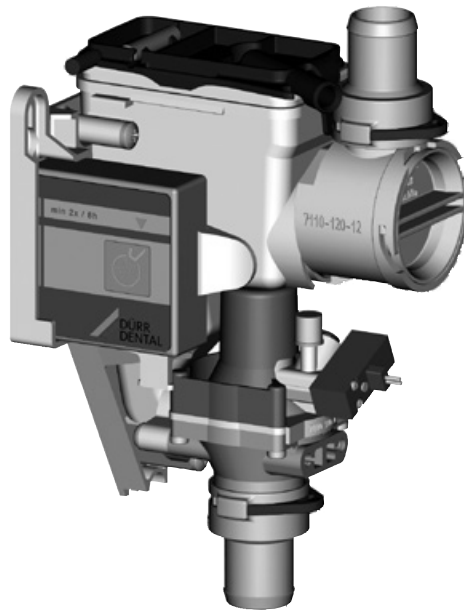


Spittoon valve 2



EN

Installation and operating instructions

CE

9000-605-78/30



 **DÜRR
DENTAL**

1806V001

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1 About this document

These installation and operating instructions represent part of the unit.


 If the instructions and information in these installation and operating instructions are not followed, Dürr Dental will not be able to offer any warranty or assume any liability for the safe operation and the safe functioning of the unit.

1.1 Warnings and symbols


Warnings

The warnings in this document are intended to draw your attention to possible risks of personal injury or material damage.


The following warning symbols are used:

 General warning symbol

 Warning – dangerous high voltage

 Biohazard warning

The warnings are structured as follows:


 **SIGNAL WORD**
Description of the type and source of danger
Here you will find a description of the possible consequences of ignoring the warning.
➤ Follow these measures to avoid the danger.


The signal word differentiates between four levels of danger:


- **DANGER**
Immediate danger of severe injury or death
- **WARNING**
Possible danger of severe injury or death
- **CAUTION**
Risk of minor injuries
- **ATTENTION**
Risk of extensive material/property damage

Other symbols


These symbols are used in the document and on or in the unit:


 Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.


 Comply with the Operating Instructions.

 Wear protective gloves.


 Wear protective goggles.

 Use a face mask.

 Refer to the accompanying electronic documents.

 Cleaning button

 Air

 Vacuum

 Manufacturer

 Order number

 Serial number

1.2 Copyright information

All circuits, processes, names, software programs and units mentioned in this document are protected by copyright.

The Installation and Operating Instructions must not be copied or reprinted, neither in full nor in part, without written authorisation from Dürr Dental.

2 Safety

Dürr Dental has designed and constructed this unit so that when used properly and for the intended purpose it does not pose any danger to people or property. Nevertheless, residual risks can remain. You should therefore observe the following notes.

2.1 Intended purpose

The spittoon valve is designed for installation in a treatment unit in dental surgeries or dental clinics.

The installation of the spittoon valve into a treatment unit helps to avoid suction noises emanating from the spittoon.

2.2 Intended use

The device is designed to be installed between the spittoon and the suction line. The spittoon valve may only process media (e.g. water, saliva, polishing powder, solid materials like fillers, etc.) from the the spittoon.

The spittoon valve can operate max. 1 dental work place.

2.3 Improper use

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damages resulting from improper use. In these cases the user/operator will bear the sole risk.

- › Do not use silicone, sludge, plaster or similar materials from the practice.
- › Do not use chemicals that contain chlorine (such as sodium hypochloride).

2.4 General safety information

- › Always comply with the specifications of all guidelines, laws, and other rules and regulations applicable at the site of operation for the operation of this unit.
- › Check the function and condition of the unit prior to every use.
- › Do not convert or modify the unit.
- › Comply with the specifications of the Installation and Operating Instructions.
- › The Installation and Operating Instructions must be accessible to all operators of the unit at all times.

2.5 Systems, connection with other devices

Additional devices connected with medical electrical devices must be proven to conform with their corresponding IEC or ISO standards. All configurations must continue to comply with the standard requirements for medical systems (see IEC 60601-1).

