MOJAVE®
Dry Vacuum System
Part Numbers V3, V5, V7, 2V3, 2V3CT, 2V5, 2V5CT, 2V7, 3V5 and 4V5

PRE-INSTALLATION GUIDE

All pumps comply with NFPA 99C level 3 requirements.
All installations must conform to local codes.

System being installed: (AS CHECKED)

☐ V3    ☐ V5    ☐ V7    ☐ 2V3    ☐ 2V3CT
☐ 2V5    ☐ 2V5CT    ☐ 2V7    ☐ 3V5    ☐ 4V5

Doctor: __________________________________________________
Address: __________________________________________________
Phone#: __________________________________________________
Dealer: __________________________________________________
Dealer Address: __________________________________________________
## MOJAVE SYSTEM CONFIGURATIONS

### System Components

<table>
<thead>
<tr>
<th></th>
<th>V3</th>
<th>V5</th>
<th>V7</th>
<th>2V3</th>
<th>2V3CT</th>
<th>V5</th>
<th>2V5</th>
<th>2V5CT</th>
<th>V7</th>
<th>3V5</th>
<th>4V5</th>
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<tr>
<td>V3 Pump Assembly</td>
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<td>V5 Pump Assembly</td>
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<td>0</td>
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<tr>
<td>MT10 / MT12 Tank Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<tr>
<td>CT20 / CT22 Tank Assembly</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Master Controller Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Maximum Users</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>20</td>
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### Recommended Number of Simultaneous HVE/SE Users

<table>
<thead>
<tr>
<th>V3</th>
<th>V5</th>
<th>V7</th>
<th>2V3 or 2V3CT</th>
<th>2V5 or 2V5CT</th>
<th>V7</th>
<th>3V5</th>
<th>4V5</th>
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<tr>
<td>HVE</td>
<td>SE</td>
<td>HVE</td>
<td>SE</td>
<td>HVE</td>
<td>SE</td>
<td>HVE</td>
<td>SE</td>
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<tr>
<td>3</td>
<td>+ 0</td>
<td>5</td>
<td>+ 0</td>
<td>7</td>
<td>+ 0</td>
<td>6</td>
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<td>2</td>
<td>+ 2</td>
<td>4</td>
<td>+ 2</td>
<td>6</td>
<td>+ 2</td>
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<td>2</td>
<td>+ 6</td>
<td>5</td>
<td>+ 4</td>
<td>3</td>
<td>+ 6</td>
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<tr>
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<td>+ 10</td>
<td>4</td>
<td>+ 6</td>
<td>1</td>
<td>+ 10</td>
<td>5</td>
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<td>0</td>
<td>+ 14</td>
<td>0</td>
<td>+ 12</td>
<td>3</td>
<td>+ 14</td>
<td>6</td>
<td>+ 14</td>
</tr>
</tbody>
</table>

**Note:** 1 HVE = 2 SE’s
1 HVE = 2 Nitrous Scavengers

### Physical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Master Controller Assembly</th>
<th>Tanks</th>
<th>Typical V3, V5 or V7 System</th>
<th>Pump Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MT10 / MT12 10 Gallon</td>
<td>MT10 / MT12 Tank Stacked onto One V3, V5 or V7 Pump</td>
<td>One V3, V5 or V7 Pump</td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>13.5 in. (34 cm)</td>
<td>29 in. (74 cm)</td>
<td>29 in. (74 cm)</td>
<td>25 in. (64 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>3 in. (8 cm)</td>
<td>22 in. (56 cm)</td>
<td>23 in. (58 cm)</td>
<td>21 in. (53 cm)</td>
</tr>
<tr>
<td>Height</td>
<td>11 in. (28 cm)</td>
<td>33 in. (84 cm)</td>
<td>50 in. (127 cm)</td>
<td>17 in. (43 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>13 Lbs. (6 kg)</td>
<td>75 Lbs. (34 kg)</td>
<td>150 Lbs. (68 kg)</td>
<td>145 Lbs. (66 kg)</td>
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</tbody>
</table>

