Installation and operating instructions
VS 300 S / VS 600 / VS 900
combi-suction unit
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1. Notes

1.1 Test of conformity
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.

1.2 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 pre-condition 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, resetting, 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 medical technical appliance and may only be used by those persons whose training and/or experience guarantees correct usage.

1.5 Using Peripheral Devices

- 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 Safety notes concerning electric current

- This unit may only be connected to a standard approved earthed electrical socket (VS 600 + VS 900).
- Before connecting the appliance to the mains, check that the frequency and voltages given for the appliance match those of the available power supply.
- Before commissioning the appliance all connections must be checked for possible damage. Damaged connections, plugs and sockets should be replaced immediately.
- Never touch patients and open sockets of the appliance simultaneously.
- All relevant electrical rules and regulations must be observed during installation and when carrying out any repairs or maintenance on the appliance.

1.7 Warnings and Symbols

The operating and installation instructions contain the following labeling and symbols for especially important information.

- **Restrictions and regulations concerning the prevention of injury or damage.**
- **Warning concerning dangerous electrical voltage.**
- Special instructions concerning economic use of the appliance or other notes.
- Observe notes in supplementary documentation
- For added safety of operators protective gloves should be worn while working on the Suction Units.
- Take environmental influences into consideration.

- **Date of manufacture.**
- **Ground connection.**
- **Fuse.**
- **Recycling**
  - ~ Single phase AC current.
  - 3~ Three-phase AC current.
  - 3N~ Three-phase AC current with central conductor.
2. Product information

2.1 Correct Usage

The suction unit has been designed to produce a vacuum in order to suck up saliva, rinsing water and other fluids which occur during dental treatment and which are transported to the waste water system. **Installation in medical facilities:**

As far as was possible, all requirements concerning Medical Products have been taken into consideration in the design and production of these appliances. Thus, the appliance may be installed in any facility providing medical treatment. Where the appliance is set up in a medical clinic or other facility, then the requirements demanded under directive 93/42 EWG as well as all relevant standards must be observed on installation.

2.2 Incorrect Usage

Any usage above and beyond that explicitly laid down in the operating instructions is deemed to be incorrect usage. The manufacturer accepts no liability for damage or injury resulting from incorrect use. All risk is carried by the operator.

2.3 Product Description

The combi-suction unit is a suction unit with an integrated separation unit. Separation within the treatment station (e.g. chair) is no longer necessary. The suction unit separates the fluids and solid particles sucked up during treatment from the air using a two-step separation system of cyclone separator and separation turbine. The separation turbine is especially effective at preventing fluids and blood foam from being sucked into the turbine section of the suction unit. The fluids sucked up are continually being rotated at high speed and transported to the waste system; thus, there is no interruption of suction due to the system being too full. The suction system is mounted on rubber mountings, which reduce vibration and operating noise.

3. Delivery Contents

The items listed under Special Accessories are not included in the standard delivery contents, but can be ordered specially.

3.1 Suction unit VS 300 S

3.1.1 Contents

**Model 7122-01/002**
Typ 230 V, 1~, 50 Hz
with control unit

**Model 7122-02/002**
Typ 230 V, 1~, 60 Hz
with control unit

**Model 7122-05/003**
Typ 100 V, 1~, 50 - 60 Hz
with control unit

3.1.2 Accessories

Connector set ............................... 7122-001-00
Suction hose LW 30, grey ............ 9000-317-27
Hose LW 20 .................................. 9000-317-22
Hose LW 30, Aluminium ............... 9000-317-37
OroCup (not Japan) ..................... 0780-350-00

3.1.3 Special Accessories

Wall mounting ............................... 7130-190-00
Housing ........................................ 7122-200-00
Exhaust bacterial filter with accessories .................................. 7120-143-00
Rinsing unit ................................. 7100-250-00
3.2 Suction Unit VS 600

