



Equipment, Assembly, Operation and Maintenance Manual



1. Index

Chapter	Page
1. Index	2
2. Package Contents	2
3. Icon Description	2
4. General Information	3
5. Purpose	4
6. Product overview	4
7. Components	5
8. Explanation of the type plate	6
9. Technical data	6
10. Function	7
11. Installation guidelines	8
12. Hose connections	10
13. Electrical connections	11
14. Connection NXT Hg5 with NXT DryVac	13
15. Maintenance / Cleaning	13
16. Operation	14
17. Spare parts	15
18. Basic Installation Diagram	16
19. Redundant “Dual-Vac” Installation Diagram	17
20. 3-D Diagram of Redundant Configuration	18
21. Troubleshooting Guide	19

2. Package Contents

- 1x suction system NXT DryVac (dry vacuum system)
- 1x noise reducing item
- 1x air inlet valve
- 1x black heat resisting hose, 2 inch; 3.3 feet
- 1x gray hose, 1 ½ inch; 3.3 feet
- 1x PVC hose, ½ inch; 3.9 feet
- 2x hose clamp , 1 ¼“ to 2“
- 1x hose clamp , ¾“ to 1 ¼“
- 1x vacuum gauge
- 1x inlet adapter
- 1x inlet coupling
- 1x condensate collector

3. Icon Description



Information



Attention



General warning sign



Follow instructions for use



On
Off



Protective Earth (Ground)



Dangerous voltage



High voltage



Caution, hot surface



MEDICAL - GENERAL MEDICAL EQUIPMENT
AS TO ELECTRICAL SHOCK, FIRE AND
MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH
ANSI/AAMI E560601-1
CSA CAN/CSA-C22.2 NO. 60601-1:14

General Information

4. General information

ATTENTION

The safety, reliability and performance of the appliance is only guaranteed by Solmetex if the following instructions are observed:

- The Solmetex NXT DryVac is ME, medical electrical, equipments externally powered, therefore Class I according to EN 60601-1.
- Assembly, alterations or repairs may exclusively be carried out by authorized service personnel in compliance with EN Standard 60601-1 (International Standard for Medical Electrical Apparatus, in particular Part 1: General Rules for Safety).
- The electrical installation must comply with the regulations of the IEC (International Commission for Electrical Engineering).
- The apparatus must exclusively be used in conformity with the instructions for installation, operation and maintenance.
- Only original parts may be used for repairs or replacements.
- All instructions issued by manufacturers of equipment for the treatment of patients which is connected to the vacuum system must be observed.
- After installation, complete the proof of installation warranty card and send to Solmetex in order to define the warranty period.
- All inspection and service work must inspected/documentated separately by the installers/maintenance workers.
- When requested by an authorized engineer, Solmetex agrees to make all documents available for the use of technically qualified service personnel.
- Solmetex accepts no responsibility for damages caused due to external factors, such as wrong installation, improper use of the apparatus or unauthorized technical intervention.
- Users must study equipment and assure themselves of its good condition before every use.
- Medical products should be treated with respect when it comes to electromagnetic compatibility and special safety measures must be taken.

WARNING

This equipment is not suitable for use in explosive or combustible environment.

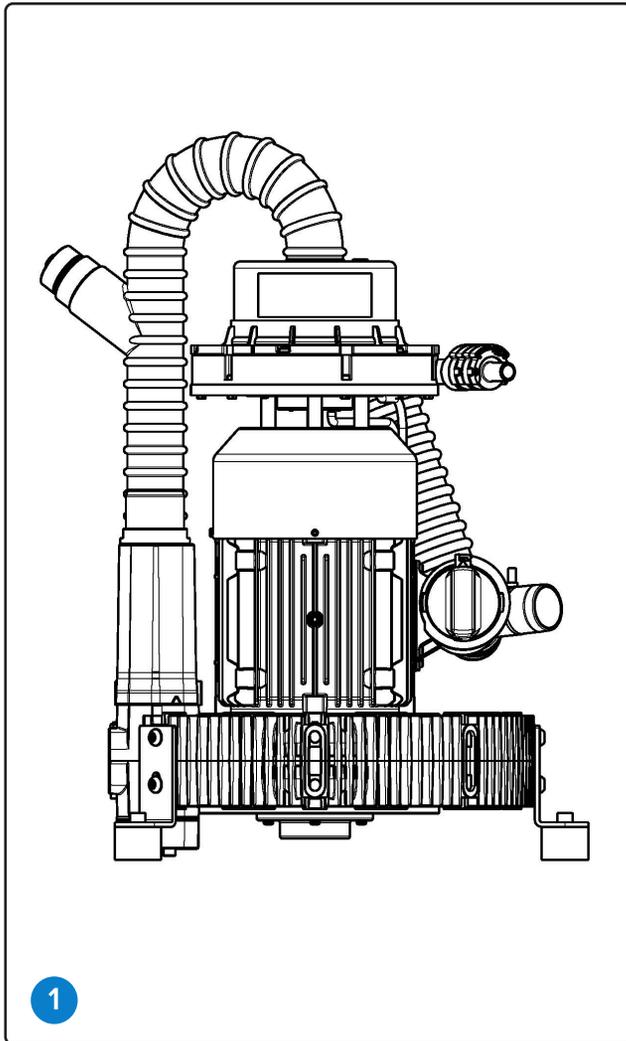
5. Purpose

The NXT DryVac is a central suction system (tankless dry vacuum system) used in dentistry for centralized vacuum production.

The NXT DryVac (tankless dry vacuum system) is a vacuum engine with integrated air/liquid separation.

Application specification

Intended medical indication	Dental treatment
Intended patient population	Dental patients
Intended part of the body or type of tissue applied to or interacted with	No direct contact with patients
Intended user profile	Dentists, experienced dental personnel, technicians for maintenance
Intended conditions of use	Place: stationary installation in remote rooms for machinery in dental practices Environment: installation guidelines Frequency of use: during dental treatment and office hours
Operating principle	Side channel blower pump for generation of vacuum with integrated separation



6. Product overview

1 NXT DryVac

NXT DryVac is a central suction system (dry vacuum system) with integrated air/liquid separation for simultaneous operation of 4-6 chairs.

Note:

1 x HVE	=	2 SEs
HVE	=	High Volume Evacuator
SE	=	Saliva Ejector

Components

7. Components

2 See illustration

2.1 Vacuum pump with dynamic separation unit

The vacuum pump (vacuum engine) is a powerful dry vacuum engine operating according to the principle of the side channel vacuum pump. The dynamic separation unit centrally separates liquids and solids from the air stream without interruption of the suction's output. This eliminates the need for an air/liquid separation tank.

2.2 Air inlet valve + noise reducing item

The air inlet valve optimizes the vacuum and protects the suction equipment from overheating. To prevent noise formation at the air inlet valve, attach the noise reducing item included in the contents.

