

CASTLEBROOK
HEATING & COOLING
USER'S MANUAL

by
Dan Smyth, President
Spencer Killian, Secretary

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INTRODUCTION

This is the user's manual for the air conditioning and heating system in use at Castlebrook Condominiums in Provo, Utah. A single system is used for both heating and cooling. This manual is written with the cold (air conditioning) system in mind, but can be used directly to solve heating problems as well in an analogous fashion.

This manual describes the air conditioning system in detail. The hope is that every person, once reading this manual, will understand:

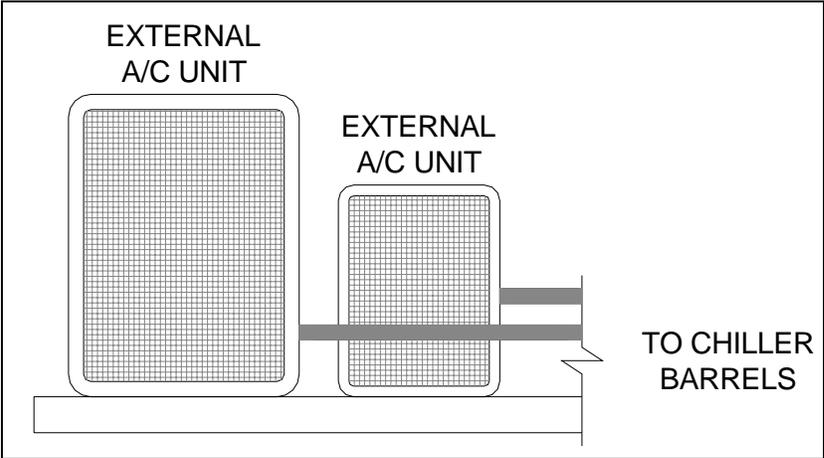
1. how the system works,
2. what the HOA's responsibilities are, and
3. what the home owner's responsibilities are.

We, as a board, hope that this information will help each home owner understand what needs to happen in order for the heating and cooling of their unit to work properly. If, after reading this document, you have any questions concerning the matter, please feel free to contact us.

HOA's Responsibilities

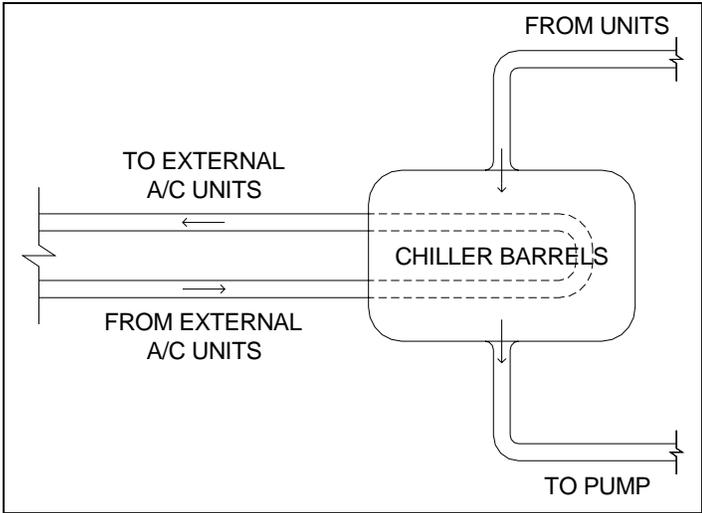
External Units

Each building has a cooling unit that sits outside near the laundry room. The HOA is responsible for keeping these in working order. If you feel that these units are having problems please contact the HOA. Do NOT make any attempts to "fix" them, or have them fixed.



