OPERATION MANUAL
HALLEY series
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MICROP DENTAL

High-speed Air Turbine Handpiece

A001/A002/A003/A004/A005/A006/A007/A008/A009/A010/A011/A012/A013/
A014/A015/A016/A017/A018/A019/A020/A021/A022/A023/A024/A025/A026/
A027/A028/A029/A030/A031/A032/A033/A034/A035/A036/A037/A038/A039

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1.Introduction

Intend Use	The dental handpieces are intended to be used by licensed dental professionals for dental treatment such as removing carious material and excess filling material, preparing cavity and crown, finishing tooth preparations and restorations.
Contraindications	None known.
Limitations for Use	The following conditions need to be evaluated on-site by a qualified dentist before use. - Patients who feel uncomfortable with the shrill noise of the operating handpiece. - Patients with ulcers or open wounds in the oral cavity. - Patients who lost their consciousness.

1.1 Safety Information

Class	Degree of risk
⚠ WARNING	Hazard that could result in serious injury or damage to the device if the safety instructions are not correctly followed
⚠ CAUTION	Hazard that could result in light or moderate injury or damage to the device if the safety instructions are not correctly followed

⚠ CAUTION

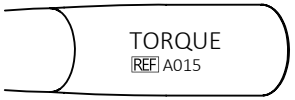
- Please lubricate the handpiece prior to initial use. Sterilize the handpiece and the nozzle cleaner. When operating the handpiece, always consider the safety of the patient.
- When using the handpiece, protect patient's oral tissues at all times.
- After a long period of use, the noise of handpiece might increase and cause hearing impairments to the operator. In such a case, please replace its turbine with a new one manufactured by our company.

⚠ WARNING

- Always inspect for bent or damaged burs before each use. A bent bur may whip severely and could be propelled with great force causing injury. DO NOT use excessive force on any bur or blade.
- DO NOT attempt to straighten a bent bur.
- Before each use, be sure that burs are completely seated and locked in the instrument. If the instrument is activated without the bur completely seated and locked, the bur may be thrown from the instrument with great force.
- Only use burs and cutters of reputable manufacturer with a shaft diameter of 1.59~1.60mm, total length of max. 21mm (0.83”) and a head diameter of up to 2mm (.0787”). Burs which deviate from the stated measurements must not be used.
- Pressing the push-button while handpiece bur is on rotation could result in OVERHEATING of the handpiece head.
- Must be caution to keep cheek tissue AWAY from the push-button of the handpiece during using. Contact with cheek tissue may cause the push-button to depress and injury to the patient may occur.
- Our company turbine should not be rebuilt. Replacing bearings only could result in unexpected failure and patient injury due to different wear factors or new vs. old components.
- Do not extend burs outward from handpiece head. Burs must be inserted all the way into chuck for proper bur retention. Extended burs could result in personal injury due to bur ejection, bent burs or inadequate cooling.
- Reuse restriction: 250 times
- Field repair is not available except as recommended by our company in this operation manual.

2. Product Description

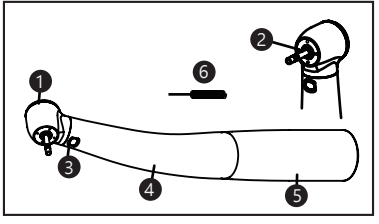
The reference number and head size can be found on the sleeve of the handpiece.



M4/B2/KaVo/NSK-QDJ/Sirona with/without light

REF: A001/A002/A003/A004/A005/A006/A013/A014/A015/A016/A017/ A018/A019/ A020/A021/A022/A023/A024/A031/A032/A033/A034/A035/A036/A037/A038/A039

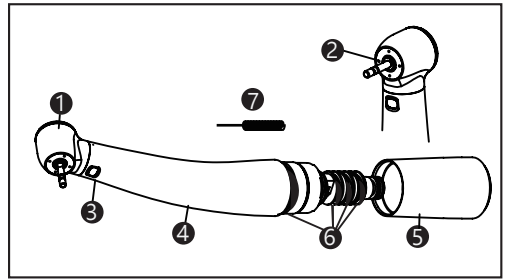
① Push button
② Spray ports
③ Light eye (No light eye in non fiber-optic handpiece)
④ Grip profile
⑤ Sleeve
⑥ Cleaning wire



