Instructions for use of Diplomat Dental units

Model One 100

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Revision: 1.1

DIPLOMAT DENTAL SOLUTIONS

CONTENTS

1 Product information

This manual provides instructions for using the **MODE ONE 100.**
Please read this manual before using the dental unit for the first time.

Intended purpose of the dental unit:
Dental unit is specified to support and position the patient and to administer necessary supply
for instruments and for performing the dental treatment of the patient by the dentist. This dental
equipment is comprised of a number of connected dental sub-assemblies and instruments that create
a complete functional unit for dental care.

Only dental professionals who have reviewed the manual and who are familiar with the applications
supported by the unit may use this dental unit. Installation, set-up and maintenance work may only be
performed by a qualified and authorised service technician certified to conduct these activities.
The conditions for use concerning utility services and installation specified in the **User Manual** must
also be fulfilled.

1.1   Product description

MODEL ONE 100 (DC 290, TYGI 200 B) is by chair carried dental unit. The pantographic dentist's table
arm and pantographic light arm are attached to the top of the cuspidor block post. The dentist's table
is equipped with a keyboard with display used to control the unit functions. Rotary instruments and
the scaler are controlled using a foot controller. The bowl on the cuspidor block is adjusted manually
only. The assistant's console arm may be equipped with a saliva ejector, a large and small aspirator,
syringe, polymerizing lamp and intra oral camera. The tray table on the pantographic light arm and
the arm for the LCD monitor are installed as optional accessories.

Product	Leading of instruments hoses	Number of instruments	Assembly
MODEL ONE 100	upper/lower	5	carried

Parts of the unit in contact with the patient:
- Seat
- Backrest
- Headrest
- Armrest
- Instruments

Instruments
- Syringe
- Rotary instruments:
  - Turbine (max. 3)
  - BLDC micro motor (max. 2)
- Scaler
- Polymerizing lamp

i. All instruments except the polymerizing lamp may be equipped with a light.
i. Optional accessories (see the valid price list)

Indications, contraindications for the medical device:

Indications: This equipment is designed to prevent, treat, or ameliorate disease in the patient's oral cavity

Contraindications: none known

Patient profile:

- Age: adult population, children age 3 and above
- Weight: up to a patient weight of 200 kg
- Health: suitability for treatment and exclusion of the contraindications for the patient occurs during examination by a dentist
- Nationality: not applicable

Body part or type of tissue: patient's oral cavity

> ⚠ Do not use the medical device, if it is suspected of being damaged or malfunctioning. Contact an authorized service technician.

1.2   Technical parameters

Dental unit	Value
Voltage	220 - 240 V ~ 100 - 127 V ~
Frequency	50/60 Hz
Max. power	400 VA
Supply air pressure	0,45 - 0,8 MPa
Supply water pressure	0,3 - 0,6 MPa
Unit weight, netto	260 + max. 50 kg
Unit weight, brutto	360 + max. 50 kg
Type of protection against electric shock	class I protection device
Level of protection against electric shock	applied parts B
Enclosure rating	IP21
Temperature of water for the cup (if heater is installed)	25 - 35 °C
Capacity of articulated light arm storage table	1,5 kg
Capacity of dentist's panel tray table: • 290 x 370 mm	1 kg
Mode of operation	permanent with intermittent loading typical of standard dental work

Chair	Value
Chair height above ground: ● Model One 100	385 mm - 825 mm ± 15 mm
Cradle function range of the back-rest from the vertical plane. ● With cradle function: ● Without cradle function:	20° ± 2° - 90° ± 2° 13° ± 2° - 97° ± 2°
The seat cradle function from a horizontal plane in the version without cradle function:	3° - 21° ± 2°
Vertical motion when unloaded	max. 19 s
Backrest motion when unloaded	max. 13 s
Seat recline	max. 8 s
Load capacity of the unit (EN ISO 7494-1)	max. 200 kg
Seat weight depending on model: ● Anchored without seat cradle function: ● Anchored with seat cradle function:	 133 + max. 5 kg 137 + max. 20 kg
Weight of the chair brutto:	180 + max. 50 kg
Mode of operation	1:9
Chair noise	max. 54 dB

1.3   Used symbols

Symbol	Description	Symbol	Description
⚠	Attention, Warning	🧍	Applied part type B
✏	Note	IP21	Level of moisture protection
SN	Serial number	CE	CE marking−product meets EU legislative requirements
📖	See the Manual	135°C	Sterilizable in a steam sterilizer (autoclave) at 135°C
�	Manufacturing date	♻	The equipment is classified as hazardous waste−please dispose of the equipment at an authorized waste collection facility
🏭	Manufacturer	▣	Class II protection device
ⓘ	Proceed according to the Manual	MD	Medical device

1.4   Placement of labels

Label description:
1.   Identification of dental unit production
2.   Basic electrical parameters
3.   Serial number
4.   Date of made
5.   Chair operation mode
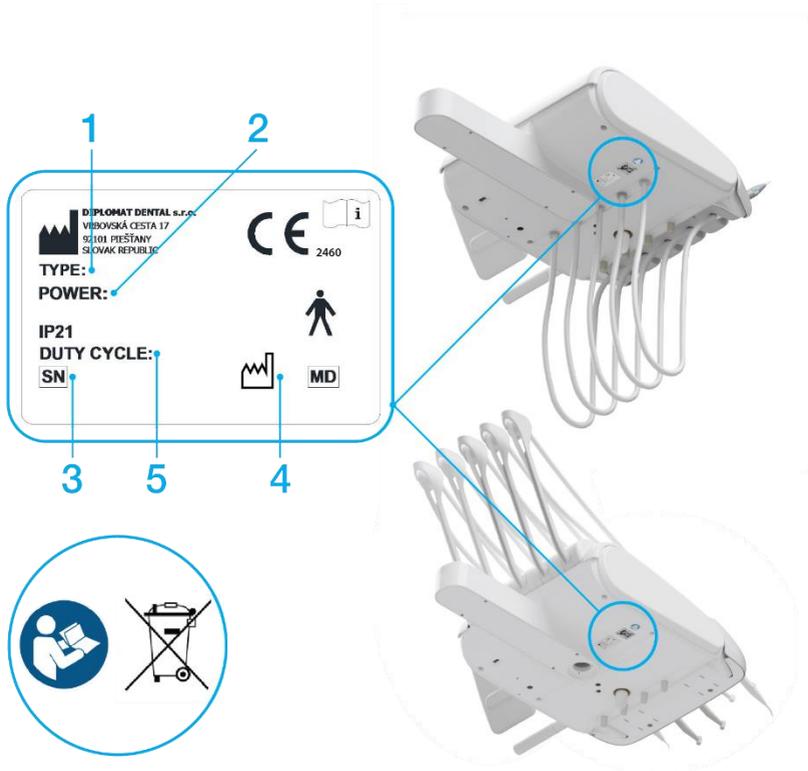
2 Main parts
of the dental unit

2.1   Carried dental unit
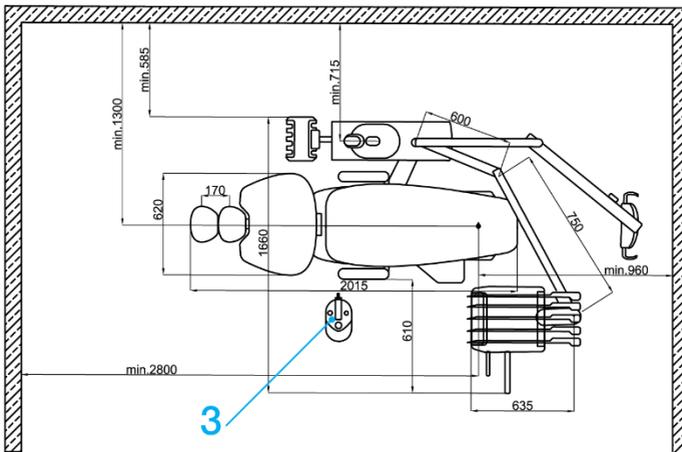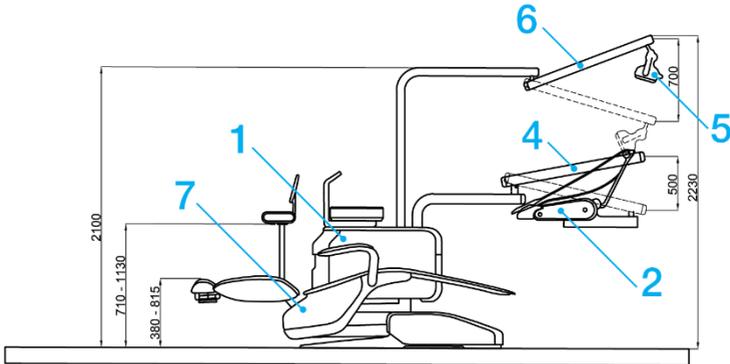
1. Cuspidor with assistant's console arm
2. Control panel
3. Foot controller
4. Pantographic control panel arm
5. Operating light
6. Pantographic light arm
7. Dental chair

3 Product installation and assembly

⚠️ Pre-installation and installation must be performed pursuant to the standards applicable in the given country and in accordance with the manufacturer's documentation.
To prevent the risk of electrocution, this equipment must be connected to an electrical system with a protective ground.
Do not install this equipment in any environment with an explosion hazard!
Do not modify this equipment without permission from the manufacturer!

3.1   Installation requirements

Flooring	Basic thickness ≥ 100 mm. Angle ≤ 1%. Anti-static flooring is preferred.

Water	Potable water from a central supply:	
	Inlet pressure	0,3 - 0,6 MPa
	Flow	> 5 l/min
	Particulate	less than 50 µm
	Water hardness	< 2,14 mmol/l
	pH	6,5 – 8,5
	Max. electrical conductivity	2000 µS/cm

i. Water containing particles larger than 50 µm must be equipped with an upstream 50 µm filter.
The water must comply with local regulations concerning potable (drinking) water.
Cu or PE piping is recommended.

Cooling instruments from a central manifold	A shut-off valve and a backflow-preventing check valve are installed in the central manifold for the unit.

Requirements and recommendations:	- An upstream 5 µm particulate filter must be installed if water - from the central manifold is used to cool instruments. - If the water contains more than **50 mg CaO/l** or **36 mg MgO/l**, a water softening station must be installed at the water manifold inlet. Hard water may result in malfunction of the dental unit. A water softener is required if distilled water is not used. - If there is a need to install a sampling point for supply water, the following schematic shows the recommended point of installation for such supply water sampling purposes.

This equipment is not included with the dental unit.

Connection schematic for dental unit inputs (EN ISO 7494-2)
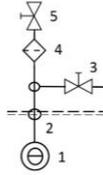
1 – water inlet from the external potable water source
2 – water inlet connection port
3 – water inlet sampling port
4 – water filter for solid particulate
5 – manual inlet valve

Air

Compressed air must be oil-free, clean and dry:

inlet pressure	0,45 - 0,8 MPa
flow	> 55 l/min

Recommended values:

dew point	max. -20°C
oil	max. 0,5 mg/m^3
particulate 1-5 µm	max 100/ m^3

Suction (if equipped with a cuspidor block with large and small aspirators)

Static vacuum must be within a range of min. 0.005 MPa (50 mbar) to max. 0.02 MPa (200 mbar) measured at the point of installation. If a static vacuum is higher than 0.02 MPa, a calibration (regulator) valve must be connected into the vacuum line to restrict the vacuum to a maximum of 0.02 MPa. This regulator valve is not included with the dental unit. The vacuum unit must supply flow of min. 450 Nl/min. measured at the point of installation.

Pressure loss between the vacuum connection point at the dental unit and the atmospheric end of the cannula:

	Vacuum [mbar]	
Flow [NL/min]	Large aspirator	Small aspirator
90	57	53
150	67	62
200	79	74
250	110	91
300	130	100
350	170	120

Drain

The drain line must have a continuous slope of min. 1% with minimum flow of 10 l/min. and must be free of any sharp bends or segments that could result in reverse flow. Do not use the same drain segment shared with another dental unit or bowl! Polypropylene or hardened polyethylene piping may be used.

> If the regulations in the country of installation require an amalgam separator, a dental unit with a cuspidor block without an amalgam separator must be connected to an external amalgam separator.
> The external amalgam separator installation must comply with its manufacturer's instructions.

3.1.1   Electrical system requirements

Mains current protection device rating	The recommended current protection device rating at the mains is 16 A (a type C circuit breaker when a circuit breaker is used). No other equipment may be connected to the same circuit! The dental unit is rated for a maximum of 1900 VA. The electrical connection must comply with all national standards.
Recommendations	Unless the national standard stipulates otherwise, the manufacturer recommends using a current protection device with a sensitivity of 30 mA and instantaneous disconnection. Once the pre-installation requirements are met, the dental unit is then assembled and installed and connected to related utility services.
Interference	The dental unit does not interfere with the operation of other electronic devices in its immediate vicinity during use.

3.1.2   Operating requirements

Parameter	Value
Ambient temperature	15 – 40 °C
Relative humidity	30 – 75 % non-condensing humidity
Relative humidity	700 – 1060 hPa
Elevation	≤ 3000 m

3.2   Installation and configuration

i. Installation must be performed by a service technician with a valid certificate. Otherwise, the warranty will not be honoured. Complete the registration form and send it to the manufacturer or the seller.

Unpacking and inspecting the delivery
Check to ensure the shipping box is intact. If the box is compromised, do not open the consignment and immediately report the problem to the carrier or seller. Carefully remove the box if the consignment is intact and unpack the individual parts of the dental unit. Check the consignment to ensure it is complete against the **packing sheet**.

i. Do not stress the articulated dentist's table arm, except for standard movement of the arm and the loading permitted on the storage tray.

✎	If an installation plate is used to install the unit, we recommend sealing the plate to the floor using a transparent silicone adhesive. Otherwise, damage may occur that will not be covered by the warranty.

3.3   Commissioning the dental unit

⚠	**Disinfection of a new dental unit prior to its initial use** Before placing a new dental unit into service, disinfection of all water connections for the instruments must be performed by a service technician per the instructions provided in the manual.

Turning on the unit:
Check to ensure the instruments are all in their designated holders and ensure the foot controller is in the idle position and no keypad buttons are depressed when turning on the unit.

