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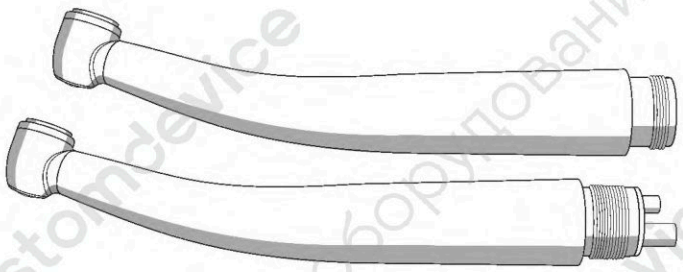
New as of: 09.2012

sirona
The Dental Company

T4 highspeed handpiece

Operating Instructions

English



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1 Before you begin …

Intended use

The T4 highspeed handpiece is used to treat dental diseases and dental trauma.

The treatment involves the rotary processing of hard and soft tooth substance and dental prostheses (crowns, inlays, bridges, etc.).

The T4 highspeed handpiece complies with the latest regulations reflecting the current state of the art. The T4 highspeed handpiece conforms to standards ISO 7785 - 1 and ISO 9168.

1. Read the Operating Instructions prior to using the T4 highspeed handpiece.
2. Only use the T4 highspeed handpiece for applications that are described in the Operating Instructions.
3. Observe the applicable hygiene standards, occupational safety regulations, and accident prevention measures for the T4 highspeed handpiece.

Target group

This product is intended only for use by trained dental personnel in dental workstations and laboratories.

1.1 Structure of the document

1.1.1 Identification of warnings

Warnings

➢ To prevent any personal injury, please observe all warnings.

Warnings can be identified as follows:

⚠ DANGER! indicates a danger leading to death or serious injury if not avoided.

⚠ WARNING! indicates a danger leading to death or serious injury if not avoided.

⚠ CAUTION! indicates a danger that may lead to injury if not avoided.

Instructions for use

➢ To prevent material damage and additional expenses, please observe all instructions for use.

Instructions for use can be identified as follows:

NOTICE! indicates measures for the prevention of material damage.

IMPORTANT: indicates important information and information on the avoidance of additional expenses.

Tip: indicates information on making work easier.

1.1.2 Formats and characters

The symbols and character formats used in the present manual have the following meaning:

✓ Prerequisite 1. First action step 2. Second action step or ➢ Alternative action ↳ Result	Requests you to do something.
Use of formats and characters [→ 3].	Identifies a reference to another text passage and indicates the relevant page number.
• List	Identifies a list.

1.2 Service life

When used as intended:

- Non-moving parts have a typical service life of 3 years
- Moving parts have a typical service life of 1.5 years

No warranty claim can be inferred here, as wear may occur earlier or later than indicated above depending on use, frequency of sterilization and frequency of maintenance.

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2 Safety instructions

Obligations of the user

- ➢ Only use operating resources in error free condition which do not deviate from the specified data [› 5].
- ➢ Protect yourself, patients and others against any foreseeable dangers. In order to do so, follow the safety instructions.
- ➢ Use the equipment as intended.
- ➢ You should always keep these operating instructions within reach for further reference.

Prevention of infection and cross-contamination

Prevent infection and cross-contamination between patients, users, and third parties as follows: Sterilize equipment after each patient.

Take the appropriate hygiene measures e.g. wear protective gloves.

Malfunction or damage

Immediately discontinue use in the case of malfunction or damage. Damaged highspeed handpieces may cause injury. Notify the dental depot or the manufacturer.

Areas subject to explosion hazards

Do not use this product in areas subject to explosion hazards.

Repair

Do not repair the highspeed handpiece yourself.

The replacement of bearings can lead to sudden failures and injuries to patients due to the different levels of wear of the newer and older components. Safe operation is not guaranteed when repairs are performed incorrectly. For repairs, contact the dental depot or the manufacturer.

