Station selection valve

EN

Installation instructions

CE

7560100010L02

DÜRR DENTAL

2104V003

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Important information

1 About this document

These installation instructions are a component of the unit.

Failure to comply with the specifications of these installation instructions will void the warranty. Dürr Dental will not assume any liability for the safe operation and the safe functioning of the unit.

The German version of the installation instructions is the original manual. All other languages are translations of the original manual.

1.1 Warnings and symbols

Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.
The following warning symbols are used:


General warning symbol


Biohazard warning

The warnings are structured as follows:


SIGNAL WORD

Description of the type and source of danger

Here you will find 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
– **NOTICE**
  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.


Wear protective gloves.


Disconnect all power from the unit.


Refer to the accompanying electronic documents.


CE labelling

Order number

Lot designation


Manufacturer

1.2 Copyright information

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2 Safety

Dürr Dental has developed and designed the unit in such a way that dangers are effectively ruled out if the unit is used in accordance with the Intended Use. Nevertheless, residual risks can remain. You should therefore observe the following notes.

2.1 Intended purpose

The purpose of the place selection valve is to block/enable the air flow generated by the suction unit between the hose manifold on the treatment unit and the suction unit.

2.2 Intended use

The installation position and technical data must be observed. Installation as a suction valve in a dental treatment unit or in other areas of a dental suction unit for one treatment chair. Only the media associated with dental treatment (e.g. water, saliva, dentine and amalgam) must be suctioned.

2.3 Improper use

Any use of this appliance / these appliances above and beyond that described in the Installation and Operating Instructions is deemed to be incorrect usage. The manufacturer cannot be held liable for any damage resulting from incorrect usage. The operator will be held liable and bears all risks.

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.
- Observe the installation instructions.
- Make the installation instructions available to the operator 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 Specialist 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.

2.8 Only use original parts

- Only use accessories and optional items that have been recommended or specifically approved by Dürr Dental.
- Only use only original wear parts and replacement parts.

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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.

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Product description

3 Overview

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):

Place selection valve 7560-500-XX

or

Place selection valve 75605000XX

– Connection parts
– Quick start instructions

3.2 Optional items

The following optional items can be used with the device:

DürrConnect20 system set 0700-700-50

Relay box 7560-565-50

3.3 Spare parts

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

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4 Technical data

Electrical data		
Rated voltage	V AC/DC	24
Electrical frequency (for AC)	Hz	50/60
Rated power	VA	1.8
Type of protection		IP 20
General data		
Max. pressure	mbar/hPa	-200
Duty cycle	%	100 (S1)
Dimensions (HxWxD)	mm	76 x 66 x 30
Ambient conditions during storage and transport		
Temperature	°C	-30 to +60
Relative humidity	%	< 95
Air pressure	hPa	500 - 1060
Ambient conditions during operation		
Temperature	°C	+10 to +40
Relative humidity	%	< 75
Air pressure	hPa	700 - 1060
Electromagnetic compatibility (EMC) Interference emission measurements		
High-frequency emissions in accordance with CISPR 11		Group 1 Class B
Interference voltage at the power supply connection CISPR 11:2009+A1:2010		Compliant
Electromagnetic interference radiation CISPR 11:2009+A1:2010		Compliant
Emission of harmonics IEC 61000-3-2:2005+A1:2008+A2:2009		N/A
Voltage changes, voltage fluctuations and flicker emissions IEC 61000-3-3:2013		N/A
N/A = not applicable		
Electromagnetic compatibility (EMC) Interference immunity measurements		
Immunity to electrostatic discharge IEC 61000-4-2:2008		Compliant
Immunity to high-frequency electromagnetic fields IEC 61000-4-3:2006+A1:2007+A2:2010		Compliant

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Electromagnetic compatibility (EMC) Interference immunity measurements	
Immunity to near fields of wireless HF communication devices IEC 61000-4-3:2006+A1:2007+A2:2010	Compliant
Immunity to fast electrical transients/bursts – AC mains voltage IEC 61000-4-4:2012	Compliant
Immunity to electrical fast transients/bursts – I/O, SIP/SOP ports IEC 61000-4-4:2012	N/A
Immunity to interference, surges IEC 61000-4-5:2005	Compliant
Immunity to conducted disturbances, induced by radio-frequency fields – AC mains voltage IEC 61000-4-6:2013	Compliant
Immunity to conducted disturbances, induced by radio-frequency fields – SIP/SOP ports IEC 61000-4-6:2013	N/A
Immunity to power frequency magnetic fields IEC 61000-4-8:2009	N/A
Immunity to voltage dips, short interruptions and voltage variations IEC 61000-4-11:2004	N/A
N/A = not applicable	

Electromagnetic compatibility (EMC) Interference immunity measurements on the supply input	
Immunity to fast electrical transients/bursts – AC mains voltage IEC 61000-4-4:2012 ± 2 kV 100 kHz repetition rate	Compliant
Immunity to surges, line-to-line IEC 61000-4-5:2005 ± 0.5 kV, ± 1 kV	Compliant
Immunity to surges, line-earth IEC 61000-4-5:2005 ± 0.5 kV, ± 1 kV, ± 2 kV	N/A
Immunity to conducted disturbances, induced by radio-frequency fields – AC mains voltage IEC 61000-4-6:2013 3 V 0.15–80 MHz 6 V ISM frequency bands 0.15–80 MHz 80% AM at 1 kHz	Compliant