Whoever connects additional devices to medical electrical devices automatically becomes the system configurator and is responsible for ensuring that the system corresponds with the standard requirements for systems. Local laws take priority over the requirements outlined above.

2.6 Qualified personnel

Operation

Unit operating personnel must ensure safe and correct handling based on their training and knowledge.

- › Instruct or have every user instructed in handling the unit.

Installation and repairs

- › Installation, readjustments, alterations, upgrades and repairs must be carried out by Dürr Dental or by qualified personnel specifically approved and authorized by Dürr Dental.

2.7 Electrical safety

- › Comply with all the relevant electrical safety regulations when working on the unit.
- › Never touch the patient and unshielded plug connections on the device at the same time.
- › Replace any damaged cables or plugs immediately.

Observe the EMC rules concerning medical devices

- › The appliance is designed for the use in health care establishments (in accordance with IEC 60601-1-2). If the appliance is operated in another environment, potential effects on electromagnetic compatibility must be taken into account.
- › Do not operate the unit in the vicinity of HF surgical instruments or MRT equipment.
- › Maintain a minimum distance of at least 30 cm between the unit and other electronic devices.

- › Keep a minimum distance of 30 cm between the unit and mobile radio devices.
- › Note that cable lengths and cable extensions have effects on electromagnetic compatibility.



NOTICE
Negative effects on the EMC due to non-authorized accessories

- › Use only Dürr Dental parts or accessories specifically approved by Dürr Dental.
- › If other accessories are used, note any negative consequences to the function of the unit.



NOTICE
Erroneous operation mode due to use immediately adjacent to other devices or with other stacked devices

- › Do not stack the unit together with other devices.
- › If this is unavoidable, note any potential impacts on the operation mode.

2.8 Only use original parts

- › Only use Dürr Dental parts or accessories and special accessories specifically approved by Dürr Dental.
- › Only use only original wear parts and replacement parts.

2.9 Transport

The original packaging provides optimum protection for the unit during transport.

If required, original packaging for the unit can be ordered from Dürr Dental.



Dürr Dental will not accept any responsibility or liability for damage occurring during transport due to the use of incorrect packaging, even where the unit is still under guarantee.

- › Only transport the unit in its original packaging.
- › Keep the packing materials out of the reach of children.

2.10 Disposal

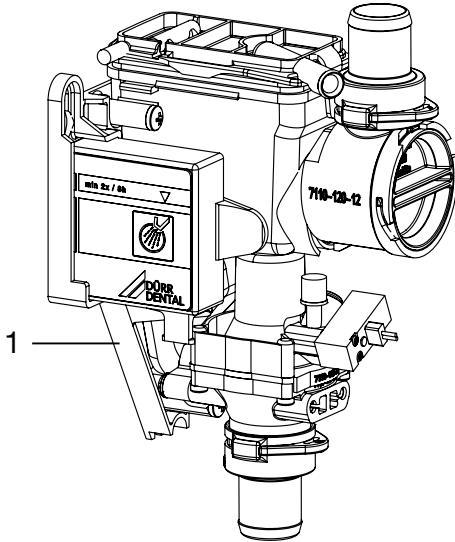


The unit may be contaminated. Instruct the company disposing of the waste to take the relevant safety precautions.

- › Decontaminate potentially contaminated parts before disposing of them.
- › Uncontaminated parts (e.g. electronics, plastic and metal parts etc.) should be disposed of in accordance with the local waste disposal regulations.
- › If you have any questions about the correct disposal of parts, please contact your dental trade supplier.



3 Overview



1 Spittoon valve

3.1 Scope of delivery

The following items are included in the scope of delivery (possible variations due to country-specific requirements and/or import regulations):

Spittoon valve 2 7560-500-xx

– Spittoon valve

3.2 Optional accessories

The following optional items can be used with the device:

Switch control panel 7560-520-00

3.3 Wear parts and replacement parts

The following working parts need to be changed at regular intervals (refer to the "Maintenance" section):

Complete filter 7110-981-00



Information about replacement parts is available from the portal for authorised specialist dealers at:
www.duerrdental.net.