NSK-PTL-CL/NSK-FM-CL with/without light

REF: A007/A008/A009/A010/A011/A012

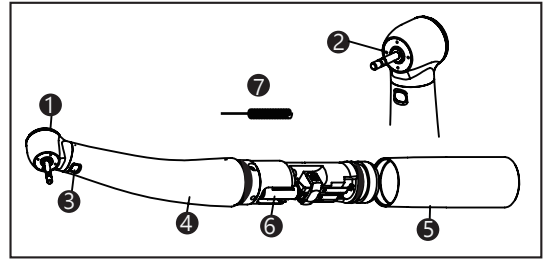
① Push button
② Spray ports
③ Light eye (No light eye in non fiber-optic handpiece)
④ Grip profile
⑤ Sleeve
⑥ O-rings
⑦ Cleaning wire



W&H with/without light

REF: A025/A026/A027/A028/A029/A030

① Push button
② Spray ports
③ Light eye (No light eye in non fiber-optic handpiece)
④ Grip profile
⑤ Sleeve
⑥ LED bulb
⑦ Cleaning wire



2.1 Symbol

Manufacturer

Date of manufacture

Washer-disinfector for thermal disinfection

Prescription use only

Sterilizable in a steam sterilizer (autoclave) at the temperature specified

Reference number

Serial Number

Do not dispose of with domestic waste

Consult instructions for use

2.2 Spare Parts & Consumables

Use only original MicroP parts or parts approved by MicroP.

Tip Nozzle

REF.	Handpiece REF.
AHLN001	A001- A039 (All)

LED Bulb

REF.	Handpiece REF.
ACLB04	A025/A026/A027

Spray Nozzle

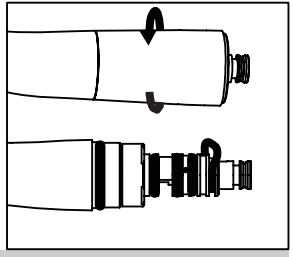
REF.	Handpiece REF.
AHLN002	A001/A002/A003/A031/A032/A033
AHLN003	A004/A005/A006
AHLN004	A007/A008/A009/A010/A011/A012
AHLN005	A013/A014/A015/A016/A017/A018
AHLN006	A019/A020/A021/A022/A023/A024
AHLN007	A025/A026/A027/A028/A029/A030
AHLN008	A034/A035/A036/A037/A038/A039

2.3 Troubleshooting

2.3.1 Replacing O-rings

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.

1) Loosen and remove the Sleeve at the rear of the handpiece.
2) Gently remove each O-ring by hand.
3) Insert the complete set of new O-rings in the correct grooves.
4) Firmly tighten the Sleeve.



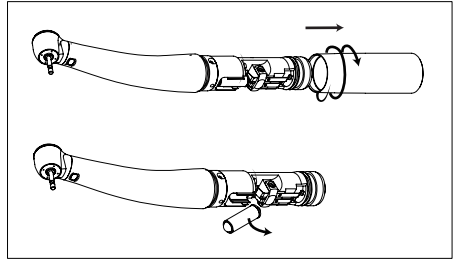
⚠ CAUTION

- Do not force the new replacement O-rings with excessive pressure.
- When inserting new O-rings, make sure they are inserted in the correct grooves.
- Make certain that the Sleeve is firmly tightened. If the Sleeve is loose, water and air leakage could occur.

2.3.2 Replacing the Bulb

For W&H with light models
REF: A025/A026/A027

1) Unscrew the Sleeve.
2) Remove the defective bulb with thumb and forefinger or tweezers.
3) Push bulb carefully into the lamp holder.
4) Screw the Sleeve lightly again.



