

1 Explanation of symbols

	See chapter 2. Safety
	Important information for the user
	Product can be sterilized in a steam sterilizer (Autoclave)
	Can be used in thermal disinfectors
	CE-mark – Confirms that this product fulfills all requirements for medical products
REF	Reference number
SN	Serial number

2 Safety

2.1 Description of danger levels

	CONTRAINDICATION AND RESTRICTION This indicates exemptions from responsibilities such as improper use and excess of design limit.
	DANGER This indicates potential direct dangers that may cause serious injuries, death, property damages such as total loss of the instrument or fire disaster.
	CAUTION This indicates potential indirect dangers that may cause serious injuries, death, property damages such as total loss of the instrument or fire disaster.
	ATTENTION This indicates potential dangers that may cause light to middle injuries, property damages such as partial loss of the instrument or loss of computer data.

2.2 Cautions for use

2.2.1 Non eligible patients

- ☞ Never use this product on patients
 - on a low salt diet (due to hypernatremia, edema, pregnancy toxemia, etc.),
 - having a serious ulcer in digestive organs,
 - having a renal dysfunction,
 - having cardiac dysfunction,
 - having asthma or chronic pulmonary disease,
 - having electrolyte abnormality due to hypochloric alkalosis,

- ☞ Avoid using this product on patients below, other than those stated in above 1):
 - having an intraoral injury or disease,
 - having a hyperemia, inflammation or bleeding in the intraoral cavity,
 - easily get oral mucosa inflammation or bleeding,
 - having allergies,
 - wearing contact lenses.

Depending on the patient physical conditions, allergy symptoms or stomatitis may seldom occur. In such a case, stop using this product.

3 Usage

- This product must be used only by qualified dental professionals and only for dental treatment.
- Never dismantle or modify this product.
- In case of trouble, do not repair by yourself, ask your dealer for repair.
- In case of deterioration or malfunction, do not use this product.
- Do not use this product when in an unmaintained condition.
- To operate correctly and safely, keep the cautions for use.
- Use sodium hydrogen carbonate powder for dental prophylaxis only. Other powder (for example, alumina powder) will cause a decrease in cleaning efficiency, powder clogging, or damage to the polisher.
- Do not reuse the powder.
- The powder must be filled into the powder cap. Filling into the chamber unit may cause a premature wear of the screw threads and insufficient sealing and powder scattering.
- Never spray into the subgingival, root canal, or extraction socket. It can cause accidental symptoms such as emphysemas.
- Never spray directly into the intraoral soft tissues (gingiva, mucosa). It can cause accidental symptoms such as surface damages.

4 Intended use

This product is intended to remove dental plaque, stain, and discoloration from tooth surface etc. by dental professionals during dental treatment.

5 Technical specifications

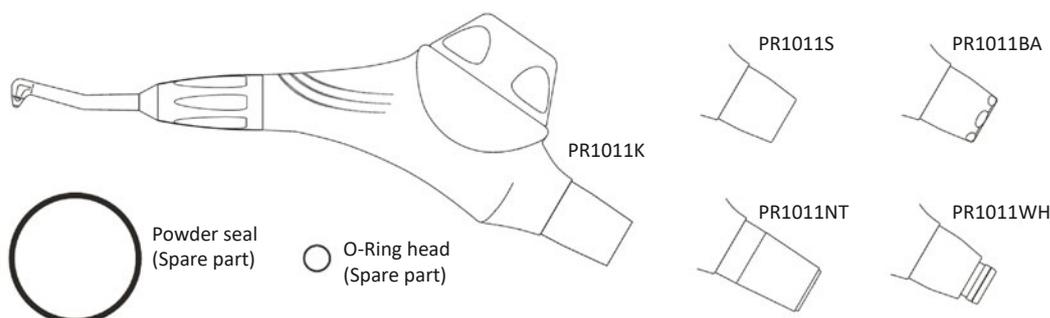
Item	PR1011				
Art. No.	PR1011K	PR1011S	PR1011WH	PR1011NT	PR1011BA
Connection	Multiflex® connection	Sirona® Quick connection	Roto Quick® connection	Match®/ Phatelus® connection	Unifix® connection
Powder consumption volume	4 g/ Min. (air pressure on coupler 0,4MPa/ 4 bar)				
Coupling air pressure	0,25 - 0,4 MPa (37 - 58 psi, 2,5 - 4,0 bar, 2,6 - 4,0 kgf/cm ²)				
Air consumption volume	12 L/ Min. (air pressure on coupler 0,4MPa/ 4 bar)				
Water flow volume	45ml/ Min. (water pressure on coolant 0,2 MPa)				
Length	201 mm (7,9 inch)	196 mm (7,7 inch)	200 mm (7,9 inch)	208 mm (8,2 inch)	296 mm 11,7 inch)
Weight (without powder)	147 g (5,2 oz.)	139 g (4,9 oz.)	139 g (4,9 oz.)	149 g (5,3 oz.)	136 g (4,8 oz.)

