



RS-45 (R-434A) Technical Bulletin

When considering RS-45 as a replacement for R-22 in flooded systems the following are important issues that must be addressed:

1. RS-45 requires 40% more mass flow than R-22.
Expansion devices, thermostatic or manual expansion valves, high and low side floats, and refrigerant pumps, must be capable of flowing 40% more liquid when used with RS-45.
2. In low pressure receivers using RS-45 with mineral (MO) or Alkyl Benzene oil (AB), the oil will float on top of the liquid in the low-pressure receiver or a shell and tube evaporator. For proper oil return it will be necessary to have an oil recovery system with a skimmer mounted in such a way to draw a refrigerant/oil mixture from the top of the liquid column in the low-pressure receiver or shell and tube evaporator. If the skimmers are not located at the top of the liquid column, then the mineral or Alkyl Benzene oil must be replaced with POE oil.

If it is necessary to replace the MO or AB oil with POE it is recommended that O-ring gaskets and compressor shaft seals that have been previously exposed to R-22 and MO or AB oil be replaced before charging the system with RS-45.

3. R22 "FLOODED" ICE RINK System Types and Related Conversion Information
The "DIRECT" overfeed system has liquid refrigerant running under the floor while the DX Loop system has a flooded chiller barrel with brine or glycol running under the floor.

Most ice rink systems were made by "Holmsten" or Ice Pro (C.W. Davis Supply), Ice Builders or Cimco. Check the name plate on the system control panel.

We have found that most Holmsten designed and installed systems have a low side receiver that skims the oil off the top of the liquid column. This makes the Holmsten system a straight forth conversion to RS-45. Meaning evacuate the R22 and put in the RS-45.

The Ice Pro (C.W. Davis Supply), Ice Builders or Cimco systems usually do not have the oil skimmed off the top of the liquid column (but not in all cases). Rather the refrigerant/oil is drawn off from the bottom of the low side receiver. This point needs to be determined before a conversion takes place.

If the oil is not skimmed off the top of the low side receiver then the options would be to change the oil from mineral oil to POE oil which we would then recommend changing out the compressor shaft seals; so as to lessen the possibility of leaks down the road. Another alternative is the installation of a retrofit kit that ComStar is working on but is currently not yet in production.