3.2.1 Contents

Model 7128-01/002
Type 230 V, 1~, 50 Hz
with control unit

Model 7128-02/002
Type 400 V, 3~, 50–60 Hz
with control unit

Model 7128-02/003
Type 230 V, 3~, 50–60 Hz
with control unit

Model 7128-05/003
Type 200 V, 3~, 50–60 Hz
with control unit

3.2.2 Accessories

Control unit
for type 7128-01/002 .................... 0700-500-50
for type 7128-02/002 .................... 0732-100-56
for type 7128-02/003 .................... 0732-100-57
for type 7128-05/003 .................... 0732-100-57
Pipe connector set .................... 7128-001-00
Hose LW 40 .............................. 9000-318-70
Hose LW 50 .............................. 9000-317-00
Hose LW 20 .............................. 9000-317-22
OroCup .................................. 0780-350-00

3.2.3 Special accessories

Noise reducing cover ................. 7128-991-00
Pressure compensation hose ...... 7112-101-00
Wall mounting ......................... 7130-190-00
Floor installation console ......... 7130-191-00
Bacterial exhaust filter .......... 0732-001-00
Fixing plate for exhaust filter ..... 0732-000-06
Noise reducer for exhaust ...... 0730-991-00
Rinsing Unit ......................... 7100-250-50

3.3 Suction Unit VS 900

3.3.1 Contents

Model 7133-01/001
Type 230 V, 1~, 50 Hz
without control unit

Model 7133-02/001
Type 400 V, 3~, 50 Hz
without control unit

Model 7133-01/002
Type 230 V, 1~, 50 Hz
with control unit

Model 7133-02/002
Type 400 V, 3~, 50 Hz
with control unit

Model 7133-03/002
Type 230 V, 3~, 50 Hz
with control unit

Model 7133-05/002
Type 200 V, 3~, 50–60 Hz
230 V, 3~, 60 Hz
with control unit

3.3.2 Accessories

Control unit
for type 7133-01/002 .................... 0732-100-55
for type 7133-02/002 .................... 0732-100-56
for type 7133-03/002 .................... 0732-100-57
for type 7133-05/002 .................... 0732-100-59
Pipe connector set .................... 7133-001-00
Hose LW 20 .............................. 9000-317-22
Hose LW 50 (0.6m) .................... 9000-317-00
Hose LW 50 (1.5m) .................... 9000-317-00
OroCup .................................. 0780-350-00

3.3.3 Special accessories

Noise reducing cover ................. 7128-991-00
Pressure compensation hose ...... 7130-991-00
Wall mounting ......................... 7130-190-00
Floor installation console ......... 7130-191-00
Bacterial exhaust filter .......... 0732-001-00
Fixing plate for exhaust filter ..... 0732-000-06
Noise reducer for exhaust ...... 0730-991-00
Rinsing unit ......................... 7100-250-50
### 4. Technical Data

#### 4.1 Suction Unit VS 300 S

<table>
<thead>
<tr>
<th>Model 7122</th>
<th>Voltage V</th>
<th>230</th>
<th>230</th>
<th>100</th>
</tr>
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<tbody>
<tr>
<td>Supply frequency Hz</td>
<td>50</td>
<td>60</td>
<td>50 - 60</td>
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</tr>
<tr>
<td>Phases</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rated current A</td>
<td>2.9</td>
<td>3.7</td>
<td>8.0 - 10</td>
<td></td>
</tr>
<tr>
<td>Residual current A</td>
<td>8.2</td>
<td>9.1</td>
<td>21 - 20.5</td>
<td></td>
</tr>
<tr>
<td>Motor protection switch</td>
<td>Motor winding overheat protector 160°C (±5°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption W</td>
<td>580</td>
<td>800</td>
<td>650 - 850</td>
<td></td>
</tr>
<tr>
<td>R.P.M. min⁻¹</td>
<td>2750</td>
<td>3100</td>
<td>2810 - 3220</td>
<td></td>
</tr>
<tr>
<td>Max. flow volume l/min</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air flow l/min</td>
<td>see Fig. 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. No. treatment stations</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight kg</td>
<td>12.5</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>see Fig. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise level* dB(A), ±1.5</td>
<td>63 - 64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duty cycle %</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection type</td>
<td>IP 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum connection</td>
<td>DürrConnect Spezial (hose ø 30 mm (inner))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust air connection</td>
<td>DürrConnect Spezial (Aluminium hose ø 30 mm (inner))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste water connection</td>
<td>DürrConnect System (hose 20 mm (inner))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary air vent setting mbar</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective low voltage V</td>
<td>24 ~</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power output VA</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* According to EN ISO 1680 air noise emissions; measured in soundproof room. Higher values will be achieved in reverberant rooms.
### 4.2 Suction Unit VS 600

