Check VacStar Model Being Installed:

- VS20
- VS40

**PRODUCT SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Electrical</th>
<th>Model VS20</th>
<th>Model VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Rating</td>
<td>*115/230</td>
<td>230</td>
</tr>
<tr>
<td>Voltage Min./Max.</td>
<td>105/125 or 205/253</td>
<td>205/253</td>
</tr>
<tr>
<td>Full Load Amps</td>
<td>16/8</td>
<td>13.4</td>
</tr>
</tbody>
</table>

*VacStar 20 may be converted from 230 Volts to 115 Volts at installation site.

<table>
<thead>
<tr>
<th>Water</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Water Pressure (PSI)</td>
<td>20 - 100</td>
<td>20 - 100</td>
</tr>
<tr>
<td>Typical Flow Rate (gal/min) per Pump w/ HydroMiser</td>
<td>0.12</td>
<td>0.18</td>
</tr>
<tr>
<td>Flow Rate (gal/min) per Pump w/o HydroMiser</td>
<td>0.50</td>
<td>0.75</td>
</tr>
<tr>
<td>Inlet Water Temperature (°F)</td>
<td>40 - 75</td>
<td>40 - 75</td>
</tr>
</tbody>
</table>

**Power and Heat (@ 100% duty cycle)**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts per Hour</td>
<td>750</td>
<td>1,230</td>
</tr>
<tr>
<td>BTU per Hour</td>
<td>2,560</td>
<td>4,197</td>
</tr>
</tbody>
</table>

**Vacuum Level**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset at Factory (in Hg)</td>
<td>10</td>
</tr>
</tbody>
</table>

All installations must conform to local codes.
**Physical Characteristics**

<table>
<thead>
<tr>
<th>Model VS20</th>
<th>Model VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (inches)</td>
<td>Height (cm)</td>
</tr>
<tr>
<td>14 inches (36 cm)</td>
<td>17 inches (43 cm)</td>
</tr>
<tr>
<td>Width (inches)</td>
<td>Width (cm)</td>
</tr>
<tr>
<td>11 inches (28 cm)</td>
<td>11 inches (28 cm)</td>
</tr>
<tr>
<td>Depth (inches)</td>
<td>Depth (cm)</td>
</tr>
<tr>
<td>11 inches (28 cm)</td>
<td>11 inches (28 cm)</td>
</tr>
</tbody>
</table>

**Electrical Connections**

- All VS20 VacStars are wired directly via an electrical box that complies with local electrical codes to the VacStar’s Electrical Connection Box. See Figure 1.
- All VS40 VacStars are wired with a supplied hospital grade NEMA 6-15P line cord and requires a hospital grade 6-15R receptacle.
- If voltage falls below the minimum or maximum during operation, a Buck/Boost Transformer must be installed. See Product Specifications.

**24V Connections**

Connection to 24 V Switch Only

- Vacuum Pump
- Interconnect Cable
- Remote Switch

- Yellow
- Brown
- Orange

- Use 18 Gauge, 4 Conductor, Interconnect Cable Between VacStar Pump and Remote Switch

Connection without 24 V Switch

- 2
- 4
- 3

- for Future Use

**Figure 1 - VS20 Connections**

**Shipping Weight**

- Model VS20: 68 lbs. (31 kg)
- Model VS40: 85 lbs. (39 kg)
**SITE REQUIREMENTS**

### Electrical

<table>
<thead>
<tr>
<th></th>
<th>VS20</th>
<th>VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Circuit Breaker Rating</td>
<td>30A@ 115V or 20A@ 230V</td>
<td>20A</td>
</tr>
<tr>
<td>Minimum Wire Gauge Size</td>
<td>10 AWG @ 115V or 12 AWG @ 230V</td>
<td>12 AWG</td>
</tr>
<tr>
<td>115-Volt Buck/Boost Transformer</td>
<td>#67500 (2.0 KVA, VS20 Only)</td>
<td>Not Used</td>
</tr>
<tr>
<td>230-Volt Buck/Boost Transformer</td>
<td>#67002 (3.4 KVA)</td>
<td>#67002 (3.4 KVA)</td>
</tr>
</tbody>
</table>

### Plumbing

**Note:** Suction piping must slope at least a ¼” for each 10 feet of run towards the pump. Use PVC Schedule 40 or Copper Type M.

<table>
<thead>
<tr>
<th></th>
<th>VS20</th>
<th>VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum CFM @ 0' Hg</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>Air Exhaust with Hydromiser or Air/Water Separator</td>
<td>2” schedule 40 pipe</td>
<td>2” schedule 40 pipe</td>
</tr>
</tbody>
</table>

### Overhead Plumbing

<table>
<thead>
<tr>
<th></th>
<th>VS20</th>
<th>VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Line Diameter (Min./Max. ID in inches)</td>
<td>1 to 1½”</td>
<td>1¼ to 2”</td>
</tr>
<tr>
<td>End Fitting</td>
<td>3/4” FNPT</td>
<td>3/4” FNPT</td>
</tr>
<tr>
<td>Overhead Main Line</td>
<td>½” ID</td>
<td>½” ID</td>
</tr>
</tbody>
</table>

