

Air-Turbine Handpiece

Midwest 45



INSTRUCTIONS FOR USE

Thank you for purchasing the Midwest 45 handpiece series.

For optimum safety and performance as well as to avoid causing harm to people, read this manual thoroughly before using the instrument and pay close attention to warnings and cautions. Keep this manual in a readily accessible place for quick and easy reference.

This manual corresponds to the following models of the Midwest 45 series, which capable to attach directly to ISO 9168 Type 3 connection tubes or couplings manufactured by other companies.

Product Name	Model	Description	Connection
Midwest 45	745244	K-Style NFO	KaVo MULTIflex/MULTIflex LUX Coupling
Midwest 45	745044	FBE NFO	ISO 9168 Type 3

Trademarks and Registered Trademarks:

Parts of the names of companies, products, services, etc. used in this manual may contain either trademarks or registered trademarks owned by each company.

The user (e.g., healthcare facility, clinic, hospital, etc.) is responsible for the management, maintenance, and use of medical devices.

Do not use the Midwest 45 handpiece series for purposes other than its specified dental treatment purpose.

The following symbols and expressions indicate the degree of danger and harm that could result from ignoring the corresponding instructions:

⚠ WARNING This alerts the user of possibility of extremely serious injury or complete destruction of the device as well as other property damage including the possibility of fire.

⚠ CAUTION This alerts the user of the possibility of minor or moderate injury to the patient.



This informs the user of important points concerning operation or the risk of device damage.

Disclaimers

Dentsply Sirona will not be responsible for accidents, product damage, or bodily injury resulting from:

- Repairs made by personnel not authorized by Dentsply Sirona.
- Any changes, modifications, or alterations of its products.
- The use of products made by other manufacturers, except for those procured by Dentsply Sirona.
- Maintenance or repairs using parts or components other than those specified by Dentsply Sirona or other than in their original condition.
- Operating the device in a manner other than described in the operating procedures in this manual or in a manner inconsistent with the safety precautions and warnings in this manual.
- Workplace, environmental, or installation conditions that do not conform to those stated in this manual, such as an improper electrical power supply.
- Fires, earthquakes, floods, lightning, natural disasters, or forces majeures.

In Case of Accident

If an accident occurs, this device must not be used until repairs have been completed by a qualified and trained technician authorized by the manufacturer.

TERMS AND CONDITIONS

Dentsply Sirona warrants the Product as follows:

- Warranty Term.**
The manufacturer warrants that the Product will be free from defects in materials and workmanship for 12 months.
- Items Not Covered by Warranty.**
This Warranty will not cover parts of the Product or consumables which normally need to be replaced such as glass or rubber components, lamps, cartridge, ball bearings and the like. Further, this warranty will not cover defects or damage caused by:
 - Failure to operate or use the Product in accordance with the Operation Instructions or warning/cautionary labels.
 - Modifications of the Product, connecting the Product to other products, or using components or replacement parts not specified or approved by Dentsply Sirona
 - Repairs performed by parties not designated by Dentsply Sirona
 - Accidents or forces outside of Dentsply Sirona's control, such as dropping the Product or collision of the Product with other objects, fire, flood, natural disaster, etc.
 - Use or operation of the Product in settings or under conditions not specified by Dentsply Sirona or set forth in the Operation Instructions including, without limitation, unauthorized changes in equipment settings, connection to unauthorized devices.
- Remedies of Customer.**
Customer must present this Warranty when claiming coverage or application thereof, and either ship or deliver the Product to an authorized location of Dentsply Sirona or its subsidiaries or authorized dealers. Upon receipt and verification of this Warranty, inspection of the Product, and determination of coverage by this Warranty, Dentsply Sirona will, at its sole option, supply the parts or components either replaced or repaired free of charge to the Customer. Delivery and shipping charges are the responsibility of the Customer.
- LIMITATIONS AND EXCLUSIONS FROM WARRANTY.**
The remedy set forth in paragraph 3 is the sole and exclusive remedy of Customer. DENTSPLY SIRONA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES AND SPECIFICALLY EXCLUDES ALL OTHER WARRANTIES INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL DENTSPLY SIRONA BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL, DIRECT OR INDIRECT, OR SPECIAL DAMAGES OF ANY KIND INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF REVENUE, LOSS OF BUSINESS OR BUSINESS OPPORTUNITY, OR OTHER SIMILAR FINANCIAL LOSS ARISING OUT OF THE PERFORMANCE, USE OR INTERRUPTED USE OF THE PRODUCT.
- Repairs Not Covered by Warranty.**
With respect to repairs not within the period of this Warranty or otherwise not covered by this Warranty, Dentsply Sirona will perform the same, timely, efficiently, and for an appropriate cost.

