DÜRR DENTAL

INSTALLATION AND OPERATING INSTRUCTIONS
DÜRR SPITTOON UNIT

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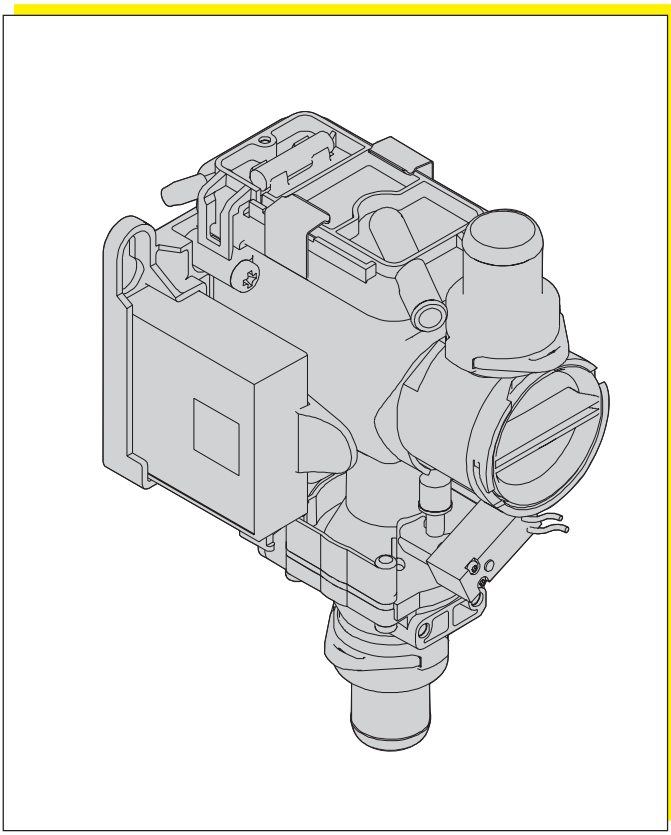

CE

9000-605-78/30

2003/12

CONTENT

Important Information

Installation

Usage

Disposal

Trouble-shooting

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IMPORTANT INFORMATION

1. NOTES

1.1 Test of conformity

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This product was tested for conformity to the Guidelines 93/42/EWG of the European Union and has been found to satisfy all criteria of these guidelines.

1.1 Test of conformity

This product was tested for conformity to the Guidelines 72/23/EWG + 89/336/EWG of the European Union and has been found to satisfy all criteria of these guidelines.

1.2 General Notes

- These Installation and Operating Instructions form an integral part of the unit. They must be kept close to the unit at all times. Precise observance of these instructions is a precondition for use of the unit for the intended purpose and for its correct operation. New personnel must be made aware of the contents, and they should be passed on to future operating staff.
- Safety for the operator as well as trouble-free operation of the unit are only ensured if use is made of original equipment parts. Moreover, use may only be made of those accessories that are specified in the technical documentation or that have been expressly approved and released by Dürr Dental for the intended purpose.
- Dürr Dental cannot guarantee for the safety or proper functioning of this unit in the case where parts or accessories are used which are not supplied by Dürr Dental.
- Dürr Dental are only responsible for the equipment with regard to safety, reliability and proper functioning where assembly, resettings, changes or modifications, extensions and repairs have been carried out by Dürr Dental or an agency authorized by Dürr Dental and if the equipment is used in conformity with the Installation and Operating Instructions.
- These Installation and Operating Instructions conform to the relevant version of the equipment and the underlying safety standards valid at the time of going to press. All switches, processes, trade marks, software programs and appliances named in this document are registered names.
- Any reprinting of the technical documentation, in whole or in part, is subject to prior approval of Dürr Dental being given in writing.

1.3 General Safety Notes

This appliance has been designed and constructed by Dürr Dental so that correct usage of the appliance is virtually free of any possible injury or danger. In spite of this, we feel it is our duty to mention the following safety measures in order to prevent any possible danger.

