

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continued Education for the HVAC/R Industry

“Better Service Through Knowledge”

December 2012

WWW.METRONYRSES.ORG



The Hot Pull Down Problem

While troubleshooting or installing refrigeration systems using a thermostatic expansion valve, it is a relatively common task to measure the superheat value of the refrigerant leaving the evaporator. This could be a very useful measurement to determine how a system is operating.

However, there is a major consideration when using this measurement to analyze the operation of a system. If the heat load on the evaporator is very high—in other words if the air temperature entering the evaporator is very high—the refrigerant’s superheat value leaving the evaporator will be high. The thermostatic expansion valve will not be able to feed enough refrigerant into the evaporator. Under this condition the thermostatic expansion valve will be open to its maximum port size and may have reached its limit of how much refrigerant it can feed into the evaporator. This is assuming that the pressure drop and temperature of the liquid entering the valve remain constant.

This is not an indication of a system problem, but simply a system working outside its design range. Do not interpret this as an issue and attempt to reduce the refrigerant’s superheat value. Trying to adjust the expansion valve, adding refrigerant to the system, or some other change is not the answer. In fact it can (and more than likely will) cause a problem.

For accurate superheat calculations, the case (return air) temperature should be within 5 °F of its design conditions. If the case temperature is initially high, this will require running the system for a period of time and allowing it to drop before relying on this measurement as a system check.

So, as with many aspects of our trade, this measurement needs to be taken using some common sense and a little knowledge. If the refrigerant’s superheat leaving the evaporator is high and the case is hot, wait to make a decision as to whether this is a problem.

If the superheat leaving the evaporator is high and the



case is within 5 °F of its normal design temperature, there is an issue. If the refrigerant’s superheat value is lower than normal regardless of the return air temperature there is a problem.

On larger cases or cases packed with product, if the case temperature is high it will take time for it to drop. This may present a problem for you.



Do you wait for the temperature to drop, or do you make a return visit, or do you simply not need to even take this reading? It’s normally best to take this measurement, but it is not always practical.

So, again, common sense must prevail. If it is a new installation or if the repair you made requires taking this measurement, you need to wait. However, if the repair you made does not really relate to taking this measurement you don’t need to wait.

Understanding this relationship can help you avoid creating additional problems and wasting time on a job, which is definitely good for you, and good your customer.

Refrigerant Decomposition

Refrigerants will decompose when exposed to high temperatures, such as when in the presence of an open flame or electric resistive heaters. As refrigerant decomposes, toxic and irritating by-products are formed. These include hydrogen chloride for CFC and HCFC refrigerant, and hydrogen fluoride for CFC, HCFC and HFC refrigerants. These acidic vapors are very hazardous and the area should be evacuated and ventilated to prevent exposure to any personnel.

This is one of the many reasons why all the refrigerant must be removed from a system prior to soldering or brazing any of its refrigerant lines.



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Metro NY Chapter RSES HVAC Training Courses

The Metropolitan New York Chapter RSES will offer the RSES Technical Institute Courses – 1, 2 & 3 on Tuesday & Thursday evenings, starting January 17th, 2013 in Long Island City, New York

Dates*: For 11 weeks on Tuesdays & Thursdays

1/15 & 1/17	1/22 & 1/24	1/29 & 1/31
2/5 & 2/7	2/12 & 2/14	2/19 & 2/21
2/26 & 2/28	3/5 & 3/7	3/12 & 3/14
3/19 & 3/21	3/26 & 3/28	

**Dates Tentative – Subject to Change*

Time: 6:00 PM – 10:00 PM

Location: Long Island City High School
14-30 Broadway
Long Island City, NY 11106

Cost for Course 1, 2 or 3:

\$849.00 for RSES members
\$949.00 non-RSES members (also includes 1 year membership in RSES)

Includes: Technical Institute course manual, course tuition, Certificate of Completion after passing final exam, 72 hours toward NATE Recertification, for those eligible.

Register by January 10th by calling, mailing or Emailing the form below

FOR ADDITIONAL INFORMATION VISIT:

<http://www.metronyrses.org>

or Email: school@metronyrses.org

or Phone Stan Hollander: 718 232-6679

by Mail: Metro NY Chapter RSES

Attn: Stan Hollander, 1837 61st Street, Brooklyn, NY 11204

–Checks and Charges Welcome –

Please make checks payable to "Metro NY RSES"



TRAINING COURSE OVERVIEWS

TECHNICAL INSTITUTE COURSE 1

This course begins with a comprehensive introduction to refrigeration and air conditioning. Topics covered include: basic physics, major system components including hermetic, semi-hermetic and open compressors, condensers, evaporators and refrigerant metering devices. It also covers the fundamental concepts of electricity and magnetism as they pertain to resistors, resistance, conductors, power supplies, circuit protection devices and transformers. Detailed information on lessons and content for Course 1 can be found at:

<http://metronyrses.org/ti1.html>

TECHNICAL INSTITUTE COURSE 2

Beginning with tools-of-the-trade this course covers refrigeration system accessories, desiccants and driers, defrosting methods, refrigeration system controls and piping. It also includes instruction on compressor replacement and system evacuation, electric motors in refrigeration systems, motor capacitors and protectors, thermostats, relays, contactors and starters, test equipment and troubleshooting, pressure and enthalpy diagrams, psychrometrics, heat transfer and estimating heat loads, residential air conditioning, humidification and a review of safety codes. Detailed information on lessons and content for Course 2 can be found at:

<http://metronyrses.org/ti2.html>

TECHNICAL INSTITUTE COURSE 3

Begins with comprehensive introduction to heat pump theory, including water-source heat pumps. Topics covered include computer-room environmental control, economizers, fans and blowers, air filtration and distribution evaporative condensers and cooling towers, water treatment, multiple-rack systems, hydronics, troubleshooting, controls and controls components, pneumatic relays, typical control applications, and control maintenance. Detailed information on lessons and content for Course 3 can be found at:

<http://metronyrses.org/ti3.pdf>

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REGISTRATION FORM

Name: _____ Company: _____

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Which course are you registering for? Technical Institute Course 1, 2 or 3 Choose ONLY ONE _____

Are you a current RSES Member: If Yes, RSES Membership Number: _____

Please register by January 10th - space is limited.

Check or Credit Card Accepted for Payment

Make check to "Metro NY RSES" and mail w/ registration to: Metro NY RSES, Attn: Stan Hollander, 1837 61st Street, Brooklyn, NY 11204

To register by Email submit this form with Credit Card information to school@metronyrses.org

METROPOLITAN NEW YORK CHAPTER, RSES

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

Annual Holiday Dinner (December Meeting)

Starting at 6:30pm

Join us for our Holiday Buffet. Bring nothing but yourselves and your appetites. Riccardo's puts out a great table for us to enjoy. Did I say "bring nothing but"? You can certainly bring a friend or colleague. They can enjoy a fine meal with us, and then partake of the educational opportunities which we have to offer, as well as our friendship and camaraderie. Who knows? They may even want to become a part of this great organization of ours.

**The Officers of The Metropolitan NY Chapter RSES wish all our members, friends & their families
a very**

*****Happy, Healthy, and Safe Holiday & Holiday Season*****

**In the unlikely event of meeting cancellations,
announcement will be posted on our web site**

HOLIDAY BUFFET— 6:30 pm

Wednesday December 12th, 2012 at 6:30pm

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