2.4 Specifications

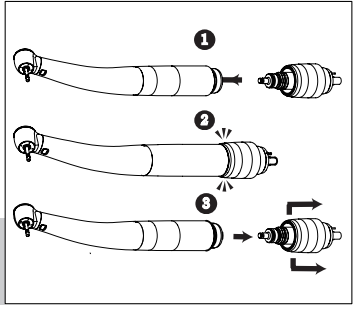
Model	Mini	Standard	Torque
Rotation Speed	330,000~390,000 rpm		310,000~370,000 rpm
Bur Type	EN ISO 1797 Ø1.59 ~ 1.60 mm Standard Bur		
Max. Bur Length	21 mm		
Max. Working Part Diameter	Ø2 mm		
Recommended Drive Air Pressure	0.28 MPa		
Operating Drive Air Pressure Range	0.25~0.3 MPa		
Max. Air Consumption	66 NL/min		
Water Pressure	0.08~0.20 MPa		
Chip Air Pressure	0.10~0.20 MPa		
Fiber Optic	Glass Rod		
Water Consumption	Min. 50 ml/min		
Use Environment	Temperature: 10~40° C, Humidity: 30~75%		
Transportation and Store Environment	Temperature:-10~50° C, Humidity: 10~85% RH, Atmos. Pressure: 500~1060 hPa		

3. Operation

3.1 Connection/Disconnection of the coupling

For NSK-PTL-CL/NSK-FM-CL/W&H connections

REF: A007/A008/A009/A010/A011/A012/A025/A026/A027/A028/A029/A030



CONNECTION

1) Insert the handpiece into the Coupling.
2) Make sure the handpiece is firmly connected to the Coupling.

DISCONNECTION

Slide back the connector ring, and the handpiece pops out.

⚠ CAUTION

- DO NOT slide back the connector ring while the handpiece is under air pressure.

For NSK-QDJ connections

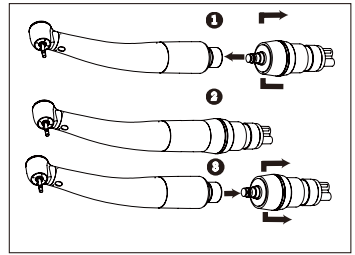
REF: A004/A005/A006

CONNECTION

1) Slide back the connector ring and insert the handpiece into the Coupling.
2) Release the connector ring. Make sure the handpiece is firmly connected to the Coupling.

DISCONNECTION

Slide back the connector ring, and the handpiece pops out.



⚠ CAUTION

- DO NOT slide back the connector ring while the handpiece is under air pressure.

For KaVo/Sirona/Star connections

REF: A013/A014/A015/A016/A017/A018/A019/A020/A021/A022/A023/ A024/ A034/A035/A036/A037/A038/A039

CONNECTION

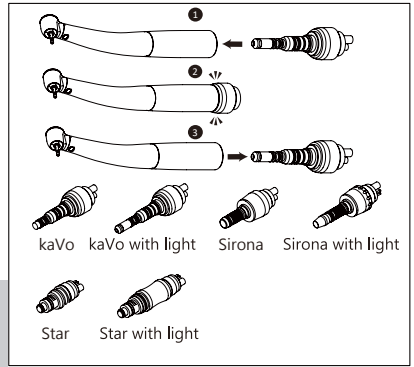
1) Insert the handpiece into the Coupling.
2) Make sure the handpiece is firmly connected to the Coupling.

DISCONNECTION

Remove the Coupling by exerting axial direction.

⚠ CAUTION

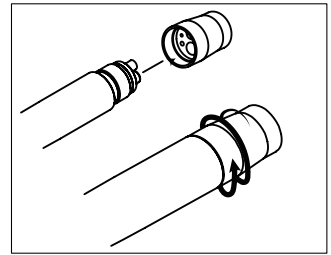
- DO NOT slide back the connector ring while the handpiece is under air pressure.



For M4/B2 connections
REF: A001/A002/A003/A031/A032/A033

CONNECTION
1) Insert the handpiece with BC/RM connection into the apertures of the turbine hose.
2) Firmly screw the union nut on.
3) Check for leaks at the handpiece.

DISCONNECTION
Unscrew the union nut and remove the handpiece from the turbine hose.