- When using this appliance all local and relevant regulations must be observed! Converting or modifying the appliance in any way is strictly prohibited. In such cases, any and all guarantees immediately become invalid. The operation of modified appliances can be punishable by law. In the interests of trouble-free operation the operator is responsible for observing these regulations.
- Retain the packaging for possible return of the product to the manufacturers. Ensure that the packaging is kept out of the reach of children. Only the original packaging provides adequate protection during transport of the unit.
  Should return of the product to the manufacturers be necessary during the guarantee period, Dürr Dental accepts no responsibility for damage occurring during transport where the original packaging was not used!
- Before every use the operator must check the functional safety and the condition of the appliance.
- The operator must be knowledgeable in the operation of the appliance.
- The product is not designed to be used in medical treatment areas where there exists the danger of explosion. Areas where explosions could occur are those where flammable anesthetic material, skin cleansers, oxygen and skin disinfectants are present. This appliance is not to be used in areas where the atmosphere could cause fire.

1.4 Notes concerning Medical Appliances

- This product is a technical medical appliance and, as such, may only be operated by trained personnel, or persons who, as a result of specialist knowledge, are familiar with this type of appliance.
- Do not lie multi-socket units on the floor.
- Other systems should not be plugged into the same multi-socket unit.

1.5 Supplementary appliances

- When using supplementary appliances in combination with Dürr appliances and the power supplied to the spittoon valve unit is supplied by an appliance from a different manufacturer, please note **that the voltage should be supplied from a safety transformer and the value of 24 V AC/DC +/- 10 % should neither be exceeded nor fallen short of**. Furthermore, the designated breaking capacity of control for suction unit / water ring pump should be kept to closely and not exceeded or fall short.
- Units may only be connected to the system or to other units when it has been established that there is no reduction of safety for the patient, the operator or the environment through such connection.
  Where it is not absolutely clear from the documentation whether safety is reduced by such connection, then the operator must establish, e.g. by contacting either the manufacturer or an expert, that there is no reduction of safety for the patient, the operator or the environment through such connection.

1.6 Electrical Safety Notes

- The appliance may only be connected to an earthed safety socket.
- Before connecting the appliance to the power supply check that the electrical current and the frequency of the device as described on the appliance are compatible with that of the power supply.
- Check the appliance and the power supply cables for possible damage before switching on. Damaged cables, plugs and sokkets must be replaced before use.
- Never touch open supply outlets and patients simultaneously.

1.7 Warnings and Symbols

In the Installation and Operating Instructions use is made of the following terms or symbols to denote information of special importance:

Information and/or mandatory regulations or prohibitions for the prevention of personal injury or substantial property damage

Special information regarding the economical use of the equipment and other information

CE-Labeling without Notified Body Number

Observe Installation and Operating Instructions!

For the protection of both staff and patients, protective gloves must be worn when using the Spitton Unit

Date of manufacture

Cleaning button on switch module

Please observe documentation supplied

Vacuum

Air

2. PRODUCT INFORMATION

2.1 Correct Usage

The suction noise on the spitton is with the integrated spitton valve in the Unit soundless.

2.2 Incorrect Usage

Any other use or use beyond that started is deemed to be not for the intended purpose. The manufacturer declines all liability in respect of any damage resulting from this. All risk is borne solely by the user.

3. CONTENTS

3.1 Special accessories

The following parts are **not** supplied as standard.
Please order separately, as required.

Pressure reducer for
spittoon unit 7560-991-00
Station selector 7560-500-60

4. TECHNICAL DATA

Model 7560-500-..		
Safety low voltage	V	24 AC/DC (±10% eff.)
Frequency	Hz	50 - 60
Current consumption	A	max. 0.1
Shaft power	VA	max. 2.4
Turn-on voltage	V	min. 5 AC/DC
Suction unit relay X4		max. 24 AC/DC
Switching surge	A	min. 0.01 - 2
Suction unit relay X4		
Duty cycle	%ED	40
Temperature range		
In operation	°C	+10 to +40
Storage and transport	°C	-10 to +60
Relative humidity		
In operation		max. 70%
Storage and transport		max. 95%
Fuse		IP 20
DürrConnect fittings		LW 20
Collection tank vent outlet		ø 9mm (outer)
Filter electrovalve		5µm
Connections to compressed air (oilfree, clean compressed air)		
Tecalan hose ∅ 4mm		
min	bar/kPa	3/30
max	bar/kPa	5/50
Max. volume flow	l/min	3,5
Max. water temperature	°C	35
Max. vacuum p_e	mbar/hPa	-200
absolute p_{abs}	mbar/hPa	800
Weight	kg	0,26
Dimensions HxBxT	cm	14.5x7.4x11.5