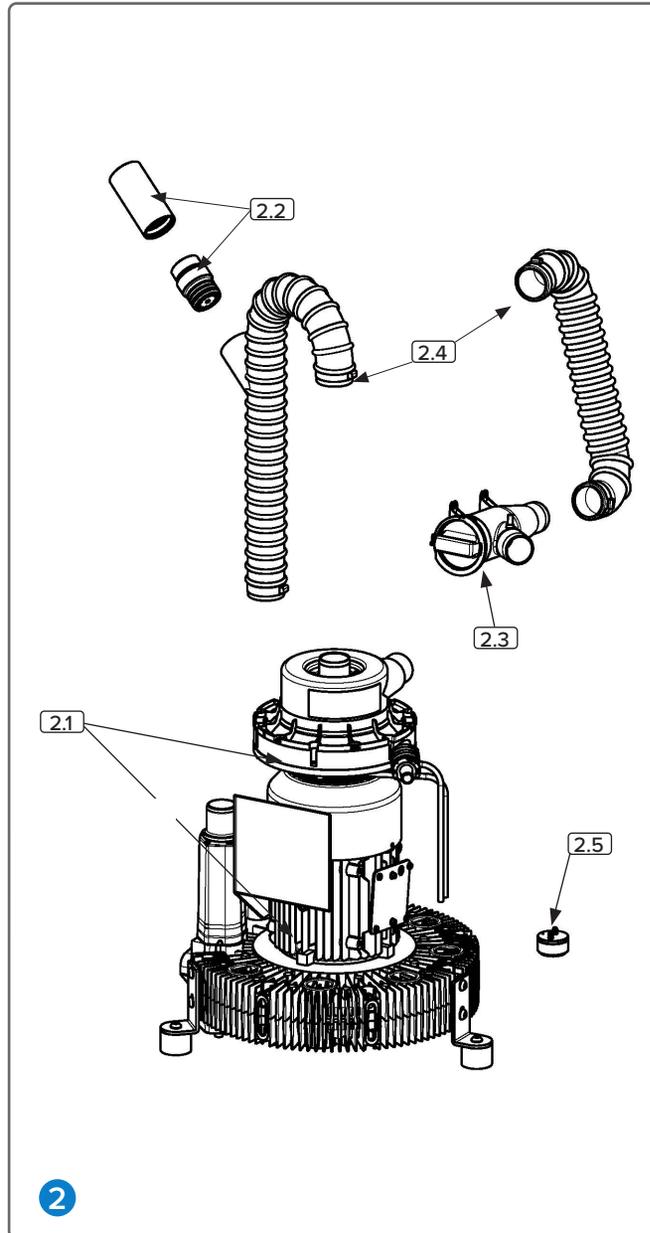
2.3 Vacuum filter (vacuum trap)

Coarse solid particles are held back in the vacuum filter.

2.4 Hose connections

2.5 Water collector

The water collector protects the suction pump (vacuum pump) from water backdraft and transports the water to the outlet, if necessary.



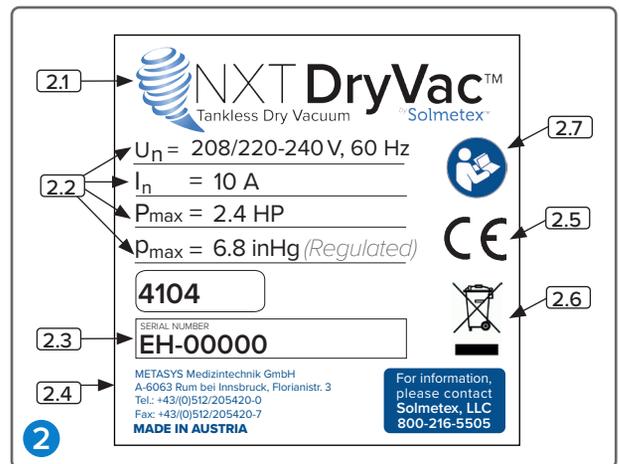
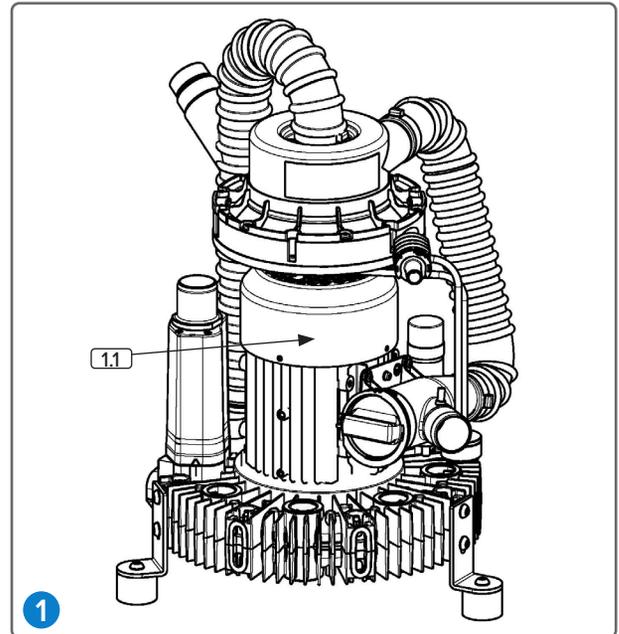
8. Explanation of the type plate

1 See Illustration

- 1.1 The type plate and the UL mark can be found at the fan cover

2 See Illustration

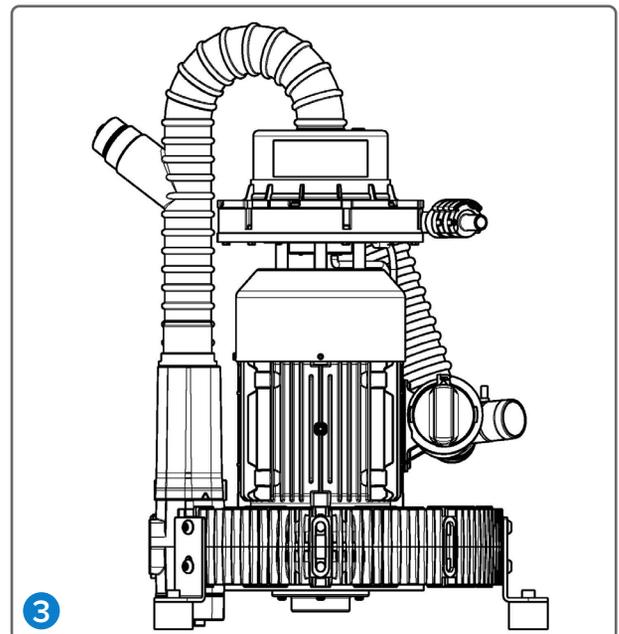
- 2.1 Equipment type
- 2.2 Mains supply data
- 2.3 Serial number
- 2.4 Address of the manufacturer
- 2.5 CE conformity mark
- 2.6 Separate collection electrical/electronic equipment
- 2.7 Follow instructions for use