1. Turn on the compressor
2. Open the central water supply
3. Turn on the vacuum unit
4. Turn on the main power switch on the unit

The unit is ready for use once an audible tone is heard.
If the unit is equipped with a water heater, the water is heated to the temperature set-point in approximately 10 minutes.

4 Dental unit control

4.1   User interface description

4.1.1   Control panel ONE plus
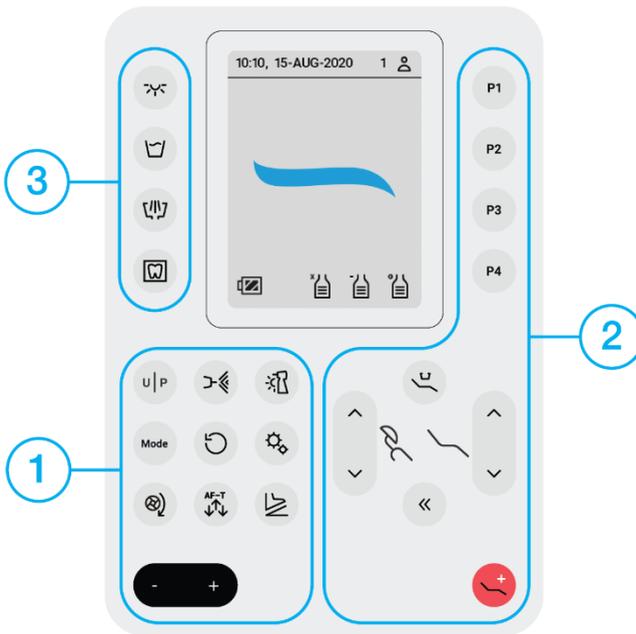
The control panel keyboard is divided into three groups of buttons.
1.   Buttons for the instrument settings,
2.   Buttons for the chair control,
3.   Buttons for light, cup, bowl and negatoscop control.

Button	Description	Button	Description
	Main light	⌃	Moving the chair up
	Cup fill	⌄	Moving the chair down
	Spittoon bowl rinse	⌃	Moving the backrest up
	Negatoscop	⌄	Moving the backrest down

U|P	User/ Program change	«	Chair zero position	
⤬«	Instrument cooling	⛄	Chair rinsing position	
灯	Instrument light	P1	Programmed chair position 1	
Mode	Instrument mode	P2	Programmed chair position 2	
↺	Reverse	P3	Programmed chair position 3	
⚙	Gear ratio	P4	Programmed chair position 4	
⊛	Torque	+	Trendelenburg chair position	
AF–T ⇅	Auto-forward time	-	Value decrease	
⤸	Foot controller function	+	Value increase	

4.1.2   Home screen on the ONE plus display

The home screen appears after switching on the unit:
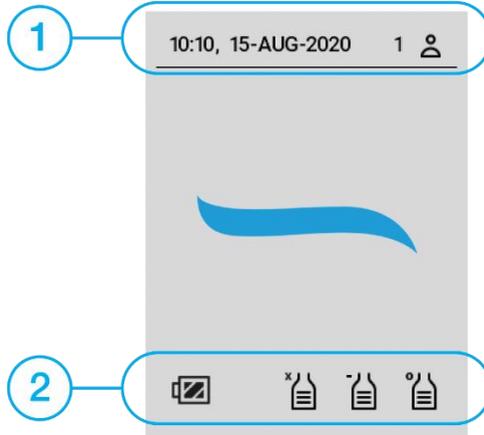
1. Time,
    Date,
    User profile identification.
2. Foot controller battery indicator (100 %),
    Decontamination solution amount indicator (100 %),
    Disinfection solution amount indicator (100 %),
    Source of distilled water (100 %).

Alternatives to the icons displayed on the home screen:

Icon	Description	Icon	Description
Alternative icons for foot controller battery indicator:			
	Foot controller battery 100%		Foot controller battery 60%
	Foot controller battery 30%		Foot controller battery CRITICAL
	Foot controller battery charging		
Alternative icons for decontamination solution amount indicator:			
	Amount of decontamination fluid 100%		Amount of decontamination fluid 60%
	Amount of decontamination fluid 30%		Amount of decontamination fluid EMPTY
Alternative icons for disinfection solution amount indicator:			
	Amount of disinfection fluid 100%		Amount of disinfection fluid 60%
	Amount of disinfection fluid 30%		Amount of disinfection fluid EMPTY
Alternative icons for distilled water amount indicator/ cooling water source:			
	Distilled water for instruments cooling 100%		Distilled water for instruments cooling 60%
	Distilled water for instruments cooling 30%		Distilled water for instruments cooling EMPTY
	No water source for instruments cooling		Central water for instruments cooling

4.1.3   Control panel ONE

The control panel keyboard is divided into three groups of buttons.
1. Buttons for the instrument settings,
2. Buttons for the chair control,
3. Buttons for light, cup, bowl and negatoscop control.

Button	Description	Button	Description
〜Ｙ〜	Main light	∧	Moving the chair up
⊔	Cup fill	∨	Moving the chair down
⊍	Spittoon bowl rinse	∧	Moving the backrest up
⊡	Negatoscop	∨	Moving the backrest down
U | P	User/ Program change	≪	Chair zero position
⊃≪	Instrument cooling	⊾	Chair rinsing position

🔦	Instrument light	P1	Programmed chair position 1
⫞	Foot controller function	P2	Programmed chair position 2
↺	Reverse	P3	Programmed chair position 3
⤙⁺	Trendelenburg chair position	P4	Programmed chair position 4
+	Value increase	**-**	Value decrease

4.1.4   List of messages on the ONE seven-segment display

Action	Displayed data	Description
Turning on the DU	∏ OnE	Welcome
	USr 2	Display of the current user (2 is the current user number)
Getting DU ready for use	rEAdY	DU ready for use
Pulling out the micromotor	∏ 1	Micromotor 1
	∏ 2	Micromotor 2
Pulling out the turbine	ᵗ 1	Turbine 1
	ᵗ 2	Turbine 2
	ᵗ 3	Turbine 3
Pulling out the Scaler	SC P2	Scaler
Pulling out the SATELEC XINETIC scaler	SAt	SATELEC NEWTRON scaler
Pulling out the SATELEC NEWTRON scaler	SAt n	SATELEC NEWTRON scaler
Pulling out the WOODPECKER scaler	UJ Pr	WOODPACKER scaler

	POS 1	1st position
	POS 2	2nd position
Recalling the memory position of the chair	POS 3	3rd position
	POS 4	4th position
	SAUEd	1st position
	SAUEd	2nd position
Remembering the memory position of the chair	SAUEd	3rd position
	SAUEd	4th position
	trEnd	Trendelenburg chair position
	S It	Chair zero position
	SP It	Chair rinsing position
Switch user	USr 1	User 1
	USr 2	User 2
Remembering user settings	SAUEd	Saved user settings
	SAUEd	Saved user settings
	P 1	Currently using Program 1
Calling up tool settings from the program	P 2	Currently using Program 2
	P 3	Currently using Program 3
	P 4	Currently using Program 4

Saving tool settings to the program	SAUEd	Program 1 is saved
	SAUEd	Program 2 is saved
	SAUEd	Program 3 is saved
	SAUEd	Program 4 is saved
Water cooling activation	UJ	Water cooling activated
Spray cooling activation	S	Spray cooling activated
Air cooling activation	A	Air cooling activated
Activation of SCALING mode	SCALE	SCALING mode activated
Activation of GENERIC mode	GEnEr	GENERAL mode activated
Activation of ENDO mode	EndO	ENDO mode activated
Activation of PERIO mode	PEr IO	PERIO mode activated
Activation BOOST mode	bOOSt	BOOST mode activated
Instrument using	40000	Current intensity/speed value
	IOO	Current intensity/speed value
	IO	Current intensity/speed value

4.1.5   List of error messages on the ONE seven-segment display

Action	Displayed data	Description
Active backrest safety sensor	C4 I02	Backrest safety sensor activated (C = CHAIR)
Active seat lift safety sensor	C4 I0I	Seat lift safety sensor activated
Active safety sensor of assistant´s arm	C4 I03	Safety sensor of assistant's arm activated
Error user chair block	04 I I0	Indicates chair block error
Error user safety switch 1	04 I2I	Indicates a user error at safety switch
Error user safety switch 2	04 I22	Indicates a user error at safety switch
Error user safety switch 3	04 I23	Indicates a user error at safety switch
Error user safety switch 4	04 I24	Indicates a user error at safety switch
Error user safety switch 5	04 I25	Indicates a user error at safety switch
Error user safety switch 6	04 I26	Indicates a user error at safety switch
Error user chair invalid position	04 I30	Indicates chair invalid position error
Error user bowl collision	04200	Indicates bowl collision error
Error user water missing	04300	Indicates water missing error
Error user hygiene	04800	Indicates hygiene error
Error user hygiene water tenso calibration	04C04	Indicates hygiene water tenso calibration error
Error user hygiene disinfection tenso calibration	04C05	Indicates hygiene disinfection tenso calibration error
Error user hygiene decontamination tenso calibration	04C06	Indicates hygiene decontamination tenso calibration error

5 Controlling the dental unit

5.1   Users

User interface can manage two user profiles. This allows users to operate the dental unit without losing individual settings.

To change the user profile:
1.   All instruments are on the dentist control panel.

2.   Press the button [U | P] to change the user profile.

3.   The active user profile 1 👤 / 2 👤 is displayed on the ONE plus control panel screen.

The active user profile USr 1 / USr 2 is displayed on ONE control panel display.

5.2   Time/Date
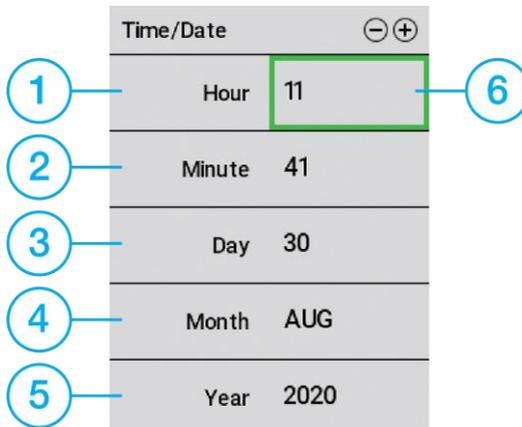
1.	Hour	
2.	Minute	
3.	Day	
4.	Month	
5.	Year	
6.	Indication of a value that can be changed	

To set time and date:
1.   All instruments are on the dentist control panel.

2.   Press the button ⚙ to display the screen for time, date setting.

3.   Press the button + to set the value.

4.   Press the button − to move to next line, (the green frame moves one line down).

5.   Press the button ⚙ to leave the time/date screen.

5.3   Main light

The main light works in two lighting modes. Operating mode, where the light intensity ranges from 8000 lx to 26000 lx. Dimmed mode, where the light intensity ranges from 3000 lx to 8000 lx.

5.3.1   Light control

The light is controlled:
- from the keypad on the dentist element
- using the sensor on the main light
- from the button on the assistant's table keypad, if equipped

5.3.1.1   Light control from keypads

1.   Press the button ⋇ to switch on the light. The light shines at the upper operating light intensity.

2.   Press the button ⋇ again to switch the light to lower dimmed light intensity.

3.   Each additional press of the button ⋇ will change the light intensity.

4.   Press and hold the button ⋇ to switch off the light.

5.3.1.2   Light control using the sensor on the main light

1.   To switch on the light, keep your hand in front of the sensor until it beeps. The light shines at the upper operating light intensity.
2.   To switch the light to lower dimmed light intensity, keep your hand in front of the sensor until it beeps again.
3.   To switch the light back to operating light intensity keep your hand in front of the sensor until it beeps again.
4.   To switch off the light keep your hand in front of the sensor until it beeps second time.

5.3.2   The light intensity setting

To set the light intensity:
1.   All instruments are on the dentist control panel.
2.   The light shines at the upper operating light intensity.

3.   Press buttons   −   +   to decrease and increase the operating light intensity.
4.   The light shines at the lower dimmed light intensity.

5.   Press buttons   −   +   to decrease and increase the dimmed light intensity.

Both light intensities that have been set are memorized automatically.

5.4   Cup fill

1.   Press the button ⊔ to start the cup filling.

2.   Press the button ⊔ during the cup filling process to stop the cup filling.

3.   Press and hold the button ⊔ to set the time of cup filling.

4.   Release the button ⊔ during the cup filling time setting to save the cup filling time.

5.5   Spittoon bowl rinse

1.   Press the button to start the spittoon bowl rinsing.

2.   Press the button during the rinsing process to stop the spittoon bowl rinsing.

3.   Press and hold the button to set the time of spittoon bowl rinsing.

4.   Release the button during the rinsing time setting to save the spittoon bowl rinsing time.

5.6   Negatoscop

1.   Press the button to switch on the negatoscop mode of the display.

2.   To switch off the negatoscop mode press the button when negatoscop mode is active.

5.7   Chair control

5.7.1   Chair height and backrest position settings

Press and hold the button ⌃ to move the chair up.

Press and hold the button ⌄ to move the chair down.

Press and hold the button ⌃ to move the backrest up.

Press and hold the button ⌄ to move the backrest down.

5.7.2   Programmed chair positions

i. Automatic chair movement may be stopped by pressing any chair control button
i. The chair's Trendelenburg position may not be changed.

Four different chair positions may be programmed.

Using a programmed chair position

Press the chair program button P1 to P4 to activate the chair to move it into the programmed position.

Saving a programmed chair position

Press and hold the chair program button P1 to P4 saves the current chair position.

5.8   Instrument control - control panel ONE plus

All instruments on the dentist's table are active and may be controlled once removed from the individual holders (dentist's table with lower instruments hoses) or by picking them up from the dentist's table (with upper instruments hoses). The individual instrument screens appear automatically, and their parameters may be adjusted.
The individual instruments are started, and speeds are controlled using the individual pedals on the foot controller.

i. Working with two instruments—a second instrument may also be used when removed from
the dentist's table. Work with the active instrument is not limited in any way. Another instrument other than
the instrument currently in use may be used once all other instruments are put back into
the dentist's table.