<table>
<thead>
<tr>
<th>Model 7128</th>
<th>-01</th>
<th>-02</th>
<th>-05</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage</strong></td>
<td>V</td>
<td>230</td>
<td>400</td>
</tr>
<tr>
<td><strong>Supply frequency</strong></td>
<td>Hz</td>
<td>50</td>
<td>50 - 60</td>
</tr>
<tr>
<td><strong>Phases</strong></td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Rated current</strong></td>
<td>A</td>
<td>5.0</td>
<td>1.8 - 2.3</td>
</tr>
<tr>
<td><strong>Residual current</strong></td>
<td>A</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td><strong>Motor protection switch</strong></td>
<td>A</td>
<td>–</td>
<td>2.5 - 4.0</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>W</td>
<td>1100</td>
<td>1000</td>
</tr>
<tr>
<td><strong>R.P.M.</strong></td>
<td>min⁻¹</td>
<td>2850</td>
<td>2850/3300</td>
</tr>
<tr>
<td><strong>Max. flow volume</strong></td>
<td>l/min</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Air flow</strong></td>
<td>l/min</td>
<td></td>
<td>see Fig. 5</td>
</tr>
<tr>
<td><strong>Max. No. treatment stations</strong></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>kg</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td>see Fig. 4</td>
</tr>
<tr>
<td><strong>Noise level</strong>*</td>
<td>dB(A), ±1.5</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td><strong>Duty cycle</strong></td>
<td>%ED</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td><strong>Protection type</strong></td>
<td></td>
<td>IP 44</td>
<td></td>
</tr>
<tr>
<td><strong>Protection class</strong></td>
<td></td>
<td>I</td>
<td></td>
</tr>
<tr>
<td><strong>Vacuum connection</strong></td>
<td>ø 40 mm (outer) (DN 40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exhaust air connection</strong></td>
<td>ø 50 mm (outer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Waste water connection</strong></td>
<td>DürrConnect System</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auxiliary air vent setting</strong></td>
<td>mbar</td>
<td>170 (170 hPa)</td>
<td></td>
</tr>
</tbody>
</table>

* According to EN ISO 1680 air noise emissions; measured in soundproof room. Higher values will be achieved in reverberant rooms.
## 4.3 Suction Unit VS 900