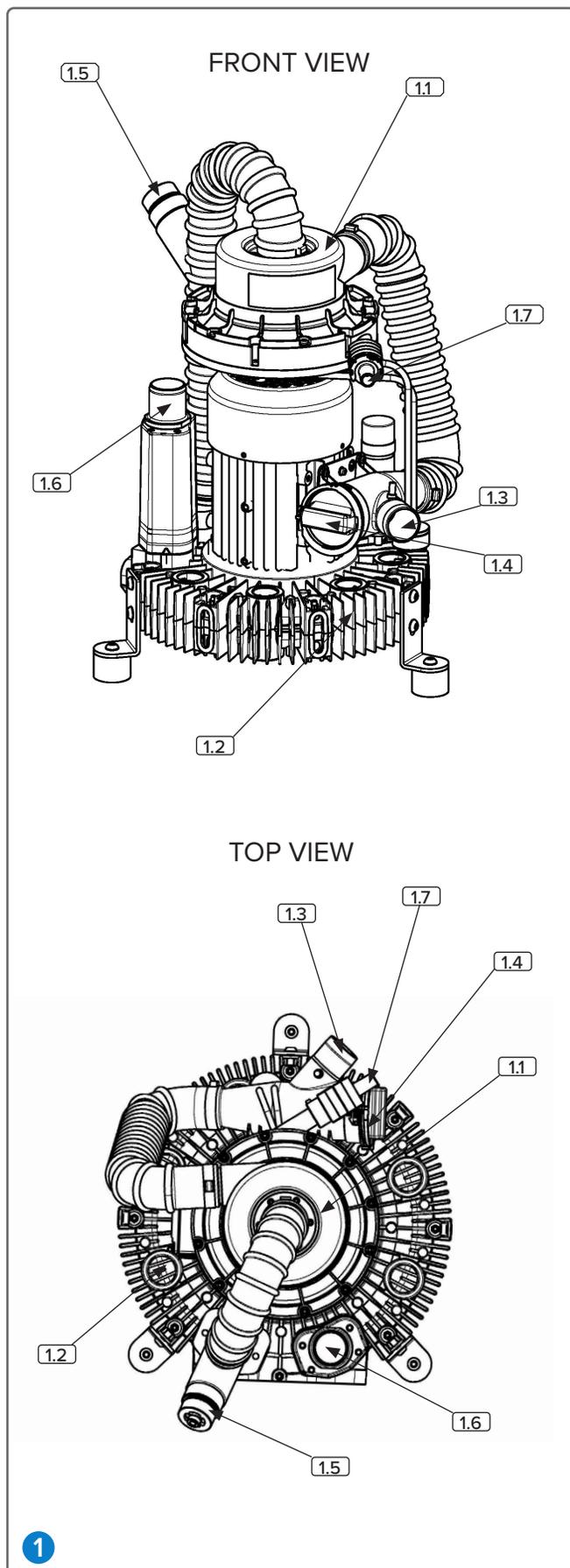


9. Technical Data

3 NXT DryVac

Mains voltage	208/220-240 V AC
Frequency	60 Hz
Max. current consumption	10 A
Electrical shaft power	2.44 HP (1,8 kW)
Max. ambient temperature	104° F (40° C)
Suction volume	84.75 cfm (2400 l/min)
Vacuum, regulated	6.8 in Hg (230 mbar)
Operating time	100 %
Weight	66 lbs (30 kg)
Noise level	68 dB(A)
Dimensions (H x W x D)	24.4" x 18.9" x 15.7" (620 x 480 x 400 mm)





10. Function

1 See Illustration

After switching on the office main switch and the protection switch on the control box, the dynamic separation **1.1** and the NXT DryVac central system suction (tankless dry vacuum system) engine **1.2** start. After the vacuum has been developed, suction is available when high HVE/SE valve is opened.

Only in case of the installation of a cuspidor: The water from the cuspidor or spittoon runs through the cuspidor bowl into the suction hose.

The mixture of liquids, solids and air sucked from the dental chairs flows through the suction connection **1.3** and prefilter **1.4** into the separation chamber **1.1**. The mixture is accelerated into a circular movement by the rapidly rotating impeller blades. The liquids and solids are tangentially centrifuged, while the air flows through the blade shafts into the hose connection with the air inlet valve **1.5** into the suction engine (vacuum engine) **1.2**. Liquid/solids are separated and discharged through outlet. **1.7** The dry air is discharged into the atmosphere through the exhaust air connection **1.6**.

The centrifuged liquids and solid particles smaller than the mesh of the prefilters **1.4** are both led into the normal sewage system via the water outlet **1.7**.

11. Installation guidelines

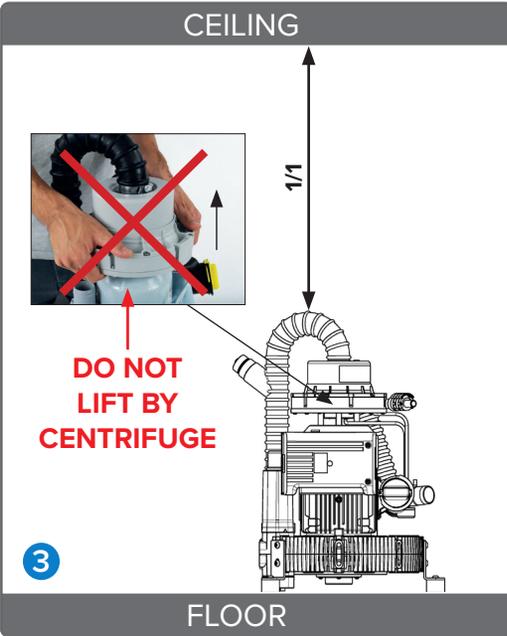
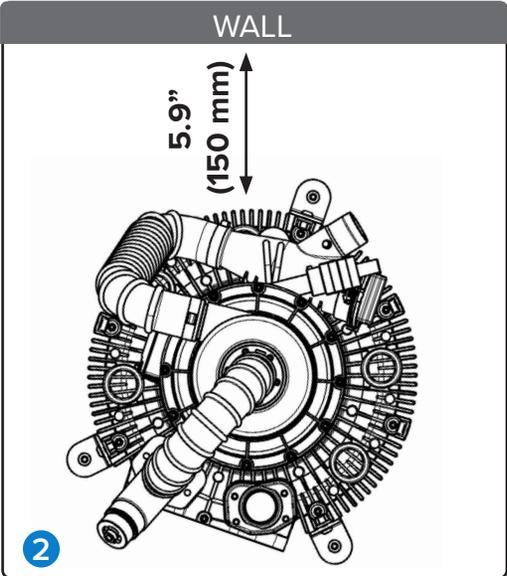
- The NXT DryVac suction system (tankless dry vacuum system) is designed to be installed only in dry, adequately ventilated rooms.

! WARNING

Use of this equipment in areas subject to explosive and fire hazards is not permitted.

Temperature and Ventilation

- The operating temperature ranges from between +40°F (+10° C) and +104°F (+35° C). The relative humidity must not exceed 70%.
- The storage and transport temperature ranges from between +32°F (+0° C) and +158°F (70°C). The relative humidity must not exceed 80%.
- In case of a room temperature of more than +95° F (+35° C), a fan must be installed for additional ventilation. An exhaust fan is necessary if room temperature is not maintained by other methods.
- Adequate forced ventilation must be provided across the unit by placing an appropriate exhaust fan opposite an equivalent air intake vent . The fan should be placed higher than the associated intake vent.



2 See illustration

When the NXT DryVac suction system (tankless dry vacuum system) is installed, the connection side must be placed at least 5.9" (150 mm) from the wall so that the hoses can be connected.

- Installation can be on the same level as the dental units, in a side room or one floor lower.
- In order to avoid vibrations, the suction system must be installed on a firm base.
- The maximum altitude is 9843 feet (3000 m).

3 See Illustration

The front of the device must be easily accessible. There must be clear space of approx. 2" (50 mm) around the device to guarantee adequate air circulation.

! WARNING

Do not lift the device by centrifuge!

! WARNING

To avoid loss of suction, the device must not be switched off at the office main switch or the protection switch of the control box, while suction is in use.

Installation Guidelines

11. Installation guidelines

1 See Illustration

- Only flexible spiral hoses, rated for vacuum, made from PVC or equivalent materials may be used.
- Connections to the NXT DryVac central suction system (tankless dry vacuum system) must be made by flexible hoses and be as short as possible.
- A pipe diameter of 1 1/2" (40mm) is recommended. Avoid right-angle bends in order not to lose suction power (dry vacuum power) (recommendation: 2 x 45° degree bends). Use only 45° degree elbows to make turns in the main line.
- Discharge pipes must meet applicable local codes.
- Waste water must be allowed to drain off freely without any backup. Waste water pipes must have a hydraulic gradient of at least 2% slope.

