

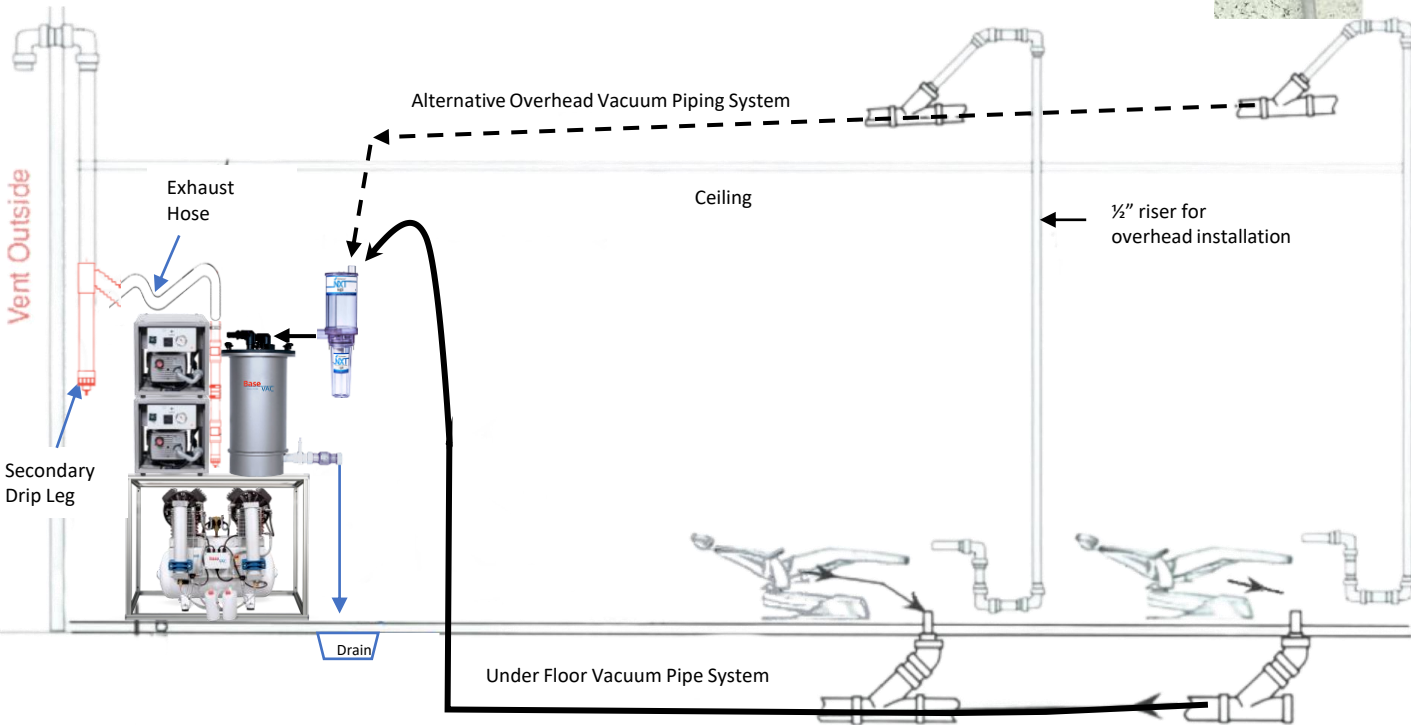
BaseVac Dental Dental Vacuum and Air Compressor Systems

Pre-Installation Guide

Many dental facilities are being serviced by vacuum pumps that may not be the most ideal, simply because of the fact that there was no “ideal” solution. In cases like this, the engineers at BaseVac™ will design the system specifically to your needs.



- 1) **Grade Vacuum Main Lines:** should be run like drain or sewer lines, sloping $\frac{1}{2}$ " every 15' towards the mechanical room.
- 2) **Overhead Installation:** should have a reverse trap to prevent fluids from returning down risers. The trunk line should be sloped $\frac{1}{2}$ " every 15'.



