Equipment Alert

Wet-Ring Vacuum system must be installed per local plumbing and electrical codes. Allow Wet-Ring Vacuum system to reach room temperature before installing. Refer to “Site Requirements” and “Site Layout” in this manual for site restrictions and piping layout. Do not turn water by-pass valve. The valve is factory set for recycler mode in CLOSED position. (Refer to ClassicSeries® Service Information on technicallibrary.midmark.com for more information)

Anti-Siphon Vacuum Breaker
Vacuum Relief Valve
Vacuum Gauge
Line Connection to Operatory
Vacuum Inlet Strainer

Remote Low Voltage Leads

Motor
Fuse
Hour Meter
Electrical Box
Vacuum Housing
Fresh Water Supply Connection

Water By-Pass Valve- Closed Position For Recycler Mode (Recycler Models Only)

Air Filter / Cap
Solenoid

Single Recycler Model Shown
## Wet-Ring Vacuum Site Requirements

**Equipment Alert**
Harmful odors, vapor contaminants and nitrous oxide gasses are vented out the top of the separator, while liquid waste flows out of the lower drain and into a “P”-Trap or floor sink. **Verify all local codes before installing.**

### Electrical

<table>
<thead>
<tr>
<th>Models</th>
<th>Single Models</th>
<th>Twin Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>CV3</td>
<td>CV3R</td>
</tr>
<tr>
<td>Voltage</td>
<td>115 or 208-230</td>
<td>115 or 208-230</td>
</tr>
<tr>
<td>(Each Pump)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>Single Phase, 50 / 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Wire Size to Control Panel</td>
<td>18 / 3 Jacketed Bell Wire</td>
<td></td>
</tr>
<tr>
<td>Branch Circuit Breaker Size</td>
<td>20 AMP (per each pump)</td>
<td></td>
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</table>

### Product Electrical Ratings

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Single Models</th>
<th>Twin Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 VAC 50/60 Hz</td>
<td>15.0 AMPS</td>
<td>15.0 AMPS</td>
</tr>
<tr>
<td>208/230 VAC 50/60 Hz</td>
<td>8.2 AMPS</td>
<td>8.2 AMPS</td>
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</table>

### Plumbing

#### Intake (Suction Line)

<table>
<thead>
<tr>
<th>Type</th>
<th>PVC</th>
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<tbody>
<tr>
<td>Line Sizing</td>
<td>1&quot; Hose with 3/4&quot; NPT Connection</td>
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#### Water Source

<table>
<thead>
<tr>
<th>Type</th>
<th>Poly Tubing</th>
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</thead>
<tbody>
<tr>
<td>Line Sizing</td>
<td>1/2&quot; NPT x 1/4&quot;</td>
</tr>
<tr>
<td>Pressure Range</td>
<td>20-120 psi / 1.4-8.3 bar</td>
</tr>
<tr>
<td>Water Temperature Range</td>
<td>35-80° F / 2-12° C</td>
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</tbody>
</table>

#### Separator

<table>
<thead>
<tr>
<th>Type</th>
<th>Small</th>
<th>Large</th>
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<tbody>
<tr>
<td>Vent Size</td>
<td>2&quot;</td>
<td></td>
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<tr>
<td>Inlet Hose</td>
<td>3/4&quot; NPT</td>
<td>1 1/4&quot; NPT</td>
</tr>
<tr>
<td>Drain Hose</td>
<td>3/4&quot; NPT</td>
<td>1&quot; NPT</td>
</tr>
</tbody>
</table>

#### Platform Drain Hose

<table>
<thead>
<tr>
<th>Type</th>
<th>N/A</th>
<th>Clear Vinyl</th>
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<tbody>
<tr>
<td>Size</td>
<td>N/A</td>
<td>3/8&quot; OD</td>
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#### Exhaust

<table>
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<tr>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Line Sizing</td>
<td>1&quot; Hose with 3/4&quot; NPT Connection</td>
</tr>
</tbody>
</table>

### Environmental

| Equipment Room Ambient Temperature - Operational | 40° - 104° Fahrenheit / 4° - 40° Celsius |
Wet-Ring Vacuum Site Requirement Layout

To prevent moisture from entering the vacuum:
- Vent should be routed to outside air source through wall or roof.
- Use one or more $90^\circ$ elbows to cap an outside vertical vent line.

