

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

February 2016

WWW.METRONYRSES.ORG



USING A LOW PRESSURE CONTROL AS A TEMPERATURE CONTROL DEVICE

The use of a low pressure control to maintain box temperature on commercial medium temperature applications has been a common practice for many years. It allows remote condensing units to be controlled without any additional control wiring between the refrigerated box and its compressor. It works on the principle that there is a direct relationship between the pressure of the saturated refrigerant in the evaporator and its temperature. For every pressure of a saturated refrigerant, there is an associated temperature.

A typical low pressure control has two set points, its cut-in and its differential. In order for the control to work properly, both the cut-in and differential set points need to be set properly. Many system manufacturers have stated values for the proper set points for their systems; however, these stated values usually work well on self-contained or close coupled systems. If the condensing unit is remotely located, the stated values *may* cause problems with the cooler.

On systems where the condensing unit is located a considerable distance away from the evaporator, it is more accurate to first set the cut-in set point. The cut-in set point should be set to a pressure (temperature) that will allow the evaporator to completely defrost during the off cycle. Since most commercial refrigeration systems work with a coil temperature below 32°F (usually between 20°F and 25°F) frost will develop on its coils. If this frost is not removed and continues to form, it will eventually completely block the airflow through the evaporator coil and cause the unit to malfunction. The cut-in value needs to be set to a pressure (temperature) that will not allow the compressor to come on until the coil is **completely defrosted**. Typically if the coil temperature is above 33°F no frost should be on the coil; however, that is usually too close for comfort. Most system designers recommend that the coil rise to a temperature between at least 36° - 39°F before allowing the compressor to cycle on. This will ensure that the coil has been completely defrosted.

Once the cut-in pressure has been set, the differential setting must then be set. The differential setting is used to cycle the compressor off at the lowest possible box temperature. The differential setting represents the difference between the cut-in pressure and the cut-



out pressure. For example if the cut-in pressure is set at 40 psig and you want the compressor to cycle off at 15 psig, the differential setting would need to be set at 25 psig (40 psig -15 psig = 25 psig). The exact cut-out pressure needed to correctly cycle off the compressor may be different from

unit to unit. One of the reasons for this is that the pressure drop from the evaporator to the compressor may be different on each unit. Here's an easy way to correctly set the differential pressure:

- First set it to an extremely high value (a value the suction pressure should never reach under normal operating conditions—30 psig should suffice).
- Allow the system to run while monitoring the box temperature.
- Once the box reaches its lowest desirable temperature, slowly adjust the differential counter-clockwise until the compressor cycles off.

Using this procedure will ensure the cut-in and differential setting have been properly set and the system will function properly — **GO PLAY!**

ANSWERS TO TEST YOUR KNOWLEDGE Pg 2

1) False; 2) False; 3) True; 4) True; 5) True;
6) False; 7) False; 8) True; 9) True; 10) False;
11) True; 12) True; 13) False

FREQUENTLY ASKED QUESTIONS ABOUT CM AND CMS CLASSIFICATIONS

Question: *What are CM and CMS?*

Answer: Certificate Membership (CM) and Certificate Member Specialist (CMS) are classifications of RSES membership. Exclusive to RSES members, these designations are earned after successfully passing rigorous written examinations. The CM exam tests 18 categories of knowledge required in the installation and servicing of refrigeration and air conditioning equipment. It requires a thorough understanding of the fundamentals of mechanical refrigeration theory, as well as working knowledge of installation, service, and troubleshooting procedures. There are 150 multiple-choice questions on the exam. A grade of 70% is required to pass. There are currently eight CMS exams, each focusing on a specialized area of expertise: Commercial Air Conditioning, Commercial Refrigeration, Controls, Heating, Domestic Service, HVACR Electrical, Dynamic Compression and Heat Pump. There are 100 multiple-choice questions on each Specialist exam. A grade of 80% is required to pass.

