

The Refrigeration Cycle

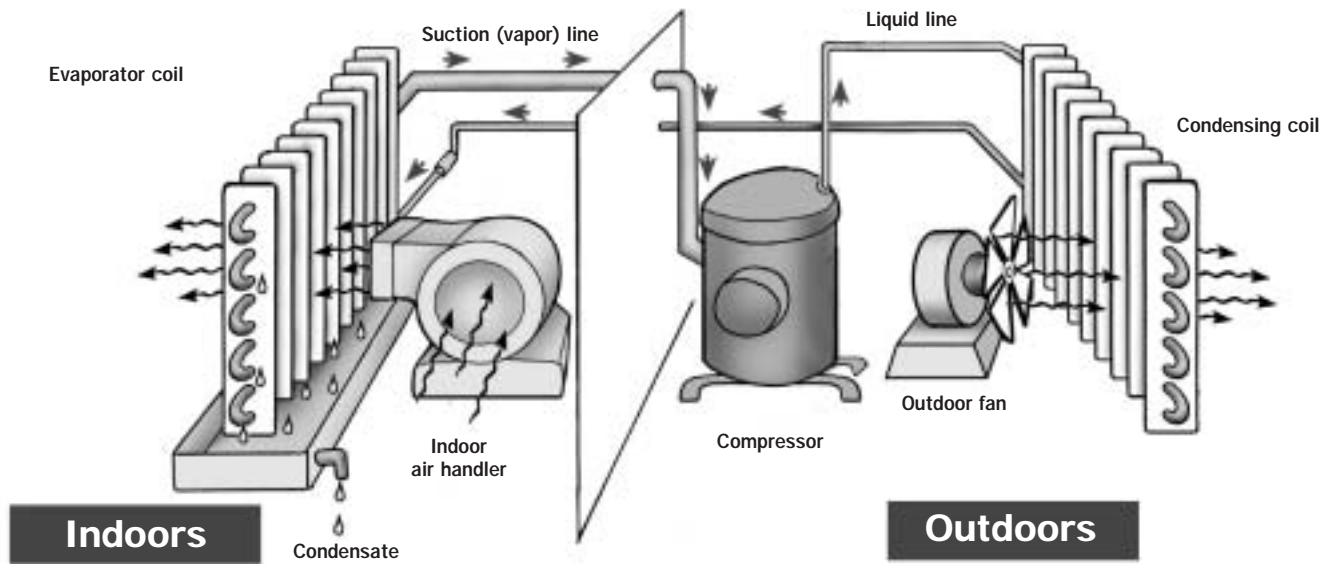


Fig. 9 • The Refrigeration Cycle

Heat Pumps & Air-Conditioning

IRC

UMC

- Heat-pump return air min. clear. area 6sq.in. per 1,000Btu output T2 [1403.1] (906.3)
- Air filter req'd [1401.1] (312.1)
- Outdoor unit on 3in.-thick raised pad sloped to drain defrost water F10 [1403.2] (1106.2)
- Horiz. air handler set level or slope to condensate drain [manu.] (manu.)
- No cooling coil upstream from heat exchangers [1411.2] (905.0)
- Refrigerant vapor (suction) lines insulated min. R4 . . . [1411.4] (manu.)
- Nail-plate protection for refrigerant piping closer than 1.5{1}in. of framing edge [2603.2.1] (313.9P)
- Condenser not next to dryer vent [manu.] (manu.)
- Heat pump w/ strip heaters needs two-stage thermostat [manu.] (manu.)