12 Months

Intended Use

■ Purpose

This device transduces compressed air into rotational power and transfers it to a bur, which is attached onto the head of the instrument to cut and polish teeth or artificial dentures.

■ User Profile

- a) Qualification : Dentist, doctor, or legally licensed professional
- b) Education and Knowledge : User needs dentistry education.
- c) Language : English or local language
- d) Experience : User needs dentistry experience.

■ Patient Population

Age, weight, nationality, and sex are not relevant.

■ Body Part or Tissue Type

Teeth or artificial dentures

■ Environment

Operating environments

- Temperature : +10°C to +40°C (+50°F to +104°F)
- Humidity : 30% to 75% (without condensation)
- Atmospheric Pressure : 70 kPa to 106 kPa

Transport and Storage environments

- Temperature : -10°C to +70°C (+14°F to +158°F)
- Humidity : 10% to 85% (without condensation)
- Atmospheric Pressure : 70 kPa to 106 kPa

* Do not expose the device to direct sunlight for an extended period of time.

* If the device will not be used for an extended period of time, store it in a clean, dry place after autoclaving it.

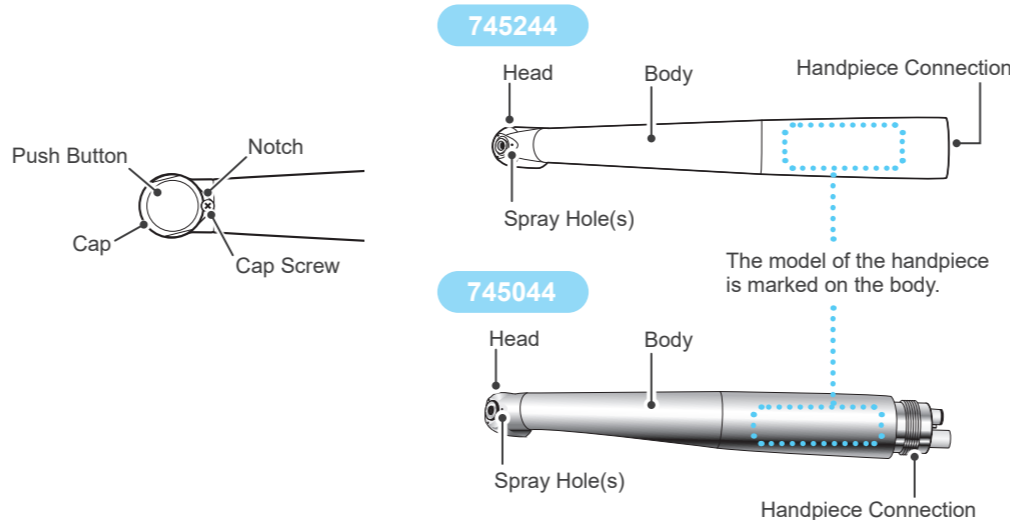
■ Medical Indications

Cut and polish the tooth or artificial dentures

■ Supposed Useful Life

The useful life of this device is 4 years from the date of installation provided it is regularly and properly inspected and maintained.

Parts Identification



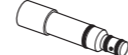
Sold Separately for each item

Spray Hole Wire
Code No.: 464197R



(Autoclavable)

Spray Nozzle
for K-Style
Code No.: 380205



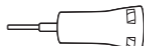
(Alcohol Disinfectable)

Maintenance Oil Spray
Midwest Plus Spray
Code No.: 380080M



(Alcohol Disinfectable)

Chuck Grip Tester
Code No.: 3327793



(Alcohol Disinfectable)

Technical Specifications

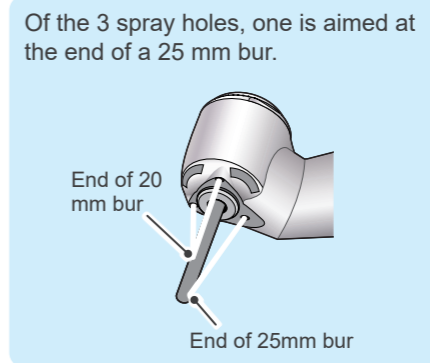
* Use this device with dental treatment units that conform to IEC 60601-1.

* Specifications may be changed without notice due to improvements.