Spare parts and accessories

Use only Sirona original or approved parts. Safe operation is not guaranteed for parts that have not been approved by Sirona.

If you have any questions, please contact your dental depot or the manufacturer.

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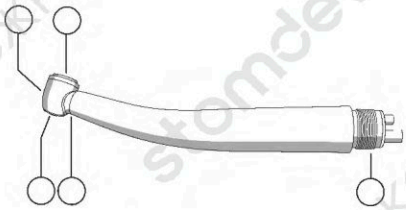
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3 Technical description

3.1 Task

The T4 highspeed handpiece is used for driving dental instruments with FG shank.

3.2 Structure of T4 highspeed handpiece



A	Highspeed handpiece head
B	Pushbutton
C	Opening of chuck system
D	Cooling spray output
E	Fixed connection (in this case: Midwest/ISO 4-hole)

3.3 Technical data

Highspeed handpiece

	T4
Light function	-
Back-suction stop in the head housing	x
Back suction stop in the area	-
Pushbutton cover clamping system	FG
No-load speed in rpm	400 000 ± 10 %

Friction grip burr instrument

	T4
Shank standard	ISO 1797-1
Shank diameter in mm	1.59 - 1.60
Maximum total length in mm	25
Maximum working diameter in mm (ISO 021)	2.1

Dental Treatment Center

	T4
Driving air pressure in bar (flowing, dry and clean)	2.1 - 2.3
Return air pressure in bar	< 0.15
Air consumption in Nl/min	43 ± 4
Spray air pressure in bar	2.3 ± 0.2
Spray water pressure in bar	2.0 ± 0.2
Recommended water content of spray	> 50 ml/min

3.4 Highspeed handpiece connection types available

	Connection type available for
	Midwest/ISO 4-hole fixed connection
	Borden/ISO 2-hole fixed connection

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4 Preparation

4.1 Initial start-up and longer breaks in use

➢ Sterilize the highspeed handpiece and accessory parts prior to startup.

➢ Clean and maintain the highspeed handpiece after longer breaks in use.

4.2 Prior to starting the work day

➢ Purge the water paths and air channels for 20 - 30 seconds.

4.3 Before each patient

1. Purge the water paths and air channels for 20 - 30 seconds.
2. Attach the highspeed handpiece [› 7].
3. Insert the burr instrument [→ 7].
4. Use a sufficient amount of cooling water (> 50 ml/min) [› 7].
5. Operate only with filtered water (< 50 µm).
6. Check the nozzles for blockages and deposits of lime, for example, and clean the nozzles if necessary.

⚠ CAUTION! Insufficient cooling leads to overheating of the cavity and damage to the tooth substance. Ensure that the water content is > 50 ml/min.

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5 Operation

⚠ CAUTION! Insufficient cooling leads to overheating of the cavity and damage to the tooth substance. Ensure that the water content is > 50ml/min.

NOTICE! Use only sharp and undamaged burrs and diamond grinders. The burrs and diamond grinders must be clean to prevent dirt from being carried into the clamping system.

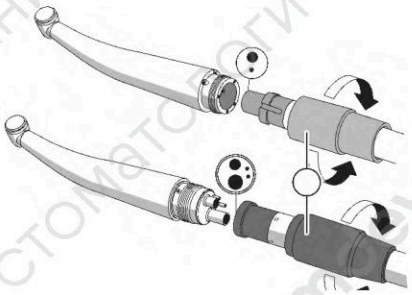
⚠ CAUTION! A loose or partially removed burr instrument can detach itself from the head or break off. This leads to a risk of injury! Therefore, only use the highspeed handpiece if the burr instrument is at least 10 mm deep and clamped securely in place.

⚠ CAUTION! Do not pull the patient's cheek back with the handpiece while the highspeed handpiece is rotating. This would actuate the pushbutton, thus creating a risk of burning the patient's oral mucosa.