### Floor Plumbing

<table>
<thead>
<tr>
<th></th>
<th>VS20</th>
<th>VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Line Diameter (Min./Max. ID in inches)</td>
<td>1 to 1½”</td>
<td>1¼ to 2”</td>
</tr>
<tr>
<td>End Fitting</td>
<td>3/4” FNPT</td>
<td>3/4” FNPT</td>
</tr>
<tr>
<td>Branch Line Diameter (Min./Max. ID in inches)</td>
<td>3/4” to 1½”</td>
<td>1 to 1½”</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th></th>
<th>VS20</th>
<th>VS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Temperature (See ventilation requirements below.)</td>
<td>40 to 104°F (5 to 40°C)</td>
<td>40 to 104°F (5 to 40°C)</td>
</tr>
</tbody>
</table>

---

**VENTILATION REQUIREMENTS**

**Equipment Room Temperature**

The VacStar equipment must be used in a controlled temperature environment. Maintain equipment room temperature between 40 and 105 degrees Fahrenheit. 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 higher than the associated intake vent.

**Exhaust Vent Protection.**

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. This can be accomplished by using one of the three methods shown below.

*Make sure to use the required pipe type for associated system*
Notes:
1. See Optional Drain Connections shown below.

2. 8-Foot Maximum Height from Main Line to pump.

3. Consult Dental Unit Manufacturer's Guidelines for correct reduced size and height of termination of vacuum line inside junction box.

4. Limit branches. Orient main line under junction box or cabinet.

5. When main line is 1-1/2" I.D. or larger, use 45° Y's and elbows only.

6. Long radius 90° elbows can be used as alternates to 45° elbows.

7. A total of 8 feet of 3/4 inch hose is supplied with VacStar units. This hose must be shared between inlet and drain.

All installations must conform to local codes.
OVERHEAD INSTALLATION - The overhead plumbing layout shown below is the alternate layout for VacStar system installations and should be used only when unable to use the sub-floor plumbing layout.

**MAIN LINE**

See Plumbing Requirements for Main Line
Diameters needed for specific units.

**RISER TRAP DETAIL**
(Using 45° Elbows)

**Note:** Consult Dental Unit Manufacturer's Guidelines for correct reduced size and height of termination of vacuum line inside junction box.

**RISER to MAIN LINE DETAIL**

**Note:** See Optional Drain Connections

**CONNECTION DETAILS ALL INSTALLATIONS -**

**MAIN LINE**

- Use only 45° elbows or sweeping (sanitary) 90° elbows to make turns in main line.
- If piping is diverted to clear an obstruction, **DO NOT MAKE A TRAP**.

**DRAIN OPTIONS**

Direct connection to vented drain. No traps before vent.

Indirect connection (Air gap) with a p-trap.

**CLOSED VENTED DRAIN**

**OPEN DRAIN PIPE**
Typical for both VacStar VS20 and VS40

4 inch Handybox (not supplied) hardware for VS20 units.

Warning: Condensation of Water will occur in vent piping. Avoid Accumulation of water in vent. Slope piping toward separator.

Floor Sink

18 Inches Maximum

Vent
vent to outside with 2" schedule 40 pipe

32 Inches Maximum.

Note: See Optional Drain Connections

IMPORTANT
Add service disconnect if Power Supply Panel is not located in equipment room.

Buck/Boost Transformer (Optional)

Building Power Supply Panel (Should be located in equipment room.)

4 inch Poly Tubing 6 feet supplied

Water Supply 1/2 inch copper tube terminate with 1/2 inch FNPT shut-off valve

Note: Hose is Part of the total of 8 feet hose supplied that must be shared between inlet and drain.

Note: All VS20 VacStars are hard-wired directly to the VacStar’s electrical box via a 4-inch handy box complying with local electrical codes.

Refer to Figure 1 for VS20 connection details.

All VS40 VacStars are connected using the supplied Hospital Grade 8-foot line cord.

OR

6-15 R NEMA outlet to connect via the supplied line cord for VS40 units.

IMPORTANT
Add service disconnect if Power Supply Panel is not located in equipment room.

Note: All VS20 VacStars are hard-wired directly to the VacStar’s electrical box via a 4-inch handy box complying with local electrical codes.

Refer to Figure 1 for VS20 connection details.

All VS40 VacStars are connected using the supplied Hospital Grade 8-foot line cord.

OR

6-15 R NEMA outlet to connect via the supplied line cord for VS40 units.

4 inch Handybox (not supplied) hardware for VS20 units.

Note: All VS20 VacStars are hard-wired directly to the VacStar’s electrical box via a 4-inch handy box complying with local electrical codes.

Refer to Figure 1 for VS20 connection details.

All VS40 VacStars are connected using the supplied Hospital Grade 8-foot line cord.

OR

6-15 R NEMA outlet to connect via the supplied line cord for VS40 units.

IMPORTANT
Add service disconnect if Power Supply Panel is not located in equipment room.

Note: All VS20 VacStars are hard-wired directly to the VacStar’s electrical box via a 4-inch handy box complying with local electrical codes.

Refer to Figure 1 for VS20 connection details.

All VS40 VacStars are connected using the supplied Hospital Grade 8-foot line cord.

OR

6-15 R NEMA outlet to connect via the supplied line cord for VS40 units.

View B. VacStar with Wall-Mounted Air/Water Separator
All VacStar vacuums comply with NFPA 99C level 3 requirements
You can obtain more information about Air Techniques' products by visiting our web site at

www.airtechniques.com

Additional installation information is available on our Authorized Air Techniques Dealer web site at

http://dealers.airtechniques.com

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