Instructions for use
POWERtorque 646B - REF 1.001.7522 | 646C - REF 1.001.7523

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Contents

User instructions

Dear user,
KaVo hopes that you enjoy your new high-quality product. Following the instructions below will allow you to work smoothly, economically and safely.

Symbols

	See the section Safety/Warning Symbol
	Important information for users and technicians

	Disinfectable with heat
	Steam sterilisable up to 135°C
CE	CE mark (Communauté Européenne). A product with this mark meets the requirements of the relevant EC directive, i.e. the applicable standards in Europe.
▶	Action request

Target group

This document is intended for dentists and their assistants. The section on starting up is also intended for service technicians.

Warranty terms and conditions

The following warranty conditions apply to this KaVo medical device:

KaVo provides the end customer with a warranty of proper function and guarantees zero defects in respect of material and processing for a period of 12 months from data of invoice, subject to the following conditions:
In case of justified complaints, KaVo will honour its warranty with a repair or free replacement. Other claims of any nature whatsoever, in particular with respect to compensation, are excluded. In the event of default, gross negligence or intent, this shall only apply in the absence of mandatory legal regulations to the contrary.
KaVo cannot be held liable for defects and their consequences that are or may be due to natural wear, improper handling, cleaning or maintenance, non-compliance with operating or connection instructions, calcination or corrosion, contaminated air or water supplies or chemical or electrical factors deemed abnormal or impermissible in accordance with KaVo's instructions for use or other manufacturer specifications. The warranty does not

usually cover lamps, light conductors made of glass and glass fibres, glassware, rubber parts and the colourfastness of plastic parts.
No liability is assumed when defects or their consequences arise from manipulations or changes to the product by the customer or a third party.
Service warranty claims will only be accepted if the product is submitted along with proof of purchase in the form of a copy of the invoice/delivery note. The dealer, purchase date, unit number or type and serial number must be clearly visible on this document.

Description of safety instructions

	Warning symbol

Structure

The introduction describes the type and source of the hazard.
This section describes the potential consequences of non-observance.
- ▸ The optional step contains necessary measures for avoiding hazards.

Description of hazardous steps

The safety instructions cited herein with the three levels of danger will help avert property damage and injury.

CAUTION
indicates a hazardous situation that can lead to property damage or minor to moderate injury.

WARNING
indicates a hazardous situation that can lead to serious injury or death.

DANGER
indicates a maximum hazardous situation that can directly cause serious injury or death.

Purpose – Proper use

This medical device is:

- Only intended for dental treatment. Any other type of use or alteration to the product is impermissible and can be hazardous. The medical device is intended for the following use: Removal of carious material, cavities and crown preparations, removal of fillings, processing of tooth and restoration surfaces.
- A medical device according to relevant national statutory regulations.

According to these provisions, this medical device may only be used for the described application by a knowledgeable user. The following must be observed:

- the applicable health and safety regulations
- the applicable accident prevention regulations
- these instructions for use

According to these provisions, the user is required to:

- only use properly operating equipment,
- use the equipment for the proper purpose,
- to protect himself, the patient and third parties from danger.
- to avoid contamination from the product.

Safety instructions

Premature wear and malfunction due to improper storage or longer periods of nonuse.
Reduced product life.
- The medical device should be cleaned, serviced and placed in a dry stored location according to instructions before long periods of nonuse.

Injury or damage due to wear.
Irregular running noise, significant vibration, overheating, imbalance or insufficient grip
- Stop work and seek service support.

Note
For safety reasons, we recommend that the tool holder system be checked annually after the warranty period expires.

Burning hazard from hot instrument cover.
If the instrument overheats, burns may arise in the oral area.
- ▸ Never contact soft tissue with the instrument head.

Risk due to incorrectly stored instrument.
Injury and infection caused by chucked drill bits or burs.
Damage to clamping system from dropping the instrument.
- ▸ After treatment, place the drill bit or bur properly in the cradle without the tool.

Hazard from contraindication.
If the soft tissue in the oral cavity is injured, the compressed air may enable septic substances to enter the tissue.
- Treatment must be discontinued with instructions operated by compressed air when soft tissue is damaged in the oral cavity.