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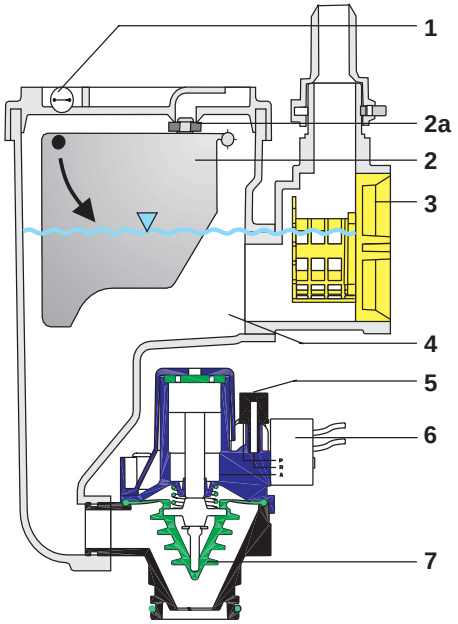
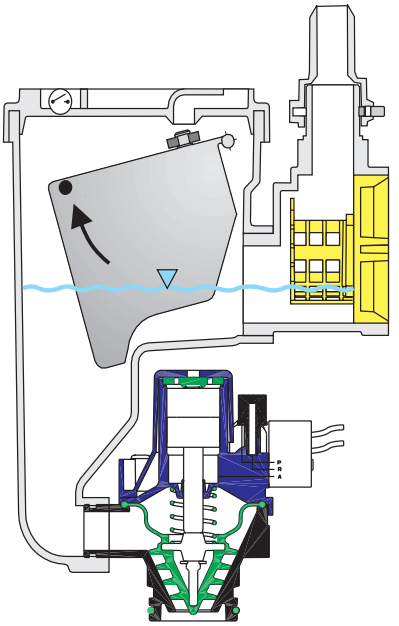
5. FUNCTIONAL LAYOUT

Operating phase



Idling phase



1 Reed contact
2 Float
2a Float seal
3 Coarse filter
4 Storage container
5 Compressed air connections
6 Electrovalve
7 Cut-off valve

6. FUNCTIONAL DESCRIPTION

6.1 Operating function

The waste water from the spittoon flows to the coarse filter (3) and into the storage container (4). When sufficient fluid has collected the float contact (2) activates the Reed contact (1) which serves to switch the suction unit on. The control electronics activate the solenoid electrovalve (6), so that the incoming stream of compressed air (5) opens the cut-off valve (7). The fluids are fed directly into the vacuum system.

6.2 Cleaning function

The automatic cleaning operation is operated by continuous pressing of the electronics box (8) or on switch module (11) (see section 8). This serves to open the cut-off valve (7) and the suction machine now starts automatically. The cleaning and disinfecting agents can now pass unhindered through the spittoon valve unit into the vacuum supply to the suction machine.
After releasing the switch on the module the suction unit will operate for a further 20 seconds or so.

7. NOTES

The Institute for Civil Engineering in Berlin has set a max. waste water flow of 4 l/min per treatment station. For this reason the water-driven suction hose should be cut off during this period.

- Check the setting on the water ring pump:
  - Any **vacuum should not exceed 160 mbar (1.6 kPa)**, set if necessary.
  - Reduce the flow of water to the lowest recommended by the manufacturer. Water consumption c. 2 l/min.
- Do not remove either the gold collector or coarse filter from the spittoon unit!

Treatment staions into which the spittoon valve unit is to be installed must be cut off from any current and protected from accidental switching on!

- The spittoon valve unit (12) may only be installedand operated in treatment stations (chairs) and in dry rooms.
  Ii this is not possible, then the spittoon valve unit (12) must be fitted in a housing and located either near the treatment unit or the wall socket.

