METROPOLITAN NY CHAPTER
Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

"Better Service Through Knowledge"

****

September 2015

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RSES® The HVACR Training Authority
Metropolitan New York Chapter

EMPIRE KEYSTONE ASSOCIATION — BETTER SERVICE THROUGH KNOWLEDGE

Determining a System's Oil Charge

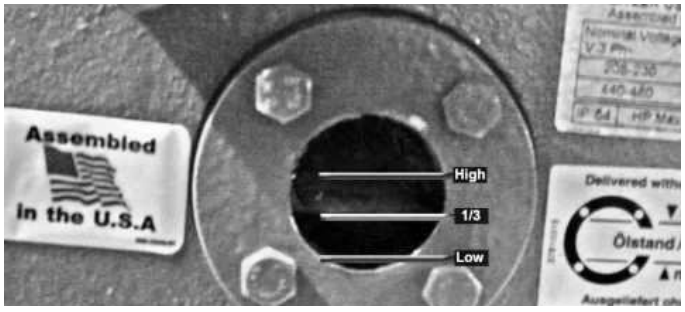
As refrigerant is discharged from a compressor, so is a small amount of refrigerant oil. If the refrigerant piping is properly sized and configured, this oil will eventually return to the compressor. However, there will always be some oil in circulation with the refrigerant. On a new system start-up it ***may*** be necessary to add refrigerant oil to a compressor to compensate for the amount of oil in circulation.

The required oil charge for a system is basically a factor of the amount of refrigerant in the system and the compressor's oil pumping rate. The most common method of determining if oil needs to be added to a compressor is to observe the compressor's oil sight glass.

During a new start-up a technician can observe the oil level within the sight glass and determine if oil needs to be added to the compressor. Generally an oil level that covers about half of the sight glass is deemed acceptable. If the oil level falls below the sight glass and stays below, oil should be added to the compressor. However, as with any component in our industry, always follow the manufacturer's recommendations, as they may differ from generally accepted practices.

But what if the compressor does not have an oil sight glass? *Not every compressor does*. For example, many hermetic compressors will not have one. So how do you know if oil needs to be added to these compressors?

A technician can approximate if oil needs to be added to these compressors by multiplying the amount of refrigerant in the system by 2.2% and then multiplying this number by 16 (fl. oz./lb). Then subtract from this value 10% of the oil charge stated on the compressor nameplate.



For example, suppose a system hold 60 pounds of refrigerant and the compressor's nameplate shows an oil charge of 118 fl. oz. You would multiply 60 pounds x 0.022 x 16 , which equals 21.12 fl. oz. Then you multiply the oil charge of the compressor—in this example 118 fl. oz.— x 0.10, which equals 11.8 fl. oz. The difference is 9.32 fl. oz. (21.12 fl. oz. - 11.8 fl. oz. = 9.32 fl. oz.), the amount that should be ***IN*** the compressor to compensate for the amount of oil in circulation.- **(And you thought this was an easy business!)**

This is not normally an issue for refrigeration technicians working on systems using hermetic compressors. For the most part, hermetic compressors without an oil sight glass are used on smaller refrigeration systems whose refrigerant charge does not exceed the amount that would require adding oil to the compressor. However this may not always be the case and technicians must be able to determine when oil needs to be added to these compressors.

When adding oil to a compressor always following the compressor manufacturer's guidelines for the type and grade of oil to use. There are several different types and grades of oil used on different types of refrigeration systems and their compressors. Adding the wrong oil to a compressor can be detrimental to the operation of the compressor, and cause it to fail prematurely.

REMEMBER—SAFETY FIRST — *ALWAYS*

Hydrofluoric Acid

When a compressor fails due to a severe motor burn, it is possible for the hydrofluoric acid which may have developed to remain within the compressor.

When removing the defective compressor from the system, care must be taken to prevent hydrofluoric acid from spilling from the compressor.

If a technician believes hydrofluoric acid may be contained within the defective compressor, they should properly seal any open compressor ports. This will prevent any acid from spilling from the compressor.

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Recommended for:

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SATURDAY,
October 24th, 2015
8:30am – 5:00pm

FULL DAY with Hot Lunch served

Location:
Riccardo's Catering
21-01 24th Avenue
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(718) 721-7777

AIR FLOW (Problems & Pitfalls) & HYDRONIC HEATING Training Seminar

YOU WILL LEARN:

ONE OF THE THINGS WE DO THE MOST IS MOVE AIR AND ONE OF THE THINGS MOST TECHNICIANS KNOW THE LEAST ABOUT IS "MOVING AIR"

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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:
$130 - ($105 for RSES members)

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For Further Information Call:
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Air Flow & Hydronics SEMINAR 10/24/15

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Warming a Refrigerant Cylinder

As refrigerant vapor is removed from a cylinder while it is being added to a system, the remaining liquid in the cylinder will boil off to replace the removed refrigerant vapor. In the process, the refrigerant left in the cylinder becomes cooler, which reduces its vapor pressure. As the vapor pressure in the cylinder is reduced, its ability to transfer the refrigerant from the cylinder to the system is reduced. The refrigerant in the cylinder must be at a higher pressure in order for it to transfer from the cylinder to the system. The greater the pressure difference, the quicker the refrigerant will be transferred.

It is a common practice for a technician to warm a refrigerant cylinder while transferring refrigerant in order to keep the vapor within the cylinder high enough to allow the refrigerant to efficiently transfer from the cylinder to the system. The best practice to use to warm a refrigerant cylinder is to place it in a bucket of warm water. **Never, *Never*, Never** use a torch or an open flame to warm a refrigerant cylinder. A water temperature of approximately 90ºF-100ºF is ideal. Never use water at a temperature higher than 125ºF, as it many over-pressurize the refrigerant cylinder.

Wednesday September 9th, 2015 at 7:30pm

at

RICCARDO'S

21-01 24th Avenue, Astoria NY 11102

New Scotsman Ice Machines – Technology, Servicing & Troubleshooting

By

Les Tatum—Scotsman Ice Systems

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EDUCATIONAL PROGRAM
Wednesday September 9th, 2015
at 7:30
SEE DETAILS—THIS PAGE

The HVACR Training Authority
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Refrigeration Service Engineers Society
241 Halsey Street
Brooklyn, NY 11216