Hazard from nonsterile products.
Infection danger to the care provider and patient.
- Sterilise the medical device before treatment.

Hazard from nonsterile products.
Infection danger to the care provider and patient.
- Before first use and after each use, sterilise the medical device.

Hazard from use as a light probe.
Do not use the device as a light probe since the rotating drill bit can cause injury.
- ▸ For additional illumination of the oral cavity or preparation site, use a suitable light probe such as the KaVo DIAlux 2300L.

The following individuals are authorised to repair and service KaVo products:
- The technicians of KaVo branches throughout the world
- Special technicians especially trained by KaVo

To ensure proper function, the medical device must be set up according to the methods described in the KaVo instructions for use, and the care products and methods described therein must be used. KaVo recommends specifying a service interval at the dental office for a licensed shop to clean, service and check the functioning of the medical device. This service interval should take into account the frequency of use.

Service may only be provided by repair shops that have undergone training by KaVo and that use original KaVo replacement parts.

Product description

POWERtorque LUX 646 B (**Mat. no. 1.001.7522**)

POWERtorque 646 C (**Mat. no. 1.001.7523**)

Technical data

Minimum pressure	2.7 bar (39 p.s.i.)
Drive pressure	2.7 to 2.9 bar/39 to 42 psi
recommendation	2,8 bar (40 p.s.i.)
Air consumption	40 to 45 Nl/min.
Idle speed	360.000 to 40,000 rpm
Recommended operating pressure	2 to 3 N

Attachable to all MULTIflex (LUX) couplings.

Transportation and storage conditions

CAUTION

Starting up the medical device can be hazardous after it has been stored in an excessively cold location.
The medical device can malfunction.
- Products that are very cold must be warmed to 20°C to 25°C before use.

	Temperature: -50 °C to +80°C
	Relative humidity: Non-condensing
	Air pressure: 700 hPa to 1060 hPa
	Protect from moisture.

First use

Insert the milling cutters or diamond grinders

Note
Only use carbide cutters or diamond grinders that correspond to DIN EN ISO 1797-1 type 3, are made of steel or hard metal and meet the following criteria:
- Shaft diameter: 1.59 to 1.60 mm
• Overall length: max. 25 mm
- Shaft clamping length: min. 11 mm
- Blade diameter: max. 2 mm

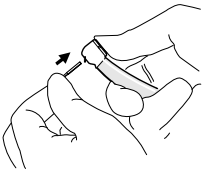
Use of impermissible carbide cutters or diamond grinders.
Injury to the patient or damage to the medical device.
- Observe manufacturer instructions and use the drill bit properly.
- Only use carbide cutters or diamond grinders that do not deviate from the indicated data.

Injury from using worn carbide cutters or diamond grinders.
Cutters or grinders can fall out during treatment and injure the patient.
- Never use cutters or grinders with worn shafts.
- Follow the instructions for use supplied by the cutter or grinder manufacturer!

Use the carbide cutters or diamond grinders properly observing the manufacturer's instructions.
Cutters or grinders with worn shafts can fall out during treatment and cause injury.
- Do not use cutters and grinders and burs with worn shafts. Tools that deviate from the above data may not be used.

Injury hazard from carbide cutters or diamond grinders.
Infections or cuts.
- Wear gloves or fingerstalls.

Insert the milling cutters or diamond grinders



- Forcefully press the push button with your thumb and simultaneously insert the drill bit until the stop.

- Check that the drill bit is seated by pulling on it.

CAUTION

Hazard from defective chucking system.
The tool can fall out and cause injury.
- Pull on the tool to check if the chucking system is functioning properly and that the tool is firmly clamped. Wear gloves or a thimble to check, insert, or remove the bits to prevent injury and infection.

Removing the milling tool or diamond grinder.

CAUTION

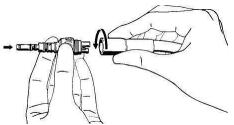
Hazard from rotating tools.
Lacerations.
- Avoid unintentionally touching rotating tools.

- Once the bit has stopped rotating, firmly press the pushbutton with your thumb and pull the bit out at the same time.

