

# On the operation of heat pump and fan coil with hot water

The following shows, when hot water supply is 120F 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(Heating)
  - PAFMAC operates in the same way as a general fan coil.
  - As shown in Figure 1, hot water goes through the coil and the fan blowers through it and heating is made.
  - Remove heat from 120F inlet hot water and will return to outlet by 110F water.
  - $\Delta t$  is 10F

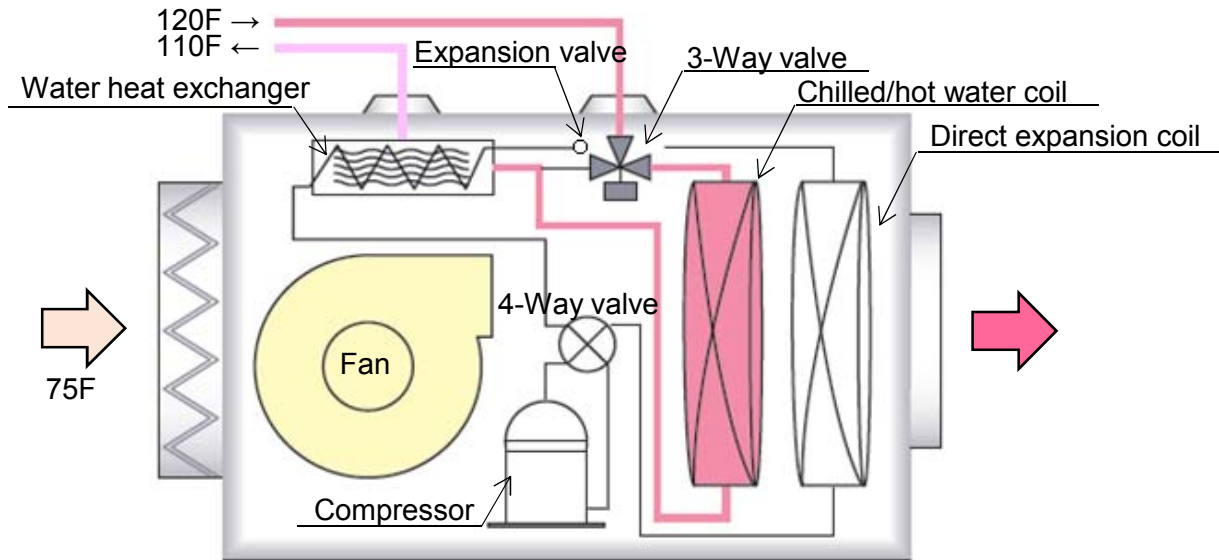


Fig.1 Fan coil operation(Heating)

3. Powerful operation(Heating)
  - Both fan coil operation mentioned the above and the heat pump operation will be conducted.
  - As shown in Figure 2, since the fan blowers through the hot water coil and the direct expansion coil, it heats up to about twice capacity of the fan coil operation.
  - Remove heat from 120F inlet hot water and will return to outlet by 100F water.
  - $\Delta t$  is 20F

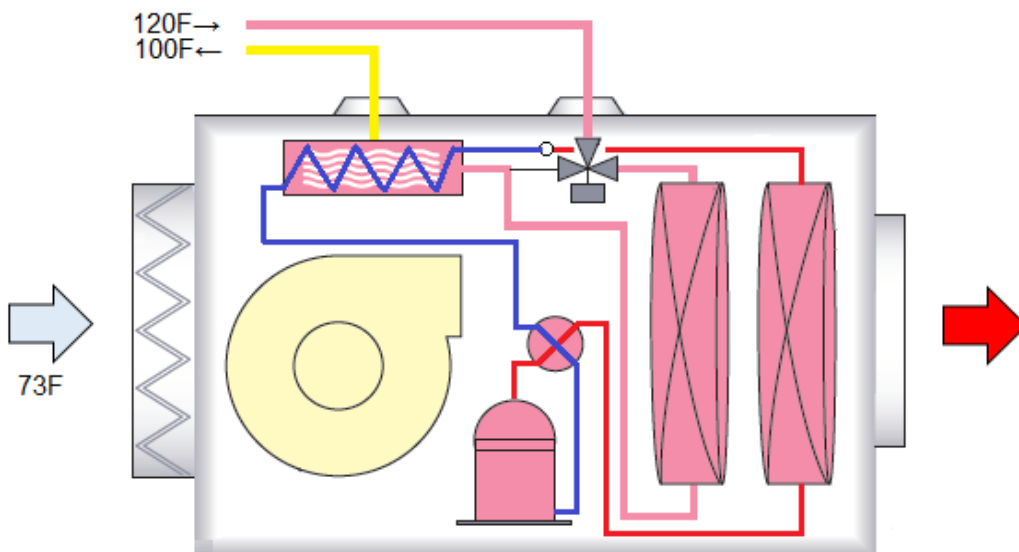


Fig.2 Powerful operation(Heating)

#### 4. Reverse mode operation(cooling)

- Only the heat pump is operated and the cooling operation is carried out.
- As shown in Figure 3, the fan blower 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.
- Hot water with inlet temperature 120F will return to outlet temperature 130F.
- $\Delta t$  is 10F

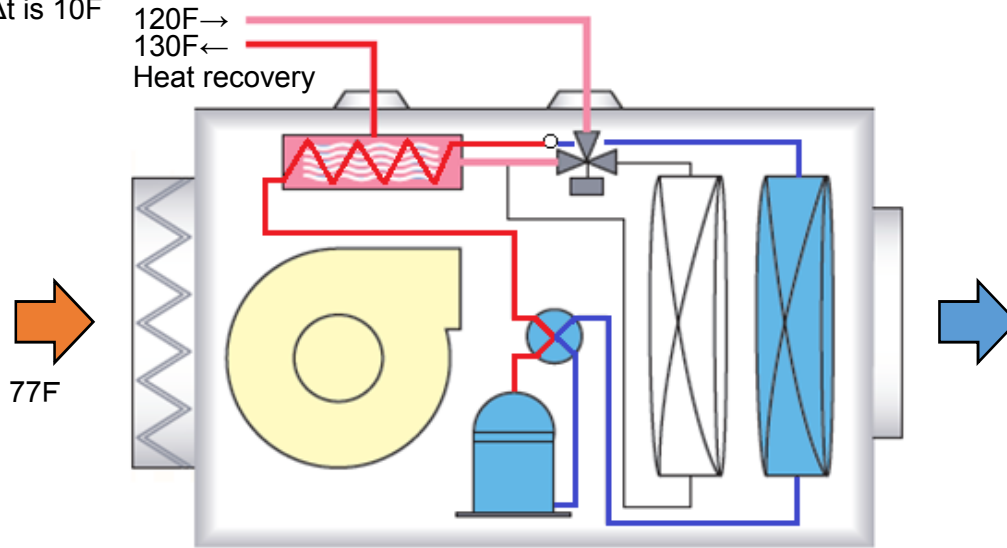


Fig.3 Reverse mode operation(Cooling)