

## TECH TIPS

April 9, 2012

### Procedures for successful evacuation



When it comes to sealed system repairs and installations, evacuation of air and moisture from the refrigerant circuit is one of the most critical processes. Let's look at ideas that will ensure quick and effective evacuations. These bullet points illustrate key criteria using the 'deep vacuum' method:

- Just like refrigerant, water changes its boiling point with pressure. When we attach a vacuum to the system, we are reducing system pressure which in turn reduces the boiling point of the water in the system. If we can reduce the water's boiling point to a temperature below ambient, then that water will change to vapor and our vacuum will be able to remove it from the system.
- In order to be certain that moisture has been removed from the system, a vacuum level of 500 microns is required. This level of vacuum equates to a boiling point of  $-12^{\circ}$  and ensures that all moisture in the system will change to vapor. A compound or low side gauge is not accurate enough to be used as a vacuum indicator, during evacuation.
- The vacuum reduces system pressure and removes air and water vapor. The vacuum pump can *NOT* remove debris such as scale formed by the brazing process. Systems should be purged with nitrogen during brazing, to prevent these formations.
- Vacuum pump manufacturers recommend changing vacuum pump oil in between each evacuation. Dirty oil can increase evacuation time or make reaching desired vacuum levels impossible.
- Micron gauges also require intermittent maintenance.
- Evacuation time can be reduced if schrader cores are removed during evacuation. This requires specific schrader core removal tools.
- The vacuum pump inlet valve should be opened *AFTER* the vacuum pump has been started. This ensures that air and moisture are being ejected from the system. If this is not done, the pump may actually pull air and moisture into the system.
- Once a level of 500 microns has been reached, the system should be isolated and the gauge observed for at least 15 minutes. If the gauge rises back to atmospheric pressure, there is a leak in the system. If the gauge rises but then levels off, there is still moisture present in the system. Remember to ensure that all hoses are in good condition.
- An inability to initially reach 500 microns would indicate one of the following: a leak in the system, a leak in the hose connections or dirty vacuum pump oil.
- It is not possible to over-evacuate a system.

If you have any questions regarding this TECH TIP, please feel free to contact me at the office at 800-830-0853, mobile phone 610-241-5839 or via email at [austindillon@americanairdist.com](mailto:austindillon@americanairdist.com).

Thanks!

*Austin*

Austin Dillon  
Dealer Support Specialist