.      | Action   | Fig.  |
|----------|--|---|
| <b>1</b> | Wear eye protection, a mask, and gloves to prevent infection.  | <b>3</b><br> <p>Water Plug (IN) [Clear Tube]    Slide Ring</p> |
| <b>2</b> | Turn off the Power Switch of the Control Unit.   |   |
| <b>3</b> | Remove the Water Plug (IN) [Clear Tube] while pulling the Slide Ring.  |   |
| <b>4</b> | Remove the Water Plug (OUT) [Blue Tube] pressing the Slide Ring.   |   |
| <b>5</b> | Dispose of the water in the Water Bottle and place the empty bottle again in the Control Unit.                   |   |
| <b>6</b> | Turn on the Power Switch of the Control Unit.  |   |
| <b>7</b> | Maximize Scaler Water Adjuster, activate the Scaler Handpiece to let out the water remaining in the Scaler Cord. |   |

 **WARNING**

- Failure to properly maintain as below, the Scaler Handpiece and the Tip may cause infection, product failure, overheating leading to burn injuries:
  - Be sure to clean the Scaler Handpiece, and Tip immediately (within 30 minutes) after use to remove residue.
  - Be sure to disinfect the Scaler Handpiece, Tip and the Tip Wrench, within 2 hours after cleaning.

 **CAUTION**

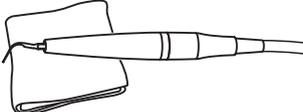
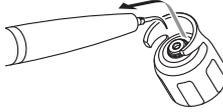
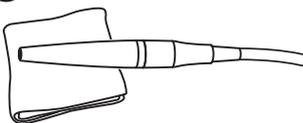
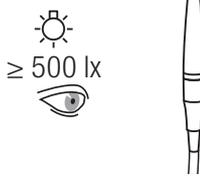
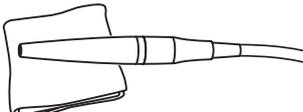
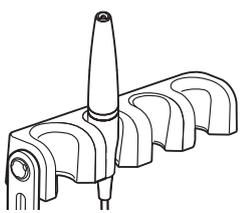
- Do not clean, immerse, or wipe with electrolyzed-oxidizing water (strong acidic water, super acidic water), strong acidic and strong alkaline liquid medicine, solvent containing chlorine, benzene, or thinner.
- Follow any additional local directives, standards, and guidelines for cleaning, disinfection, and sterilization.

**NOTICE**

- Be sure to remove the Water Plug (IN) [Clear Tube] first.
- Note that if the Water Plug (OUT) [Blue Tube] is removed first, the water in the bottle may blow out for a moment.
- When the Water Bottle (IN) [Clear Tube] is removed, the air in the bottle bursts out and makes a noise. However, this is not a failure.

**6-2 Maintenance for between each patient**

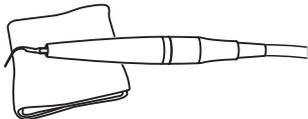
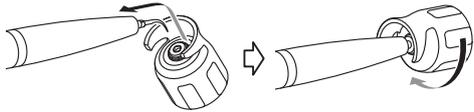
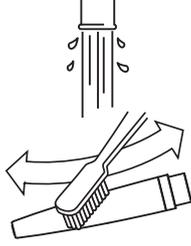
**6-2-1 Cleaning and Disinfection of outside of the Scaler Handpiece and the Scaler Cord, and Replacing the Scaler Handpiece**

| No.                           | Action  | Fig.  |
|-------------------------------|---|---|
| <b>&lt; Cleaning &gt;</b>     |   |   |
| <b>1</b>                      | Remove the all debris on the surface of the Scaler Handpiece and the Scaler Cord with a wipes (Minuten Wipes: ALPRO).   | <b>1</b><br>  |
| <b>2</b>                      | Remove the Tip from the Scaler Handpiece.<br>* Reference: "4-3 Mounting the Tip".   | <b>2</b><br>Minuten Wipes: ALPRO  |
| <b>3</b>                      | Wipe the debris on the surface of the Scaler Handpice and the Scaler Cord with a cloth moistened with water.  |   |
| <b>4</b>                      | After cleaning, under appropriate lighting (500 lx or higher), inspect the Scaler Handpiece and the Scaler Cord for contamination. If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 3. | <b>3</b><br><br><b>4</b><br><br>≥ 500 lx |
| <b>&lt; Disinfection &gt;</b> |   |   |
| <b>1</b>                      | Wipe the surface of the Scaler Handpiece and the Scaler Cord with disinfectant wipes (Minuten Wipes: ALPRO).  | <b>1</b><br><br><b>2</b><br>             |
| <b>2</b>                      | Disconnect the Scaler Handpiece from the Scaler Cord, then attach a sterilized Scaler Handpiece and place it on the Holder.   | Minuten Wipes: ALPRO  |

- \* Be sure to clean, disinfect and sterilize a used Scaler Handpiece and the Tip, refer to section "6-3-2 Cleaning and Disinfection of the inside of the Scaler Handpiece (Including the Water Line)" and "6-4 Sterilization".
- \* Be sure to clean, disinfect and sterilize a used Tip, refer to section "6-3-5 Cleaning of the outside of the Tip and the Tip Wrench", "6-3-6 Cleaning and Disinfection of the inside of the Tip (Including the Water Line)" and "6-4 Sterilization"

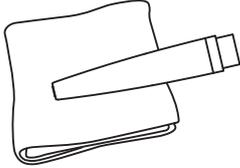
**6-3 Maintenance after close**

**6-3-1 Cleaning of the outside of the Scaler Handpiece**

| No.                       | Action  | Fig.  |
|---------------------------|---|---|
| <b>&lt; Cleaning &gt;</b> |   |   |
| <b>1</b>                  | Remove the all debris on the surface of the Scaler Handpiece and the Scaler Cord with a wipes (Minuten Wipes: ALPRO).   | <b>1</b><br> |
| <b>2</b>                  | Remove the Tip from the Scaler Handpiece. Remove the Scaler Handpiece from the Scaler Cord.<br>* Reference: "4-3 Mounting the Tip".<br>* Maintenance of the Tip and the Tip Wrench, refere to section "6-3-5 Cleaning of the outside of the Tip and the Tip Wrench", "6-3-6 Cleaning and Disinfection of the inside of the Tip (Including the Water Line)" and the "6-4 Sterilization". | <b>2</b><br>  |
| <b>3</b>                  | Clean the surface of the Scaler Handpiece under running water with a soft bristled brush for more than 20 seconds.<br>Water temperature: 38C° or less<br>Water quality: Water available as drinking water<br>Water amount: 3.5L/min or more   | <b>3</b><br> |