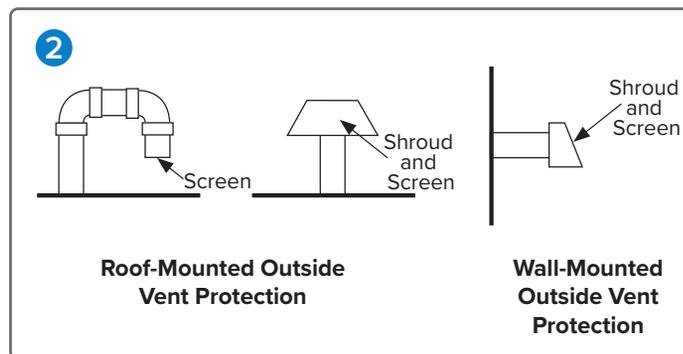
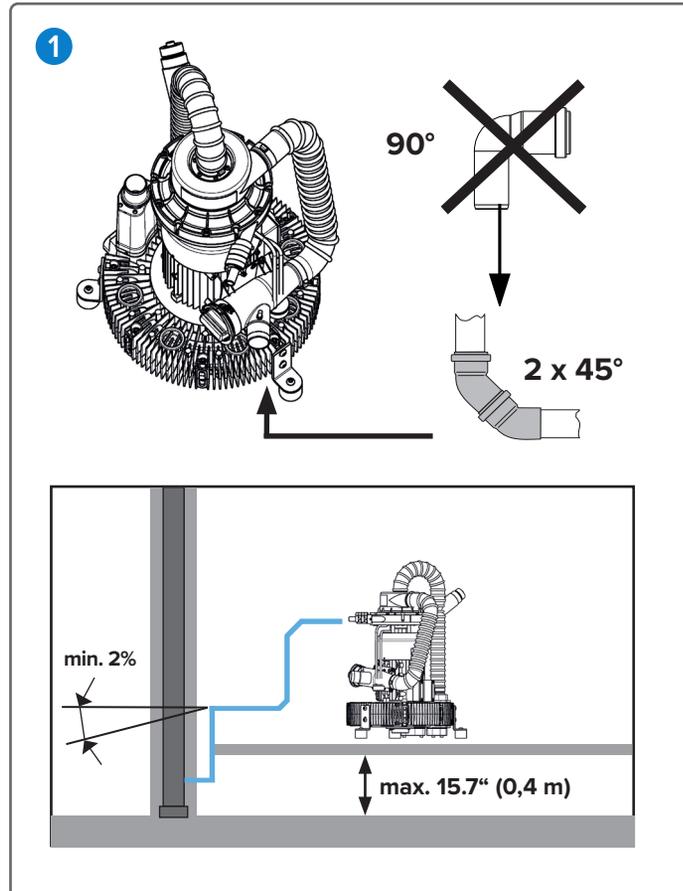
Exhaust air

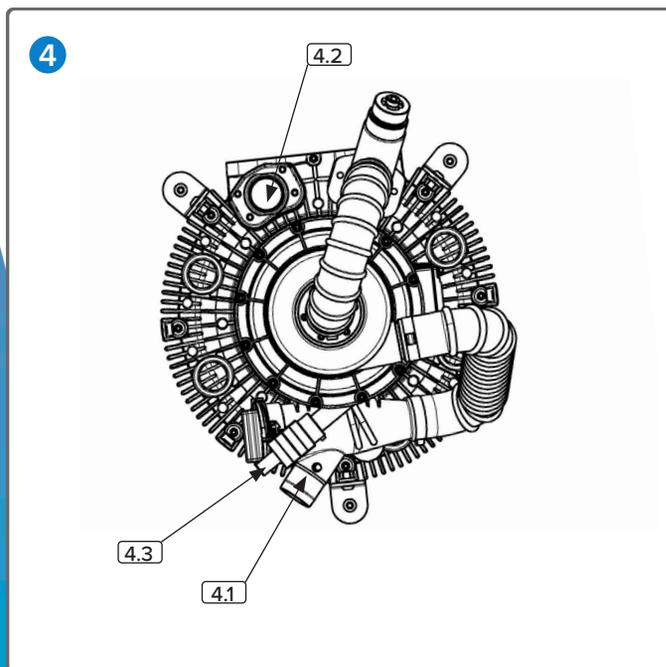
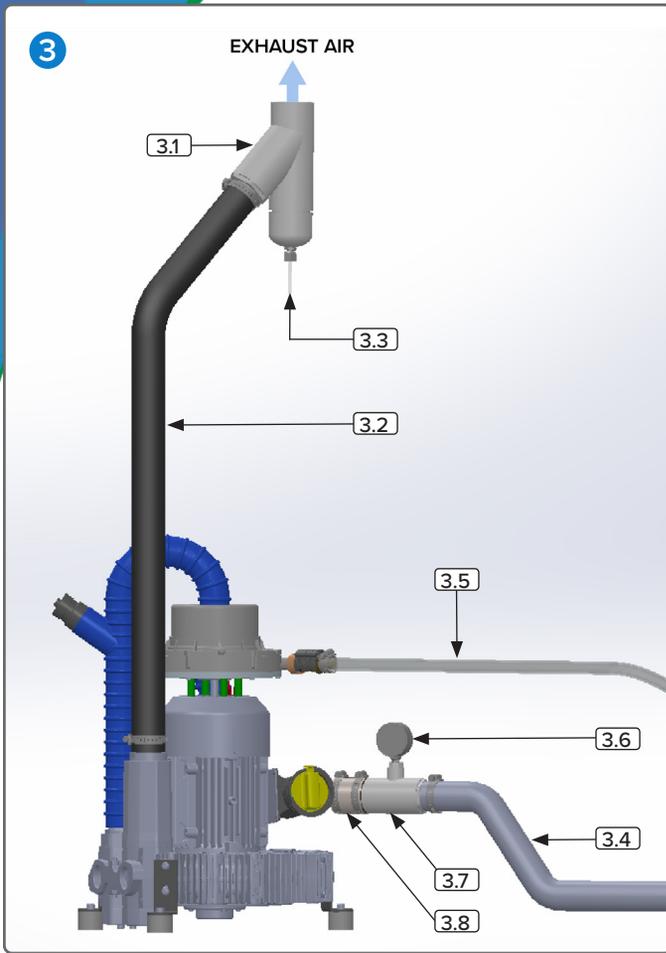
- The air must be discharged out-of-doors. For reasons of hygiene and to avoid noise pollution, it is recommended that the outgoing air connection is fitted with a bio-filter.
- The diameter of the discharged air connection must be equal to or bigger than the diameter of the suction connection. Use metal pipe. Do not make a trap in the exhaust vent piping. Do not use 90° fittings. Connection between the pump and exhaust vent piping is typically made via the supplied 2-inch black heat resisting hose.

Exhaust Vent Protection

2 See Illustration

- If the exhaust piping is venting to the outside of the building, precautions must be taken to protect the equipment room from weather elements and animal intrusion.





11. Installation guidelines (continued)

Exhaust air: condensate water backflow

- A self-closing flap or a fine-meshed grid must be installed at the air outlet to prevent particles or small animals from entering.
- It must be ensured that no condensate water can run from the exhaust air to the suction machine. The exhaust air must be lead outside and equipped with a condensate collector.

- 3.1 Condensate collector
- 3.2 Heat resistant exhaust air hose (flexible)
- 3.3 Condensate water outlet (1/4" tubing x 5' long)
- 3.4 Vacuum suction inlet
- 3.5 Waste water outlet hose
- 3.6 Vacuum gauge
- 3.7 Inlet adapter
- 3.8 Vacuum inlet coupling

12. Hose connections

4 See illustration

- 4.1 Connection for the suction hose (from the dental units): 1 1/2" (40 mm) diameter
- 4.2 Connection for exhaust air: 2" (50 mm) diameter
- 4.3 Connection for waste water (clean water discharge): 5/8" (15 mm) diameter

Pipe and hose installation:

⚠ ATTENTION

- Any pipe or hose used must be vacuum tight and resistant to all chemicals normally used in a dental practice (e.g. HT discharge pipes made from PP, PVC-C, PVC-U, PE-HD).
- All hose connections must be secured with hose clamps!
For the exhaust air connections only heat-resistant ($\geq 266^\circ\text{F}$ [130°C]) hose and pipe material must be used.
- In case of water discharge at the water collector, all connections, especially the water discharge pipe, must be checked.

Electrical Connections

13. Electrical connections

Mains connection:

The mains connection must only be carried out by a trained electrician.

The electrical installation must be carried out in accordance with applicable local codes.

Before connecting with the mains, the nominal voltage stated on the type plate on the equipment must be compared with the mains voltage.

The NXT DryVac suction system (tankless dry vacuum system) must only be connected to the power supply with the supplied power cable. Extension cables must not be used.

! ATTENTION

- **The electrical connections must be carried out observing all technical regulations concerning the setup of low voltage systems in areas used for medical purposes.**
- **The motor connection cable must be laid in such a way that it does not come into contact with hot surfaces. The motor connection cable may not contact hot surfaces!**

- Before start-up, check the mains voltage against the voltage indicated on the model identification plate.
- When connecting to the mains electricity supply, ensure that the circuit is fitted with an all-pole disconnect switch (all-pole switch)
- Suction units can only be connected to the mains power supply using a fixed cable connection.
- Replacement of supply cord only by authorized person according to local codes.
- The suction unit is operated using the main board located in the external control box.