Question: *Who can take the CM Exam?*

Answer: The CM exam may be taken by any RSES member in good standing who is an Active member. RSES Canada requires two years of Active membership for their members before taking the exam.

Question: *Who can take a CMS exam?*

Answer: CMS exams may be taken by any RSES member in good standing who is a Certificate Member. It is not possible to take both the CM and a CMS exam at the same time.

Question: *What does it cost to take a CM or CMS exam?*

Answer: It costs \$40 to sit for the CM exam and all CMS exams cost \$45 per test, to take the test through our local chapter.

Question: *What does RSES do to promote my achievements?*

Answer: All successful CM and CMS candidates receive personalized wall certificates suitable for framing. In addition, all future correspondence includes the CM or CMS designation with the member's name and the member is encouraged to do the same. With the member's permission, his or her employer is automatically notified of successful passing. Further, the names of successful candidates are included in each month's RSES Journal, as well as listed in press releases and broadcast e-mails sent to industry peers and publications.

TEST YOUR KNOWLEDGE

Gas and Oil-Fired Furnaces

(Answers on page 1)

Answer the following questions as they relate to gas and oil-fired furnace preventive maintenance.

1. *True or False.* All thermostats have heating anticipators.
2. *True or False.* True or False. Normally a misadjusted heating anticipator will cause the furnace to go off on a safety limit.
3. *True or False.* Hot surface ignitors can be checked for cracks using an ohmmeter.
4. *True or False.* The components of the combustion system should always be cleaned of all accumulated soot and dirt during an inspection.
5. *True or False.* Never operate an oil furnace with a cracked heat exchanger.
6. *True or False.* It is okay if the refractory material in the combustion chamber is slightly damaged during an inspection.
7. *True or False.* The vent system does not need to be checked for damage during an inspection.
8. *True or False.* When reinstalling the flue pipe on an oil furnace, the flue pipe should be pitched upwards 1/4" per foot.
9. *True or False.* It is a good practice to change the nozzle during each inspection.
10. *True or False.* On an oil-fired furnace, it is not necessary to clean the ignition terminal contacts during an inspection.
11. *True or False.* There is no difference in the supply oil pressure from a one-pipe to a two-pipe system.
12. *True or False.* To determine the operational efficiency of an oil furnace, the percentage of carbon dioxide must be measured.
13. *True or False.* A smoke spot test will determine if the discharge air temperature of the furnace is within the manufacturer's specifications.



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in the Spring*

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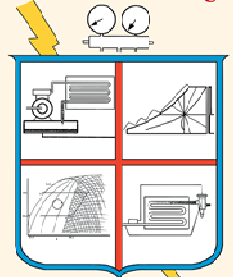
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If you have any suggestions or requests for Future programs,
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For Information Call: Stan Hollander, CMS (718) 232-6679

MESSAGE FROM THE PRESIDENT

We are now in the final steps in transitioning to all email Newsletters. This month's Newsletter (February '16) is *email only*. The March Newsletter (next month) will be both mailed and emailed. It is our hope that members who have not updated their email addresses with RSES.org will realize they did not get the February meeting notice and log-on to www.RSES.ORG and register or update their email address.

In the past, we have sent meeting notices to businesses and non-members who have attended our training programs. Unfortunately, they do not receive meeting notices when we email them. We are establishing a separate email list to accommodate those people/companies. If you are not an RSES member, you may sign up for emailed Newsletters. Just send your request to <http://www.MetroNYRSES.org>. All requests will be entered in a drawing for a \$50.00 gift card.

Feel free to forward this email to anyone you think might be interested in attending our meetings or in joining RSES.

Drew Garda, President

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

Wednesday February 10th, 2016 at 7:30pm

at

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**UV Technology and Implementation
It has Changed—Are You Ready?**

by

Rich Aughey—FreshAireUV

— PLACE LABEL HERE —

**EDUCATIONAL PROGRAM
Wednesday February 10th, 2016
at 7:30pm
SEE DETAILS THIS PAGE**