4 Technical data

Electrical data

Safety low voltage	(AC/DC)	
	V	24
Frequency	Hz	50 / 60
Nominal current	A	0.1
Rated power	W	2.4
Type of protection		IP 20

Electrical data, suction unit relay

Switching voltage	(AC/DC)	
min.	V	5
max.	V	24
Switching current		
min.	mA	10
max.	A	2

Connections

Supply and waste water connection		
DürrConnect	mm	Ø 20
Collection vessel vent connection	mm	Ø 9
Compressed air connection	mm	Ø 4

Media

Compressed air		
min.	bar / MPa	3 / 0.3
max.	bar / MPa	5 / 0.5
Fluid flow rate, max.	l/min	3.5
Fluid temperature, max.	°C	35
Suction system pressure		
max.	mbar/hPa	-200
Absolute	mbar/hPa	800

General data

Duty cycle	%	40
Medical device		Class I
Weight	g	240
Dimensions (H x W x D)	mm	143 x 75 x 110

Ambient conditions during storage and transport

Temperature	°C	-10 to +60
Relative humidity	%	< 95

Ambient conditions during operation

Temperature	°C	+10 to +40
Relative humidity	%	< 70
Air pressure	hPa	700 - 1060

Electromagnetic compatibility (EMC)**Interference emission measurements**

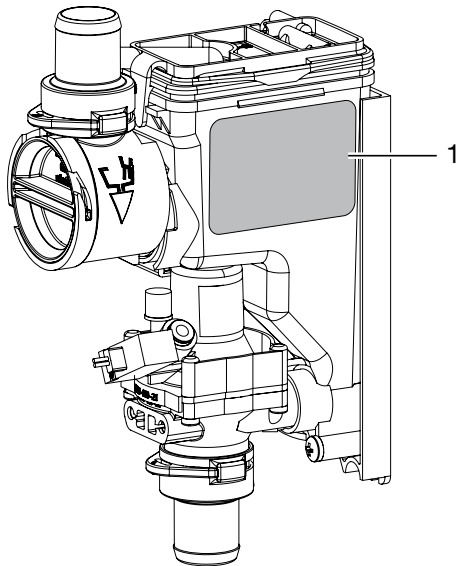
High-frequency emissions in accordance
with CISPR 11

Class B

The unit complies with the relevant requirements according to IEC 60601-1-2:20014.

4.1 Type plate

The type plates are located on the side of the fluid collector.



1 Type plate

4.2 Evaluation of conformity

This device has been subjected to conformity acceptance testing in accordance with the current relevant European Union guidelines. This equipment conforms to all relevant requirements.

