

technical q&a

msac MANUFACTURERS' SERVICE ADVISORY Council HOTLINE

The Manufacturers' Service Advisory Council provides expert answers to your technical questions

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Hydrotest Piping Pressure

What pressure do you hydrotest piping for 407C? Does this question make sense?

A hydrostatic test is performed on boilers by pressurizing them with water to 150% of their maximum allowable water pressure, and then leak checking visually and by looking for a drop in the water pressure unattributed to temperature change.

Refrigerant piping containing 407C should NOT be tested with water pressure. Remember that moisture and air are things that we must remove from refrigerant piping systems, so putting water into the tubing just makes no sense.

If you are referring to a standing pressure test performed with dry nitrogen (a VERY different procedure), I recommend that the system not be pressurized above the manufacturer's test pressure of the lowest pressure component, which is usually the evaporator. I recommend staying at least 50 PSIG below the lowest component test pressure.

Question from George Friedman, Woodridge, NJ. Answer from Andrew Erbach, Professor, Elgin Community College.

Gas Ballast Function

I am currently employed by the Rockview Prison HVACR work crew. For our vacuum pump we have an Emerson Platinum. It has a 3 CFM. The model number is C55JXKPK-5060. My question is, on the top of the vacuum pump there is a thumb screw (approximately 1/2 in. in diameter) for the gas ballast. What is the gas ballast used for? When should it be cracked open and when should it be closed? Everybody I ask seems to have a different answer or don't really know.

The gas ballast valve is for the first part of the evacuation procedure. After the pump quiets down from initial volume of air, close valve and continue evacuating. Failure to close

valve will result in poor pump performance.

Question from Ethan Hannold of Bellefonte, PA. Answer from Robert Coné, CM, Field Technical Consultant, Lennox Industries.

R-22 Systems

When an older R-22 residential unit requires a condensing unit replacement, it should be upgraded to a current R-410A unit. Are there some scenarios where the existing R-22 evaporator could be used (with a TEV replacement) and work satisfactorily with the new R-410A condensing unit?

Also, are there certain years of manufacture where the pressure rating of the R-22 evaporator would not be within the current pressure rating requirement for an R-410A evaporator? Are there certain R-22 system SEER ratings which would not allow for satisfactory operation of the evaporator with a more efficient R-410A condensing unit?

This goes back a few years so I'm working from memory, but when R-410A was selected as the replacement of choice for R-22 all the major OEMs stated the design pressures for their existing R-22 coils was more than sufficient for use with R-410A. We also lab tested multiple existing evaporator coils and found all performed well with R-410A when a new metering device was installed. The exception being evaporator coils using capillary tubes. They were ruled out as it was not considered practical or cost effective to replace the tubes. Coils using a fixed orifice would perform well, although it was always recommended that a TXV be used as the replacement due to its superior refrigerant flow control. One had to keep in mind that most coil/condenser matches were not lab tested, so specific performance could not be guaranteed.

Question from Anonymous Contractor. Answer by Jack Bartell, Director, Service & Training, Virginia Air Distributors.