1 1/2” P-Trap With 1” Air Gap or Floor Sink
(Provided by Plumber)

6” - 12”

Air/Water Separator Height - Top bracket mounting screws located 28” (70 cm) above vacuum supporting surface.
(Floor, shelf, stack rack etc.)

Operatory Air Line Connection

Notes:
Important Information

Intended Use
To provide suction during general examinations and procedures conducted by qualified dental professionals.

Electromagnetic Interference
This Midmark Wet-Ring 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)

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 & mechanical hazards only, in accordance with UL60601-1 and CAN/CSA C22.2 NO. 601.1.
**Pre-Install steps..**
A. Remove vacuum(s) from shipping platform.
B. Move vacuum to a dry, well ventilated area on a solid, level surface.
C. Verify all sides of Vac Unit are not obstructed.
D. Unpack installation kit.
E. Install rubber feet. (Single Pump Models Only)
F. Verify water by-pass valve is in recycler position, CLOSED.

---

**Equipment Alert**

Scavenging polishing paste with abrasives, running the pump with no water supplied, using water with high mineral content, or water with excessive sediment can damage or reduce the lifespan of the pump and is not considered a defect in material or workmanship.

---

### Install Kits

#### Single Models

- **Bushing** Qty 1
- **Clamp** Qty 4
- **QC Fitting** Qty 1
- **Mount with Nut Lock** Qty 3
- **Nipple** Qty 2
- **Intake / Exhaust Hose** 1” ID x 84” Qty 1
- **Fresh Water Intake Hose** 1/4” OD x 72” Qty 1

#### Twin Models

- **Bushing** Qty 1
- **Clamp** Qty 4
- **QC Fitting** Qty 1
- **Nipple** Qty 4
- **Pipe Plug** Qty 1
- **Intake Hose** 1 1/2” ID x 96” Qty 1
- **Fresh Water Intake Hose** 3/8” OD x 72”, Qty 1
- **Cap** Qty 1
- **Platform Drain Hose** 3/8” OD x 96”, Qty 1
Installation
Plumbing Connections - Single Models with Air/Water Separator

Single Models Air/Water Plumbing...
A. Mount Separator 28” (70 cm) above vacuum supporting surface.
B. Install exhaust silencer into 1” exhaust hose from vacuum to P-trap if applicable.
   If not using an exhaust silencer....
C. Connect exhaust hose from vacuum to separator.
D. Connect 3/4” hose from separator to drain or P-trap.
E. Connect 2” PVC to top of separator and out to vent.
F. Connect 1/4” poly tube from vacuum to water supply.
G. Connect 3/4” NPT fitting and hose clamp from vacuum line to operatory.

Note
Exhaust silencer installation is an optional for the Wet-Ring Vacuums. Wet-Ring Vacuums are operational without exhaust silencer.
Installation

Plumbing Connections - Single Models with Air/Water Separator - continued

Note

Exhaust silencer installation is an optional for the Wet-Ring Vacuums. Wet-Ring Vacuums are operational without exhaust silencer.

Installation

Plumbing Connections - Single Models with Air/Water Separator - continued

Top View

3/4" FNPT

8"

7 1/2"

PVC Plug 3/4" NPT

PN- 77000115
Air/Water Separator
Single Pumps

Front View

3/4" FNPT

2" PVC

14 1/2"

Vent

PVC Plug 3/4" NPT

Side View

3/4" FNPT

5/8"

1/2"

PVC Plug 3/4" NPT

PVC Drain 3/4" FNPT
Installation
Plumbing Connections - Single Models without Air/Water Separator

**Single Model Plumbing...**
A. Install exhaust silencer into 1” exhaust hose from vacuum to P-trap if applicable.
B. If not using an exhaust silencer...
C. Install 1” exhaust hose from vacuum to P-trap or floor drain.
D. Connect 1/4” poly tube from vacuum to water supply.
D. Connect 3/4” NPT fitting and hose clamp to vacuum line from operatory.

**Note**
Exhaust silencer installation is an optional for the Wet-Ring Vacuums. Wet-Ring Vacuums are operational without exhaust silencer.
Installation

Plumbing Connections - Twin Models with Air/Water Separator

**Note**
Exhaust and inlet connections can be installed on either the RH or LH sides. Install hose connections to one end and plug/cap the other end.