5 Operation

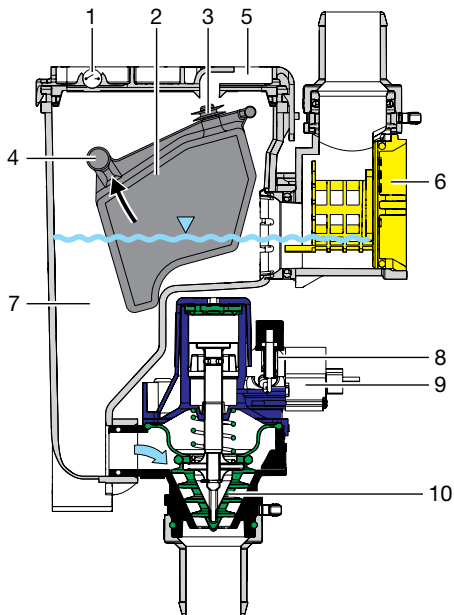


Figure 1: Idle phase

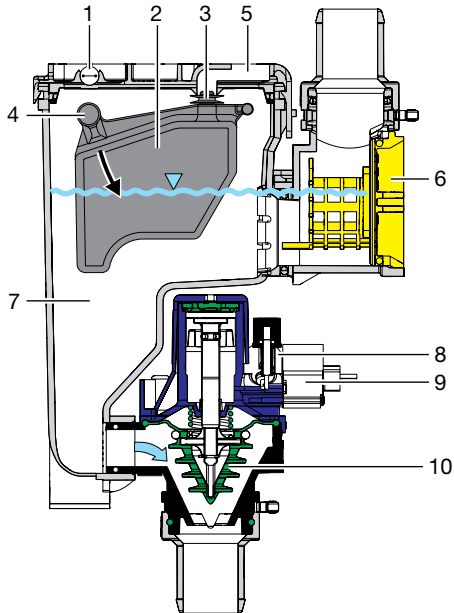


Figure 2: Operational phase

- 1 Reed switch
- 2 Float sensor
- 3 Air extraction seal
- 4 Magnet in float sensor
- 5 Vent
- 6 Protective strainer
- 7 Fluid collector
- 8 Compressed air connection
- 9 Solenoid valve
- 10 Shut-off valve

5.1 Operating function

The waste water from the spittoon flows through the coarse filter into the collector vessel. Once sufficient fluid has been collected the magnet in the float activates the reed switch. As a result the control electronics detect that the maximum filling level of the collection vessel has been reached. The control electronics start up the suction unit with the suction unit relay and actuate the solenoid valve for the compressed air supply. The inflowing compressed air opens the shut-off valve via a piston. The fluid from the storage container is then sucked into the suction pipe. As soon as the fill level in the collector vessel has dropped, this is detected by the control electronics and the solenoid valve is switched off. While waste water continues to flow in from the spittoon the collector vessel re-fills and the process starts again from the beginning.

5.2 Cleaning function

The cleaning function is activated by permanent pressure on the cleaning button on the electronic box or on the the switch control panel (if present). As a result the solenoid valve for the compressed air supply, and therefore the shut-off valve, is opened and the suction unit relay is actuated in order to start up the suction unit.

The cleaning and disinfection solutions can now be aspirated without hindrance through the spittoon valve into the suction pipe and into the suction unit. A suction noise can be heard at the spittoon.



6 Requirements

6.1 Setup options

- Installation in treatment units in dental surgeries or dental clinics.

6.2 Preparing for the installation

Prior to installation of the spittoon valve the following media should be checked and if necessary adjusted; refer also to "4 Technical data":

- Vacuum of the suction system
- Compressed air supply
- Water amount from the spittoon



Do not remove the gold collector or the coarse sieves from the spittoon.

6.3 Hose materials

For waste connections and suction lines only use the following hose types:

- Flexible spiral hoses made of PVC with integrated spiral or equivalent hoses
- Hoses that are resistant to dental disinfectants and chemicals



Plastic hoses will display signs of ageing over time. Therefore, they should be inspected regularly and replaced as necessary.

The following types of hoses must not be used:

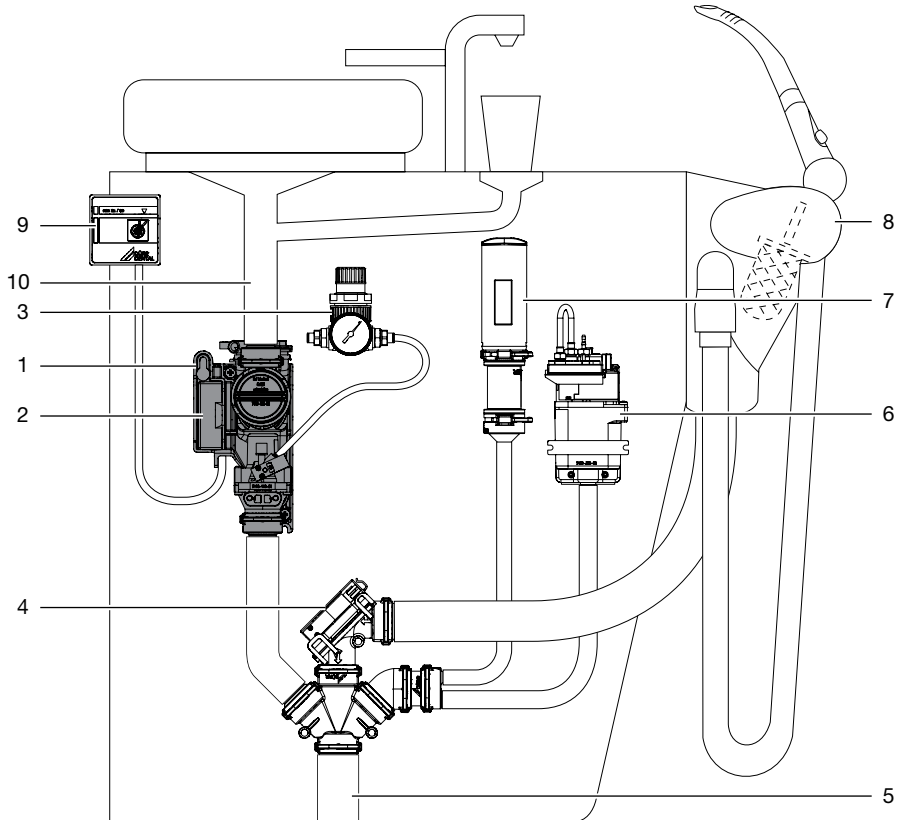
- Rubber hoses
- Completely PVC hoses
- Hoses that are not sufficiently flexible

6.4 Information about electrical connections

- › The supply voltage to the device must satisfy the requirements for two patient protection (MOPP) protective measures as set out in IEC 60601-1 in relation to the supply network.
- › The supply voltage must satisfy the following voltage/power requirements:
24 V AC/DC, 50-60 Hz, at least 2.4 VA

7 Installation

7.1 Installation overview

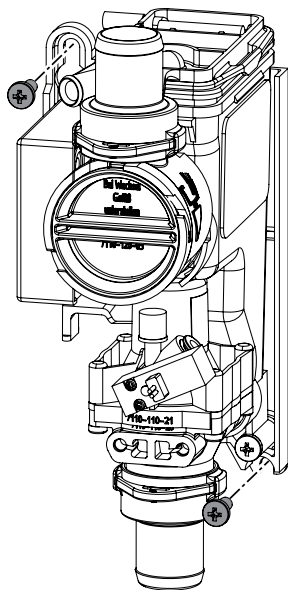


- 1 Spittoon valve
- 2 Electronics box
- 3 Pressure reducer
- 4 Place selection valve
- 5 Suction pipe connection
- 6 Rinsing unit
- 7 Auxiliary air nozzle
- 8 Hose manifold
- 9 Switch control panel
- 10 Spittoon outlet

7.2 Installation of the spittoon valve

i The cleaning function can be activated via the cleaning button on the electronics box. For this reason the spittoon valve should be positioned in an easily accessible location. If this is not possible, a separate switch control panel can be used as an optional accessory.

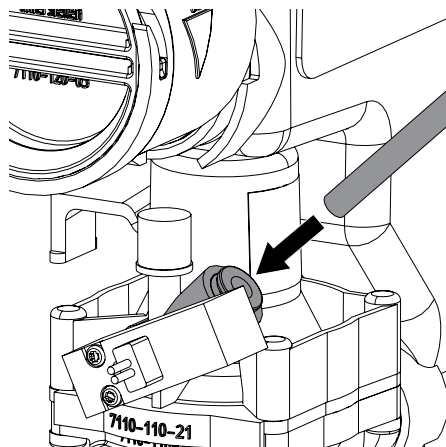
- › Disconnect the treatment unit from the power supply and secure it so that it cannot be switched back on again.
- › Firmly screw the spittoon valve onto a suitable place on the treatment unit.
- › Connect the drain hose from the spittoon to the inlet of the spittoon valve.
- › Connect the outlet of the spittoon valve to the suction pipe.



