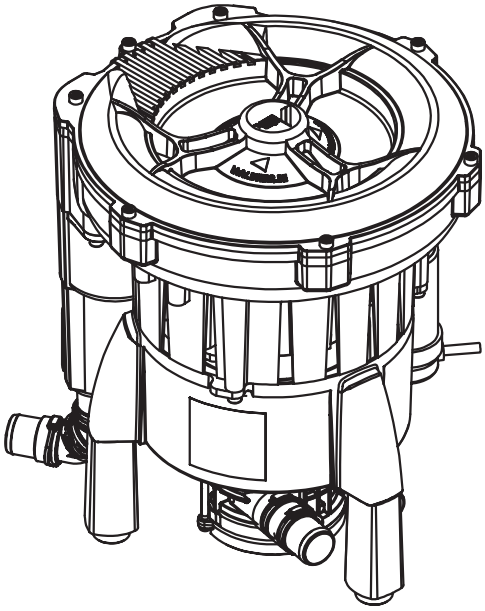
VacStar viper®

VIPER100-50 and VIPER100-60

Installation and Operating Instructions



AIR TECHNIQUES equipped for life®

ISO 13485 CERTIFICATION™ Intertek

Important Information

Installation

Operation

Trouble-Shooting

CE

During the development and manufacture of the product, the recognized regulations of the technical aspects, as well as the recognized valid standards and guidelines were taken into account and used. In addition the product has been designed and constructed in such a way that endangerment through the agreed use are minimized. Nonetheless we feel obliged to describe the following safety measures so the remaining dangers can also be minimized.

1. General

1.1 Note on Conformity

This product was tested for conformity to the Guidelines 2007/47/EC 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. Only parts specifically laid down in these Installation and Operating Instructions or accessories approved by Air Techniques may be used with this appliance. If other accessories are used with this appliance, Air Techniques cannot guarantee safe operation or proper functioning. No liability on the part of the manufacturer will be accepted in the case that damage arises through the use of non/approved accessories.
- Air Techniques is only responsible for the equipment with regard to safety, reliability and proper functioning where assembly, re-settings, changes or modifications, extensions and repairs have been carried out by Air Techniques or an agency authorized by Air Techniques 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.
- This translation of the Installation and Operating Instructions has been carried out in all good faith. The manufacturers can accept no liability arising from an incorrect translation.
- Any reprinting of the technical documentation, in whole or in part, is subject to prior approval of Air Techniques being given in writing.
- Retain the packaging for possible return of the product to the manufacturer. 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 manufacturer be necessary during the guarantee period, Air Techniques accepts no responsibility for damage occurring during transport where the original packaging was not used!

1.3 Disposal of the appliance

Once the unit has been operated it can be assumed that the appliance will be contaminated to some degree. Be sure to inform the firm contracted for waste disposal so that they can take the necessary safety precautions.

The unit must be disposed of according to the usual local and national regulations.
When returning the unit, e.g. to your dental dealer or to Air Techniques, be sure to close all connections tightly.

1.4 Notes on Medical Products

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.

1.5 Notes on electromagnetic compatibility for medical devices

Special precautionary measures must be taken regarding electromagnetic compatibility and medical devices.

1.6 Intended Use

The suction unit is designed to produce vacuum in order to draw up saliva, rinsing water and other fluids which arise during dental treatment in dental surgeries or dental clinics and to pass them to the waste water system. This suction unit is a Suction Unit with integrated separation. Separation in the treatment unit is, therefore, no longer necessary.

1.7 Incorrect Usage

Any use of this appliance/these appliances above and beyond that laid down 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 is liable for all risk.

This unit may not be used in operating rooms.

1.8 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 guaranteed by such connection, then the operator must establish, e.g. by contacting either the manufacturer or an expert, that safety for the patient, the operator or the environment through such connection is maintained.

2. Safety

2.1 General Safety Notes

This appliance has been designed and constructed by Air Techniques 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.
- Installation must be carried out by suitably qualified personnel.
- 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.

2.2 Electrical Safety Notes

- 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.
- Before commissioning the appliance all connections must be checked for possible damage. Damaged cables, plugs and sockets must be replaced before use.
- When working on the appliance all relevant electrical safety procedures must be observed.
- Never touch open supply outlets and patients simultaneously.