8. SPITTOON VALVE UNIT - INSTALLATION GUIDE

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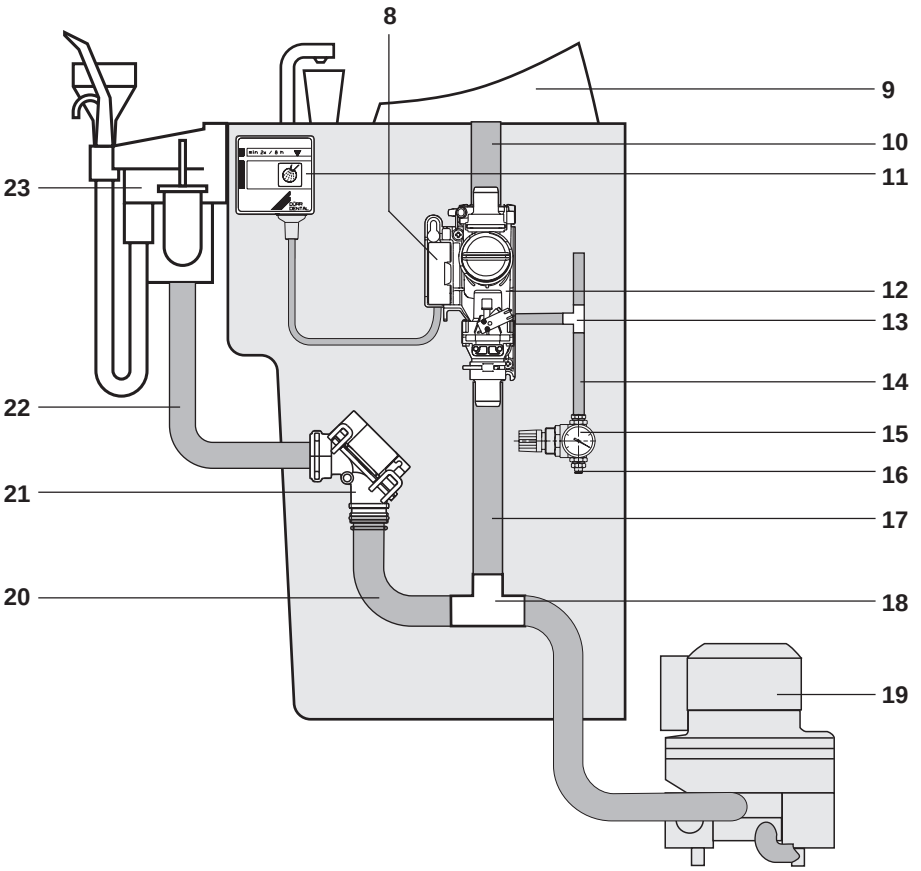

8 Electronics box
9 Spittoon
10 Spittoon waste water connection
11 Switch module
12 Spittoon valve unit
13 T-connection
14 Compressed air hose (3-5 bar)
15 Pressure reducer 7560-991-00
16 Compressed air connection (socket end)
17 Spittoon waste water outlet
18 T-piece NW 32
(e.g. Dürr Connect 0700-700-02E)
19 Separator e.g. VSA 300
20 Waste water connection from station selector
21 Station selector valve unit 7560-500-55
22 Connection from hose manifold unit
23 Hose manifold unit

9. INSTALLATION OF SPITTOON VALVE UNIT

9.1 Installation Valve Unit

We recommend that the spittoon valve unit (12) be installed inside the treatment unit (chair) in the supply to the waste water connection from the spittoon (10).

- Mount the spittoon valve unit in a suitable location in the treatment chair.
- Cut the waste water outlet hose at a suitable point and insert the spittoon valve unit. If necessary use parts of the connector series (see Special Accessories under section 3.1).

9.2 Electronics box - alternative set-up

- The box containing the electronics (8) can be detached from the spittoon valve unit and mounted separately into the treatment unit. The automatic cleaning operation is activated using the electronics box switch. Therefore, the electronics box must be mounted in a visible and accessible location.
  The distance from the spittoon valve unit should not exceed 25 cm.

If access is poor or the max. distance of 25 cm is not possible then the switch module (11) 7560-520-00 should be fitted.

- Place the switch module (11) in a good visible and accessible location near to the spittoon valve unit (9).

9.3 Compressed air supply

Check the compressed air supply: if a pressure of 5 bar is exceeded, an additional pressure reducer is necessary (15, 7560-991-00) and should be installed.

