

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

March 2018

WWW.METRONYRSES.ORG



Find us on
Facebook



Testing for Evaporator Leaks

Locating and repairing refrigerant leaks associated with air conditioning systems is a common task for many technicians. Sometimes, locating a leak can be tricky.

If the leak is in an area which is not readily accessible, it may be difficult to locate. One such location on residential split system air conditioners is within the evaporator section. The evaporator is enclosed in either a plenum or its own casing. To leak search this area, a section of the casing surrounding the evaporator must be removed. On some systems this may be a time-consuming task. If this is the case, the following procedure can be used to initially determine if there is a refrigerant leak in that section before removing any panels:

- Make sure the system still contains some amount of the refrigerant.
- If the evaporator has any ice on its coils, remove the ice before proceeding. If the system has a forced-air furnace attached, turn the system to the heating mode to defrost the evaporator. If not, allow the indoor blower to run without the compressor running to defrost the evaporator.
- Turn off all system power and allow the system's pressure to equalize.
- Set the leak detector to its highest sensitivity.
- Locate the evaporator's drain outlet and remove a section of the piping close the evaporator's drain pan.
- Position the detector's probe at the drain opening (be careful to avoid any water coming in contact with the probe).
- Leave the probe in this area for at least ten minutes or until a leak is sensed.
- Remove the electronic leak detector's probe, recalibrate if needed, and repeat Step 8.
- If refrigerant is detected on both tests, then remove the required casing to expose the evaporator and pinpoint the exact location of the leak.



A Common Cause of Capacitor Failure

Many single phase RHVAC motors require the use of either a start capacitor, run capacitor, or both, for proper operation. Capacitors can and will occasionally fail, causing a problem for the motor. The primary cause of a capacitor failure is overheating.

Start capacitors are not designed to dissipate the heat associated with continuous operation. They are designed to stay in the circuit only momentarily while the motor is starting. If a start capacitor stays in the circuit too long it will overheat and fail. If a failed start capacitor is discovered while troubleshooting a motor, the switch (start relay or centrifugal switch) needs to be inspected as the possible cause of the capacitor failure, especially when dealing with hermetic compressors. It is normally best to replace both the start relay and start capacitor if a defective start capacitor is discovered. Another possible cause of a failed capacitor is a motor that is short cycling. The start capacitor may not have sufficient time to cool down after each start, and this can lead to the capacitor overheating.



When replacing a start capacitor there are two important specifications that must be determined: its microfarad (MFD) rating and its rated operating voltage. The MFD rating of the replacement capacitor should be equal to its original. If the exact rating cannot be found, a capacitor with no more than a 20% greater MFD rating can be used. A lower MFD rating **should not** be used. The voltage rating on the capacitor should also be matched to the original. If the original voltage rating cannot be found, a capacitor with a higher rated voltage can be substituted. Do not use a capacitor with a lower rated voltage.

Run capacitors are designed for continuous motor operation, however they can also overheat and fail. A failed run capacitor can affect the operation of a motor in one of two ways: either the motor will fail to start, or if started will draw higher than normal amperage and cause the motor to trip on its internal overload.

When replacing a run capacitor, the same rules apply except that a replacement run capacitor with a MFD rating of plus or minus 10% of the original MFD rating can be safely used, and never a lower voltage.

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 six CMS exams, each focusing on a specialized area of expertise: Commercial Air Conditioning, Commercial Refrigeration, Controls, Heating, Domestic Service, and HVACR Electrical. 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: Every RSES member gets to take one CM exam free of charge. After that, it costs only \$25 to sit for additional CM exams. All CMS exams cost \$25 per test.

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

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.* 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.

ANSWERS TO TEST YOUR KNOWLEDGE
 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

JOHNSTONE **HVAC/R**
Parts
Supplies
Equipment

27-01 BROOKLYN QUEENS
EXPRESSWAY WEST
WOODSIDE, NY 11377
FAX (718) 274-4972

Large
Local
Stock
Free Catalogue

718-545-4896
WHOLESALE ONLY

Supco

**SEALED UNIT
PARTS CO., INC.**

P.O. BOX 21
2230 LANDMARK PLACE
ALLENWOOD, NJ 08720 USA
(732) 223-6644
FAX: (732) 223-1617

H&L
HEATING SUPPLY, Inc.
COMMERCIAL / INDUSTRIAL /
RESIDENTIAL

AUTHORIZED DEALER OF

- HONEYWELL • McDONNELL MILLER •
- FIREYE • HEAT TIMER •
- FUEL WATCHMAN •
- BELL AND GOSSETT • ASCO •
- POWERFLAME BURNERS •
- T.A.C. BUILDING AUTOMATION •
- ECLIPSE GAS BOOSTER •
- SIEMENS GAS TRAINS •
- GRUNDFOS •

BRIAN T. O'NEILL
BRIAN@HLHEATINGSUPPLY.COM

1100 CONEY ISLAND AVENUE
BROOKLYN, NY, 11230
(718) 859-2424
FAX (718) 859-5727

UR
**UNITED
REFRIGERATION INC.**
Refrigeration, Air
Conditioning, Heating,
Supplies, Equipment & Parts

Jim Herlinger
Branch Manager
51-05 59th Place
Woodside, NY 11377-7408

Tel: 718 476-2600
Fax: 718 476-2648
Branchv2@uri.com

HALSEY SUPPLY
CO. INC.

