

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

January 2019

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OIL SEPARATORS

During the normal compression cycle, as the refrigerant is discharged from a compressor a small amount of refrigerant oil will also be discharged. It is important that this discharged oil returns back to the compressor. In order for the oil to return back to the compressor good piping practices must be followed. If the refrigerant lines are not properly sized or configured the oil may become trapped out in the system. If enough oil becomes trapped out in the system, the compressor could become starved for oil and bearing damage could occur.

An oil separator is an accessory used on some larger refrigeration systems to help limit the amount of oil in circulation. It is typically used on low temperature applications where the refrigerant's mass flow rate is low, but it could be used on any system. An oil separator will separate a major portion of the oil from the refrigerant as it is pumped from the compressor. It will also collect this separated oil and safely return it to the compressor's crankcase. Oil separators are installed in the discharge line close to the compressor's discharge. Sometimes they are heated and/or insulated to prevent the refrigerant inside from condensing at low ambient conditions.

As the refrigerant/oil mixture is discharged from the compressor it enters the oil separator. The velocity of this mixture is slowed down from the use of internal baffles and impingement screens. This slowing down causes a major portion of the oil to drop out of the mixture and fall to the bottom of the oil separator. At the bottom of the oil separator is a float assembly connected directly back to the crankcase of the compressor. As the oil level at the bottom of the oil separator increases, the float will cause a valve to open and, due to the pressure difference between the oil separator and the compressor's crankcase, some of the oil will be returned to the crankcase until the float level in the oil separator drops and the valve closes.

While servicing systems with oil separators one item to check is the temperature of the oil return line from the oil separator to the compressor. It should be just above room



temperature most of the time. If it is hot all the time, this is an indication that the float assembly inside the oil separator may be stuck open and allowing hot discharge vapor to enter the compressor's crankcase. This can lead to excessive crankcase pressures, overheating, and serious damage to the compressor.

Although oil separators can be quite efficient (some as high as 98% efficient), they do not separate all of the oil from the refrigerant. Some quantity of oil will always travel with the refrigerant throughout the system. They are not a cure for oil return problems. Good piping practices must always be followed while installing a system. Even with an oil separator, poor piping practices will eventually lead to oil being trapped out in the system causing a deficiency of oil in the compressor's crankcase and possible compressor damage.

Refrigerant Cylinders

We regularly handle various types of refrigerant cylinders, which can cause injury to a technician if mishandled, so keep these safety guidelines in mind:

- Use only DOT approved cylinders for the recovery of refrigerants from a system.
- Do not overfill refillable refrigerant cylinders to more than 80% of their internal volume.
- Disposable cylinders are not reusable.
- Disposable cylinders must be transported in the original cartons.
- Always transport refrigerant cylinders in an upright and secured position to prevent movement during transportation.
- Recovery cylinders must be re-tested according to the latest DOT guidelines. Do not use a recovery cylinder which has not been re-tested .
- If the cylinder looks damaged , do not use it. Any dents, rusting locations or gouges may indicate an unsafe condition.
- Do not warm refrigerant cylinders above a temperature of 130°F.

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

Wednesday January 9th, 2019

at

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Adding Mod-Con Boilers to Existing Heating Systems: Utilizing Caleffi, Webstone & Hydrolevel products for INCREASED EFFICIENCY & PROFIT.

Presented by:

Rich Bruno

PRESIDENT'S MESSAGE

On behalf of your Board of Directors I want to wish all of you a HAPPY NEW YEAR. We hope you had an enjoyable Holiday Season.

Have you ever encountered a problem on a job that you just could not determine how to fix it. Maybe you were getting unusual pressure or amperage readings.

Where did you go for help? When you attend our meeting you pick up valuable information. You can usually get the speakers business card so if you have a question on that topic in the future you have a person to contact. After the meeting we have coffee and Danish. This is a great time to network with fellow technicians. Now, it is unrealistic to expect you to wait until our next meeting if you run into a problem. However, if you are having a problem with an ice machine, maybe you met someone at a meeting that did a lot of ice machines and you could speak to, or contact him for advice. You can also visit us on our Facebook page, Metro NY RSES. This is a page for trade members only, so please request membership and follow the prompts. It's a great place to exchange your thoughts, get information and keep up with RSES news.