**Post-use Maintenance**

**6-3-1 Cleaning and Disinfection of outside of the Scaler Handpiece and the Scaler Cord, and Replacing the Scaler Handpiece (Continued)**

| No.                                   | Action   | Fig.   |
|---------------------------------------|--|--|
| <b>&lt; Cleaning (Continued) &gt;</b> |  |  |
| <b>4</b>                              | Wipe the residual moisture on the surface of the Scaler Handpiece with a dry cloth.  | <div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;"><b>4</b></div>  <div style="margin-bottom: 20px;"><b>5</b></div> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">  <p>≥ 500 lx</p> </div>  </div> </div> |
| <b>5</b>                              | After cleaning, under appropriate lighting (500 lx or higher), inspect the Scaler Handpiece for contamination.<br><br>If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 3. |  |

**6-3-2 Cleaning and Disinfection of the inside of the Scaler Handpiece (Including the Water Line)**

**⚠ CAUTION**

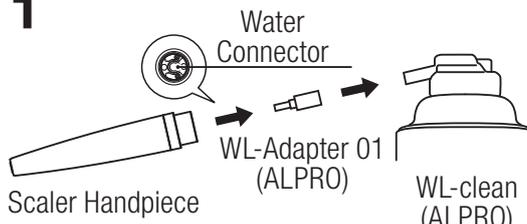
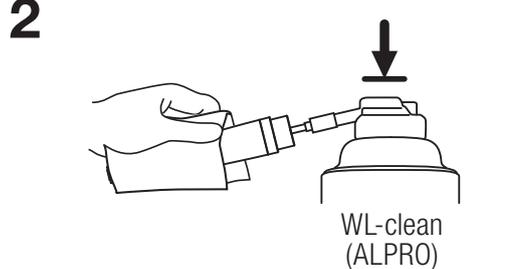
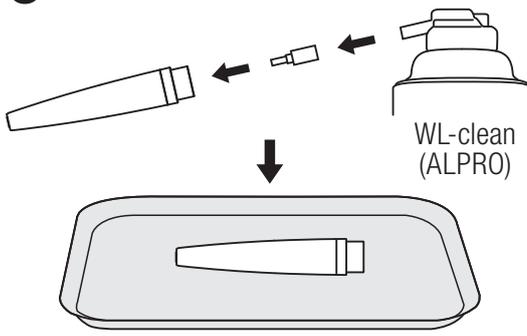
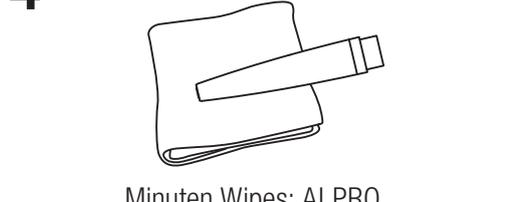
- Be sure to perform Cleaning and Disinfection the "6-3-1 Cleaning of the outside of the Scaler Handpiece" before "6-3-2 Cleaning and Disinfection of the inside of the Scaler Handpiece (Including the Water Line)".
- After disinfection, be sure to sterilize the Scaler Handpiece. Reference: "6-4 Sterilization".
- When using the each Spray (ALPRO), be sure to cover the tip of the Scaler Handpiece with a cloth, etc. to prevent the dispersal of the cleaning solution and the disinfecting solution in the surrounding area. It is recommended to use a Spray Mist Absorber (Y900084).

6-3-2-1

Manual Cleaning and Disinfection (Including the Water Line) (In case of connecting to the adapter)

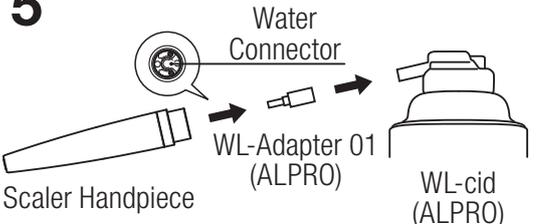
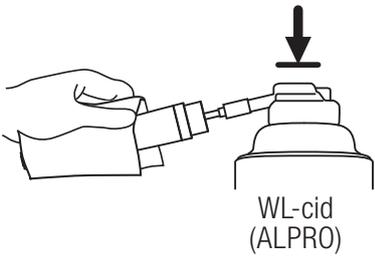
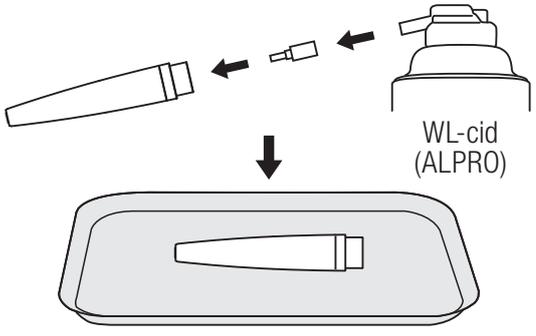
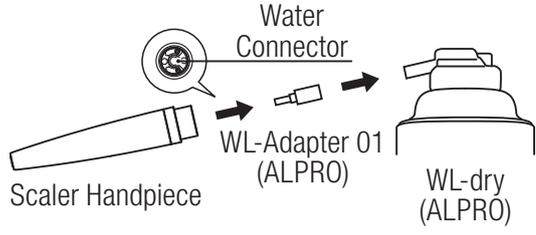
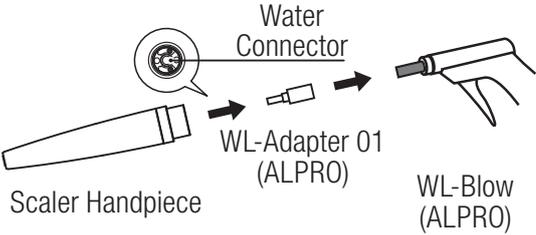
WL-Adapter 01 (ALPRO) is to be prepared by customers.

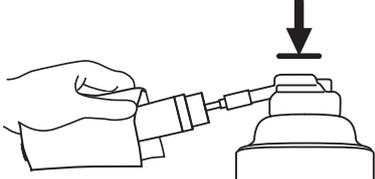
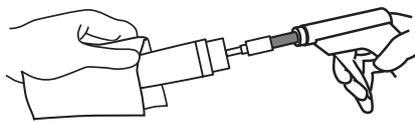
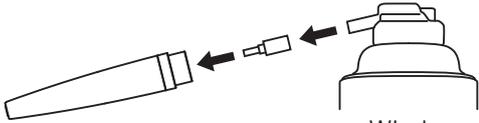
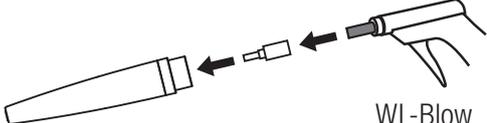
Cleaning and Disinfection should be done in the cleaning tank.

