AUTOMOTIVE AIR CONDITIONING REPAIR

Question:

What is ambient temperature and its effect on refrigerant?

Answer:

Depending on which book you read, ambient temperature is the air surrounding a motor or control device to allow it to reach its maximum operating horsepower. The automotive industry has chosen to refer to ambient temperature as the air temperature in the surrounding work area. If in a building, there is no radiation when the AC service is performed. The amount of cooling inside the building will have an affect on pressures. Therefor, reference from inside to outside temperatures should be made when troubleshooting.

Sense we are dealing with refrigerant and how temperature affects it, let's start at the beginning. Refrigerants boil at a temperature of about 20 below zero. When colder than that, there is no evaporation so there is no pressure. As the temperature increases, so does pressure. On a can of refrigerant there is a statement not to store in temperatures above 125 degrees. At that point, there is 168 lb. of pressure in the can.

After the refrigerant is compressed in the compressor, latent heat has been added to the refrigerant. This is referred to as the refrigerant has been superheated. The amount of heat is dependent on the ambient temperature. This will be about 45 degrees above ambient temperature.

The rule and the law of physics state as temperature increases, so does pressure.