<table>
<thead>
<tr>
<th></th>
<th>Model 7133</th>
<th>-01</th>
<th>-02</th>
<th>-03</th>
<th>-05</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage</strong></td>
<td>V</td>
<td>230</td>
<td>400/230</td>
<td>230</td>
<td>200</td>
</tr>
<tr>
<td><strong>Supply frequency</strong></td>
<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50-60</td>
</tr>
<tr>
<td><strong>Phases</strong></td>
<td></td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Rated current</strong></td>
<td>A</td>
<td>6.5</td>
<td>2.5/4.0</td>
<td>4.0</td>
<td>5.7-6.7</td>
</tr>
<tr>
<td><strong>Residual current</strong></td>
<td>A</td>
<td>29</td>
<td>14/24</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td><strong>Motor protection switch</strong></td>
<td>A</td>
<td>7.5</td>
<td>2.7/4.6</td>
<td>4.5</td>
<td>6.0-7.0</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>W</td>
<td>1480</td>
<td>1520</td>
<td>1420</td>
<td>1500-2080</td>
</tr>
<tr>
<td><strong>R.P.M.</strong></td>
<td>min⁻¹</td>
<td>2770</td>
<td>2820</td>
<td>2820</td>
<td>2810-3200</td>
</tr>
<tr>
<td><strong>Max. fluid flow</strong></td>
<td>l/min</td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td><strong>Air flow</strong></td>
<td>l/min</td>
<td></td>
<td></td>
<td></td>
<td>see Fig. 7</td>
</tr>
<tr>
<td><strong>Max. No. treatment stations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>kg</td>
<td></td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>see Fig. 6</td>
</tr>
<tr>
<td><strong>Noise level</strong></td>
<td>dB(A), ±1.5</td>
<td></td>
<td></td>
<td></td>
<td>64</td>
</tr>
<tr>
<td><strong>Duty cycle</strong></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td><strong>Protection type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IP 44</td>
</tr>
<tr>
<td><strong>Protection class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td><strong>Vacuum connection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ø 47 mm (outer)</td>
</tr>
<tr>
<td><strong>Exhaust air connection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ø 50 mm (outer)</td>
</tr>
<tr>
<td><strong>Waste water connection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DürrConnect System</td>
</tr>
<tr>
<td><strong>Auxiliary air vent setting</strong></td>
<td>mbar</td>
<td></td>
<td></td>
<td></td>
<td>170 (17 hPa)</td>
</tr>
</tbody>
</table>

* According to EN ISO 1680 air noise emissions; measured in soundproof room. Higher values will be achieved in reverberant rooms.
4.4 Environmental conditions

Take environmental influences into account. The appliance must not be used in damp or wet locations.

Storage and transport
Temperature: ......................... –10 °C to +60 °C
Rel. humidity: ......................... max. 95%

Operation
Temperature: ......................... +10 °C to +40 °C
Rel. humidity: ......................... max. 70%

5. Functional description

VS 900 as example of principle function
In the suction unit the fluids and solid particles which are sucked up are separated from air using a two-step separation system. This separation system consists of a cyclone separator and a separation turbine. The suction process runs continuously. The intake mixture of fluid, solid particles and air enters the suction unit via the intake connection (D). The coarse filter (B) retains the larger solid particles. The remaining mixture proceeds to the cyclone separator (I) and is then rotated in a spiral action. In this 1st stage the fluids and any remaining solid particles are thrown against the outer walls of the cyclone separator by the centrifugal action. Initially there is only a “coarse separation” of the fluids.

In the following 2nd stage the separation turbine (J) sets a “fine separation” into play, in which the remaining fluids are now separated from the air which has transported them thus far.

The waste water pump (H) now transports the fluids from the centrifuge together with the fine solid particles to the waste water connection (E) and the central waste water system. The air, now free of any fluids, is transported to the exhaust air system (C) using the vacuum provided by the action of the turbine wheel (K).

The turbinen wheel and the waste water pump are driven by the motor (L).

In order to separate dental amalgam it is necessary to install an amalgam separator, e.g. model 7801-07, after the waste connection (E).

Should an amalgam separator from another manufacturer be fitted, then the max. fluid flow rate of the suction unit must be taken into account.
6. Functional description

A Auxiliary air vent
B Coarse filter
C Exhaust air connection
D Intake sleeve
E Waste water connection
F Diaphragm valve
G Exhaust air noise reducer
H Waste water pump
I Cyclone separator
J Separation turbine
K Turbine wheel
L Motor
Installation

7. Set-up

7.1 Set-up location

- The ambient room temperature must not fall below 10 °C and should not be allowed to rise above 40 °C. The relative humidity must not exceed 70%.
- Installation in a purpose-built room, e.g. in boiler room, must be approved beforehand (i.e. observe local regulations).
- Installation in wet rooms is not permissible.
- When installing this unit inside a cabinet or in a machine room, sufficient air inlet and outlet openings must be provided; these must have a minimum of 120 cm² cross-section.
- If insufficient ventilation is available then a fan must be fitted, this must be able to provide at least 2 m³/min ventilation flow; additionally, an inlet opening must be provided for cool air.

