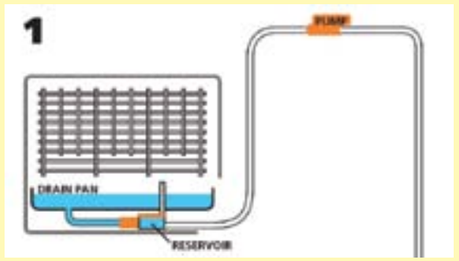
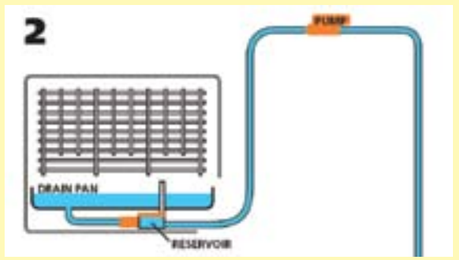
Situation:

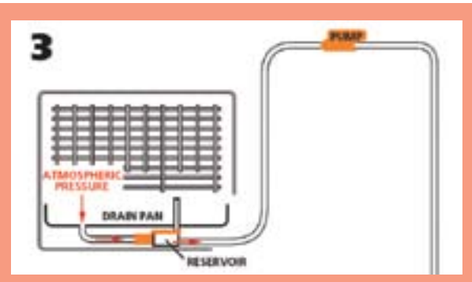


- drain pan fills with condensate
- condensate flows into reservoir
- intake hose between reservoir and pump empty

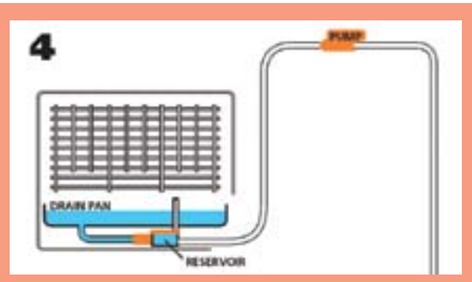


- condensate level raises float, activates pump
- pump self primes, sucks water up from reservoir (in this period pump operates dry and will click loudly)
- intake hose purged of air
- water enters pump and cools and lubricates
- pump runs at low hum
- water flows through pump and out discharge hose

Incorrect:



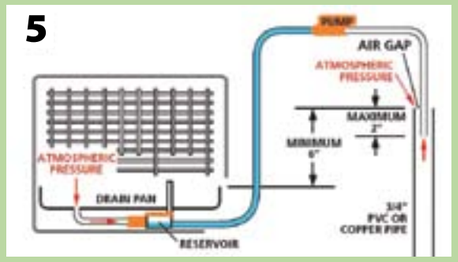
- water has been discharged from step 2
- weight of the water in discharge hose plus atmospheric pressure at drain pan outlet forces water remaining in the intake hose to flow out through pump
- intake is once again full of air



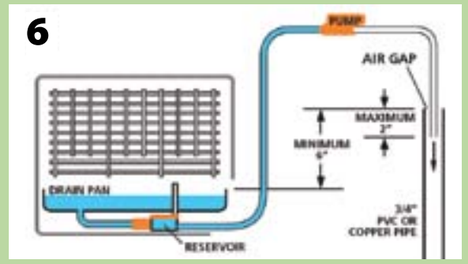
- we begin back at step 1
- drain pan fills with condensate
- condensate flows into reservoir
- intake hose between reservoir and pump empty the cycle will keep repeating itself and eventually destroy the pump

- The problem with this situation is every time the pump has to prime itself and purge the air from the intake hose (runs dry- see step 2) it sustains a small amount of damage which wears out the pump.
- Each time the pump runs dry it takes longer for it to suction the water to cool itself and eliminate the loud clicking noise.
- This will destroy the pump! See steps 5 & 6 for proper installation.

Correct:



- water has been discharged from step 2
- air gap equalizes atmospheric pressure
- siphoning effect cannot occur
- intake hose remains filled with water



- drain pan fills up with condensate
- intake hose already filled with water
- pump immediately cooled and lubricated
- pump runs quite immediately
- no clicking noise occurs

- The pump is operating within the proper parameters and there is no danger of overheating. (note: this is only for instances where the drain hose runs below the drain pan in the evaporator)

Guidelines for proper discharge:

In order to fully understand the operation of these pumps it is necessary to understand some of their basic principles of operation:

All Aspen mini pumps share common characteristics:

1 - They are self priming
2 - They are water cooled
3 - They are water lubricated

This means that when they are activated, they will self prime, however during this initial period they will suck in air and while this is happening they will be running both hot and dry. Because of this, they will emit a clicking noise which is entirely normal during the initial start up phase only, (usually around 10 seconds or less) and this will stop when all of the air in the pump intake has been purged and the pump becomes cooled and lubricated by the water flowing through it.

If the clicking noise is heard while the pump is operating after the initial start up has been completed, this is an abnormal situation and indicates that there is a problem in that the pump is running without cooling or lubrication and is overheating. This usually occurs in a split pump because the intake hose (the 1/4" clear hose between the reservoir and the pump) has emptied itself due to a siphoning effect created by atmospheric pressure.

Therefore, it is vital that the intake hose is kept full of water at all times so that no air is present for the pump to suck in when it starts operation. As long as the intake hose remains full of water, every time the pump starts up it is immediately cooled and lubricated by the water flowing through it and will operate as designed, with minimal noise.

Each pump is fitted with a thermal overload protector which will deactivate it in case of overheating. However, once it cools down it will begin to operate again, and if the pump is allowed to continue to operate for a sustained period of time in this condition, it will overheat, seize up and destroy itself.

In some applications, the vertical distance between the reservoir and the pump can be up to 1m (3' feet) and obviously, the longer this distance, the longer the pump will have to operate hot and dry before it evacuates the air from the intake tube. Therefore, the longer time it will have in which to damage itself.
If the discharge hose is run below the level of the drain pain in the evaporator, the weight of the water in the discharge hose, plus atmospheric pressure on the water in the drain pan will cause the water to continue flowing - even after the pump has switched itself off; until all the water in the system has evacuated itself. This is similar to the siphon effect one creates when sucking gas out of a tank in a car, i.e. once you start the initial siphoning effect by sucking on the hose the contents of the tank will continue to flow out as long as the discharge end is lower than the fluid level in the tank. The flow will continue until the tank is empty or until the end of the discharge hose is lifted up higher than the fluid in the tank. At which point the atmospheric pressure equalizes and the siphoning effect stops.