- Cut the compressed air hose (14) **perpendicularly** after the pressure reducer (lower air pressure) and fit the T-piece connector (13) with 4mm fork.
- Fit a tecalan hose between the T-piece (13) and the spittoon valve unit.

When inserting or removing the pressure hose (14) press the black socket end on the air connection (16) inwards.

9.4 Installation selector valve

If no station selector valve has been fitted, we recommend the installation of s selector (21) to be placed between the outlet from the hose manifold set (22).

Detailed information about the installation of the selector unit can be found in the Installation and Operating Instructions Station Selector Valve, 9000-605-15/30.

- Cut the waste water connection coming from the spittoon valve unit (17).
- Place the T-piece (18) in position.
- Cut the waste connection from the hose manifold unit (22) and place the station selector valve (21) in position.

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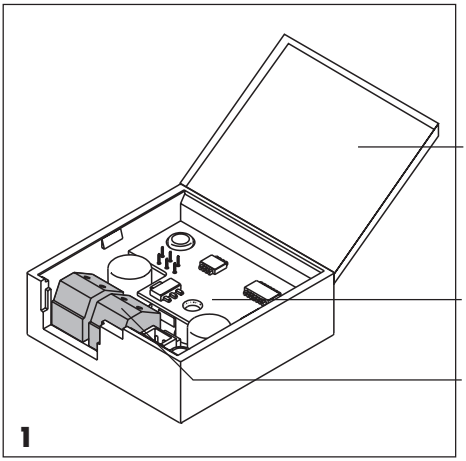
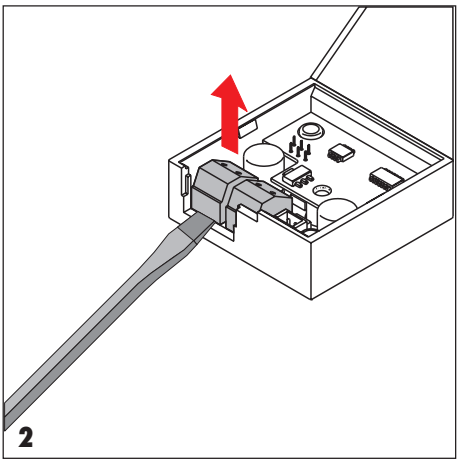


10. ELECTRICAL CONNECTIONS

10.1 Electronics box

When inserting the wires the electronics box can be released from its clamp on the spittoon valve unit.

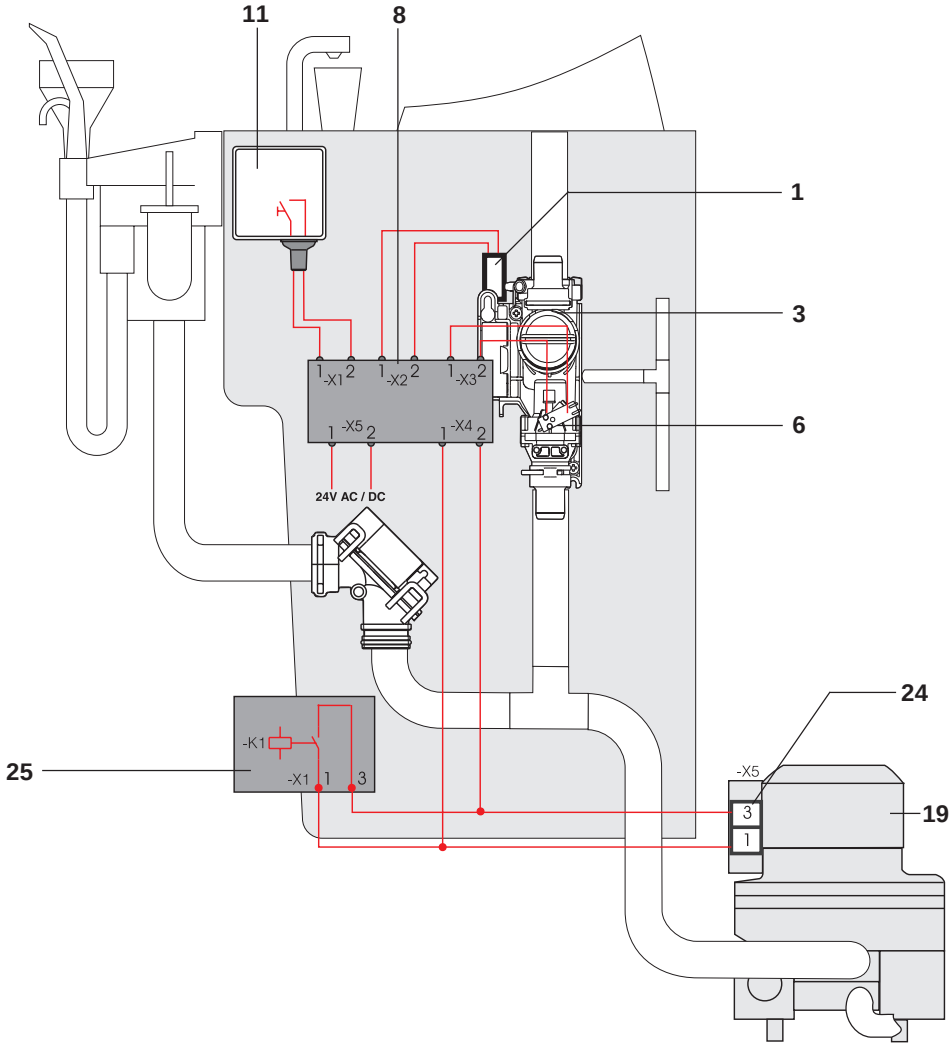
- Open the cover of the electronics box (8).