5.1 Changing the highspeed handpiece

⚠ CAUTION! Do not remove the handpiece while the highspeed handpiece is running.

5.1.1 Highspeed handpiece with fixed connection



Connecting the highspeed handpiece

1. Attach the highspeed handpiece to the supply hose, observing the various tube diameters.
2. Screw the screw cap (A) hand-tight. Hold the highspeed handpiece securely when doing this.

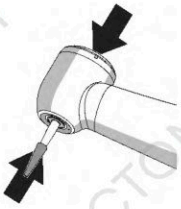
Removing the highspeed handpiece

1. Unscrew and remove the screw cap.
2. Pull the highspeed handpiece off of the supply hose.

5.2 Inserting and removing burr instruments

IMPORTANT: Check the pushbutton to make sure it moves freely.

NOTICE! Use only sharp and undamaged burrs and diamond grinders. The burrs and diamond grinders must be clean to prevent dirt from being carried into the clamping system.



⚠ CAUTION! A loose or partially removed burr instrument can detach itself from the head or break off. This leads to a risk of injury! Therefore, only use the highspeed handpiece if the burr instrument is at least 10 mm deep and clamped securely in place.

Inserting the friction grip burr instrument

✓ The highspeed handpiece has come to a stop.

1. Press the pushbutton and insert the burr instrument up to the stop.
2. Then pull the burr instrument to check that it is firmly seated.

Removing the friction grip burr instrument

✓ The burr instrument has come to a stop.

➢ Remove it while pressing and holding down the pushbutton.

5.3 Adjusting the cooling spray

➢ Adjust the cooling spray for the highspeed handpiece with fixed connection at the treatment unit.

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6 Re-processing

6.1 After each treatment session

1. Clean and disinfect the highspeed handpiece and the accessory parts.
2. Spray the highspeed handpiece.
3. Sterilize the highspeed handpiece and the accessory parts.

6.2 At the end of the work day

➢ Spray the highspeed handpiece.

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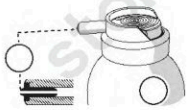
7 Care and maintenance

7.1 Spraying the mechanics

Intervals

- At least daily at noon and in the evening
- Prior to sterilization
- After thermodisinfection
- During a longer preparation (> 10 minutes)

Required accessories

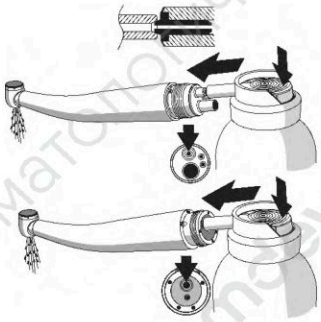


A Black nozzle insert

B T1 Spray

NOTICE! Using sprays from other manufacturers can reduce the product's service life. Only use Sirona T1 spray.

Procedure



✓ The highspeed handpiece has come to a stop.

✓ The black nozzle insert is present in the spray can tube.

1. Remove the burr instrument.
2. Take the highspeed handpiece off of the supply hose [› 7].
3. Insert the nozzle of the spray can in the driving air tube. Hold the highspeed handpiece securely with a cloth when doing this.
4. Apply spray to the highspeed handpiece for 1 - 2 seconds.

Check

1. Check whether the liquid escaping from the highspeed handpiece head is clean.
2. If the liquid is dirty: repeat the spraying procedure.

The liquid is still not clean?

1. Connect the highspeed handpiece to the supply hose and allow the handpiece to run briefly. In this way, the spray can be distributed more effectively.
2. ⚠ CAUTION! Wait until the highspeed handpiece comes to a standstill. Wipe off any leaking oil with a dry cloth.
3. Repeat the spraying procedure.