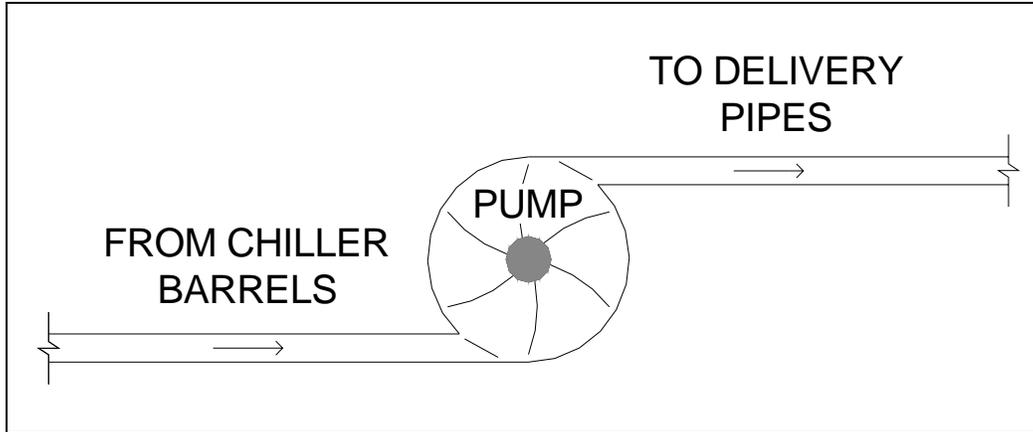
Chiller Barrels

The refrigerant from the external air conditioning unit cools off water, which is then pumped through a series of pipes within the buildings. The HOA is responsible to make sure these work.



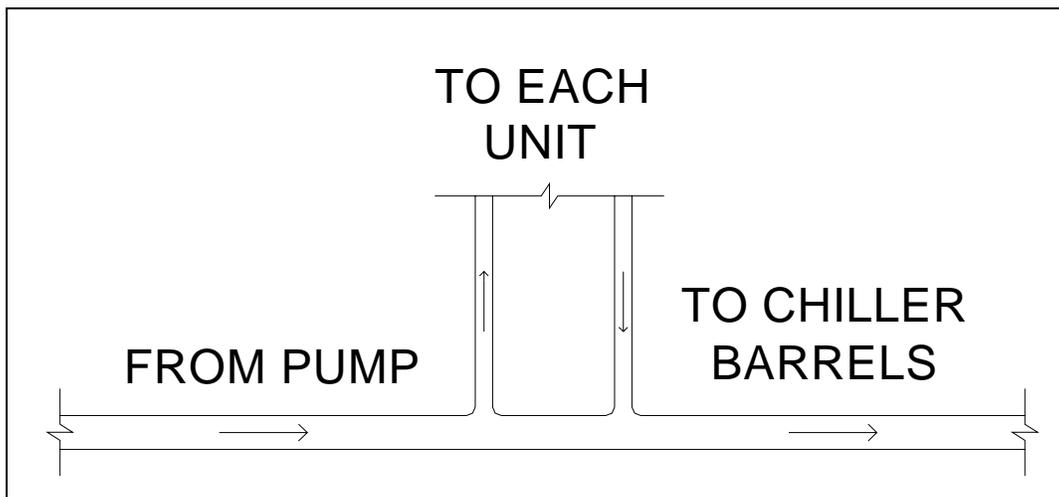
Pump

The chilled water is pumped through the buildings. The HOA is responsible for the upkeep of these pumps.



Delivery

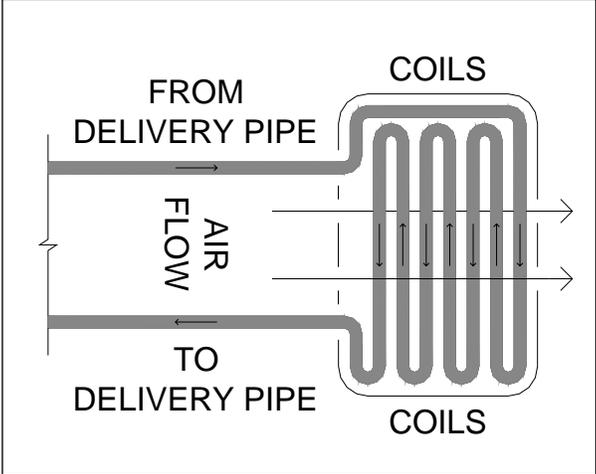
The chilled water travels through a large pipe, typically underground, to each residence. Underneath each residence, smaller pipes are attached to the large, delivery, pipe. Cold water is circulated through each residence through these smaller pipes. The HOA is responsible for the delivery pipes, and the home owners are responsible for the pipes that extend into their units.