3. Warnings and Symbols

The Installation and Operating Instructions makes use of the following terms or symbols for important information:


Information or warnings concerning the safety of operating personnel or damage.


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


Warning of dangerous electrical voltage


Automatic start


Hot surface


Wear water-proof protective gloves!


Do not use foaming agents

EC REP
MDSS
Schiffgraben 41
30175 Hannover, Germany

Figure 1. VIPER100

3.1 Model identification plate

REF Order number / model type

SN Serial-No.


Observe Operating Instructions


Date of manufacture

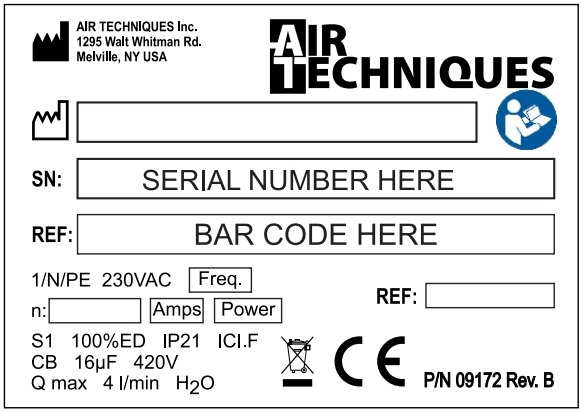


Figure 2. VIPER100-60 Serial Plate

4. Delivery Contents

4.1 VIPER100-50 or VIPER100-60

4.2 Connection components 56716

1 Hose joint piece Ø 25
2 Hose joint pieces Ø 20
2 Connectors Ø 36
1 Elbow piece 90°
3 O-Rings 20x2
4 O-Rings 30x2
4 Safety clamps

Hose ø 19 mm, 4 m long

Hose ø 25 mm, 2 m long

Installation and Operating Instructions 56708

5. Technical Data

VIPER100		-50	-60
Voltage	V	230	230
Electrical frequency	Hz	50	60
Phases		1	1
Current consumption	A	5,5	4,8
Starting current	A	ca. 20	ca. 20
Power output	kW	0,8	1,1
RPM	min^{-1}	2890	3385
Max. volume flow	l/min	4	4
Air flow rate		see fig. 4	see fig. 4
Maximum number of working stations		1	1
Weight	kg	13	13
Noise levels (See Note 1.)	dB(A)	64	64
Duty cycle	%	100 (S1)	100 (S1)
Fuse type		IP 21	IP 21
Protection class		I	I
Medical device		Class I	Class I
Vacuum connection		ø 20 mm	ø 20 mm
Exhaust air connection		ø 25 mm	ø 25 mm
Waste water connection		ø 20 mm	ø 20 mm

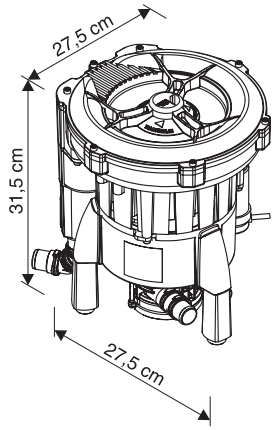


Figure 3. VIPER100 Dimensions

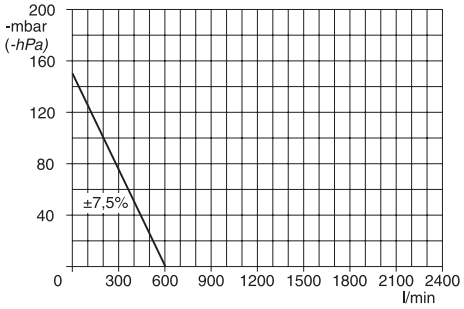


Figure 4. VIPER100 Air Flow Rate

Note 1: According to EN ISO 1680 Noise emissions; measured in sound-proofed room. The values are mean values with a tolerance of c. +/-1.5 dB(A). Higher values will be achieved in reverberant rooms (e.g. with tiled walls).