| No.      | Action   | Fig.  |
|----------|--|---|
| <b>1</b> | Attach the WL-Adapter 01 (ALPRO) to the WL-clean (ALPRO) and contact the Water Connector on the Scaler Handpiece to the end of the WL-Adapter 01 (ALPRO).  |  <p>1</p> <p>Water Connector</p> <p>Scaler Handpiece</p> <p>WL-Adapter 01 (ALPRO)</p> <p>WL-clean (ALPRO)</p> |
| <b>2</b> | Spray the WL-clean (ALPRO) to the Water Connector of the Scaler Handpiece with hold the Scaler Handpiece and the WL- clean (ALPRO), clean the inside of Water Line.<br>* For details, confirm the operation manuals issued by manufacturer.<br>Spray time: 2 seconds<br>Number of spray: 3 times |  <p>2</p> <p>WL-clean (ALPRO)</p>  |
| <b>3</b> | Release the Water Connector on the Scaler Handpiece from the WL-Adapter 01 (ALPRO) and remove the WL-Adapter 01 (ALPRO) from the WL-clean (ALPRO).<br><u>Place the Scaler Handpiece onto the tray for at least 1minute to take effect.</u>   |  <p>3</p> <p>WL-clean (ALPRO)</p>   |
| <b>4</b> | Wipe the surface of the Scaler Handpiece with disinfectant wipes (Minuten Wipes: ALPRO).   |  <p>4</p> <p>Minuten Wipes: ALPRO</p>   |

6-3-2-1

Manual Cleaning and Disinfection (Including the Water Line) (In case of connecting to the adapter)( Continued)

| No. | Action  | Fig.   |
|-----|---|--|
| 5   | Attach the WL-Adapter 01 (ALPRO) to the WL-cid (ALPRO) and contact the Water Connector on the Scaler Handpiece to the end of the WL-Adapter 01 (ALPRO).   | <p><b>5</b></p>  <p>Water Connector<br/>Scaler Handpiece<br/>WL-Adapter 01 (ALPRO)<br/>WL-cid (ALPRO)</p>  |
| 6   | <p>Spray the WL-cid (ALPRO) to the Water Connector on the Scaler Handpiece with hold the Scaler Handpiece and the WL- cid (ALPRO), disinfect the inside of Water Line.</p> <p>* For details, confirm the operation manuals issued by manufacturer.</p> <p>Spray time: 3 seconds<br/>Number of spray: 1 time</p> | <p><b>6</b></p>  <p>WL-cid (ALPRO)</p>  |
| 7   | <p>Release the Water Connector on the Scaler Handpiece from the WL-Adapter 01 (ALPRO) and remove the WL-Adapter 01 (ALPRO) from the WL-cid (ALPRO).</p> <p><u>Place the Scaler Handpiece onto the tray for at least 2 minutes to take effect.</u></p>   | <p><b>7</b></p>  <p>WL-cid (ALPRO)</p>   |
| 8   | <p>Attach the WL-Adapter 01 (ALPRO) to the WL-dry (ALPRO) or the WL-Blow (ALPRO) and contact the Water Connector on the Scaler Handpiece to the end of the WL-Adapter 01 (ALPRO).</p>   | <p><b>8</b> · When using the WL-dry (ALPRO):</p>  <p>Water Connector<br/>Scaler Handpiece<br/>WL-Adapter 01 (ALPRO)<br/>WL-dry (ALPRO)</p> <p>· When using the WL-Blow (ALPRO):</p>  <p>Water Connector<br/>Scaler Handpiece<br/>WL-Adapter 01 (ALPRO)<br/>WL-Blow (ALPRO)</p> |

| No.              | Action   | Fig.   |
|------------------|--|--|
| <p><b>9</b></p>  | <p>Discharge the disinfect solution from the Water Line on the Scaler Handpiece.<br/>For details, confirm the operation manuals issued by manufacturer.</p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):<br/>Spray time: 3 seconds<br/>Number of spray: 1 time</li> <li>· When using the WL-Blow (ALPRO):<br/>Air blow time: 3 seconds<br/>Number of spray: 1 time</li> </ul> | <p><b>9</b></p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):</li> </ul>  <p>WL-dry (ALPRO)</p> <ul style="list-style-type: none"> <li>· When using the WL-Blow (ALPRO):</li> </ul>  <p>WL-Blow (ALPRO)</p>      |
| <p><b>10</b></p> | <p>Release the Water Connector on the Scaler Handpiece from the WL-Adapter 01 (ALPRO) and remove the WL-Adapter 01 (ALPRO) from the WL-dry (ALPRO) or the WL-Blow (ALPRO).</p>   | <p><b>10</b></p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):</li> </ul>  <p>WL-dry (ALPRO)</p> <ul style="list-style-type: none"> <li>· When using the WL-Blow (ALPRO):</li> </ul>  <p>WL-Blow (ALPRO)</p> |
| <p><b>11</b></p> | <p>Proceed to section "6-3-3 Cleaning of the Glass Rod".</p>   |  |

**! CAUTION**

After cleaning and disinfection of the Scaler Handpiece, be sure to clean the Glass Rod and sterilize the Scaler Handpiece. Reference: "6-3-3 Cleaning of the Glass Rod" and "6-4 Sterilization".

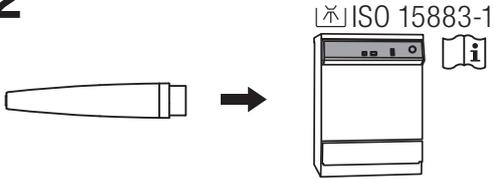
6-3-2-2

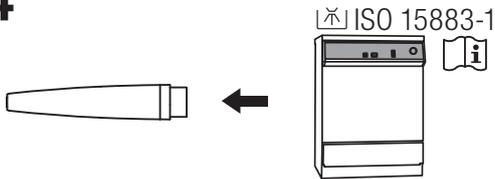
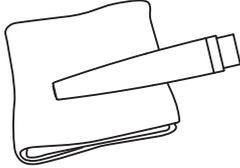
Automated Cleaning and Disinfection  
(Including the Water Line)

**CAUTION**

- Scaler Cord cannot be cleaned with washer-disinfector.
- Use a cleaning and disinfection device (washer-disinfector) complying with DIN EN ISO 15883 (e.g. Miele washer-disinfector G7781 / G7881; Melag Melatherm), that operates with a maximum pH value of 10.5 (e.g. neodisher, Dr. Weigert) and is equipped with the appropriate adapters. Proof of suitability for the process must be obtained from the washer-disinfector manufacturer.
- Automated cleaning and disinfection should be done in accordance with the operation manual of washer-disinfector.
- After using washer-disinfector, dry the product completely. The remaining moisture causes internal corrosion etc.