WARNING

Do not press the pushbutton while the drill bit or burr is rotating.
If you press the pushbutton when the drill bit or burr is rotating, it can damage the chucking system and cause injury.

- Never touch soft tissue with the head or tip since it may be hot and cause a burn.
- After treatment is over, remove the drill bit or bur from the contra-angle handpiece since injury and infection may result from putting it away when the drill and bur are inserted.



Attach the MULTIflex coupling

- **Screw the MULTIflex (LUX) coupling** to the turbine hose and tighten with the key.

The amount of water in the spray can be adjusted by rotating the spray ring on the MULTIflex (LUX) coupling.

Check the amount of water

Hazard to the tooth from insufficient water for the spray cooling.
Insufficient water can cause thermal damage to the tooth.

- ▸ At least 50 cm^3/min of water is necessary for spray cooling of the tooth.

Check the pressure

Connecting to devices
Dirty and moist compressed air causes premature bearing wear.
- In general, ensure dry, clean uncontaminated compressed air according to EN ISO 7494-2.

A minimum drive pressure of 2.7 to 2.9 bar/39 to 42 psi is required to operate the device. 2.8 bar (40 p.s.i.) is ideal.

The air consumption is approx. 40 to 45 Nl/min.

- Insert the test manometer (**Mat. no. 0.411.8731**) between the hose and **MULTIflex LUX coupling** and check the following pressures:
  - Drive air: 2.7 to 2.9 bar(39 to 42 psi) recommended: > 2.8 bar (40 p.s.i.)
  - Return air: < 0.5 bar (< 7 p.s.i.)
  - Water: 0,8 to 2,5 bar/11 to 36 psi
  - Spray air: 1,0 to 4,0 bar/14 to 57 psi

Check O-rings

Missing or damaged O-rings
If the O-rings are missing or damaged, malfunctions and premature failure can occur.
- ▸ Check that all O-rings are present and undamaged on the coupling.

Number of available O-rings: 5

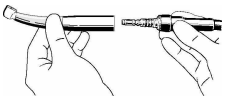
Operation

Note
At the beginning of each work day and before each patient, rinse the water and air channels for approx. 20 to 30 seconds.

Attach the medical device

CAUTION

Damage from inexact coupling
Improper coupling, especially during the afterglow period, can destroy the high-pressure lamp of a MULTIflex LUX or reduce its life.
- ▸ Check the seat of the turbine on the coupling by pulling it.



- ▸ Precisely attach the medical device to the **MULTIflex LUX coupling** and push is to the rear until the coupling audibly locks in the medical device.
- ▸ Pull on it to make sure that the medical device is securely affixed to the coupling.

WARNING

Release of the medical device during treatment.
A medical device that is not properly locked can release from the MULTIflex (LUX) during treatment.

- Before each use, check if the medical device is securely locked onto the MULTIflex (LUX).

Remove the medical device

- Hold the coupling tight, and pull the medical device off while twisting slightly.

Exchanging the O-rings on the coupling on the supply hose

Hazard from improper care of the O-rings.
Improper care of the O-ring can cause the medical device to partially or completely malfunction.

- ▸ Do not use Vaseline or other grease or oil.

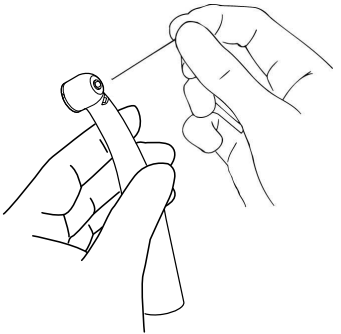
Note
The O-rings on the coupling may only be lubricated with a cotton ball wet with KAVOspray.

- ▸ Press the O-ring between your fingers to form a loop.
- ▸ Shove the O-ring to the front, and remove it.
- ▸ Insert new O-rings into the grooves.

Cleaning the spray nozzle.

Hazard from insufficient spray water.
Insufficient spray water can cause the medical device to overhead and damage the tooth.

- ▸ If the amount of spray water is insufficient, unplug the spray nozzles.