### Diagram

- MOJAVE System Configurations: Gas/Liquids/Solids
- MOJAVE System Components: V3, V5, V7
- Typical MOJAVE System Installation

![Typical MOJAVE System Installation Diagram]
Important:
The Master Controller is mounted on the front of the MT10 / MT12 or CT20 / CT22 tank chassis. Never stack a CT20 / CT22 Tank on top of any Pump. Never stack a Pump on top of any Tank. Recommend pumps only be stacked a maximum of two high. All units shipped with all leveling feet set to lowest position.
## SITE REQUIREMENTS

### Electrical

<table>
<thead>
<tr>
<th>Voltage Rating Volts AC</th>
<th>V3 &amp; V5</th>
<th>V7</th>
<th>2V3 &amp; 2V3CT</th>
<th>2V5 &amp; 2V5CT</th>
<th>2V7</th>
<th>3V5</th>
<th>4V5</th>
<th>Master Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>All pumps 220 Volts Single Phase AC, 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>120 / 220</td>
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<table>
<thead>
<tr>
<th>Voltage Minimum/Maximum</th>
<th>198/242 Volts AC All pumps</th>
<th>108/132 Volts AC or 198/242 Volts AC</th>
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<table>
<thead>
<tr>
<th>Wire Size AWG Minimum Gauge</th>
<th>#12 AWG (Qty 1)</th>
<th>#10 AWG (Qty 1)</th>
<th>#12 AWG (Qty 2)</th>
<th>#10 AWG (Qty 2)</th>
<th>#12 AWG (Qty 3)</th>
<th>#12 AWG (Qty 4)</th>
<th>#14 AWG</th>
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</table>

<table>
<thead>
<tr>
<th>Minimum Circuit Breaker Rating</th>
<th>20A</th>
<th>30A</th>
<th>20A (Qty 2)</th>
<th>20A (Qty 2)</th>
<th>20A (Qty 2)</th>
<th>20A (Qty 3)</th>
<th>20A (Qty 4)</th>
<th>15A</th>
</tr>
</thead>
</table>

### Incoming Power

- Hard wire Connection (Each pump is supplied a 6 foot BX cable)
- NEMA 5-15R for 120V
- NEMA 6-15R for 220V
- (Supplied 10-ft. line cord)

### Remote (Low Voltage Wiring)

- #18 AWG (Qty 4) Wire Connection between the MMC and the Remote Switch Panel.

