E.P. Homiek Sheet Metal & HVAC Supply
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The Duct Man

HVAC Industry News You Can Use

UPCOMING CLASSES & SEMINARS

Electrical Diagnostics in HVAC
Cost: FREE
Lakewood 2/20/20
Union 3/5/20

Ductless Mini-Split Workshop
Cost: FREE
Lakewood 3/19/20
Union 4/2/20

NJ HVACR 5-Hour C.E. Course
Cost: $195
Lakewood 3/21/20
Union 4/4/20

Understanding ECM Motors
Cost: FREE
Union 3/26/20

RSVP REQUIRED
Lakewood: 732.364.7644
Union: 908.688-9104

Measuring HVAC Airflow & Static Pressure:
If You're Not Collecting Data, You're Just Guessing

Simply replacing HVAC equipment will not correct airflow performance issues. Rather, clearly identifying static pressure problems and correcting ductwork anomalies will. But to find the problems afflicting an HVAC system, you first need to know where to look and how. If you're not collecting data, you're just guessing.

As static pressure increases, airflow will decrease. Almost all HVAC manufacturers design equipment to operate at a 0.5 TSP (total static pressure). Many residential HVAC systems usually operate at a higher TSP due to ductwork returns being undersized and supply ductwork having excessive flex ductwork runs, kinks, closed dampers etc. In fact, the average residential TSP is about 0.87.

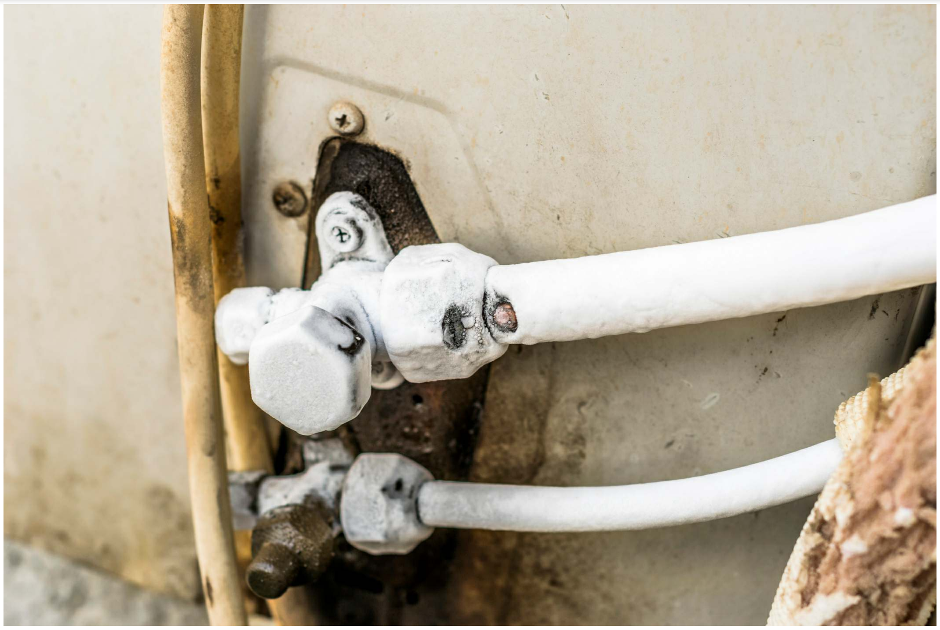
In comparing static pressure with the manufacturer's blower motor performance chart, HVAC contractors will often find systems to be moving 100-250 CFM less than what is required. What this means is if a system is not moving the right amount of air at the right velocity, there will be a direct impact on suction, discharge pressure, sub-cooling, superheat, and across the heat exchanger. Without the right temperature rise, be prepared for heat exchanger failure. That is why taking a simple static pressure map of a few readings with a digital manometer on every service call is so important. It only takes a few minutes and will tell you everything about the systems airflow. Many identified problems can be fairly easily corrected by either repairing or replacing sections of ductwork, correcting flex ductwork problems, opening dampers, etc., to deliver proper airflow throughout a home.

Benefits of Variable Speed Inverter Compressors

An inverter compressor utilizes a variable frequency drive to control the speed of the compressor motor in order to modulate cooling output. Inverter compressors offer a number of advantages over traditional compressor technology.

Inverter compressors conserve energy. Unlike traditional single-speed compressors that cycle off and on at maximum capacity as indoor temperatures rise and fall, inverter compressors continually alter the speed of the compressor to meet demand. Inverter compressors use only the amount of power needed, often running at as low as 25% capacity, and they rarely turn off, eliminating inefficient start/stop cycles that draw high current. Occupant comfort is improved by continually maintaining humidity levels and eliminating temperature fluctuations common to traditional units. Because they operate at lower speeds and are not constantly turning on and off, inverter compressors are quieter – an added advantage where homes are in close proximity. Soft starts and elimination of on/off cycling mean less mechanical stress, lower service costs, and decreased wear.

Never Replace a Compressor Without First Determining Why it Failed



When a compressor fails, it seldom happens due to a defect in the compressor itself. In fact, 90% of compressor failures occur as a direct result of issues found elsewhere in the system. If a new compressor is installed without identifying and fixing the root problem, the new unit will likely fail as well.

Loss of lubrication is the single most common reason compressors fail, and there are a number causes. Incorrectly-sized piping on split systems can trap oil and prevent it from returning to the compressor properly. Suction lines must be sized properly – large enough to minimize pressure drop, but small enough to maintain required velocity for oil return. The same goes for liquid lines, which must be large enough to minimize pressure drop and small enough to avoid undercharging the system. Always follow factory guidelines for piping and accessories.

Another leading cause of compressor failure is flood-back, which occurs when liquid refrigerant returns to the compressor through the suction pipe during the running cycle, washing oil from bearing surfaces. This dilution can lead to excessive wear in bearings, pistons, cylinders, rotors, and stators. Flooded starts result when refrigerant migrates and condenses in the crankcase oil during the off cycle. On startup, crankcase pressure drops and the refrigerant bursts from the oil, carrying oil out of the crankcase and washing oil from bearings, journals and rods. Both flooding and flood-back are caused by a wide variety of issues.