Adapter (ADS 2: Miele/73900: Melag) is to be prepared customers.

| No.      | Action   | Fig.  |
|----------|--|---|
| <b>1</b> | Wipe the contact part of the Scaler Handpiece and adapter (ADS 2: Miele/ 73900: Melag) with disinfectant wipes (Minuten Wipes: ALPRO). | <p><b>1</b></p>  <p>Minuten Wipes: ALPRO</p> |
| <b>2</b> | Attach the Scaler Handpiece to the Adapter (ADS 2: Miele/ 73900: Melag) of the washer-disinfector.                                     | <p><b>2</b></p>  <p>ISO 15883-1</p>           |
| <b>3</b> | Clean and disinfect the Scaler Handpiece.  | <p><b>3</b></p>  <p>ISO 15883-1</p>          |

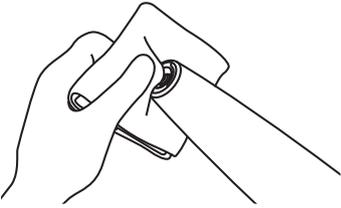
| No. | Action  | Fig.   |
|-----|---|--|
| 4   | Remove the Scaler Handpiece from the Adapter (ADS 2: Miele/73900: Melag) of the washer-disinfector.   |    |
| 5   | Wipe the residual moisture of the Scaler Handpiece with a dry cloth. Or the blow it off with filtered clean compressed air ( $\leq 0.35\text{MPa}$ ) until there is no moisture in the interior and exterior.                   |   |
| 6   | Under appropriate lighting (500 lx or higher), inspect the Scaler Handpiece for contamination. If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 2. |  |
| 7   | Proceed to the section "6-3-3 Cleaning of the Glass Rod" and "6-4 Sterilization".   |  |

**! CAUTION**

- Scaler Handpiece must be removed from the washer-disinfector immediately (within 1 hour) after the cleaning, disinfecting and drying cycle is complete to prevent corrosion.
- After using washer-disinfector, dry the product completely. The remaining moisture causes internal corrosion etc.
- After cleaning and disinfection of the Scaler Handpiece, be sure to clean the Glass Rod and sterilize the Scaler Handpiece. Reference: "6-3-3 Cleaning of the Glass Rod" and "6-4 Sterilization".

**Post-use Maintenance**

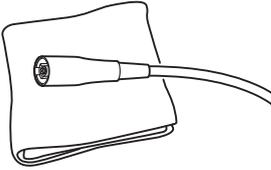
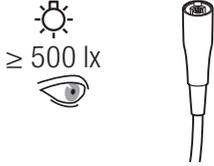
**6-3-3 Cleaning of the Glass Rod**

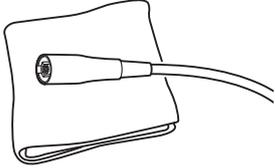
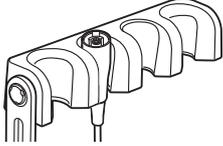
| Action  | Fig.  |
|---|---|
| <p>When contaminants or cutting dust is attached to the end of the Glass Rod, wipe carefully with disinfectant wipes (Minuten Wipes: ALPRO).</p> <p>Proceed to section "6-4 Sterilization".</p> |  <p>Minuten Wipes (ALPRO)</p> |

**⚠ CAUTION**

- Do not use a sharp tool to clean the Glass Rod. It could damage the glass and reduce the light transmission. When this happens, please contact your Authorized NSK Dealer.

**6-3-4 Cleaning and Disinfection of the Scaler Cord**

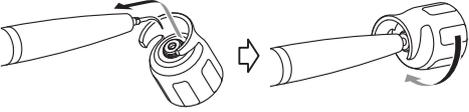
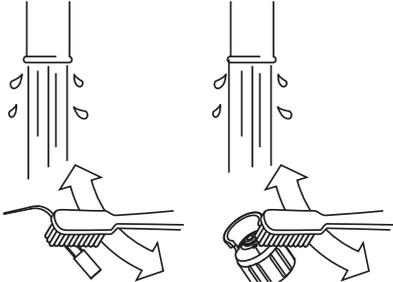
| No.                       | Action   | Fig.  |
|---------------------------|--|---|
| <b>&lt; Cleaning &gt;</b> |  |   |
| <b>1</b>                  | Remove the all debris on the surface of the Scaler Cord with a cloth moistened with water.   | <b>1</b><br> |
| <b>2</b>                  | Under appropriate lighting (500 lx or higher), inspect the Scaler Cord for contamination. If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 1. | <b>2</b><br> |

| No.                         | Action   | Fig.  |
|-----------------------------|--|---|
| <b>&lt;Disinfection&gt;</b> |  |   |
| <b>1</b>                    | Wipe the surface of the Scaler Cord and the Holder with the disinfectant wipes (Minuten Wipes: ALPRO). | <b>1</b><br><br>Minuten Wipes: ALPRO |
| <b>2</b>                    | Place the Scaler Cord on the Holder.   | <b>2</b><br>                         |

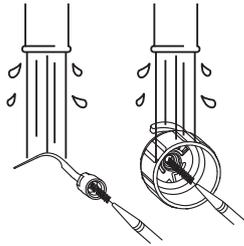
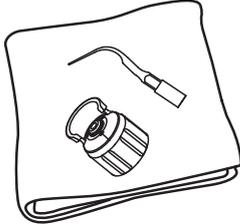
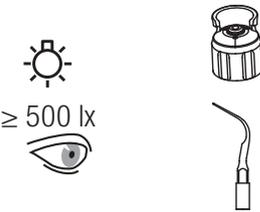
**6-3-5 Cleaning of the outside of the Tip and the Tip Wrench**

**! CAUTION**

- Follow any additional local directives, standards, and guidelines for cleaning, disinfection, and sterilization.

| No.                       | Action   | Fig.  |
|---------------------------|--|---|
| <b>&lt; Cleaning &gt;</b> |  |   |
| <b>1</b>                  | Remove the Tip form the Handpiece.<br>* Referece: "4-3 Mounting the Tip".  | <b>1</b><br>  |
| <b>2</b>                  | Clean the surface of the Tip and the Tip Wrench under running water with a soft bristled brush for 20 seconds or more.<br>* The diamond part on the Diamond Tips are clogged with cutting powder.<br>Be sure to clean the Diamond Tips sufficiently for remove a residual clogged to the diamond parts of the Diamond Tip.<br>Water temperature: 38 C° or less<br>Water quality: Water available as drinking water<br>Water amount: 3.5 L/min or more<br>Cleaning time: 20 seconds or more | <b>2</b><br> |

**6-3-5** | **Cleaning of the outside of the Tip and the Tip Wrench (Continued)**

| No.                                   | Action  | Fig.   |
|---------------------------------------|---|--|
| <b>&lt; Cleaning (Continued) &gt;</b> |   |  |
| <b>3</b>                              | Clean the screw hole of the Tip and the Tip holding hole inside the Tip Wrench under running water with the Cleaning Wire (Z144095) for 20 seconds or more.   | <b>3</b>    |
| <b>4</b>                              | Wipe the residual moisture on the surface of the Tip and the Tip Wrench with a dry cloth.   | <b>4</b>   |
| <b>5</b>                              | Under appropriate lighting (500 lx or higher), inspect the Tip and Tip Wrench for contamination. If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 2. | <b>5</b>  |

6-3-6

Cleaning and Disinfection of the inside of the Tip (Including the Water Line)