5.8.1 Standard TURBINE and TURBINE with proportional valve
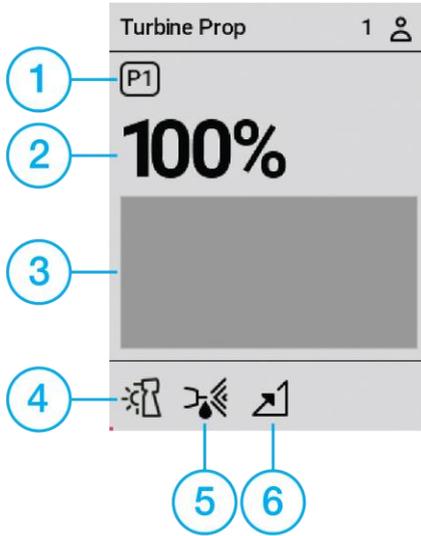
i. Points 2 and 6 are only accessible for a turbine with a proportional valve.

1.	**Program of the instrument**. A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings:

P1 P2 P3 P4

2.	**Maximum turbine speed settings.** Maximum instrument speed may be limited to a set speed.
3.	**Speed indicator**
4.	**Instrument lighting** Possible settings:

	Light off		Light on

5.	**Instrument cooling** Possible settings:

	Cooling off		Air cooling
	Water cooling		Water cooling with automatic chip blower
	Spray cooling		Spray cooling with automatic chip blower

6.	**Foot controller mode** Possible settings:

	Switching on/ off mode		Analog control mode (only available for proportional turbine)

5.8.2   Micromotor DX, DX BLUE
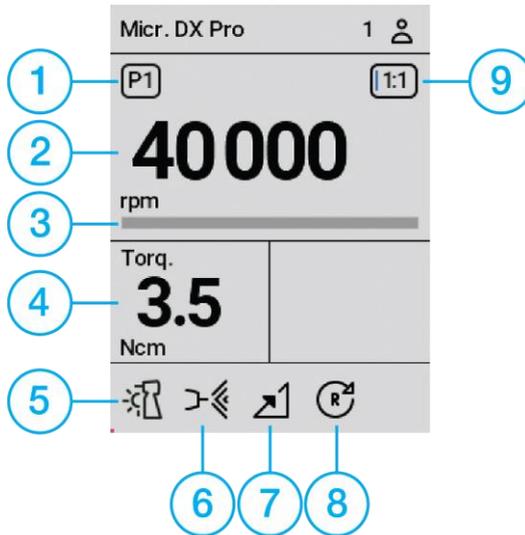
1.	**Program of the instrument**. A dentist may save up to 4 different instrument settings. See the chapter on instrument programs.

Possible settings:

P1 P2 P3 P4

2.	**Maximum micromotor speed.** Maximum instrument speed may be limited to a set speed.
3.	**Speed indicator**
4.	**Torque**

5.   Instrument lighting
Possible settings:

🔦	Light on		
🔦	Blue light on (only available for DX BLUE)	🔦	Light off

6.   Instrument cooling
Possible settings:

⊐ˣ	Cooling off	⊐3	Air cooling
⊐《	Water cooling	⊐《	Water cooling with automatic chip blower
⊐⠿	Spray cooling	⊐⠿	Spray cooling with automatic chip blower

7.

Foot controller mode
Possible settings:

Switching on/ off mode   Analog control mode

8. **Direction of rotation**
Possible settings:

Rotation to the right   Rotation to the left

9. **Gear ratio of the contra angle**. See the chapter on gear ratio settings.

5.8.3   Micromotor DX PRO, DX PRO BLUE
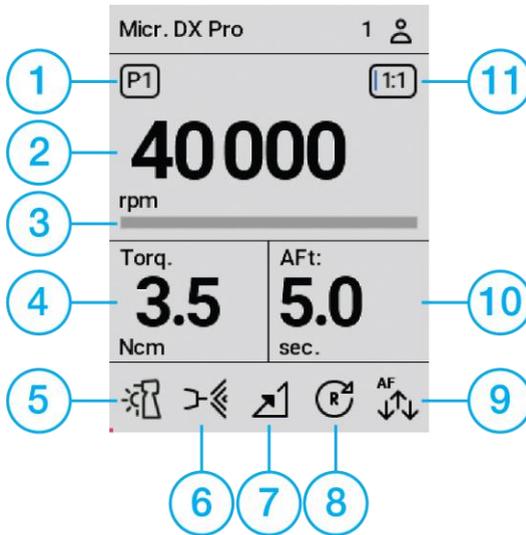
1. **Program of the instrument**. A dentist may save up to 4 different instrument settings.
See the chapter on instrument programs.

Possible settings:

P1 P2 P3 P4

2. **Maximum micromotor speed.**
Maximum instrument speed may be limited to a set speed.

3. **Speed indicator**

4. **Torque**

5.	**Instrument lighting** Possible settings:			
		Light on		
		Blue light on (only available for DX PRO BLUE)		Light off

6.	**Instrument cooling** Possible settings:			
		Cooling off		Air cooling
		Water cooling		Water cooling with automatic chip blower
		Spray cooling		Spray cooling with automatic chip blower

7.	**Foot controller mode** Possible settings:			
		Switching on/ off mode		Analog control mode

8.	**Direction of rotation** Possible settings:			
		Rotation to the right		Rotation to the left

9.	**Micromotor working mode**			
		Normal mode		
		Autoreverse mode		Autoforward mode

10.	**Autoforward time**

11.	**Gear ratio of the contra angle.** See the chapter on gear ratio settings.

5.8.4   Scaler SATELEC NEWTRON LED, SATELEC XINETIC
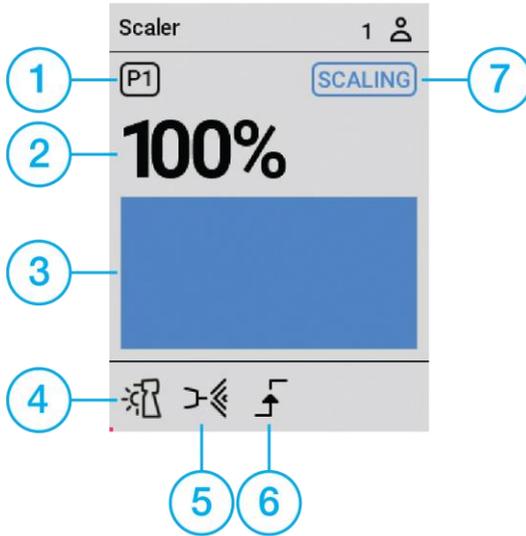
1.	**Program of the instrument**. A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings: P1 P2 P3 P4
2.	**Maximum scaling intensity**. Maximum scaling intensity may be limited to a set value.
3.	**Scaling intensity indicator**
4.	**Instrument lighting** (only available for model NEWTRON) Possible settings: Light on Light off
5.	**Instrument cooling** Possible settings: Cooling off Water cooling
6.	**Foot controller mode** Possible settings: Switching on/ off mode Analog control mode
7.	**Scaler mode** Possible settings: PERIO Perio mode (low power) ENDO Endo mode (medium power) SCALING Scaling mode (high power) BOOST Boost mode (boost) (only available for model NEWTRON)

5.8.5   Scaler EMS, EMS LED

1.	**Program of the instrument.** A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings:
	P1 P2 P3 P4

2.	**Maximum scaling intensity**. Maximum scaling intensity may be limited to a set value.

3.	**Scaling intensity indicator**

4.	**Instrument lighting** (only available for model with LED) Possible settings:
	Light on Light off

5.	**Instrument cooling** Possible settings:
	Cooling off Water cooling

6.	**Foot controller mode** Possible settings:
	Switching on/ off mode Analog control mode

5.8.6 Scaler NSK VA170, NSK VA170 LED

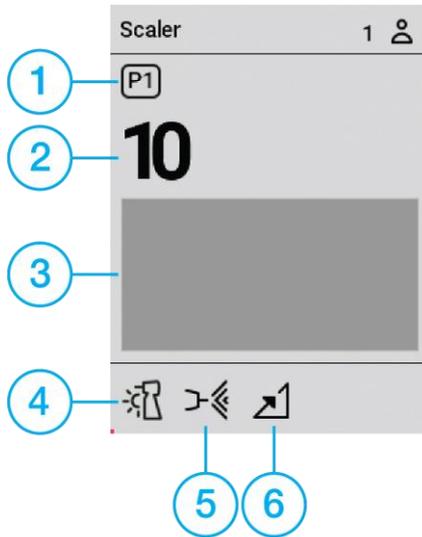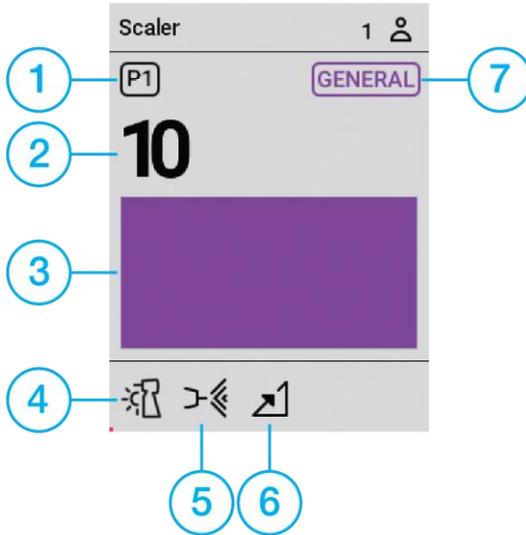|		
1.	**Program of the instrument.** A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings: P1 P2 P3 P4	
2.	**Maximum scaling intensity.** Maximum scaling intensity may be limited to a set value.	
3.	**Scaling intensity indicator**	
4.	**Instrument lighting** (only available for model VA170 LED) Possible settings:	Light on Light off
5.	**Instrument cooling** Possible settings:	Cooling off Water cooling
6.	**Foot controller mode** Possible settings:	Switching on/ off mode Analog control mode
7.	**Scaler mode** Possible settings: PERIO Perio mode (low power) ENDO Endo mode (medium power) GENERAL General mode (high power)	

5.8.7   Scaler LM LED

1.	**Program of the instrument**. A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings: P1 P2 P3 P4
2.	**Maximum scaling intensity.** Maximum scaling intensity may be limited to a set value.
3.	**Scaling intensity indicator**
4.	**Instrument lighting** Possible settings: Light on / Light off
5.	**Instrument cooling** Possible settings: Cooling off / Water cooling
6.	**Foot controller mode** Possible settings: Switching on/ off mode / Analog control mode

5.8.8   Scaler WOODPECKER
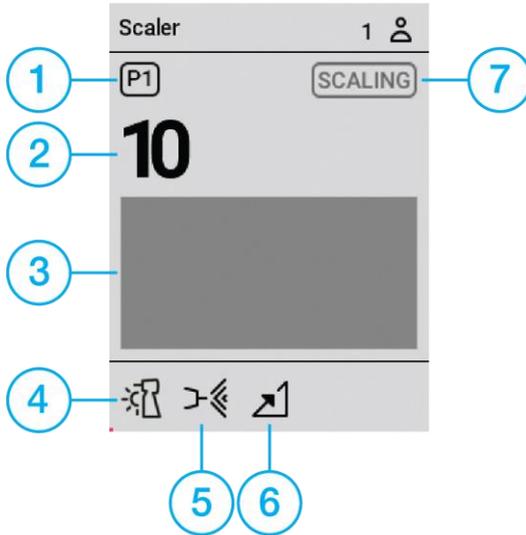
1.	**Program of the instrument**. A dentist may save up to 4 different instrument settings. See the chapter on instrument programs. Possible settings: [P1] [P2] [P3] [P4]	
2.	**Scaling intensity.** Maximum scaling intensity may be limited to a set value.	
3.	**Scaling intensity indicator**	
4.	**Instrument lighting** Possible settings: Light on Light off	
5.	**Instrument cooling** Possible settings: Cooling off Water cooling	
6.	**Foot controller mode** Possible settings: Switching on/ off mode Analog control mode	
7.	**Scaler mode** Possible settings: SCALING Scaling mode (high power) ENDO Endo mode (medium power)	

5.8.9   Instrument programs

i. The instrument programming process is applicable to all instruments controlled from the dentist's table
i. 4 different program settings are supported for every instrument

The currently used instrument program is identified on the display by icons P1 P2 P3 P4

Saving changes to the currently displayed program

On the keypad press and hold the button of the program U | P to save the current parameters and instrument settings.

Recalling a program

Press the button U | P repeatedly to set the desired program P1 to P4 .

5.9   Instrument control - control panel ONE

All instruments on the dentist's table are active and may be controlled once removed from the individual holders (dentist's table with lower instruments hoses) or by picking them up from the dentist's table (with upper instruments hoses). The seven-segment display shows the instrument description and current intensity or speed value.
The individual instruments are started, and speeds are controlled using the individual pedals on the foot controller.

i. Working with two instruments – a second instrument may also be used when removed
from the dentist's table. Work with the active instrument is not limited in any way. Another instrument
other than the instrument currently in use may be used once all other instruments are put back into
the dentist's table.
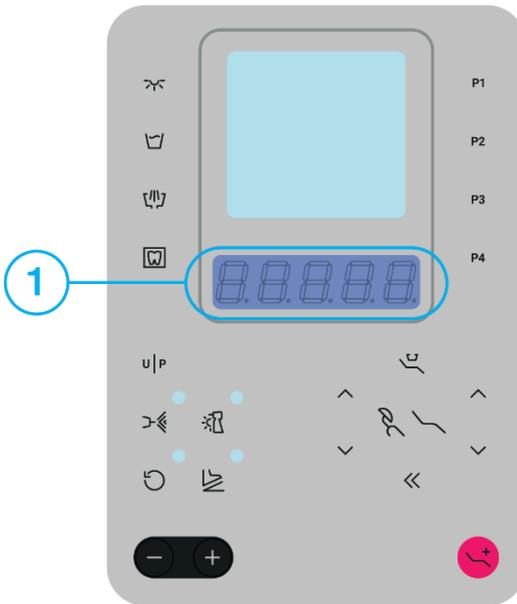
  1.   Seven segment display

i. For a list of messages displayed, see chapters 4.1.4 Instrument description on seven segment display,
4.1.5. List of error messages on the ONE seven-segment display.

