

Air Conditioning Problems

Head Pressure

Head pressure varies significantly based upon 2 variables in a properly functioning system:

- 1) load on the condenser (outdoor temperature)
- 2) SEER efficiency rating of the system

Let us take a 10 SEER unit on a 80 degree F day. The head pressure will for most systems, be 180 - 195 psig on R-22 if the coil is clean, the unit is properly charged, no air is in the system, there are no restriction to refrigerant or air flow through the coil, and the metering device is working correctly.

Given the same conditions, a 14 SEER unit will have a lower head pressure. Perhaps between 150 and 165 psig.

But head pressure in an improperly functioning system can be high when any of the following conditions exist:

- low air flow across the condenser coil,
- overcharge of refrigerant,
- condenser has a low load,
- wrong refrigerant is in the system,
- air in the system,
- etc.

Low air flow can be caused by a variety of problems including dirty condenser coil, condenser fan not placed properly in the orifice, condenser fan motor not coming up to speed,

Head pressure may be lower if:

- the refrigerant charge is low,
- the condenser coil is wet,
- condenser has a low load,
- condenser coil has excessive air flow,
- etc.

Do not charge any air conditioner using head pressure or suction pressure unless directed to do so by the manufacturer of the equipment. The figures outlined above are for informational purposes only.

Modern units often have the charging information under the service access cover – “seek and you will usually find.”

Suction Pressure

Suction pressure varies with:

- 1) the latent and sensible load on the evaporator,
- 2) air flow across the evaporator.

Unlike head pressure, suction pressure does not vary significantly with system SEER.

Again we will assume R-22 is our refrigerant. Suction pressure ranges from a low of 58 psig – 80 psig. The cooler and dryer the indoor air passing across the evaporator coil, the lower the suction pressure. Conversely, the higher the indoor air temperature and humidity the higher the suction pressure. However, under extremely low load suction pressure can be less than 58 psig.

If the suction pressure is ever below 58 psig your evaporator coil may be frosting. However, under low load conditions this is normal.

In short, cool inside the house, low suction pressure. Warm inside the house higher suction pressure.

Causes of low suction pressure may be:

- low load on the evap. coil or wrong piston,
- low air flow
- low charge
- restricted refig. flow (liquid or suction line)
- defective TXV if so equipped
- etc.

Causes of high suction pressure include:

- over charge or wrong piston,
- compressor valves defective,
- high head pressure,
- high load on evaporator,
- etc.

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