Environmental conditions during operation
Temperature (°C). . . . . +10 to +40
Relative humidity (%) . . . . . max. 70
Environmental conditions during storage and transport
Temperature (°C). . . . . -10 to +60
Relative humidity (%) . . . . . max. 95

5.1. Information concerning electromagnetic compatibility

Test	Standard
Conducted interference	CISPR 11 Cl. A
Conducted interference	CISPR 11 Cl. B
Radiated emission	CISPR 11 Cl. A
Radiated emission	CISPR 11 Cl. B
Fast transients on power lines	IEC/EN 61000-4-4
Fast transients on I/O-lines	IEC/EN 61000-4-4
Injected RF current on power lines	IEC/EN 61000-4-6
Injected RF current on I/O-lines	IEC/EN 61000-4-6
Radiated RF field, amplitude modulated	IEC/EN 61000-4-3
Electrostatic discharges	IEC/EN 61000-4-2
Single transients on power lines	IEC/EN 61000-4-5
Voltage drop and voltage	IEC/EN 61000-4-11
Voltage fluctuations and flicker	IEC/EN 61000-3-3
Harmonic current emission	IEC/EN 61000-3-2

Note: All tests passed without modification

5.2. Applied standards

Based on the appliance type, place of using and the statements of the client, following EMC standards are applied:

Electromagnetic emission and immunity IEC 60601-1-2:2014, EN 60601-1-2:2015

6. Function

6.1. VIPER100 Functional Diagram

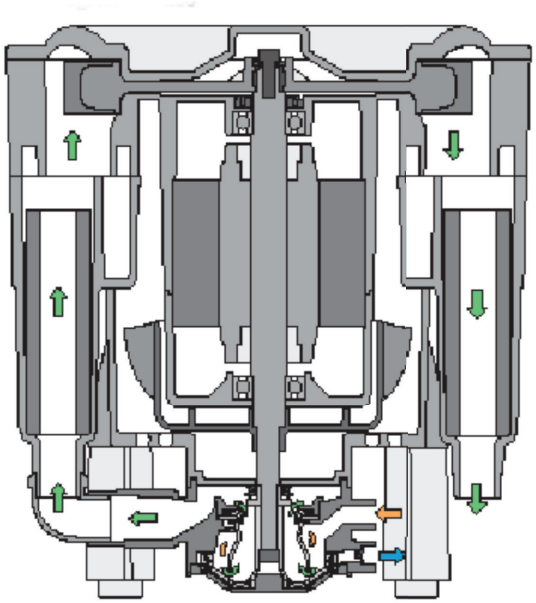


Figure 5. VIPER100 Cross Section View

6.2. VIPER100 Functional Description

This suction unit is a Suction Unit with integrated separation. Separation in the treatment unit is, therefore, no longer necessary. The fluids and solid particles within the suction unit are separated from the air using a two-step separation system. This separation system consists of a cyclone-separator together with a separation turbine. The separation turbine reliably prevents the passage of fluids and blood foam into the turbine chamber of the suction unit.

The mixture drawn in consisting of fluids, solid particles and air is conveyed via the inlet connections into the suction unit. Firstly, the coarse filter serves to filter out any solid particles. The rest of the mixture flows towards the cyclone separator where it is set into a spiralling motion. In this 1st Step centrifugal forces are employed to hurl the fluids and any remaining particles against the outside wall of the separation chamber of the cyclone-separator. This then leads to a coarse separation of the fluids. In the 2nd Step which follows the separation turbine proceeds to initiate a fine separation, during which the rest of the fluids which have been carried here in the flow of air.

The waste water pump forces the fluids extracted by the centrifugal unit together with any fine solid particles via the waste water system into the central waste water drainage system. The air which has now been freed of any fluids is now drawn by vacuum pressure produced by the turbine and then fed to the exhaust air connections.

The turbine wheel and the waste water pump are both driven by the motor. If there is low or negative pressure in one of the machines then approximately 250 l air/min. is sucked up through the suction cannula. This rate of flow guarantees an effective transport of all particles of dirt.

7. Set-up

7.1 Room conditions

- Room temperature must not fall below + 10 °C in winter and must not exceed + 40 °C in summer.
- Installation in a purpose-built room, e.g. in a boiler room, must be checked with local building regulations.
- Installation in a wet-room is not permitted.
- When cabinet set-up is chosen then air intake and air exit slots must be provided which must have an unobstructed cross section of at least 120 cm².

