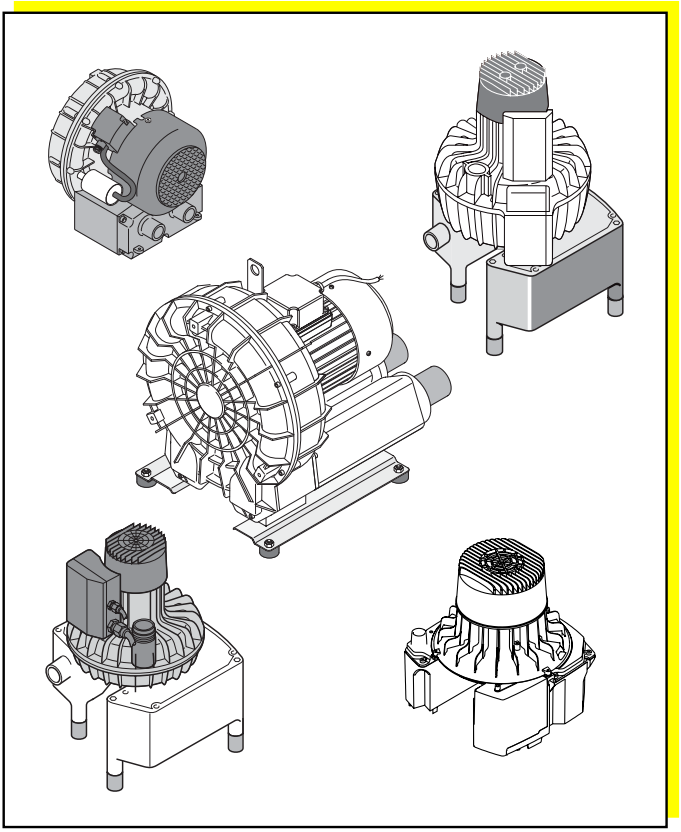
DÜRR DENTAL

Installation and Operating Instructions
V 250 / V 300 S / V 600 / V 900 / V 1200
Suction Unit

GB



CE 0124

9000-606-04/30

2005/01

Contents



Important Information

1. Notes 4
1.1 Test of conformity 4
1.2 General Notes 4
1.3 General Safety Notes 4
1.4 Using Peripheral Devices 5
1.5 Safety notes concerning electric current 5
1.6 Warnings and Symbols 5
2. Product information 6
2.1 Correct Usage 6
2.2 Incorrect usage 6
3. Delivery Contents 6
3.1 V 250 6
3.2 V 300 S 6
3.3 V 600 7
3.4 V 900 7
3.5 V 1200 7
4. Technical Data 8
4.1 V 250 8
4.2 V 300 S 9
4.3 V 600 10
4.4 V 900 11
4.5 V 1200 12
5. Circuit Diagram 13
6. Functional description 13



Installation

7. Set-up 14
7.1 Installation room 14
7.2 Set-up alternatives 14
7.3 Condensation trap 14
7.4 Plumbing materials 15
7.5 Hose material 15
7.6 Pipe installation 15
8. Electrical Connection 15
8.1 Connection details 15
8.2 Control unit 16
8.3 Connecting to terminal box 16
9. Commissioning 17



Care

10. Disinfecting and cleaning suction units 18
11. Maintenance 18



Disposal

12. Appliance disposal 18



Trouble-shooting

13. Tips for Technicians 19

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Important Information

1. Notes

1.1 Test of conformity

This product was tested for conformity to the Guidelines 73/23/EWG + 89/336/EWG of the European Union and has been found to satisfy all criteria of these guidelines.

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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, 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 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.

1.5 Safety notes concerning electric current

- This unit may only be connected to a standard approved earthed electrical socket (V 600, V 900, V 1200).
- 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.

1.6 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.



Obseve 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 units are used in connection with seperation units, in dry suction systems, in dental surgeries or dental clinics.
The suction unit must be cleaned and disinfected according to manufacturer's instructions.
For correct usage the Installation and Operating Instructions, as well as conditions concerning installation, operation and maintenance must be observed.

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It is absolutely necessary that secretion and air be separated prior to the suction unit.

2.2 Incorrect usage

Do not suck off any combustible or explosive mixtures. The appliances are unsuitable for use as vacuum cleaners. No secretion or any other fluid must be sucked into the suction unit.

Any other use or use beyond what is specified is deemed to be not for the intended purpose. The manufacturer accepts no liability for damage resulting therefrom. All risk is borne soleley by the user.