6 Characteristics

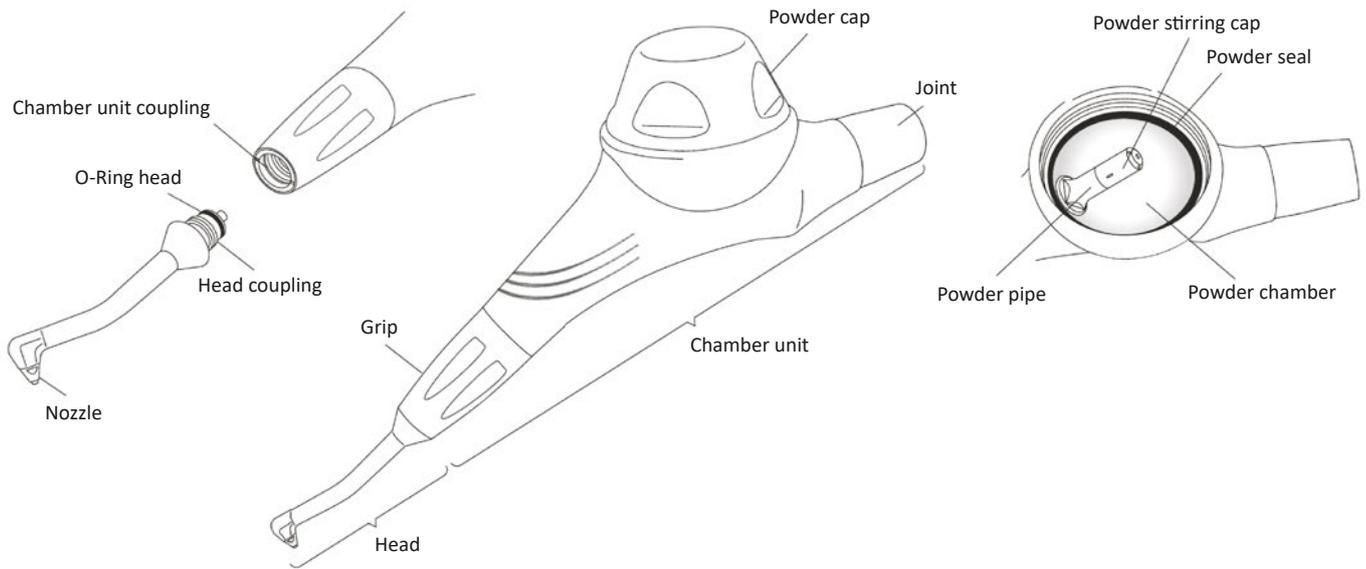
- The compact handpiece form allows easy movement between dental units and takes up little space for storage.
- The quick-disconnect system permits easy replacement with turbines and immediate use. No need for cumbersome installation and allows easy integration into your treatment system.
- The contra-angled head rotates 360 degrees, allowing excellent access to all areas.
- The detachable head allows easy maintenance in case of powder clogging.
- Driven by compressed air and water from the dental unit, polisher neither effects other medical devices and is not effected by electromagnetic waves.

7 Delivery package

The components and accessories below are included in the delivery kit. When you open the delivery package first time, confirm all components are included in the package. If something is missing, contact your dealer immediately. No powder is included in the delivery package.



7.1 Product components



8 Putting into service and operation

8.1 Preparation for use

 WARNUNG	CAUTION Do not impact this product (dropping, for example). The main body may be damaged.
 VORSICHT	ATTENTION - Use this product for the prescribed purpose according to the specified usage only. - When using other products which are compatible (such as peripheral devices and instruments) to this product, observe instructions for use of such devices or instruments.

- ☞ When unpacking the package first time, confirm all contents in **7 Delivery package** are included in the package.
- ☞ Confirm polisher has no defect or damage such as cracks.
- ☞ Clean with alcohol and sterilize in an autoclave according to instructions in **12 Sterilization**.
- ☞ To supply polisher with clean and dry air, drain air filter of the compressor in your dental office. Do not supply compressed air containing moisture. For drainage and regular maintenance of your compressor, please refer to your air compressor's instruction manual. Confirm the processor is maintained according to its instructions for use.

8.2 Air pressure setting (at first use)

8.2.1 Preparation of polisher

- ☞ If polisher is connected to a turbine hose, disconnect it from the turbine hose.
- ☞ Attach the head and powder cap to the chamber unit according to **8.3 Attaching the head** and **8.4 Attaching the powder cap**. Do not fill the powder yet.

8.2.2 Connection (PR1011K, WH, NT, S, BA)

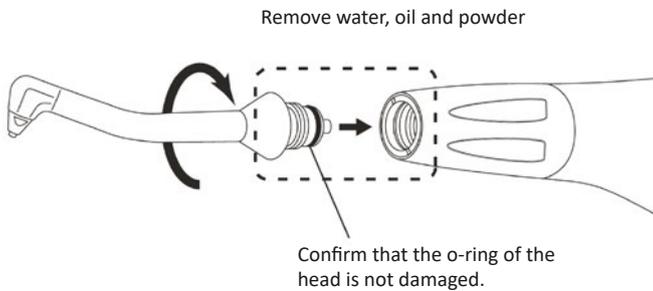
- ☞ Connect your coupling (separately sold) to your turbine hose. Confirm secure connection.
- ☞ Connect a pressure gauge to your coupling on your turbine hose until you hear a locking sound. Confirm the gauge is firm attached. If you don't have a pressure gauge, consult with your dental dealer.
- ☞ Connect polisher to the coupling of the pressure gauge until you hear a locking sound. Confirm the gauge is firmly seated.

8.2.3 Air pressure setting

- ☞ Turn off the water supply of your dental unit. Direct polisher to your cuspidor and depress your foot control to activate the dental unit.
- ☞ Adjust the air pressure of the unit until the gauge shows 0.25 to 0.4 MPa (about 2.6 to 4.0kgf/cm²).
- ☞ Detach the pressure gauge and polisher after pressure adjustment.

 WARNUNG	CAUTION
	<ul style="list-style-type: none"> - When connecting your coupling to this product, confirm secure connection after hearing a locking sound. Make sure the head and powder cap are firmly screwed in. An unstable attachment will invite injuries due to fall of the body and such parts, or powder scattering. - Never pull the handpiece out of your coupling while polisher is in operation. This may cause injury due to disconnection of the polisher. - The head and powder cap must not be detached during operation. This may cause injuries due to instrument becoming disconnected, or powder scattering. - The air pressure at the coupling must be set within 0.25 to 0.4 MPa (about 2.6 to 4.0kgf/cm²). Use at 2). an excess air pressure will damage tooth surface and cause patient pain. It may also cause trouble during use such as injuries due to instrument damage, or powder scattering.