5.9.1   Standard TURBINE and TURBINE with proportional valve

1.   **Program of the instrument.** A dentist may save up to 4 different instrument settings. See the chapter on instrument programs.

U|P	Press	P	2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/
Instrument programing				
U|P	Press and hold	SAUEd		Instrument settings saved
2.	**Instrument cooling**			
↘⧏	Cooling off			Press/ press and hold to set the cooling type
↘⧏	Water cooling	UJ		
↘⧏	Spray cooling	S		
↘⧏	Air cooling	A		
↘⧏	Water cooling with automatic chip blower	UJ bL		
↘⧏	Spray cooling with automatic chip blower	S bL		

- +	Cooling mode setting	Press to set the required cooling type

3. **Speed – turbine with proportional valve**

Press		Press and hold	
+	Increasing the speed step by step	+	Increasing the speed with acceleration
-	Decreasing the speed step by step	-	Decreasing the speed with acceleration

4. **Instrument lighting**

	Light off		Light on

5. **Foot controller mode**

	Switching on/ off mode
	Analog control mode (only available for proportional turbine)

i. Description of the light indicator

	Completely filled circle	Lights without interruption
	Half-filled circle	Flashing

5.9.2   Micromotor DX, DX BLUE

1.   **Program of the instrument.** A dentist may save up to 4 different instrument settings. See the chapter on instrument programs.

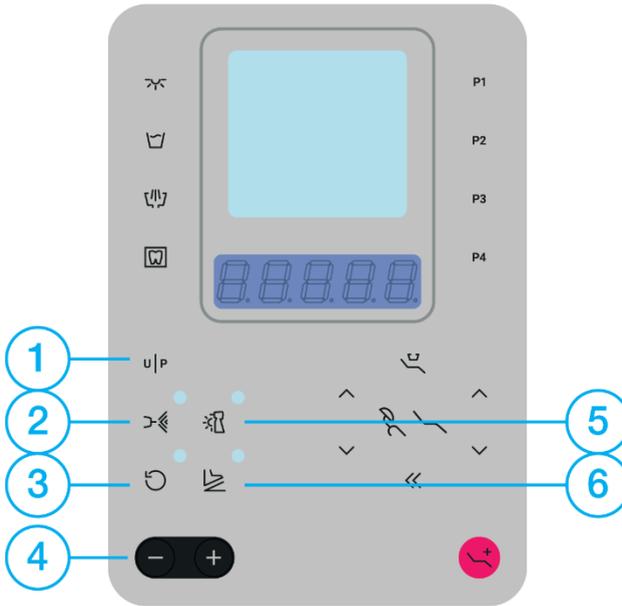|			
U|P	Press	P 2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/
Instrument programing			
U|P	Press and hold	SAUEd	Instrument settings saved

2.   **Instrument cooling**

⇥«	Cooling off		Press/ press and hold to set the cooling type
⇥«	Water cooling	UJ	
⇥«	Spray cooling	S	
⇥«	Air cooling	A	
⇥«	Water cooling with automatic chip blower	UJ bL	
⇥«	Spray cooling with automatic chip blower	S bL	

[- +] Cooling mode setting		Press to set the required cooling type

3. **Direction of rotation**

	Rotation to the right
	Rotation to the left

i. The left rotations, unless they are stored in the memory, are remembered only temporarily until the dental unit is switched off.

4. **Micromotor speed**

Press		Press and hold	
[+]	Increasing the speed step by step	[+]	Increasing the speed with acceleration
[-]	Decreasing the speed step by step	[-]	Decreasing the speed with acceleration

5. **Instrument lighting**

	Light off		Light on
	Blue light on (only available for DX BLUE)		

6. **Foot controller mode**

	Switching on/ off mode
	Analog control mode

i. Description of the light indicator

	Completely filled circle	Lights without interruption
	Half-filled circle	Flashing

5.9.3   Micromotor DX PRO, DX PRO BLUE

1. **Program of the instrument.** A dentist may save up to 4 different instrument settings.
    See the chapter on instrument programs.

u|p	Press	P	2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3.../
Instrument programing				
u|p	Press and hold	SAUEd		Instrument settings saved
2. **Instrument cooling**				
⊃≪	Cooling off			Press/ press and hold to set the cooling type
⊃≪	Water cooling	UJ		
⊃≪	Spray cooling	S		
⊃≪	Air cooling	A		
⊃≪	Water cooling with automatic chip blower	UJ bL		
⊃≪	Spray cooling with automatic chip blower	S bL		

− +	Cooling mode setting	Press to set the required cooling type

3.   **Direction of rotation**

↺	Rotation to the right
↺	Rotation to the left

i. The left rotations, unless they are stored in the memory, are remembered only temporarily until the dental unit is switched off.

4.   **Micromotor speed**

Press		Press and hold	
+	Increasing the speed step by step	+	Increasing the speed with acceleration
−	Decreasing the speed step by step	−	Decreasing the speed with acceleration

5.   **Instrument lighting**

🔦	Light off	🔦	Light on
🔦	Blue light on (only available for DX PRO BLUE)		

6.   **Foot controller mode**

⊵	Switching on/ off mode
⊵	Analog control mode

i. Description of the light indicator

⊱«	Completely filled circle	Lights without interruption
⊱«	Half-filled circle	Flashing

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5.9.4   Scaler SATELEC NEWTRON LED, SATELEC XINETIC

1.   **Program of the instrument.** A dentist may save up to 4 different instrument settings.
See the chapter on instrument programs.

U|P	Press	P	2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/

Instrument programing

U|P	Press and hold	SAUEd	Instrument settings saved

2.   **Instrument cooling**

⊃⧏	Cooling off	⊃⧏	Water cooling

3.   **Scaling mood**

↺	Scaling mode (high power)	SCALE S 100	Change the scaling mode /program rotation SCALING->PERIO-> ENDO->SCALING->PERIO->ENDO…/
↺	Endo mode (medium power)	EndO E 10	
↺	Perio mode (low power)	PEr 10 P 10	

	Boost mode	**bOOSt** **b IOO**	(only available for model NEWTRON)

4. **Scaling intensity**

Press		Press and hold	
+	Increasing the speed step by step	**+**	Increasing the speed with acceleration
-	Decreasing the speed step by step	**-**	Decreasing the speed with acceleration

5. **Instrument lighting**

	Light off		Light on

6. **Foot controller mode**

	Switching on/ off mode	/Rotation – step regulation-> continuous regulation-> step regulation-> continuous regulation…/
	Analog control mode	

i. Description of the light indicator

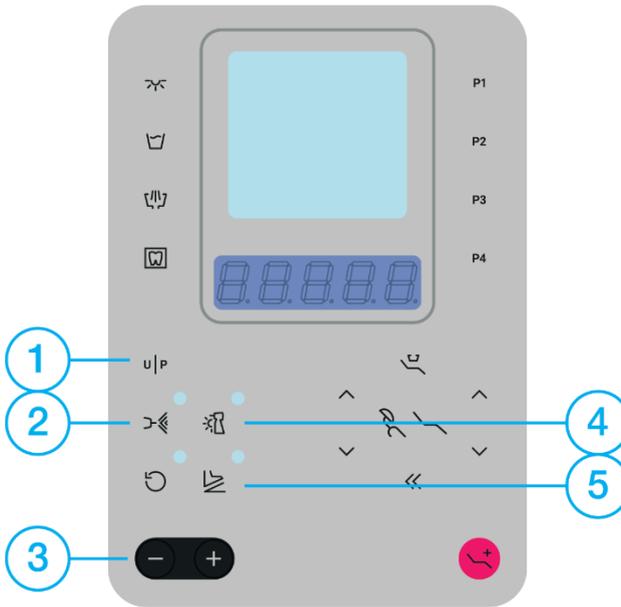|	Completely filled circle	Lights without interruption
	Half-filled circle	Flashing

5.9.5   Scaler EMS, EMS LED

1. **Program of the instrument.** A dentist may save up to 4 different instrument settings.
    See the chapter on instrument programs.

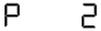|				
U|P	Press	P	2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/

Instrument programing

U|P	Press and hold	SAUEd	Instrument settings saved

2. **Instrument cooling**

⊃≪	Cooling off	⊃≪	Water cooling

3. **Scaling intensity**

Press		Press and hold	
+	Increasing the speed step by step	+	Increasing the speed with acceleration
-	Decreasing the speed step by step	-	Decreasing the speed with acceleration

4. **Instrument lighting**

🔦	Light off	🔦	Light on

5.

Foot controller mode

	Switching on/ off mode
	Analog control mode

i. Description of the light indicator

	Completely filled circle	Lights without interruption

5.9.6 Scaler NSK VA170, NSK VA170 LED

1.	**Program of the instrument.** A dentist may save up to 4 different instrument settings. See the chapter on instrument programs.				

U|P	Press	P	2	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/

Instrument programing				
U|P	Press and hold	SAUEd		Instrument settings saved

2.	**Instrument cooling**			
⊃≪	Cooling off	⊃≪		Water cooling

3.	**Scaling mood**			
↺	Perio mode (low power)	PEr 10 P 10		Change the scaling mode /program rotation PERIO->ENDO-> GENERAL->PERIO->ENDO…/
↺	Endo mode (medium power)	EndO E 10		
↺	General mode (high power)	GEnEr G 10		

4.	**Scaling intensity**		
Press		Press and hold	
	Increasing the speed step by step		Increasing the speed with acceleration
	Decreasing the speed step by step		Decreasing the speed with acceleration

5.	**Instrument lighting** (only available for model VA170 LED)		
	Light off		Light on

6.	**Foot controller mode**
	Switching on/ off mode
	Analog control mode

i. Description of the light indicator

	Completely filled circle	Lights without interruption

5.9.7   Scaler LM LED

1.   **Program of the instrument.** A dentist may save up to 4 different instrument settings.
See the chapter on instrument programs.

U|P	Press	P	∂	Selected program /program rotation P1->P2->P3->P4 ->P1->P2->P3…/
Instrument programing				
U|P	Press and hold	5AUEd		Instrument settings saved

2.   **Instrument cooling**

⊃«	Cooling off	⊃«	Water cooling

3.   **Scaling intensity**

Press		Press and hold	
+	Increasing the speed step by step	+	Increasing the speed with acceleration
-	Decreasing the speed step by step	-	Decreasing the speed with acceleration

4.   **Instrument lighting**

氷	Light off	氷	Light on

5.

Foot controller mode

Switching on/ off mode
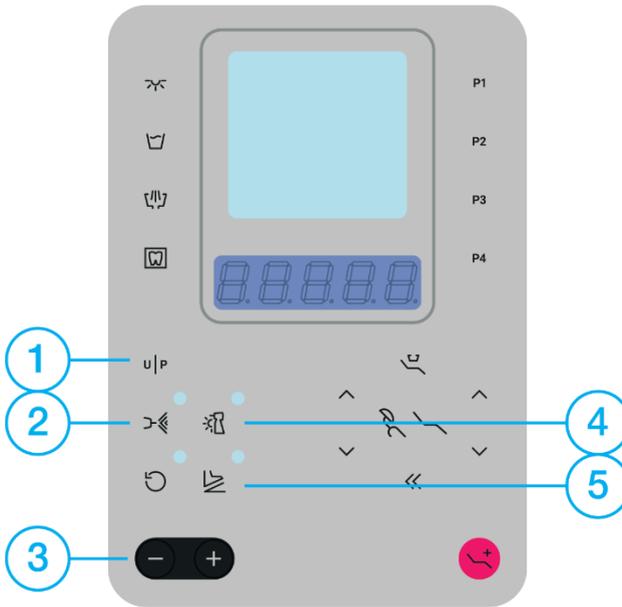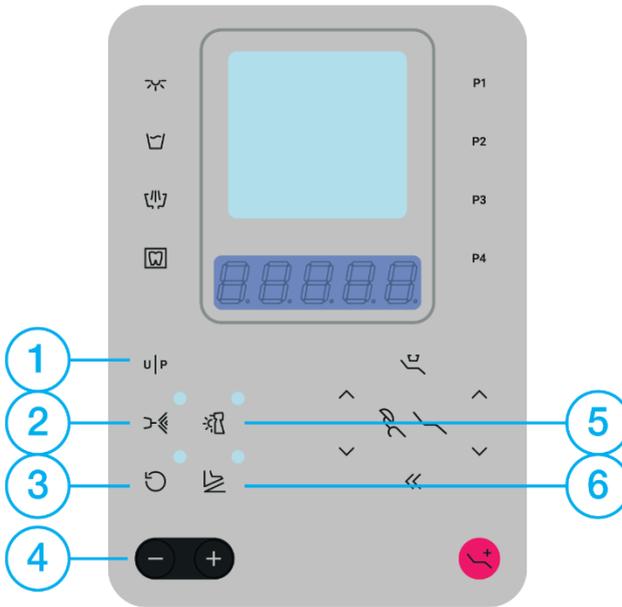
Analog control mode

---

i. Description of the light indicator

Completely filled circle   Lights without interruption

5.9.8   Scaler WOODPECKER

1.   **Program of the instrument.** A dentist may save up to 4 different instrument settings.
See the chapter on instrument programs.

U|P	Press	P 2	Selected program /program rotation PROG1->PROG2->PROG3->PROG4->PROG1…/
Instrument programing			
U|P	Press and hold	SAUEd	Instrument settings saved
2.	**Instrument cooling**		
⊃≪	Cooling off	⊃≪	Water cooling
3.	**Scaling mood**		
⟲	Scaling mode (high power)	SCALE S 10	Change the scaling mode /program rotation SCALING->ENDO->SCALING->…/
⟲	Endo mode (medium power)	EndO E 10	

4.	**Scaling intensity**		
	Press		Press and hold
	Increasing the speed step by step		Increasing the speed with acceleration
	Decreasing the speed step by step		Decreasing the speed with acceleration

5.	**Instrument lighting**		
	Light off		Light on

6.	**Foot controller mode**	
	Switching on/ off mode
	Analog control mode

i. Description of the light indicator

	Completely filled circle	Lights without interruption

5.9.9   Instrument programs

i. The instrument programming process is applicable to all instruments controlled from the dentist's table
i. 4 different program settings are supported for every instrument

The currently used instrument program is identified on the display as

P   1, P   2, P   3, P   4

Saving changes to the currently displayed program

On the keypad press and hold the button of the program (U | P) to save the current parameters and instrument settings.