Circuit protection: automatic cutout 16 A, characteristics C according to EN 60898

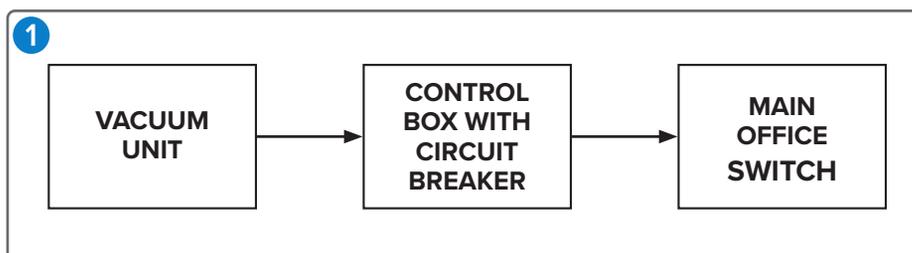
! ATTENTION

NXT DryVac may only be connected to a power supply with maximum permissible system impedance $Z_{max} = 0.42$

1 Main switch / Connection to control box

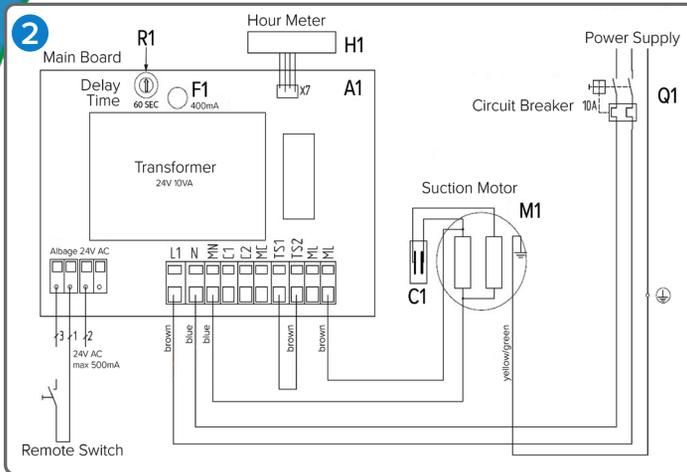
Connections to the mains, 208/220-240 V, must be done with office's main switch in OFF position.

The suction unit (vacuum unit) is operated using the circuit breaker located in the control box. Do not position the suction unit (vacuum unit) in a way that it is difficult to operate the circuit-breaker. The control box must be easily reachable for the shutdown of the suction unit.



13. Electrical connections (continued)

2 Circuit diagram NXT DryVac - 208/220-240 V



Legend:

A1	Control Circuit Board	
C1	Capacitor	
H1	Hour Meter	
M1	Suction Motor	
Q1	Protection Switch/ Circuit Breaker	In = 12 A Un = 240 V Icu = 2 KA
F1	Fuse	In = 0.4 A Un = 250 V (UL Required) Icu = 35 A

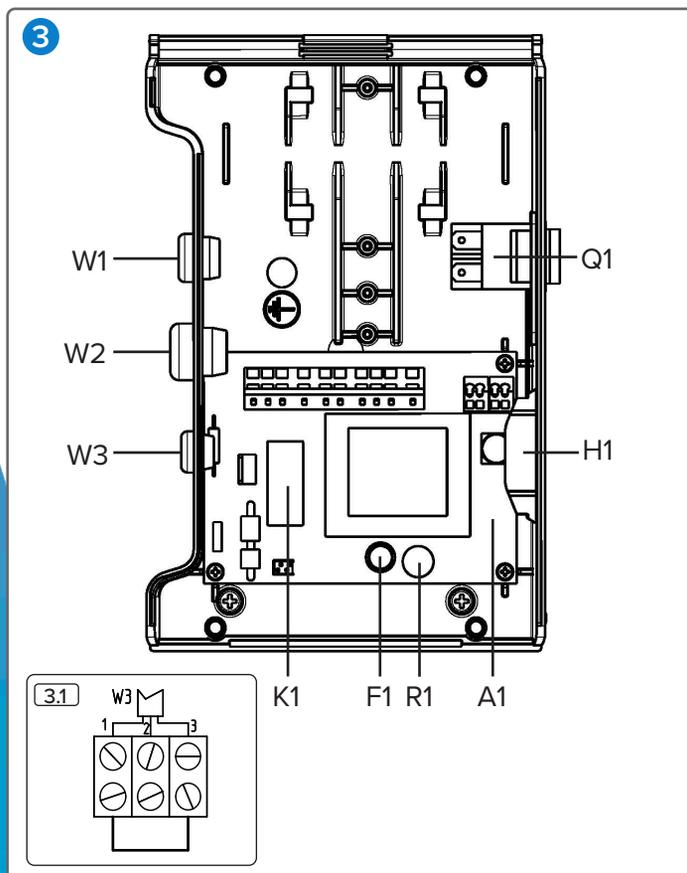
Follow-up time: The factory-made follow-up time of the suction system (dry vacuum system) is approx. 60 seconds. By turning the knob P2 on the timing relay, this running time can be adjusted.

Office main switch:

If the starting signal from the dental chair is not available, a connection must be made between cable strand number 1 and number 3 of the control cable (picture [3.1](#)). The NXT DryVac suction system (tankless dry vacuum system) starts when the office main switch and the protection switch on the control box are both switched on.

NOTE: 60 seconds is minimum follow-up time to purge vacuum lines prior to shutdown.

3 NXT DryVac



Legend:

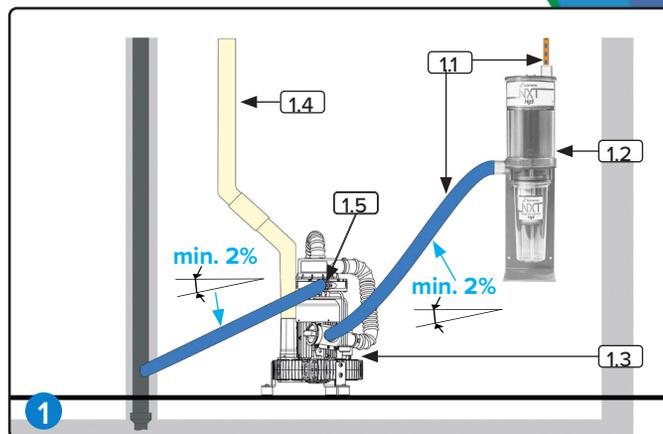
A1	Control Circuit Board	
F1	Fuse (0.40 A)	In = 0.4 A Un = 250 V Icu = 35 A
H1	Hour Meter	
K1	Motor Contactor	
Q1	Protection Switch	In = 12 A Un = 240 V Icu = 2 KA
W1	Main Power Supply	
W2	Control Cable - Suction Motor	
W3	Control Cable - Sucking Contact	
R1	Follow-up Time (factory set at 60 seconds)	

Connecting the NXT DryVac to the NXT Hg5 Amalgam Separator

14. Connection of the NXT Hg5 Amalgam Separator to the NXT Dry Vac

1 Connection of the sewerage tubes and pipes

- 1.1 Air in
- 1.2 Amalgam Separator
- 1.3 NXT DryVac
- 1.4 Air out
- 1.5 Water out



15. Maintenance / Cleaning

2 and 3 See illustration

Once daily, clean vacuum lines with PowerScrub Vacuum Line Cleaner. Ideally, cleaning with PowerScrub should be carried out before longer periods of downtimes of the dental unit.

It is recommended that the cuspidor should also be rinsed out daily with PowerScrub Vacuum Line Cleaner.

4 Cleaning of the filters

The filters must be cleaned at least once a week. However, depending on the method of working, this may be necessary every day. A clogged prefilter is perceivable by a reduction of suction power.