7.3 Establishing the compressed air connection

- › Disconnect a suitable compressed air line from the treatment unit.
- › Install a T-piece with 4 mm branch in the compressed air line.
- › Connect a compressed air hose to the T-piece.

- › Route the compressed air hose to the spittoon valve, cut it off straight and insert it.



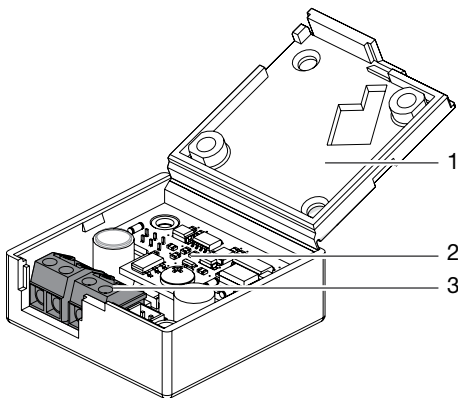
- i** To pull off the compressed air hose from the spittoon valve, press the black sleeve on the compressed air connection inwards.

7.4 Electrical connections

e Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

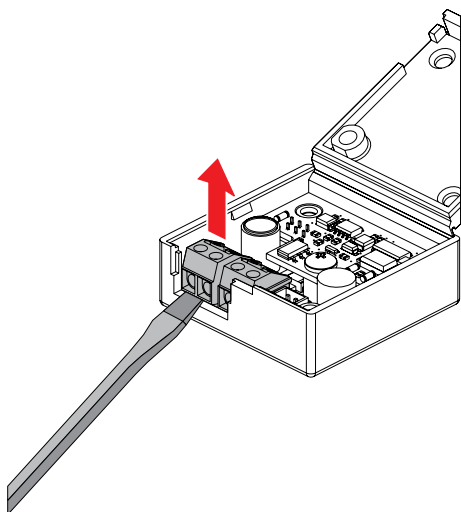
i The requirements of IEC 60601-1 must be satisfied during installation.

- › Remove the electronics box from the spittoon holder.
- › Open the cover of the electronics box.

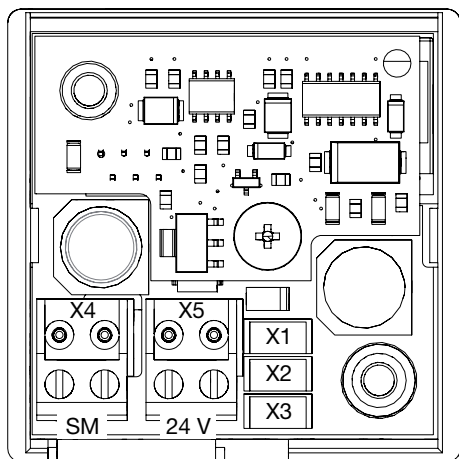
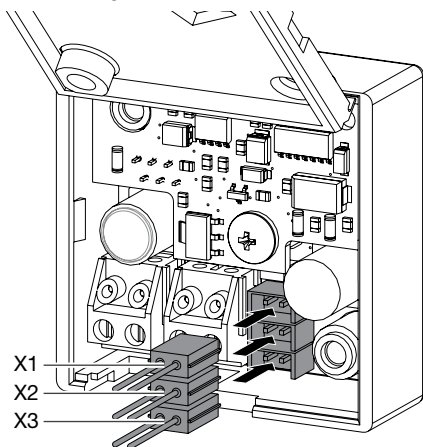


- 1 Cover
- 2 Control electronics
- 3 Connector terminals

- › Route the power supply and control line of the suction unit to the spittoon valve.

