

Commercial refrigeration applications

# Move on from R404A to R448A

In stationary systems with remote condensing units and self-contained units. We are ready when you are.

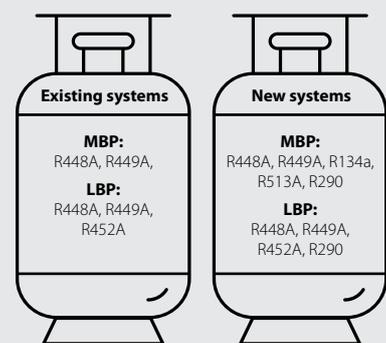
**+** **New installations**

**Redesign and retrofit**  
If the condensing unit is not qualified for alternative refrigerants.

**Drop-in**  
If the condensing unit is already qualified for alternative refrigerants. No major changes in the system.

## Possible replacements for R404A

Main refrigerants in play – non-exhaustive list.



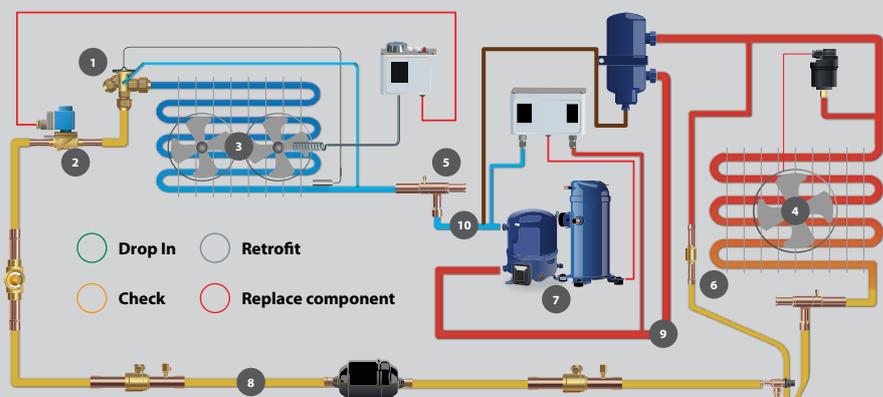
You can view a detailed log(p)-h diagram for your chosen refrigerant in **Coolselector®2**

For potential charge limitation of A2L refrigerants, please refer to your local regulations.

1. Use **Coolselector®2** to select a new condensing unit, compressor, and other system components.
2. Use the **Coolselector®2** commercial applications module to calculate cold room loads and find all Danfoss solutions for a specific refrigerant.
3. Pay close attention to Ecodesign level of the condensing unit.

1. Ensure that the compressor or condensing unit operating map with new refrigerant fits with your application.
2. Adjust settings for expansion valves, safety switches, and the controller, if any.
3. Clean the system and change the filter drier and sight glass for a longer lifetime.

## Impact on system performance with R448A



**1. Expansion valve T2/TU**

- +38%** Valve is probably oversized, risk of malfunction; check and replace, if needed
- 5K** Risk of malfunction. Requires big change in settings. Superheat adjustment is critical.

**2. Solenoid valve EVRv2**

- +33%** Check if the valve is oversized

**3. Evaporator (Te = -30°C)**

- +16%** Check dimensioning

**4. Condenser MCHE (Tc = 40°C)**

- 16%** Check dimensioning

**5. Pressure regulator KVP**

- +9%** Valve should be ok

**6. Check valve NRv**

- +14%** Check if valve is oversized

**7. Compressor MTZ/NTZ/MLZ/LLZ and Optyma™ condensing units**

- 13K** Discharge temperature change
- 6%** Heating capacity
- 8%** Cooling capacity should be ok
- +2%** Power
- 10%** COP

**8. Liquid line**

- +36%** Piping oversized. No risk, just low velocity

**9. Discharge line**

- +5%** Pipe should be ok
- +69°C** Discharge temperature

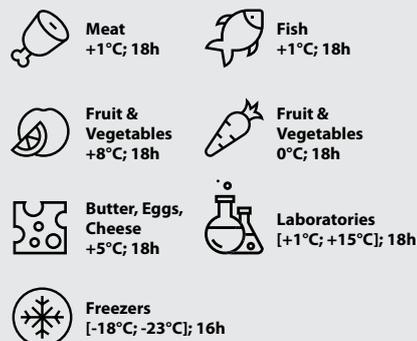
**10. Suction line**

- +2%** Pipe should be ok

**Other components**

DML, DCL filter driers, SGP sight glass, GBC ball valves, KP pressure switches, XGE fan speed controller are qualified for this refrigerant. No resize is needed.

## Typical operating temperatures and times in cold rooms



Access our online resources 24/7

Coolselector®2

Refrigerant Slider

Retrofit guidelines

Refrigerants.danfoss.com

### Tested and approved

All new and upgraded Danfoss products undergo extensive testing to qualify for new refrigerants.

Source: Danfoss, example for a medium temperature application operating at -10°C with 35°C condensation temperatures