- Clean the water passage in the spray nozzles by using the nozzle needle **Mat. no. 0.410.0921**.

Preparation at the site of use

Hazard from nonsterile products.
An infection hazard exists from contaminated medical devices.
- ▸ Observe suitable personal protective measures.

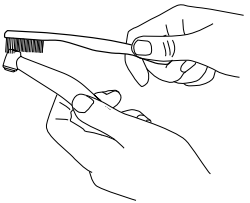
- ▸ Remove residual cement, composite or blood at the site of use.
- ▸ The medical device must be dry when transporting it to be prepared. Do not place it in a solution or the like.
- ▸ The medical device should be prepared as close to the treatment time as possible.
- ▸ Remove carbide cutters or diamond burs from the medical device.

Cleaning

Malfunctions from cleaning in the ultrasonic unit.
Defects to the product.
- ▸ Only clean manually or in the thermodesinfector!

Manual cleaning of the exterior

Required accessories:
- Tap water 30°C ± 5 °C or a 60 to 70% alcohol solution
- Brush such as a medium hard toothbrush



- Brush off under flowing tap water, or clean with a 60-70% alcohol solution.

Manual cleaning of the inside

To effectively set up, the inside of the machine must be cleaned automatically in a cleaning and disinfection unit in accordance with ISO 15883-1. (The interior of this product is not to be cleaned manually).

Mechanical cleaning of the exterior and interior

KaVo recommends thermodesinfectors in accordance with DIN EN ISO 15883 such as the Miele G 7781/ G 7881.

(Validation was performed with the program "VARIO-TD", the cleaner "neodisher® mediclean", the neutraliser "neodisher® Z" and rinse "neodisher® mielclear").

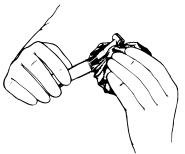
- The program settings and cleansers and disinfectants that must be used can be found in the instructions for use of the thermodisinfector.
- Directly after automated cleaning, treat the medical device with the care products and systems provided by KaVo.

Disinfection

CAUTION

Malfunctions from using a disinfectant bath or chlorine-containing disinfectant.
Defects to the product.
- ▸ Only clean manually or in the thermodesinfector!

Manual disinfection of the the exterior

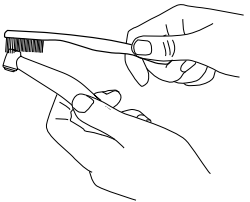


KaVo recommends the following products based on material compatibility. The microbiological efficacy must be ensured by the disinfectant manufacturer.

- ▸ Microcide AF by Schülke&Mayr (liquid or cloths)

- FD 322 by Dürr
- CaviCide by Metrex

Required tools:
Cloths for wiping off the medical device.



Spray the disinfectant on a cloth then wipe the medical device and let it work according to the disinfectant manufacturer.

Note
Observe the instruction for use for the disinfectant.

Manual disinfection of the interior

To effectively set up, the inside of the machine must be cleaned automatically in a cleaning and disinfection unit in accordance with ISO 15883-1. (The inside of this product should not be disinfected manually.)

Mechanical disinfection of the exterior and interior

KaVo recommends thermodesinfectors in accordance with DIN EN ISO 15883 such as the Miele G 7781/ G 7881.

(Validation was performed with the program "VARIO-TD", the cleaner "neodisher® mediclean", the neutraliser "neodisher® Z" and rinse "neodisher® mielclear").

- The program settings and cleansers and disinfectants that must be used can be found in the instructions for use of the thermodisinfector.
- Directly after automated cleaning, treat the medical device with the care products and systems provided by KaVo.

Drying

Manual drying

- ▸ Blow off the outside and inside the compressed air until no water drops are visible.

Machine drying

The drying procedure is normally part of the cleaning program of the thermodisinfector.

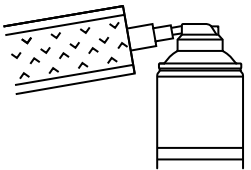
Note
Please follow the instructions for use of the thermodisinfector (compressed air quality - see the Warning under "Start-up").

Care products and systems

Sharp tool in the medical device.
Injury hazard from sharp and/or pointed tool.
- Remove the tool.

