



WHAT ARE IMPORTANT DIFFERENCES IN THE INSTALLATION PROCESS OF 410A AND R454B THAT INSTALLERS NEED TO KNOW

Transitioning from R410A to R454B involves several key differences in the installation process that HVAC installers need to be aware of. These differences primarily stem from R454B's mild flammability (A2L classification) and its lower global warming potential. Here are the critical points to consider:

Safety Precautions

1. Flammability:

- **R410A:** Non-flammable.
- **R454B:** Mildly flammable (A2L classification). Ensure proper ventilation in the work area, avoid open flames, and use appropriate personal protective equipment (PPE), such as safety glasses, gloves, and a face mask.

2. Leak Detection:

- **R410A:** Standard leak detection methods.
- **R454B:** Requires specific leak detection methods suitable for A2L refrigerants. Typically, electronic "sniffer" detectors and spray-on "bubble" leak detectors are used.

Equipment Compatibility

1. Refrigerant Recovery:

- **R410A:** Uses standard recovery cylinders.
- **R454B:** Requires specialized recovery cylinders with red tops, two warning labels (compressed gas and flammability), a pressure relief valve instead of a rupture disc, and left-handed threads.

2. Lubricating Oil:

- **R410A:** Uses standard POE oil.
- **R454B:** Typically, compatible with the same POE oil used for R410A, but always verify compatibility.

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Installation Procedures

1. System Flushing:

- **R410A:** Flushing is not always necessary.
- **R454B:** Consider flushing the system before introducing R454B, especially if there is a significant difference in oil compatibility or if the system previously used a different refrigerant.

2. Charging Procedures:

- **R410A:** Standard charging procedures.
- **R454B:** Adjust charging procedures based on manufacturer's guidelines, including different subcooling or superheat values. Charge the refrigerant slowly to avoid overcharging and allow proper system stabilization.

Pressure and Temperature Differences

- **R410A:** Higher operating pressures and temperatures.
- **R454B:** Slightly lower evaporator and condenser pressures. The existing R410A gauge sets can typically handle the new refrigerants but be aware of the different pressure settings and temperature glides.

Installation of Leak Dissipation Systems

- **R410A:** Does not require a leak dissipation system.
- **R454B:** Requires installation of a leak dissipation system, which includes a refrigerant sensor, sensor wire harness, leak dissipation control board, and power wire harness. This system ensures safety by detecting leaks and dissipating the refrigerant safely.

Electrical Connections

- **R410A:** Standard electrical connections.
- **R454B:** Includes additional connections for the leak detection and dissipation system. Ensure all components are properly connected and verify the operation of the dissipation system.

Summary

The transition to R454B requires careful attention to safety due to its mild flammability, proper handling and storage of refrigerants, adjustments in charging procedures, and the installation of additional safety systems. By following these guidelines, installers can ensure a safe and efficient transition from R410A to R454B.

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