

On the operation of heat pump and fan coil with chilled water

The following shows, when chilled water supply is 45F and indoor setting temperature is 75F

1. The PAFMAC system makes it cooling/heating operation at water temperature between 40F to 120F.
2. Fan coil operation(Cooling)
 - PAFMAC operates in the same way as a general fan coil.
 - As shown in Figure 1, chilled water goes through the coil and the fan blows through it and cooling is made.
 - Remove heat from 45F inlet chilled water and will return to outlet by 55F water.
 - Δt is 10F

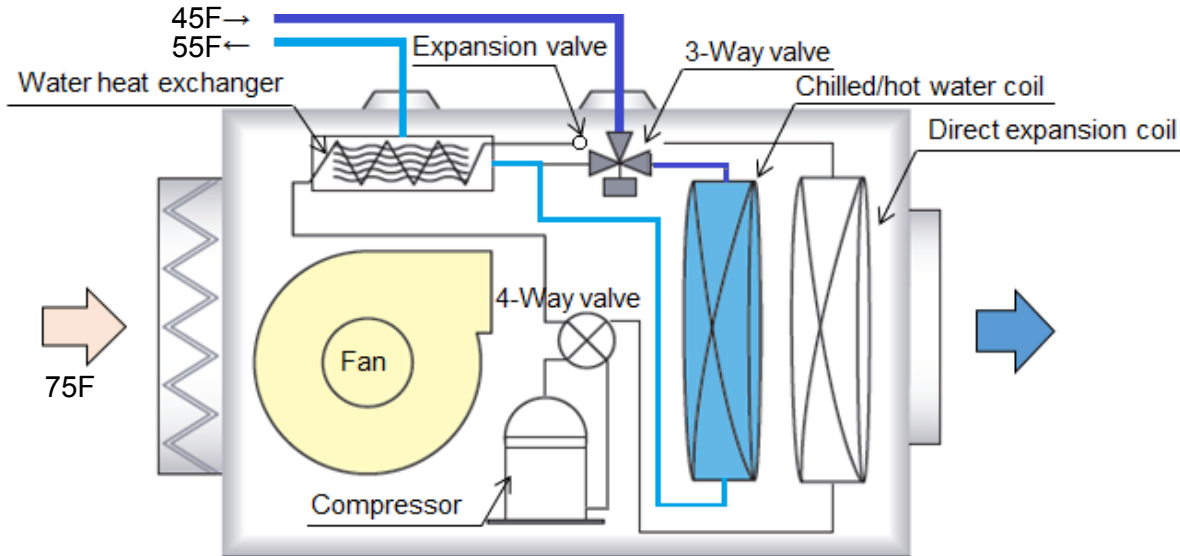


Fig.1 Fan coil operation(Cooling)

3. Powerful operation(Cooling)
 - Both fan coil operation mentioned the above and the heat pump operation will be conducted.
 - As shown in Figure 2, since the fan blows through the chilled water coil and the direct expansion coil, it cool up to about twice capacity of the fan coil operation.
 - Remove heat from 45F inlet chilled water and will return to outlet by 65F water.
 - Δt is 20F

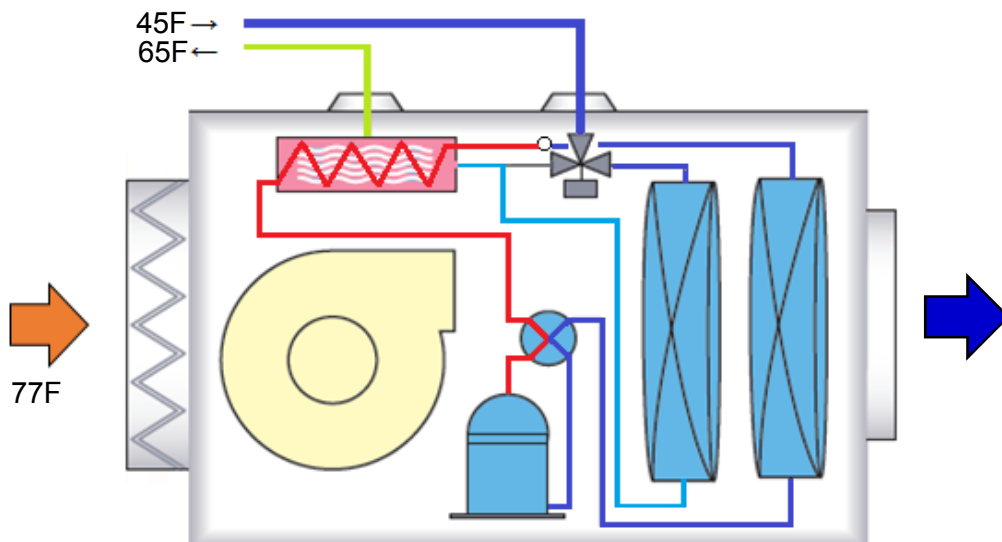


Fig.2 Powerful operation(Cooling)