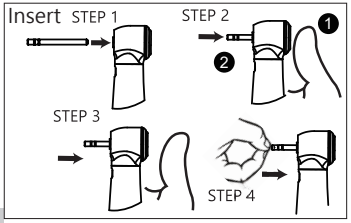
3.2 Insertion/Removal of the Bur

To insert the rotary instrument

STEP 1 Insert the bur.
STEP 2 Press the Push Button.
STEP 3 Insert the bur fully into the deepest end, and then release the Push Button.
STEP 4 Ensure that the rotary instrument is firmly secured by gently push the bur.

To remove the rotary instrument

STEP 5 Press the Push Button and remove the bur.



⚠ CAUTION

- Always check that the bur is fully inserted.
- Remove the bur only after the handpiece has completely stopped rotating. Always keep the bur shank clean.
- Do not exceed the bur diameter recommended by the bur manufacturer. (Ø1.59- Ø1.60 mm)
- Do not exceed the maximum bur length recommended by the handpiece manufacturer.

3.3 Check Before Treatment

Please follow the instructions below and make sure that there's no abnormalities of the handpiece before each treatment.

1) Please check the handpiece's Head Cap is firmly tightened.
2) Please check the bur is firmly tightened by gently pulling it.
3) Run the handpiece for 5 seconds and check whether any obvious abnormal vibration, noise and overheating exist.

If any abnormalities are found, please do NOT use the handpiece for any treatment and contact MicroP for repair immediately.

⚠ CAUTION

- Please always be careful of the sharp point of the bur while you are checking the handpiece.
- Lack of checking before treatment might lessen the detection of malfunctions and cause careless injuries.

3.4 Reprocessing & Maintenance According to EN ISO 17664:2017

Limitations and Restrictions on Processing

The product lifetime and the ability for successful operation are mainly determined by mechanical stress during use and the heat and chemical influences due to reprocessing.
Reprocessing limitation: approximately 250 times maximum.

3.4.1 Initial Treatment at the Point of Use

Please reprocess and maintain the handpieces as soon as possible after each patient as the following instructions.
Please always wear puncture-resistant and protective gloves, clinical mask and goggles to minimize the risk of infection.
Remove all residual cement, composite or blood without delay.

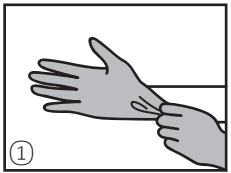
⚠ CAUTION

- The handpieces should be cleaned, disinfected, lubricated and sterilized immediately after treatment. If the handpieces are not properly maintained, it may cause premature failure or go overheating and burns of the device.

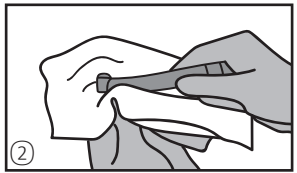
3.4.2 Preparation Before Cleaning

DANGER

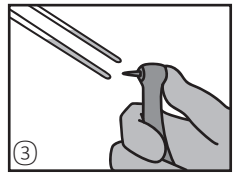
The handpieces should be cleaned, disinfected, lubricated and sterilized immediately after treatment. If the handpieces are not properly maintained, it may go overheating and cause burns or mulfunction of the device.



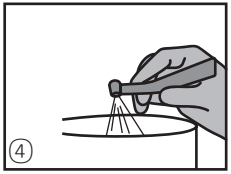
For your safety, please always wear puncture-resistant and protective gloves, clinical mask and goggles to minimize the risk of infection.



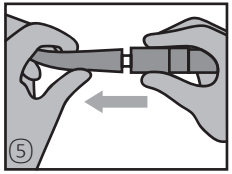
Immediately wipe the handpiece with an approved disinfectant until all visible contaminants are removed.



Remove the bur from the chuck system and place it in the disinfectant solution.

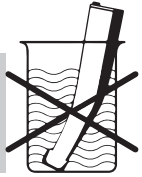


After each treatment of patient, run the handpiece for at least 20 seconds air and/or water.



Disconnect the handpiece from the tube.