Recalling a program

Press the button (U | P) repeatedly to set the desired program (P1) to (P4) .

6 Operating the dental unit

6.1   Manipulation with dentist´s element

For manipulation with dentist´s element, there is not necessary to release any brake. The arm is set to allow comfortable handling. There are brakes on the arms, the strength of which can be adjusted during regular servicing.
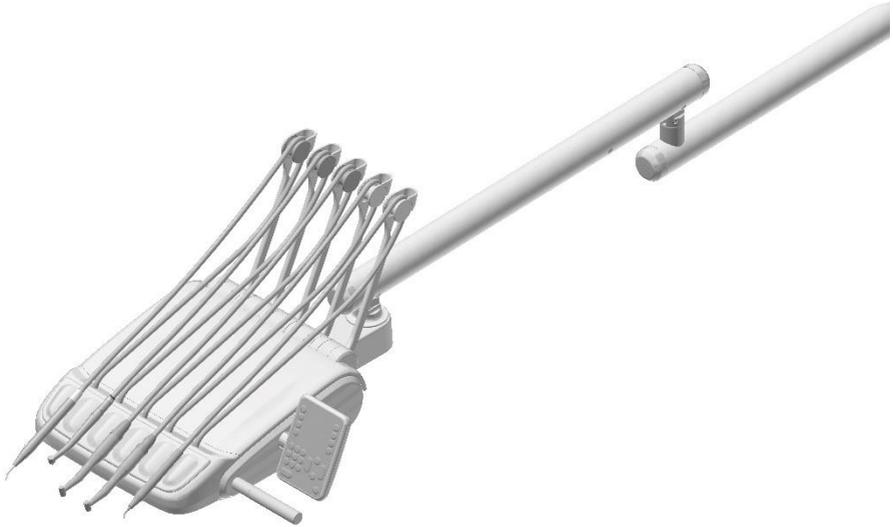

6.2   Whip locking

A dentist's table with instrument hoses routed in the upper configuration may be equipped with a whip lock. An instrument whip is routed to the instrument stopped in a designated slot. The whip is pulled towards the stop to unlock. The whip then returns back to its basic position.

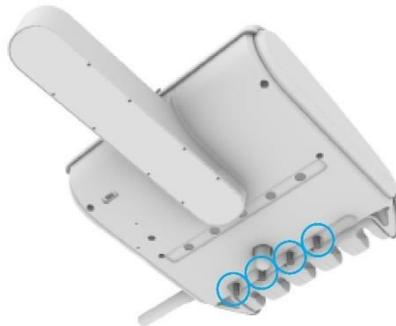## 6.3 Mechanical adjustment of instrument cooling water flow

6.3.1 One regulator for all instruments

One mechanical regulator located at the bottom of the dentist's table is used to adjust instrument cooling water flow for all instruments.
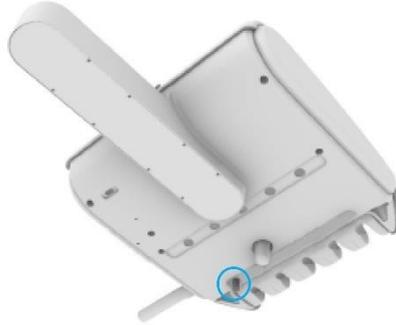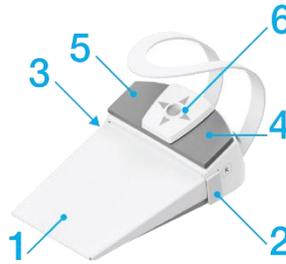

6.3.2. Own regulator for each instrument

The mechanical regulators located at the bottom of the dentist's table are used to adjust instrument cooling water flow individually.

6.4   Foot controller

UNO foot controller

NOK foot controller

Foot controller buttons:

1.   Lever / Pedal
2.   Right side button
3.   Left side button

4.   Chair programming
5.   The chair entry position
6.   Joystick for chair controls

6.4.1   Control with a foot controller

Foot controller lever / pedal
Level / pedal **(1)** is used for starting and regulating the rotary instrument revolutions and for starting and regulating the power of the scaler, based on the selected settings.

Controlling the chair
By moving the joystick (**6**) it is possible to control the basic movements of the chair up, down, back-rest up, back-rest down.

The chair entry position
By pressing the button (**5**) the chair entry position is recalled.

Recalling the chair program positions

Program position no. **1** (see the chapter 5.7.2) is recalled by pressing the button **(4)** and subsequent by moving the joystick upwards.	Program position no. **2** is recalled by pressing the button **(4)** and subsequent by moving the joystick downwards.
Program position no. **3** is recalled by pressing the button **(4)** and subsequent by moving the joystick to the left.	Program position no. **4** is recalled by pressing the button (4) and subsequent by moving the joystick to the right.

Recalling the chair program positions by separate chair

Program position no. **1** is recalled by pressing the button **(4)** (there will be a sound**)** and subsequent by moving the joystick upwards. After saving position, there will be a sound again	Program position no. **2** is recalled by pressing the button **(4)** (there will be a sound**)** and subsequent by moving the joystick downwards. After saving position, there will be a sound again
Program position no. **3** is recalled by pressing the button **(4)** (there will be a sound**)** and subsequent by moving the joystick to the left. After saving position, there will be a sound again	Program position no. **4** is recalled by pressing the button **(4)** (there will be a sound**)** and subsequent by moving the joystick to the right. After saving position, there will be a sound again

i. The second pressing / movement of the joystick must occur within two seconds after pressing the button (4) otherwise the position will not be recalled.

Controlling the spittoon bowl rinse
By pressing left side button **(3)** the spittoon bowl rinsing starts. By pressing left side button **(3),** during the rinsing process, the spittoon bowl rinsing stops.

Controlling the cup fill
By pressing the right side button **(2)** the cup starts filling. By pressing right side button **(2)**, during the cup filling process the cup filling stops.

Controlling the lamp
By pressing lever / pedal **(1)** – the lamp lights up highest intensity. By pressing lever / pedal **(1)** – the light intensity changes from high to low or from low to high. By long pressing lever / pedal **(1)** – the light switches off.

6.4.2   Instrument control with foot controller

i. These control options are available, after the instrument is removed from the individual holder.

Instrument cooling

By pressing left side button **(3)** instrument cooling is activated according to the predefined cooling type.	Control panel ONE plus - the icon on the tool screen will change its status to - cooling activated. Control panel ONE - the LED next to the button lights up / flashes.
By pressing left side button **(3)** instrument cooling is deactivated.	Control panel ONE plus - the icon on the tool screen will change its status to - cooling deactivated. Control panel ONE - the LED next to the button turns off.

Micromotor reverse

By pressing and holding left side button **(3)** micromotor reverse is activated.	Control panel ONE plus - the icon on the tool screen will change its status to - reverse activated. Control panel ONE - the LED next to the button lights up.
By pressing and holding left side button **(3)** instrument cooling is deactivated.	Control panel ONE plus - the icon on the tool screen will change its status to - reverse deactivated. Control panel ONE - the LED next to the button turns off.

Instrument cooling with automatic chip blower

By pressing and holding right side button **(2)** automatic chip blowing is activated.	Control panel ONE plus - the icon on the tool screen will change its status to - chip blowing is activated. Control panel ONE - the LED next to the button flashes.
By pressing and holding right side button **(2)** automatic chip blowing is deactivated.	Control panel ONE plus - the icon on the tool screen will change its status to - chip blowing is deactivated. Control panel ONE - the LED next to the button turns off.

i. For more information about display and indications on control panel, see chapter 5.8 Instrument control - control panel ONE plus/ 5.9 Instrument control - control panel ONE.

6.4.3   Foot controller connection

The connector for connecting the wired foot controller is located in the front lower part of the chair.
i. When connecting the foot controller, pay attention to the correct position (rotation) of the connector.

6.5   Cuspidor block

> ⚠ Do not unscrew the bottles, or do not fill-up, bottles for distilled water and hygiene solutions during the ongoing hygiene process! The bottles are under pressure.

6.5.1   Central water supply

Water from the central drinking water supply can be used to cool the instruments and as a source of the water for syringes. If the unit is equipped with this function, you can activate it by toggling the cooling type selection switch located in the spittoon block to position. ⚐

6.5.2   Distilled water container

Distilled water is used as a source of water to cool the tools on the dentist´s element, as well as a source of water for syringes for the dentist´s element and the assistant´s element.

Filling-up the distilled water – bottle without funnel:

The container, a bottle of distilled water is placed in a cuspidor. For service purposes (seal replacement, bottle replacement), the bottle is accessible and removable after opening the cuspidor´s door.
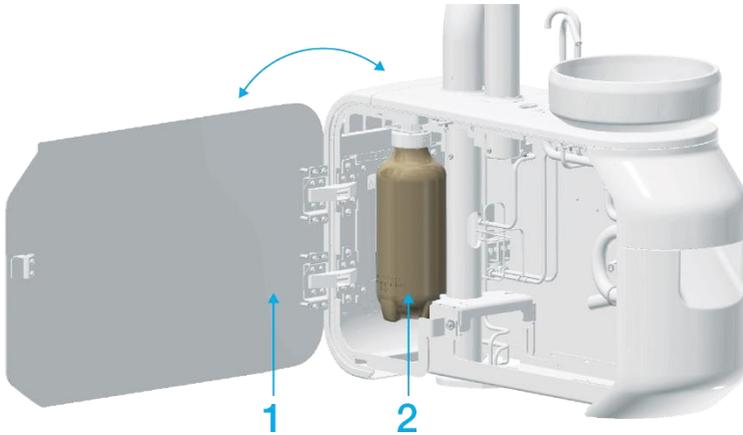
- Open the cuspidor´s door **(1)**.
- Turn the three-position switch on the cuspidor block to the position with crossed drops symbol to depressurised waterway system.
- Unscrew the bottle **(2).**
- Top up with distilled water.
- Reattach the bottle back **(2).**
- Turn the three-position switch to the position with the bottle symbol.
- Close the cuspidor´s door **(1)**.

Filling-up the distilled water – bottle with funnel:
Distilled water is poured into the bottle through a funnel located under the front cover of the cuspidor.
The container, a bottle of distilled water is placed in a cuspidor. For service purposes (seal replacement, bottle replacement), the bottle is accessible and removable after opening the cuspidor´s door.

- Open the front cover of the cuspidor **(1)** (the waterway system is automatically depressurised).
- Unscrew the cap in the funnel **(2).**
- Top up with distilled water. During the filling, an intermittent sound signal sounds, the interval of which is shortened by topping up. A continuous beep indicates that the bottle is full.
- Screw the cap back in the funnel **(2).**
- Close the front cover of the cuspidor **(1)** (the waterway system is automatically pressurized).

> ⚠ Only use distilled water approved for medical purposes with maximum conductivity of 2000 µS/cm.
> Do not use demineralised water intended for technical applications!
> The manufacturer recommends replacing the distilled water container once a year.

i. If the dental unit is not equipped with a hygiene system, it is necessary to pour distilled water with a mixed disinfectant solution into the bottle.
For more information, see chapter 7.1 Disinfection of instrument water cooling channels - Manual hygiene.

6.5.3   Filling-up and change of solutions for the automatic hygiene system

If the dental unit is equipped with a Diplomat automatic hygiene system, in the cuspidor, in addition to the bottle for distilled water, there are bottles for solutions for disinfection waterways and decontamination of suction.
The automatic hygiene system detects a lack of liquid in the bottles and does not start the hygiene procedure.

The waterway disinfection solution bottle (**1**) is accessible from the right side in the cuspidor.
The suction decontamination solution bottle (**2**) is accessible from the left side of the cuspidor.
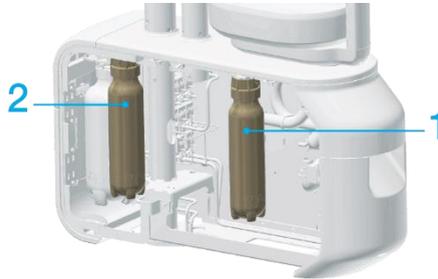
Hygiene bottles can be unscrewed at any time during work and filled-up with the appropriate solutions.

> ⚠ Do not unscrew the bottles, or do not fill-up, bottles for distilled water and hygiene solutions during the ongoing hygiene process! The bottles are under pressure.

If the dental unit is equipped with a WEK water treatment unit, the system will automatically alert you to the missing Green & Clean WK solution located in the spittoon block. The shrink solution bottle (**2**) is replaced. It is not filled-up.

Carefully pull the cap (**1**) with the tube out of the neck of the empty bottle and insert it into the new bottle (**2**).
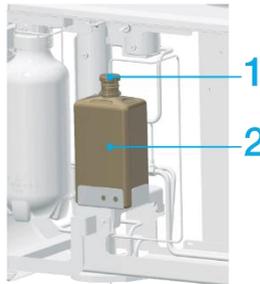
6.6 Assistant's element
6.6.1 Assistant's element advanced

Assistant's element

Assistant's element advanced

6.6.1.1 Assistant's element keypad

Button	Description	Button	Description
	Filling the cup		Rinsing the bowl
	Rotating the bowl		Hygiene
	Main light		Bell
	The chair rinsing position		The chair entry position
	The chair previous position		Trendelenburg chair position
	Moving the chair up		Moving the backrest up
	Moving the chair down		Moving the backrest down

P1 P2 P3 P4	Programmed chair positions P1 to P4

i. Chair positions cannot be programmed from the keypad at the assistant's element.

6.6.2   Assistant's element basic

Assistant's element

Buttons for spittoon bowl rinse and cup fill

6.6.3   Assistant's element equipment

Saliva ejector
Automatically starts when removed from the holder. Automatically stops when inserted back into the holder.

> ⚠ The saliva ejector (tip) is a single-use appliance and is not intended for repeated use. Serious health risks are associated with reusing a saliva ejector (tip) with another patient.

Small aspirator, large aspirator
Automatically starts when removed from the holder. Automatically stops when inserted back into the holder. Aspirator suction may be adjusted by opening the aspirator control valves.