- When connecting the wires it is possible to lift the black treminal connectors (8b), **X5 = 24V AC / DC** and **X4 = SM,** from the electronic board (8a) using a screwdriver (8a) for easier access.

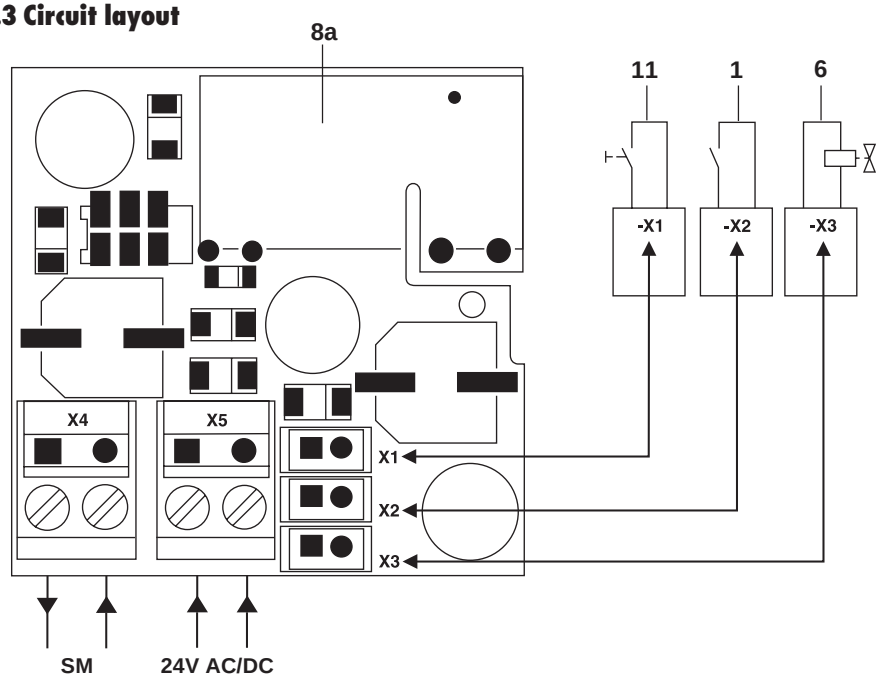
Connections with a cross-section of not more than 1.5 mm^2 may be fitted. The maximum permitted torque on the screws is 0.2 Nm.