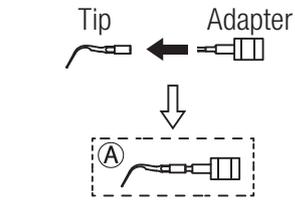
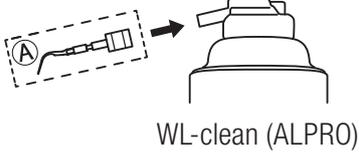
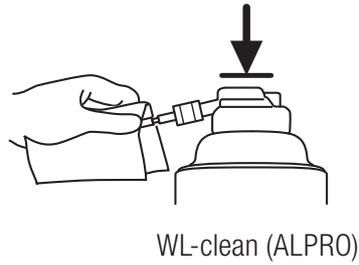
6-3-6-1

Manual Cleaning and Disinfection

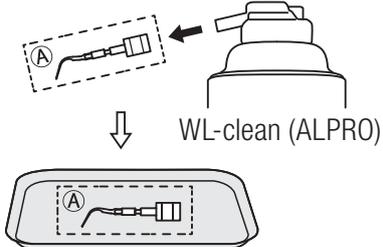
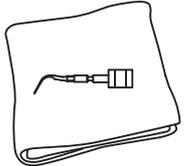
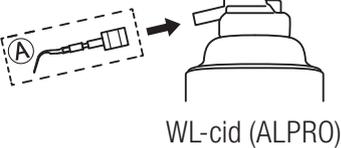
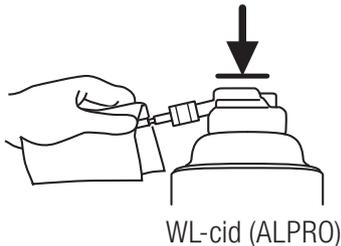
**! CAUTION**

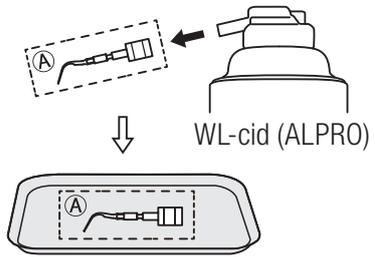
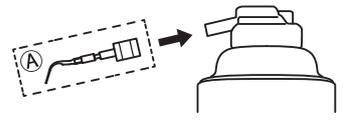
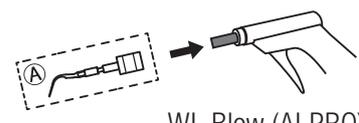
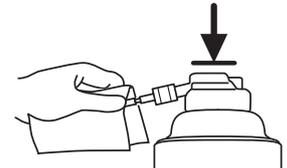
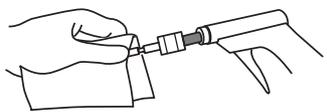
- Before using an alcoholic product for internal disinfection, the Tip must first be cleaned with a non-protein-fixing product (e.g. Alpro WL-clean). Reference: "< Cleaning and Disinfection of the inside of the Tip (Including the Water Line)>".
- Manual cleaning and disinfection using WL-clean and WL-cid (Alpro) require the subsequent use of WL-dry or WL-blow to remove any WL-clean or WL-cid residues from the instrument.

Adapter (U-3: ALPRO) is to be prepared by customers.

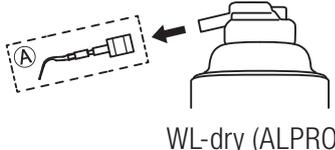
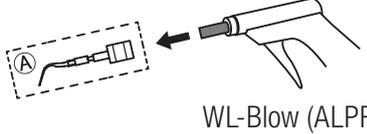
| No.  | Action  | Fig.  |
|--|---|---|
| <p><b>&lt; Cleaning and Disinfection of the inside of the Tip (Including the Water Line) &gt;</b><br/>                     Only in case of the Tips with a coolant bore.</p> |   |   |
| <p><b>1</b></p>  | <p>Attach the Adapter (U-3 REF3573: ALPRO) to the screw hole of the Tip.</p>  | <p><b>1</b></p>  |
| <p><b>2</b></p>  | <p>Push in the <b>A</b> to the WL-clean (ALPRO).</p>  | <p><b>2</b></p>  |
| <p><b>3</b></p>  | <p>Spray the WL-clean (ALPRO) to the <b>A</b>, clean the inside of the Water Line.<br/>                     * For details, confirm the operation manuals issued by manufacturer.</p> <p>Spray time: 2 seconds<br/>                     Number of spray: 3 times</p> | <p><b>3</b></p>  |

6-3-6-1 Manual Cleaning and Disinfection (Continued)

| No.  | Action   | Fig.   |
|--|--|--|
| <b>&lt; Cleaning and Disinfection of the inside of the Tip (Including the Water Line)<br/>(Continued) &gt;</b> |  |  |
| <b>4</b>   | Remove the (A) from the WL-clean (ALPRO).<br><br><u>Place the (A) onto the tray for at least 1 minute to take effect.</u>  | <b>4</b>    |
| <b>5</b>   | Wipe the surface of the Tip with the disinfectant wipes (Minuten Wipes: ALPRO).  | <b>5</b>   |
| <b>6</b>   | Push in the (A) to the WL-cid (ALPRO).   | <b>6</b>  |
| <b>7</b>   | Spray the WL-cid (ALPRO) to the (A), disinfect the inside of the Water Line.<br>* For details, confirm the operation manuals issued by manufacturer.<br><br>Spray time: 3 seconds<br>Number of spray: 1 time | <b>7</b>  |

| No. | Action  | Fig.   |
|-----|---|--|
| 8   | <p>Remove the (A) from the WL-cid (ALPRO).</p> <p>Place the (A) onto the tray, then spray the WL-cid to all over the Tip.<br/> <u>Wait 2 minutes to take effect.</u></p>  | <p><b>8</b></p>  <p>WL-cid (ALPRO)</p>  |
| 9   | <p>Push in the (A) to the WL-dry (ALPRO) or the WL-Blow (ALPRO).</p>  | <p><b>9</b></p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):</li> </ul>  <p>WL-dry (ALPRO)</p> <ul style="list-style-type: none"> <li>· When using the WL-Blow (ALPRO):</li> </ul>  <p>WL-Blow (ALPRO)</p>     |
| 10  | <p>Discharge the disinfect solution from the Water Line of the Tip.</p> <p>* For details, confirm to the operation manuals issued by manufacturer.</p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):<br/>                     Spray time: 3 seconds<br/>                     Number of spray: 1 time</li> <li>· When using the WL-Blow (ALPRO):<br/>                     Air blow time: 3 seconds<br/>                     Number of spray: 1 time</li> </ul> | <p><b>10</b></p> <ul style="list-style-type: none"> <li>· When using the WL-dry (ALPRO):</li> </ul>  <p>WL-dry (ALPRO)</p> <ul style="list-style-type: none"> <li>· When using the WL-Blow (ALPRO):</li> </ul>  <p>WL-Blow (ALPRO)</p> |