Premature wear and malfunction from improper service and care.
Shortened product service life.
- Regularly service the device properly!

Note
KaVo only guarantees that its products will function properly when care products are used that are listed by KaVo in the accessories since they were tested for proper use on KaVo products.



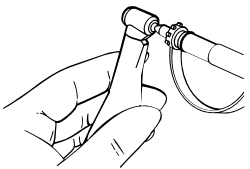
Care products and systems: Care with KAVOspray

KaVo recommends servicing the project twice daily (at noon and in the evening after hours), after each time the machine is cleaned, and before each sterilisation.

- Removing the tool.
- Cover the product with the Cleanpac bag.
- Place the product on the cannula, and press the spray button for one second.

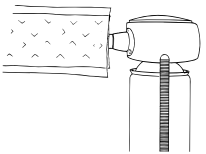
Care for the chuck of the KAVOspray

KaVo recommends cleaning and maintaining the chucking system once a week.



- ▸ Remove tool, place the spray nipple tip in the opening and spray.

Note
For the care procedure, see the section "Care with KAVOspray."



Care products and systems: Care of KaVo SPRAYrotor

KaVo recommends servicing the project twice daily (at noon and in the evening after hours), after each time the machine is cleaned, and before each sterilisation.

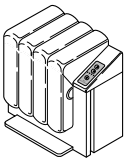
- Place the product on the appropriate coupling on the **KaVo SPRAYrotor** , and cover the product with the Cleanpac bag.

- Servicing the product.

See also: Instructions for use **KaVo SPRAYrotor**.

Care products and systems: Care with KaVo QUATTROcare

Cleaning and care unit with expansion pressure for thorough cleaning and care



KaVo recommends servicing the project twice daily (at noon and in the evening after hours), after each time the machine is cleaned, and before each sterilisation.

- Removing the tool.

- Servicing the product.

KaVo QUATTROcare plus spray can

KaVo recommends cleaning and maintaining the chucking system once a week.

See also: Instructions for use **KaVo QUATTROcare**.

- Remove tool, place the spray nipple tip in the opening and spray.

- Subsequently treat with the care products and systems listed below.

Packaging

Note
The sterilisation bag must be large enough for the instrument so that the bag is not stretched.
The quality and use of the packaging of the items to be sterilised must satisfy the applicable standards and be appropriate for sterilising.

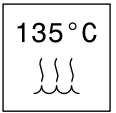
- Individually weld the medical device in the sterilised item packaging (such as KaVo STERIclave bags**Mat. no. 0.411.9912**)!

Sterilisation

Sterilization in a steam sterilizer in compliance with DIN EN 13060

Premature wear and malfunctions from improperly care and service shortens the service life of the product.
Shortened product life.
- The medical device must be serviced with KaVo care products before each sterilisation cycle.

Contact corrosion from moisture.
Damage to the product.
- Immediately remove the product from thesteam steriliser after the sterilisation cycle!



The medical device has a max. temperature resistance of 138°C.
KaVo recommends for example
- STERIclave B 2200/ 2200P by KaVo
- Citomat/ K-series by Getinge

Autoclave three times with an initial vacuum for at least 4 minutes at 134°C ± 1
Autoclave using the gravitation method for at least 10 minutes at 134°C ± 1
Autoclave using the gravitation method for at least 60 minutes at 121°C ± 1
Follow the manufacturer's instructions for use.

Storage

Prepared products should be stored protected germ-free from dust in a dry, dark and cool room.

Note
Observe the expiration date of the sterilised item.

Accessories

Accessories obtainable from dental and medical suppliers.

Material summary	Mat. no.
Replacement turbine with key	0.589.8931
Replacement turbine without key	0.589.8911
Instrument stand 2151	0.411.9501
Insert for turbines	0.411.9902
Cleanpac 10 units	0.411.9691
Nozzle needle	0.410.0921
KAVOspray 2112 A	0.411.9640
ROTAspray 2142 A	0.411.7520
QUATTROcare plus Spray 2140	1.005.4525
MULTIflex spray head (nozzle)	0.411.9921
STERIclave bags	0.411.9912

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