10.2 Connections guide



11 Switch module
8 Electronics box
1 Reed switch in spittoon valve unit
3 Yellow coarse filter
6 Electrovalve within the spittoon valve unit
24 Control line in the suction unit VSA 300 with mother board
19 VSA 300
25 Switch contact in the treatment unit

10.3 Circuit layout



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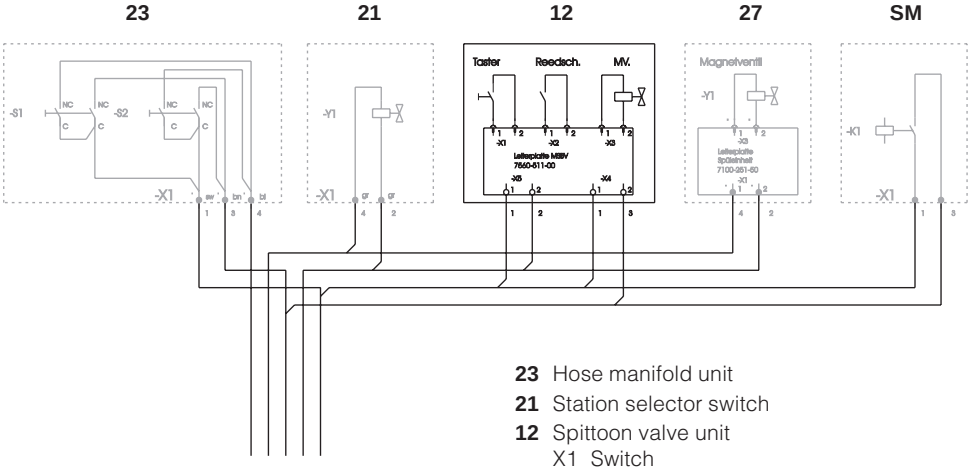
10.4 Connecting components

Treatment staions into which the spittoon valve unit is to be installed must be cut off from any current and protected from accidental switching on!

- Connect the wire from the switching module to the electronics PCB (8a) in the electronics box (8).
  See also plan **X1** (11)
- Connect Reed switch (1) to the electronics PCB (8a) in electronics box (8).
  Siehe auch Anschlussplan **X2** (1)
- The solenoid electrovalve (6) should be connected to the PCB (8a) in the electronics box (8).
  See also plan **X3** (6)
- In order to control the suction unit the black terminal clamps **SM** must be connected to the relay in the treatment unit (25) in parallel.
  See also plan **X4**
- The black terminal clamp **24V AC / DC** of the electronic PCB (8a) must be connected to low protection voltage 24V, 7W, of the protective low voltage transformer in the treatment unit.
  See also plan **X5**

The maximum current of 24V should be connected through the two black terminals X4 and X5 of the PCB. Do not connect to low voltage (110V or 230V).

11. CIRCUIT DIAGRAM



0700-.. 4 4 3 2 1
0732-.. 4 4 3 2 1

23 Hose manifold unit

21 Station selector switch

12 Spittoon valve unit
- X1 Switch
- X2 Reed switch
- X3 Magnet valve
- X4 Relay, non-earthed closer for suction unit

27 Rinsing unit

SM Relay unit for suction unit

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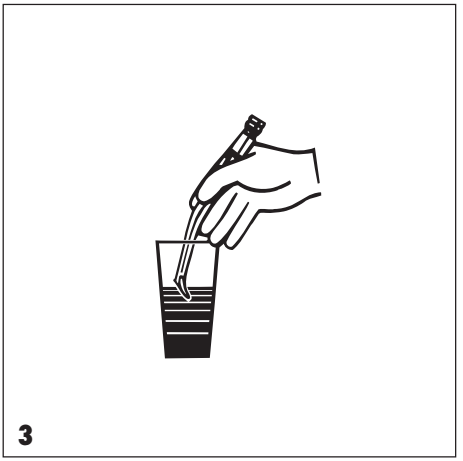

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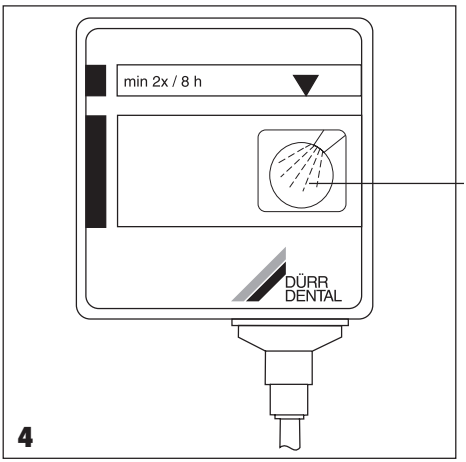