**6-3-6-1 Manual Cleaning and Disinfection (Continued)**

| No.  | Action  | Fig.   |
|--|---|--|
| <b>&lt; Cleaning and Disinfection of the inside of the Tip (Including the Water Line)<br/>(Continued) &gt;</b> |   |  |
| <b>11</b>  | Remove the (A) from the WL-dry (ALPRO) or the WL-Blow (ALPRO).                            | <b>11</b> · When using the WL-dry (ALPRO):<br><br>WL-dry (ALPRO) |
| <b>12</b>  | Remove the Adapter (U-3 REF3573: ALPRO) from the Tip. Proceed to the "6-4 Sterilization". | · When using the WL-Blow (ALPRO):<br><br>WL-Blow (ALPRO)         |

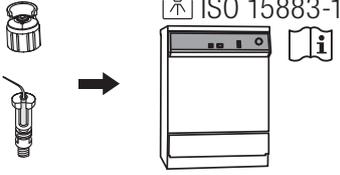
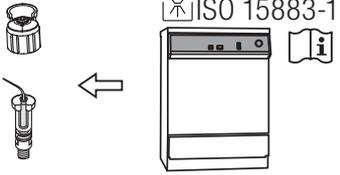
**6-3-6-2 Automated Cleaning and Disinfection**

**⚠ CAUTION**

- Use a cleaning and disinfection device (washer-disinfector) complying with DIN EN ISO 15883 (e.g. Miele washer-disinfector G7781/G7881), that operates with a maximum pH value of 10.5 (e.g. neodisher, Dr. Weigert) and is equipped with the appropriate adapters. Proof of suitability for the process must be obtained from the washer-disinfector manufacturer.
- Automated cleaning and disinfection should be done in accordance with the operation manual of washer-disinfector.

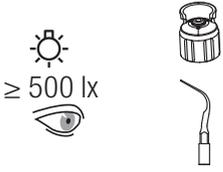
Washer-disinfector can be used for the Tip and the Tip Wrench.

Adapter (Miele adapter: A814) is to be prepared customers.

| No.      | Action  | Fig.   |
|----------|---|--|
| <b>1</b> | Attach the Tip to the adapter (Miele: A814).  | <b>1</b>    |
| <b>2</b> | Attach the adapter (Miele: A814) with the Tip and Tip Wrench to the washer-disinfector.   | <b>2</b>    |
| <b>3</b> | Clean and disinfect the Tip and the Tip Wrench.   | <b>3</b>   |
| <b>4</b> | After removing the adapter (Miele: A814) with the Tip and the Tip Wrench from the washer-disinfector, then remove the Tip from the adapter (Miele: A814).   | <b>4</b>  |
| <b>5</b> | Wipe the residual moisture of the Tip and the Tip Wrench with a dry cloth. Or the blow it off with filtered clean compressed air ( $\leq 0.35\text{MPa}$ ) until there is no moisture in the interior and exterior. | <b>5</b>  |

## Post-use Maintenance

### 6-3-6-2 Automated Cleaning and Disinfection (Continued)

| No.      | Action   | Fig.  |
|----------|--|---|
| <b>6</b> | Under appropriate lighting (500 lx or higher), inspect the Tip and the Tip Wrench for contamination.<br>If any visible contamination remains, repeat the process until it is visually clean. Be sure to repeat from the procedure No. 2. | <b>6</b><br> |
| <b>7</b> | Proceed to section "6-4 Sterilization".  |   |

#### CAUTION

- Tips must be removed from the washer-disinfector immediately (within 1 hour) after the cleaning, disinfecting and drying cycle is complete to prevent corrosion.
- After using washer-disinfector, dry the product completely. The remaining moisture causes internal corrosion etc.

## 6-4 Sterilization

### CAUTION

- Follow local rules, regulations, and guidelines regarding the reprocessing of devices.
- Do not autoclave the Scaler Cord and the O-ring.
- Do not conduct ultraviolet sterilization for the Scaler Handpiece. This could cause discoloration.
- Do not autoclave the product with other instruments even when it is in a pouch. This is to prevent possible discoloration and damage to the product from chemical residue on other instruments.
- Do not heat or cool the product too quickly. Rapid change in temperature could cause damage to the product
- Be sure to use sterilizers that can perform sterilization up to 135°C. In some sterilizers, the chamber temperature may exceed 135°C. Do not use these sterilizers as failure of the product could occur. Contact the sterilizer manufacturer for detailed information about cycle temperatures.
- Clean the Scaler Handpiece, the Tip and the Tip Wrench prior to disinfect. If blood remains on the internal surface it can become clotted and cause product failure.
- Keep the product in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt and sulphur.
- Do not touch the product immediately after autoclaving as it will be very hot and must remain in a sterile condition.
- Autoclave sterilization is recommended for the Scaler Handpiece, the Tip and the Tip Wrech. The validity of other sterilization methods (such as plasma sterilization or EOG sterilization) is not confirmed.
- Immediately after sterilization is complete (within 1 hour), remove the Scaler Handpiece, the Tip and the Tip Wrech from the sterilizer. Failure to do so may cause corrosion.
- In case of using a sterilization case, be sure to individually insert the Scaler Handpiece, the Tip, the Tip Wrench into the sterilization case, then insert the sterilization case into the sterilization pouch that conforms to ISO 11607-1.

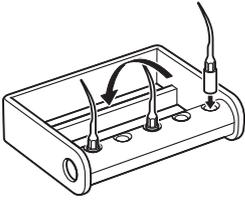
### NOTICE

- NSK recommends Class B sterilizer as stated in EN 13060.
- For details, confirm the operation manual issued by manufacturer of the sterilizer.

Apply autoclave sterilization for the following parts. After each patient treatment, sterilize the parts as follows.

Autoclavable equipment: Scaler Handpiece, Tip, Tip Wrench, Tip Holder.

## Post-use Maintenance

| No.   | Action   |   |                                  |
|---|--|---|----------------------------------|
| <b>&lt; Preparation before sterilization &gt;</b>   |  |   |                                  |
| <b>1</b>  | Insert the Scaler Handpiece and/or the Tip Wrench individually into a sterilization case or sterilization pouch that confirms to ISO 11607-1, and seal the pouch or use the sterilization cassette.  |   |                                  |
| <b>2</b>  | Insert the Scaler Handpiece, Tip and the Tip Wrench individually into a pouch that confirms to ISO 11607-1, and seal the pouch.<br>* In case of use the sterilization cassette, insert the Scaler Handpiece, Tip and the Tip Wrench individually into a sterilization cassette then insert the sterilization cassette to a pouch that confirms to ISO 11607-1, and seal the pouch. |   |                                  |
| <b>&lt; In case of using the Tip Holder &gt;</b>  |  |   |                                  |
| The Tip Holder can be sterilized up to 5 pieces at the same time.                                       |  |   |                                  |
| No.   | Action   | Fig.  |                                  |
| <b>1</b>  | Insert the Tip to the Tip Holder and incline the Tip to the arrow direction.   | <b>1</b><br> |                                  |
| <b>2</b>  | Insert Tip Holder into a sterilization pouch that confirms to ISO 11607-1.   |   |                                  |
| <b>&lt; Sterilization &gt;</b>  |  |   |                                  |
| Autoclave the Scaler Handpiece, Tip, Tip Wrench, Tip Holder. Conduct autoclave sterilization as follow. |  |   |                                  |
| Type  | Gravity Displacement   |   | Pre-Vacuum (Dynamic Air Removal) |
| Temperature   | 121°C (0 / +4°C)   | 132°C (0 / +4°C)  | 134°C (0 / +4°C)                 |
| Full Cycle Time   | 20 min or longer   | 15 min or longer  | 3-18 min                         |
| Drying Time   | 30 min or longer   | 30 min or longer  | 30 min or longer                 |
| <b>3</b>  | Store the product in a place where it is kept clean and keep it in a sterilization pouch until it is used next.  |   |                                  |

6-5

Maintenance of the Water Line for Scaler Handpiece and the Scaler Cord (In case of Connecting to the Control Unit)

Cleaning and Disinfection should be done in the cleaning tank.

