



# Aspen® Mini Pump Installation Best Practices

## Aqua, Orange, and Micro V

### INTRODUCTION

The following Best Practices are intended to help educate the licensed contractor of Ductless & VRV/VRF equipment about the proper installation, use and maintenance of Aspen mini pumps. These Best Practices were created to arm the installing contractor with technical awareness, set better expectations, create general understanding and drastically reduce installation errors and frustration.

Although the percentage of complaints vs. pumps installed is extremely low, by far the primary complaints about mini pumps are noise, premature failure and difficulty with wiring. By following these step by step procedures, you can greatly reduce failures allowing you to install Aspen Mini Pumps with confidence!

**NOTE:** The following Best Practices are intended as a general guide for “typical” installations. Your installation may vary! Always follow the AC unit & pump manufacturers printed recommendations!



### 1. Aspen Pump & Reservoir Installation

- Prior to installing the pump and reservoir, set the pump and reservoir in the desired location and run all wiring and tubing in, under, around or through any obstacles to ensure each is long enough to complete your installation.
- The Reservoir (float) should be installed close to and level with or below (not more than 5") the drain pan spout on a horizontally flat surface using the supplied Velcro strip. The reservoir has a  $\frac{5}{8}$ " port on one side to connect to the drain pan using the OEM drain tube or tubing supplied in the pump box. It will have a hard wired communication cord that connects to the pump. It will also have a  $\frac{1}{4}$ " port on the side of the housing that connects to the  $\frac{1}{4}$ " inlet (lift) port of the pump. And it will have a vent port on the lid, please ensure the included 6" vent tube is installed.
- The Pump should be installed above the reservoir (1 inch to 5 feet) and can be installed in any orientation using the supplied Velcro or mount as long as the discharge side of the pump is level or pointing upward.
- The pump is connected to the reservoir with the control wire and  $\frac{1}{4}$ " tubing.
- All tubing connections should be secured with zip ties.
- The pump is directional and the indicated flow direction must be followed.
- The Pump is wired to the terminal block inside the evaporator (see wiring directions).



RectorSeal has an excellent pump selector on our website and includes the appropriate PDF wiring diagrams for many specific AC units. <http://www.rectorseal.com/pump-selector/>

Aspen pumps are available in voltage specific 115 V or 230 V and Univolt (100-250 V)



#### h. The Pump also has a discharge port. Please follow these steps (NA Silent+ models)

- I. Attach approximately 18 inches\* of field supplied ¼" tubing.
- II. Install the included Anti-Siphon Device (**in any orientation**).
- III. Add enough additional ¼" tubing to the discharge side of the Anti-Siphon device to complete your discharge run.
- IV. Position the OEM drain tube with enough slack that it may reach the pump's reservoir inlet.

**\*WARNING: Do not use discharge tubing greater than ¼".**

## 2. Wiring

- a. **Aspen Pump wiring harnesses have 4 wires; 2 power and 2 safety**
- b. **For a standard 230-V split system with a 4 block terminal, we recommend the following. This scenario assumes lines 1 & 2 from the outdoor unit are power wires and that line 1 is BLACK and line 2 is RED. Shut off the power and following safe electrical handling procedures prior to wiring the pump.**
  - I. Using a wire nut, tie together the **BLACK** power wire & the **GRAY** safety wire from the pumps wiring harness along with the **BLACK** power wire coming from the outdoor unit. The black wire from the outdoor unit may already be installed on terminal 1 of the indoor unit, if it is, remove it so it can be tied into the wire nut as described in this section. The wire nut should have 3 wires in it.
  - II. Locate the **included inline fuse loop**, cut and strip the wires. Using a wire nut, attach one end of the inline fuse to the **RED** power wire from the pumps wiring harness. Now insert the other end of the **RED** fuse wire into terminal 2 of the indoor unit along with the **RED** power wire coming from the outdoor unit.
  - III. Insert the **PURPLE** safety wire from the pump's wiring harness into terminal 1 of the indoor unit all by itself.

## 3. Siphoning

What is it and how does it affect the pump?