Vacuum Line Material –

PVC SCH 40, 80 or better is recommended. Follow local code but avoid using copper to avoid long-term effects with amalgam and other chemicals that may inadvertently be used in the vacuum lines for disinfection and cleaning purposes that may react negatively to earth metals.

PVC Piping: ASTM D1785-6, Type 1 (normal impact), Grade 1 (chemical resistant), Sch 40,48 or better pipe.

Overhead Trunk Diameter –

Risers are always $\frac{1}{2}$ ", on rare occasions $\frac{3}{4}$ " when acting as a riser on a manifold.

1 Chair = $\frac{1}{2}$ " 2-4 Chairs = $\frac{3}{4}$ " 5-6 Chairs = 1" 7-10 Chairs = 1.25"

11+ Chairs = Contact BaseVac for further information.

Trunk Diameter –

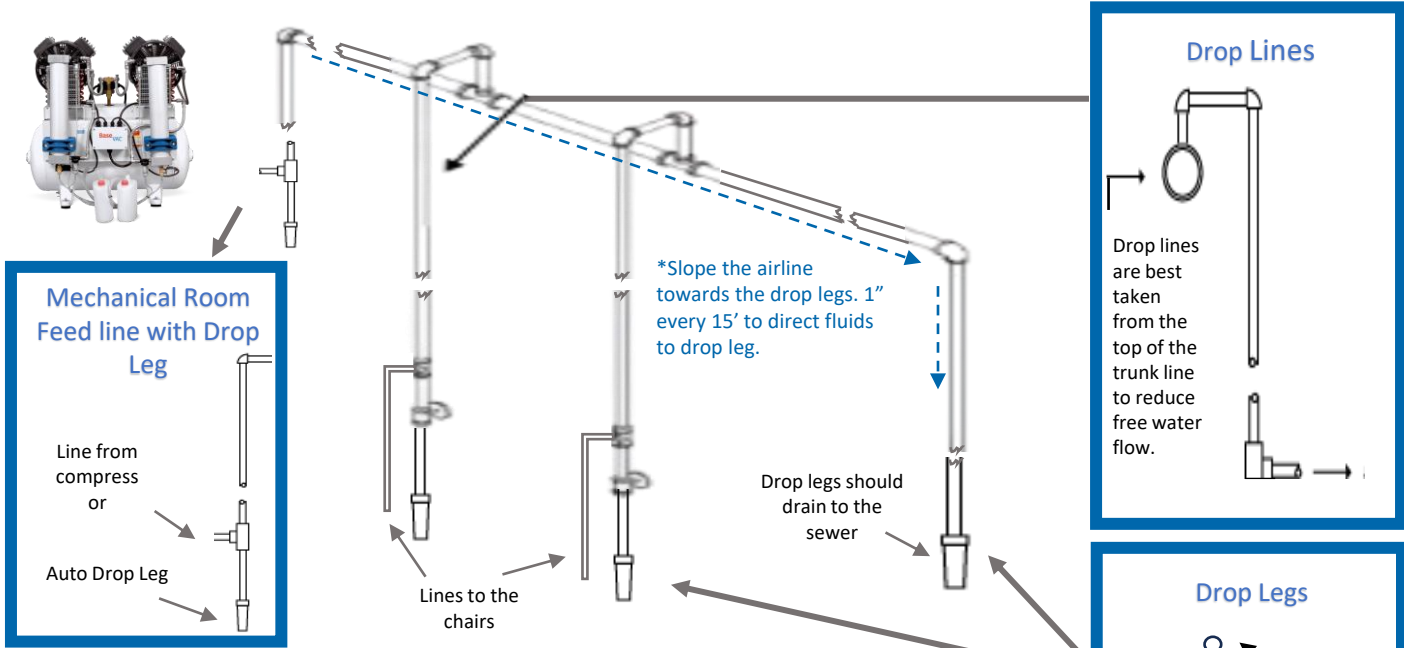
1- 15 Chairs = 1.5" 16-30 Chairs = 2" 31-60 Chairs = 4"

60+ Chairs = Contact BaseVac for further information.