  Where insufficient ventilation is available then a ventilation fan must be fitted with a performance of at least 2 m3/min, and also sufficient slots must be present to ensure an adequate flow of cooling air from outside.

7.2 Set-up alternatives

- On same floor as surgery.

7.3 Plumbing materials

Only the following plumbing materials may be used:

Airtight HT-waste water piping of polypropylene (PP), chlorinated polyvinyl chloride (PVC-C), un-plasticized polyvinyl chloride (PVC-U) and polyethylene (PEh).

The following must not be used: Acrylonitric butadiene styrene (ABS) or styrol-copolymer-blends (SAN+PVC)

7.4 Hose materials

For waste water and suction connections only flexible spiral hoses of PVC with integrated spiral or equivalent hoses may be used.

Hoses of a material which is not resistant to the dental disinfectants and chemicals, as well as hoses made of rubber or hoses only of PVC which are not sufficiently flexible must not be used.

7.5 Hose placement

Waste water plumbing connections must be carried out according to local and national regulations.

The connection between plumbing network and suction unit connection should be kept as short as possible and laid as straight as can be without bends and using the flexible hose supplied. This will reduce the vibration effect throughout the plumbing system.

8. Pump Connection

8.1 VIPER100 Connecting Parts

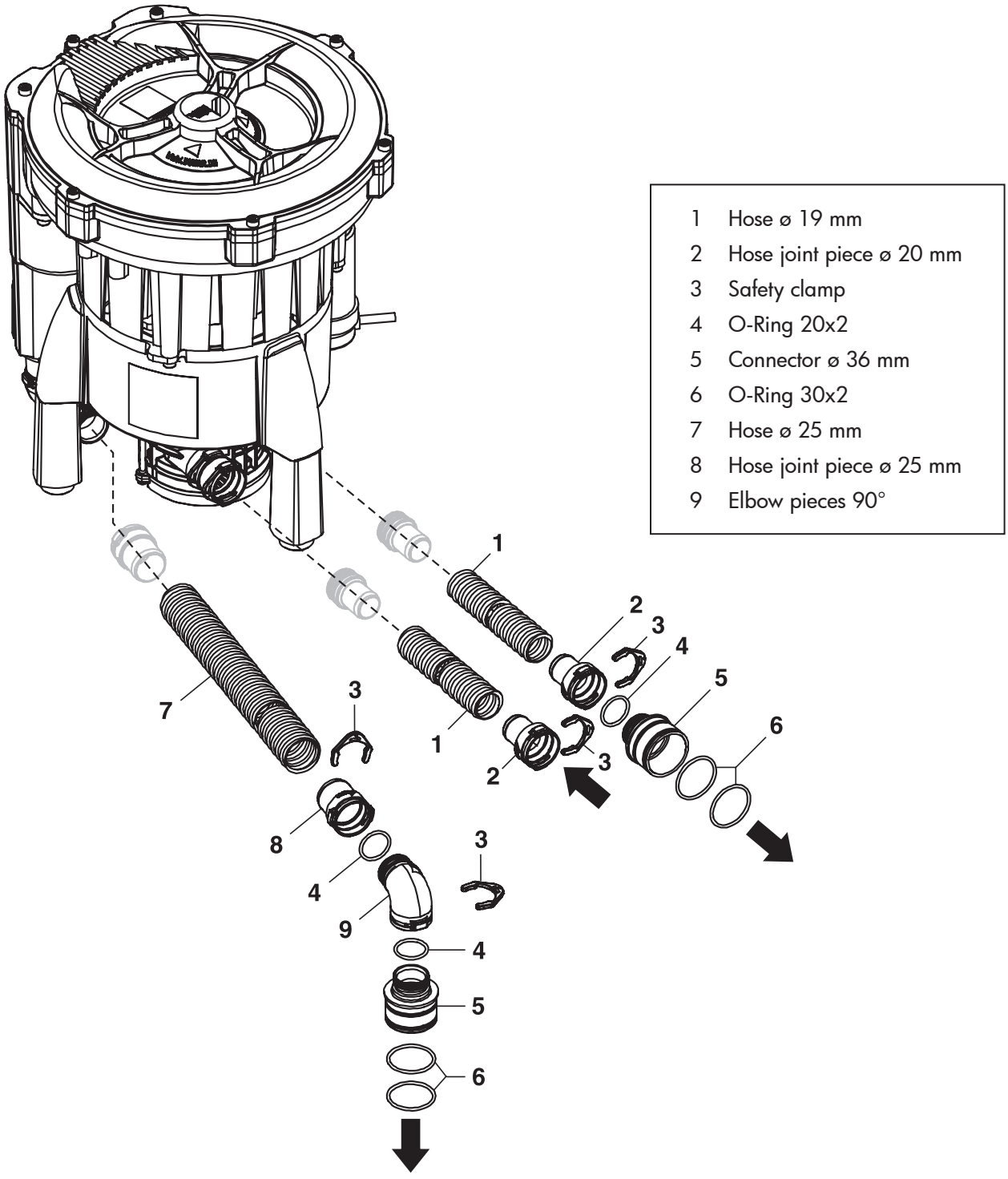


Figure 6. VIPER100 Parts Location Exploded View

9. Electrical Connections

The electrical equipment for providing the supply voltage must be set up according to clinics governing surgeries and clinics. When carrying out electrical connection to the main power supply an all-polar insulating device (all-polar switch or all-polar power safety switch (fused)) with a minimum 3 mm contact opening width must be built into the system. Circuit fusing: LS-switch 16 A, characteristics B, C and D according to EN 60898