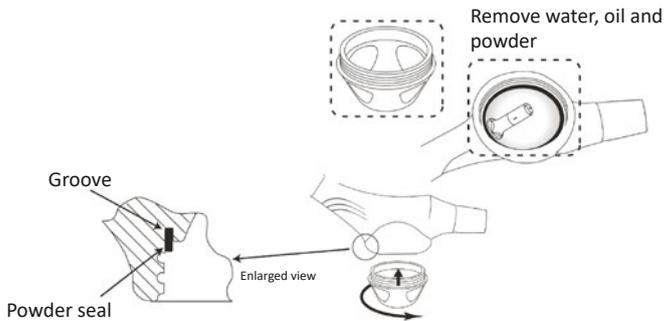
8.3 Attaching the head



- ☞ Polisher must be disconnected from a turbine hose of dental unit when attaching and detaching the head. If it is connected, disconnect from the turbine hose first.
- ☞ Confirm the o-ring of the head is not damaged.
- ☞ If water, oil, or powder adheres to head or inside the chamber unit's coupling, wipe off with a cotton swab or dry cloth.
- ☞ Align the head to the thread of the chamber unit's coupling, turn the head in the direction of the arrow in the illustration until it stops. Confirm secure attachment.

8.4 Attaching the powder cap

Water due to sterilization must be expelled by an idle run beforehand. Do not fill the powder yet.



- ☞ The powder cap must be attached or detached when polisher is not connected to a turbine hose. If connected, detach from the turbine hose.
- ☞ If water, oil, or powder adheres to inside chamber unit, powder cap, or powder seal, wipe off with a dry cloth.
- ☞ Confirm the powder seal (blue) is fully engaged in the groove of chamber unit shown in the illustration.
- ☞ Turn the powder cap in the direction of the arrow in the illustration. Confirm secure attachment.

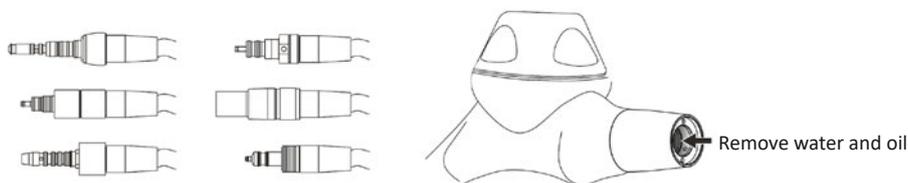
 WARNUNG	CAUTION
	<ul style="list-style-type: none"> - Powder cap and powder seal must be attached firmly. An unstable attachment will cause the powder cap to undo during use and may cause injuries or powder scattering. - Remove powder remaining in/on the screw threads of the powder chamber, powder cap, and sealing surface of the powder seal. Remaining powder may cause premature wear of the threads and insufficient sealing which may cause powder scattering. - In case of screw thread failure of the chamber unit including wear and/or deformation, stop using the polisher. Ask for repair of the chamber unit together with the powder cap.

 VORSICHT	ATTENTION
	<p>Remove water, oil, or powder remaining in/on the head, coupling of chamber unit, powder chamber, and powder cap. Otherwise, the powder Will get damp and cause clogging.</p>

8.5 Connection to the dental unit

8.5.1 Cleaning of the joint

- ☞ Confirm no water or oil remains in the coupling on your turbine hose. Remove with a dry cloth if remains.
- * When a handpiece (air turbine, air scaler, etc.) is detached, water and oil remain at the joint. Remove the water and oil without fail.
- ☞ Confirm no water or oil remains in the joint of polisher. Remove with a cotton swab if remains.



 VORSICHT	ATTENTION
	Remove water or oil remaining inside of the coupling on your turbine hose and joint of the chamber unit. Otherwise, the powder will become damp and cause clogging.

8.6 Connecting to a quick connector

- ☞ Connect a coupling (separately sold or included in the delivery kit) compatible with your polisher to your turbine hose. Confirm the coupling is firmly seated.

8.7 Connecting to a turbine hose

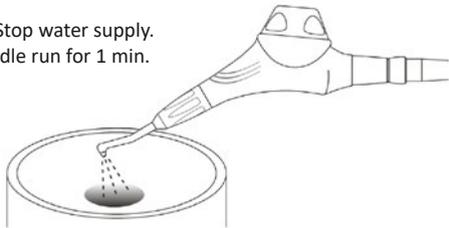
- ☞ Insert your coupling on your turbine hose into the joint of polisher until you hear a locking sound. Confirm the handpiece is firmly seated.
- ☞ If your coupling has a light source, turn off the illumination switch of your dental unit.

 WARNUNG	CAUTION
	When connecting your coupling to this product, confirm secure connection after hearing a locking sound. Make sure the head and powder cap are firmly screwed in. An unstable attachment will invite injuries due to fall of the body and such parts, or powder scattering.

 VORSICHT	ATTENTION
	To avoid shortening the life of the light source (light bulb) of your coupling, turn off the illumination of your dental unit when using this product.

8.8 Water removal in the channels (idle run)

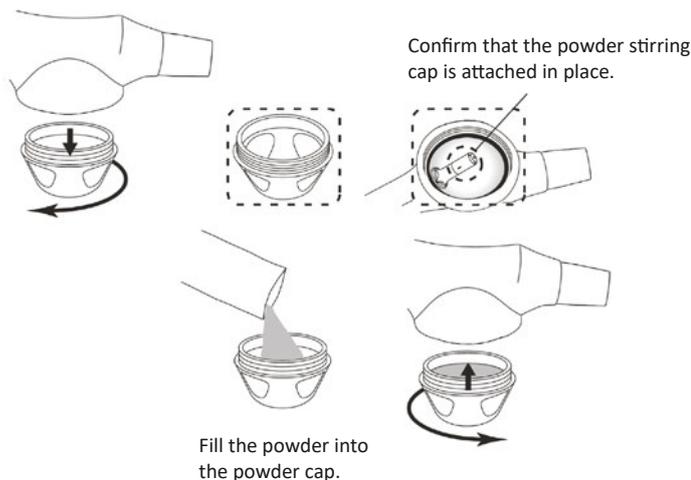
Stop water supply.
Idle run for 1 min.