SAFE TRANSPORT- Please use closed instrument tray in the process of transportation to other places.



⚠ CAUTION

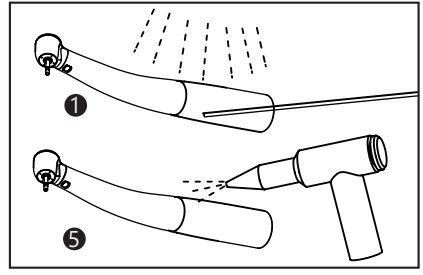
- The disinfectant used during pre-treatment is only for personal protection and cannot replace the disinfection step after cleaning.
- Do NEVER insert handpieces/turbines in disinfectant solutions or clean them in ultrasonic devices!

3.4.3 Manual Cleaning

Please clean the handpiece manually as follows:

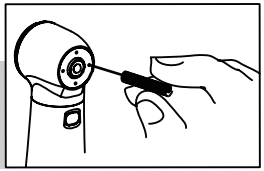
1) Rinse under demineralized water (<38° C) with the aid of brush.
2) Remove any liquid residues, debris from clean head holes with cleaning brush.
3) Rotate the handpiece and immerse half of the handpiece head in the cup of water.
4) Rotate then stop intermittently the handpiece 3 times for 2 to 3 seconds each time.
5) Wipe the handpiece dry with an absorbent cloth or blow dry with compressed air.

* If the dirt could not be removed from the hole, clean it by brush.



Cleaning spray ports

Please clean the ports when spray ports are clogged or spray does not exit evenly from the ports.

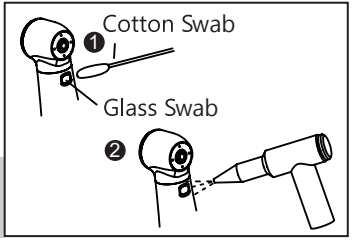


⚠ CAUTION

- DO NOT forcibly insert the wire into the port. Resultant port damage could cause the spray to be directed away from the bur, and the colling efficiency reduces.
- DO NOT blow air into the Clean Head Hole.

Cleaning (Optic)

1) Wipe clean the Glass Rod tip with an alcohol-immersed cotton swab. Remove all debris and oil.
2) Remove any liquid residues (use absorbent cloth or blow dry with compressed air).



⚠ CAUTION

- DO NOT use a sharp tool to clean the Glass Rod. It could damage the glass and reduce the light transmission.

3.4.4 Automated Cleaning

This mark denotes that the product can be automated cleaned and disinfected via a Thermo Washer Disinfector. Automated cleaning with alkaline detergents with a pH-value of max.10 and operating with program "Vario-TD" is recommended.

Please use a handpiece holder when washing the handpiece; otherwise any medical agent remains inside the handpiece, it may corrode or clog the air or water pipe, resulting in a malfuction of the handpiece.

⚠ CAUTION

- Do not place the handpiece in liquid disinfectant or in an ultrasonic bath!
- When installing the handpiece, make sure to connect the inner tube of the product to the corresponding interface of the Washer-Disinfector machine to ensure that the inner cavity of the product is sufficiently washed during the cleaning process. If the handpiece is not sufficiently rinsed, the inner cavity may not be cleaned.
- If the machine is not well maintained regularly, the bur may accidentally come loose during operation.

3.4.5 Manual Disinfection

Manual Disinfection is not aplicable.
Please refer to the instructions of 3.4.6 Automated Disinfection for automated disinfection of handpieces.

3.4.6 Automated Disinfection

Automated disinfection using a Thermal Washer Disinfector in accordance with EN ISO 15883-1 under 90 to 95°C, and holding time ≥ 5 minutes (or A_0> 3,000) is recommended.
Please read and follow the detailed instructions and warnings provided by the manufacturers of Thermal Washer Disinfectors and Cleaning Agents.

⚠ CAUTION

- Handpieces should be obtained immediately after the end of the treatment to avoid contact corrosion. Care must be taken when all is removed from the processing with suitable activities from the instrument (spray air, spray water, transmission channels), otherwise, it may lead to corrosion in the instrument.
- Supplying oil spray or lubrication oil after cleaning and disinfection and before autoclaving is necessary.