3. Delivery Contents

Those items listed under Special Accessories are **not** part of the supplied delivery contents but can be ordered separately.

3.1 V 250

3.1.1 Delivery contents

Type 0741-01
Model with 230V, 50Hz

3.1.2 Special accessories

Sterile filter 7120-143-00
Set of connecting pieces 0741-001-00
Condensation collector 7120-700-00
Wall mounting bracket 7120-991-00

3.2 V 300 S

3.2.1 Contents

Model 7119-01/002
Typ 230 V, 1~, 50 - 60 Hz
with control unit

3.2.2 Accessories

Connector set 7119-001-00
Suction hose LW 30, grey 9000-317-27
Hose LW 19 9000-317-22
Hose LW 30, Aluminium 9000-317-37
Condensation collector 7119-700-00

3.2.3 Special Accessories

Wall mounting 7130-190-00
Housing 7122-200-00
Exhaust bacterial filter with accessories 7120-143-00

3.3 V 600

3.3.1 Delivery contents

Type 7127-01/002
Model with 230V, 1~, 50Hz

Type 7127-02/002
Model with 400V/230V, 3~, 50-60Hz
with control board 400V, 3~

Type 7127-02/003

Model with 400V/230V, 3~, 50-60Hz
with control board 230V, 3~

3.3.2 Accessories

Connecting pieces + tubes 7127-001-00
Condensation collector 7130-700-00
Control board
230V, 1~, 50Hz 0700-500-50
230V, 3~, 50-60Hz 0732-100-53
400V, 3~, 50-60Hz 0732-100-52

3.3.3 Special accessories

Wall mounting bracket 7130-190-00
Sound absorber 9000-416-06
Sterile filter 0732-001-00
Sterile filter mounting 0732-000-06

3.4 V 900

3.4.1 Delivery contents

Type 7130-01/002
Model with 230V, 1~, 50Hz

Type 7130-02/002
Model with 400V/230V, 3~, 50Hz
with control board 400V, 3~

Type 7130-03/002
Model with 230V, 3~, 50Hz
with control board 230V, 3~

3.4.2 Accessories

Connecting pieces + tubes 7130-001-00
Control board
230V~, 1~, 50Hz 0732-100-50
400V~, 3~, 50Hz 0732-100-52
230V~, 3~, 50Hz 0732-100-53
Condensation collector 7130-700-00

3.4.3 Special accessories

Wall mounting bracket 7130-190-00
Sound absorbing hood 7133-991-00
Sound absorber 9000-416-06
Sterile filter 0732-001-00
Mounting for sterile filter 0732-000-06

3.5 V 1200

3.5.1 Delivery contents

Type 0730-01

Model with 400V, 3~, 50Hz

3.5.2 Accessories

Base plate 7130-190-04
Connecting pieces + tubes 0730-001-00
Control board 0732-100-54
Condensation collector 7130-701-00

3.5.3 Special accessories

Sound absorber 9000-416-06
Fine filter 0732-001-00
Mounting for sterile filter 0732-000-06

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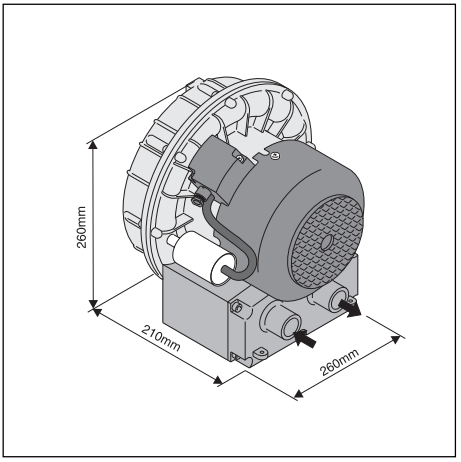
4. Technical Data