- ☞ Confirm no powder remains within the powder chamber.
- ☞ Direct the nozzle to your cuspidor. Depress your foot control without water supply from the dental unit. Run for 1 minute to remove water remaining in the channels of polisher.

 VORSICHT	ATTENTION
	After sterilization, run polisher for 1 minute without powder before use. This run will expel remaining water inside. If water remains inside of sterilized main body, powder will become damp and cause clogging.

8.9 Powder filling

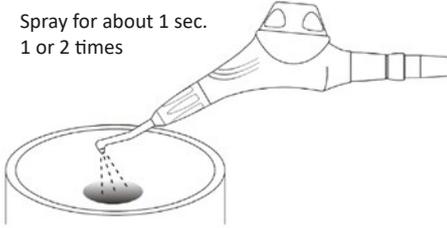


- ☞ Remove polisher from the turbine hose before refilling filling the powder, disconnect it from the turbine hose.
- ☞ Detach the powder cap by turning in the direction of the arrow in the illustration above.
- ☞ Confirm the powder stirring cap is attached in place.
- ☞ If water, oil, or powder remains inside of powder chamber or powder cap, remove it with a dry cloth.
- ☞ Fill sodium hydrogen carbonate powder not exceeding 15 g into the powder cap.
 - * The powder must be filled into the powder cap. Take care not to spill the powder over the thread of the powder cap. If the powder is spilt over the thread, wipe it off with a dry cloth.
- ☞ Hold the chamber unit downward and the powder cap upward as shown in the illustration. Turn the powder cap in the direction of the arrow until it stops.
- ☞ Confirm the powder cap is screwed securely in place.

 VORSICHT	ATTENTION
	<ul style="list-style-type: none"> - Confirm the powder cap is attached firmly. An unstable attachment will cause the powder cap to undo during use and may cause injuries or powder scattering. - Remove powder remaining in/on the screw threads of the powder chamber, powder cap, and sealing surface of the powder seal. Remaining Powder may cause premature wear of the threads and insufficient sealing which may cause powder scattering. - If the powder cap has a crack or fissure, replace with a new one. - In case of screw thread failure of the chamber unit including wear and/or deformation, stop using the polisher. Ask for repair of the chamber unit together with the powder cap.

8.10 Confirming correct operation and water volume

Spray for about 1 sec.
1 or 2 times



☞ A lot of powder might be sprayed immediately after filling powder. Before using on a patient, spray into your cuspidor for one second one or two times to confirm proper operation.

 VORSICHT	ATTENTION
	<ul style="list-style-type: none"> - When connecting your coupling to this product, confirm secure connection after hearing a locking sound. Make sure the head and powder cap are firmly screwed in. An unstable attachment will invite injuries due to fall of the body and such parts, or powder scattering. - Confirm no damage, no cracks, no breakage or no major corrosion is present on the product and it is safe to use.

- ☞ Insert your coupling on your turbine hose into the joint of polisher until you hear a locking sound. Confirm the handpiece is firmly seated.
- ☞ Direct the nozzle to your cuspidor.
- ☞ Depress the foot control of your dental unit one or two times for about one second and confirm if:
 - air, water, and powder are sprayed,
 - water supply is sufficient,
 - no leak of air and water from polisher.
- ☞ If you have trouble, refer to **14 Problembehandlung**. For water supply adjustment, use the water volume control of your dental unit.

9 Treatment

9.1 Patient, operator, and assistant protection

- Operator and assistant must wear protective eyewear and anti-dust mask.
- Protect the patient's face (other than oral cavity) with towels or protective eyewear.
 - * If the patient wears contact lenses, the patient must remove them before treatment.
- When spraying into an area around soft tissues such as gingiva, protect it with cotton in advance.

 WARNUNG	CAUTION
	<ul style="list-style-type: none"> - When using, the operator and assistant(s) must wear protective eyewear and anti-dust masks full-time. If the powder gets into your eyes, wash your eyes with plenty of water and consult an eye doctor. - During a treatment with polisher, protect the patient with towels or protective eyewear so that the powder does not enter mucous membranes (eyes, nose, tracheae) other than intraoral.

9.2 Spraying

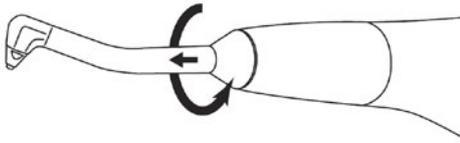
The prevention ability of tooth against discoloration is decreased after cleaning. Instruct the patient not to smoke or have foods or beverages with strong coloring effect such as tea and coffee for two or three hours after treatment.



- ☞ Make your vacuum suction system spraying.
- ☞ When using for the first time, grasp the spraying area and cleaning effect with an extracted tooth or tarnished coin.
- ☞ Keep distance of 2 to 5 mm from the tooth surface.
- ☞ Spray from gingival margin to occlusal surface. Suction the spray with your vacuum suction system and avoid soft tissues.

- When cleaning a large area, spray while moving the nozzle minutely.
- The powder may be sprayed for a few seconds after releasing your foot control due to the residual pressure within the powder chamber. Collect the powder with your vacuum suction to avoid damaging soft tissues.
- Have the patient wash out his/her mouth as needed or after treatment.

9.3 Turning the head



☞ Rotate the head by turning the grip. The head rotates 360 degrees.

