Answers to hvac unit 8 review question

Why must no foreign vapors be left in a refrigeration system? Air in the system is not condensable and has the effect of increasing heat pressures. This in turn places unnecessary strain on the compressor and if the situation is not corrected, failure may result. It is most undesirable to have any 'foreign' gas present in a refrigeration system.

What leaks occur only when the unit is in operation are called dependent leaks? Vibration Dependent Leaks (VDL) occur only during unit operation. The mechanical strain of motion, rotation, refrigerant flow, or valve actuation are all associated with VDL. Combination Dependent Leaks (CDL) are flaws that require two or more conditions in order to induce leakage.

Which are the best vacuum pumps, one stage or two state? The first stage creates a vacuum, while the second cleans the system, resulting in a higher ultimate vacuum level. As a result, two-stage pumps may achieve higher vacuum levels than single-stage pumps.

What is the primary advantage of testing for leaks by pressurizing to 150 psig or more? Nitrogen pressurization –Pressurizing the system with nitrogen at 150 psi. This test takes a bit of time and can detect small, large or multiple leaks. A leak may not become apparent until the system operates; a disadvantage.

What are the only two substances should be in the refrigeration system? Moisture may also cause the system oil to break down and form sludge. This sludge can clog orifices, filter driers, and valves, causing system failure. The only two substances that should be present in the refrigerant circuit are refrigerant and oil.

Can you leave a vacuum pump on overnight? Always remove the Schrader valve and reinstall it when the system is under a slight positive pressure. If you plan on running your vacuum pump overnight, it's highly recommended to use a full port solenoid valve inline with the vacuum line to the pump, so you won't lose the vacuum during a power failure.

What are the 3 classes of leaks? –Class I: Leakage indicated by wetness or discoloration, but not great enough to form drops. –Class II: Leakage great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected. –Class III: Leakage great enough to form drops that fall from the item being checked/inspected.

What are the two types of leakage? The two type of leakages are savings , imports. Leakage refers to withdrawal of the money from the circular flow of income.

What vapors does a deep vacuum pull out of the system? Evacuation is when we remove all water vapor and air from the system. We evacuate a system before filling it back with refrigerant to avoid mixing refrigerant with air. We do this by sucking out all the air and creating a vacuum inside the appliance. Vacuum essentially means the absence of any matter or air.

When adding refrigerant to a newly evacuated system? So, to a newly evacuated system when a refrigerant is added, the best method is to add liquid refrigerant to the system through the liquid line service valve.

How often should AC vacuum pump oil be changed? A common question for vacuum pump owners is, “How often should you change the oil on a vacuum pump?” It is an excellent question and reminds us that periodic maintenance keeps your equipment operating at optimal performance and extends the life of your pump. We recommend every 500 hours.

How many CFM vacuum pumps do I need? The cubic feet per minute, or CFM, directly affects the time it takes to evacuate the air from the system, and the higher the CFM the faster the job can be completed given proper hose configuration. Most HVAC pumps flow rate vary between 2 and 10 CFM. As a rule of thumb, most residential homes require a 5-CFM pump.

Which of the following should never be used to pressure test for leaks? Explanation: When using a "standing pressure test" for leak-checking, hydrogen should never be used since an explosive mixture can be created.

What are leaks that occur only when the unit is in operation called? Vibration -dependent leaks- Vibration-dependent leaks only occur during unit operation. The mechanical strain of motion, rotation, refrigerant flow, or valve actuation are all associated with vibration -dependent leaks.

What can happen if you exceed 10 psig while pressurizing the system? In refrigeration systems, components such as pressure relief valves, compressor seals, condenser tubes, and evaporator coils are designed to handle specific pressure ranges. Exceeding these ranges with higher pressure, such as over 10 psig during nitrogen leak testing, can cause failure in these components.

Where is the heat rejected during the refrigeration cycle? The condenser is the point in the cycle where heat is removed from refrigerant. The condenser is a coil of tubing, typically copper, with metal fins and a fan. As refrigerant gas travels through the length of coil, heat is dissipated, or rejected, causing the gas to condense into a high-pressure liquid.

What device lowers the temperature of the refrigerant before it enters the evaporator? A metering device is a component in an air conditioning system that drastically decreases the temperature and pressure of the refrigerant moving from the condenser before it enters the evaporator.

What does the refrigerant do when it first enters the condenser? Inside the condenser the gas begins to cool and change state in to a vapour. Additional cooling inside the condenser causes the refrigerant vapour to condense in to a high pressure subcooled liquid.

What happens if you don't pull a vacuum on an AC system? Acid build-up: When moisture integrates with the system's lubricant, it leads to acid formation. This can result in rust formation and subsequent failure in the internal mechanisms of the AC system.