Home owner's responsibilities

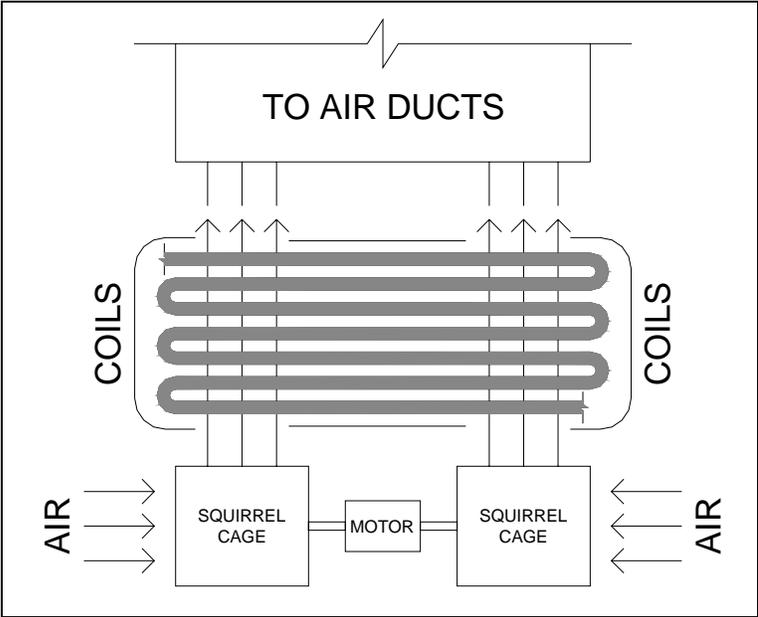
Coils

Air within each residence is cooled by blowing it over a series of coils, which are cooled by the flow of cold water within them. If there is anything wrong with these coils, it is the owner's responsibility to fix them.



Fan

The fan motor spins the squirrel cages, which forces air across the coils and through the ducts. If there is anything wrong with the fan, it is the homeowner's responsibility to see that it is fixed.



Air Filter

An air filter should be used inside the air return of each residence. It is important that this filter be replaced on a regular basis so that air can continue to circulate through the residence.

Water Flow

Occasionally, water flow through the pipes (those extending from the delivery pipe and into the individual units) or through the coil may become blocked due to rust, debris, or air bubbles. If this happens, it is the home owner's responsibility to restore that flow. This process will be covered in a later section.

Efficiency

There are several ways to increase the efficiency of the air conditioner within your residence.

A few are detailed here:

Install a recirculation pump – By having a certified plumber install a recirculation pump within your residence, you can increase the flow of water traveling through your coils and thus maintain a smaller drop in the water's temperature as it travels through them.

Working fan – It is imperative that your fan work. Without a working fan, the ability to cool your unit will become negligible. The HOA has replacement motors and squirrel cages for those that need to be replaced.

Direct the air – For those units that are two stories, you can help to cool your entire residence by closing all of your downstairs vents. This will force the upstairs to be cooled first. The cold air will then travel down the stairwell and cool the downstairs level.

Avoid cold air losses – Keep doors closed as much as possible. Keep windows closed as much as possible. Close blinds and/or curtains during the hot parts of the day.

Avoid adding heat – Try to not use the stove/oven during the day. If you have to use the stove/oven, turn on the fan above the stove to help pull the hot air out of your unit. Keep the dishwasher closed until it has cooled off; keep all that hot steam within the dishwasher, if possible.