### Optional Buck Boost Transformer

- 67002
- 67000-1

### Plumbing

<table>
<thead>
<tr>
<th>Exhaust Vent Pipe Using Heat Exchanger</th>
<th>V3</th>
<th>V5</th>
<th>V7</th>
<th>2V3 &amp; 2V3CT</th>
<th>2V5 &amp; 2V5CT</th>
<th>2V7</th>
<th>3V5</th>
<th>4V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot; PVC Sch. 40</td>
<td>2&quot; PVC Sch. 40</td>
<td>2&quot; PVC Sch. 40</td>
<td>One 3&quot; or two 2&quot; PVC Sch. 40</td>
<td>One 3&quot; or two 2&quot; PVC Sch. 40</td>
<td>One 3&quot; or two 2&quot; PVC Sch. 40</td>
<td>One 4&quot; or three 2&quot; PVC Sch. 40</td>
<td>Two 3&quot; or four 2&quot; PVC Sch. 40</td>
<td></td>
</tr>
<tr>
<td>Exhaust Vent Pipe Not Using Heat Exchanger (See note 1)</td>
<td>2&quot; Metal Pipe</td>
<td>2&quot; Metal Pipe</td>
<td>2&quot; Metal Pipe</td>
<td>One 3&quot; or two 2&quot; Metal Pipe</td>
<td>One 3&quot; or two 2&quot; Metal Pipe</td>
<td>One 3&quot; or two 2&quot; Metal Pipe</td>
<td>One 4&quot; or three 2&quot; Metal Pipe</td>
<td>Two 3&quot; or four 2&quot; Metal Pipe</td>
</tr>
<tr>
<td>Minimum Suction Line Pipe</td>
<td>1&quot; PVC Sch. 40</td>
<td>1 1/4&quot; PVC Sch. 40</td>
<td>2&quot; PVC Sch. 40</td>
<td>1 1/2&quot; PVC Sch. 40</td>
<td>2&quot; PVC Sch. 40</td>
<td>4&quot; PVC Sch. 40</td>
<td>3&quot; PVC Sch. 40</td>
<td>3&quot; PVC Sch. 40</td>
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<tr>
<td>Maximum Suction Line Pipe (See note 2)</td>
<td>1 1/4&quot; PVC Sch. 40</td>
<td>2&quot; PVC Sch. 40</td>
<td>2 1/4&quot; PVC Sch. 40</td>
<td>2 1/2&quot; PVC Sch. 40</td>
<td>4&quot; PVC Sch. 40</td>
<td>4&quot; PVC Sch. 40</td>
<td>3&quot; PVC Sch. 40</td>
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<tr>
<td>Riser Pipe</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
<td>1/2&quot; PVC Sch. 40</td>
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<tr>
<td>Vacuum Line Termination</td>
<td>1 1/2&quot; FNPT</td>
<td>1 1/2&quot; FNPT</td>
<td>2&quot; FNPT</td>
<td>2&quot; FNPT</td>
<td>2&quot; FNPT</td>
<td>2&quot; FNPT</td>
<td>2&quot; FNPT</td>
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<tr>
<td>Branch Line Pipe</td>
<td>Size requirement of Branch piping differs by the number of operators being serviced.</td>
<td></td>
<td></td>
<td>Up to three operators use 1&quot; PVC Schedule 40.</td>
<td>Four to six operators use 1 1/2&quot; PVC Schedule 40.</td>
<td>More than six operators use 2&quot; PVC Schedule 40</td>
<td></td>
<td></td>
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<tr>
<td>Drain Line Pipe</td>
<td>1 1/2&quot; PVC Schedule 40</td>
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<tr>
<td>Wash-Out Water Line</td>
<td>1/2&quot; FNPT Shut-off Valve</td>
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### NOTES

1. Recommended pipe used with models without a heat exchanger includes wrought iron pipe (black & galvanized) or copper pipe type M. Insulate metal pipe in utility room to avoid adding heat to the room. Insulation must be rated for a minimum of 300°F continuously.
2. Use maximum internal diameter for the main line when preparing any new installation.
A. **PUMP INSTALLATION SPACE** - Area for stacked or side by side pump installation. Keep 4 inch space from walls. Only stack up to 2 pumps in one area.

B. **TANK INSTALLATION SPACE** - Area for typical side by side tank installation. Keep 4 inch space from walls. Never install the CT20 / CT22 tank on top of a pump.

C. **SEWER DRAIN** - Provide a drain for the removal of waste liquids from the MOJAVE tank. Use an open drain pipe (1 1/2” inch P-Trap with 1 inch air gap or floor sink) or a closed vented drain. See detail C for options.

D. **TANK WASHOUT** - Provide a water source terminated with a 1/2” inch FNPT shut-off valve providing water pressure between 20 and 100 psi for daily tank washout. Valve location must be no more than 10 feet from the tank installation to allow connection of supplied 10-foot 3/8-inch Poly tubing to the tank washout port. Provisions for backflow prevention may be required. Check local code requirements.

E. **MASTER CONTROLLER ELECTRIC OUTLET** - Master Controller requires a dedicated standalone 120V, 5 AMP or 220V, 5 AMP grounded receptacle.

F. **PUMP ELECTRIC SERVICE** - Each Mojave pump is wired directly with a dedicated 220V, 20 AMP, single phase 60 Hz circuit. If Main Circuit panel is not located in equipment room, a disconnect box with approved ground is needed for each pump. Disconnect boxes should be mounted no more than 3 feet of each other and 3 feet of installation center line.