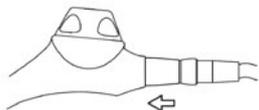
 WARNUNG	<p>CAUTION</p> <ul style="list-style-type: none"> - Confirm secure attachment of the head and powder cap before every treatment. Loosening of the head or powder cap during use will invite injuries due to fall of the such parts or powder scattering. - Avoid prolonged continuous use. Have the patient wash out his/her mouth enough as needed. - Do not put this product close to heat. It will cause damage on the body and malfunction, and may invite injuries or powder scattering during use. - To avoid infection, wear suitable protective wears such as mask, gloves and eyewear when using.
	<p>CONTRAINDICATIONS AND RESTRICTIONS</p> <p>☞ Never use this product on patients</p> <ul style="list-style-type: none"> - on a low salt diet (due to hypernatremia, edema, pregnancy toxemia, etc.), - having a serious ulcer in digestive organs, - having a renal dysfunction, - having cardiac dysfunction, - having asthma or chronic pulmonary disease, - having electrolyte abnormality due to hypochloric alkalosis, <p>☞ Avoid using this product on patients below, other than those stated in above 1):</p> <ul style="list-style-type: none"> - having an intraoral injury or disease, - having a hyperemia, inflammation or bleeding in the intraoral cavity, - easily get oral mucosa inflammation or bleeding, - having allergies, - wearing contact lenses.

Depending on the patient physical conditions, allergy symptoms or stomatitis may seldom occur. In such a case, stop using this product.

 WARNUNG	<p>CAUTION</p> <ul style="list-style-type: none"> - Never spray into the subgingival, root canal, or extraction socket. It can cause accidental symptoms such as emphysemas. - Never spray directly into the intraoral soft tissues (gingiva, mucosa). It can cause accidental symptoms such as surface damages.
 VORSICHT	<p>ATTENTION</p> <ul style="list-style-type: none"> - Always use with sufficient water. If the water is insufficient, the powder will scatter and the cleaning efficiency will decrease. - Do not spray directly to restorations such as crowns. It may scratch restorations. - Collect the sprayed powder with your vacuum suction system while using. - The powder may be sprayed for a few seconds after releasing your foot control due to the residual pressure in the powder chamber. Collect the powder with your vacuum suction system to avoid damaging soft tissues. - Take care so that the patient does not swallow too much powder. - The tooth cuticle is removed during the cleaning procedure and the prevention ability of tooth against discoloration is decreased. The tooth cuticle will be re-created by protein contained in saliva. To avoid discoloration, instruct the patient not to smoke or have foods or beverages with strong coloring effect such as tea and coffee for two or three hours after treatment.
 WARNUNG	<p>CAUTION</p> <p>The head must be rotated by holding and turning the grip, not the head. Otherwise the head will loosen and this may invite injuries or powder scattering during use:</p>

9.4 Other remarks on use

9.4.1 Disconnecting from the turbine hose

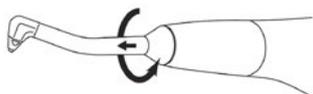


- ☞ Detach the handpiece according to the instruction manual of your coupling.



When reconnecting, clean the coupling on your turbine hose and inside of chamber unit's joint in advance referring to **8.5.1 Reinigen der Kupplung**.

9.4.2 Detaching the head



- ☞ The head must be attached or detached when polisher is not connected to a turbine hose. If polisher is connected to a turbine hose, disconnect it from the turbine hose.
- ☞ Turn the head in the direction of the arrow in the illustration and detach.
- ☞ When reattaching, clean the head and inside of chamber unit's coupling in advance referring to **8.3 Aufstecken des Kopfes**.

9.4.3 Detaching the powder cap

- ☞ The powder cap must be attached or detached when polisher is not connected to a turbine hose. If polisher is connected to a turbine hose, disconnect it from the turbine hose.
- ☞ Hold polisher keeping the powder cap downward. Turn the powder cap in the direction of the arrow in the illustration to detach. Detach the powder cap above your cuspidor, as the powder in the powder chamber may scatter when the powder cap is released.
- ☞ Discard the leftover powder in the powder cap.
- ☞ When refilling the powder and reattaching the powder cap, clean the inside of powder chamber and powder cap referring to **8.9 Einfüllen des Pulvers**.



ATTENTION

The leftover powder must be discarded after treatment. When the powder gets damp, it will cause clogging.

10 Maintenance and checks

10.1 Regular maintenance and checks



Perform maintenance and checks as follows before sterilization and after clinic hours without fail.



ATTENTION

To use safely, check and maintain this product daily after clinic hours according to the instructions in **10 Wartung und Kontrollen**.

10.2 Powder disposal

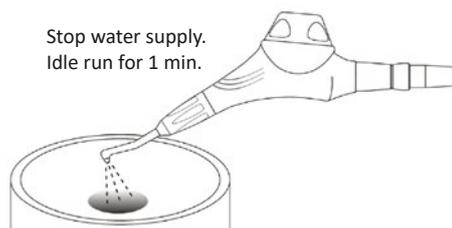
- ☞ Detach the powder cap referring to **9.4.3 Abnehmen der Pulverkappe**. Taking care of powder scattering, discard the leftover powder.



ATTENTION

The leftover powder must be discarded after treatment. When the powder gets damp, it will cause clogging.

10.3 Removal of remaining powder within polisher



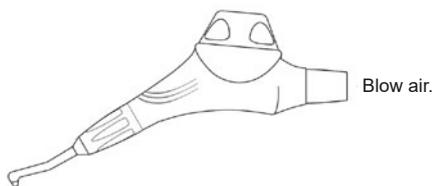
- ☞ Attach the emptied powder cap to the chamber unit.
- ☞ Connect polisher to the coupling on your turbine hose.
- ☞ Direct the nozzle to your cuspidor. Depress your foot control without water supply from the dental unit. Run for 1 minute to remove the powder remaining within the channels of polisher.
- ☞ Disconnect polisher from your coupling.

10.4 Cleaning

- ☞ Wipe off saliva and blood on the polisher with alcohol.
- ☞ Detach the head and powder cap from the chamber unit. Wash each part (in particular, where powder adheres) with running water.