Branch Diameter

1- 15 Chairs = 1.25"-1.5" 16-30 Chairs = 1.5"-2" 31-60 Chairs = 2"

60+ Chairs = Contact BaseVac for further information.



Why does fluid form in the airlines?

When cool/dry air leaves the Dental Compressor, it has a dew point of -38 degrees Celsius. As the air travels through an attic space or plenum, there is a potential for temperature shifts which could heat the air in the compressor airline. When an airline drops from the warm attic or plenum and enters the cooler clinic, the air in the line cools down again, dropping any moisture out of the lines.

How do you keep air dry to the chair?

When utilizing overhead airlines, maintaining equal temperature throughout the whole run is ideal. This can be achieved by running the lines in a conditioned space and/or insulating the lines. If this is not achievable, it may be necessary to utilize the following suggestions to capture moisture that may form in the airlines;

Drop Lines

The airlines from the main trunk line to the chairs should leave the trunk line from the top of the pipe.

Drop Lines with Drop Legs

If moisture is likely to form from the trunk line to the chairs, having a drop leg on the drop line will knock out any moisture that may have formed.

Drop Legs

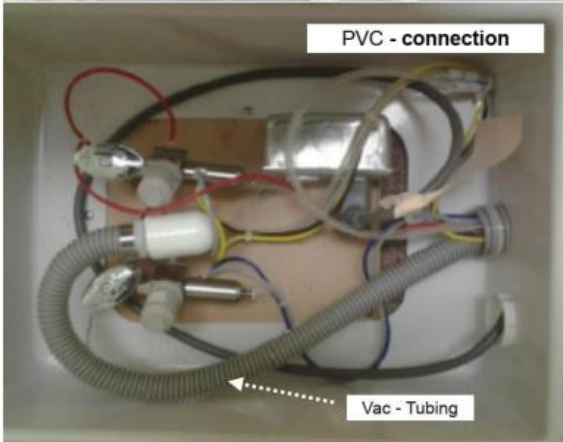
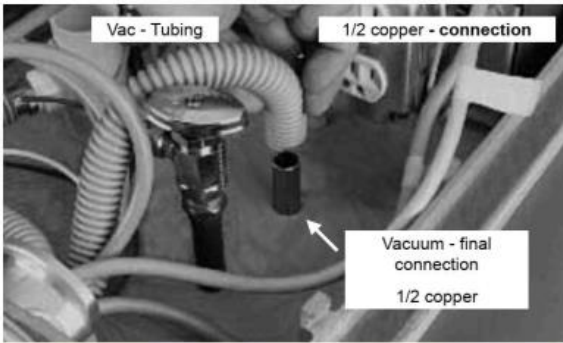
Each trunk line should end with a drop leg with an auto drain filter. Sloping the trunk lines to these drop legs will ensure that any water that forms in the trunk line will be pushed out of the system, keeping fluids away from the Dental Chairs.

Auto Drop Leg Filter (PN. 5000100)

Condensate in the airline to be automatically drained from the airline. The inlet is 1/2" FPT, and the outlet is 1/8" FPT.

Drop Lines with Drop Leg

***Drop Legs are optional but ideal. Especially in applications where temperatures fluctuate along airline run**



Typical Final Connections to dental chairs

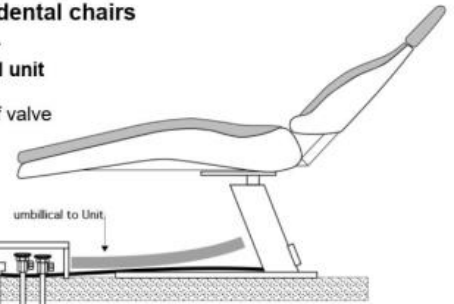
Vac - 3/4" pipe / riser through floor with 1/2" final connection to dental unit

Air - 1/2 riser through floor to shut off valve
 1/2" pipe for up to 8 chairs
 3/4" pipe for up to 20 chairs
 1" pipe up to 50 chairs

Compressor Air Pressure Switch
 - 80 psi min / 100 psi max
 * Set Chair Regulator @ 80 psi *