7.2 Alternative set-ups

- On the same floor as the surgery.
- In a ventilated cabinet (e.g. Dürr PTS 105/195).
- In Dürr-housing (VS 300 S only) as extension to the treatment unit and connected to electrical floor connection.
- On a lower floor than the surgery.

VS 300 S

When installing the VS 300 S in a cellar or similar room, then the unit should be mounted on a platform or on the wall at a height of 30 cm above the floor.

7.3 Securing the suction unit

- When setting up the suction unit together with an amalgam separator a floor console should be included.

⚠️ The suction unit must be at least 20 cm above any amalgam separator which is also installed.

- For mounting on the wall we recommend using the Dürr wall-mounting unit.

🔍 Information concerning fitting can be found in the installation instructions which are supplied with the floor console or the wall-mounting unit.

7.4 Fitting a pressure compensation hose

- For suction units VS 600 and VS 900 the installation of a pressure compensation hose is necessary where an amalgam separator is present.

💡 Due to the high rate of fluid flow through these units, a pressure compensation hose is required between the suction unit and amalgam separator and serves as intermediate storage in cases of spontaneous rush of water.

🔍 Information on installation can be found in the instructions supplied with the pressure compensation hose.

7.5 Rinsing Unit

It is strongly recommended that a rinsing unit be added to the suction unit for surgical treatment. This enables a small amount of water to be fed into the system during suction which serves to dilute the secretions and allow them to be transported through the system more easily. This rinsing unit should either be integrated into the treatment station itself or can be set up in the vicinity of the suction unit.
7.6 Plumbing materials
Only the following pipe materials may be used:
Vacuum-sealed HT-drain pipe made from polypropylene (PP), chlorinated polyvinyl-chloride (PVC-C), unplasticized polyvinyl-chloride (PVC-U) or polyethylene (PEh).

⚠️ Do not use: Acrylonitrile-Butadiene-Styrene (ABS) or Styrene-Copolymer blends (e.g. SAN+PVC).

7.7 Hose materials
For waste water and suction connections use only PVC flexible spiral hoses with integrated spiral or hoses of equivalent type.

⚠️ Do not use: Hoses which are not resistant to dental disinfectants and other chemicals, or rubber or PVC hoses with insufficient flexibility.

7.8 Laying hoses and pipes
Waste water connections should be completed in accordance with the local regulations.

⚠️ The connection between supply and the suction unit itself should be kept as short as possible, be straight without bends and carried out with the flexible hose supplied. This will avoid any vibration being effected in the plumbing system.
8. Connections

The connections illustrated here are only meant as examples which can be varied according to the conditions present in the individual surgery.

8.1 VS 300 connections

1  Connector 30/36
1a O-Ring
2  Hose clip ø30mm
3  Exhaust hose (Aluminium) inner ø30mm
4  Angle piece DN 30
5  O-Ring 30x2
6  Securing ring
7  Plug, external ø36mm
8  O-Ring 20x2.0
9  Securing ring
10 Hose socket ø25mm
11 Hose clamp ø28mm
12 Suction hose, internal ø30mm
13 Double plug
14 Waste water hose, internal ø20mm
8.2 VS 600 connections

5  O-Ring 30x2
7  Plug, external ø36mm
8  O-Ring 20x2,0
9  Securing ring
10 Hose socket ø20mm
11 Hose clamp ø28mm
13 Double plug
14 Waste water hose, internal ø20mm
20 Elbow DN50
21 Hose clamp ø55mm
22 Exhaust air hose, internal ø50mm
23 Hose plug DN40/50
24 Hose clamp ø46mm
25 Suction hose ø40mm
8.3 VS 900 connections