 VORSICHT	ATTENTION
	- Do not use ultrasonic cleaners to clean this product. This will cause malfunction or damage. - Remove powder remaining inside and on the surface of polisher between treatment and sterilization. If the powder gets damp, it will cause powder clogging.

10.5 Water draining



- ☞ Attach the powder cap and head to the emptied chamber unit.
- ☞ Direct the nozzle to your cuspidor.
- ☞ Blow air into the joint of chamber unit with a three-way syringe to drain the water channels.

 VORSICHT	ATTENTION
	- Drain polisher before every sterilization and once a day after clinic hours. - Do not lubricate this product. Lubricant will be mixed into the compressed air and cause powder clogging.

11 Processing according to ISO 17664

11.1 Processing at the location of use

 WARNUNG	WARNING
	Risk of infection due to non-sterile instruments. → Always wear gloves.

- ☞ Process the instrument within one hour after each treatment in order to prevent piling.
- ☞ Immediately remove any debris of cement, blood, composite or powder.
- ☞ Ensure a dry transport of the instrument to the place of processing.
- ☞ Do not put the instrument in any kind of solution.

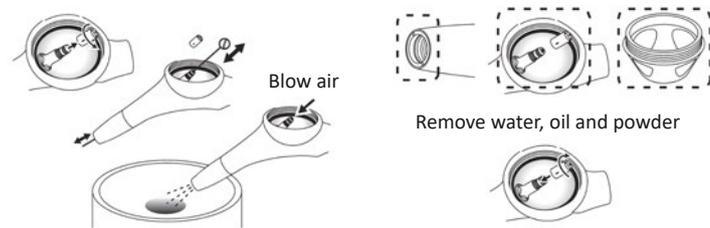
11.1.1 Manual pre-cleaning

 ACHTUNG	CAUTION
	Risk of infection due to multiple uses of dental brushes → To prevent cross infections always use a new dental brush for each instrument.

 ACHTUNG	CAUTION
	Insufficient cleaning of the surface and the water- and air pipes → In order to ensure a successful cleaning a thorough manual pre-cleaning, even with the small brush, must be done.

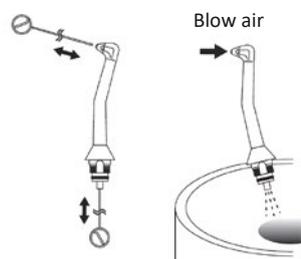
clean each part of polisher. Cleaning must be done when polisher is disconnected from the coupling on your turbine hose.

11.1.2 Powder stirring cap cleaning (if the center hole of the stirring cap is clogged with powder)



- ☞ Remove the powder stirring cap from the powder pipe.
- ☞ Remove powder adhered on the center hole of the powder stirring cap with a cotton swab or dry cloth.
- ☞ Clean the center hole with the attached cleaning wire to remove the powder blocking the center hole. (The cleaning wire does not pass through the center hole.)

11.1.3 Head cleaning



- ☞ Remove the head from the chamber unit.
- ☞ Insert the cleaning wire into the spraying orifice of the nozzle and center hole of the coupling.
- ☞ Remove powder remaining within the channels using the cleaning wire.
- ☞ Blow air into the spraying orifice of the nozzle with a three-way syringe to remove powder remaining inside.
- ☞ If water, oil, or powder remains in the head, remove with a dry cloth.

11.1.4 Chamber unit cleaning

- ☞ Detach the head and powder cap from the chamber unit.
- ☞ Loosen the powder stirring cap from the powder pipe by turning in the direction of the arrow in the illustration and detach it.
- ☞ Insert the cleaning wire into the powder pipe and remove powder remaining in the pipe.
- ☞ Blow air into the powder pipe of the nozzle with a three-way syringe to remove powder remaining inside.
- ☞ If powder remains inside coupling of the chamber unit, remove with a cotton swab or dry cloth.
- ☞ If water, oil, or powder remains inside chamber unit or in the powder cap, remove with a cotton swab or dry cloth.
- ☞ Attach the powder stirring cap to the powder pipe by turning in the direction of the arrow in the illustration.



ATTENTION

Make sure the powder stirring cap is attached in place. Improper attachment will lower the cleaning efficiency.

11.2 Mechanical cleaning and disinfection of the interior and the exterior



MK-dent recommends thermal disinfectors that fulfill the EN ISO 15883-1 requirements and are approved by the manufacturer for the straight- and contra angle, as well as for high speed handpieces. The cleaning should be carried out at a minimum of 55 °C and for at least 6 minutes, the disinfection at a minimum of 90 °C and for at least 5 minutes (for an A0-value > 3,000). For the cleaning a mild alkaline cleaning agent with a pH of 9 to 11 is recommended, like e.g. Neodisher® MediClean Forte.

- ☞ For the internal cleaning the adaptors specified by the manufacturer must be used.
- ☞ Repeat the process, if visible contaminations still exist after the treatment in a thermal disinfectant.
- ☞ Before use the instrument must be dry and free of residues.
- ☞ To prevent any kind of impairments of the instrument, make sure after every cycle that the instrument is dry on the inside and the outside.

11.3 Process of drying

11.3.1 Manual drying

- ☞ Blow on the instrument with compressed air from the inside and the outside until no visible drops are left.

11.3.2 Mechanical drying

The drying process normally is part of the cleaning process of your thermal disinfectant. Please follow the instructions for your thermal disinfectant.

- ☞ In case of moisture remaining on the instrument after the cleaning process, blow with compressed air until completely dry.

12 Sterilization

12.1 Sterilizability

Polisher (head, chamber unit, and powder cap) and cleaning wire are sterilizable in autoclave.

135°C



This medical product has a temperature resistance of up to max. 135 °C.