Condensate

IRC

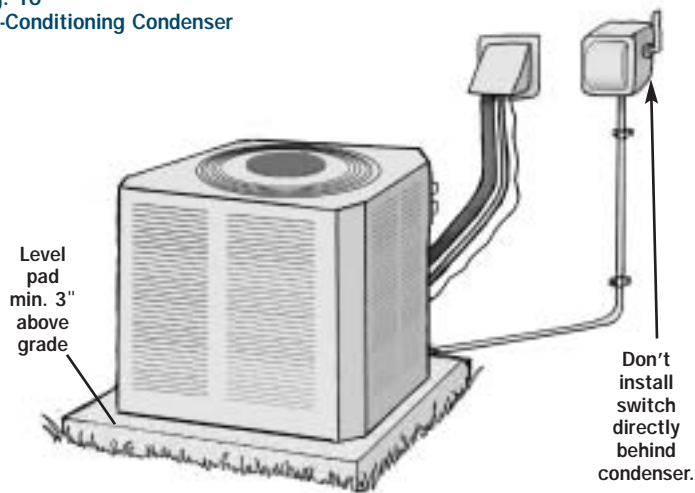
UMC

- Condensate may not drain to public way [1411.3] (310.1)
- Drainpipe min. win. with 8in./ft. slope [1411.3.1] (310.1)
- No PVC female thread fittings [n/a] (310.5)
- May drain to indirect receptor (lav. tailpiece, tub overflow) F11 [n/a] (310.1)
- No direct connection to waste or vent pipe [1411.3] (310.1)
- Secondary drain and/or pan req'd. for equip. above framing [1411.3.1] (310.2)
- Secondary drain to conspicuous point of disposal . . [1411.3.1] (310.2)
- Note: water level detection device in pan w/ cutout OK in lieu of pan drain [1411.3.1(3)] (n/a)
- No drilling (saddle fittings) of DWV pipes to accept condensate drain [3003.2] (311.2P)

Btu rating	24k	30k	36k	42k	48k	60k
Tons	2	2.5	3	3.5	4	5
Blower sq. in.	144	180	216	252	288	360
Round duct diameter	14"	16"	18"	18"	20"	20"

Central AC & heat pumps req. 6sq.in. per 1,000Btu/hr. output [1602.2] (906.3).

Fig. 10
Air-Conditioning Condenser



Electrical Requirements

- Disconnect in sight of condenserF10 [4001.5] (440.14)
- Working clearance in front of disconnectF10 [3305.1] (110.26A)
- Thermostat wire not inside power conduitF10 [4204.1] (725-54a1)
- Size conductors and overcurrent per nameplate . . . [3602.11] (440.4B)

Window and Through-Wall Units

- Max. cord length 10ft. (120V), 6ft. (240V) [4001.3] (440.64)
- Cord plug OK as disconnect if controls ≤6ft. of floor . [4001.5] (440.63)
- Max. load 80% of circuit rating for individual circuit [3602.12.1] (440.62B)
- Max. load 50% of circuit rating if circuit has other outlets [3602.12.2] (440.62C)

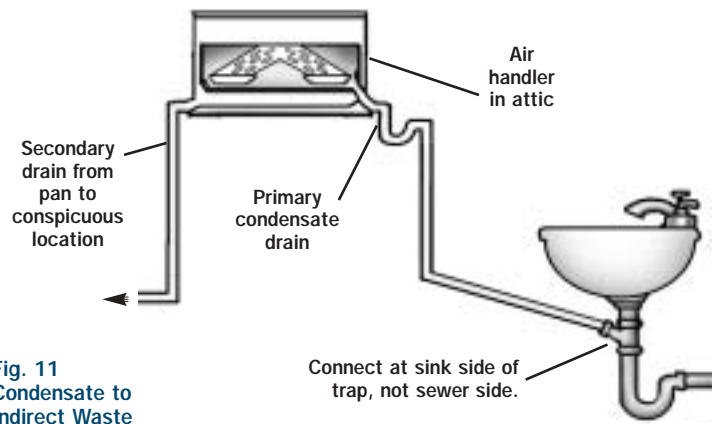


Fig. 11
Condensate to Indirect Waste

Evaporative (Swamp) Coolers

- | | IRC | UMC |
|---|-----|------------|
| <input type="checkbox"/> Ground-mounted unit on level base min. 3in. above grade [1413.1] | | {406.0} |
| <input type="checkbox"/> Platform-mounted unit min. 6in. above grade {n/a} | | {406.0} |
| <input type="checkbox"/> Support per manu. instructions [1413.1] | | {406.0} |
| <input type="checkbox"/> Flash any openings into building [1413.1] | | {406.0} |
| <input type="checkbox"/> Backflow protection on potable water supply [1413.2] | | {603.4.9P} |

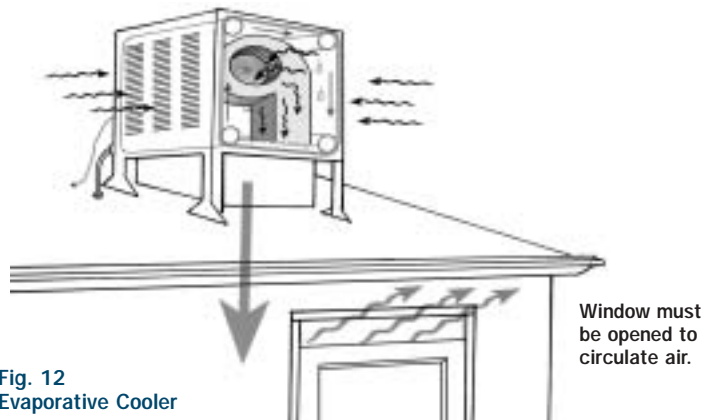


Fig. 12
Evaporative Cooler