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USAGE

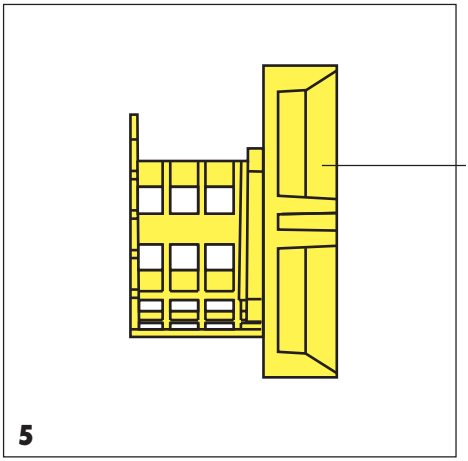
12. CLEANING AND DISINFECTING THE SPITTOON VALVE UNIT

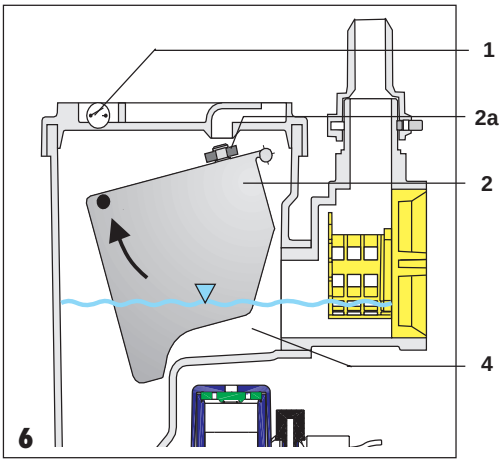
- Press button for spittoon rinse.
- Keep pressing the button on the switch module (8) until spittoon rinsing has finished.
- Pour an amount of disinfectant into the spittoon, e.g. Orotol Plus.

Do not use foaming or aggressive cleaning agents.

- Keep pressing the button on module (8) until the disinfecting agent has been completely sucked up.

Prepare the disinfectant max. 1 hour before use. The disinfection effect is reduced when this period is longer.





13. MAINTENANCE

To avoid the danger of any infection protective gloves should be worn when working on the spittoon valve unit.

13.1 Monthly

Clean or replace the coarse filter (3)
Ord.No. 7110-981-00

The yellow sieve in the spittoon unit acts as a coarse filter and removes any large tooth particles are able to enter the suction system.

13.2 Annually

- Check rinsing function:
  Press the button in the switch module (8) for 3 seconds (fig. 4).
  The suction unit must operate and the spittoon valve must open. (Sounds of suction from waste connection of spittoon.)
- Check the supply of compressed air for the spittoon valve is 3-5 bar (in the treatment unit).
- Carry out function test, see section 11

13.3 Every 3 years

- Check Reed contact (1), replace if necessary Ord.No. 7110-122-00.
- Clean the float contact (2) in storage container (4). Replace the seal (2a) Ord.No. 7110-120-04. Alternatively fix using the repair kit Ord.No. 7110-110-51.

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14. DISPOSAL

- The functional parts of the spittoon valve unit will be contaminated and should be disposed of according to local and national regulations regarding the disposal of contaminated parts.
- The electrical components of the spittoon valve unit can be disposed of as electronic waste.

15. TIPS FOR USERS AND TECHNICIANS

Repairs above and beyond normal maintenance must be carried out by suitably qualified personnel or our service team.

Before repairs and maintenance are carried out, remove all power

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Problem	Probable cause	Solution
1. Spittoon valve does not operate.	• No power	• Check power and reconnect.
	• Faulty connection	• Check connections **X1** Solenoid electrovalve **X2** Switch **X3** Reed switch.
		• Check switch function of relay.
	• Relay does not activate	• Check the compressed air supply to spittoon unit.
	• No compressed air connection	• Check the function of the Reed contact by pressing switch.
	• Reed contact defect	• Check float contact moves freely.
2. Suction unit does not start or runs permanently	• Float contact (2) is not moving freely in housing, is stuck	• Check filter, check whether in faulty position or blocked, clean if required.
3. Fluids do not run off	• Waste connection blocked	• Clean the waste water connections.