4. Reverse mode operation(Heating)

- Only the heat pump is operated and the heating operation is carried out.
- As shown in Figure 3, the fan blowers through the direct expansion coil to cool it.
- Remove heat from the air that passed through the direct expansion coil and discharge it to the water heat exchanger.
- Chilled water with inlet temperature 45F will return to outlet temperature 35F.
- Δt is 10F

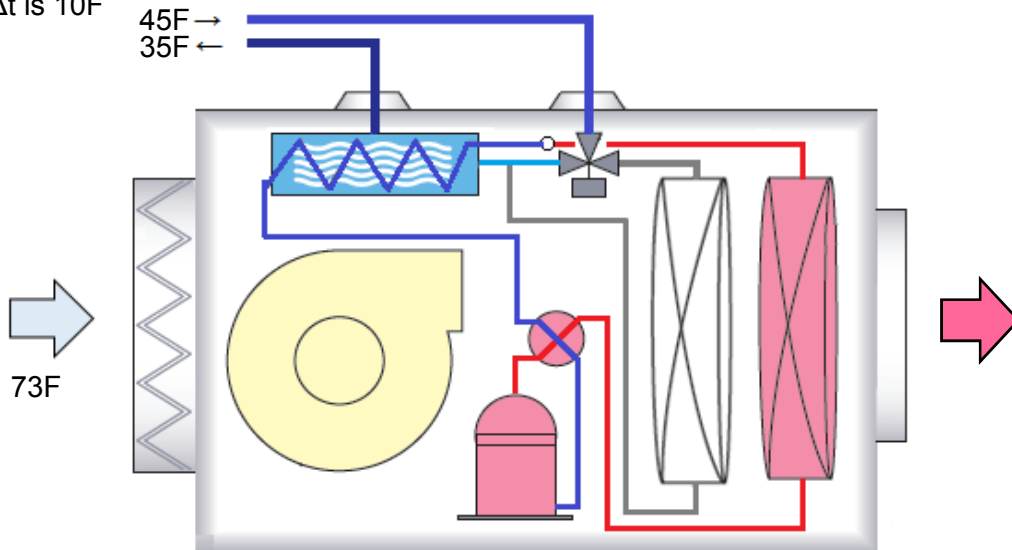


Fig.3 Reverse mode operation(Heating)

5. Dry mode operation

- Both fan coil operation mentioned the above and the heat pump operation will be conducted.
- As shown in Figure 4, since the fan blowers cooled by a cold water coil, then reheated through the direct expansion coil and blown out, so dehumidify it.
- Remove heat from 45F inlet hot water and will return to outlet by 45F water.
- Δt is 0F

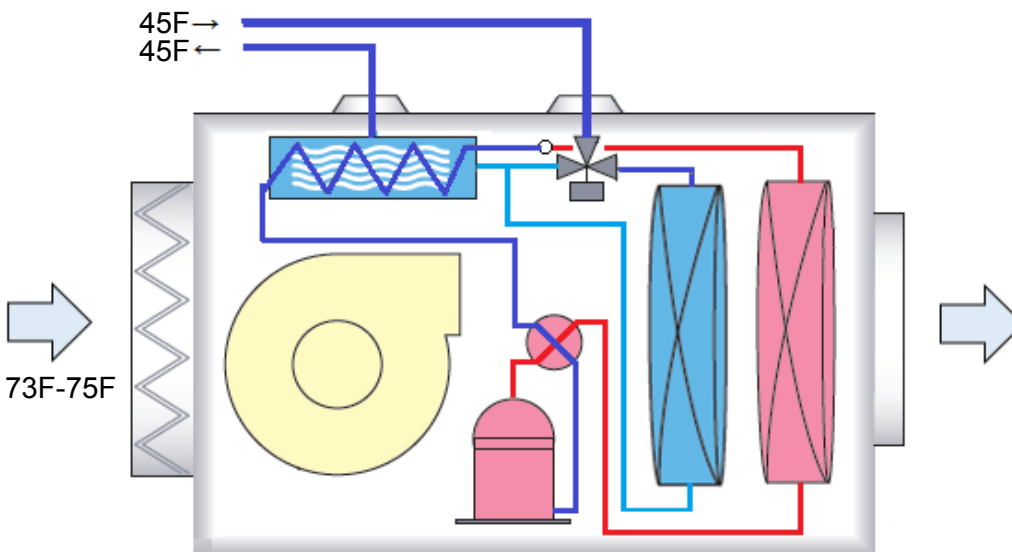


Fig.4 Dry mode operation