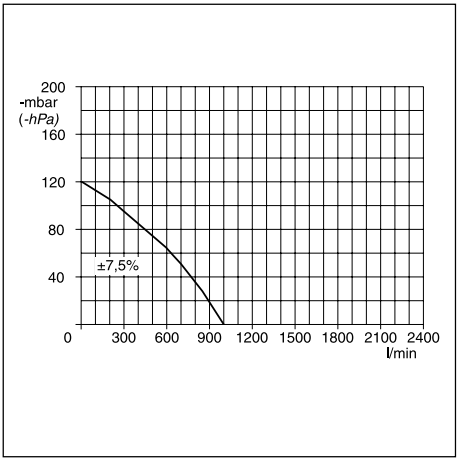
4.1 V 250

Type 0741		-01
Voltage	V	230 / 1~
Frequency	Hz	50
Rated current	A	1.85
Starting current	A	9.5
Electric power	W	415
Rotary frequency	min^{-1}	2810
Weight	kg	10
Sound level*	dB(A), ±1,5	approx. 64
Operating time	%ED	100
Temperature range		
Appliance in operation	°C	+10 to +40
Storage and transportation	°C	-10 to +60
Humidity of air		
Appliance in operation		max. 70%
Storage and transportation		max. 95%
Protection system		IP 44
Protection class		I

Vacuum connection	ø 30 mm (outside)
Exhaust connection	ø 30 mm (outside)

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





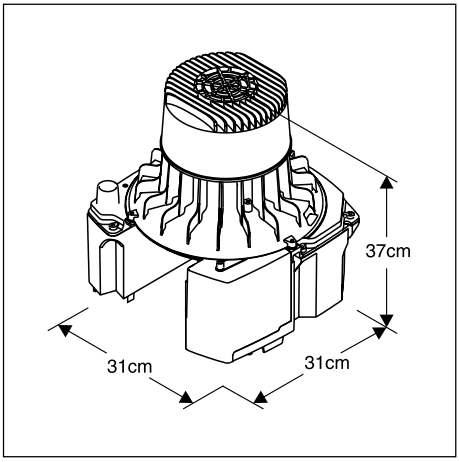
4.2 V 300 S

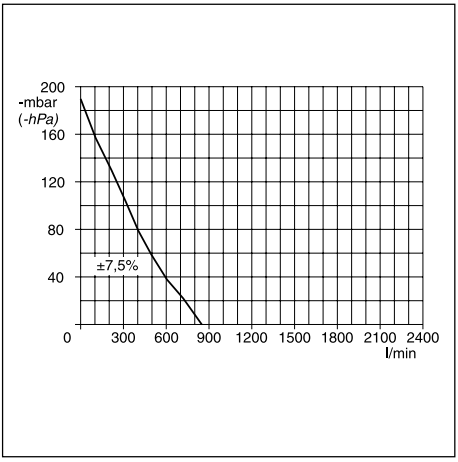
Type 7119		**-01**
Voltage	V	230 / 1~
Frequency	Hz	50-60
Rated current	A	2.9 - 3.7
Starting current	A	8,2 - 9.1
Motor protection switch	A	Motor winding overheat protector 160°C (±5°C)
Electric power	W	580 - 800
Rotary frequency	min^{-1}	2750 - 3100
Weight		
without housing	kg	12,5
Sound level*	dB(A), ±1,5	approx. 63
Operating time	%ED	100
Temperature range		
Appliance in operation	°C	+10 to +40
Storage and transportation	°C	-10 to +60
Humidity of air		
Appliance in operation		max. 70%
Storage and transportation		max. 95%
Protection system		IP 24
Protection class		I

Vacuum connection	DürrConnect Spezial (hose ø 30 mm (inner))
Exhaust connection	DürrConnect Spezial (Aluminium hose ø 30 mm (inner))