- The filter at the suction tube holder, at the dental unit, cuspidor bowl (only if present)
- The vacuum filter (vacuum trap) on the suction machine

NOTE: Any residues from the prefilter, which might contain amalgam, must be disposed according to the local codes.

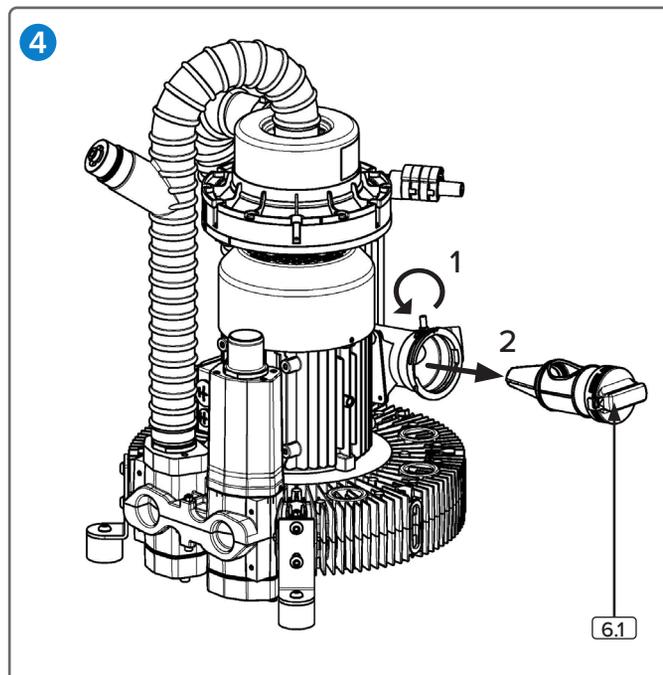
Exhaust air filter

The exhaust air bio-filter must be used if not discharged outdoors. Change once per year (only if present).

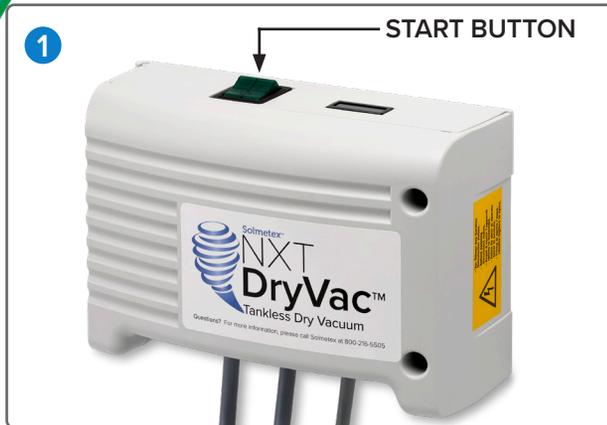
A yearly maintenance of the NXT DryVac is required

Yearly maintenance kit (item no: DRYVAC-NXT-MTK)

A yearly maintenance of the NXT DryVac is required: This includes the check valve of the air/liquid separation outlet, the filter grid and the inlays of the noise reducing item.

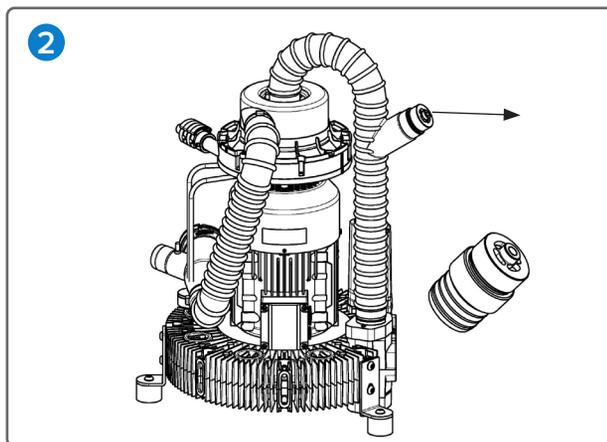


16. Operation



1 See illustration

- Switch on the office and the protection switch of the control box.



2 The air inlet valve - see illustration

- The suction flow at the HVE should be at least 7 cfm (200 l/min).

Adjustments cannot be made! Any adjustments done lead to a loss of warranty. The vacuum needs to be measured at the connection "Air in" with a vacuum measuring device.



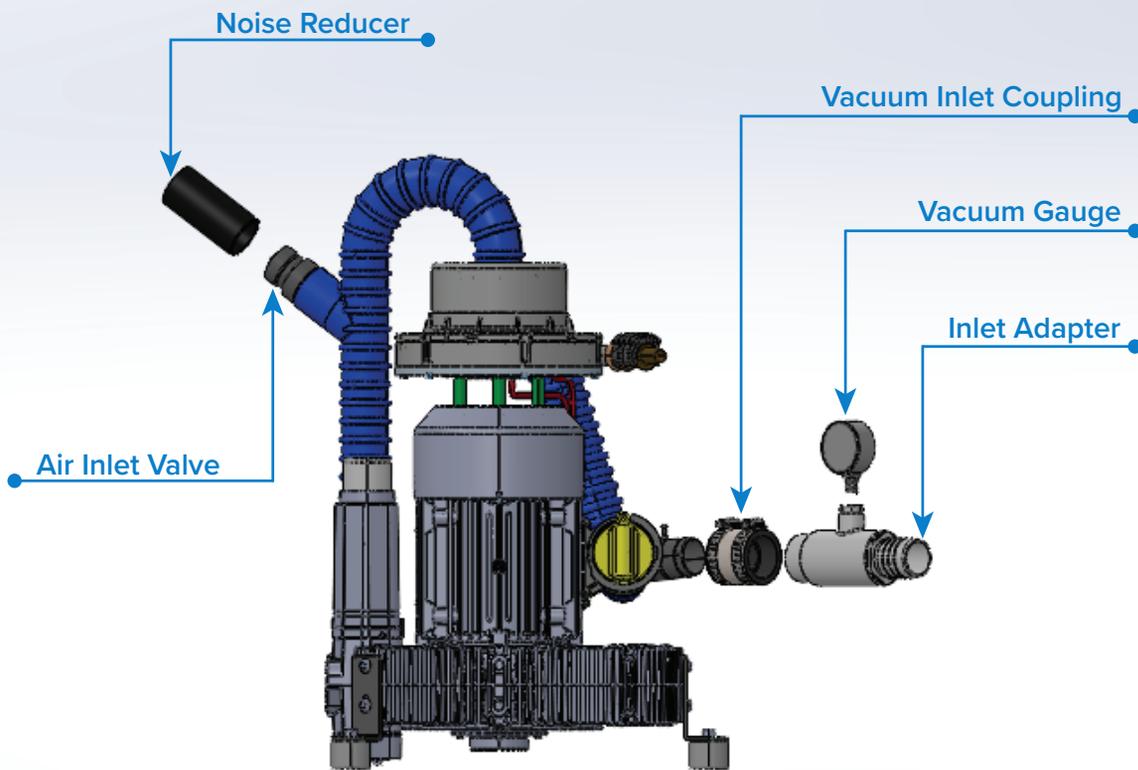
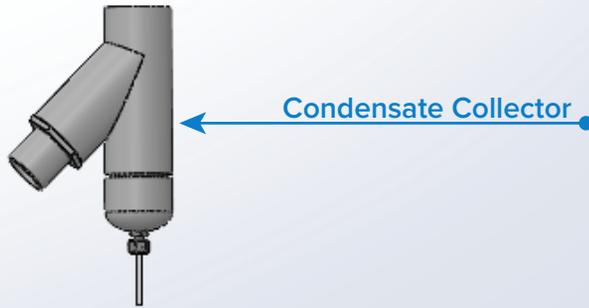
3 See illustration

- Suck 1 gallon (approx. 4 litres) of water and check that the DryVac central suction system (tankless dry vacuum system) is operating correctly.
- Undertake electrical safety checks as required by local code.

