

TXV Diagnosis

Diagnosing a defective expansion valve has been made easier with the newer screw-on valves coming with the evaporators.

A defective valve will give the symptoms of a restriction, which are low suction pressure and high superheat. Most valves will regulate a superheat between 5 and 15 degrees.

Low suction and high superheat may also be from a low on charge situation or a condenser restriction or liquid line drier restriction, so measurement of the liquid line subcooling should be taken. Most properly charged system will have a subcool between 8 to 13 degrees. The liquid line temperature may not be below the ambient temperature otherwise the service valve is at issue or a restriction in the condenser or factory drier.

Some good expansion valves are changed because the problem is actually a plugged screen upstream of the valve or foreign matter in the distributor or distributor tubes.

A valve can be tested by removing it from the evaporator.

1. Can you blow through the valve? If so, then the power head is good.
2. Attach the equalizing line to a tank of refrigerant. Open the tank valve. If the TXV now closes and reopens upon removal of pressure, then the valve is good.

If the valve passes this test, then the problem might be foreign matter in the liquid line or distributor.

1. With the valve still removed from the evaporator and the condensing unit's service valves closed, blow nitrogen into the liquid line and suction line service valves to attempt forcing the restriction out of the system. A helper with a clean rag to capture the material is suggested.
2. Reinstall the TXV, replace or install a liquid line drier, evacuate to 500 microns and open the service valves. Adjust the refrigerant to obtain 10 to 13 degrees of subcool or what is necessary for this system.
3. If after a minimum of ten minutes run time, the suction remains low and the superheat high, attempt inspection of the distributor tubes to verify that each is approximately the same temperature. If the blower is disabled, the tubes and evaporator circuits should frost equally.
4. If the problem remains, the evaporator should be replaced.

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