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Electromagnetic compatibility (EMC) Interference immunity measurements on the supply input	
Immunity to voltage dips, short interruptions and voltage variations IEC 61000-4-11:2004	N/A
N/A = not applicable	

Electromagnetic compatibility (EMC) Interference immunity measurements SIP/SOP	
Immunity to electrical fast transients/bursts – I/O, SIP/SOP ports IEC 61000-4-4:2012 ± 1 kV 100 kHz repetition rate	N/A
Immunity to impulse voltages, conductor to earth IEC 61000-4-5:2005 ± 2 kV	N/A
Immunity to conducted disturbances, induced by radio-frequency fields – SIP/SOP ports IEC 61000-4-6:2013 3 V 0.15–80 MHz 6 V ISM frequency bands 0.15–80 MHz 80% AM at 1 kHz	N/A
N/A = not applicable	

Electromagnetic compatibility (EMC) Interference immunity measurements on the cover	
Immunity to electrostatic discharge IEC 61000-4-2:2008 ± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	Compliant
Immunity to high-frequency electromagnetic fields IEC 61000-4-3:2006+A1:2007+A2:2010 3 V/m 80 MHz–2.7 GHz 80% AM at 1 kHz	Compliant
Immunity to near fields of wireless HF communication devices IEC 61000-4-3:2006+A1:2007+A2:2010 Refer to the table with immunity to interference levels for near fields of wireless HF communication devices.	Compliant
Immunity to power frequency magnetic fields IEC 61000-4-8:2009 30 A/m 30 Hz or 60 Hz	N/A

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Electromagnetic compatibility (EMC) Interference immunity measurements on the cover
N/A = not applicable

Immunity to interference table, near fields of wireless HF communication devices		
Radio service	**Frequency band MHz**	**Test level V/m**
TETRA 400	380 - 390	27
GMRS 460 FRS 460	430 - 470	28
LTE band 13, 17	704 - 787	9
GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE band 5	800 - 960	28
GSM 1800 CDMA 1900 GSM 1900 DECT LTE band 1, 3, 4, 25 UMTS	1700 - 1990	28
Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE band 7	2400 - 2570	28
WLAN 802.11 a/n	5100 - 5800	9

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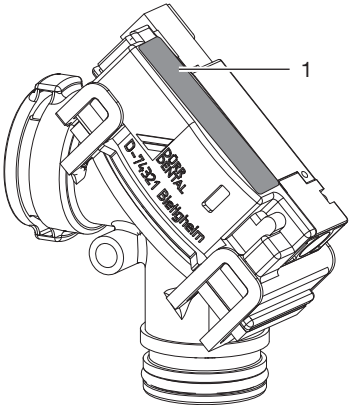
4.1 Type plate

The type plate is located on the top of the valve.



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.

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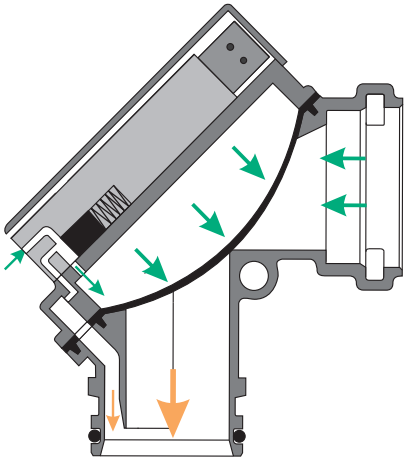
5 Operation

Place selection valve closed

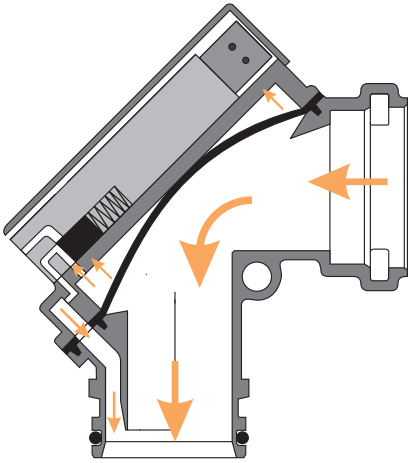
The solenoid valve on the place selection valve is normally open. Atmospheric pressure enters between the valve cap and membrane through a small channel. The membrane therefore rests on the valve body and interrupts the suction power.



1 Solenoid valve
2 Valve membrane

Place selection valve open

If the suction hose is taken out of the hose manifold, a voltage is applied to the solenoid valve on the place selection valve and the solenoid valve is actuated. With the vacuum of the suction unit, the volume between the valve cap and membrane is drawn by suction until it is empty and the membrane is consequently raised. The raised membrane therefore releases the suction power in the place selection valve.