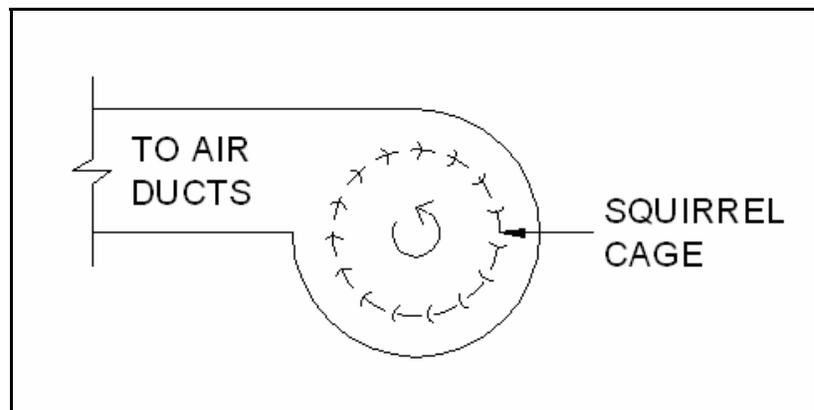
TROUBLESHOOTING

Fan Won't Turn On

Check to make sure that your thermostat is working correctly. If you need to, have an air conditioning service come out to check that everything is wired correctly, and that everything is switched correctly within your unit.

Little or No Air Flow

Check to be sure that the filter is not clogged. Check to make sure that the fan is working. Air should be getting pulled into the outside ends of the squirrel cages as shown previously. Additionally, the squirrel cages need to be oriented such that the curved fins on the squirrel cages are scooping the air and pushing it forward.



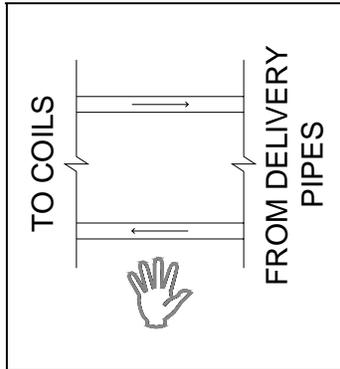
If the cages are spinning the wrong direction, or the fins are oriented in the wrong direction, the fan will not circulate the air through your ducts. Make sure that your ducts have not been clogged by anything. If you need to, have an air conditioning service come out to check that everything is working correctly.

Air is Not Cold

If the air coming out of your ducting is not cold, follow these steps to determine and fix the problem.

1. Check pipe temperature

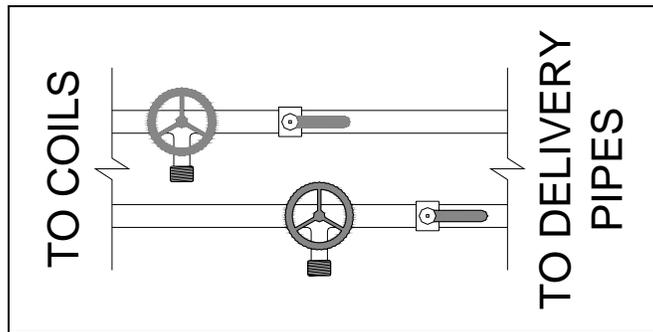
- a. Pipes are located inside the air return. Feel the pipes to make sure they are both cold.



2. Pipes should be 60 Degrees or colder.
 - a. If both pipes are cold, proceed to next step.
 - b. If both pipes are warm, call HOA.
 - c. If one pipe is warm and the other is cold, proceed to **Clogged Pipes**.
3. If both pipes are cold but your air is not, call the HOA to check the temperature of your pipes. If the temperature difference between the two pipes is less than 10 degrees, consider installing a recirculation pump. Otherwise, proceed to **Clogged Pipes**.