Protective low voltage	V	24 ~
Power output	VA	4

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



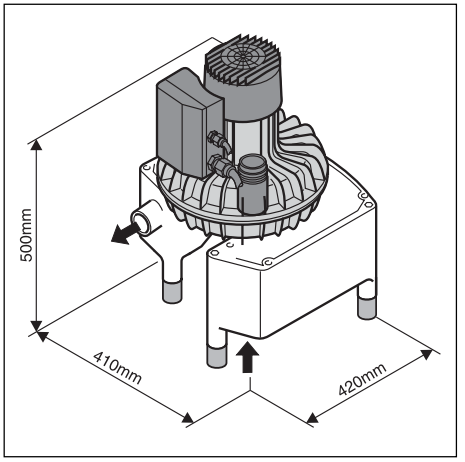


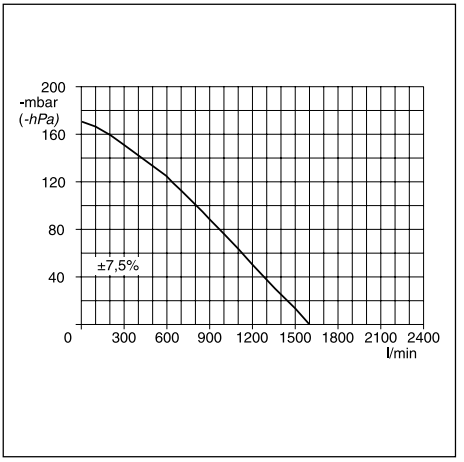
4.3 V 600

Type 7127		-01	-02	
Voltage	V	230 / 1~	400 / 3~	230 / 3~
Frequency	Hz	50	50 - 60	50 - 60
Rated current	A	5	1.8/2.3	3.2/4.0
Starting current	A	22	8	9
Electric power	W	1100	980	1420
Rotary frequency	min^{-1}	2850	2850	3350
Weight	kg		25	
Sound level*	dB(A), ±1,5		approx. 63	
Operating time	%ED		100	
Temperature range				
Appliance in operation	°C		+10 to +40	
Storage and transportation	°C		-10 to +60	
Humidity of air				
Appliance in operation			max. 70%	
Storage and transportation			max. 95%	
Protection system			IP 44	
Protection class			I	

Vacuum connection		ø 40 mm (DN 40)(outside)
Exhaust connection		ø 50 mm (outside)
Air-bleed setting	mbar	approx. 170 (170 hPa)

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



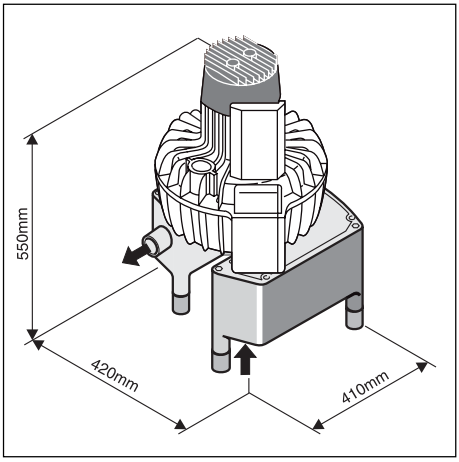


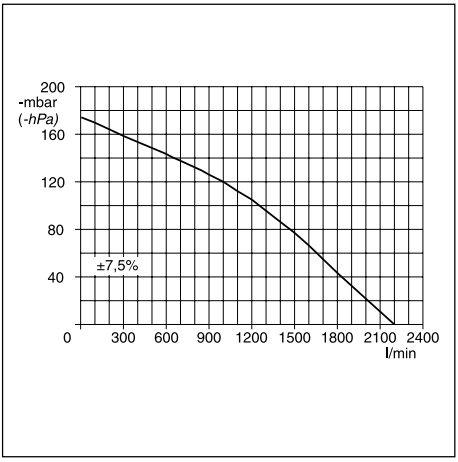
4.4 V 900

Type 7130		-01	-02	-03
Voltage	V	230 / 1~	230 / 400 / 3~	230 / 3~
Frequency	Hz	50	50	50
Rated current	A	5.5	4 / 2.5	4
Starting current	A	29	26 / 16	24
Electric power	W	1480	1520	1420
Rotary frequency	min^{-1}	2770	2820	2820
Weight	kg		approx. 35	
Sound level*	dB(A), ±1,5		approx. 64	
Operating time	%ED		100	
Temperature range				
Appliance in operation	°C		+10 to +40	
Storage and transportation	°C		-10 to +60	
Humidity of air				
Appliance in operation	max.		70%	
Storage and transportation	max.		95%	
Protection system			IP 44	
Protection class			I	

Vacuum connection		ø 50 mm (DN 50)(outside)
Exhaust connection		ø 50 mm (outside)
Air-bleed setting	mbar	aprox. 170 (170 hPa)