Polymerising lamp
The polymerising lamp is ready for use when removed. Please read the manual for the specific model of polymerising lamp to determine how to use it.

Intra oral camera
This is used to improve visibility during dental procedures.
The camera includes:
- a holder
- USB flash drive
- the camera itself

Please read the manual for the specific model of intraoral camera to determine how to use it.

> ✎ Protect this product from exposure to water, do not store in humid areas.

6.7   Main lamp

6.7.1   Xenos

The Xenos dental lamp is designed for use in dental practice to illuminate the oral cavity. The light source is two highly luminous LEDs. They radiate homogeneous white light (3700K - 4000K). The light trace is formed using two parabolic reflecting glasses with back reflection. The light trace achieved in this way allows the dentist to work with excellent colour resolution and without disturbing influences.

6.7.1.1 Technical data

Parameters	Value
Max. input:	10 VA
Type of protection against electric shock:	II.
The optimal light trace is in the distance of:	700 mm
Nominal size of the light trace:	max. 70 x 160 mm
Correlated colour temperature:	3700 K − 4000 K
Lighting intensity:	8000 lx − 26000 lx
Weight:	1 kg ± 0.1 kg

6.7.2   Faro Maia LED

The Faro dental lamp is designed for use in dental practice to illuminate the oral cavity. The light source is two highly luminous LEDs. They radiate homogeneous white light (5000 K). The light trace is formed using two parabolic reflecting glasses with back reflection.

6.7.2.1 Technical data

Parameters	Value
Max. input:	9 VA
Type of protection against electric shock:	II.
The optimal light trace is in the distance of:	700 mm
Nominal size of the light trace:	max. 100 x 175 mm
Correlated colour temperature:	5000 K
Lighting intensity:	3000 lx − 35000 lx
Weight:	1 kg ± 0.1 kg

6.7.3   Main lamp control

Position of non-contact sensors for lamp control.

Both models are controlled in the same way.
It is possible to work with lamps in two modes - light intensity levels. In the higher, operating light intensity mode, it is possible to set the light intensity range from 8000 lx to 26000 lx in the case of the Xenos lamp. In the case of the Faro Maia LED lamp, the range is from 3000 lx to 35,000 lx.

In the mode designed for working with composite materials, it is possible to set a lower light intensity. In the case of the XENOS lamp from 5500 lx to 8000 lx and in the case of the Faro Maia LED lamp from 3000 lx to 8000 lx.

i. To set the light intensity of the main lamp, see chapter 5.3 Main light and chapter 5.3.1 Light control.

Control of the main lamp at the level of switching on and switching between light modes is possible from four places on the dental unit:

- By Control panel ONE / ONE plus.

  1. By pressing the button ☀ the lamp lights up for the operating light.

  2. By repeated pressing the button ☀ the lamp changes its lighting intensity.

  3. By pressing and holding the button ☀ the lamp will switch-off.

- By a sensor located on the main lamp.
  1. By holding hand in front of the sensor, the lamp lights up for the operating light.
  2. By repeated brief holding the hand in front of the sensor, the lamp changes its lighting intensity.
  3. By long holding the hand in front of the sensor, the lamp will switch-off.

- By a button on the assistant´s element keyboard.

  1. By pressing the button ☀ the lamp lights up for the operating light.

  2. By repeated pressing the button ☀ the lamp changes its lighting intensity.

  3. By pressing and holding the button ☀ the lamp will switch-off.

- By a foot controller.
    1. By pressing lever / pedal – the lamp lights up for the operating light.
    2. By pressing lever / pedal – the light the lamp changes its lighting intensity.

6.8   Chair

The dental unit can be equipped with two chair constructions.
The chair in the basic version, where the seat does not have the cradle function when the back-rest is moved.
The chair in the version, where the seat does have the cradle function when the back-rest is moved.
i. For the positions and ranges of seat cradle functioning, see the chapter 1.2 Technical parameters.
I. Both chair constructions reach the Trendelenburg position.

6.8.1   Chair control

All movements of the chair can be controlled via control panel keyboard with display, control panel keyboard with seven segment display, from the keyboard of the assistant's table and via the foot controller.

- The way of controlling standard movements, recalling and programming the positions of the chair from the assistant's element keyboard is identical to the control from the control panel

i. For the chair control methods via the foot control, see the chapter 6.4.1 Control with a foot controller.

6.8.2   Head-rest control

	Head-rest	Direction of movement:	Securing the position
1.	2D MECHANICAL		Forwards / Backwards	Mechanically by turning the lever.
2.	3D MECHANICAL		Forwards / Backwards To the sides	Mechanically by turning the lever.

The mechanism for the head-rest position setting can be in two versions.

- The mechanical head-rest incline is set by releasing the lever located on the back of the head-rest. After reaching the desired position, the back-rest must be locked again with the lever.
- Height setting is performed mechanically, by pulling or pressure in the direction of the setting.
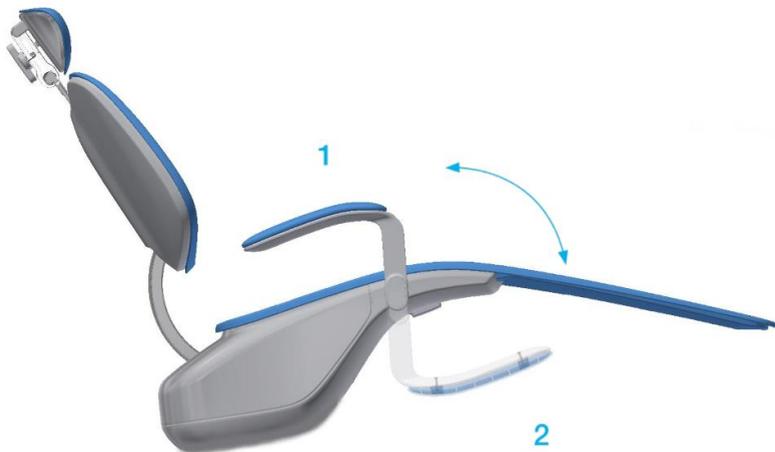

max. 170mm
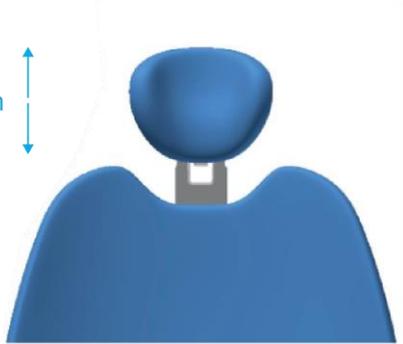
When working with a patient, we recommend using an external protective cover for the head-rest.
The protective sleeve protects the upholstery from damage by hair products.
Complaints may not be accepted in case of damage to the head-rest by hair products.

6.9   Hand-rest

The articulated hand-rest may be rotated backward (movement no. **1**) or forward (movement no. **2**).

6.10   Finishing the work with the dental unit

Perform the following steps after finishing work:
- turn off the unit with the main switch,
- close the main water supply,
- turn off the compressor and vacuum unit.

6.11 Safety sensors

⚠️ Do not place any objects in the work area of the dental unit. There is a risk of collision and injury. Check the work area before starting work.

The dental unit is equipped with safety sensors that are activated in the case of a collision.
The movement of the chair is blocked if one of the safety switches is activated or any instrument on the control panel is activated.

6.11.1 Carried dental unit

	Part of the unit	Sensor activation	Deactivation of the sensor
1.	Chair	In the case of a chair collision while moving down	By removing the blocking object
2.	Chair cover	In the case of a chair collision while moving down	By removing the blocking object
3.	Backrest	In the case of a backrest collision while moving down	By removing the blocking object
4.	Control panel	The chair movement is blocked by activation of any instrument with the foot control	By ending the work with instrument
5.	Assistant arm	In the case of an assistant arm collision while moving down	By removing the blocking object

7　Product maintenance – cleaning, disinfection and decontamination

i. Instrument and tip maintenance should be performed according to the manufacturer's instructions. Cuspidor blocks with a central water manifold connection require the upstream filter be inspected along with the functionality of the water softening equipment (per the manufacturer's instructions).

7.1 Disinfection of instrument water cooling channels - Manual hygiene

If the unit is not equipped with an automatic water channel and suction hose hygiene system, regular hygiene must be performed manually.

The recommended disinfectants are Alpron, Sanosil S003 or Dentosept P in a 1% concentration with distilled water. Pour these solutions into the distilled water container. These products in a 1% concentration are completely inert with respect to patients. The channels of the cooling system are kept clean through regular use and there is no need to use other means of disinfection.

If water from a central manifold is used to cool instruments, daily hygiene is performed as follows:
1. Add the 1% solution of the disinfectant and distilled water to the distilled water container.
2. Set the switch on the cuspidor block to the "bottle" as the water source.
3. Remove an instrument and then activate each instrument one by one for a minimum of 10 seconds to flush all the instruments individually. Flush the first instrument in order for 30 seconds until the disinfectant solution from the container reaches to the dentist's table.
4. Then turn the switch on the cuspidor block to the central manifold as the water source.

We recommend performing such disinfection at least once a day, and at the end of the workday is best.

7.1.1 Intensive disinfection/restoration of instrument water channels

Intensive disinfection uses a higher concentration of disinfectant solution. Intensive disinfection is not used when procedures are performed on patients.
All water channels and dispensers must be flooded with disinfectant. The disinfectant must remain in the water channels of the unit for the working period defined by the manufacturer. The solution is then rinsed out after the defined period.

Intensive disinfection is recommended to be performed:
1. on a cyclical basis, at least once a quarter,
2. under high micro-organism load,
3. after an extended shutdown and it is recommended any time, the dental unit is not used for more than three days.

The process of intensive disinfection proceeds as follows:
1. Fill the distilled water container with 100% concentrated Alpron (a disinfectant). Use the concentration defined by the manufacturer of any other disinfectant.
2. Set the switch on the cuspidor block to the "bottle" as the water source.
3. Remove an instrument and then activate to flow the concentrate through the water channels of all instruments until the disinfectant begins to flow out of the instrument.
4. The unit may then be turned off.
5. Allow the Alpron to work for a minimum of 60 minutes but a maximum of 50 hours. Allow any other disinfectant that is used to work for the time defined by the manufacturer.
6. Fill the distilled water container with distilled water.
7. Gradually flushing each instrument individually for a at least 120 seconds.

7.2   Disinfection of instrument cooling waterways - Automatic hygiene

The automatic hygiene of the instrument waterways is controlled by the electronics program.
It is available for dental units that are equipped with it. To start automatic hygiene, press the button **(1)**
on the assistant`s keyboard. Further orders must be entered through the dentist's element control panel.

It provides four options shown at dentist's element control panel:

> 1. Beginning of a workday hygiene,
> 2. After treatment hygiene,
> 3. End of a workday hygiene,
> 4. Intensive hygiene.

7.2.1   Beginning of the workday hygiene

i. This hygiene must always be started if "End of a workday hygiene" has not been performed on the previous working day.

1. PREPARATION – Put the instrument hygiene holder into the bowl and press the P1 button **(1)** on the dentist´s element control panel.
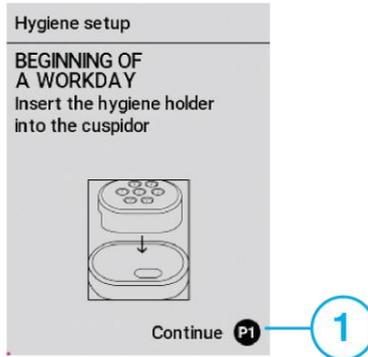

2. PREPARATION – If the assistant's element is equipped with a syringe, this syringe has to also be inserted into the holder. Before putting the syringes into the hygiene holder, it is necessary to slide the hoop onto the syringes, which will ensure that the waterway button is pressed.
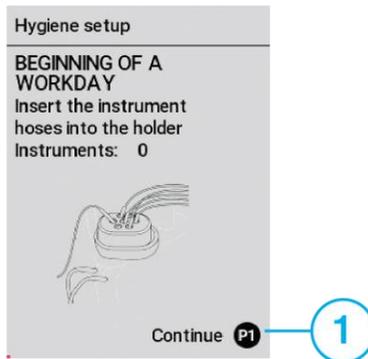

If the dental unit is equipped with a decontamination system, it is necessary to slide the suction hoses onto the hygiene nozzles as shown in the illustration.

3. FLUSHING TIME – Select the instrument hoses flushing time by pressing the button
The recommended flushing time with the central water source is 120 s. If a 1% bottle solution is used for cooling, it is possible to shorten the flushing time to a minimum 20 s.

4. START – Press the P1 button to start the flushing process.
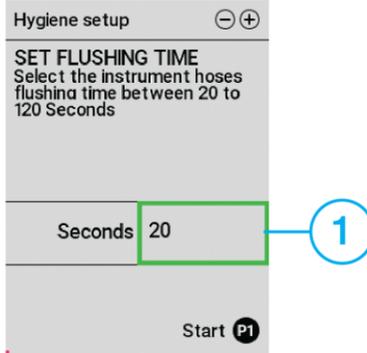
5. FLUSHING IN PROGRESS – The progress of flushing individual instruments **(1)** is displayed on the screen **(2)**. Press the P1 button to stop flushing. If necessary, the flushing can be interrupted at any time and terminated prematurely by pressing the P1 button.
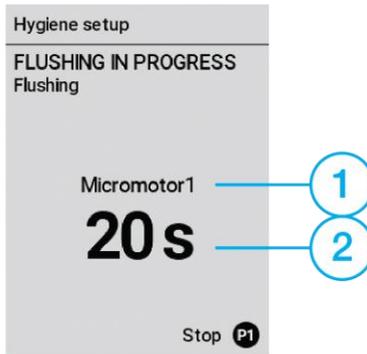
6. FLUSHING SUCCESSFULLY COMPLETED – Flushing completed, put the instrument hoses into holders.

Hygiene setup

FLUSHING COMPLETED SUCCESSFULLY
Insert instrument hoses
into their holders

7.2.2 After treatment hygiene

i. This hygiene does not need to be used if a 1% bottle solution is used to cool the instruments.
The hygiene process consists of identical steps as "Beginning of a workday hygiene". The recommended flushing time is 20 s.

i. If necessary, the hygiene process can be interrupted at any time and terminated prematurely by pressing to P2 button.