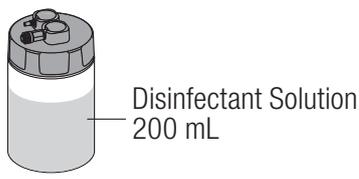
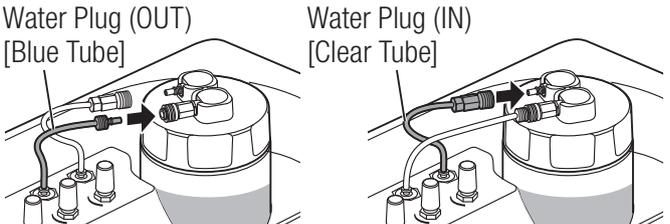
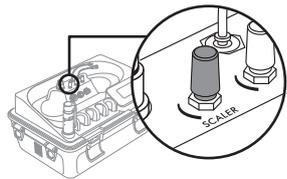
**! CAUTION**

- Be sure to Clean and Disinfect the Scaler Handpiece and the Scaler Cord before maintenance of the Water Line.

6-5-1

Preparation of the Water Line before disinfection

Disinfect with Alpro Bilpron (ALPRO) (undiluted) is recommended as maintenance once or twice week.

| No.             | Action   | Fig.  |
|-----------------|--|---|
| <p><b>1</b></p> | <p>Put 200 mL of disinfectant solution in the Water Bottle. Tightly close the Water Bottle lid and place the Water Bottle in the Control Unit.</p> <p>* For details, confirm the operation manual issued by manufacturer.</p> <p>Disinfectant Solution: Alpro Bilpron (ALPRO) (undiluted)</p> <ul style="list-style-type: none"> <li>• When there is not enough disinfectant solution, turn off the Power Switch of the Control Unit, take out the Water Bottle, and add disinfectant solution.</li> </ul> | <p><b>1</b></p>  <p><b>2</b></p>  |
| <p><b>2</b></p> | <p>Insert the Water Plug (OUT) [Blue Tube] and the Water Plug (IN) [Clear Tube] to the lid until hearing a clicking sound.</p>   | <p><b>4</b></p>   |
| <p><b>3</b></p> | <p>Turn on the Power Switch of the Control Unit.</p>   |   |
| <p><b>4</b></p> | <p>Maximize the Scaler Water Adjuster.</p>   |   |

**6-5-2 Disinfection of the Water Line of the Scaler Handpiece and the Scaler Cord**

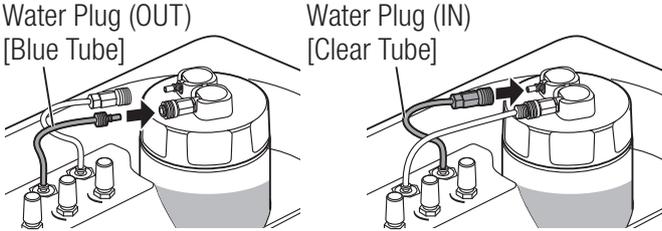
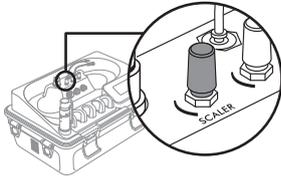
| No.      | Action   | Fig. |
|----------|--|------|
| <b>1</b> | Push the SCALER Key.<br>Turn on the SPRAY Key to irrigation.   |      |
| <b>2</b> | Hold the Scaler Handpiece and the Scaler Cord in the cleaning tank.  |      |
| <b>3</b> | Press the ON/OFF Key for 2 seconds and activate 10 seconds or more to confirm that the disinfectant solution comes out from the tip of the Scaler Handpiece. |      |
| <b>4</b> | Place the Scaler Handpiece and the Scaler Cord on the Holder and leave them for a night (at least 12 hours).   |      |

**⚠ CAUTION**

- Disinfectant solution remains in the Water Line by letting the solution out from the tip of the Scaler Handpiece.
- It takes 12 hours to complete the disinfection after disinfectant solution remain on the Water Line of the Scaler and the Scaler Cord.

6-5-3

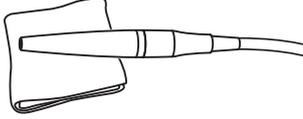
Rinsing of the Water Line of the Scaler Handpiece and the Scaler Cord after Disinfection

| No. | Action   | Fig.   |
|-----|--|--|
| 1   | Put 250 mL of drinking water in the Water Bottle. Tightly close the Water Bottle Lid and place the Water Bottle in the Control Unit.   | <p><b>1</b></p>    |
| 2   | Insert the Water Plug (OUT) [Blue Tube] and the Water Plug (IN) [Clear Tube] to the lid until hearing a clicking sound.  | <p><b>2</b></p>   |
| 3   | Turn on the Power Switch of the Control Unit.  |  |
| 4   | Maximize the Scaler Water Adjuster.  |  |
| 5   | Push the SCALER Key. Turn on the SPRAY Key to irrigation.  | <p><b>4</b></p>  <p><b>5</b></p>  |
| 6   | Hold the Scaler Handpiece and the Scaler Cord in the cleaning tank.  |  |
| 7   | <p>Press the ON/OFF Key for 2 seconds and activate 10 seconds or more to confirm that the disinfectant solution comes out from the tip of the Scaler Handpiece.</p> <ul style="list-style-type: none"> <li>· When there is not enough drinking water, turn off the Power Switch of the Control Unit, take out the Water Bottle, and add drinking water.</li> </ul> |  |

## Post-use Maintenance

6-5-3

### Rinsing of the Water Line of the Scaler Handpiece and the Scaler Cord after Disinfection (Continued)

| No. | Action  | Fig.   |
|-----|---|--|
| 8   | Wipe the surface of the Scaler Handpiece and the Scaler Cord with the disinfectant wipes (Minuten Wipes: ALPRO).  | <p><b>8</b></p>  |
| 9   | <p>Disconnect the Scaler Handpiece from the Scaler Cord then attach the sterilized Scaler Handpiece to the Scaler Cord and place it on the Holder.</p> <p>* Be sure to sterilize the rinsed Scaler Handpiece (including Water Line) before use.</p> | <p>Minuten Wipes (ALPRO)</p>   |

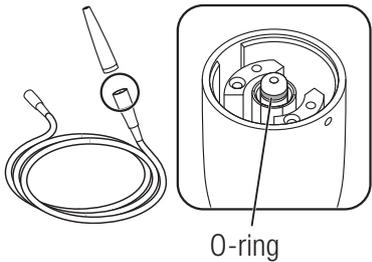
### ⚠ CAUTION

- After rinsing, be sure to sterilize the Scaler Handpiece. Reference: "6-4 Sterilization".