- a. **Siphoning occurs when the discharge tubing terminates below the pump and reservoir. In this scenario, when the pump stops running, gravity takes over and pulls all the water out of the pump. The next time the pump begins to run, it is dry and must self-prime. When the pump "self-primers" it is functioning "dry," without water. Proper operation of the pump requires that the pump be lubricated and cooled by water and may sustain damage anytime it runs without water.**
- b. **Where to install the anti-siphon device:**
  - I. All Aspen pumps include the anti-siphon device, it is pre-installed at the factory on our **Silent+** models and located inside the box on all other models (**which means that the installer must install the anti-siphon device on those models**).
  - II. The anti-siphon device is an in-line device that can be installed in any orientation; it will have tubing on either side of it when correctly installed. The anti-siphon device must be installed on the discharge side of the pump, **ABOVE THE PUMP** and ideally should be installed 18" from the pump or prior to the drain tube dropping below the level of the pump. (\*this distance may vary to suit your installation) and will have additional ¼" tubing leading to the desired discharge location.
  - III. The correct use of the anti-siphon device allows the discharge tubing to terminate at any location within discharge distance specification of the pump without causing any potential siphoning effect to reach the pump.

## 4. Maintenance

Yes, pumps require some maintenance just like AC systems.

- a. **Annual inspections are recommended and consist of the following:**
  - I. Inspect all electrical, communication and tubing connections to ensure they are tight.
  - II. Carefully disassemble the reservoir and inspect the mesh filter and inside the reservoir for debris and or organic growth. If necessary, remove and clean the reservoir with warm water and mild soap, rinse thoroughly before re-installing. The float inside the reservoir must be re-installed with magnet on the top side!
  - III. Visually inspect the pump for any signs of tampering or malfunction and ensure it is securely installed.
  - IV. Inspect the anti-siphon device to ensure it is installed and is secure.
  - V. Inspect the termination point of the discharge tubing to ensure it is secure in discharging the condensate to the appropriate location.
  - VI. Do not run any coil (or other) cleaning products through Aspen pumps or reservoirs. **Disconnect the reservoir prior to cleaning coils.**
- b. **Environments with heavy airborne debris such as a dentist office or hair salon may require more frequent maintenance. The use of an Aspen reservoir pre-filter (RectorSeal Part # 83893) is recommended for environments with a high concentration of airborne debris.**



## 5. Noise

- a. **Complaints of noisy pumps are usually not the pump's fault!**
- b. **These are piston pumps; they contain a rapidly moving piston.**
- c. **The pumps operate at a normally acceptable decibel level, however, the piston inside the pump is moving rapidly and does vibrate.**
- d. **Most noise complaints are from improperly installed pumps and can easily be corrected.**
  - I. Minor adjustments to the position of the pump often result in quieter operation.
  - II. Some Aspen pumps "buzz" three times when first energized to let the installer know the pump has power.
  - III. Some pump noise is normal during initial set-up when the pump is priming.
  - IV. **The use of foam insulation may be used to reduce vibration transfer.**
  - V. As long as the pump stays primed, receives proper maintenance, has been correctly specified and is well insulated against vibration, you can expect very few problems.
  - VI. Continued pump noise should decrease with additional water flow.

## 6. "New Construction" Installations

- a. **Aspen pumps are intended for use in normal operating conditions in a clean and/or occupied space.**
- b. **AC units with Aspen Pumps should not be run during construction. If AC units must be run during construction or within other extremely dusty environments, take all necessary precautions to eliminate airborne debris from entering the AC unit. Large amounts of airborne construction debris will require frequent maintenance of Aspen reservoir and pump and may cause pump failure and void the pump warranty. The use of an Aspen inline reservoir pre-filter (RectorSeal Part # 83893) is recommended for environments with a high concentration of airborne debris. Aspen Peristaltic pumps are recommended for high airborne debris environments.**

## 7. Replacing an Aspen Pump

- a. **When replacing an Aspen Pump, we require the contractor to remove and replace ALL old components; this included (as applicable) The Pump, Reservoir, Power Leads, Communication Cable and ALL Tubing. Pumps can fail for many reasons; failure to remove and replace all components may result in the new pump failing prematurely due to an unknown cause. Replacing all components will eliminate that possibility.**

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