Equipment Alert
PowerMax high performance vacuum system must be installed per local plumbing and electrical codes. Refer to “Site Requirements” and “Site Layout” in this manual for site restrictions and piping layout.
# PowerMax Site Requirements

<table>
<thead>
<tr>
<th>Supply</th>
<th>PM-1</th>
<th>PM-3</th>
<th>PM-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>208-230 VAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>Single Phase, 50 / 60 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Size</td>
<td>20 AMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire Size to Control Panel</td>
<td>18 / 3 Jacketed Bell Wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208/230 VAC 60 Hz</td>
<td>5.1 AMP</td>
<td>9.7 AMP</td>
<td>14.3 AMP</td>
</tr>
</tbody>
</table>

## Plumbing

### Intake (Suction Line)
- Type: Type K or L Copper Tubing, PVC and CPVC sch 40, 80 and 120 - *Note: Do Not use compression fittings for vacuum lines.*
- Line Sizing: 1"
- Operatory Termination: 1 1/4"

### Recovery Package
- Exhaust: Exhaust May be vented to the outside using an optional Exhaust Kit. (Available from Midmark)
- Vent Type: Copper Tubing or Conduit (Installer Supplied)
- Line Sizing: 3/4"

## Environmental
- Equipment Room Ambient Temperature - Operational: 40° - 104° Fahrenheit / 4° - 40° Celsius

## Installation Kit Provided with PowerMax

- 6' Vacuum Hose with 1/2" NPT Connections
- Connects from PowerMax to Operatory Vacuum Line
- Feet, Qty 4
- Hardware for Feet, Qty 4 Bolts and Washers
**PowerMax Site Requirement Layout**

**Elevation View**

- **If Optional Exhaust System is Used**
  - Only Install "Midmark PowerMax Exhaust Kit"

- **Disconnect Box** 208-230VAC - 20 Amp
  - Single Phase 50/60 Hz Circuit
  - Approved ground required.
  - (Provided by Electrician)

- **"Optional" Roof Vent**
  - Use Raincap with Insect Screen

- **"Preferred" Wall Vent**
  - Use Raincap with Insect Screen

- **3/4" Metal Exhaust Piping** - Vent to Outside
  - (Installer Supplied)

- **Optional Midmark PowerMax Exhaust Kit**

- **Equipment Alert**
  - Metal tubing must slope "AWAY" from the PowerMax as shown in the elevation view.

- **Slope**
  - 30" Front
  - 12" Back
  - 12"
Important Information

**Intended Use**
To provide suction during procedures conducted by qualified dental professionals.

**Electromagnetic Interference**
The Midmark® PowerMax Vacuum is designed and built to minimize electromagnetic interference with other devices. However, if interference is noticed between another device and these units:
- Remove interfering device from room
- Plug interfering device into an isolated circuit
- Increase separation between unit and interfering device
- Contact Midmark if interference persists

**Disposal of Equipment**
At the end of product life, the unit(s), accessory and other consumable goods may become contaminated from normal use. Consult local codes and ordinances for proper disposal of equipment, accessories and other consumable goods.

**Transportation / Storage Conditions**
Ambient Temperature Range: 40°F to 104°F (4°C to 37°C)
Relative Humidity: 10% to 90% (non-condensing)
Atmospheric Pressure: 500hPa to 1060hPa (0.49atm to 1.05atm)

**Notes**
- Keep dry
- Maximum stacking height (palletted units)
- Fuse rating specification
- Caution hot surface
- Ordinary Equipment

**Safety Symbols**

**WARNING**
Indicates a potentially hazardous situation which could result in serious injury if not avoided.

**Caution**
Indicates a potentially hazardous situation which may result in minor or moderate injury if not avoided. It may also be used to alert against unsafe practices.

**Equipment Alert**
Indicates a potentially hazardous situation which could result in equipment damage if not avoided.

**Note**
Amplifies a procedure, practice, or condition.

*This product has been evaluated with respect to electrical shock, fire and mechanical hazards only, in accordance with UL60601-1 and CAN/CSA C22.2 NO. 601.1.*
**Before you Install...**

*Pre-Install steps...*
A. Remove PowerMax from shipping platform.
B. Move PowerMax to a dry, well ventilated area on a solid, level surface.
C. Verify all sides of PowerMax are not obstructed.
D. Unpack installation kit.
E. Install rubber feet.