7.2 Maintaining the pushbutton chuck

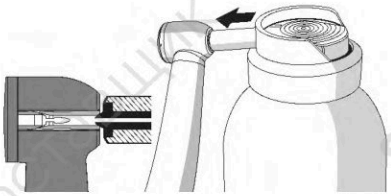
Interval

Carry out maintenance work on the pushbutton chuck at least once a week.

Required accessories

T1 Spray

Procedure



1. Press the highspeed handpiece head with the chuck firmly against the spray can nozzle.
2. Spray the chuck for 1 - 2 seconds. IMPORTANT: Hold the spray can upright.
3. Wipe off any leaking protective oil with a lint-free cloth.

7.3 Manually cleaning and disinfecting the surface

✓ Wear appropriate protective clothing.

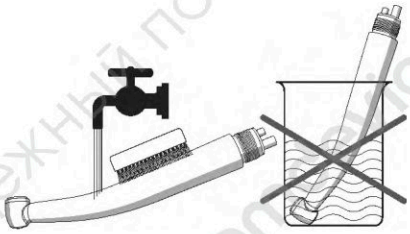
1. Remove the burr instrument [→ 7].
2. Automated processing is preferable to manual.

IMPORTANT: Manual cleaning must always be combined with disinfection.

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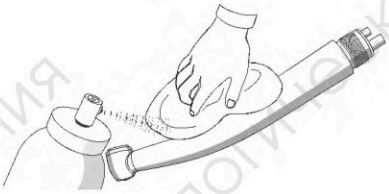
7.3.1 Cleaning the outer surface



NOTICE! Never clean in an ultrasonic bath!

1. Clean the highspeed handpiece by brushing it off under running water (< 38°C, < 100°F, at least drinking water quality).
2. Blow the highspeed handpiece out with max. 3 bar.

7.3.2 Disinfecting the surface



NOTICE! Never immerse in disinfectants!

✓ The disinfectants that are approved in your country must have proven bactericidal, fungicidal and virucidal properties.

1. Spray the surface with disinfectant.
2. Wipe the disinfectant away using a cloth.

In the USA and Canada, for example, you can use:

- CAVICIDE®
- CAVIWIPES ™

Please observe the manufacturer's instructions for using instrument disinfectants.

7.4 Manually cleaning and disinfecting the spray channels

➢ Clean and disinfect the spray channels using suitable equipment and the corresponding adapters in accordance with the manufacturer specifications.

7.5 Automated cleaning and disinfecting ...

7.5.1 ... with a DAC UNIVERSAL



We recommend using Sirona DAC UNIVERSAL for automated cleaning, disinfection, and care.

For further details, refer to the operating instructions supplied with the unit.

➢ Manually maintain the pushbutton chuck [→ 9].

7.5.2 ... with cleaning and disinfection equipment

The highspeed handpiece can also be cleaned and disinfected in a suitable item of cleaning and disinfection equipment.

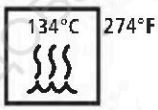


The cleaning and disinfection equipment used must be approved by its manufacturer for the cleaning and disinfection of dental instruments and comply with EN ISO 15883-1 (e.g. 95°C (203°F) and 10 min. holding time).

For further details, refer to the operating instructions supplied with the unit.

1. Check whether the highspeed handpiece is clean after processing.
2. If any contamination is present: repeat the procedure.
   ↳ For further processing, the highspeed handpiece should be dry and free from any residues.
3. Blow the highspeed handpiece out with max. 3 bar.
4. Manually maintain the mechanics [› 9].
5. Manually maintain the pushbutton chuck [→ 9].

7.6 Sterilizing



1. Clean and disinfect the highspeed handpiece. [→ 9]
2. Spray the highspeed handpiece [› 9].
3. Sterilize the highspeed handpiece in the steam sterilizer with saturated water vapor.

Saturated water vapor:	Temperature: 134°C (274°F) Overpressure: 2.04 bar (29.59 psi)
Holding time:	3 min

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Steam sterilizers that fulfill the requirements of either EN 13060, class B (for example, DAC PROFESSIONAL) or EN 13060, class S and are suitable for the sterilization of highspeed handpieces are approved.