## 7 Maintenance

### 7-1 Replacing the O-ring

Replace the O-ring when it is worn or water leakage occurs.

| No. | Action  | Fig.   |
|-----|---|--|
| 1   | Disconnect the Scaler Handpiece from the Scaler Cord. | <p><b>1</b></p>  |
| 2   | Remove the O-ring to be replaced using a needle.      |  |
| 3   | Place a new O-ring into the groove.                   |  |

\*For replacement O-ring, refer to "3 Package Contents"

## 7-2 Periodical Maintenance Checks

Every 3 months perform periodical maintenance checks, referring to the check sheet below. If any abnormalities are found, contact your Authorized NSK Dealer.

| Points to check  | Details   |
|--|---|
| Handpiece function   | Mount the Tip and check if there is any vibration, noise or generation of heat. Also, check the lighting and watering function. |
| Connecting/<br>Disconnecting the<br>Handpiece and the<br>Scaler Cord | Check if the connecting/disconnecting can be done smoothly.   |

## 8 Troubleshooting

### 8-1 Problems and Solutions

When a problem is detected, check the following again before requesting a repair. If none of these is applicable or if the trouble is not remedied even after an action has been taken, a failure of this product is suspected. Contact your Authorized NSK Dealer.

| Problem           | Cause   | Remedy   |
|-------------------|---|--|
| Weak/No vibration | The Tip is loose.   | Tighten the Tip again with the Tip Wrench until hearing a clicking sound. If the looseness does not improve, the Tip Wrench might have worn and need to be replaced. |
|                   | The Tip is worn.  | Replace the Tip with a new one.  |
|                   | Dirt adheres to the threads of the Handpiece or the Tip.    | Cleaning is needed.  |
|                   | The threads of the Handpiece are worn due to long-time use. | Contact your NSK Dealer.   |
|                   | The power setting is not appropriate for the mounted Tip.   | Set the power below the maximum power indicated on the Tip Power Guide or the Tip Case.  |

## Troubleshooting

| Problem                      | Cause   | Remedy   |
|------------------------------|---|--|
| Weak/No vibration            | A failure of the vibrator in the Handpiece.                 | Contact your NSK Dealer.   |
| The Tip is broken or bent    | The power setting is not appropriate for the mounted Tip.   | Set the power below the maximum power indicated on the Tip Power Guide or the Tip Case.  |
| The Tip comes off.           | The Tip is loose.   | Tighten the Tip again with the Tip Wrench until hearing a clicking sound. If the looseness does not improve, the Tip Wrench might have worn and need to be replaced. |
| Big noise from the Handpiece | The power setting is not appropriate for the mounted Tip.   | Set the power below the maximum power indicated on the Tip Power Guide or the Tip Case.  |
|                              | The Tip is loose.   | Tighten the Tip again with the Tip Wrench until hearing a clicking sound. If the looseness does not improve, the Tip Wrench might have worn and need to be replaced. |
|                              | Dirt adheres to the threads of the Handpiece or the Tip.    | Cleaning is needed.  |
|                              | The threads of the Handpiece are worn due to long-time use. | Contact your NSK Dealer.   |

| Problem                       | Cause   | Remedy   |
|-------------------------------|---|--|
| The Handpiece becomes heated. | The power setting is not appropriate for the mounted Tip.                             | Set the power below the maximum power indicated on the Tip Power Guide or the Tip Case.  |
|                               | The Tip is loose.   | Tighten the Tip again with the Tip Wrench until hearing a clicking sound. If the looseness does not improve, the Tip Wrench might have worn and need to be replaced. |
|                               | Dirt adheres to the threads of the Handpiece or the Tip.                              | Cleaning is needed.  |
|                               | The threads of the Handpiece are worn due to long-time use.                           | Contact your NSK Dealer.   |
| Water leakage                 | The O-ring at the connection of the Handpiece and the Scaler Cord is damaged or worn. | Replace the O-ring with a new one.<br>(Reference : 7-1 Replacing the O-ring)   |
| No lighting.                  | The Handpiece is not inserted to the Scaler Cord correctly.                           | Insert the Handpiece firmly to the Scaler Cord.  |

## 9 Specifications

### 9-1 Specifications

|                 |             |
|-----------------|-------------|
| Model           | VA 170      |
| Drive Frequency | 28 - 32 kHz |
| Maximum Output  | 11W         |
| Light           | White LED   |

|  | Temperature | Humidity  | Pressure      |
|--|-------------|-----------|---------------|
| Use environment                        | 0 - 40°C    | 30 - 75%* |               |
| Transportation and storage environment | -10 - 50°C  | 10 - 85%* | 500 - 1060hPa |

\*No condensation.

### 9-2 Classification of Equipment

- Method of sterilization or disinfection recommended by the manufacturer :  
Reference : 6-4 Sterilization
- Degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:  
Equipment NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
- Mode of operation:  
Intermittent operation device (ON : 2 minutes, OFF : 3 minutes)

### 9-3 Operation Principle

The sine wave electrical signal output from the ultrasonic wave oscillator is input to the oscillator which is laminated with piezoelectric ceramics. The input electrical signal is converted into the mechanical vibration through piezoelectric ceramics. The vibration will be transmitted to the Tip mounted at the end of the oscillator and functions as it is made for.

## Specifications

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### 9-4 Symbol



This product is Autoclavable up to Max.135°C.



This product can be washed via Washer Disinfector.



Conforms to CE European Directive of “Medical device directive 93/42/EEC.”



Manufacturer.



Authorized representative in the European community.



Consult operation instructions.



Caution, Refer to attached instructions.

## 10 After-sales Service

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### 10-1 Warranty

NSK products are warranted against manufacturing errors and defects in materials. NSK reserves the right to analyze and determine the cause of any problem. Warranty is voided should the product be not used correctly or for the intended purpose or has been tampered with by unqualified personnel or has had non NSK parts installed. Replacement parts are available for seven years beyond discontinuation of the model.

### 10-2 Disposing Product

In order to avoid the health risks of operators handling the disposal of medical equipment, as well as the risks of environmental contamination caused thereof, a surgeon or a dentist is required to confirm the equipment is sterile. Ask specialist firms who are licensed to dispose of specially controlled industrial wastes, to dispose the product for you.

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Specifications are subject to change without notice.

2018.08.10 002<sup>Ⓜ</sup>