1 Solenoid valve
2 Valve membrane

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Assembly

6 Requirements

6.1 Setup options

– Installation in treatment units in dental surgeries or dental clinics.
– Installation outside the treatment unit in the suction system (e.g. for 12 o'clock suction).

6.2 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
– Hoses made completely of PVC
– Hoses that are not sufficiently flexible

6.3 Information about electrical connections

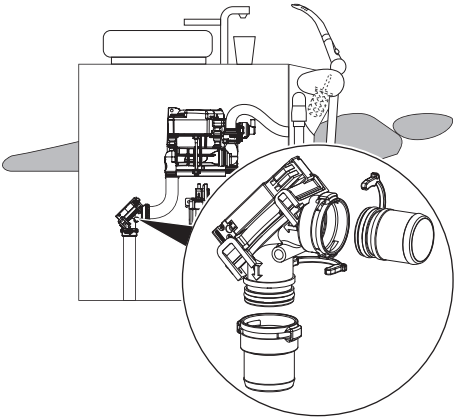
› The supply voltage to the device must satisfy the requirements for two means of patient protection (MOPP) as set out in IEC 60601-1 in relation to the supply network.
› The supply voltage must satisfy the following voltage/power requirements:
24 V AC/DC, 50–60 Hz, at least 3 VA

7 Installation

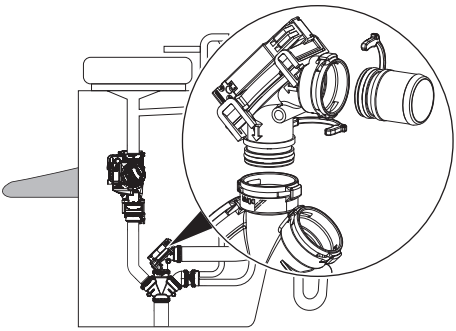
Prior to working on the unit or in case of danger, disconnect it from the mains.

7.1 Installation example

Installation in the dry suction system:



Installation in the wet suction system:



7.2 Preparing the place selection valve

Use DürrConnect connection parts (not included in scope of delivery).

› Push the hose adapter and hose connector socket onto the place selection valve.
› Insert the securing rings.

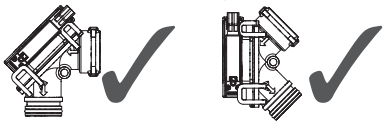
7.3 Installing the place selection valve

WARNING

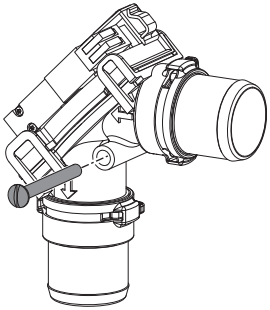
Infection due to contaminated treatment unit in the event of retrofit installation

› Clean and disinfect the suction equipment before working on the unit.
› Wear protective equipment when working (e.g. liquid-tight protective gloves, protective goggles, face mask).

› Locate a suitable installation point in the treatment unit.
  › Observe the installation position:



› Fasten the place selection valve.



› Connect the hoses to the connecting sleeves.
› Secure the hoses with hose clamps.

7.4 Electrical connections

› Connect the control line as per the circuit diagram.

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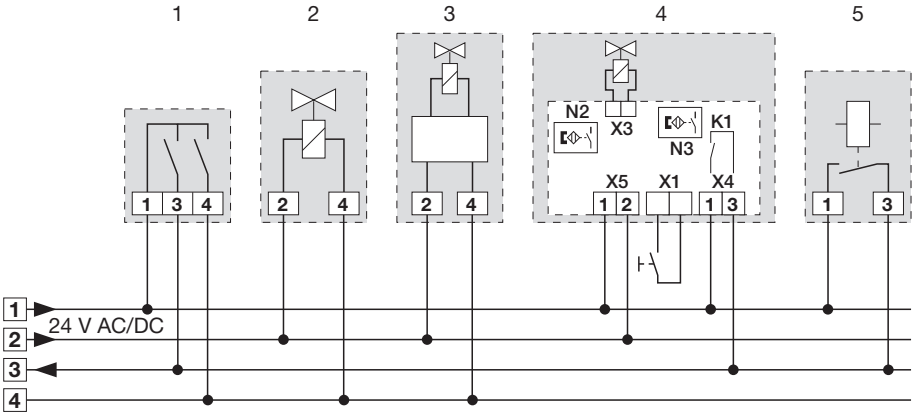
7.5 Circuit diagram



1 Hose manifold
2 Station selection valve
3 Rinsing unit
4 Spittoon valve
X1 Cleaning button for switch control panel
X3 Solenoid valve
X4 Control line for suction unit
X5 Power supply
K1 Suction unit relay
N2 Float sensor detection
N3 Cleaning button detection sensor
5 Suction machine relay in the treatment unit

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.
› Check the aspiration function.
› Check the connections, hoses and device for leaks.

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Troubleshooting

9 Tips for 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).

Error	Possible cause	Remedy
No suction power	Valve membrane closed.	› Check voltage on solenoid valve. › Clean valve membrane. › Clean air ducts. › Check vacuum.

Hersteller / Manufacturer:

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