



December 2014 Tech Tips

Gas Heating Tip Max Heat Rise

Most all forced air gas heating appliances will have a "MAX Heat Rise" value listed on their name plate. This information is a quick way to look at your gas pressure to air flow ratio.

With air conditioning we can tell a fair bit from our temperature split in cooling. With a 10° split we know to check the charge because it looks low. With a 30° split we tend to think our air flow is low for some reason.

Our heat rise can do the same for us in heating. Say you are on a roof mount package gas/electric with a Max Heat Rise of 40° listed. If you take a temperature split and get 70° return - 115° (45°) you can rest assured the unit will probably trip the Hi Limit if allowed to run long enough. Even with a 50° return air, exceeding the Max Heat Rise will almost always cause a Hi Temp limit to trip. So why is the temp split so high? The most common and easiest to check is air flow (dirty filter, fan speed, etc.). A frequently overlooked cause would be gas pressure. With Natural Gas, that appliance was probably designed to run at 3 1/2" of manifold pressure. I have seen a manifold pressure of 4" (brand new unit) cause the temperature split to exceed the Max Heat rise by 10° and cause a Hi Limit failure.

I would encourage you to keep your temperature split a few degrees below the value list for Max Heat Rise. Meaning if it list 40°, try to keep it around 35. This will keep it from nuisance Hi Temp failures on a long run cycle and insure the product has a long service life.

Mini Split Systems Communication Issues

Most mini split systems are digital communication between the indoor and outdoor unit. As well as the indoor unit gets its power from the outdoor unit. So when power is applied to the outdoor unit, the very first thing it does is communicate with the indoor unit as part of its self-diagnostics mode. When it cannot find the indoor unit, it will go into fault mode (nothing will happen and it will not turn on, ever).

On many commercial projects an electrical disconnect must be installed by the indoor unit. Often the chain of events at start-up goes;
Evacuate line set - weigh in charge to line set - open line set valves on unit - turn on outdoor disconnect - head inside to turn on indoor unit disconnect...

The second we had power to the outdoor unit with no power (communication to the indoor unit) our outdoor unit goes into Fault Mode. To clear such a fault; Power up the indoor unit – turn the power to the outdoor unit off (leave off at least a few minutes but no more than 10) – then re-apply power to the outdoor unit.

By resetting the power to the outdoor unit, that should have cleared any accidental faults caused by having the outdoor unit powered up with no power to the indoor unit.

If you get a communication fault on an operating system not caused by having power applied in the wrong sequence, check your communication wire between your outdoor and indoor unit. That would most likely be the issue.