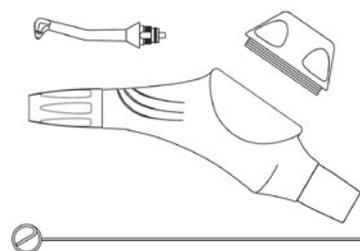
12.2 Sterilization (Sterilization must be done after every patient.)

- ☞ Remove the head and powder cap from the chamber unit. Confirm no powder remains in the powder chamber.
- ☞ Put the chamber unit (with head and powder cap detached) into a sterilization bag and seal it.
- ☞ Place each component sealed in the sterilization bag on a sterilization tray to avoid direct contact with sterilizer's inner chamber surface, and put into the autoclave.

Only apply the following sterilization process:

- Autoclave with a triple pre-vacuum (recommended): minimum of 5 minutes at a minimum of 134°C

- ☞ Pay close attention to the manufacturer's instruction.



Sterilizable in autoclave



CAUTION

- Sterilization must be done after every patient in order to prevent direct and cross infection.
- To avoid infection, wear suitable protective wears such as mask, gloves and eyewear.

 VORSICHT	VORSICHT
	<ul style="list-style-type: none"> - To avoid trouble and damage on the product, follow the instructions in 12 Sterilization when sterilizing. - Do not sterilize with powder remaining in the powder chamber. - Do not sterilize polisher with instruments on which some medicine or chemical agent remains. - Do not immerse polisher in disinfectant liquids. - Do not use alkaline disinfectant and oxidized water (hard acid water or super acid water) for disinfection. - Dry heat sterilizers generate high heat that exceeds the maximum sterilization temperature of polisher. Do not use in order to avoid mechanical trouble or damage to polisher. - Depending on the conditions of your sterilizer or sterilizing methods, this product may discolor. - The chamber unit is made from a synthetic material and may rarely get minute scratches due to autoclave sterilization. But this will have little influence on performance. To have maintenance after 250 autoclave cycles or once every two years is recommended.

12.3 After sterilization

☞ When the sterilization cycle is finished, take out sterilized polisher from the autoclave. Cool naturally. Dry naturally and completely to avoid water beading.

12.4 Validation of the processing

i The validation of the cleaning and of the disinfection was carried out with the device WD BHT INNOVA® M3 in the programme Nr.14 Reinigung/ Nr.03 Thermodesinfektion with the cleanser Neodisher® MediClean Forte.

Adjustment:

- Pre-rinsing for 1 minute
- Cleaning at 55 °C for 6 minutes with a dosage of 0.5% Neodisher® MediClean Forte
- Neutralization
- Washing down for 1 minute
- Disinfection at 90°C for 5 minutes

The sterilization was validated with the device W&H® LISA 517 in a fractional pre-vacuum process at 134 °C for 5 minutes. Please note, that the reprocessing procedure performed in your dental office must be validated also.

i For more information on the entire preparation process download our MK-dent Processing Guide for High- & Low Speed Handpieces from our website www.mk-dent.com/downloadcenter.

12.5 Maintenance & service

 ACHTUNG	CAUTION
	<p>Inappropriate maintenance or service may result in dysfunctions and/or deterioration. → Always perform proper maintenance and service.</p>

12.6 Storage

After sterilization and natural drying, confirm no water beading remains and store. The powder is sensitive to heat and humidity. Store in a place of low temperature and moisture.

 VORSICHT	ATTENTION
	<ul style="list-style-type: none"> - For depository of this product, follow the instructions in „9.3 Storage“. - The chamber unit and head must be dried completely before storage. If water remains, discoloration, rust, or powder clogging will occur. - Store and take care of polisher properly to keep it out of reach of persons other than dental professionals. - Do not store polisher in a place where it may be exposed to water. - Keep polisher in a place where it is not affected by barometric pressure, temperature, humidity, ventilation, strong sunshine, dust, salt or sulfurous air. - Keep polisher in places without vibration or shock. - Do not store polisher in a place where chemical agents are kept or some gas exists.

13 Replacement of consumable parts, disposal

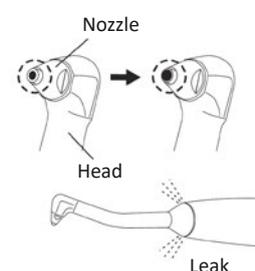
i For disposal of used consumables, see **13.5 Entsorgung**

13.1 Replacement of the head

The nozzle of the head will wear out with use. A broadened spraying orifice will cause decrease in cleaning efficiency and difficulty in pinpoint spraying. When the spraying orifice has become larger like shown in the illustration, the work efficiency will be recovered by replacement of the head (separately available).

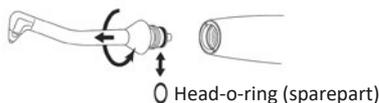
☞ Attach the head properly according to **8.3 Aufstecken des Kopfes**.

i The entire head must be replaced, not only the nozzle.



13.2 Replacement of the head o-ring

In case the o-ring at the coupling of the head is damaged or worn or, air, water, or powder leaks from the joint, replace the used o-ring with the provided head o-ring (spare).



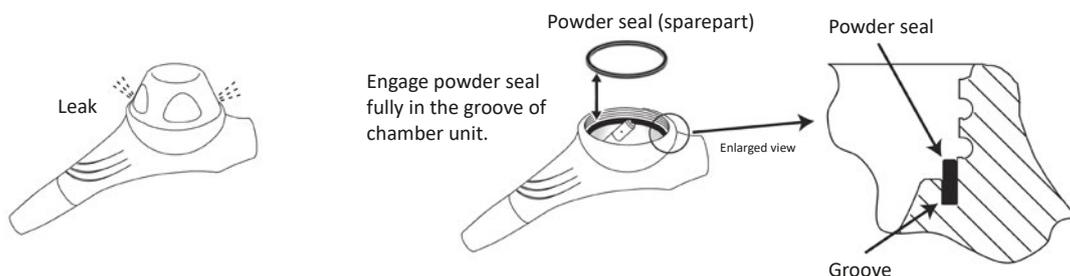
☞ Attach the o-ring properly in place. Do not damage the surface of the o-ring when replacing.