7.2.3 End of a workday hygiene

The system ensures the filling of all waterways, including the filling of the cup, with 1% concentrate of disinfectant solution.

*i. This hygiene has to be started every day before the end of working hours.*

1. PREPARATION – Put the instrument hygiene holder into the bowl and press the P3 button **(1)** on the dentist´s element control panel.
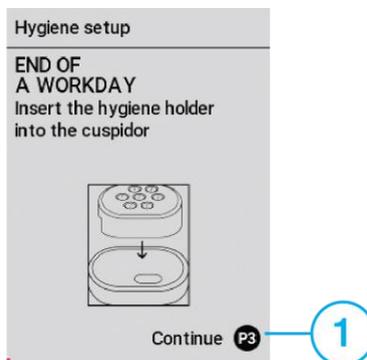
Hygiene setup

END OF A WORKDAY
Insert the hygiene holder
into the cuspidor

Continue P3 — 1

2. PREPARATION – If the assistant`s element is equipped with a syringe, this syringe has to also be inserted into the holder. Before putting the syringes into the hygiene holder, it is necessary to slide the hoop onto the syringes, which will ensure that the waterway button is pressed.

If the dental unit is equipped with a decontamination system, it is necessary to slide the suction hoses onto the hygiene nozzles as shown in the illustration.
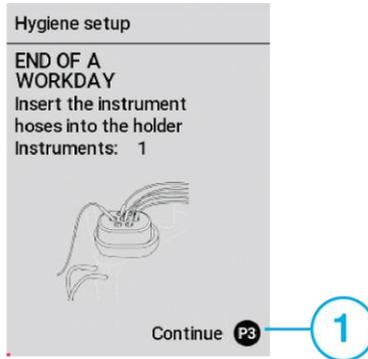

3. FILLING BY SOLUTION - The progress of filling with a solution of individual instruments is displayed on the screen. Press the P3 button **(1)** to stop filling with solution.
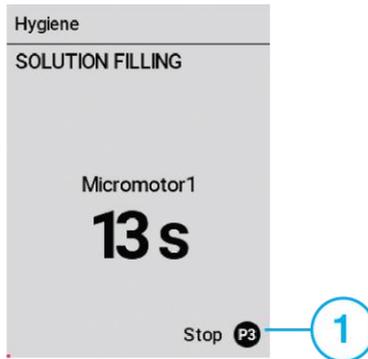
4. SOLUTION EXPOSURE – The solution exposure time is displayed on the screen. The dental unit can be turned off.

5. TO START FLUSHING – By starting the flushing, the screen for setting the flushing time is displayed.
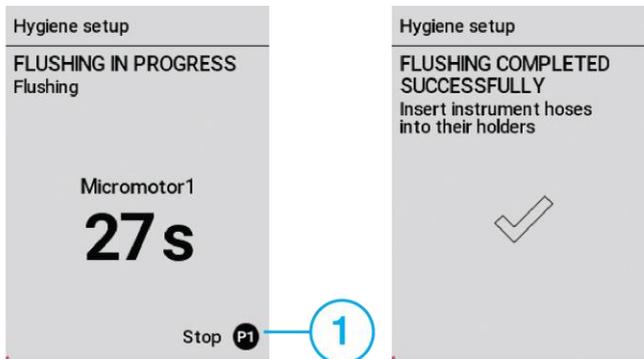
7.2.4 Intensive hygiene

The system ensures the filling of all waterways, including the filling of the cup, with 100% concentrate of disinfectant solution.

This hygiene has to be started:
1. cyclically, at least quarterly,
2. at high load by microorganisms,
3. after a long break, the recommendation is always if the dental unit has not been worked on for more than three days.

1. PREPARATION – Put the instrument hygiene holder into the bowl and press P4 **(1)** on the dentist´s element control panel.
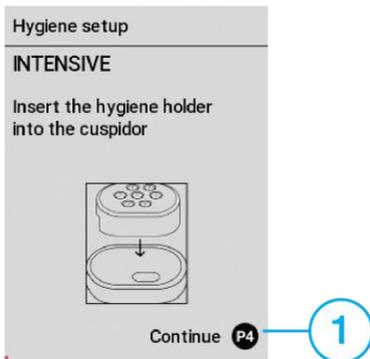
2. PREPARATION – If the assistant`s element is equipped with a syringe, this syringe has to also be inserted into the holder. Before putting the syringes into the hygiene holder, it is necessary to slide the hoop onto the syringes, which will ensure that the waterway button is pressed
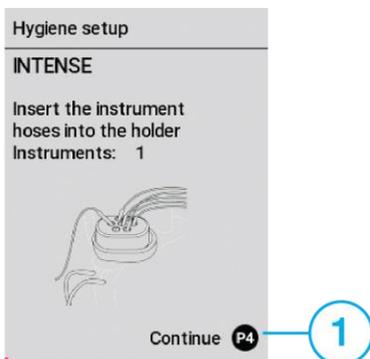
3. FILLING WITH 100% CONCENTRATE – The progress of filling individual instruments is displayed on the screen. Press the P4 button **(1)** to stop filling.
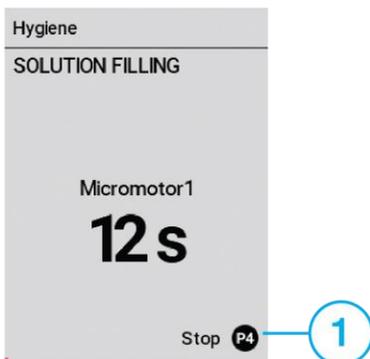
4. 100% CONCENTRATE EXPOSURE – The exposure time is displayed on the screen. The dental unit can be turn off.

5. TO START FLUSHING – By starting the flushing, the screen is displayed without setting options of flushing time.

i. For this type of hygiene, the fixed flushing time is 120 s.
i. Flushing cannot be stopped prematurely. In case of flushing interruption, the system will ensure its correct termination.
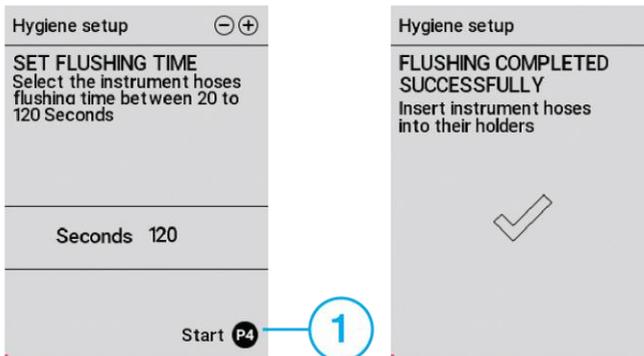
7.3   Cleaning and decontaminating the saliva ejector

A sieve is located in the tip of the saliva ejector and must be regularly checked and cleaned as necessary.
The saliva ejector hose must be flushed by drawing through 1 dL of clean water after every patient.
At the end of the workday, the saliva ejector hose must be cleaned by drawing through 1 dL of 1% disinfectant solution used for suction system hygiene.

1. Sieve

7.4   Cleaning and decontaminating the large and small aspirators

Disconnect the suction control dumpers. Clean under running water and fold back.
After each patient, flushing the suction hoses with approximately 1 dcl of water.

1.   Large aspirator
2.   Small aspirator
3.   Suction control valve
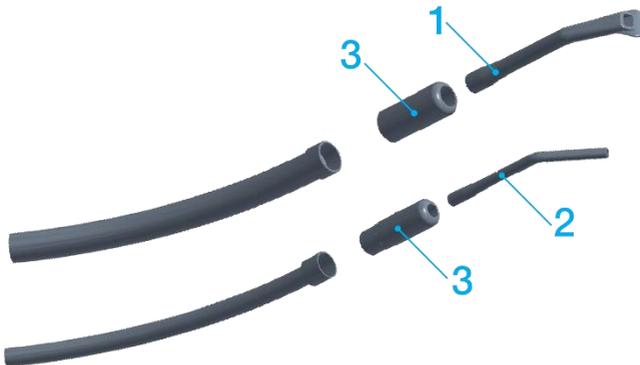
If the dental unit is not equipped with an automatic decontamination system, it is necessary to perform the hygiene manually. The choice of a suitable hygiene product depends on what other equipment is built into the suction system.

● In case if a CATTANI mini-separator is built into the unit, it is necessary to use PULI - JET PLUS agent.

● In case if a METASYS amalgam separator is built into the unit, GREEN & CLEAN M2 agent must be used.

● In case of DÜRR CAS1 amalgam separator and the DÜRR CS1 separator, OROTOL PLUS must be used.

7.5   Cleaning suction filters

A screen is located in the suction block to capture coarse particulate and must be regularly checked and cleaned as necessary. Rinse the screen under running water.

i. Cleaning is recommended at least once a day.

1. Plug
2. Sieve
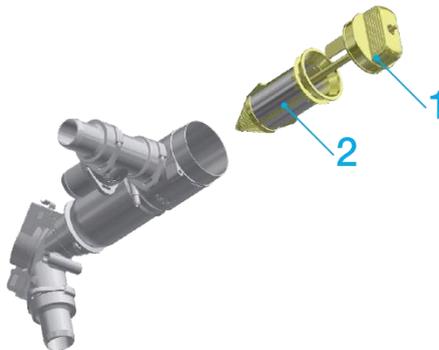
7.6   Cleaning and disinfecting Dürr valves

For cleaning and decontamination, it is necessary:

A compatible material, non-foaming disinfecting/cleaning solution approved by the manufacturer, Dürr Dental, such as Orotol plus or Orotol Ultra.
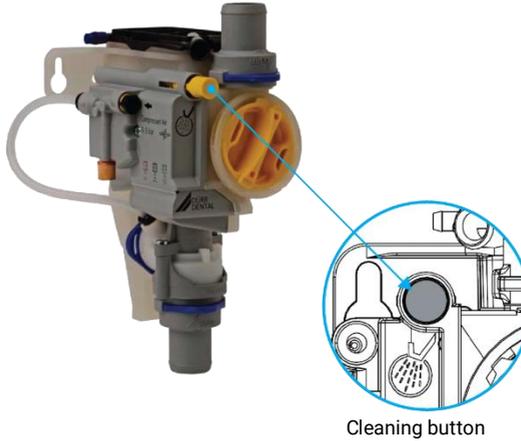
Cleaning button

Procedure:

1. Start the cuspidor bowl rinse
2. Press and hold the yellow cleaning button on the control panel until the cuspidor bowl rinse is complete
3. Pour the disinfection solution into the cuspidor bowl and then press the valve cleaning button on the control panel until the disinfection solution is completely aspirated.

Monthly maintenance:

1. Press the valve cleaning button until the collection vessel is emptied by the valve.
2. Clean out the yellow coarse filter or replace if necessary.

The yellow coarse filter prevents larger pieces of particulate from entering into the suction system.
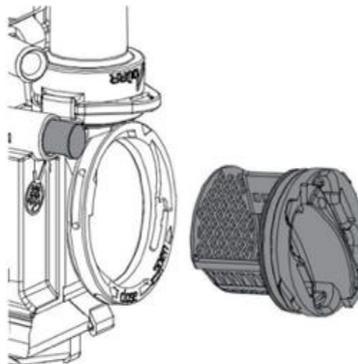
> **Malfunction or damage to the equipment resulting from the use of incompatible supplies and materials may void the warranty**
>
> - Do not use any foaming products, such as household cleaning products.
> - Do not use abrasive cleaning products.
> - Do not use cleaning agents containing chlorine.
> - Do not use any solvents such as acetone.

7.7   Cleaning and decontamination of the cuspidor bowl

Operating personnel must inspect the condition of the coarse catch screen in the cuspidor bowl and clean as needed.

If the dental unit is only equipped with a saliva ejector, use a 1% decontamination solution of SAVO Prim (Czech Republic). Decontamination of the cuspidor bowl must be conducted at least once a day (for instance, at the end of the workday) using SAVO Prim in a 1% concentration by pouring at least 200 ml of the solution into the cuspidor bowl.

If the dental unit is equipped with an aspirator, the proper cleaning solution depends on the type of separator built into this unit.

- Use PULI–JET PLUS if a CATTANI separator is installed.
- Use GREEN & CLEAN M2 if a METASYS amalgam separator is installed.
- Use OROTOL PLUS if a DÜRR CAS 1 amalgam separator and DÜRR CS 1 separator is installed.

7.8   Hygiene when using a CATTANI separator

Instructions for using anti-foaming CATTANI disinfection tablets for dental aspirators

Turbulent flow is generated when working with an aspirator to remove blood, saliva and all types of sanitary products create a large quantity of foam that may cause sudden and frequent suction blockages.

Regular use of anti-foaming tablets significantly reduces the occurrence of such stoppages.

Tablets are individually wrapped in a protective film that dissolves in water and ensures easy and safe handling and storage; the product itself is not classified as hazardous or dangerous. Do not remove this protective film as it will dissolve in water.

Aspirating a small quantity of water through the end of the large or small aspirator after placing the tablet inside the screen of the separation block is sufficient to achieve an instantaneous and preventative anti-foaming effect.

If the tablet must be inserted into a small space, remove the protective film (wearing gloves is recommended) and break it into two pieces by snapping along the pre-stamped indentation. Clean the film off the agent using a fine sandpaper to ensure it works properly. The tablet dissolves slowly after making contact with water and releases its disinfecting and anti-foaming effect over the entire workday.

Instructions for using PULI−JET PLUS

The separator's manufacturer recommends disinfecting the suction system daily at the end of the workday and at least once clean-out washing in the middle of the day. Filling the dispenser: place the container in a vertical position, preferably on a flat surface. Unscrew the cap and slightly press on the container at the locations marked with the two stickers to fill the dispenser up to the top (being careful not to overfill it).

Release the pressure: return any excess liquid back to the container, ensuring the correct quantity (10 ml) of concentrate remains in the dispenser. Concentrated PULI−JET PLUS after thinning to a 0.8% solution cleans and disinfects, while it is only a sanitary cleaning product when thinned to 0.4%. For cleaning and disinfection once daily at the end of the workday, thin out two batches (20 ml) from the dispenser in 2.5 l of warm water (50°C) and aspirate it through the system. Thin out one batch (10 ml) from the dispenser for cleaning of the system in the middle of the day. Do not rinse as the proteolytic and disinfectant effects of PULI−JET PLUS appears over time.