Model	745244	745044
Description	K-Style NFO	FBE NFO
Length [mm]	115	125
Weight [g]	57	45
Bearing Type	Ball bearing	
Chuck Type	Push chuck	
Cartridge Type	Capsule cartridge	
Air Pressure [MPa] (at handpiece end)	0.20 to 0.29	
Recommended Air Pressure [MPa] (at handpiece end)	0.23 to 0.25	
Water Pressure [MPa] (at handpiece end)	0.05 to 0.20	
Recommended Water Pressure [MPa] (at handpiece end)	0.10 to 0.20	
Exhaust Pressure [MPa] (at handpiece end)	0.03 or less	
Maximum Power [W] ¹ (for 0.29 MPa handpiece end pressure)	20	
Rotation Speed [rpm] (for 0.2 MPa drive air pressure)	370,000 ±30,000	
Air Flow [NL/min] (for 0.29 MPa handpiece end pressure)	60 or less	
Number of Spray Holes	3	
Head Diameter [mm]	10.5	
Head Height [mm]	13.2	
Usable Bur Configuration: Type 3 Shank (FG)	Shank Diameter [mm]	1.59 to 1.60
	Shank Length [mm] ²	10 or more
	Total Length [mm] ²	20 to 25
	Tip Diameter [mm]	2.0 or less

¹ The measurement method of the power is based on "Output power of high-speed turbine handpiece" in ISO 14457 Dentistry – Handpieces and motors.

² Do not use miniature burs or short-shank burs.



Symbols

* Some symbols may not be used.

- SN** Serial number
- UDI** Unique device identifier
- REF** Catalogue Number
- Autoclavable up to +135°C (+275°F)
- Supports Washer-Disinfectors
- GS1 DataMatrix
- Temperature limitation
- Humidity limitation
- Atmospheric pressure limitation
- Manufacturer
- Date of manufacture
- Refer to instructions for use
- Rx Only Prescription Device
- CAUTION: Federal law restricts this device to sale by or on the order of a dentist. (Valid only for U.S.A.)
- Packaging unit

Usage

Precautions

⚠️ WARNING

- To prevent infection, be sure to perform the handpiece reprocessing procedures after use with each patient. **Reprocessing**
- Always wear personal protective equipment (PPE), such as safety glasses, gloves, a mask, etc. when using this handpiece.
- In cases of tooth extractions, split teeth, endodontic treatment etc. or incision or open wounds in soft tissue, care must be taken to avoid causing a subcutaneous emphysema due to emitted air from the handpiece.
- Before use, run the handpiece outside the patient's oral cavity to make sure of the following points:
 - Bur does not wobble
 - No abnormal vibration or sound
 - No backlash movement at the head, push button, or cap
 - No heat is generated at the head, push button, or cap
 - Rotation speed and direction are correct
- Stop using the handpiece immediately if the handpiece is hot, the rotation speed reduces, or makes an abnormal vibration or noise. Ball bearings inside the head are consumable parts.
- Stop using the handpiece immediately if the handpiece gets damaged; the head could overheat and result in burns to the user or patient.
- Wait until rotation stops completely before inserting or removing burs. Holding down the push button while the handpiece is in operation could result in burns to the user.
- Do not operate the handpiece with the cap is contacting soft tissue such as buccal mucosa inside the oral cavity, or the push button is pressing against the antagonistic teeth. This could result in damage to the dental pulp or burns to the patient.
- Stop using the handpiece immediately if the bur becomes detached while you are drilling a tooth.
- Do not apply force in a direction that could result in the bur becoming detached (scooping up). Otherwise, burs may become detached and cause injury to the patient's oral cavity or be swallowed by the patient.
- Always spray water and use the soft touch (feather touch) techniques while using the handpiece to avoid injury to the dental pulp.
- Wait for a bur to come to a complete stop before putting it into or taking it out of the patient's oral cavity.

⚠️ CAUTION

- Always perform pre-use inspection before using the handpiece. **1 Before Use**
- If you notice any abnormal noise, vibration, heat generation, or wobbling of the bur during use, replace the bur with a new one and then try operating the handpiece to check if the problem has been resolved. If this does not resolve the problem, stop using the handpiece immediately and have it professionally repaired.
- Be sure to remove the bur when storing the handpiece in the dental chair unit. Failure to do so could injure another person or damage property.
- If the bur gets stuck in the handpiece, do not forcibly remove it using pliers or other tools; have it professionally repaired instead. If excessive force is applied, the chuck mechanism may become damaged and the bur may become detached during use.
- Follow the bur manufacturer's recommendations for rotation speed and direction.
- Handle the handpiece carefully; do not drop it or let it swing and bang against the dental treatment unit.
- Be sure to use a rubber dam appropriately.

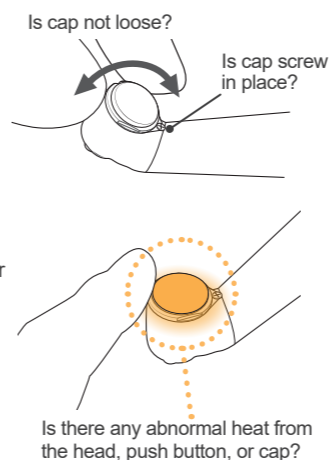
- ⚠️ Crown removal and similar operations produce considerable vibration, which may result in the bur coming out during use or the bur getting stuck in the handpiece after use. To avoid these problems, stop using the handpiece at regular intervals and take the bur out and reinsert it occasionally, rather than operating the handpiece continuously.
- ⚠️ During the treatment, if the push button is pressed against the teeth opposite the one being treated, it will result in wear to the inner surface of the push button, making insertion and removal of the bur difficult.