Suction line graded like DWV to air water separator and pump location

BaseVac Vac / pump setting Hg"- * see notes
 Recommended adjust to max for best suction
 Can be set at 15" to 18" - will lose some capacity



Air / Water Riser - 1/2 inch riser

Vacuum Riser - 3/4 inch riser

Main Vac / Suction Line -

1.5" PVC up to 8 chairs

2" PVC up to 20 chairs

Vacuum - Final Connections to Dental Chair:

** Note - Check with Chair / Unit manufacturer - connection and demand may vary by equipment type and use.*

Recommend 3/4 " riser for Vac - copper or PVC through floor and then adapt to final connection (usually 1/2 copper)

Note: Final Vac connection typically to 5/8" ID spiral flex - but may vary with type of chair - 1/2 Copper pipe is typical

Soundproofing of the Mechanical Room

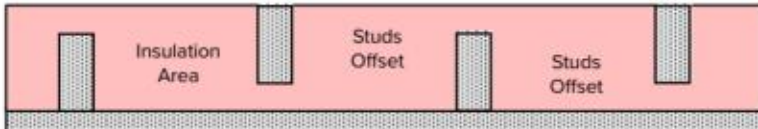
New Office Construction ? - 3 main / important areas

- 1) **Soundproofing clips plus second layer and thicker drywall** can be one of the most effective steps for soundproofing
- 2) **Use of a caulk-sealant such as "green seal"** will also help seal joints and help contain sound in the mechanical room
- 3) **Mechanical Room Door is often the main issue** - see notes / at right side of this document . . .

In addition to above - less effective but may be helpful . . .

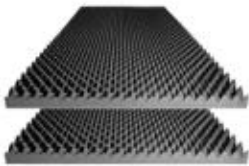
- 1) **Insulation** - Add sound absorbing "insulation" between walls
- 2) **Thicker wall board (Gypsum Plasterboard)** from 1/2" to 5/8" will add "Mass" to dampen low frequencies transmissions

Decoupling and "off-setting wall studs" can help mechanically separate the two sides of a wall and makes it harder for sound to pass through the wall.



Existing Offices . . .

The above can be duplicated in a "renovation" or existing mechanical room by adding another layer of dry wall to the existing dry wall and using acoustic caulk such as "Green Glue"



Existing Offices - Acoustic Panels . . .

A less expensive option (and less effective) alternative method is to add acoustic panels on the inside wall of the mechanical room and on the door - change door to solid core door

Mechanical Room Walls - Soundproofing clips + insulation and an extra layer of drywall combined with the use of acoustic caulk and "Green Glue" can help significantly reduce noise transmission thru walls.



Acoustic Caulking



**Disclaimer - See Manufacturer installation manuals, site notes and architectural drawings for more specific details in regard to construction guidelines and other requirements. For example - local by-laws vary by state, and may be subject to medical guidelines such as NFPA, CSA, EPA, VA facilities*

Mechanical Room Door . . .

- 1) **Use a dense "solid core" door** and avoid hollow doors to minimise noise - a hollow door can act like a guitar and transmit sound
- 2) **Install a door gasket around the door frame** and door sweep on the bottom of the door so that door is well sealed when closed.
- 3) **Avoid Door vents** and use "acoustic caulking" to "seal" door frame and drywall corners and connections