**Twin Model Plumbing...**
A. Mount Separator 28” (70 cm) above vacuum supporting surface.
B. Connect exhaust hose from exhaust to separator.
C. Install plug in exhaust end not in use.
D. Connect 1” hose from separator to drain or P-trap.
E. Connect 2” PVC to top of separator and out to vent.
F. Install inlet strainer to one end of the inlet piping. Cap off other end.
G. Connect 1 1/4” NPT fitting and hose clamp to inlet strainer from operatory.
H. Connect 3/8” poly tube from vacuum to water supply.
I. Install 3/8” platform drain hose from platform to drain or sewer.
Installation
Plumbing Connections - Twin Models with Air/Water Separator - continued

PN- 77000246
Air/Water Separator
Dual Pumps

Top View
1 1/4” FNPT
10 1/2”
11”

Front View
Vent
2” PVC
1 1/4” FNPT

Side View
Vent
2” PVC

1 1/4” FNPT

PVC Plug 1 1/4” NPT
PVC Drain 1” FNPT

PVC Plug 1 1/4” NPT
15 1/2”
12 1/2”

3”
5/8”
1/2”

1 1/2”

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Installation
Plumbing Connections - Twin Models without Air/Water Separator

Twin Model Plumbing...
A. Install 1 1/2" exhaust hose from exhaust to P-trap.
B. Install plug in exhaust end not in use.
C. Connect 3/8" poly tube from vacuum to water supply.
D. Install inlet strainer to one end of the inlet piping. Cap off other end.
E. Connect 1 1/4" NPT fitting and hose clamp to inlet strainer from operatory.
F. Install 3/8" platform drain hose from platform to drain or sewer.

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Installation - Single Models
Electrical - Convert 1 1/4 HP model to 115 Voltage (if applicable)

Note
CV3 and CV3R Models are factory configured for 208-230 Volt operation and can be rewired to operate on 115 Voltage. All vacuum systems are to be installed according to local electrical codes. Refer to Specification Sheet for Electrical Ratings located in this manual.

To convert 1 1/4 HP Motor from 208-230V to 115V...
A. Loosen screws on electrical box to remove cover.
B. Install line voltage conduit with conduit connector in side of vacuum electrical box.
C. Connect line voltage to leads at terminals X1 (Black) and X4 (White-Neutral).
D. Connect ground wire to ground (green/yellow) lead.
E. Remove all three jumpers from terminal block and relocate at ...
   X3 and X4
   X5 and X6
   X7 and X8

115 Voltage Configuration

Conduit Entry

Proceed to Supply Box and Remote Panel Installation
Installation - Single Models
Electrical Connections for 1 1/4 HP 208-230 Voltage

To connect 1 1/4 HP Motor to 208-230V ...
A. Loosen screws on electrical box to remove cover.
B. Install line voltage conduit with conduit connector in side of vacuum electrical box.
C. Connect line voltage to leads at terminals X1 (Black) and X2 (Red).
D. Connect ground wire to ground (green/yellow) lead.
E. Verify jumper locations ...
   X2 and X3
   X6 and X7

208-230 Voltage Configuration
Installation - Single Models
Electrical Connections - 2 HP 208-230 Voltage

To connect 2Hp Motor to 208-230V ...
A. Loosen screws on electrical box to remove cover.
B. Install line voltage conduit with conduit connector in side of vacuum electrical box.
C. Connect line voltage to Red and Black contactor leads.
D. Connect ground wire to ground (green/yellow) lead.

Proceed to Supply Box and Remote Panel Installation
Installation - Twin Models

Electrical Connections - Convert 1 1/4 HP models to 115 Voltage (if applicable)

Note
CV6 and CV6R Models are factory configured for 208-230 Volt operation and can be rewired to operate on 115 Voltage. All vacuum systems are to be installed according to local electrical codes. Refer to Specification Sheet for Electrical Ratings located in this manual.