3.4.7 Drying Check Before Lubrication

Please check the handpiece is completely dry after disinfection.
Use compressed air (Max. 3 bar) to blow dry the handpiece internal until there is no liquid coming out, and make sure that the handpiece is completely dry before lubrication.

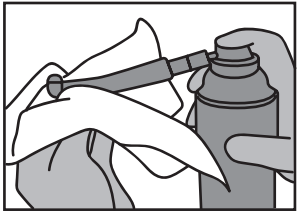
⚠ CAUTION

- Any liquid residuals inside the handpiece may reduce the efficacy of lubrication and sterilization.
- When applying compressed air, please make sure to hold the handpiece firmly to prevent the handpiece from slipping out of the hand due to the air pressure.

3.4.8 Manual Lubrication

Internal Lubrication

Clean, disinfect, lubricate and sterilize the handpieces after the treatment of each patient. After cleaning and disinfection, maintain the product as follows. Lack of maintenance could cause premature failure or overheating of the handpiece.
Supply oil spray or lubrication oil after each use and before autoclaving.

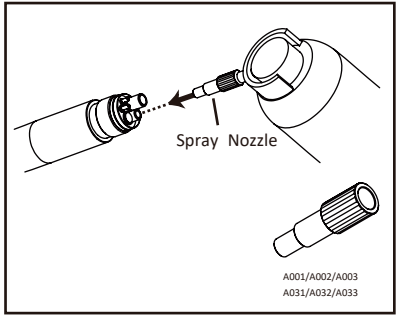


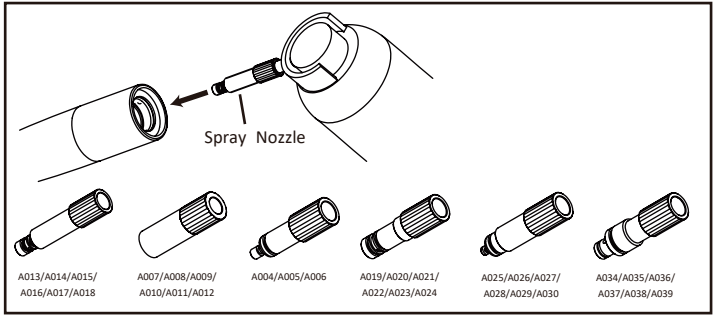
1) Remove the bur from the handpiece
2) Insert the Spray Nozzle into the spray port nozzle on the can.
3) Insert the Spray Nozzle into the rear of the handpiece. Hold the handpiece and spray for approximately 2-3 seconds. Apply lubricant until it expels from the handpeice head for at least 2 seconds.

⚠ CAUTION

- When applying spray be sure to hold the handpiece firmly to prevent the handpiece from slipping out of the hand due to the spray pressure.
- Hold the spray can upright.
- Lack of lubrication might increase the bearings to crush and decrease the liftime of the handpiece.

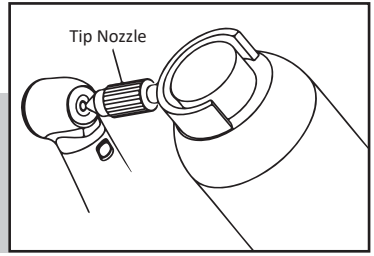
Spray Nozzle





Chuck Lubrication

Clean the Push Button chuck once a week.
1) Mount the Tip Nozzle into the spray port nozzle on the can.
2) Lubricate the chuck directly through the bur insertion hole.

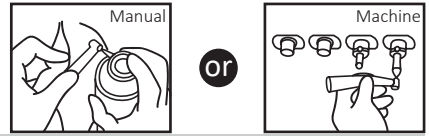


⚠ CAUTION

- If the chuck is not regularly cleaned, the chuck grip may be weakened and the bur may be accidentally released while in operation.
- Always hold the Spray Can upright.
- To prevent the handpiece from slopping from the Nozzle, always hold the handpiece securely to the Nozzle.