Clogged Pipes

1. Check pipes within your unit for valves and bibs.



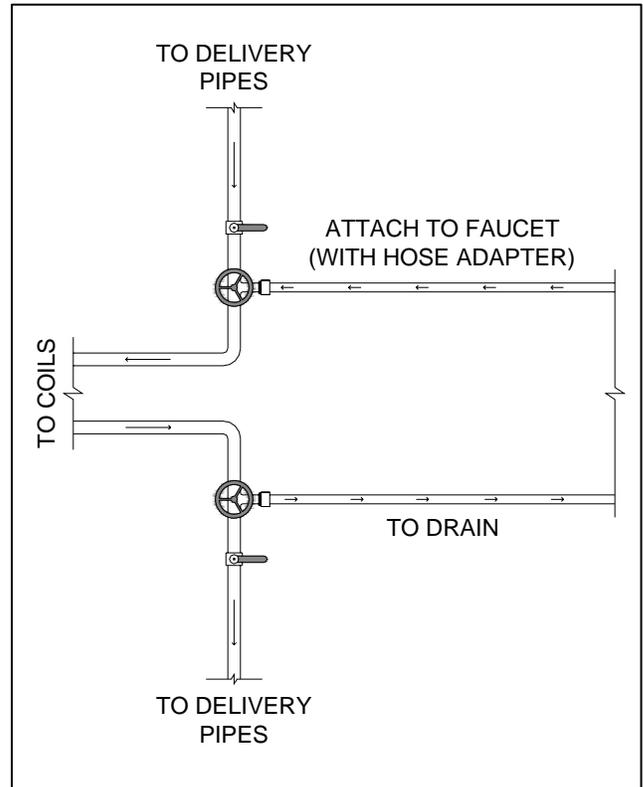
2. If these are present on both pipes, proceed to **Flushing Coils**.
3. If not present, call a plumber to have them installed.

Flushing Coils

This is a four part process. Follow the instructions to make sure that water is flowing through every part of your air conditioning system.

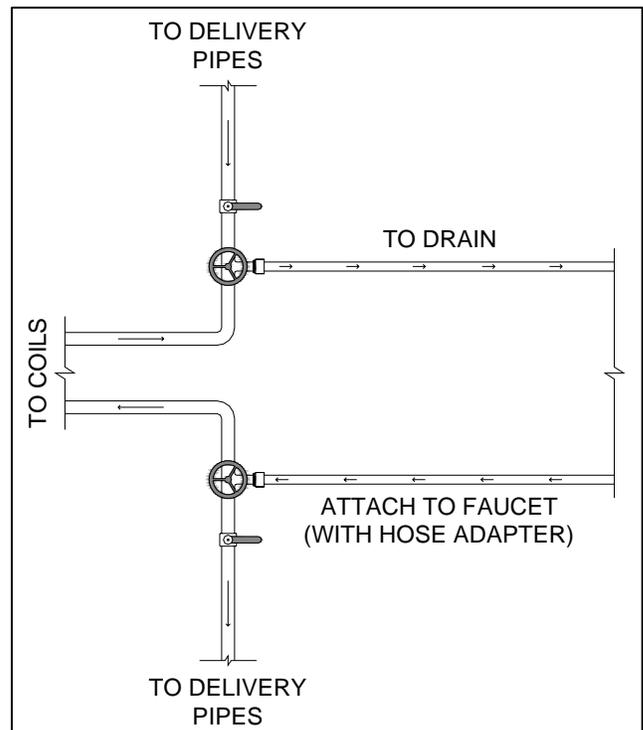
Part 1 – Flush Coil Forward

1. Turn off both ball valves
2. Attach hoses to bibs
3. Turn on bibs
4. Turn on water faucet to force water through the coils
5. Flush until water is clear and flowing quickly