1 Before Use

* The handpiece is not sterilized before shipping. It must be autoclaved before it is used for the first time.

Before using the handpiece, always check the following points outside the oral cavity.

- The cap and cap screw have been tightened properly.
- No gaps or backlash at the connection of the cap, head, and body.
- No scratches, deformation, rust, or dirt on the handpiece.
- Connect the handpiece to a coupling, and give it a light tug to check that the handpiece is securely connected.
- Run the handpiece for approximately 10 seconds and check that there is no speed reduction, abnormal vibration, or noise.
- Immediately after the above test, touch the head, push button, and cap with your hand and check that there is no heat.
- The spray is emitted from all of the spray holes.
- Check the handpiece connection; it is not loose, there is no air or water leakage from the connection, and the light comes to the head through the light guide. (only for models with light capability)
- Bur is inserted all the way, securely chucked, and does not wobble.
- Run the handpiece with a bur inserted and check that there is no abnormal vibration or noise.
- Make sure air is not emitted in the direction of the bur.



If any abnormality is found, do not use the handpiece and have it professionally repaired.

⚠️ WARNING

- If the cap or the cap screw are loose or if they are damaged or worn, the cap or the cartridge could fly off inside the oral cavity and cause an injury.

- ⚠️ Use compressed dry air that does not contain debris or oil. Failure to do so could cause a malfunction.
- ⚠️ Set the air and water pressure for the dental treatment unit to within its recommended range.

Technical Specifications

Burs

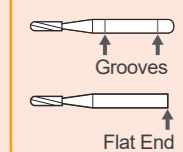
* Use burs or points with shanks that conform to ISO 1797-1.

Technical Specifications

⚠️ WARNING

- Never use the types of burs described below. Using such burs is extremely dangerous as they may become detached and cause injury to the patient's oral cavity or be swallowed by the patient.
 - Does not conform to ISO standards.
 - Has any grooves, scratched or damaged blades or shanks.
 - Deformed, bent, rusty, chipped or broken
 - It has been modified (such as short-shank burs).

DO NOT USE



⚠️ CAUTION

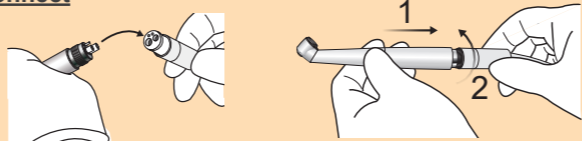
- When using welded or blazed burs, ensure that the bur tip does not wobble.
- Be sure to follow the requirements regarding the usable bur length and the shank length. Using non-supported burs is dangerous as they may become detached and cause a malfunction.
 - Some bur detergents contain ingredients that cause metals to rust. Be sure to clean up the bur detergent before inserting the bur into the chuck.
 - Even if it is an unused bur, it may not be balanced well due to a deformity. In this case, there is a risk of chuck or bearing damage due to bur wobble. Stop using the handpiece immediately if you notice that the rotation noise is significantly loud.
 - Do not use burs with a flat end at the shank, nor with any grooves or contaminants on the shank. Using these burs will cause the handpiece to malfunction: the chuck will lose its gripping strength and it may be difficult to take the bur out.
 - If any detergent, dust, or other foreign matter enters the chuck, contact your local dealer or Midwest Air Repair to request an inspection.

2 Handpiece Connection

* For model 745244, refer to the accompanying user manual for the couplings or turbine tubes.

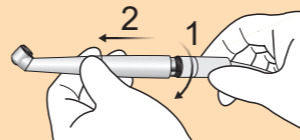
745044

Connect



Line up the projections on the handpiece with the indentations in the tube and then tighten up the cover nut.

Disconnect



Hold the handpiece and unscrew the cover nut of the tube.

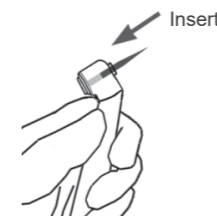
⚠️ WARNING

- Before connecting the handpiece, make sure that the handpiece connection is not loose, worn, or damaged. For models with light capability, also check the lamp cover.
- Before use, give the tube a light tug to check if the handpiece is securely connected and run the handpiece outside the patient's oral cavity. If the connection is loose, the handpiece could be dismantled and cause a hazardous situation.
- Wait for the handpiece to stop rotating before connecting or dismantling the handpiece.