G. **SUB FLOOR INSTALLATION VACUUM LINE** - See Plumbing Requirements for connection to tank input via supplied hose.

H. **OVERHEAD INSTALLATION VACUUM LINE** - See Plumbing Requirements for connection to tank input via supplied hose.

J. **HEAT EXHAUST** - See Plumbing Requirements for the exhaust vent line required for specific Mojave configurations. Use metal pipe on systems whenever the Heat Exchanger is removed. Schedule 40 pipe can normally be used on typical Mojave configuration installations with a Heat Exchanger. When installing multiple pumps, see Mojave exhaust line options page.

K. **PUMP/TANK MANIFOLD** - User fabricated to connect 3 or 4 pumps to a tank. Used with 3V5 and 4V5 systems. See Pump/Tank Connection Manifold.
TREATMENT ROOM PLUMBING INSTALLATIONS

SUB FLOOR INSTALLATION -
Recommended system installation layout should be used whenever possible.

Notes:
1. Use only 45° elbows to make turns in main line.
2. Make sure to use the proper pipe type for associated system.
3. If piping is diverted to clear an obstruction, DO NOT MAKE A TRAP. See detail A, Main Line Turn Connections.
4. DO NOT use standard 90° elbows.

OVERHEAD INSTALLATION -
Alternate system installation layout should be used only when unable to use the sub-floor plumbing layout.

Notes:
1. 10-foot Maximum Height from Main Line to Tank.
2. Consult Dental Unit Manufacturer’s Guidelines for correct reduced size and height of termination of vacuum line inside junction box.
3. Limit branches. Orient main line under junction box or cabinet.
4. When piping line is above 3/4” I.D. or larger, use 45° Y’s & elbows only.
5. Recommend installing separate line connection for scavenger when using Nitrous scavengers in overhead piping installations.

CONNECTOR DETAILS - ALL INSTALLATIONS

- Use only 45° elbows to make turns in main line.
- Make sure to use the proper pipe type for associated system.
- If piping is diverted to clear an obstruction, DO NOT MAKE A TRAP. See detail A, Main Line Turn Connections.
- DO NOT use standard 90° elbows.

Important:
All installation pipes and fittings provided by plumber.
All installations must conform to local codes.
Pump/Tank Connection Manifold Using Accessory Kit

- 3" PVC or Copper Tubing & Elbow (Supplied by Plumber)
- 2" PVC or Copper Tubing for Tank Hose (Supplied by Plumber)
- Sanitary Tee with 1-1/2" FNPT End Fitting. 3 or 4 depending on system configuration. (Supplied by Plumber)
- Compression Gasket Connector to Pump
- Check Valve Installed Flat Side Facing Up Horizontal to Floor
- 3" PVC or Copper Clean-out Plug Used with P/N MIK4 (Supplied by Plumber)
- Check Valve Side View
- 1-1/2" FNPT to Sanitary Tee
- 3 or 4 Supplied Check Valves - See Kit P/N MIK4
- 3 or 4 Supplied Check Valves - See Kit P/N MIK4
- Hoses From Manifold To Pumps
- Hose Between Manifold and CT20 / CT22 Tank Secured by Flexible Couplers
- Hose From Manifold Connected to Pump via Air Input Filter Gasket Connector
- 2" Pipe for connection to Facility Piping from Operatory.
- 6-inch Riser
- Swivel Elbow
- Reducing Bushing
- Customer-Supplied Tee Connector
- 2" Flexible Coupling Connector
- 1/4-inch Vacuum Sample Port to Master Controller
- 2" Flexible Coupling Connector

Note: Hang using at least 3 pipe supports supplied by Plumber.
**NOTE:** Do not use multiple 2" WYE assemblies together with a single 2" exhaust line for multi-pump systems. Make sure to take into account pump locations before assembling manifold.
VENT LINE - The exhaust vent line required for MOJAVE systems using the Heat Exchanger and systems with the Heat Exchanger removed have different requirements. Use metal pipe on systems without a Heat Exchanger while PVC Schedule 40 pipe can be used on systems with a Heat Exchanger. Do not make a trap in the exhaust vent piping. Do not use 90° fittings.