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



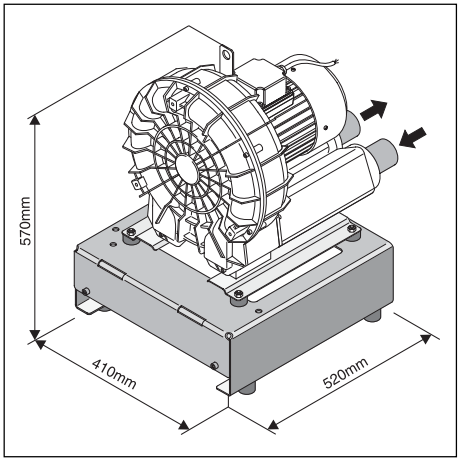


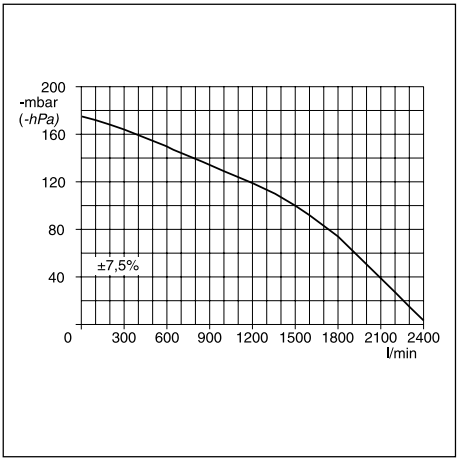
4.5 V 1200

Type 0730		-01
Voltage	V	230/400 / 3~
Frequency	Hz	50
Rated current	A	5.5 / 3.2
Starting current	A	28
Electric power	W	1500
Rotary frequency	min^{-1}	2930
Weight	kg	33
Sound level*	dB(A), ±1,5	65
Operating time	%ED	100
Temperature range		
Appliance in operation	°C	+10 to +40
Storage and transportation	°C	-10 to +60
Humidity of air		
Appliance in operation	max.	70%
Storage and Transportation	max.	95%
Protection system		IP 54
Protection class		I

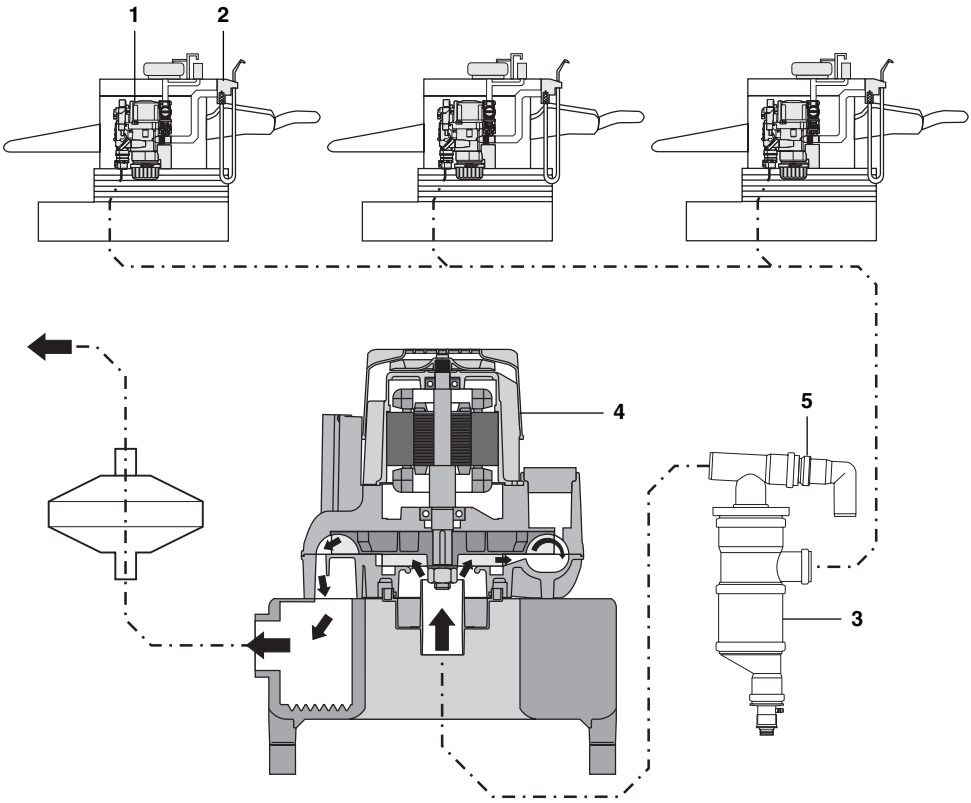
Vacuum connection		ø 50 mm (outside)
Exhaust connection		ø 50 mm (outside)
Air-bleed setting	mbar	approx. 160 (160 hPa)

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





5. Circuit Diagram



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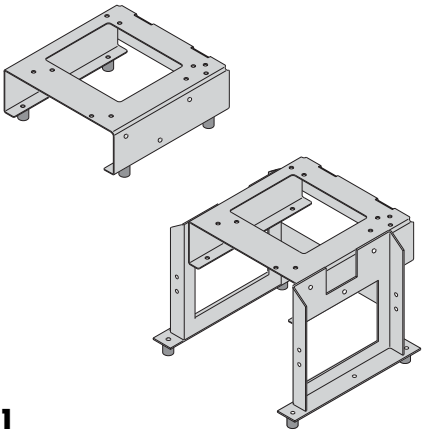
6. Functional description

The V-Suction units (4) are used with dry suction systems. The advantage is that the suction units can be installed in any suitable room without paying attention to the arrangement of the wiring (also in upper floor or basement). The necessary air flow and vacuum requirements are achieved using the by-pass duct compression principle.