7.9 Hygiene when using a METASYS MST1 amalgam separator

Instructions for using GREEN & CLEAN M2

Press the lever on the dispenser twice to dispense 6 ml of GREEN & CLEAN M2 into the mixing container and add water from the tap up to the mark. Mix the solution and then use the small and large aspirators to draw the solution in through the aspiration openings in the container. Once it is fully drained, remove the port from the container, raise it up higher so that the fluid drains from the hose into the drain pipe and into the separator. Pour the remainder of the solution in the container out into the cuspidor bowl and rinse with a small quantity of water.

The separator's manufacturer recommends using GREEN & CLEAN M2 **2 x** during the workday.

7.10 Hygiene when using a DÜRR CAS 1 amalgam separator and DÜRR CS 1 separator

Instructions for using Orotol Plus

Before every use of Orotol Plus, aspirate 1 l of clean cold water through the hose of the large and small aspirator (using the Oro Cup container for this purpose). The disinfection procedure using Orotol Plus is as follows:

1. unscrew the cap on the Oro Cup container
2. pour 2 l of cold water into the Oro Cup (up to the mark)
3. add the required quantity of Orotol Plus, meaning two measured units (one unit up to the mark on the Orotol Plus cover is 20 ml of the solution)
4. screw the cap on the Oro Cup container
5. mix the disinfectant with water in the Oro Cup thoroughly
6. remove the cap on the Oro Cup cover
7. place the Oro Cup vertically (as depicted on the Oro Cup). Aspirate 1 l of the mixed solution with the Oro Cup in this position through the aspirator hoses (0.5 l through the large aspirator hose and 0.5 l through the small aspirator hose).
8. install the aspirator hose adapter onto the tip on the Oro Cup
9. pour the remainder of the thinned solution (approximately 1 l) from the Oro Cup into the cuspidor bowl and rinse with a small quantity of water

10. we recommend disinfecting the suction and drain system using Orotol Plus at least once a day (ideally at the end of every workday)
11. aspirate 1 l of clean cold water through the large and small aspirator hoses at the start of the following workday

7.11 Cleaning, disinfection and decontamination of other parts of the dental unit

- Use a damp cloth to clean all surfaces of the unit, the tablet and the chair upholstery
- Recommended cleaner: Incidin™ Foam – spray (HENKEL – ECOLAB)
- Performing cleaning on a regular basis and any time soiling occurs

> ⚠️ Upholstered parts should not be cleaned with products, which contain more than 10% of alcohol and products that damage the structure of the upholstery itself, such as acetone, trichloroethylene, tetrachloroethylene, abrasive cleaners, or polish.
>
> Other parts should not be cleaned with products that damage the structure of fabric or plastics (phenol and aldehyde-based products).

Clean at least once daily (depending on configuration):
- the separation block sieve installed in the cuspidor block
- the sieve at the inlet to the amalgam separator
- the saliva ejector sieve
- the large and small aspirator sieves
- the sieve in the cuspidor bowl

7.12 Instruments and nozzles

Cleaning, disinfection and sterilization of instruments and their nozzles must be performed according to the instructions of their manufacturer, which is supplied with the instrument.

i. The foot controller may not be placed on a wet floor.
i. The manufacturer is not liable for damages resulting from the use of other disinfectants and cleaning supplies not recommended for use.

8 Warranty, service and disposal of goods

8.1   Equipment service

> Use only original and approved spare parts and components, without changing performance, safety characteristics or intended purpose of medical device.

Contact your service technician or seller in the event of a malfunction.

8.1.1   Service inspections during the warranty period

Regular service inspections are recommended every 3 months.

Service inspections focus on checking:
- inlet filters,
- suction system,
- waste hoses,
- all utility connections,
- correct usage and maintenance of the unit and instruments, and mechanical components of the chair.

i. A service technician is obliged to certify that the inspection was completed on the Warranty certificate.

8.1.2   Post-warranty service inspections

Regular service inspections are recommended every 6 months.

Post-warranty service inspections focus on checking:
- air and water filters,
- the integrity of electrical components and installations,
- functional parts of the dental unit, and
- adjustment of working air and water pressures.

8.2   Technical audit of the electrical installation

Such technical audit is conducted under the regulations of the country in which the unit is installed.

8.3   Warranty

The manufacturer provides a product warranty per the warranty sheet.
Risks of damage to the goods transfer from the seller to the buyer at the moment the goods are consigned to the first carrier for transport to the buyer or at the moment of acceptance of the goods by the buyer directly.

When the goods are accepted for use, the buyer is required to complete the warranty form and to send it back to the manufacturer.

> ✎ Warranty claims involving defects attributable to negligent operation or failure to follow the instructions in this manual will not be null and void

The manufacturer reserves the right to make changes within innovations of the product.

8.4   Disposal of the equipment

Part of the unit	Basic material	Recyclable material	Landfilled waste	Hazardous waste
Frame and covers:				
● **Metal**	Steel Aluminium	✓		
● **Plastics**	PUR PVC ASA PA, ABS Fibreglass Other plastics	✓ ✓	✓	✓
● **Rubber**			✓	
● **Ceramic**			✓	
Instruments			✓	
Electronics		✓		
Wiring	Copper	✓		
Transformer		✓		
Amalgam separator	Filters Collection container with amalgam			✓ ✓
Crate	Wood Cardboard Paper PUR	✓ ✓ ✓	✓	

Do not dispose with municipal solid waste!

Such waste may be taken to designated locations, for instance electrical waste. Comply with all applicable legislation in the disposal of the dental unit. The unit must be decontaminated prior to disassembly: clean the surface, clean the suction and drain system, remove amalgam from the separator and handover to a disposal service. A professional company should be entrusted with disposal.

9 Packed contents, transport and storage

9.1   Packed contents

Basic configuration:

Dental chair	Light arm holder
Dentist's panel with arm/cart	Foot controller
Cuspidor with assistant's arm	Tray table
Cuspidor block	Instruments
Light	

Accompanying documentation: | **Options:**

User manual	right armrest
Warranty sheet	storage table
User manuals from suppliers	monitor arm and monitor
Completion sheet	intra oral camera
registration form	

9.2   Transport conditions

- only ship in enclosed means of transport
- stack as instructed on the packaging
- secure to prevent shifting or movement
- crates with dental units must not be tilted or allowed to drop during transport

Parameter	Value
Ambient temperature	-25 – 50 °C
Relative humidity	5 – 95 % non-condensing humidity
Atmospheric pressure	700 – 1060 hPa

9.3   Storage conditions

- store in a dry, enclosed space without sudden temperature changes
- stack as instructed on the packaging
- units may not be stored together with chemicals.

Parameter	Value
Ambient temperature	-25 – 50 °C
Relative humidity	5 – 95 % non-condensing humidity
Atmospheric pressure	700 – 1060 hPa

9.4 MODEL ONE 100 package weight

Kit part packaging

FOREIGN PACKAGING	
Packaging pallet + crate blanks	A653-950-001-0
External dimensions	1580x1080x v:680mm
Weight of the set (with chair) net	130 kg + max. 50 kg according to the design
Weight of the set (with armchair) gross	180 kg + max. 50 kg according to the design
OVERSEA PACKAGING	
Packaging pallet + box blanks / dried /	A653-950-002-0
External dimensions	1580x1080x v:680mm
Weight of the set (with chair) net	130 kg + max. 50 kg according to the design
Gross set weight	180 kg + max. 50 kg according to the design

i. Packaging is non-returnable

Packaging of the armchair part

FOREIGN PACKAGING	
Packaging pallet + crate blanks	A516-400-004-1
External dimensions	1500x800x v:810mm
Weight of the set (with chair) net	130 kg + max. 50 kg according to the design
Weight of the set (with armchair) gross	180 kg + max. 50 kg according to the design
OVERSEA PACKAGING	
Packaging pallet + box blanks / dried /	A516-400-005-1
External dimensions	1500x800x v:810mm
Weight of the set (with chair) net	130 kg + max. 50 kg according to the design
Gross set weight	180 kg + max. 50 kg according to the design

i. Packaging is non-returnable

Packaging of separate upholstery

PACKING	
Packaging cardboard box	A516-400-003-0
External dimensions	1300x600x v:350mm
Package weight / gross /	20 + max. 5kg

10 Electromagnetic compatibility according to EN 60601-1-2

⚠ Use of any accessories not specified in the manual for the dental unit may increase electromagnetic emissions or reduce electromagnetic immunity and result in malfunction of this device

⚠ A portable radio frequency communication device may not be used at any distance of less than 30 cm from any part of the dental unit. The functionality of this device might otherwise be degraded

10.1 Electromagnetic emissions

Measurement of interfering RF emissions	Conformity	Electromagnetic environment
High-frequency emissions according to CISPR11	Group 1	The dental unit only uses high frequency energy in its operation. Its high-frequency emissions are very low and unlikely to cause interference with nearby electrical equipment.
High-frequency emissions according to CISPR11	Class B	The dental unit is designed for use in all environments including residential areas and can be directly connected to the public low-voltage power supply network.
Emission limits of harmonic current components EN 61000-3-2	Class A	
Limitation of voltage variations, voltage fluctuations and flickering in public low voltage grids EN 61000-3-3	Conforms	

10.2 Electromagnetic resistance

The dental unit is designed for use in an electromagnetic environment that meets the requirements in Table. The customer or user must ensure the dental unit is operated in such an environment.

Immunity test	Test level per EN 60601	Conformity	Electromagnetic environment
Immunity to electrostatic discharge per EN 61000-4-2	Contact discharge ± 6 kV Air discharge ± 8 kV	Contact discharge ± 6 kV Air discharge ± 8 kV	Flooring must be made of wood, concrete or a ceramic material. If the floors are covered with a synthetic material, the relatively air humidity must be at least 30%
Immunity to rapid electrical transients/impulse groups per EN 61000-4-4	±2 kV for power cables ±1 kV for power cables	±2 kV for power cables ±1 kV for power cables	The quality of the mains must correspond to that of a standard commercial or hospital environment

Surge immunity perEN 61000-4-5	±1 kV symmetrical voltage ±2 kV common voltage	±1 kV symmetrical voltage ±2 kV common voltage	The quality of the mains must correspond to that of a standard commercial or hospital environment
Immunity to a magnetic field with mains frequency per EN 61000-4-8	3 A/m	3 A/m	A magnetic field with the mains frequency should not exceed the standard value for commercial and hospital environments
Immunity to short-term voltage drops, short breaks and voltage fluctuations per EN 61000-4-11	< 5% UT (> 95% short-term UT drop over 0.5 periods) 40% UT (60% short-term UT drop over 5 periods) 70% UT (30% short-term UT drop over 25 periods) < 5% UT (> 95% short-term UT drop over 5 periods)	< 5% UT (> 95% short-term UT drop over 0.5 periods) 40% UT (60% short-term UT drop over 5 periods) 70% UT (30% short-term UT drop over 25 periods) < 5% UT (> 95% short-term UT drop over 5 periods)	The quality of the mains must correspond to that of a standard commercial or hospital environment If the user needs to ensure continuous operation during a power outage, the unit should be connected to a backup power source.
Immunity to interference induced by radio frequency fields propagated by conductors per EN 61000-4-6	3 Veff 150 kHz to 80 MHz	3 Veff	Portable and mobile high-frequency communications gear should not be used at a distance that is less than the minimum spacing distance calculated using the given equation dependent upon the transmission frequency. Recommended minimum spacing: $d=1{,}167 \sqrt{P}$ 150 kHz to 80 MHz $d=1{,}167 \sqrt{P}$ 80 MHz to 800 MHz $d=2{,}333 \sqrt{P}$ 800 MHz to 2.5 GHz $P[W]$−nominal maximum output power $d[m]$−recommended buffer zone The field intensity from fixed transmitters should be lower than the compliant level at all frequencies.
Immunity to emitted radio frequency electromagnetic fields per EN 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	

Interference may occur around equipment labelled with the

symbol.

i. At a frequency of 80 MHz, the 80 MHz to 800 MHz band applies and at a frequency of 800 MHz, the 800 MHz to 2.5 GHz band applies

These guidelines may not necessarily be applicable in all situations.
The propagation of electromagnetic fields is affected by absorption and reflection from buildings, objects and people

The field intensity of fixed transmitters, such as base stations for wireless phones, mobile radio communication devices, amateur radio stations, radio and television transmitters, and the like, is not possible to define theoretically in advance. It would be appropriate to consider taking electromagnetic field measurements to assess the electromagnetic environment in terms of fixed transmitters.
If the measured electromagnetic field intensity where the dental unit is installed exceeds the level specified above, its proper operation must be verified. If an abnormality is observed in the operation of the dental unit, the unit must be installed in a different location.

Field intensity should be less than 3 V/m in the band from 150 KHz to 80 MHz.

10.3   Recommended buffer zones between portable high-frequency communication devices and the dental unit

The dental unit is designed for use in an electro-magnetic environment in which high-frequency interference emissions are under control. The customer or user may prevent such electromagnetic interference by maintaining minimum distances between portable high-frequency communication devices and the dental unit pursuant to Table 10.3.

Nominal maximum output of the transmitter P[W]	Buffer zone depending on transmitter frequency d[m]		
	150 kHz to 80 MHz $d=1{,}167\sqrt{P}$	80 MHz to 800 MHz $d=1{,}167\sqrt{P}$	800 MHz to 2,5 GHz $d=2{,}333\sqrt{P}$
0,01	0,117	0,117	0,233
0,1	0,369	0,369	0,738
1	1,167	1,167	2,333
10	3,69	3,69	7,377
100	11,67	11,67	23,33

P[W] - nominal maximum output power
d[m] - recommended buffer zone

For transmitters with maximum power not specified in the table, the buffer zone is calculated using the equation contained in the table for the specific frequency.

i. At a frequency of 80 MHz, the 80 MHz to 800 MHz band applies
and at a frequency of 800 MHz, the 800 MHz to 2.5 GHz band applies

> These guidelines may not necessarily be applicable in all situations.
> The propagation of electromagnetic fields is affected by absorption and reflection from buildings, objects and people

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