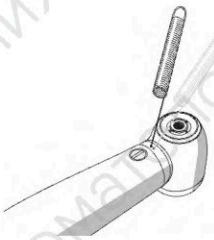
NOTICE! Do not exceed 140°C (284°F), even during the drying phase.

The highspeed handpiece can be sterilized in a packaging which is suitable for sterilization and storage, e.g. a paper/plastic composite packaging.

After sterilizing

1. Remove the highspeed handpiece from the steam sterilizer immediately.
   ⚠ CAUTION! The highspeed handpiece is hot. There is a risk of burning!
   NOTICE! Do not immerse the highspeed handpiece in cold water to speed up the cooling process. This will damage your highspeed handpiece!
2. Store all highspeed handpieces so that they are protected from contamination.
3. Sterilize again once the storage period has elapsed.

7.7 Cleaning the cooling spray nozzle



If your tap water is very hard, calcareous deposits can constrict or completely block the cooling spray nozzle.

1. Carefully clean the nozzle opening on a regular basis by running a cleaning wire through it.
2. Briefly operate the highspeed handpiece with cooling spray.

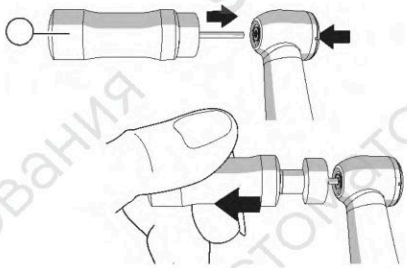
7.8 Testing the FG clamping system

Interval

Test the FG clamping system at least once a month.

Required accessories

Chuck tester



Procedure

✓ The expiry date of the chuck tester (A) has not elapsed.

1. Insert the chuck tester into the FG clamping system [› 7].
2. Pull on the chuck tester until the marking ring appears (withdrawal force: 22 N).

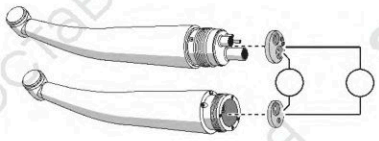
Does the chuck tester slide out of the chuck before the marking ring appears?

⚠ CAUTION! The chuck is defective and there can be no guarantee that the burr instrument will be held securely in place. This leads to a risk of injury!

1. Take the product out of use.
2. Have the chuck replaced by a technician who is authorized by Sirona to perform this task.

Tip: Keep a record of the time and result of the inspection for your own monitoring purposes.

7.9 Replacing the sealing washer



Highspeed handpiece with fixed connection

1. Take the highspeed handpiece off of the supply hose.
2. Remove the sealing washer (B).
3. Insert the new sealing washer. Its bulging side (A) must be pointing outwards.

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8 Spare parts and consumables

Use only Sirona original or approved parts.

	Order No.:			Order No.:
T1 Spray (6x 250 ml cans)	59 01 665		Chuck tester	33 27 793
Sealing washer, 4-hole	58 61 765		Sealing washer 2-hole	64 08 384
Cleaning wire for spray nozzles	58 66 715			

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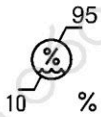
Storage and transport conditions



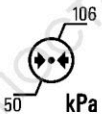
Protect against moisture



Sensitive contents



Relative humidity



Air pressure



Temperature

After a severe change in temperature, allow sufficient time for acclimatization.

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10 Disposal

- To the best of our current knowledge, the product does not contain any substances which are hazardous to the environment.
- Disinfect the product prior to disposal.
- Please observe the disposal regulations applicable in your country.

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We reserve the right to make any alterations which may be required due to technical improvements.

© Sirona Dental Systems GmbH 2012
D3355.201.17.02.02 09.2012
Sprache: englisch
Ä.-Nr.: 115 286
Printed in Germany

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