Electrical connection to the supply voltage using an earthed contact-plug or CCE type plug is NOT permitted

9.1 Notes on connections

230V connection line (power supply, fixed line):

- NYM-J 3 x 1.5 mm²

230V connection line (power supply, flexible):

The connection between the control unit and the suction unit or between appliance socket and suction unit should be set up using a PVC-hose connection:

H05 VV-F 5G1,5 mm²
or a rubber connection:
H05 RN-F 3G1,5 mm²,
H05 RR-F 3G1,5 mm²

Depending on the current consumption it may be possible to reduce the cross section to 1 mm².

24 V control line protective low voltage for:

- Hose holder (manifold)
- Station selector switch
- Spittoon valve

Flexible connection:

- data cable LiYCY 4 x 1.0 mm² with shielded mantle as for telephone or IT connections
- data cable LiYY 3 x 0.5 mm²
- Light-PVC-control line with shielded mantle.

9.2 Motor terminal box connections

Connect the power line to the motor terminal box as listed below and shown by Figure 7.

M1	=	Motor
C1	=	Capacitor
bl	=	blue (N connection)
br	=	brown (L1 connection)
ws	=	white
gnge	=	green/yellow (PE connection)

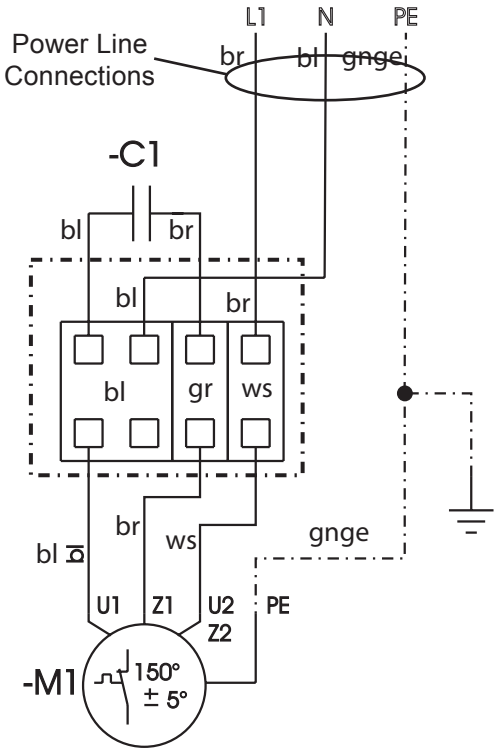


Figure 7. Motor Terminal Box Circuit Diagram

The suction unit must not be operated without the coarse filter, as larger particles such as pieces of tooth or fillings can lead to obstruction and maybe damage.

10. Commissioning / first use

- Switch on appliance itself or at main surgery switch.
- Check the function of the appliance and look for signs of leakages of all connections.
- Carry out an electrical safety check according to national and local regulations and record the results, e.g. in the technical log book.
- Check that the coarse filter (e.g. in the spittoon) is installed.