5 O-Ring 30x2
7 Plug, external ø36mm
8 O-Ring 20x2.0
9 Securing ring
10 Hose socket ø20mm
11 Hose clamp ø28mm
13 Double plug
14 Waste water hose, internal ø20mm
20 Elbow DN50
21 Hose clamp ø55mm
22 Exhaust air hose, internal ø50mm
30 Snap-lock connector, straight
31 Snap-lock connector, bent
32 Collar seal
33 Union nut
34 Suction hose, internal ø55
9. Electrical Connections

The electrical supply unit must conform to all national rules and regulations concerning power supply to surgeries and clinics. Where electrical connection to the mains is via floor or ceiling an all-polar isolating device (all-polar switch or all-polar power safety switch (fused)) with > 3mm contact opening width must be built into the system. Fusing: LS-Switch 16 A, Characteristics B, C and D according to EN 60898

Electrical connection to the main power supply using a shockproof plug or CCE-type plug is not permitted

9.1 Connection requirements

100–110 V / 230 V / 400 V cables (permanently fitted mains supply):
- NYM-J 3 x 1.5 mm² / 5 x 1.5 mm²

100–110 V / 230 V / 400 V cables (mains supply, flexible):

The connection between control unit and suction unit or between mains supply socket and suction unit should be of PVC-sleeved cable:
- H05 VV-F 5G1.5 mm² / 5G1.5 mm²
- or rubber-sleeved:
- H05 RN-F 3G1.5 mm² / 5G1.5 mm²,
- H05 RR-F 3G1.5 mm² / 5G1.5 mm²

A cable of cross-section 1 mm² may be used when installing the VS 300 S.

24 V control connection, VS 600 + VS 900

Protective low voltage for:
- Hose holder (manifold)
- Station selector switch
- Spittoon valve

Permanent connection: (N)YM (St)-J 4x1.5 mm² sheathed shielded cable.

Flexible connection: PVC-Data cable LiYY 3 x 0.5 mm²
Order-No. 9000-118-83

9.2 Control unit (VS 600 + VS 900)

The suction unit can be connected to a control unit which is either included in the contents or, if not, may be ordered as a special accessory. The connection plans and circuit diagrams are included in the control unit installation and operating instructions.
10. Commissioning

- Switch on unit or main surgery power switch.
- Check the setting of the motor protection switch (see section 4, Technical Data) and adjust if necessary.
- Check direction of motor rotation (at 3/N/PE AC).
- Check function of unit and seals of all connections.
- Carry out an electrical safety check according to local rules and regulations and record the results, e.g. in the technician’s report.
- Check that the coarse filters are in position (e.g. in spittoon).

The suction unit must not be operated without installation of coarse filters, as large particles such as tooth chippings or fillings can lead to damage.
11. CLEANING AND DISINFECTION OF THE SUCTION UNIT

After every patient treatment
For reasons of hygiene after every single treatment a glass of cold water should be drawn up through the larger and the smaller suction hose - even if only the saliva extractor has been used.

Using the larger suction hose to draw up water causes a larger amount of air (~300 l/min) to be sucked up and this serves to considerably improve the cleaning efficiency.

Before the mid-day break and at the end of the working day
the Suction Unit should be cleaned and disinfected by drawing up a suitable cleaning and disinfectant agent, e.g. OROTOL Ultra or OROTOL Plus, as recommended by the manufacturer.

Do not use any foaming agent, e.g. household cleaning agent, instrument disinfection agent or abrasive agent.

Do not use any agent containing chlorine or any thinner, e.g. Acetone. These agents can cause damage to the materials. Guarantee claims will become null and void.

Further information is contained in the Instructions for Use “Disinfection and Cleaning of Suction Units", order number 9000-605-10/.. as well as in “Cleaning Instructions for contaminated Suction Units”, order number P007-235-01.

