# Charging Air Conditioning Systems

1. **If you're installing a new unit, there should be a charging chart in the installation instructions, or somewhere on the condensing unit itself.**

**2. The best thing you can do with a new unit or any unit is following the manufacturer's recommendations.**

**3. You'll need a wet bulb thermometer or sling psychrometer. If you do not have one, get one. It will help out**

**When you are charging air conditioning systems, and when you're checking cooling capacity.**

**4. If you're working on a unit with no factory charging chart, use a superheat and subcooling calculator**

**Available from Carrier or Trane to determine the proper charge for the unit.**

**5. With regards to subcooling, most DX (direct expansion) a/c systems with TXV's will run with 10 to 15°**

**of subcooling.**

**6. Before charging air conditioning systems, you must be absolutely sure the unit is low on charge.**

**A bubbling sight glass, frosting coil, frosting metering device, or poor cooling capacity don't necessarily**

**mean that a unit is undercharged.**

**7. Check your coils, blowers, and filters for cleanliness and obstructions, and be sure all your components match.**

**Does your condensing unit match your evaporator?**
**Is your compressor the right size?**
**Are your blowers the right horsepower, speed, and rotation?**
**And are your blower wheels and fan blades the right size and rotation?**

**8. If there was a leak, have you found it, repaired it, replaced the filter drier, and evacuated the system to**

**500 microns?**

**9. If you've made sure the system is ready to be re-charged, do the following if you do not have a superheat**

**and subcooling calculator or a wet bulb thermometer.**

**10. If you're working on a window or package unit, weigh in the charge to factory specifications if you can**

**find them, and you're done.**

**11. Check the operating characteristics to be sure they're normal, but as far as charging the system, weighing in**

**the exact charge is quick and easy.**

**12. If the unit is in a vacuum, charge liquid into the high side at the receiver king valve, or the high side**

**access valve.**

**13. Watch the low side gauge. If it doesn't rise, stop charging liquid, as more than likely you have a restriction.**

**14. On R-22 units over 5 tons, at this point with the unit not running, charge in 1/4 pound of liquid, per ton**

**of rated capacity, into the high side of the system.**

**15. So if the unit was a 10 ton unit, I'd charge 2 1/2 pounds of liquid into the high side, or less if pressures**

**stabilized and refrigerant stopped going in.**

**16.Then run the unit and finish charging.**

**17. If the system components all match, and there is no air flow or piping problems, start by looking for**

**the following running conditions:**

- **As long as the compressor amp draw stays normal, and head pressure stays normal, charge in vapor until you get 2° of subcooling.**

- **Let the unit run until the space is within 5° of design temperature, then finish charging.**

- **Charge TXV systems to 10° to 15° of subcooling; remember TXV's maintain constant superheat.**

- **Charge cap tube or orifice systems to 20° to 30° of superheat.**