Mechanical Room Tips Sound Proofing In the Medical / Dental Mechanical Room

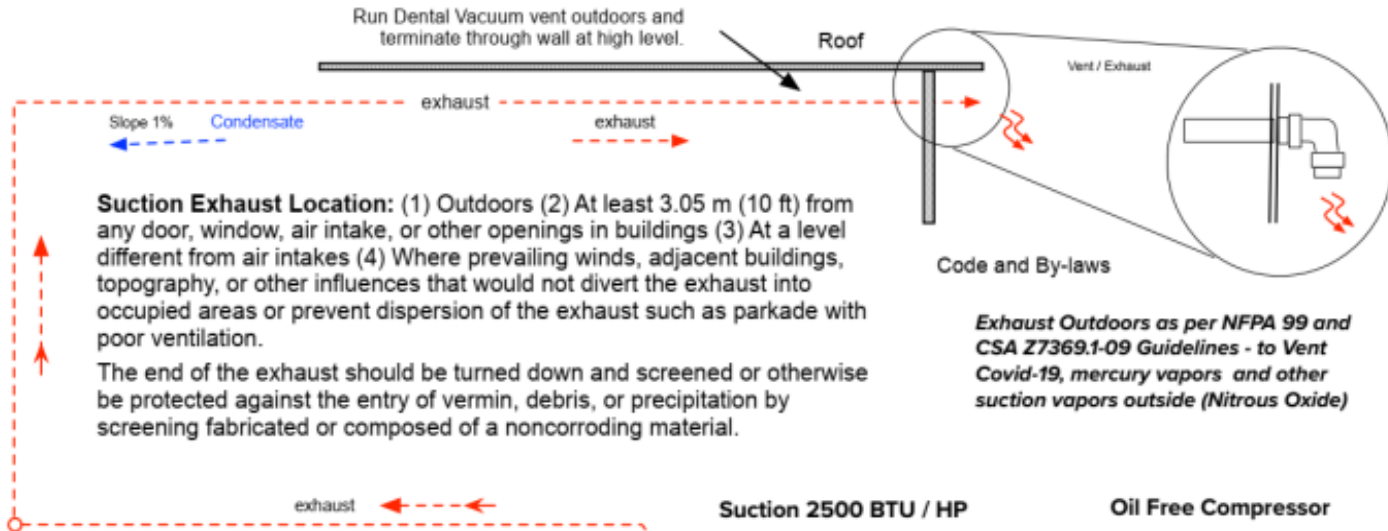


Mechanical Room Door Sweep



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**Mechanical Room Tips
Forced Air Ventilation
and Heat In the Medical /
Dental Mechanical Room**



Suction Exhaust Location: (1) Outdoors (2) At least 3.05 m (10 ft) from any door, window, air intake, or other openings in buildings (3) At a level different from air intakes (4) Where prevailing winds, adjacent buildings, topography, or other influences that would not divert the exhaust into occupied areas or prevent dispersion of the exhaust such as parkade with poor ventilation.

The end of the exhaust should be turned down and screened or otherwise be protected against the entry of vermin, debris, or precipitation by screening fabricated or composed of a noncorroding material.

Code and By-laws

Exhaust Outdoors as per NFPA 99 and CSA Z7369.1-09 Guidelines - to Vent Covid-19, mercury vapors and other suction vapors outside (Nitrous Oxide)

New Office Construction - Mechanical Rooms require ambient room ventilation to remove heat and also an isolated vent pipe to vent suction exhaust and heat to the outdoors (Covid-19, Mercury vapours, N2O etc.)

Mechanical Room Ventilation . . .

Use a "forced air" ventilation fan 700 cfm or more to remove ambient heat from mechanical room to outdoors

Temperature - Mechanical room - if possible should be maintained at 95° F or lower - most electrical equipment and motors will indicate a maximum or 105° F on the label of the motor

Fan Output - Total ventilation / exchange rate should be 20 (Room Size) air changes per hour minimum - check with HVAC specialist

Suction 2500 BTU / HP
10,000 BTU's
66 - 70 decibels

Oil Free Compressor
2500 BTU / HP x 50% . . .
5,000 BTU's
68 - 74 decibels



**Dental Compressors and Suction Units - Rule of Thumb
- 2500 BTU's per horsepower**

Model	HP	BTU / HR	Run Time	Vent CFM
1HD4.25	1.2	3000	100% Duty Cycle	96
1HD4.40	2	5000	100% Duty Cycle	160
S1.5	1.5	1875	50% Duty Cycle	60
S2.0	2	2500	50% Duty Cycle	80
D1.5	3	3750	50% Duty Cycle	240
D2.0	4	5000	50% Duty Cycle	160
D2.5	5	6250	50% Duty Cycle	200



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Available @ Macmast-Carr