RULES OF THUMBS AND WHY NOT TO USE THEM

Rules of thumb usually assume certain normal design and operating criteria, which are not always present. Here are some common HVAC rules of thumb.

400 CFM per ton of air conditioning:
In high heat load conditions or for heat pumps, 500 CFM per ton is recommended. The higher CFM is required to remove the sensible heat from the environment. However, if you have an environment that has high humidity then 350 CFM per ton is better. At the lower CFM the coil is colder and the air spends more time on the coil and increases dehumidification.

400 square foot per ton of AC:
This rule has been changing. Some have it as 400 sq. ft. per ton and others have it as 600 sq. ft. per ton. Neither is correct. First, they are based on 8 ft. ceilings and average load conditions with average insulations. No two homes have the same load conditions. A manual J should be performed before installing a new system.

800 FPM velocity in duct work:
Most standard air filters require 700-750 FPM. HEPA filters require 250 FPM and electronic filters require 500 FPM. The filter may not catch all the particles it can if the air moves through it too quickly. Hydro coils need 700 FPM and AC coils require 550-600 FPM. Below the recommended velocity the evaporator coil may freeze, and above the recommended velocity the condensation could be blown off the coil.

Charge until the high side pressure is 30 degrees above ambient temperature:
If you charged an R22 system until the high side pressure is 30 degrees above ambient temperature, the system would have worked, but not efficiently. If you charged an R410A system like that, your system will be shutting down on high head pressure conditions.

20 degrees between supply and return air temperature:
This will get you close, however, as the relative humidity decreases the temperature difference between supply and return air is going to increase. For example, if the return dry bulb temperature is 78 and the wet bulb is 64 you should have a 20 degree split. However, if the dry bulb is 78 and the wet bulb is 70 you should have a 14 degree split. If you had 78 dry bulb return and 55 wet bulb return you should have a 25 degree split.

Charge a non-TXV system to 15-20 degrees of superheat:
There is no way to calculate superheat without taking the proper air temperatures. If you use the 15-20 degree you may be charged correctly if you were born with a 4 leaf clover in your hair, a rabbit’s foot in one hand and a horse shoe in the other. It is more likely that you are either over or under charge.