Spare Parts

17. Spare parts

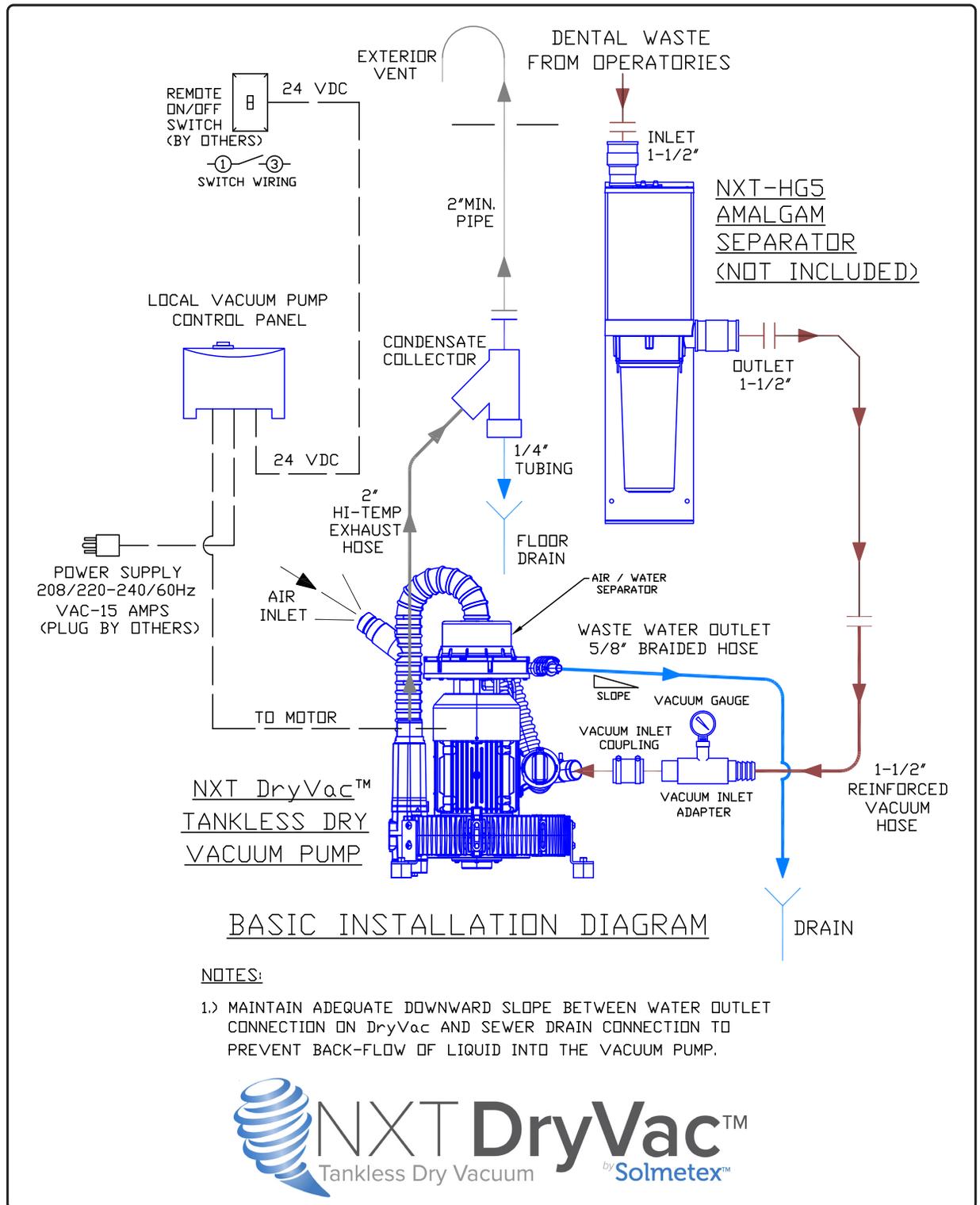
Spare Parts for the



**YEARLY
MAINTENANCE
KIT**

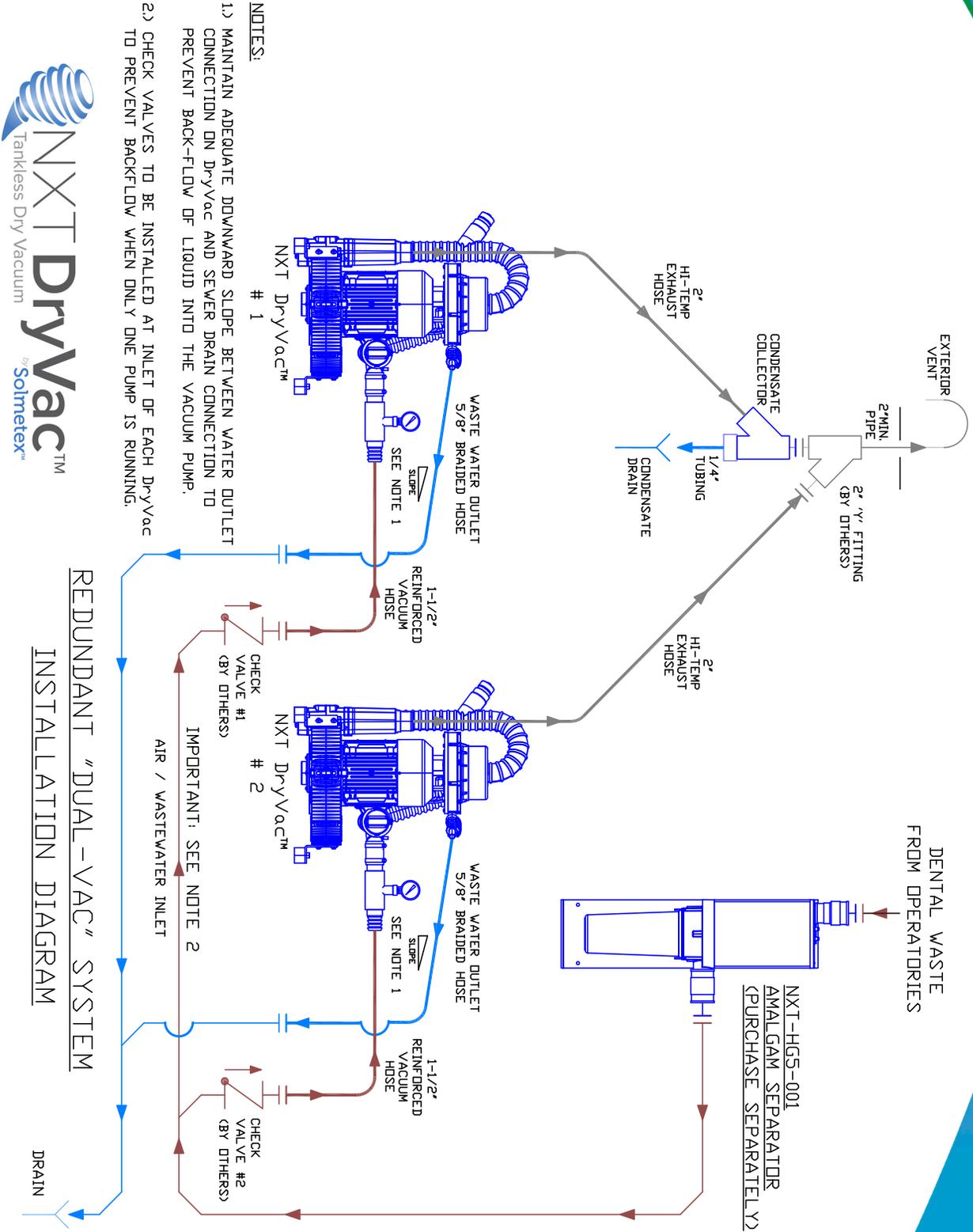
← Part Number: DRYVAC-NXT-MKT

18. Installation Diagram



NXT DryVac Redundant "Dual-Vac" System Installation Diagram

19. Redundant "Dual-Vac" System Installation Diagram

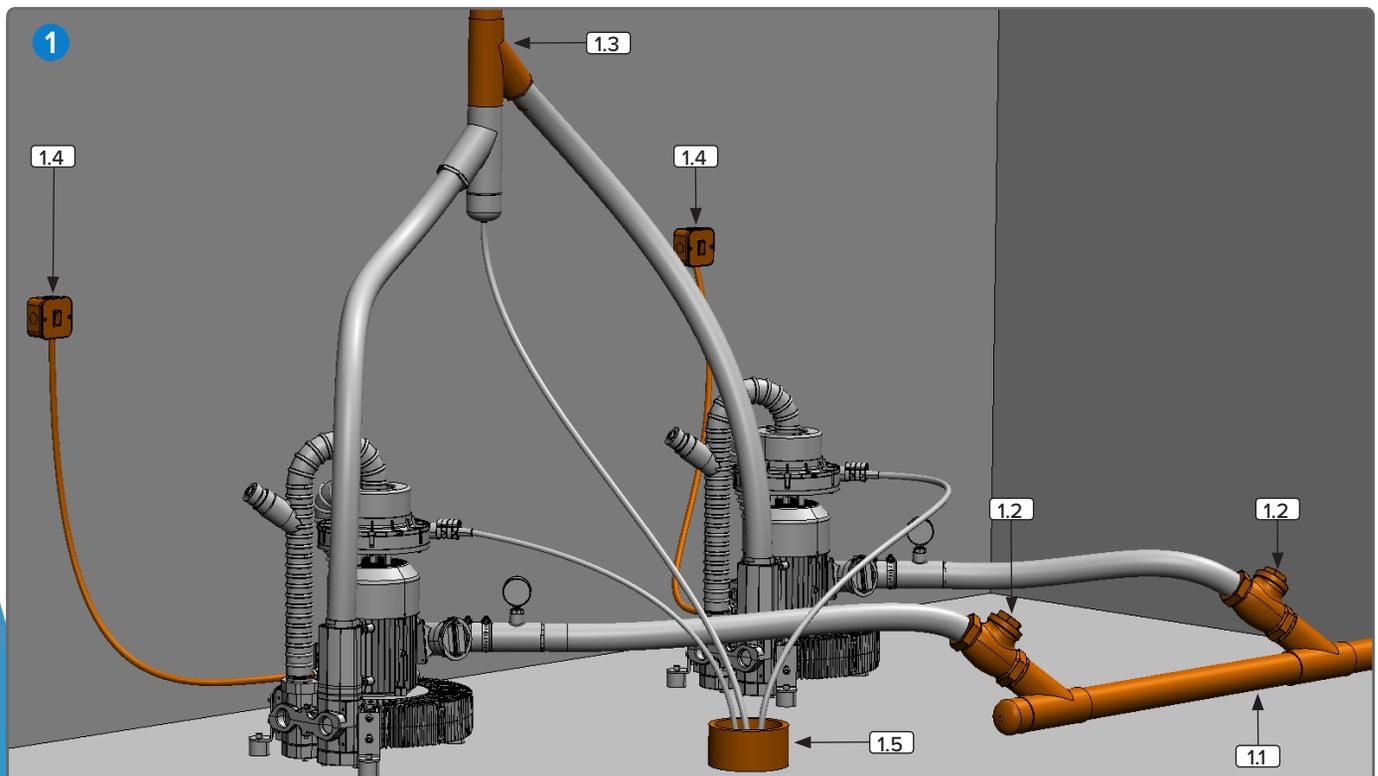


NXT DryVac Redundant "Dual-Vac" System 3-D Diagram

20. Redundant Configuration for NXT DryVac Tankless Dry Vacuum System

1 See Illustration

- 1.1 Water intake distributed equally between the two vacuum systems
- 1.2 Check valves to prevent intake suction backflow when only one pump is running
- 1.3 Additional wye fitting connecting both vacuum system exhausts to outside air (minimum 2" diameter tubing)
- 1.4 Separately controlled power switches for individual or dual vacuum activation
- 1.5 Floor drain for both the vacuum system water outlets and exhaust condensate collector drain



⚠ ATTENTION

NOTE: In the illustration above, all components in orange are not supplied by Solmetex LLC

Troubleshooting Guide

19. Troubleshooting Guide

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

Problem	Possible Cause(s)	Initial Troubleshooting	Advanced Troubleshooting (Performed by Qualified Technicians)
Vacuum Unit motor does not start	•No main supply voltage connected	•Make sure unit is plugged in. Main switch on control box should be lighted 'GREEN'	•Check main supply circuit breakers, fuses, etc. to ensure correct voltage is present where unit is plugged in. If necessary, inform an electrician
	•Main switch on control panel not set to 'ON'	•Make sure main switch on control box is set to 'ON' position	
	•Remote switch not set to 'ON'	•Make sure Remote switch is set to 'ON' position	•Check wiring connection on remote switch. If remote switch is not used, ensure wires 1 and 3 on remote switch cable are securely jumped together
	•Motor protection (main) switch / circuit breaker tripped	•Set main switch to 'OFF' and then back to 'ON'	
	•Circuit board fuse F1 blown	•Call a qualified technician	•Open control box, remove fuse F1 and check continuity. If no continuity, replace blown fuse (contact Solmetex, LLC for details)
	•Motor protection (main) switch / circuit breaker defect	•Call a qualified technician	•Replace motor protection (main) switch (contact Solmetex, LLC for details)
	•Capacitor defect	•Call a qualified technician	•Check capacitor, replace if necessary (Contact Solmetex, LLC for details)
