



Technician FAQ Guide to A2L Conversion

Transitioning from installing HVAC systems using R410A refrigerant to R454B involves a few key considerations and steps to ensure a smooth and successful process.

1. What is the Difference?

R410A is a hydrofluorocarbon (HFC) refrigerant with a high global warming potential (GWP).

R454B (Opteon™ XL41) is a low GWP refrigerant designed as a more environmentally friendly alternative.

2. What Are Safety Precautions?

Familiarize yourself and your team with the safety data sheets (SDS) for R454B to understand potential hazards and necessary precautions. <Add in link to SDS sheets>

3. What is Equipment Compatibility?

Check if the existing HVAC equipment is compatible with R454B. Many systems designed for R410A can work with R454B, but it is crucial to confirm compatibility with the equipment manufacturer.

4. What is Oil Compatibility?

Verify the compatibility of lubricating oil used in the compressor with R454B. Some systems may require an oil change. The same oil that is used for R410A can be used for R454B.

5. What are the Pressure and Temperature Differences?

Be aware of the differences in pressure and temperature characteristics between R410A and R454B. Adjust pressure settings and familiarize yourself with the temperature glide of R454B. Technicians Can expect to see slightly lower evaporator and condenser pressure with R454B which means the existing R410A gauge sets can handle the new refrigerants.

6. Should You Do a System Flush?

Consider flushing the system before introducing R454B. This is especially important if there is a significant difference in oil compatibility between the two refrigerants.

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7. What About Recovery and Recycling?

Follow proper procedures for recovering any remaining R410A from the system. Ensure that you follow industry standards for refrigerant recovery and recycling. Because R-454B and R-32 have a mildly flammable characteristic, there are several key changes to the recovery cylinder. The tops will be red for identification purposes, there will be two warning labels (compressed gas and flammability), cylinders will utilize a pressure relief valve for safety instead of a rupture disc, and the threads will be reversed (left-handed instead of right-handed for R-410A refrigerants). A R-454B / R-32 refrigerant recovery cylinder can only be used for R-454B/R-32 refrigerant; R-410A refrigerant recovery cylinders will still be required for R-410A refrigerants.

8. What is the Charging Procedure?

Adjust charging procedures based on the manufacturer's guidelines for R454B. This may include different subcooling or superheat values.

Safety Precautions:

- Ensure proper ventilation in the working area, as R454B is classified as mildly flammable.
Use appropriate personal protective equipment (PPE), such as safety glasses, gloves, and a face mask.
Ensure that there are no open flames or potential sources of ignition in the vicinity.

Equipment Check:

- Confirm that the equipment is compatible with R454B.
Inspect the system for any leaks or damage.

Recovery:

- If the system has an existing refrigerant charge, recover it using approved recovery equipment.
Follow proper procedures for refrigerant recovery, recycling, or reclamation, depending on local regulations.

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Evacuation:

- Evacuate the system to remove any residual air and moisture using a vacuum pump.
Follow the manufacturer's recommendations for evacuation times.

Leak Check:

Conduct a thorough leak check after evacuation to ensure there are no leaks in the system.

Charging:

- Charge the system with the recommended amount of R454B refrigerant.
Follow the manufacturer's guidelines for charging procedures, including the use of an appropriate charging manifold and hoses.
Charge the refrigerant slowly to avoid overcharging and to allow for proper system stabilization.

Monitoring:

Monitor the system pressures and temperatures during the charging process to ensure proper operation.

9. What is the Leak Detection Procedure?

Use leak detection methods suitable for R454B. The refrigerant may have distinctive characteristics, and the existing leak detection equipment may need adjustment. Typically, two types of detectors are used – a “sniffer” (electronic unit) to detect the presence of a leak, and a spray-on “bubble” leak detector to find the exact location.

13. Do I Need to Follow Local Regulations?

Adhere to local regulations regarding the use, handling, and disposal of refrigerants. Stay informed about any regulatory changes related to refrigerants.

14. How Important is Testing and Monitoring?

Conduct thorough testing and monitoring after the transition to ensure the system operates efficiently and meets performance standards.

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