Can you run a compressor with nitrogen? Nitrogen compressors can handle higher pressures, remove contaminants from gas, and work safely with the unique properties of nitrogen gas.

What can damage a vacuum pump?

Which type of leak is the most common?

What is the difference between seep and leak? A leak is verified by the identification of pooling fluid with the formation of droplets and dripping. Below are examples determined to be a leak. A seep is defined as a thin accumulation, film, or coating of oil on the exterior of a component.

What is the most common water leak? Toilets are often the culprits behind water leaks. The good news is, you can usually diagnose and even fix some toilet leaks yourself. If you hear water running or ghost flushes, you might have a failing flapper valve. Flappers are inexpensive rubber parts that can build up minerals or decay over time.

Why should refrigerant vapors not be inhaled? Explanation: Refrigerant vapors or mist should not be inhaled because they can contain toxic chemicals that may irritate the eyes, nose, and throat. More seriously, inhalation can lead to headaches, nausea, and damage to the liver, kidneys, and central nervous system.

What happens if there is air in refrigeration system? Air is a non-condensable and cannot be condensed like refrigerant vapors. The liquid seal (subcooled liquid) at the bottom of the condenser will prevent air from leaving the condenser. Air will cause a reduction of condensing surface area and cause high condensing (head) pressures.

What is the necessity of Vapour compression refrigeration system? Advantages of Vapour Compression Refrigeration Cycle By regulating the expansion valve, the temperature of the evaporator can be controlled. This cycle has a high Coefficient of Performance. The operating cost of the overall system is low.

What happens if moisture is left in an operating refrigeration system? Moisture within the system can react with the refrigerant, creating corrosive acids. These

acids can damage the system's metal components, which can be costly to repair.

Why should venting out of refrigerant be avoided? Never intentionally release refrigerant in a confined space. Even the safest refrigerant can still displace enough oxygen to cause suffocation. Set up ventilation equipment, like a portable fan, in areas where possible release would mean high concentrations.

Why can't you release refrigerant into the air? Under Section 608 of the Clean Air Act, EPA prohibits individuals from knowingly venting refrigerants containing ozone-depleting refrigerants (including HCFC-22) as well as their substitutes (such as HFCs, including R-410A), while maintaining, servicing, repairing, or disposing of AC and refrigeration equipment.

What happens if you breathe refrigerant vapor? Severe lung damage may occur. Survival past 72 hours usually means the person will have a complete recovery. Sniffing Freon is extremely dangerous and can lead to long-term brain damage and sudden death.

What is the most common problem that enters a refrigerant system? Floodback occurs when refrigerant leaves the evaporator and enters the running compressor as a liquid instead of a vapor — which can ultimately lead to system failure. Conditions contributing to floodback include air flow, ice buildup, overcharging refrigerant or misadjusted expansion valves.

How do you remove air from a refrigerant system? In order to remove this air, it is necessary to vacuum the interior of the refrigeration system, sometimes due to subjective and objective reasons, the vacuum inside the refrigeration system is not enough to meet the requirements, leaving a small amount of air in the system.

How to purge air from HVAC system? Slowly open the valve; some water may drip, but any trapped air will also be released. You will likely hear a slight hissing sound when you first loosen the valve, which is an excellent sign that trapped air is being removed from the system. When no more air comes out of the valve, close it completely.

What is COP in refrigeration? The coefficient of performance or COP (sometimes CP or CoP) of a heat pump, refrigerator or air conditioning system is a ratio of useful

heating or cooling provided to work (energy) required. Higher COPs equate to higher efficiency, lower energy (power) consumption and thus lower operating costs.

When the refrigerant exits the evaporator, what state is it in? Question #2:When the refrigerant exits the evaporator, what state is it in? In the evaporator, refrigerant absorbs heat from the indoor air to change state from liquid to vapor. This means that when the refrigerant leaves the evaporator, it is fully in the vapor state.

What is superheat in refrigeration? Superheat is the amount of heat added to a vapor above its boiling point. As a result, it shows the amount of heat your Freon has gathered over time. However, when the reading is too high, there isn't sufficient refrigerant, and the system will be inefficient.

What removes moisture from a refrigerant? Drier is used to remove the moisture from the refrigerant. Sometimes it is also referred as dehydrator or dryer.

What happens inside an air conditioning system that is contaminated with moisture? When the refrigerant circuit is subjected to moisture, excessive heat, contaminants, or other impurities, it leads to a chemical reaction that creates acid. This condition is brought about by age (ordinary wear and tear), a lack of maintenance, or an improper system repair.

How to remove moisture from a HVAC system?

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