

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continued Education for the HVAC/R Industry

"Better Service Through Knowledge"

April 2012

WWW.METRONYRSES.ORG



Accurately Diagnosing a Defective Compressor

Replacing a compressor in a refrigeration system is never an easy or inexpensive task. If a compressor is found to be defective, every effort should be made to verify that a correct diagnosis was made. Sometimes compressors that have been changed out in the field are later found to be operational. This is not good for either the service contractor or their customers.

There are several symptoms that could mislead a service technician into believing that the compressor is defective when, in fact, it is not.

One common scenario in which a compressor may appear to be defective is when it has overheated. If a compressor has an *internal overload* and has overheated, the compressor will not start. If the technician arrives on the job when the compressor has tripped on its internal overload and checks the resistance from common to run and common to start and finds it to be infinite (open), he may interpret this to be an opened winding in the compressor. However, if the compressor was allowed to cool down and the internal overload reset, the technician may find the compressor will start normally, and would not need to be replaced. The real problem as to why the compressor overheated will then need to be identified and resolved.

If the original compressor is replaced without finding out why it overheated, the replacement compressor will most likely overheat and the system will *again* not be operational. Any time a compressor with an internal overload is extremely hot, a technician should allow it to cool down before attempting to check the resistance through its windings. This will allow the technician to accurately determine if the compressor has an open winding or has simply opened on its internal overload.

Another potential scenario is a compressor with a defective start or run capacitor. If the run capacitor is defective, depending on the type of compressor, it could cause the compressor to draw higher than normal amperage and cycle off on its overload or not start at all. A compressor with a defective start capacitor will most likely cause the compressor not to start. A technician in either sce-



nario can interpret this to be a defective compressor. Before any compressor is pronounced defective, if it incorporates either a start or run capacitor, the capacitors must be checked to see if they are in good condition and working.

If incorrect voltage is applied to a compressor it could cause the compressor to either run for a brief time then cycle off on its overload, or not start at all. A service technician must first verify the correct voltage for the compressor and then measure to see what actual voltage is applied. Most compressors are rated with a tolerance of +-10%. If the applied voltage is outside these limits or the limits stated by the manufacturer, the voltage must be corrected before the compressor can be properly diagnosed.

It is always a good practice to attempt to start the compressor by external means before condemning it. This means removing all the system wiring for the compressor and attempting to start the compressor with your own compressor starting kit. The compressor starting kit can either be self-made or purchased at a local supply house. There are a few companies that manufacture/sell this type of kit. This will help to determine if the problem lies within the starting components of the compressor or with the compressor itself.

Lock-out/Tag-out

When working on electrical circuits, safety should always be ***first*** on your mind. Electrical circuits should always be de-energized before repairing or replacing any electrical component or wiring. De-energize at the system's disconnect and then follow standard "Lock-out/Tag-out" procedures.

Lock out the circuit by placing a padlock on the disconnect, which will prevent anyone from mistakenly energizing the circuit while you are working on it.

Place a tag on the disconnect so any other building or maintenance personnel will know the system is being serviced and who de-energized the circuit and the system.

When following the basic "Lock-out/Tag-out" procedure always follow the guidelines set forth by the agency having jurisdiction.





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Seminar



Traditional heating and A/C companies are branching out into the REFRIGERATION side of the industry. This Seminar will give them what they need to know. This program will benefit and reinforce the knowledge of the seasoned technician, as well.

The topics covered are too numerous to list here. We will cover every aspect and component used in the REFRIGERATION SYSTEM. Those experienced technicians will gain a better understanding of these components, along with a better understanding of how they relate to each other, both functionally and installed locations.

This program utilizes lecture, field examples, computerized demonstrations, handout materials and encourages audience participation. A certificate of completion will be mailed to all participants.

The cost for full program, including morning & afternoon refreshment breaks and full service, hot sit-down lunch is:
\$105 for RSES members, \$130 for non-members.

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**REFRIGERATION SERVICE ENGINEERS SOCIETY
METROPOLITAN NY CHAPTER**

For Further Information Call: Stan Hollander @ 718 232-6679

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Refrigeration for the HVAC Technician 4/14/12

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8:30am – 5:00pm

FULL DAY
SESSION
with 2 Breaks &
Hot Lunch served

Location:

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21-01 24th Avenue
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METROPOLITAN NEW YORK CHAPTER, RSES

For Information Call: Stan Hollander, CMS (718) 232-6679

We will discuss the value of using voltage line monitors and head pressure controls. Voltage line monitors protect motors and other three phase equipment from premature failure and damage due to over/under voltage conditions, phase loss, phase reversal, phase unbalance, faulty power supply and contactor problems. Head Pressure Controls regulate system pressure by modulating the condenser fan speed as a function of condensing temperature during low ambient conditions to prevent evaporator freeze ups, low pressure cut-outs and liquid slugged compressors. These products are a must in any compressor environment. We will also discuss the value of manufacturing electronic controls in the US and the advantages this brings the contractor. We will also briefly touch on furnace and defrost replacement boards.

Wednesday April 11th, 2012 at 7:30pm

at

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***SEE DESCRIPTION OF PRESENTATION
IN BOX ABOVE***

by

Peter Pierret—ICM Controls

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**EDUCATIONAL PROGRAM
at 7:30pm
Wednesday April 11th, 2012
SEE DETAILS THIS PAGE**

