METROPOLITAN NY CHAPTER

Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

"Better Service Through Knowledge"

December 2023

RSES® The HVACR Training Authority Metropolitan New York Chapter

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EDUCATIONAL MEETING

December 13th, 2023 @ 7:30pm

COMPLIMENTARY Dinner at 6:00pm

Please email Rich Bruno: richbrunony@aol.com if you are coming, so that we can have an informed head count.

At *TAVERNA KOS* 41-19 23rd Ave., Astoria

LOW VOLTAGE WIRING for CONNECTED THERMOSTATS & DUAL –FUEL RESIDENTIAL APPLICATIONS

- Introduction to c***onnected*** thermostats
- How to take advantage of ***wireless controls***
- How to wire a ***dual fuel*** system with a heat pump and hydronic back up
- How to integrate ***IAQ*** into your thermostat
- How to integrate ***water leak damage prevention*** into your system.

Presented by: Vinnie Ventura, Venco Sales

PRESIDENT'S MESSAGE

Our in-person meetings have been going well.

I would like to encourage our members to join us for a chance to be with other technicians as well as enjoy an informative educational presentation. It is only by being there that you can ask questions—***and learn***.

As is our tradition, our Holiday dinner is FREE, compliments of our Chapter. So come join us for dinner at 6:00, followed by an educational presentation.

Please email Rich Bruno: richbrunony@aol.com so that we can have an informed head count.

Your Board of Directors joins me in wishing you a Happy and Safe Holiday Season.

Drew Garda, President

PSC MOTORS

PSC (permanent split capacitor) motors are very common within the air conditioning and refrigeration industry—although they are slowly giving way to the newer technologies. When servicing these types of motors, failures can generally be classified as either electrical or mechanical in nature. Knowing which type of failure has occurred can assist the service engineer in the correct diagnostic path to follow.

Electrical problems can be easily diagnosed by knowing how the motor is internally wired. The PSC motor consists of two motor windings: a run winding and a start winding. In addition to the motor windings, a PSC motor has a run capacitor which is wired externally to the motor housing and in series with the start winding

The first step in diagnosing an electrical problem in a PSC motor is to determine if the correct voltage has been applied to the motor. This is done by locating the data plate on the motor to determine the correct voltage to be applied. A voltmeter should then be used to determine if that voltage is being applied to the motor. If no voltage, or the incorrect voltage is applied, the next step would be to determine the cause, and then to repair. Be cautious of a blown fuse. A blown fuse is an indication of a serious electrical problem. Before replacing a fuse, thoroughly inspect the electrical system to determine the cause of that problem.

If the voltage is correct and the motor still does not start, or if it is suspected that the motor caused the fuse to blow, then the continuity of the run and start windings should be checked. Disconnect power to the motor and with an ohm meter check the resistance between the common and run terminals and then the common and start terminals. The exact reading will vary from motor to motor. What the service technician should look for is to see if the motor is open (an infinite resistance reading on the ohm meter) or shorted (a zero resistance reading on the ohm meter). If either of these problems exists, the motor needs to be replaced.

Another possible electrical problem is a defective run capacitor. To check a run capacitor, first remove it from the circuit. If the capacitor does not have a bleed resistor across its terminal, place an 18K ohm, 2-watt resistor across its terminals. This will discharge the capacitor of any voltage. Next take an analog-type ohm meter and place the leads across the terminals of the capacitor. A shorted capacitor will read a resistance of zero and an open capacitor will read an infinite resistance. A good capacitor will deflect the needle to the right and then move back to the left.

Mechanical problems are generally the result of defective bearings within the motor. A motor that checks out fine electrically but still does not run, generally has a mechanical failure. The motor bearings are probably seized and do not allow the motor to turn. When a mechanical problem of this nature is discovered, it is easier to replace the entire motor than to attempt to replace the bearings. Always replace the PSC motor with one that matches the original motor's capacity and configuration. When possible, obtain an exact replacement from the OEM (original equipment manufacturer).

A final test of a PSC motor is to check its amperage draw with the motor running under full load. Check the motor data plate for its full-load amperage draw and compare it to the actual amperage draw. Any major deviance from the full-load amperage draw to the actual amperage draw should be questioned and the cause determined.

Joe Marchese, CMS
Greater Pittsburgh Chapter, PA

COMING TOPICS

Control Wiring w/ New Technology

Covid-19 effects on HVAC/R industry

Upselling The Job

Handling Customers Who are "Educated" on the Internet

High Quality Compressor Remanufacturing

If you have any suggestions or requests for FUTURE EDUCATIONAL PROGRAMS, please let us know!