



## *Ducted Systems Technical Services Service Tips Letter*

Letter: **ST-007-2020**

Date: March 27, 2020

To: Ducted Systems Branch Service, Sales, Training Managers, and Warranty Managers  
Ducted Systems Distribution Service, Sales, Training Managers, and Warranty Managers

Subject: **DS Split System Pandemic Tips for General Spring AC Operation Checks**

Effective: **March 27, 2020** Expires: **March 27, 2021**

Summary: **This letter provides supporting recommendations for Split System AC operation when indoor access is not available to a Service Technician during Pandemic situations.**

*Johnson Controls is committed to the health and safety of all employees, customers, partners, and communities we serve. Johnson Controls is actively implementing local and regional contingency plans across the globe to ensure that our teams are available to support and meet the needs of our customers and other stakeholders while ensuring our employee's health and safety remains a priority. Please refer to the company statement regarding COVID-19 on the public website at [www.johnsoncontrols.com](http://www.johnsoncontrols.com).*

To minimize human interaction while performing the recommended springtime service procedures for your customers' HVAC equipment, we've prepared the following guidelines.

**Disclaimer:** This is an abbreviated method to determine if a unit's charge is within its design parameters without placing gauges on it or going inside the conditioned space. This is not to be considered a correct method for charging units but will give an effective overview of unit operation within design conditions and is a good indicator of whether additional service procedures may be required during a follow-up visit.

We always recommend confirming proper airflow at the indoor unit and taking entering and leaving WB and DB Temperatures to calculate system performance, which requires a technician to enter the conditioned space. Since a customer may not want a technician in their home, or you may not want your technicians entering homes, a method used to quickly confirm that the unit's refrigerant charge is within operating range is listed on the back of this letter.

This method compares Condenser Entering Air Temperature to Liquid Line Temperature. We call it the LLOA (Liquid Line Over Ambient) method of checking charge. It's also known as the 'Approach Method' of checking charge. It's a very accurate method when a TXV is utilized on the indoor coil since it gives a good indication of subcooling. Systems with an Orifice on the indoor unit can correctly operate over a wide range of subcooling depending on indoor and outdoor conditions, so this method is simply an indicator that a unit that was previously known to be correctly charged is operating within those known parameters.

## The 'No Home Entry' method of checking a unit

**Important Note: Read and follow all manufacturers' installation, operation, and maintenance instructions.**

Note: Do not adjust charge using this method. If charge adjustments are required, use conventional methods of superheat (fixed orifice) or subcooling (TXV) which will require access to the indoor unit to obtain temperature and airflow readings.

1. Shut off power to the outdoor unit at the disconnect.
2. Inspect components and wiring including the contactor's contact points.
3. Check capacitors with a capacitor tester for correct microfarad reading.
4. Inspect fan blade and confirm free rotation by hand.
5. Replace worn components as required.
6. Clean the condenser coil.
7. Restore power to the unit, check for correct voltage.
8. If possible, manually bump the contactor to confirm compressor and condenser fan operation.
9. Call the homeowner and ask them to initiate a cooling call and turn down the thermostat to ensure extended operation.
10. Place a thermometer on the entering air side of the condenser out of direct sun contact.
11. Place another thermometer on the liquid line leaving the unit.
12. Ensure a dry coil before comparing Liquid Line Temperature to Condenser Entering Air Temperature.
  - a. Liquid Line Temperature should always be greater than Condenser Entering Air Temperature.
13. Use one of the charts below to ensure charge is reasonably correct.
14. If it is unknown what type of metering device is present on the indoor coil, use the Fixed Orifice chart.
15. Measure and record operating voltages and amperages of the compressor and fan motor.
16. Call the homeowner and ask them to restore the thermostat to their desired setting.

Summary: Virtually all units installed within the past 20 years found operating within the 5° to 20° LLOA range are deemed ok for operation until the indoor system can be accessed.

### **Units with a TXV on the Indoor Coil**

LLOA = Liquid Line Over Ambient

15°F LLOA – 6 to 10 SEER Equipment (1991 and Prior)  
10°F LLOA – 10 to 12 SEER Equipment (1992 to 2005)  
10°F LLOA – 13 to 15 SEER Equipment (2006 to Present)  
5°F LLOA – 16 SEER and higher Equipment (2006 to Present)

### **Units with a Fixed Orifice on the Indoor Coil**

LLOA = Liquid Line Over Ambient

15°F to 25°F LLOA – 6 to 10 SEER Equipment (1991 and Prior)  
10°F to 20°F LLOA – 10 to 12 SEER Equipment (1992 to 2005)  
5°F to 15°F LLOA – 13 to 15 SEER Equipment (2006 to Present)  
(Orifice not Allowed) – 16 SEER and higher Equipment (2006 to Present)

Please feel free to contact us if you have any questions or comments regarding this supporting process.

Jeff Preston  
Residential Technical Support Manager  
Ducted Systems Technical Services  
[Jeff.A.Preston@jci.com](mailto:Jeff.A.Preston@jci.com)

Bruce Porter  
Commercial Technical Support Manager  
Ducted Systems Technical Services  
[Bruce.L.Porter@jci.com](mailto:Bruce.L.Porter@jci.com)

Ken Blakley  
Regional Technical Service Manager  
Ducted Systems Technical Services  
[Kenneth.W.Blakley@jci.com](mailto:Kenneth.W.Blakley@jci.com)