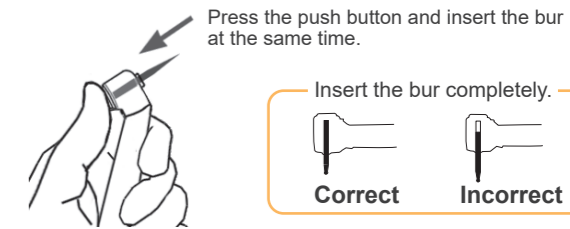
- ⚠️ Be sure the handpiece connection is free of dust such as cotton fibers or debris of O-ring, etc. Failure to do so could damage the instrument.

3 Installing/Removing Bur

Installing

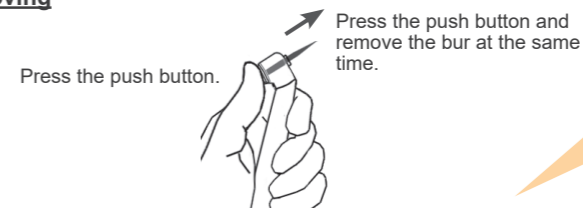


Be sure to insert the bur straight all the way in.



Press the push button firmly and insert the bur all the way in at the same time.

Removing



Hold down the push button firmly and pull the bur out straight.

It is easier to press the push button if you support the body of the handpiece with your index finger positioned at a point between the head and the body.

⚠️ WARNING

- Insert the bur firmly as far as it will go into the chuck, and give it a light tug to make sure it is held securely.
- Using the handpiece with a bur that is improperly inserted could result in a bur coming out and injuring the oral cavity or being swallowed by the patient.

⚠️ CAUTION

- Wear gloves and take extra care not to injure your fingers when inserting or removing the bur.

- ⚠️ When inserting or removing a bur, make sure that the rotation is stopped completely. Failure to do so will result in wear to the inner surface of the push button, making insertion and removal of the bur difficult.
- ⚠️ Do not insert or take a bur out without pressing the push button.

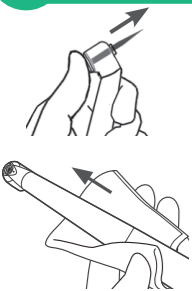
Reprocessing

⚠ WARNING

- Always wear personal protective equipment (PPE), such as safety glasses, gloves, a mask, etc. when performing the handpiece reprocessing procedures.

* Be sure to perform the handpiece reprocessing procedures promptly after use with each patient by following procedures 1 through 6.

1 After Use



Remove the bur from the handpiece, turn on the water supply switch of the dental treatment unit, and run the handpiece for 20 seconds.

Wipe the whole handpiece from the handpiece connection to the head with a piece of gauze that has been dampened with tap water or protein anticoagulant agent to remove visible contaminants. Disconnect the handpiece from the treatment unit, and clean the handpiece.

* If you cannot clean the handpiece immediately, spray protein anticoagulant agent over the handpiece and clean it within 2 hours.

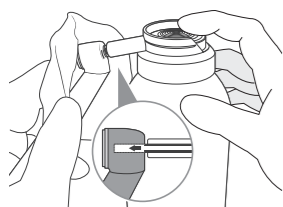
Usable Protein Anticoagulant: Neutral and foamless agent applicable to aluminum and brass materials.

- ❗ Be sure to remove the bur from the handpiece after use. If the bur is left in the handpiece, it may get stuck.
- ❗ Be sure to remove contaminants promptly after use with each patient. If the parts are left contaminated with blood, it will be difficult to remove.
- ❗ Do not use any chemicals that may coagulate proteins before cleaning.
- ❗ If a medical or adhesive agent being used for treatment has adhered to the component, immediately wash it off under tap water.
- ❗ Do not immerse the handpiece in protein anticoagulant agent.
- ❗ If dust or other impurities enter the handpiece, they may cause poor rotation or poor spray delivery.

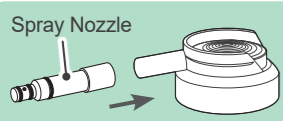
3 Lubrication

- * Be sure to lubricate the handpiece with the Midwest Plus Spray after use with each patient. Be sure to lubricate the handpiece after the cleaning and disinfection steps or before autoclaving.

745244



Cover the head with gauze, press the spray nozzle tip against the bur insertion hole, and then spray for 2 seconds.



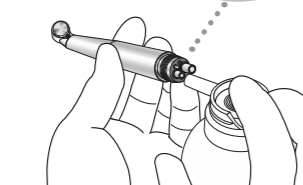
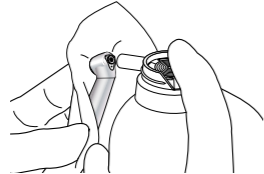
Insert the spray nozzle into the handpiece connection end, hold it firmly, and then spray for 2 seconds.