Also see Exhaust Vent Protection and Ventilation Requirements below.

2. V3, V5 & V7 PUMP EXHAUST VENT CONNECTION - Connection between the pump and exhaust vent piping is typically made via the supplied 2-inch Black Flex tubing.

3. EXHAUST VENT ASSEMBLY - The supplied assembly must be installed at the lower end of the vent pipe to collect condensation. This can be accomplished by using one of the three methods shown on the right.

Note: Only 1 pump is running when operating in idle mode.

- MOJAVE Unit
- Watts (Idle)
- Watts (Max)
- BTU/Hr (Idle)
- BTU/Hr (Max)

V3
- 886 watts
- 1,601 watts
- 3,021 BTU/Hr
- 5,462 BTU/Hr

V5
- 886 watts
- 2,245 watts
- 3,021 BTU/Hr
- 7,660 BTU/Hr

V7
- 1,200 watts
- 2,245 watts
- 3,021 BTU/Hr
- 7,660 BTU/Hr

V3 or V5 Pump Top View
- Exhaust Vent
- 4" Drip Leg Detail View
- 35" H

V7 Pump Top View
- Exhaust Vent
- 4" Drip Leg Detail View
- 35" H

Note:
- Only 1 pump is running when operating in idle mode.
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Exhaust Vent Protection.

The MOJAVE equipment must be used in a controlled-temperature environment. Maintain equipment room temperature between 40 and 105 degrees Fahrenheit. An exhaust fan is necessary if room temperature is not maintained by other methods.

Exhaust Vent Requirements.

The MOJAVE equipment has been designed to operate in a environment that is free from weather elements and animal intrusion. It is expected that 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 on the right.

Exhaust Vent Protection.

Wall-Mounted Outside Vent Protection
- Shroud & Screen

Roof-Mounted Outside Vent Protection
- Shroud & Screen
- Screen

Exhaust Vent Requirements.

The MOJAVE equipment must be used in a controlled-temperature environment. Maintain equipment room temperature between 40 and 105 degrees Fahrenheit. 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 located 18 inches from the floor. The fan should be located off the exhaust plenum. The fan should be located off the exhaust plenum. The fan should be located off the exhaust plenum. The fan should be located off the exhaust plenum.

Estimated air temperatures associated with the exhaust system will vary depending on the type of exhaust system, the amount of exhaust air, and the amount of exhaust air. The estimated air temperature will vary depending on the type of exhaust system, the amount of exhaust air, and the amount of exhaust air. The estimated air temperature will vary depending on the type of exhaust system, the amount of exhaust air, and the amount of exhaust air.

<table>
<thead>
<tr>
<th>MOJAVE</th>
<th>WATTS (MAX)</th>
<th>BTU/HR (MAX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3</td>
<td>886</td>
<td>1,601</td>
</tr>
<tr>
<td>V5</td>
<td>886</td>
<td>2,245</td>
</tr>
<tr>
<td>V7</td>
<td>1,200</td>
<td>2,245</td>
</tr>
</tbody>
</table>

2V3 & 2V3CT
- 886 watts
- 3,202 watts
- 6,042 BTU/Hr
- 10,924 BTU/Hr

2V5 & 2V5CT
- 886 watts
- 4,490 watts
- 6,042 BTU/Hr
- 15,320 BTU/Hr

2V7
- See Note 1
- 1,200 watts
- 4,490 watts
- 6,042 BTU/Hr
- 15,320 BTU/Hr

3V5
- 886 watts
- 6,735 watts
- 9,063 BTU/Hr
- 22,980 BTU/Hr

4V5
- 886 watts
- 8,980 watts
- 12,084 BTU/Hr
- 30,640 BTU/Hr