

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

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High Pressure Switches

High pressure switches are used on many refrigeration systems. They are designed to shut down a compressor if the system's high pressure rises above an unsafe level and not allow the compressor to restart until the pressure returns to a safe level.

High pressure switches are available with either an automatic or manual reset. An automatic reset will automatically restart the compressor when the pressure falls to a safe value. A manual reset high pressure switch needs to have an operator manually press a reset button in order to restart the compressor. They are also available with either an adjustable cut-out setting that could be adjusted by a technician or fixed settings which cannot be adjusted by a technician.



When making field adjustments to the adjustable high pressure switch it is always best to follow the directions or requirements of the system manufacturer. When the manufacturer's guidelines are not available, the cut-out setting can be set at a saturation pressure equivalent to a 155°F condensing temperature, or 60°F above the normal maximum ambi-

ent.

When troubleshooting it is important to not allow a system to run with its high pressure switch electrically bypassed as it could potentially lead to a very dangerous operating condition. I can personally attest to this potential safety hazard.

Below is a true story why it is important not to bypass a high pressure switch. A mechanic was called out to repair a 10 ton package air conditioning one day. When he arrived on the job he noticed the system had tripped on its high pressure switch. The technician attached his gauges and then reset the high pressure switch. Sure enough as the system started to run, the high side pressure steadily increased to the trip point of the high pressure switch and shut down the system again. Not knowing the true cause of the problem, he decided to electrically bypass the high pressure switch (not a very smart decision—as you will see shortly). He then restarted the system and the high side

pressure again started to rise. He watched as it continued to rise well beyond the trip point of the pressure switch and decided to shut down the system. Being an inexperienced technician, he decided to start the system up again. Not sure why he needed to see the pressure rise again, but he did. Just as he restarted the system for a second time, his pager went off (this was back in the day before all technicians carried cellphones). So he made mistake number two and left the system running while he went to find a phone to call the office. A few minutes into his conversation on the phone he heard a loud explosion and he, along with everyone in the area, immediately ran out.

Needless to say, the “explosion” was actually an 8 inch section of the discharge line (from the unit he was servicing) blowing out of the system. Apparently the system pressure had built up so severely that this section of discharge line broke free and was jettisoned across the room. It actually took down several lights and got wedged into a wall close by. If he had been there, or another person was walking close by, they could have been severely injured.

Lucky for him, his company and their customer, no one was injured but it was definitely a lesson well learned.

Compressor Terminals

Care should be taken when examining the terminals of a compressor. It is possible for a weakened terminal to blow out and cause injury to a service technician. If the terminals are weakened due to some system problem, the refrigerant pressure within the compressor can cause one or more of the terminals to blowout.



Most manufacturers recommend that the refrigerant charge be removed from a compressor before the terminal cover is removed for inspection of the compressor terminals.

If this is not done, as is recommended, the technician should stand off to the side while removing the terminal cover and while inspecting the terminals, then immediately reinstall the terminal cover when done with the inspection.

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PRESIDENT'S MESSAGE

We live and work in uncertain times. There are Family Medical Leave Acts in both Federal and New York State. Rules we must follow as companies and rights we have as employees seem to be constantly changing. However, one thing that will have an effect on the HVAC industry is Tariffs. China, Canada and Mexico are being hit with tariffs and it seems China is getting hit the hardest. If you are quoting any large jobs for future installation you should check that your supplier will hold the price. If a Tariff becomes effective on something you quoted before you do the job you might have to pay more than anticipated for the product.