



**VAST-14-006**

**Service Tip**

**09/09/2014**

**Subject:** TXV's sticking or failing in Commercial or Residential Systems

Most of you are aware of the issues going on with TXV's becoming plugged due to (according to most everyone in the industry) a process change by Copeland. We have nothing official from York/JCI nor anything from Copeland but I'm sure something will be coming soon. The net effect from the process change (assumed to be a rust inhibitor used on the scroll plates) is the contaminant is mixing with the POE oil causing a sludge that prevents the TXV pin from moving properly. The result is very low suction pressure indicating a restriction. The TXV freezes and if left running long enough the evaporator coil will freeze as per the picture below.



We then see very high superheat which can lead to compressor failure due to the overload protector sticking open after tripping too many times. While this can occur in any system containing a Copeland compressor whether residential or commercial the greatest number of incidents VA Air has seen have involved packaged heat/cool units and packaged heat pumps. Other OEM's have reported split system

issues with many releasing letters addressing the topic, but the entire industry is working toward a more permanent solution.

If caught in time preliminary field testing with an oil additive has proven successful in breaking down the sludge and allowing the TXV to operate normally once again. Two materials have been used, SUPCO 88 and Nu Calgon A/C Renew. We have been made to understand the Nu Calgon material is being life cycle tested by Copeland as we speak. The tests they run last 3 to 4 weeks and can simulate 10 years of compressor operation. If the results of the test show zero negative reaction by the compressor Copeland may approve of its use. But until the test results are final we cannot recommend use of an oil additive unless we get pre approval from the factory. If we have a job with a blockage causing a suction pressure of below 90 psi (with the outdoor temperature above 80° F) and/or a superheat value of over 30° F we would recommend you recover the charge, then take apart the TXV to clean the pin and other surfaces of the valve by using SUPCO 88 or A/c Renew on a clean rag.

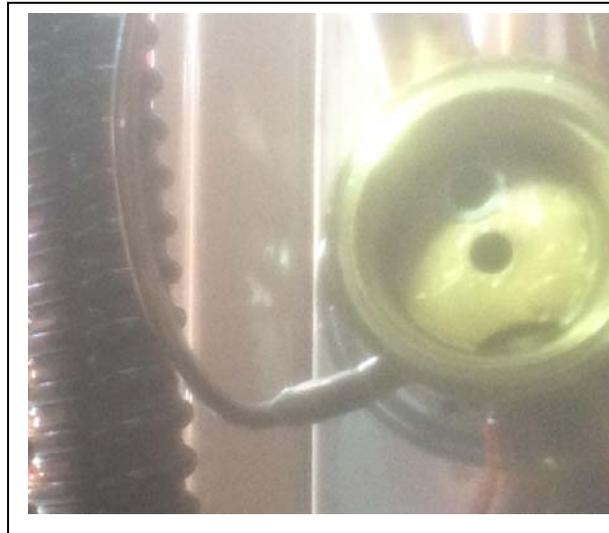
The picture below shows what a sludge coated pin, spring and cap looks like:



The next picture shows the same parts after being cleaned with the SUPCO 88:



We used a clean rag lightly dipped in SUPCO 88 to clean the valve body by wiping it down. The following two pictures show the valve body before and after:



We also wiped some SUPCO 88 on the pin, inserting it back into the body then used a needle nosed pliers to hold it while pushing it all the way down and pulling it back out again, repeating for 10 to 15 seconds (could not get a photo of that).

Putting the valve back together isn't difficult but I recommend putting a rag down below the valve body to catch the cap or spring if you happen to drop one of them. I found it best to have the pin all the way out, then carefully tipped the spring and cap in place, turning it up while pressing in quickly to use the pin to hold the cap in place. See picture below



After recovering the charge this process of cleaning the valve and putting it back together shouldn't take longer than 15 minutes. The system then gets recharged with **new** R-410A. However, until we get additional instructions from the factory we are not recommending the LL dryer be replaced unless there is evidence to show it's already restricted, which has not been the case up to this point. We've cut open dryers and found little or no material present so the overall volume of sludge is expected to be minimal. Please note the pictures and references contained in this letter are for an adjustable TXV typically found in a commercial system, therefore it can be disassembled and cleaned. Smaller non-adjustable TXV's found in residential system suspected to be restricted due to this sludge will simply need to be replaced.

While we have no official confirmation, another observation we've made is that the sludge may form faster in systems experiencing low airflow which as you know causes lower suction pressures and TXV's that remain closed or nearly closed for longer periods. So please do not overlook the obvious and insure you have adequate airflow. We expect more information from York/JCI in the next couple of weeks so this letter is for guidance only and it needs to be noted we do not have any sanction to take proactive steps. This is a fix on fail to be dealt with on a case by case basis only. Labor and/or material compensation will also be handled on a case by case basis.

If you have questions please contact your local Virginia Air TSM.