3.4.9 Machine Lubrication

Manual with oil spray or oil machine like the following pictures.
When using the oil machine, please observe the following note:
Manually maintain high-speed handpieces with oil spray immediately after use.



⚠ CAUTION

- Measures to maintain/lubricate the transfer instrument must be made AFTER each cleaning and disinfecting process and before each sterilization.
- If the collet is not regularly inflated, wear on the chuck holder will occur, causing the bur to accidentally loosen during operation.

3.4.10 Inspection

Check the handpiece after lubrication for any function damage, visible residual soiling and surface changes.
Reprocess any handpieces that are still soiled.

3.4.11 Packaging

The handpiece must be individually sealed in a sterilization bag. A standard sterilization pouch according to ISO 11607-1 must be used. Ensure that the pouch is large enough to contain the handpiece without stressing the seals.

3.4.12 Sterilization

Sterilization is required before first use and after each use. Please sterilize the handpiece by autoclave steam sterilizer according to EN 13060 Type B for pre-vacuum sterilization, and under the following sterilization parameters:

- Pre-vacuum autoclave at 134°C for 3 minutes, or
- Gravity type autoclave at 121°C for 30 minutes, or 132°C for 15 minutes.
- Dry time: 30 minutes

⚠ CAUTION

- Please follow the steps to sterilize when first time use and keep it well stored after sterilization.
- DO NOT use any other ways not recommended by manufacturer to sterilize the handpiece.
- Immediately after use, the product should be cleaned, disinfected, lubricated and sterilized. If blood remains on the external or internal surfaces, it can become clotted and cause rust.

3.4.13 Drying After Sterilization

Please dry the handpiece for at least 30 minutes using the sterilization dry cycle and allow the handpiece to cool to room temperature in pouch prior to use. If moisture is present, increase your sterilization dry cycle appropriately.

⚠ CAUTION

- Heating element may be located at the bottom of the chamber, where the temperature locally may exceed the set value. Please place the handpiece on the center or the upper tray.
- Do not autoclave the handpiece with other instruments even when it is in a pouch. This is to avoid discoloration and damage to the handpeice from chemical residue on other instruments.
- Do not heat or cool down too quickly. A rapid change in temperature could cause damage to the product.
- Please store at dry, dark, cool place after each sterilization.
- Do not touch the product immediately after autoclaving as it will be very hot and must remain in a sterile condition.

3.5 Storage

The handpieces should be stored in packaged state and protected from dust with minimum exposure to germs in a dry, dark and cool space. Comply with the expiry date of the sterilized items.

3.6 Periodical Maintenance Checks

Please perform periodical maintenance checks monthly referring to the checkpoints below.
If any abnormalities are found, please do NOT use the handpiece and contact MicroP for repair immediately.

Checkpoints	Details
Appearance	Check the handpiece head and body to see if there is any crush or damages.
Head Cap	Check the Head Cap is firmly tightened and would not easily loosen.
Chuck System	Check the Bur can always firmly tightened in the Chuck and would not easily loosen by pulling it.
Rotation	Operate the handpiece and check for abnormalities such as abnormal rotation, vibration, noise, and overheating.
Water Spray	Operate the handpiece and check that the coolant water is equally flowing through the spray ports.
Leakage	Operate the handpiece and check if there is any air or water leakage from the handpiece other than the spray ports.

⚠ CAUTION

- Please always be careful of the sharp point of the bur while you are checking the handpiece.
- Lack of periodical maintenance checking might lessen the detection of malfunctions and cause careless injuries.

4. Disposing Products

Disposal of the Medical Devices
In order to avoid the health risks of operators handling the disposal of medical devices, as well as the risks of environmental contamination, please do not dispose of the medical devices with domestic waste. Please follow your country-specific laws, directives, and guidelines for the disposal of used medical devices and make sure that they are disinfected or sterilized before disposal.

Disposal of the Packaging Material
All packaging materials have been selected according to environmental compatibility, disposal aspects and recyclability. Please recycle the materials to relevant collection and processing system for the duties towards the environment.

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