---

**Equipment Alert**
*PowerMax must have minimum clearance of 30” in front and 12” on remaining sides.*
Installation

Plumbing Connections

**Plumbing Connections...**

A. Connect vacuum hose to PowerMax vacuum line.
B. Connect opposite end of vacuum line to vacuum piping outlet station.

Note: Vacuum line to operatories should be type K or L copper tubing. Do not use compression fittings for vacuum lines, refer to, “Site Requirements in this manual for tubing size.”

**Equipment Alert**

Vacuum system must terminate at a operatory recovery room package (available from Midmark) to prevent contamination of vacuum outlets and the PowerMax.
Installation
Electrical Connections - Supply Box and Remote Panel

**Electrical Connections...**
A. Connect remote panel wires to Low Voltage Control wires if applicable.
B. Connect conduit cable to user supplied electrical box.

*Refer to Specification Sheet for Electrical Ratings in this manual.

**Supply Box**
*208-230 Volt Source  
Single Phase, 50/60 Hz  
Recommended - 20 Amp Fuse Disconnect Box (Electrician Supplied)*

**Remote Panel**
Transformer  
Relay (Contactor)

Control Panel Reference Cross Wiring

<table>
<thead>
<tr>
<th>Brand</th>
<th>Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midmark®</td>
<td>A Blue</td>
</tr>
<tr>
<td>Air Techniques</td>
<td>Yellow</td>
</tr>
<tr>
<td>DentalEz</td>
<td>Black</td>
</tr>
<tr>
<td>Matrix®</td>
<td>Red</td>
</tr>
<tr>
<td>Apollo</td>
<td>Blue</td>
</tr>
</tbody>
</table>
**Installation Check and Test**

- **Check Vacuum System**
  - A. Check for leaks.
  - B. Check Vacuum switch On/Off setpoints

### Checking for Leaks...
- Turn PowerMax on, allow it to reach 20"Hg.
- Close inlet valve.
- Do not use any vacuum piping for several minutes.
- If gauge drops while inlet valve is closed, there is a leak in the unit.
- Open inlet valve.
- If gauge drops after opening inlet valve, a leak in the office piping system.
- Repair any leaks found.

### Check Vacuum Setpoints...
- Close ball valve and drain valve.
- Turn PowerMax on.
- Observe Gauge, unit should shut off at 20"Hg.
- Open drain valve, unit should turn on at 13"Hg.
- Perform adjustment if necessary

### Adjustments
- **Vacuum Range Switch Adjuster**
  - Adjust vacuum range if system didn't shut off at 20"Hg.
  - Clockwise will decrease reading.
  - Counter Clockwise will increase reading.

- **Low Setpoint for Low Limit**
  - Adjust Low Limit if system didn't turn on at 13"Hg.
  - Clockwise will decrease reading.
  - Counter Clockwise will increase reading.
### Specification Sheet
#### PowerMax High Performance Vacuums

<table>
<thead>
<tr>
<th>Model</th>
<th>Users</th>
<th>Height (IN.)</th>
<th>Width (IN.)</th>
<th>Depth (IN.)</th>
<th>Weight (LBS.)</th>
<th>HP</th>
<th>Voltage (50/60 Hertz)</th>
<th>Breaker Size per Pump (Amps)</th>
<th>Tank Capacity (GAL)</th>
<th>CFM Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-1</td>
<td>1</td>
<td>31&quot;</td>
<td>32&quot;</td>
<td>25&quot;</td>
<td>150</td>
<td>.75</td>
<td>208-230 @ 5.1 Amp</td>
<td>20</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>PM-3</td>
<td>2-3</td>
<td>31&quot;</td>
<td>32&quot;</td>
<td>25&quot;</td>
<td>210</td>
<td>1.5</td>
<td>208-230 @ 9.7 Amp</td>
<td>20</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>PM-4</td>
<td>3-4</td>
<td>34&quot;</td>
<td>38&quot;</td>
<td>27&quot;</td>
<td>290</td>
<td>2.25</td>
<td>208-230 @ 14.3 Amp</td>
<td>20</td>
<td>32</td>
<td>24</td>
</tr>
</tbody>
</table>