Connect the handpiece to its tube. Operate the handpiece for at least 15 seconds to expel excess oil from the head, and then wipe it off with a piece of gauze. Disconnect the handpiece from the tube.

* When friction-produced debris comes out from the head, re-lubricate both the bur insertion hole and handpiece connection end again.

745044



Press the spray nozzle against the handpiece connection end for the drive air, hold the handpiece firmly, and then spray for 2 seconds.

Lubrication and excess oil removal can also be performed using the Midwest Automate handpiece maintenance system.

⚠ WARNING

- Never direct the spray towards a person.
- Do not use the spray in a closed space without proper ventilation. Open windows or turn on exhaust fans to make sure the room is well ventilated.
- Do not get the spray in your eyes. If you accidentally get it in your eyes, wash your eyes with plenty of water and see a doctor.
- Do not get the spray on your skin. If it gets on your skin, wash it off with soap and water.
- If used in a sink or other enclosed space, a flammable propellant could permeate the air; keep the area free of open flames or other ignition sources.

- ❗ Do not use any type of maintenance spray other than the Midwest Plus Spray.
- ❗ Make sure to use the spray nozzle designed for the handpiece connection.
- ❗ Always keep the maintenance spray can in an upright position when using and storing.
- ❗ Failure to lubricate the handpiece will result in a malfunction.
- ❗ If spraying continues for more than 5 seconds, the moisture inside the handpiece may freeze up. Operating the handpiece under this condition could damage the ball bearings.
- ❗ Insert the spray nozzle tip straight into the bur insertion hole and pull it straight out. Failure to do so may damage the nozzle tip.
- ❗ To maintain optimum performance, be sure to spray both the bur insertion hole and handpiece connection end.
- ❗ When wiping off excess oil from the head, make sure that you do not touch the push button while the handpiece is running. Otherwise, it will result in wear to the cap and cartridge, making insertion and removal of the bur difficult.



2 Cleaning & Disinfection

Automated Cleaning and Disinfection



- * Be sure to use washer-disinfectors that conform to ISO 15883-1 for cleaning and disinfection.
- * If your region is susceptible to hard water scale buildup, use deionized water (ion-exchanged water) for the final rinse process.

Recommended Conditions

Unit Name	Mode	Detergent (concentration)	Rinse (concentration)
Miele G7881	Vario TD	neodisher MediClean (0.3% to 0.5%)	neodisher MediKlar (0.03% to 0.05%)

Put the handpiece in a handpiece holder. Select the washer-disinfector's mode as shown in the chart above and start the process. (For thermal disinfection, setting the operation mode to A₀ = 3000 is recommended.) After completion of the process, expel remaining moisture inside the handpiece with compressed air.

- For details on handling medical agents, adjusting their concentration, and about water quality, refer to the accompanying user manual for the washer-disinfector.
- Be sure to lubricate the handpiece after washing.

⚠ WARNING

- Any moisture left inside the handpiece after the cleaning could cause corrosion, or poor lubrication and sterilization.
- ❗ If the handpiece is cleaned without using the handpiece holder, it could result in corrosion or clog in the air or water line and damage the handpiece due to impurities or remaining medical agents.
- ❗ Inappropriate cleaning methods and medical agents will damage the handpiece.
- ❗ Do not use strong acidic or alkaline chemicals that could cause the metal to corrode.
- ❗ Moisture left inside the handpiece after cleaning could result in the remaining water coming out during use.
- ❗ Do not start drying when the handpiece is filled with water. Otherwise, this could cause corrosion due to condensation of the rinsing solution.
- ❗ Do not leave a handpiece inside the washer-disinfector.

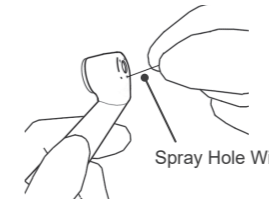
⚠ CAUTION

- Be sure to autoclave the handpiece; the reprocessing procedures must continue beyond the disinfection step.

Manual Cleaning and Disinfection



Clean the parts in running water with a toothbrush.



Clean the spray hole(s) with the spray hole wire, and rinse off the handpiece in running water.

Attach a suitable adapter to the WL-clean can. Insert the adapter into the handpiece connection end. Spray 3 times for 2 seconds each. Remove the handpiece from the adapter and place it aside. Wait for at least 1 minute for the cleaning agent to work effectively.



Attach a suitable adapter to the WL-cid can. Insert the adapter into the handpiece connection end. Spray for approximately 3 to 5 seconds. Remove the handpiece from the adapter and place it aside. Wait for approximately 1 to 2 minutes for the disinfectant to work effectively.