Vacuum unit runs but then shuts down	•Motor protection (main) switch / circuit breaker tripped	•Set main switch on control box to 'OFF' and then back to 'ON'. Unit may re-start but may shut down again. If so, call a qualified technician	•Check main supply circuit breakers, fuses, etc. Check current with motor running. If necessary, inform an electrician. Circuit protector trips at 16 amps. Normal range is 10 amps or less
	•Thermal "Hi-Temp" protection switch in motor windings is tripped	•Make sure utility room has adequate ventilation to remove heat and maintain ambient temperature at 104°F or less	•Open control box and view set of three LED indicators. Top LED steady-on indicates power is connected. Middle LED steady-on indicates 'Hi-Temp' tripped. Middle LED blinking-on/off indicates motor tripped on 'Hi-Temp' but can now be re-started. Bottom LED is not used
	•Vacuum turbine is blocked, turns hard or not at all	•Call a qualified technician	•Check to see that vacuum turbine spins freely with little resistance. (Contact Solmetex, LLC for details)
	•Motor protection (main) switch / circuit breaker defect	•Call a qualified technician	•Replace motor protection (main) switch (Contact Solmetex, LLC for details)
Vacuum unit produces unusual or loud noises while turned on		•Verify that vacuum unit was installed properly	
	•Solid particles in the turbine chamber	•Clean vacuum lines with a validated vacuum line cleaner (PowerScrub™ Vacuum Line Cleaner is preferred)	
		•Call a qualified technician	•Check to see that vacuum turbine spins freely with little resistance. (Contact Solmetex, LLC for details)
Vacuum unit suction too low	•Vacuum inlet filter blocked	•Check vacuum inlet filter. Remove and clean as needed	•Replace vacuum inlet filter, if required. (Replace once per year or as required)
	•Leaks in the vacuum unit plumbing	•Check vacuum lines for obvious leaks (with vacuum running)	•Check all pipes, hoses, and connections for leaks. Tighten or replace, if necessary
	•Foam in turbine housing due to using wrong cleaning and disinfection solution	•Switch to a "low foaming" vacuum line cleaner (PowerScrub™ Vacuum Line Cleaner is preferred)	•Antifoaming substance is required. Inadequate cleaning and disinfection solution was used
	•Vacuum setting too low	•Check vacuum gauge (gauge should read 7 inHg with pump running)	•Determine if inlet air valve is at correct setting, adjust to 7 inHg if necessary
	•Turbine rotation hindered by debris	•Call a qualified technician	•Check to see that vacuum turbine spins freely with little resistance. (Contact Solmetex, LLC for details)

If issues persist, please contact Solmetex Customer Service at 800-216-5505 or sales@solmetex.com



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