FOR ALL YOUR
•
AIR CONDITIONING
REFRIGERATION
•
EQUIPMENT
PARTS SUPPLIES
•
EPA-CERTIFICATION TESTING

241 HALSEY STREET
BROOKLYN, NY 11216

(718) 574-4774
FAX (718) 574-4778

RA
RATHE
ASSOCIATES

**EXPECT MORE
& GET IT.**

REPRESENTING THE
INDUSTRY'S FINEST
MANUFACTURERS

**CERTIFIED FACTORY
TRAINING BY
INDUSTRY EXPERTS**

LOOK TO US FOR ALL YOUR
PLUMBING, HEATING & HVAC NEEDS

NY 631.822.1200
NJ 908.753.4686 • fax 631.822.1400
ratheassoc.com

COMING TOPICS


*Low Temperature
Hydronic Heating*

*What's New in Motors for the
HVAC Industry*

*The Latest
in Compressor Technology*

If you have any suggestions or requests for Future programs,

JUST ICE



Suppliers of Food-Grade Ice Blocks
11 lb • 25 lb • 75 lb
300 lb Carving Blocks

Just Ice NY Corp.
110-90 Dunkirk Street, St. Albans, NY 11433

www.justiceony.net • Email: kurt@justiceony.net
Phone: 718-864-9000 • Fax: 718-864-9001

SEE US 1st

Harvey's

WHOLESALE DISTRIBUTORS
Refrigeration/AC/Heating

BROOKLYN (718) 257-3347
10720 Avenue D

JAMAICA (718) 526-0330
139-29 Queens Blvd.

MT. VERNON (914) 688-3631
551 S. Columbus Ave.

DUPONT

**Fire Ice
Mechanical Inc.**

HVAC/R Service Contractors

KURT J. EGGERT

Vogt Tube-Ice Authorized Dealer/
Sales & Factory Certified Technicians
Goldenrod Distributor,
The Newest in Water Treatment Technology
Air Conditioning & Refrigeration

Tel (718) 631-1503
Fax (718) 279-4686

Thermatix Supply
Plumbing, Heating, and Air
Conditioning Supplies

"We keep you supplied
7 days a week!"



73 Broadway, Hicksville, NY 11801
toll free: (877) 390-9421
tel: (516) 513-0985 / 0986
fax: (516) 620-5942
email: sales@thermatixsupply.com

ABCO

49-70 31st STREET
L.I.C., NY 11101
Phone: 718-937-9000
Fax: 718-392-1296
1-800-937-9000

DUPONT
Suva

Centrotherm
solutions beyond



The only
UL-1738
polypropylene
vent pipe
approved in NYC

ETL
Intertek

518.434.3400
www.centrotherm.us.com

THIS IS A SAMPLE OF OUR MONTHLY NEWLETTER

If you are not familiar with our organization –READ ON.....

There is an organization for you!! This organization was founded over eighty years ago and is dedicated to **YOUR** education. It is devoted to achieving perfection in our trade by improving the educational standards and technical ability of its members. This organization can keep you up-to-date on the latest installation, service and troubleshooting techniques as well as the availability of the newest equipment and tools. Its members are your fellow mechanics, service managers, owners, engineers and wholesalers. We are:

The “REFRIGERATION SERVICE ENGINEERS SOCIETY” (RSES) –*an international organization.*
In the New York City area we are “*The Metropolitan N.Y. Chapter, RSES*”.

Wednesday March 14th, 2018
at 7:30pm

at
RICCARDO'S
21-01 24th Avenue, Astoria NY 11102

Low Temperature
Hydronic Heating

By Ken Resnick—Rathe Associates

PRESIDENT'S MESSAGE

Are you having trouble keeping up with our industry? We now see many of our technicians being asked to service everything from room air conditioners to Variable Refrigerant Flow systems. Many technicians have started their career with small jobs, and as their reputation and skill increased so did the size of the units they work on. If you find yourself passing up jobs because you are not fully trained, let us know what areas we can help you with. Unsure of how to read a schematic? We have run several seminars on reading & understanding wiring diagrams, both pictorial and line diagrams. We will run them again if the need is there. Need help learning zoning? From the beginner to the seasoned veteran there are topics that need a refresher course.

We are willing to try to set up training on any topic the membership wants. Just email your suggestion to Stan at EducationalDirector@metronyrses.org.