Attach a suitable adapter to the WL-dry can or WL-Blow. Connect the WL-Blow to the compressed air line properly. Insert the adapter into the handpiece connection end. Blow compressed air for approximately 3 seconds.

Wipe the whole handpiece with a piece of microfiber cloth (e.g., Toraysee for CE) that has been dampened with mikrozyd AF liquid, FD322, or Rubbing alcohol.

- ❗ Do not clean the handpiece with ultrasonic cleaning or immersion cleaning devices.
- ❗ Do not use disinfectants other than those described above.
- ❗ Do not immerse the handpiece in or wipe it with any of the following: functional water (acidic electrolyzed water, strong alkaline solution, and ozone water), medical agents (glutaral, chloride-containing, etc.), or any other special types of water or commercial cleaning liquids. Such liquids may result in metal corrosion or adhesion of the residual medical agent to the handpiece.

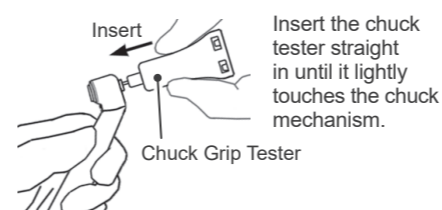
4 Inspection

Test Chuck's Gripping Strength

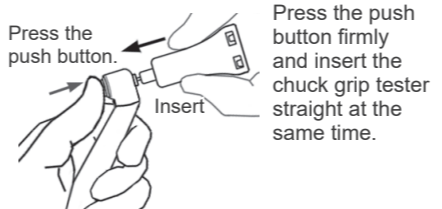
* Test the chuck's gripping strength when you sense it is weakened or at least once a day.

⚠ WARNING

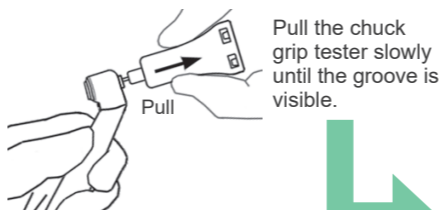
- Weakening of the chuck's gripping strength could result in detaching a bur causing injury to the patient's oral cavity or in a bur being swallowed by the patient.
- The chuck grip tester is specifically designed for the Midwest 45 handpiece series. Do not use the chuck grip tester with any other handpieces.



Insert the chuck tester straight in until it lightly touches the chuck mechanism.

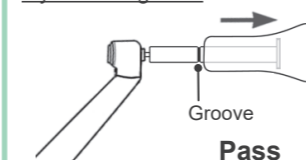


Press the push button firmly and insert the chuck grip tester straight at the same time.



Pull the chuck grip tester slowly until the groove is visible.

If you see a groove

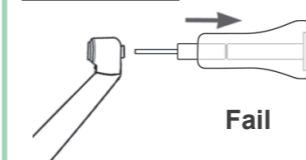


Pass

Chuck's gripping strength is normal.

Stop pulling as soon as you see the groove, and slowly return the chuck grip tester to its original position. Press the push button firmly and pull the chuck grip tester out straight.

If you do not see a groove and the tester comes out

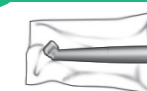


Fail

Chuck's gripping strength is weakened.

Lubricate the chuck, and then recheck the gripping test. If the gripping strength is not regained and it fails the test, replace the cartridge.

5 Packaging



Make sure that the handpieces are not wet, and then put them in individual sterilization pouches. Use only sterilization pouches that conform to ISO 11607.

- ❗ Do not use any sterilization pouches that contain hydrosoluble adhesive ingredients such as PVA (polyvinyl alcohol). Otherwise, its adhesive ingredient may seep into the handpiece during sterilization, resulting in a solid residue that may cause a failure to rotate properly or poor water delivery. Note that even ISO 11607 conformable sterilization pouches may contain PVA.

6 Sterilization

Autoclave the handpieces. After autoclaving, store them in a dry environment.

Recommended Temperature and Time

Sterilizer Type	Temperature	Time	Drying Time after Sterilization
Pre-vacuum Type (Dynamic Air Removal, class B)	+135 °C (+275 °F)	3 minutes	16 minutes
Gravity Type (except class B)	+135 °C (+275 °F)	10 minutes	30 minutes

⚠ WARNING

- To prevent the spread of infections, the handpiece must be autoclaved after each patient's treatment has been completed.

⚠ CAUTION

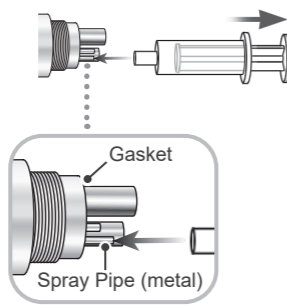
- Handpieces are extremely hot after autoclaving; wait for them to cool off before touching.