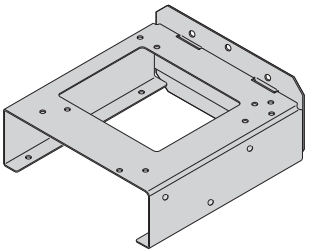
A condensation trap (3) is fitted to the vacuum side of the V-Suction unit (V 250 special accessory), which collects any condensation that accumulates in the pipe system and removes this externally. An air-bleed (5) in the condensation trap (only types V 600, V 900, V 1200) protects the V-Suction unit from over-heating and provides for constant suction performance.

If one of the units has a loss in suction then ca. 300 l air/min. is sucked in via the suction channels. The speed at entry into the channel is ca. 50 m/s. In the suction pipes the speed of flow is reduced to 15-20 m/s. This speed is enough to guarantee reliable transport of all dirt particles.

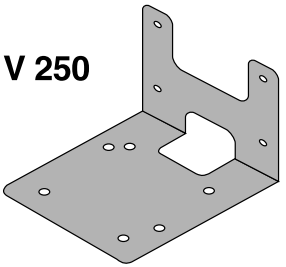
In the hose manifold (2) is a fine filter which retains all larger particles. In the separator unit (1) there is a reliable removal of all remaining dirt components. By this means only air with no fluid or particles is transported from the separator to the suction motor. The secretions in the separator unit flow automatically through the drainage hose into the drainage system of the treatment unit.



1



2



3

Installation

7. Set-up

7.1 Installation room

- The room temperature must not fall below + 10 ° C in winter and in the summer must not rise above + 40 ° C.
- Installation in special-purpose rooms, e.g. in heating rooms, must be checked concerning building regulations beforehand.
- Installation in wet or damp rooms is prohibited.
- When installing in a cupboard or similar, check that there is sufficient ventilation, i.e. check that air vents are present in the cupboard. If air flow is insufficient then a fan should be installed

7.2 Set-up alternatives

A great advantage of dry suction systems is that the suction unit may be installed in any suitable room (also in upper floor or basement) without worrying about the available plumbing.

- Installation of the suction unit directly onto the floor (depending on type).
- Installation of the suction unit onto a special frame and then onto the floor.
- From the wall on a special wall mounting bracket.

For reasons of hygiene and in order to avoid both smell and problems of heat we recommend the exhaust air to be fed outside the building and to fit a sterile filter

7.3 Condensation trap

Where a condensation trap is present, this should be fitted first before installation of the suction unit. Where the suction unit is to be fitted on the top floor of the building then the condensation trap, should be fitted at the lowest point of any plumbing.
Installation instructions for the condensation trap are delivered together with that unit.

7.4 Plumbing materials

Only the following materials may be used for the pipe system:

Vacuum-sealed HT-drain pipe made from polypropylene (PP, polypropen), chlorinated polyvinyl-chloride (PVC-C), unplasticized polyvinyl-chloride (PVC-U) or polyethylene (PEh).

The following materials may NOT be used:
Acrylnitril-Butadien-Styrol (ABS) and Styrol-Copolymer-Blends (SAN+PVC)

7.5 Hose material

Only flexible spiral hoses of PVC with spiral fittings or hoses of this quality should be used for the drainage and suction systems.

The following materials may NOT be used:
Hoses which are not capable of withstanding the dental disinfectants and chemicals used, or hoses which are of rubber or full PVC tubes which are not sufficiently flexible.

7.6 Pipe installation

- **Drainage pipes,** e.g. after the condensation trap, must be installed according to the local rules and regulations.

The connection between the plumbing system and the inlet to the suction unit should be kept as small as possible and as straigt as possible with no bends using the flexible hose supplied. This will avoid unnecessary vibration on the plumbing system.