13.3 Replacement of the powder cap

The transparency of the powder cap will lower with use and may result in decreased visibility inside the powder cap. In case you cannot see powder in the powder chamber, replace the powder cap (separately available). If the powder cap is cracked, it must be replaced with a new one. Attach the powder cap properly according to **8.4 Ansetzen der Pulverkappe** when replacing.

13.4 Replacement of powder seal

In case the powder seal attached into the thread of the powder chamber is damaged or worn or, air or powder leaks between the powder cap and powder seal, replace the used powder seal with the provided powder seal (spare). Follow the procedure below:
If powder or something remains in the groove of the powder chamber, in which the powder seal is attached (see the illustration below), remove it with air from a three-way syringe. Clean the groove and attach the powder seal properly so that the powder seal fully seats in the groove (see the illustration below). Do not damage the surface of the powder seal when replacing.



 WARNUNG	CAUTION
	When replacing o-rings and powder seal, be careful about the correct mounting location and direction. Incorrect mounting may cause injuries due to disconnection of the head or powder cap, powder scattering, leakage of air, water, or powder during use.

13.5 Disposal

Dispose of this product according to your local rules and regulations.

14 Trouble shooting

If this product does not operate as stated in this manual, check your problem according to the list below. If your trouble is not corrected, or if your trouble is not listed below, contact your dealer.

	CONTRAINDIKATION AND RESTRICTION
	This product must not be repaired by the user in case of malfunction. Contact your dealer for repair.

Symptoms	Possible causes	Countermeasures
1) No powder spray. Low cleaning efficiency.	<ul style="list-style-type: none"> The center hole of the powder stirring cap is clogged with powder. Powder clogging within the channels. The powder stirring cap is not attached properly. No air supply. Low air pressure at the coupling. The control system of the dental unit does not work. 	<ul style="list-style-type: none"> Clean the powder stirring cap according to 11.1.2 Reinigung der Pulvermischkappe. Clean the head and chamber unit according to 11.1.3 Reinigen des Kopfes and 11.1.4 Reinigen des Kammerelements. Attach the powder stirring cap properly according to 11.1.4 Reinigen des Kammerelements. Set coupling pressure between 0.25 and 0.4 MPa. Check the control system using other handpiece.
2) No water	<ul style="list-style-type: none"> Water supply system of your dental unit is shut off. Water does not reach turbine hose. Water channels of polisher are clogged. O-ring(s) on your coupling is/are damaged. 	<ul style="list-style-type: none"> Activate the water supply system of your dental unit. Check the water supply system of your dental unit. Ask your dealer for repair. Replace the o-ring(s) on your coupling (separately sold or included in delivery).

Symptom	Mögliche Ursache	Maßnahme
3) Leak (air, water, and powder) from powder chamber coupling.	<ul style="list-style-type: none"> • The head is not firmly attached. • The o-ring in the head is worn or damaged. 	<ul style="list-style-type: none"> • Attach the head firmly according to 8.3 Aufstecken des Kopfes. • Replace with the attached head o-ring according to 13.2 Ersetzen des Kopf-O-Rings.
4) Air and/or powder leak from near of the powder chamber.	<ul style="list-style-type: none"> • The powder cap is not firmly attached. • The powder seal is not properly attached in the powder chamber. • The powder seal is worn or damaged. • Powder adheres to the sealing surface (of the powder seal and/or powder cap). 	<ul style="list-style-type: none"> • Attach the powder cap firmly according to 8.4 Ansetzen der Pulverkappe. • Attach the powder seal properly according to 13.4 Ersetzen der Pulverdichtung. • Replace with the attached new powder seal according to 13.4 Ersetzen der Pulverdichtung. • Fill the powder into the powder cap properly according to 8.9 Einfüllen des Pulvers.
5) Water leak from around the coupling on the turbine hose.	<ul style="list-style-type: none"> • O-ring(s) on your coupling is/are damaged (For PR1011K/WH/S/BA/). • O-ring(s) on your joint is/are damaged (For PR1011NT). 	<ul style="list-style-type: none"> • Replace the o-ring(s) on your coupling (separately sold or included in delivery package). • Replace the o-ring(s) on the joint (separately sold).
6) Polisher cannot be connected to your coupling.	<ul style="list-style-type: none"> • Polisher is not compatible with your coupling. • The light cover at the front of the coupling is loose (if you use coupling with light). 	<ul style="list-style-type: none"> • Use polisher compatible with your coupling according to 8.5 Anschluss an die Behandlungseinheit. • Turn the light cover at the front of the coupling to fix securely.

15 Warranties

MK-dent provides the end user a warranty for proper function, immaculate material and workmanship for a period of 12 months after purchasing. Relevant for this is the invoice date.

In case of justified complaints MK-dent carries out a free repair or a possible free replacement. This will be decided by MK-dent. Other claims of any kind, in particular damage compensation are excluded. In the event of default, gross negligence or intent, this shall only apply unless there are compelling legal regulations.

MK-dent is not liable for defects and their consequences that have arisen whose arising may be due to natural wear, improper handling, improper cleaning, or maintenance, non-compliance with operating or manual instructions, calcination or corrosion, contaminated air and water supply or chemical or electrical influences that are unusual or not permitted according to MK-dent's instruction for use or to other manufacturer's instructions.

The warranty does usually not cover lamps, light conductors made of glass fibers, glassware, rubber parts and the color fastness of plastic parts.

All liability is excluded if defects or their consequences arise because of interventions or modifications on the product by the end user or by a third party not authorized by MK-dent.

Warranty claims will only be accepted if the product is submitted with a proof of purchase in the form of an invoice or a copy of the delivery note. Dealer, purchase date, model and serial number must be clearly visible.



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