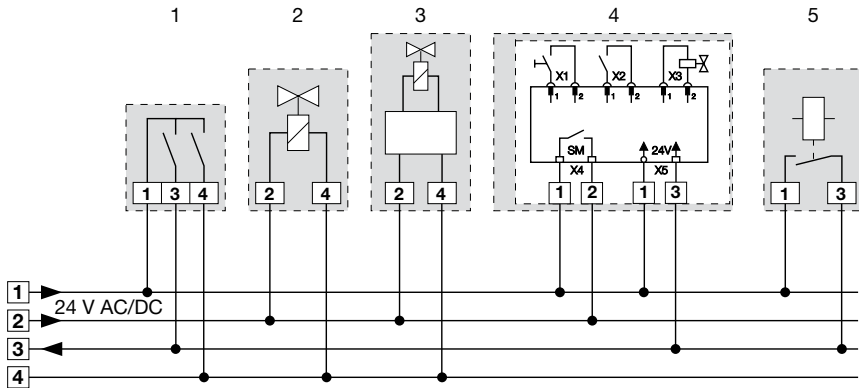


- › Remove connector terminals **X4 = SM** and **X5 = 24V** in an upward direction with the aid of a screwdriver.
- › Connect the power supply and control line for the suction unit to the corresponding connector terminals.
- › Plug in the connector terminals at the corresponding positions on the control electronics
- › Plug in the connectors of the connecting lines for the switch control panel (optional), reed switch and solenoid valve at the corresponding positions on the control electronics.
- › Secure the connection lines with cable ties to the housing.



- X1 Cleaning button for switch control panel
- X2 Reed switch
- X3 Solenoid valve
- X4 Control line for suction unit
- X5 Power supply

7.5 Circuit diagram



- 1 Hose manifold
- 2 Place selection valve
- 3 Rinsing unit
- 4 Spittoon valve
- 5 Suction machine relay in the treatment unit
- X1 Cleaning button for switch control panel
- X2 Reed switch
- X3 Solenoid valve
- X4 Control line for suction unit
- X5 Power supply

8 Commissioning



In many countries technical medical products and electrical devices are subject to regular checks at set intervals. The owner must be instructed accordingly.

- › Turn on the unit power switch or the main surgery switch.
- › Carry out an electrical safety check in accordance with applicable local regulations (e.g. the German Ordinance on the Installation, Operation and Use of Medical Devices / Medizinprodukte-Betreiberverordnung) and record the results as appropriate, e.g. in the technical log book.
- › Carry out a functional inspection of the system and check the connections for leaks.
- › Attach and screw on the covers.



9 Disinfection and cleaning

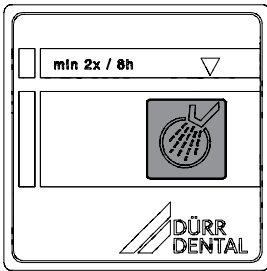


NOTICE Device malfunctions or damage due to use of incorrect media

Guarantee claims may become invalid as a result.

- › Do not use any foaming agents, e.g. household cleaning agents or instrument disinfection agents.
- › Do not use abrasive cleaners.
- › Do not use agents containing chlorine.
- › Do not use any solvents like acetone.

9.1 Spittoon valve



- › Switch on the rinsing for the spittoon.
- › Pour disinfection solution into the spittoon and at the same time press the cleaning button on the switch control panel until the disinfection solution has been aspirated.

9.2 Suction system

After every treatment

- › Aspirate a glass of cold water through the large and the small suction hoses. Do this even if only the small suction hose was actually used during treatment.



Suction through the large suction hose causes a large amount of air to be drawn up, thereby considerably increasing the cleaning effect.

Daily after the end of treatment



After higher workloads before the midday break and in the evening

The following are required for disinfection/cleaning:

- Material-compatible, non-foaming disinfection/cleaning agents with Dürr Dental approval, e. g. Orotol plus.
- Unit care system, e.g. OroCup
- › To pre-clean, suck up 2 litres of water with the care system.
- › Aspirate the disinfection/cleaning agent with the care system.