11. Cleaning and disinfection of suction units

After every patient treatment for both hygienic and functional reasons a glass of cold water should be drawn through both the smaller and the larger suction hoses - even if only the saliva extractor has actually been used.

Aspiration with the larger suction hose allows a large amount of fresh air (~250 l/min) to be drawn up and this considerably improves the cleaning efficiency.

Before device shutdown (such as a lunch break or after a surgical procedure), the suction unit should be cleaned and disinfected by drawing up a suitable cleaning and disinfecting agent as recommended by the manufacturer.

Do not use any foaming agent, e.g. household cleaning agent, instrument disinfectant or scouring agent.

Do not use any chlor-based agent or solvents, such as acetone. These agents could lead to damage to the materials. Guarantee claims cannot be considered where incorrect agents have been used.

12. Maintenance

Wear water-proof protective gloves!

Every 4 weeks the filter located at the suction connection to the suction unit should be checked and, if necessary, cleaned. To do this slip the suction hose from the suction unit. If required, remove the filter from the inlet connection and clean.

Every 2 years the exhaust air filter, part number 56727, (where installed) should be checked and, if necessary, cleaned or replaced.

The separation integrated into the suction unit does not prevent the passage of germs or bacteria, therefore we strongly recommend the installation of a bacterial filter into the exhaust air passageway.

Each exhaust air filter is supplied with a memo sticker; this can be stuck into the surgery planner to remind personnel when changing the filter is due.

Every 3 to 4 years the waste water valve, part number 56728, must be checked by a Service Technician and, if necessary replaced.

13. Tips for technicians

The following details concerning trouble-shooting and their solutions are solely intended for Service Technicians. Any repairs necessary may only be carried out by Service Technicians.
Please contact the Air Techniques customer service department if you have any questions. The address can be found on the last page of these instructions

Before starting any trouble-shooting activities ensure that the appliance has been removed from the power supply.

Problem	Possible cause	Solution
1. Suction Unit does not operate.	• No power supply voltage.	• Check the mains fuse, and check the fuse in the control box or on the controller board, and replace if necessary. Check the power supply voltage.
	• Under or over voltage.	• Measure the power supply voltage, contact an electrician if necessary.
	• Capacitor defect.	• Measure capacitance and, if necessary, replace capacitor.
	• Turbine blocked by solid particles or sticky dirt; Thermal-protector activated.	• Take the Suction Unit apart and clean the turbine.
2. Suction unit produces strange noises.	• Solid particles in turbine chamber.	• Take the Suction Unit apart and clean the turbine.
3. Water leaks from the exhaust air connection.	• Diaphragm valve is blocked.	• Check the diaphragm valve at waste water connections and if necessary clean or replace.
4. Suction Unit provides too little output.	• Dirt in the turbine leads to mechanical sluggishness.	• Take the Suction Unit apart and clean the turbine.
	• Coarse filter blocked.	• Clean coarse filter at inlet connection.
	• Leak in the suction system.	• Check for signs of leakages in the suction system and the connections and seal if necessary.

For over 50 years, Air Techniques has been a leading innovator and manufacturer of dental products. Our priority is ensuring complete satisfaction by manufacturing reliable products and providing excellent customer and technical support. Whether the need is digital imaging, utility room equipment or merchandise, Air Techniques can provide the solution via our network of authorized professional dealers. Proudly designed, tested and manufactured in the U.S., our products are helping dental professionals take their practices to the next level.

Air Techniques' family of quality products for the dental professional include:

❑ Digital Imaging

- Digital Radiography
- Intraoral Camera
- Caries Detection Aid
- Intraoral X-ray
- Film Processors

❑ Utility Room

- Dry Vacuums
- Wet Vacuums
- Air Compressors
- Amalgam Separator
- Utility Accessories
- Utility Packages

❑ Merchandise

- Surface Disinfectant
- Enzymatic Cleaner
- Hand Sanitizer and Lotion
- Waterline Cleaner
- Evacuation System Cleaner
- Imaging Accessories
- Chemistry
- Processor Accessories

Corporate Headquarters
1295 Walt Whitman Road | Melville, New York 11747- 3062
Phone: 800-247-8324 | Fax: 888-247-8481

www.airtechniques.com

Platinum Green Business Certified

You Tube

AIR TECHNIQUES equipped for life®