Every 4 weeks (or every 3 months for VS 600 + 900) the filter located in the air intake of the suction unit should be checked and, if necessary, cleaned. Remove the suction hose from the suction unit. If required, extract the filter from the suction connections and clean thoroughly.

Wear non-porous safety gloves!

Every 2 years (VS 600 + 900) the auxiliary air vent should be checked and, if necessary, cleaned.

Every 2 years the exhaust bacterial filter (if fitted) should be checked and, if necessary, cleaned or replaced.

The separation unit in the suction system does not keep back germs. Fitting a bacterial filter into the exhaust air vent is, therefore, strongly recommended.

The bacterial filter is supplied with a memo sticker, which can be stuck into the surgery planner to remind personnel when to carry out the filter replacement.

Every 3–4 years the waste water valve must be checked by a technician and, if necessary, replaced.

Wear non-porous safety gloves!

12. Maintenance

Every 4 weeks (or every 3 months for VS 600 + 900) the filter located in the air intake of the suction unit should be checked and, if necessary, cleaned. Remove the suction hose from the suction unit. If required, extract the filter from the suction connections and clean thoroughly.

Wear non-porous safety gloves!

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Every 3–4 years the waste water valve must be checked by a technician and, if necessary, replaced.

Wear non-porous safety gloves!
Disposal

13. Appliance disposal

The machine may be contaminated. Please inform the waste disposal contractors in order that they can take the appropriate safety measures.

Non-contaminated plastic parts of the suction unit can be disposed of for recycling.

The control units, electronic PCB and other components should be disposed of as electric waste. The remaining metal parts (e.g. turbine housing) should be disposed of as metallic waste.

If returning the appliance, e.g. to your local Depot or to Dürr Dental, make sure that all connections are closed.
# 14. Tips for Technicians

The following steps concerning trouble-shooting and correction of faults are only designed for our technicians. Repairs are only to be carried out by qualified technicians.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Suction unit does not start.</td>
<td>• No mains supply voltage.</td>
<td>• Check mains supply, fuses in the control unit and/or on the PCB, and replace if necessary. Check supply voltage.</td>
</tr>
<tr>
<td></td>
<td>• Under or over voltage.</td>
<td>• Check the supply voltage, if necessary inform electrician.</td>
</tr>
<tr>
<td></td>
<td>• Motor protection switch set too low (see section 4. Technical Data for values).</td>
<td>• Check current. Set motor protection switch to the correct value.</td>
</tr>
<tr>
<td></td>
<td>• Motor protection switch defect.</td>
<td>• Check motor protection switch; replace, if necessary.</td>
</tr>
<tr>
<td></td>
<td>• Turbine is blocked due to solid particles or sticky dirt: Motor protection switch activated.</td>
<td>• Dismantle the suction unit and clean the turbine thoroughly.</td>
</tr>
<tr>
<td>2. Suction unit produces unusual noises.</td>
<td>• Solid particles in the turbine chamber.</td>
<td>• Dismantle the suction unit and clean the turbine thoroughly.</td>
</tr>
<tr>
<td>3. Water drops from air vent connection.</td>
<td>• Diaphragm valve blocked.</td>
<td>• Check the diaphragm valve on the waste water section and clean or replace as necessary.</td>
</tr>
<tr>
<td>4. Suction unit power too low.</td>
<td>• Mechanical movements of turbine hindered by dirt.</td>
<td>• Dismantle the suction unit and clean the turbine thoroughly.</td>
</tr>
<tr>
<td></td>
<td>• Coarse filter blocked.</td>
<td>• Coarse filter at entrance should be cleaned.</td>
</tr>
<tr>
<td></td>
<td>• Leaks in the suction unit plumbing.</td>
<td>• Check all pipes, hoses and connections for leaks and replace if necessary.</td>
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</tbody>
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