Once or twice a week before the midday break



Under harsher conditions (e.g. hard water or frequent use of prophylaxis powders) 1x daily before the midday break

The following are required for cleaning:

- Material-compatible, non-foaming special cleaning agents that have been approved by Dürr Dental, e.g. MD 555 Cleaner
- Unit care system, e.g. OroCup
- › To pre-clean, suck up 2 litres of water with the care system.
- › Aspirate the cleaning agent with the care system.
- › Rinse with ca. 2 l water after the application time.

10 Maintenance



All maintenance work must be performed by a qualified expert or by one of our Service Technicians.



Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).



WARNING

Infection due to contaminated unit

- › Clean and disinfect the suction before working on the unit.
- › Wear protective equipment when working (e. g. impermeable gloves, protective goggles and mouth and nose protection).

Maintenance interval	Maintenance work
Monthly	<ul style="list-style-type: none"> › Press the cleaning button to empty the collection vessel. › Clean the yellow coarse filter or replace it if required.
Annually	<ul style="list-style-type: none"> › Check compressed air supply. * › Perform a function test.
Every 3 years	<ul style="list-style-type: none"> › Clean the float monitor in the collection vessel. * › Clean the seal on the float sensor for ventilation and replace if required. *

* Only by customer services service technicians.



11 Tips for operators and service technicians



Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.



WARNING

Infection due to contaminated unit

- › Clean and disinfect the suction before working on the unit.
- › Wear protective equipment when working (e. g. impermeable gloves, protective goggles and mouth and nose protection).



Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

Fault	Probable cause	Solution
Spittoon valve not working	No power supply	› Check power supply and restore. *
	Faulty connections	› Check the plug connections. * – X1 Switch control panel – X2 Reed switch – X3 Solenoid valve
	Connector terminals malfunction	› Check connector terminals. * – X4 Control line for suction unit – X5 Power supply 24 V AC/DC
	Relay not switching	› Check the switching function of the relay. *
	No compressed air present	› Check the compressed air supply of the spittoon valve. *
	Reed switch defective	› Check the function by manually moving the float sensor.
Suction unit does not start up or runs continuously	Float sensor does not move in its housing	› Clean the housing and float sensor. *
		› Insert the float sensor correctly. *
Fluid does not drain off	Drain blocked	› Clean the drain line. *
		› Check whether the filter is blocked, clean if necessary.

* Only by customer services service technicians.

12 Transporting the unit



WARNING

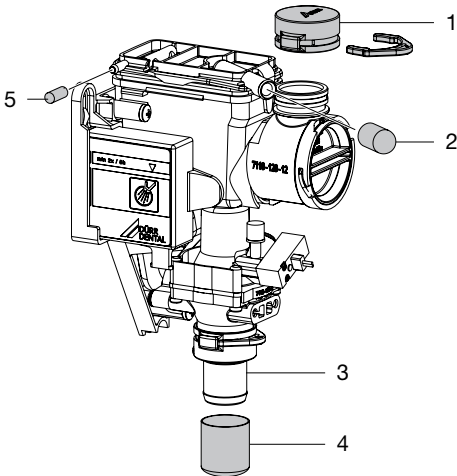
Infection due to contaminated unit

- › Disinfect the unit before transport.
- › Close all media connections.



Wear protective equipment to avoid any risk of infection (e.g. liquid-tight protective gloves, protective goggles, face mask).

- › Before disassembly, clean and disinfect the suction unit and the unit using a suitable disinfectant approved by Dürr Dental.
- › Disinfect a defective unit using a suitable surface disinfection agent.
- › Seal all connections with sealing caps.
- › Pack the unit securely in preparation for transport.



- 1 DürrConnect dummy bushing (order no. 0700-700-10E)
- 2 Protective cap (order no. 9000-412-85)
- 3 DürrConnect hose connector socket \varnothing 20 mm (order no. 0700-700-20E)
- 4 Protective cap (order no. 9000-412-98)
- 5 Sealing cap (order no. 9000-310-002)

EN



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