8. Electrical Connection

Before commissioning check that the electrical supply conforms with that on the appliance label.
Electrical connection to the power supply must be carried out by inserting into the circuit a universal circuit breaker (universal switch or universal line safety switch (fuse)) with >3mm contact gap.
The suction unit may be connected via the control system to an external junction box.
Fuse rating: 16 AT

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8.1 Connection details

100/110V / 230V / 400V connection (power supply, fixed):

- NYM-J 3x1.5mm² / 5x1.5mm²

100/110V / 230V / 400V connection (power supply, flexible):

The connection between the suction unit and the external control unit or between appliance socket and suction unit should either be composed of a PVC-connector:
H05 VV-F 5G1.5mm² / 5G1.5mm²
or of rubber:
H05 RN-F 3G1.5mm² / 5G1.5mm²,
H05 RR-F 3G1.5mm² / 5G1.5mm².
A cable of cross-section 1 mm² may be usde when installing the V 250, V 300 S.

24V control line, protective low voltage for

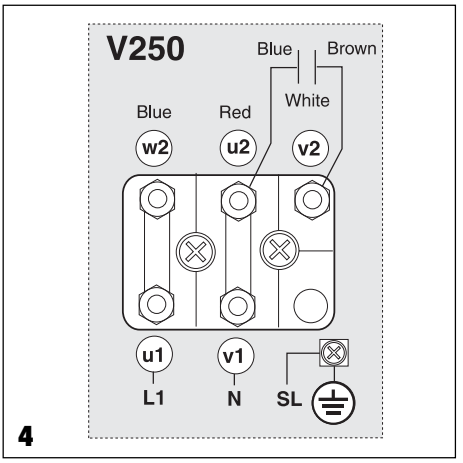
- Hose manifold
- Selector switch
- Spittoon valve

Fixed installation: (N)YM (St)-J 4x1.5mm² protected casing.

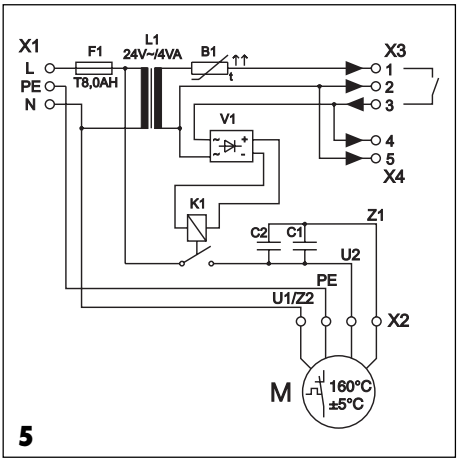
Flexible installation: PVC-Data connection LiYCY 4x1.0mm² with protected casing as used for telephone or information systems or light PVC-cable with protected casing.

24 V Control line for V 300 S

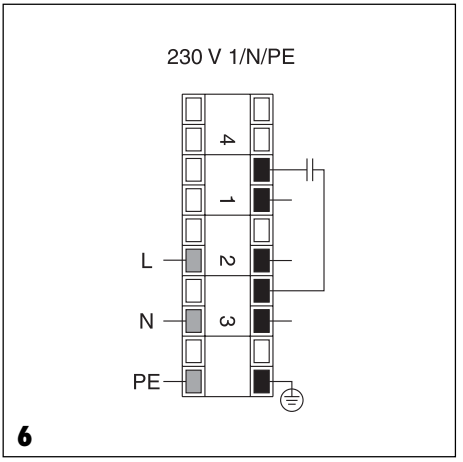
Flexible cable connection: PVC-Data cable LiYY 3 x 0.5 mm²
Order-No. 9000-118-83



4



5



6

8.2 Control unit

The suction unit can be operated via a control unit, supplied with the unit or available as special accessory. Connection plans and circuit diagrams can be found in the Installation and Operating Instructions for the Control Unit.

8.3 Connecting to terminal box

Connect power supply from the control unit to the appropriate terminals on the motor terminal box (see also connection plans in the Installation and Operating Instructions for the Control Unit).

8.3.1 V 250, 230V (Fig. 4)

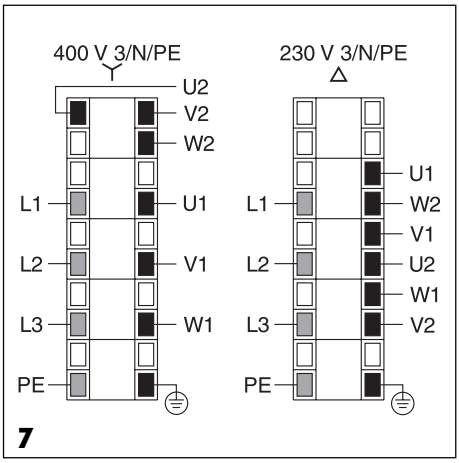
Blue = blau
Red = rot
White = weiss
Brown = braun
SL = PE

8.3.2 V 300 S, 230V, (Fig. 5)

with Control Unit integrated into sound-reducing housing.