To convert 1 1/4 HP Motor from 208-230V to 115V...
A. Loosen screws on electrical box to remove cover.
B. Disconnect red line voltage wire from red jumper. Replace nut on red jumper wire.
C. Connect red voltage wire with white jumper from X4.
D. Remove all three jumpers from terminal block and relocate at ...
   X3 and X4
   X5 and X6
   X7 and X8

115 Voltage Configuration

X1  X2  X3  X4  X5  X6  X7  X8

Proceed to Supply Box and Remote Panel Installation
Installation
Electrical Connections - Supply Box and Remote Panel

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

Note: All vacuum systems are to be installed according to local electrical codes. Never operate the equipment without complete and proper grounding. Refer to Specification Sheet for Electrical Ratings, located in this manual.

Supply Box
*1 1/4 HP Models
115 Volt Source
OR
208-230 Volt Source
Single Phase, 50/60 Hz
Recommended - 20 Amp Fuse Disconnect Box (Electrician Supplied)

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

Remote Panel

Transformer
A
B
C
Remote Switch
Light

Relay (Contactor)

Control Panel Wiring Cross Reference

<table>
<thead>
<tr>
<th>BRAND</th>
<th>WIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midmark</td>
<td>Blue White Red</td>
</tr>
<tr>
<td>Air Techniques</td>
<td>Yellow Brown Orange</td>
</tr>
<tr>
<td>DentalEZ</td>
<td>Black Brown Yellow</td>
</tr>
<tr>
<td>Apollo</td>
<td>Blue White Red</td>
</tr>
<tr>
<td>Matrix</td>
<td>Red Blue White</td>
</tr>
</tbody>
</table>

Green/Yellow = Ground
Red and Black Connect to Electrical Supply*
Installation
Check & Test

Equipment Alert
Perform Checks before operation.
Turn only one vacuum on at a time while checking. Operating vacuum without full pressure water supply will result in serious seal damage.

Initial Start-up Checks, Verify...
A. All water supply valves are “OPEN”
B. Exhaust hoses have water flowing through each pump and no leaks are present.
C. Check vacuum gauge to ensure it reads 10 “Hg.

Note: If necessary perform Vacuum Relief Valve adjustment as shown below.

Vacuum Relief Valve Adjustment...
• Rotate barrel clockwise to increase “Hg.
• Rotate barrel counterclockwise to decrease “Hg.

Vacuum Relief Valve Location on Single Models
Vacuum Relief Valve Location on Twin Platform Models
### Specification Sheet
**ClassicSeries® Wet-Ring Vacuums**

<table>
<thead>
<tr>
<th>Vacuum Model</th>
<th>Max. Users</th>
<th>Width (IN.)</th>
<th>Depth (IN.)</th>
<th>Height (IN.)</th>
<th>Weight (LBS.)</th>
<th>Total HP</th>
<th>Voltage (50/60 Hertz)</th>
<th>Breaker Size per Pump (Amps)</th>
<th>Inlet Connection Size (IN.)</th>
<th>Drain Connection Size (IN.)</th>
<th>Fresh Water Connection Size (FNPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV3</td>
<td>3</td>
<td>12&quot;</td>
<td>13&quot;</td>
<td>15&quot;</td>
<td>54</td>
<td>1 1/4</td>
<td>115 / 208-230</td>
<td>20</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/2&quot;</td>
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<td>CV3R</td>
<td>3</td>
<td>12&quot;</td>
<td>13&quot;</td>
<td>15&quot;</td>
<td>56</td>
<td>1 1/4</td>
<td>115 / 208-230</td>
<td>20</td>
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<td>1/2&quot;</td>
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<td>CV5</td>
<td>5</td>
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<td>17&quot;</td>
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<td>17&quot;</td>
<td>65</td>
<td>2</td>
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<td>CV6</td>
<td>6</td>
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<td>20&quot;</td>
<td>18 1/2&quot;</td>
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<td>2 1/2</td>
<td>115 / 208-230</td>
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<td>1/2&quot;</td>
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<td>25 1/2&quot;</td>
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<td>18 1/2&quot;</td>
<td>154</td>
<td>4</td>
<td>208-230</td>
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<td>1 1/4&quot;</td>
<td>1 1/4&quot;</td>
<td>1/2&quot;</td>
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<td>25 1/2&quot;</td>
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<td>1 1/4&quot;</td>
<td>1/2&quot;</td>
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