- ❗ Do not sterilize the handpieces by any method other than autoclaving.
- ❗ Remove a bur from the handpiece before autoclaving.
- ❗ Failure to clean and lubricate the handpiece before autoclaving will result in a malfunction.
- ❗ The sterilization and drying temperatures must not exceed +135°C (+275°F). If they exceed +137°C (+278.6°F), it will result in discoloration of the handpiece or a malfunction.
- ❗ Do not let the handpiece come into contact with the heat source or chamber wall inside of the autoclave to avoid damage of the O-rings or other parts due to the high temperature.
- ❗ When autoclaving the handpiece in an upright position, make sure that it is placed in the autoclave with its head at the top.
- ❗ Do not leave the handpiece in the autoclave.

Maintenance and Inspection

- * The Midwest 45 handpiece series should be inspected every 3 months in accordance with the Regular Inspection List.
- * Maintenance and inspection are generally considered to be the duty and obligation of the user, but if, for some reason, the user is unable to carry out these duties, they may rely on a qualified medical device provider. Contact your local dealer or Midwest Air Repair for details.
- * For repairs, contact your local dealer or Midwest Air Repair.

Regular Inspection List

	Item	Procedure
1	Chuck's Gripping Strength	Check the gripping strength with the chuck grip tester. If the gripping strength is weakened, replace the capsule cartridge.
2	Cap	Check if the cap of the head or its screw is loose.
3	Rotation and Spray	Run the handpiece for approximately 10 seconds and check that there is no reduction in speed or abnormal vibration or noise, and the spray is a fine mist.
4	Heat Generation	Immediately after the test 3 above, touch the head, push button, and cap with your hand and check that there is no heat.
5	One-way Valve (Model 745044)	<p>Cover the spray pipe with the end of a plastic disposable syringe with the needle removed. Press the end of the syringe flush against the gasket on the coupling so that it is air tight. Pull the plunger out slightly and see if it sucked back towards its original position. If it does not move back at all, the one-way valve must be replaced.</p>  <p>CAUTION</p> <ul style="list-style-type: none"> • The end of the syringe must be pressed firmly against the gasket so that air cannot leak into the syringe. Otherwise the plunger will not go back even if the one-way valve is working normally.

- * Dentsply Sirona will offer replacement parts and service for the product for a period of 5 years after the manufacturing of the product has been discontinued. Replacement parts and service will continue to be available during that period.
- * Replace the parts as necessary depending on degree of wear and length of use.
- * Order parts from your local dealer.

Troubleshooting

If the Midwest 45 handpiece series does not seem to be working properly, first inspect the points described below. Before inspection and adjustment, check to see if the main switch of the device, such as a dental treatment unit that the handpiece is connected to, is turned on and if the main air and water valves are open.

- * For repair or other types of service, contact your local dealer or Midwest Air Repair.

◆ Cannot insert burs/Chuck's gripping strength is weakened

Lubricate the chuck and then reinsert an unused bur to check if the problem has been resolved. If this does not resolve the problem, replace the cartridge (as well as the cap if necessary).

◆ Poor rotation

If air is coming out of the head

After lubricating the handpiece connection, attach an unused bur and check again to see if the problem has been resolved. If abnormal rotation is still observed, replace the cartridge.

If air is not coming out of the head

Disconnect the handpiece from the coupling or the tube and operate the foot control. If air comes out of the tube, have the handpiece professionally repaired.

◆ Handpiece does not rotate after autoclaving

Manually rotate the bur inserted into the handpiece. If the bur rotates, the cause of the problem may be a caked adhesive ingredient inside the handpiece, which seeped from sterilization pouches during sterilization. Clean the inside of the handpiece with a washer-disinfector. If this does not resolve the problem, have the handpiece professionally repaired.

◆ Poor water delivery

If no water is coming out of the spray hole(s)

Disconnect the handpiece from the coupling or the tube and operate the foot control. If water comes out of the tube, have the handpiece professionally repaired.

If any of the spray holes does not emit water

Clean the spray hole with the spray hole wire. If the spray hole still does not emit water, check the O-rings on the coupling or the tube. In addition, check the water volume control for the coupling or the dental treatment unit.

Service and Disposal

The Midwest 45 handpiece series may be repaired and serviced by:

- The technicians of Midwest Air Repair's subsidiaries worldwide.
- For repair or other types of service, contact your local dealer or Midwest Air Repair.

Standards and Procedures for the Disposal of Medical Devices

When disposing of this device, it should fall into the category of infectious waste.

The dentist or doctor must confirm that the device is uncontaminated, and must then have it disposed of by a healthcare facility or an agent licensed and qualified to handle standard industrial waste and industrial waste requiring special treatment.



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