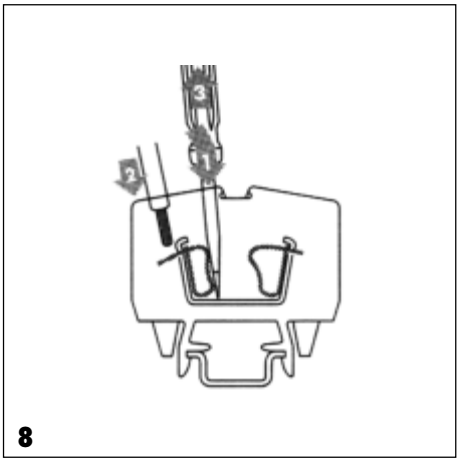
X1 Power supply connection
X2 Motor connection
X3 Connection to manifold
24VAC / max. 80mA
X4 Control signal output
24VAC / max. 20mA

8.3.3 V 600, 230V 1~
V 900, 230V 1~



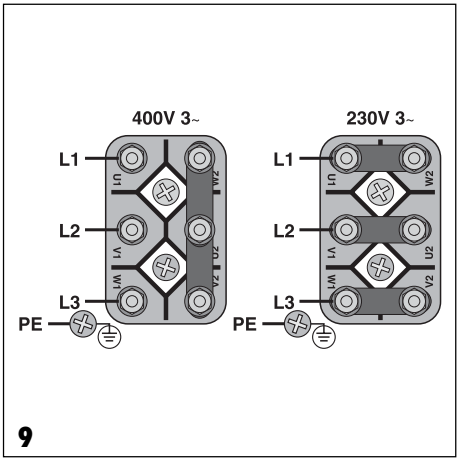
7

8.3.4 V 600, 230V/400V 3~
V 900, 230V/400V 3~



8

Handling the terminal strip for V 600 and V 900



9

8.3.5 V 1200, 230V/400V 3~

9. Commissioning

- Turn on at the appliance or central surgery on switch.
- Carry out function check and check all connections for leakage etc.
- Carry out electrical check according to national regulations and record results as appropriate, e.g. on the technical report.



Care

10. Disinfecting and cleaning suction units

After every treatment a glass of cold water should be sucked through the system; through both the small and the large suction hoses, even if only the saliva suction hose was used during treatment.

The cleaning effect is increased considerably by using the larger suction hose.

Before midday break and at the end of the day a non-aggressive and non-foaming cleaning and disinfecting agent (e.g. Orotol Plus) should be used to clean and disinfect the suction system.

Do not use a foaming cleaning agent, as this can damage the suction unit.

The suction unit may not be used to extract solvents such as Acetone or anything similar. These agents attack the plastic and rubber parts of the unit.

Further information can be found in the instruction booklets "Disinfection and Cleaning of Suction Units“, order number 9000-605-10 and in "Cleaning Instructions for contaminated Suction Units", order number P007-235-01.

11. Maintenance

The V-Suction unit itself requires no maintenance.
The exhaust from the suction unit contains bacteria. As the separation techniques within the suction unit are only designed to remove fluids and particles, germs which are present are sucked through the system. For this reason we recommend that a sterile filter be fitted into the exhaust sytem and that this filter be changed at least once a year.



Disposal

12. 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.

13. 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.

Problem	Possible cause	Solution
1. Suction unit does not start.	• No mains supply voltage.	• Check mains supply, fuses in the control unit and/or on the PCB, and replace if necessary. Check supply voltage.
	• Under or over voltage.	• Check the supply voltage, if necessary inform electrician.
	• Motor protection switch set too low (see section 4. Technical Data for values).	• Check current. Set motor protection switch to the correct value.
	• Motor protection switch defect.	• Check motor protection switch; replace, if necessary.
	• Turbine is blocked due to solid particles or sticky dirt: Motor protection switch activated.	• Dismantle the suction unit and clean the turbine thoroughly.
2. Suction unit power too low.	• Mechanical movements of turbine hindered by dirt.	• Dismantle the suction unit and clean the turbine thoroughly.
	• Leaks in the suction unit plumbing.	• Check all pipes, hoses and connections for leaks and replace if necessary.