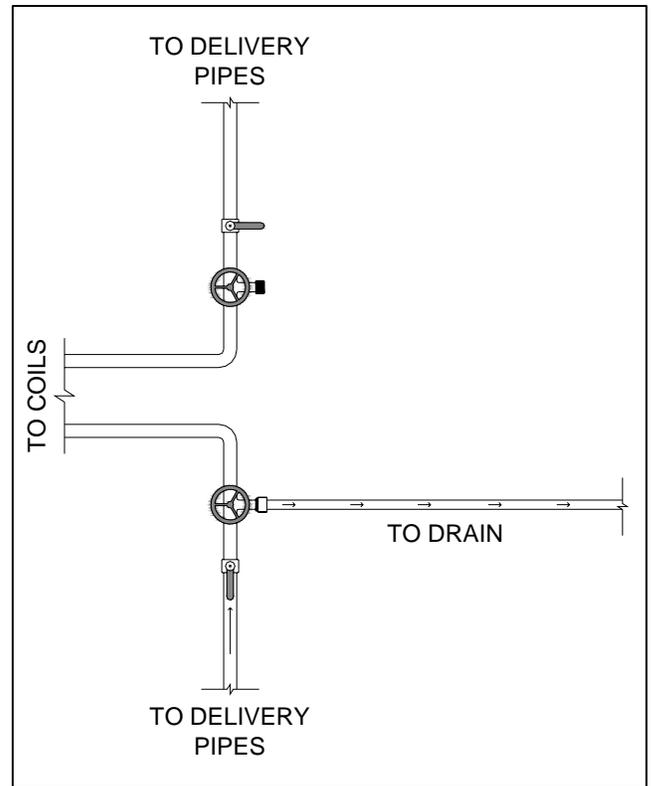
Part 2 – Flush Coil Backward

1. Close bibs.
2. Switch hoses.
3. Open bibs.
4. Flush system other direction.
5. Flush till water is clear and flowing quickly



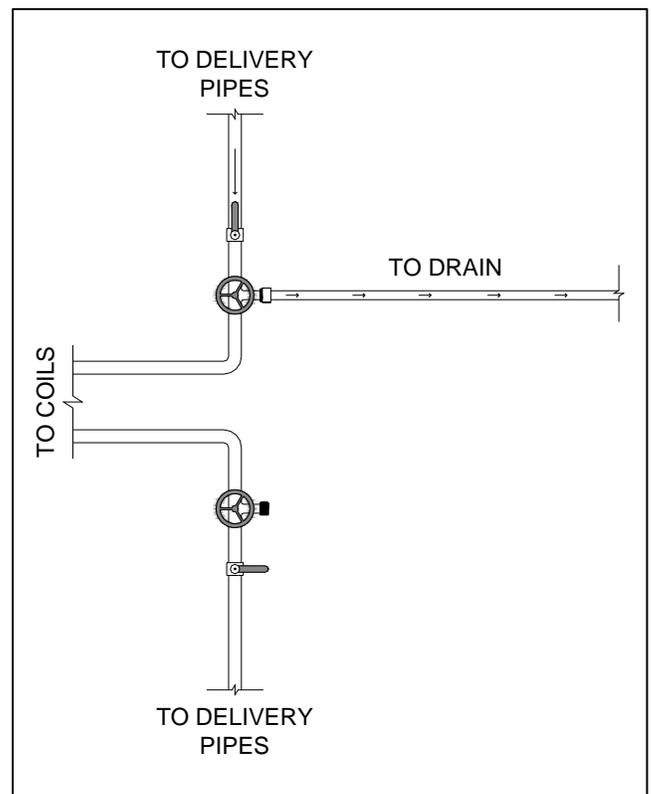
Part 3 – Flush Feed Pipe

1. Have one ball valve open, and the other one closed
2. Connect the hose to the water bib adjacent to the open ball valve
3. Turn on bib next to open valve
4. Water from delivery pipe will flow out into the drain. Minimize this time. Cold water lost here will be made up with warm make-up water
5. Flush till water is clear and flowing. You may have to open and close the ball valve a few times. This will help the pressure in the delivery line to blow out any restrictions in the feed pipe.



Part 4 – Flush Return Pipe

1. Switch hose to other bib
2. Have one ball valve open, and the other one closed
3. Connect the hose to the water bib adjacent to the open ball valve
4. Turn on bib next to open valve
5. Water from delivery pipe will flow out into the drain. Minimize this time. Cold water lost here will be made up with warm make-up water
6. Flush till water is clear and flowing. You may have to open and close the ball valve a few times. This will help the pressure in the delivery line to blow out any restrictions in the feed pipe.



Water Dripping

Water drips are usually caused by condensation from cold water pipes during the summer months. Make sure that all air conditioning pipes are insulated sufficiently to avoid this problem. If you have insulated all of the pipes in your unit and water drips persist, then you probably have a leak and should call a plumber to have the problem fixed. This is the home owner's responsibility.

Cold Floor

If your floor is oddly cool or warm in one particular spot a delivery pipe may have broken.

Report this to the HOA immediately!!!

DISCLAIMER

The information found in this manual is free, helpful information. Home owners are responsible for everything they do to their unit. Castlebrook will not be held responsible for any damage resulting from home owners trying to use this information to fix their heating/cooling system.